G8 Research Group Oxford

Governing Global Climate Change:

St. Petersburg Compliance Report for the 'G8 Plus Five' Countries

G8 Final Compliance Report 2007
(20 July 2006 to 27 May 2007)

Oxford, 6 June 2007

The views expressed in this report are those of the authors alone. They do not necessarily reflect the views of the associated institutions.

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Foreword

Founded in 1987, the G8 Research Group is an independent organization whose mission is to serve as the world's leading independent source of information, analysis, and research on the institutions, issues, and members of the G8. Managed from its base at the University of Toronto, the G8 Research Group is assisted by a professional advisory council on the G7/8 and special advisors and experts on specific issue areas. Since 1996, the G8 Research Group has produced an annual compliance report on the progress made by the G8 member countries in meeting their Summit commitments, which is presented to scholars and professionals in the media, business, government, and civil society around the world who are interested in the ongoing initiatives of the G8 and related bodies such as the G20.

The G8 Research Group Oxford joined the G8 Research Group in 2004-2005 as an associated institution in our growing global network of research communities. This year marks the launch of its parallel but separate research initiative on Climate Change and Energy in the "G8 + 5" countries.

There are two major differences between *Governing Global Climate Change* and the G8 Research Group's previous compliance reports. First, this report broadens our research agenda to include the five major developing countries in a side-by-side study of compliance with the G8 states. And, second, it deepens our analysis by focusing exclusively on one issue area – climate change, selected as the German presidency's top priority at the upcoming 2007 G8 Summit in Heiligendamm.

All country evaluations are based on publicly available information, including government documentation, media reports, and civil society analysis and are extensively cross-checked to ensure precision, nuance, and comprehensiveness of the Oxford group's assessment.

We welcome comments from various stakeholder communities and are most grateful to the many individuals who responded to our invitation to contribute to the Interim Compliance Reports published this spring. Their feedback is kept anonymous, and responsibility for this report's contents lies exclusively with the authors and analysts of the G8 Research Group.

This work of the G8 Research Group has benefited tremendously over the years from the insight and the support of many people around the world. We are particularly grateful to the dedicated Oxford team of analysts and advisors without whose commitment this report would not have been possible.

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Executive Summary

The subject of climate change has become increasingly prominent in both domestic and international headlines in the course of the past year, most notably since the publication of a series of authoritative reports, including the *Stern Review* on the economics of climate change (October 2006) and the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) on *Climate Change 2007*: *The Physical Science Basis* and *Impacts, Adaptation and Vulnerability*, released in the early 2007. In its December 2005 report, *A more secure world: our shared responsibility*, the UN High-Level Panel on Threats, Challenges and Change had identified climate change as one of the 21st century threats that has not been "effectively addressed" by governments.

The G8 engagement with this issue-area (and the related question of energy security) long predates the tremendous growth in public concern about global warming. Most recently, at the first G8 Summit hosted by the Russian Federation in St. Petersburg on 15-17 July 2006, the leaders of the G8 nations, the European Commission, and the Plus Five developing countries reaffirmed their commitment to fighting this global problem.

This first annual Compliance Report of the G8 Research Group Oxford, *Governing Global Climate Change,* provides detailed analysis of fourteen governments' activities in the area of climate change to assess to what degree, and how effectively, the world's leading economies have lived up to their 2006 Summit promises.

This study follows on the Interim Compliance Report published by the G8 Research Group Oxford earlier this year based on the results of the participants' compliance with their commitments contained in the *St. Petersburg Plan of Action on Global Energy Security*, issued on 16 July 2006,.[1] While the Interim Report served as a useful indicator of the governments' progress at the half-mark point in the Summit cycle (July 2006 to January 2007), this publication, the Final Compliance Report, brings the assessment full circle by extending the period of analysis to 27 May 2007 – mere days before the Heiligendamm Summit hosted by the German G8 Presidency on 6-8 June 2007.

The compliance scores are summarized in Table 1 below, with in-depth analytical assessments describing each country's activities (by commitment) in the sections that follow. These scores are intended to detail the degree to which individual G8 members, the EU, and the Plus Five countries have complied with their Summit pledges.

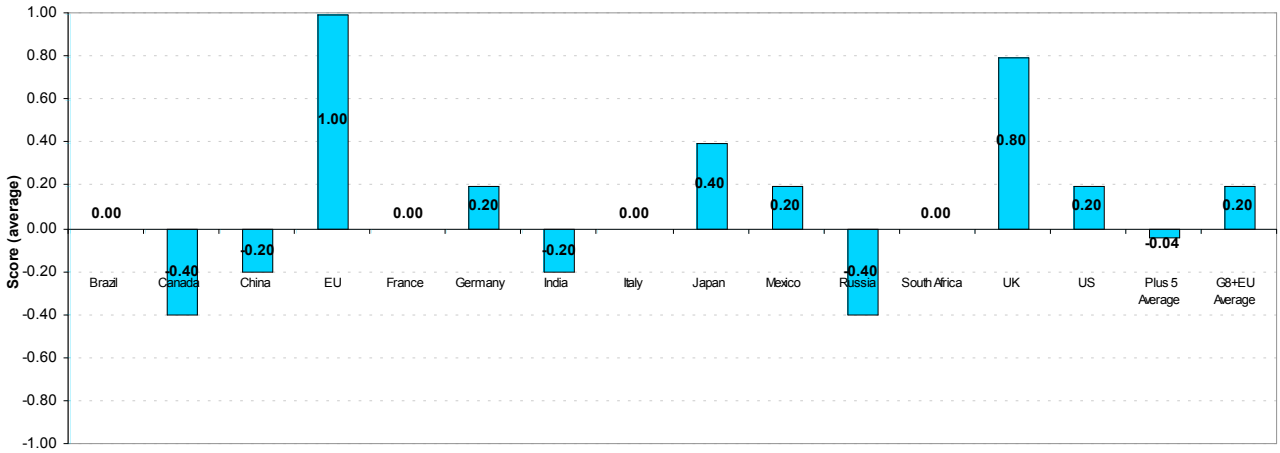
Overall Compliance

Country averages were obtained based on a scale whereby +1.0 is equivalent to perfect compliance, -1.0 means that the member government are either non-compliant or are, in fact, doing the opposite of what was committed to, and 0 indicates "work in progress," whereby compliant action with a commitment has been initiated, but has not been meaningful or substantial enough.[2]

Based on an equally weighted average of the five individual commitment scores and of all fourteen country/actor scores, final compliance with the St. Petersburg climate change commitment received a low score of 0.11. As a group, the G8+EU members averaged 0.20. The Plus Five countries received an average score of - 0.04 for their performance.

[1] Governing Global Climate Change: St. Petersburg Final Compliance Report for the 'G8 Plus Five' Countries, G8 Research Group, (Oxford), April 2007.
[2] For a detailed explanation of how the scores are calculated, see Governing Global Climate Change: Interpretive Guidelines 2007, G8 Research Group, (Oxford), March 2007 (rev.ed.).

Compliance by Country

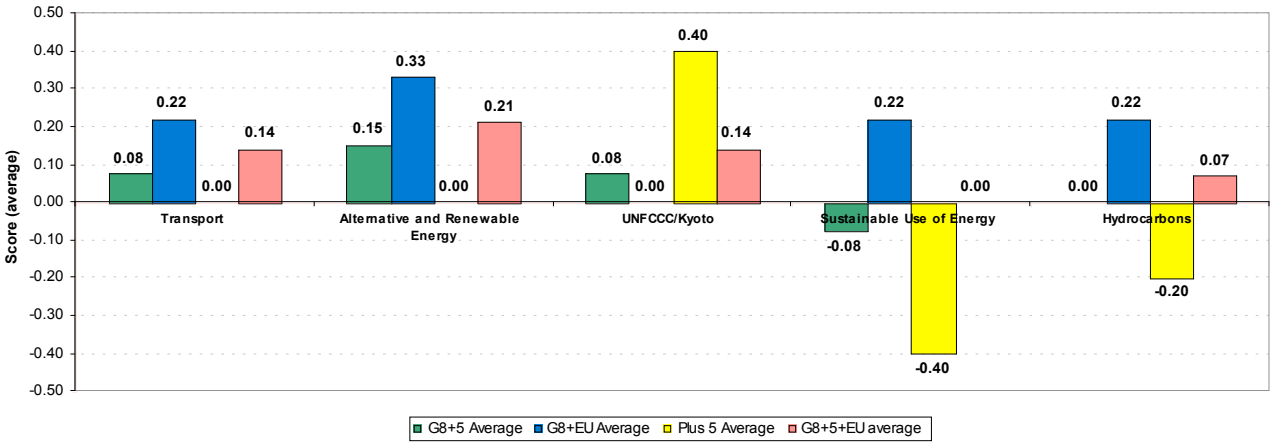


The final results reveal that the EU has done the most to fulfil its St. Petersburg commitments and has earned a perfect compliance score of 1.00, having attained full compliance in all five areas. The United Kingdom, with an average of 0.80, is in the second place, followed by Japan, with an average of 0.40. Germany, Mexico, and the United States all scored an average of 0.20, while four countries – Brazil, France, Italy, and South Africa – had an average of 0.00. Two of the Plus Five states, China and India, were next with an average of -0.20. Tied for the last place were the two worst performing G8 countries in this assessment period, Canada and Russia, having scored an average of -0.40.

The Compliance Gap by Country

Even though most countries improved their performance relative to the interim report, the performance gap between the most and the least compliant members remains remarkably high – at 140% (+1.00 for the EU v. -0.40 for Canada and Russia). This is consistent with previous G8 Research Group studies, which found that those G8 states that had started out on the lower end of the compliance spectrum in the interim assessment period do not tend to meet their commitment nearly as rapidly or as completely as do those countries that had been scoring on the higher end of the performance spectrum from the outset.

Compliance by Commitment



The area of climate change policy in which all 14 subjects of analysis demonstrated the highest level of compliance was the Alternative and Renewable Energy commitment, with an average score of 0.21. The commitments on Clean and Efficient Energy in the Transport Sector and the UNFCCC/Kyoto commanded the second highest level of compliance, with an average of 0.14 each. Innovative Energy Technologies in Hydrocarbon Production and Use followed with an average score of 0.07. The Sustainable Use of Energy commitment, with a score of 0.00, was in last place in terms of average compliance.

The picture looks slightly different if we consider only the G8 and the EU. Alternative and Renewable Energy remains the commitment with the highest level of compliance, with an average score of 0.33. It is followed by the commitments on Clean and Efficient Energy in the Transport Sector, Sustainable Use of Energy, and Innovative Energy Technologies in Hydrocarbon Production and Use, with an average of 0.22 each. The UNFCCC/Kyoto commitment is last, with a score of 0.00.

Thus, the average scores for the G8+EU exceed the performance by the G8+EU+5 (or the G8+5) in *every* area except for the UNFCCC/Kyoto. This can partly be explained by the differential obligations imposed by the UNFCCC and the Kyoto Protocol on their Annex-1 as opposed to their Annex-2 signatories, given that the Annex-1 (developed) countries have to meet higher expectations under the framework convention.

Finally, the Plus Five countries demonstrated their highest level of compliance on the UNFCCC/Kyoto commitment, with a score of 0.40. Tied for the second place were the commitments on Clean and Efficient Energy in the Transport Sector and Alternative and Renewable Energy, with an average score of 0.00. This was followed by an average compliance score of -0.20 for Innovative Energy Technologies in Hydrocarbon Production and Use. In last place, and with the lowest average score for any commitment on the whole, was the area of Sustainable Use of Energy with -0.40.

Final Compliance Scores in Context

Given that this report is the first ever in-depth assessment of the G8 performance in the area of climate change, as well as the first assessment of the Plus Five countries' compliance with a G8 commitment, an exact year-to-year comparison of compliance trends is not possible. However, it is clear that the 2007 average compliance score of 20% for the G8+EU – and, even more so, 11% for all 14 participants – compares very unfavourably with the final G8 compliance scores in other commitment issue areas analyzed by the G8 Research Group in Toronto since 1996.

The G8 Performance Assessments by Issue between 1996 and 2004 have typically fallen in a B/B+ range and have been as high for the Environment (broadly defined).[3] On Climate Change more specifically, previous assessments had also recorded relatively high compliance. For instance, for the seven years in the period between the 1996 Lyon and the 2005 Gleneagles Summit for which the G8 compliance results on climate change are available, the average score was a solid 67%.[4]

The fact that the first comprehensive G8RG report on climate change has found such low compliance across all five sub-commitments and across most countries under analysis is therefore a troubling indicator of the G8+5's ability, or willingness, to reverse global warming both in the domestic and international context. If there is one common message in the fourteen country reports that follow, it is that much more remains to be done if the world is to avoid dangerous anthropogenic changes in the earth's climate. At the same

[3] Analytical Studies, G8 Research Group (Toronto). Date of Access: 1 June 2007. http://www.g8.utoronto.ca/evaluations/assessments.htm.

[4] This is derived from data in "Appendix F: Compliance with Climate Change Commitments, 1987–2006," in John J. Kirton, The G8's Energy-Climate Connection, Paper prepared for a conference on "Workshop or Talking Shop? Globalization, Security and the Legitimacy of the G8," Brussels, May 24-25, 2007. Date of Access: 1 June 2007. http://www.g8.utoronto.ca/scholar/kirton2007/kirton_energy-climate.pdf.

time, numerous examples of progressive policies and promising developments contained in these reports also suggest that, between them, the fourteen largest economies in the North and in the South already possess the capacity, the knowledge, and the ingenuity to avert a global catastrophe. But that presupposes that they will be able to forge a political consensus on the international level on how to combat climate change and carry their own share of responsibility.

Commitments

The five key climate change commitments selected for compliance monitoring are as follows:

Clean & Efficient Energy in the Transport Sector (2006-116)

"For making transportation more energy efficient and environmentally advanced we shall…develop programs in our respective countries, consistent with national circumstances, to provide incentives for consumers to adopt efficient vehicles, including clean diesels and hybrids; and introduce on a large scale efficient public hybrid and/or clean diesel transportation systems, where appropriate…"

Alternative and Renewable Energy (2006-123)

"We will work to develop low-carbon and alternative energy, to make wider use of renewables and to develop and introduce innovative technologies throughout the entire energy sector."

UNFCCC/Kyoto (2006-165)

"With respect to climate change, we reaffirm our shared commitment under the UNFCCC and its related mechanisms."

Sustainable Use of Energy (2006-62)

"[Recognizing the shared interest of energy producing and consuming countries in promoting global energy security, we, the Leaders of the G8, commit to: …] environmentally sound development and use of energy, and deployment and transfer of clean energy technologies which help to tackle climate change…"

Innovative Energy Technologies in Hydrocarbon Production and Use (2006-138)
"[*Despite the increased role of alternative sources in the energy mix, hydrocarbons are expected to continue to play a leading role in total energy consumption well into this century*]…Therefore we will work with the private sector to accelerate utilization of innovative technologies that advance more efficient hydrocarbon production and reduce the environmental impact of its production and use."

Table 1: 2006 St. Petersburg Interim Compliance Scores: Climate Change

	Clean and Efficient Energy in the Transport Sector	Alternative and Renewable Energy	UNFCCC/ Kyoto	Sustainable Use of Energy	Innovative Energy Technologies in Hydrocarbon Production and Use	Country Average:
Brazil	0.00	0.00	1.00	-1.00	0.00	0.00
Canada	0.00	0.00	-1.00	0.00	-1.00	-0.40
China	0.00	0.00	0.00	0.00	-1.00	-0.20
EU	1.00	1.00	1.00	1.00	1.00	1.00
France	1.00	-1.00	0.00	0.00	0.00	0.00
Germany	0.00	1.00	0.00	0.00	0.00	0.20
India	0.00	0.00	0.00	-1.00	0.00	-0.20
Italy	0.00	0.00	0.00	0.00	0.00	0.00
Japan	0.00	1.00	0.00	0.00	1.00	0.40
Mexico	0.00	0.00	1.00	0.00	0.00	0.20
Russia	-1.00	0.00	0.00	0.00	-1.00	-0.40
S. Africa	0.00	0.00	0.00	0.00	0.00	0.00
UK	1.00	0.00	1.00	1.00	1.00	0.80
US	0.00	1.00	-1.00	0.00	1.00	0.20
Plus 5 Average	0.00	0.00	0.40	-0.40	-0.20	-0.04
G8+EU Average	0.22	0.33	0.00	0.22	0.22	0.20
G8+5 Average	0.08	0.15	0.08	-0.08	0.00	0.05
G8+5+EU Average	0.14	0.21	0.14	0.00	0.07	0.11

Note:

+1 represents full compliance.
0 represents partial compliance
-1 represents no compliance

The average score by issue is the average of all countries' compliance scores for that issue. The average score by country is the average of all issue scores for a given country.

A Note on Methodology and Interpretation

In evaluating the results of this report, the following considerations should be kept in mind:

Commitment selection: Compliance with the St. Petersburg Summit has been assessed against *five* key commitments in the climate change issue-area, rather than all climate change-related commitments negotiated at the last Summit. The five commitments were not chosen at random, but through a systematic and careful selection process designed to produce a representative and multi-dimensional assessment of progress in this specific issue area. Each commitment, if taken in isolation, could at best provide only a partial appraisal of compliance in this issue-area. But, taken together, these five commitments give a comprehensive picture of individual governments' performance in tackling climate change, covering sustainable energy use (demand-side policies); alternative and renewable energy production (supply-side policies); sector-specific sustainable energy use (ground transport); technological innovation and private-public partnerships in hydrocarbon production and use; and emissions reductions under international treaties. These five areas represent the main components of the sort of wide-ranging strategy which is needed to combat climate change while taking into account both energy security and sustainability.

Method of compliance: For most commitments, there are no pre-agreed procedures to secure full compliance. Each G8/G13 country is governed by a set of distinct constitutional, legal, and institutional processes. As such, government actions, policy initiatives, and timeframes for meeting the Summit commitments at the national level may differ considerably from state to state. The decisive question is whether the goals contained in each Summit commitment are met; the manner in which they are reached is context-dependent. As a result, there is no standardized cross-national evaluative criterion that can be used to rate compliance since the 14 assessed members frequently take different steps to comply with the same commitment. That said, evidence of budget allocations and funding, specific legislation, and steps toward institutionalization are typically a good indicator of most governments' intentions.

Scoring compliance: Individual compliance is graded on a *three-point scale* (-1, 0, +1). The evaluative scale used in this compliance Report runs from (–100) percent to (+100) percent. Any score in the positive range represents at least some degree of compliance with the specific G8 Summit commitments. The criteria used to score each individual commitment are described in detail in the G8RG-Oxford *Interpretive Guidelines* 2007. All judgments are based on exhaustive empirical data about government policy (footnoted throughout the report), which are cross-referenced with independent commentary to establish their expected and/or actual policy impact. The resultant scores therefore reflect both *results* and *promises*.

Interpreting the scores: All scores are judged relative to each country's current policy position: i.e. 'significant' progress for one country would not necessary count as significant for another, given their current levels of emissions and other factors. This should be kept in mind especially for commitments that hold differential obligations for different countries (such as the UNFCCC). Moreover, the time between one summit and another may be insufficient to comply with certain (longer-term) commitments. In such cases, compliance scores across the G8/G13 members will be lower. In other cases, dramatically altered international conditions or newly-available knowledge about resolving a particular problem

may make compliance with a Summit commitment unwise or unfeasible. Where applicable, this would be noted in the analysis.

Grounds for compliance: It cannot be assumed that a country's compliant behaviour is a direct consequence of its government's participation at the previous G8 Summit. In many cases, commitments negotiated in a G8 Communiqué may coincide with, or echo, identical or similar pledges made in other international forums, international organizations, or national policy statements—just as they may precede such developments. Whether the St. Petersburg Summit has had a norm-setting or agenda-shaping effect is beyond the scope of this analysis.

Effect of compliance: Depending on the wording and the intent of the individual commitment negotiated at the Summit, it is possible that even full compliance may fail to address the deeper structural problems. (This issue may arise for commitments featuring a high degree of precision, obligation, and delegation and short implementation timetables, which often lead to simple, short-term action to meet the specified commitment rather than resolve the root-causes over the longer term). In other cases, individual (i.e. country-by-country) compliance may be insufficient, as the objectives behind a specific commitment will require full compliance and cooperation by *all* G8/G13 members. Compliance in the climate change area is therefore assessed against the specific commitments made by the G8 at St. Petersburg, rather than what may be seen as necessary or appropriate action to address the problem at hand.

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Oxford, 6 June 2007

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Country Compliance Analysis

1. Brazil

Background

The Brazilian government and public have displayed increasing concern about climate change since the St. Petersburg Summit. President Luiz Inacio Lula da Silva (Lula) acknowledged in March 2007 that "global warming is a concrete and current threat to which the solution is within reach."[5] A BBC World Television poll released in April 2007 revealed that 87% of Brazilians are concerned with climate change, the highest proportion among the 21 nations studied.[6] Despite this support, Brazil has demonstrated only minimal compliance with the commitments made at the last G8 Summit in St. Petersburg in July 2006. The most significant progress in Brazil on climate issues has been made in the areas of biofuel production and prevention of deforestation.

Brazil had demonstrated a commitment to renewable energy long before the St. Petersburg Summit, and Lula is currently striving to build on this, claiming that within the next 15 years, "Brazil will become the most important country in relation to renewable energy."[7] The country continues to invest in alternative technologies, such as biofuels, both because of their economic benefits and energy security. The Brazilian government uses this fact to support its claim that it is environmentally responsible,[8] although an increasing number of scientists and economists are pointing out that there are significant negative environmental impacts associated with biofuel production, such as water and air pollution and destruction of Brazilian savannahs and rainforests.[9] There is also the ethical question of whether Brazilian land should be devoted to grow food for its starving citizens or to produce biofuels for exports, as recently brought up by Fidel Castro.[10]

Progress on clean and efficient energy in the transport sector has been limited to support for the development of biofuels and multi-fuel engine technology; however, new consumer initiatives for clean energy are few and far between. One notable development was the announced hydrogen bus program in Sao Paulo, which is intended to spur the creation of an efficient country-wide mass-transit infrastructure,[11] but implementation has been slow.

The main post-St. Petersburg development with respect to the UNFCCC has been Brazil's proposal for the inclusion of emissions reductions from avoided deforestation in international climate policy. In addition, Brazil currently claims to host over 12% of all CDM projects,[12] and the government is actively promoting further research and implementation of other such projects.

Overall, Brazil's progress towards meeting the climate change commitments agreed upon at St. Petersburg has been mediocre. Policy responses have been variable: Brazil demonstrated leadership in the area of biofuel development, especially in the Latin American context, and international climate negotiations on avoided deforestation;

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[12] CDM Pipeline, UNEP Risoe Centre, (Roskilde, Denmark), April 2007. Date of Access: 15 April 2007. www.cd4cdm.org/Publications/CDMpipeline.xls.

however, it has shown only minimal efforts on demand-side sustainable energy use and hydrocarbon technologies. Furthermore, President Lula's new mandate has done little to concretely address climate change issues between the St Petersburg and Heiligendamm.

Authors: Marcio Pontual and Carlos Sayao

Clean and efficient energy in the transport sector: 0

Brazil has made some progress towards its commitment to clean and efficient energy in the transport sector. Particularly in the months following the St. Petersburg Summit, the country made a strong attempt to incorporate clean fuels into personal transport and announced plans for a large scale alternative fuel mass transit system in Sao Paulo, its biggest city. In recent months, however, there has been a relative dearth of activity in clean transport initiatives, especially with respect to implementation and consumer initiatives.

First, stringent national policies on minimum biodiesel content in gasoline have fostered the expansion of Brazil's biodiesel industry. Biodiesel is a plant-based fuel that can substitute for petroleum-based fuels. The combustion of biodiesel releases 78% less CO_2 into the atmosphere than conventional diesel, and eliminates SO_2 emissions (hence its status as a clean fuel).[13] In July 2006, the government passed federal legislation on minimum quality standards for diesel/biodiesel fuel mixes. The minimum biodiesel content of 2% in fuel mixes was made mandatory,[14] and the government plans on implementing a 5% standard by 2010.[15] As a result, the national biodiesel auction series promoted by the National Petroleum Agency (ANP) has sparked interest in the major oil companies to purchase biodiesel for distribution at gas stations. The 5th auction, held on 13 February 2007, resulted in the sale of 45 million cubic metres of biodiesel,[16] bringing the total for the scheme to 885 million cubic meters.[17] The fuel sold is certified with a 'sustainability seal' to indicate that production methods have incorporated social inclusion and sustainability criteria, such as the avoidance of chemical pesticides.[18] In addition to the growth of biodiesel, the market for ethanol, another clean fuel, is also expected to grow substantially--mainly as a result of increased use in personal transport[19] and the current content requirement of 20% ethanol in gasoline sold in Brazil.[20] The government has been offering consumers a 2% sales tax reduction on the purchase of new flex-fuel vehicles (FFV) since 2001.[21] New national consumer incentives for renewable fuels and hybrid vehicles, however, have been lacking.

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[13] Biodiesel.org FAQs. Date of Access: 30 December 2006. http://www.biodiesel.org/resources/faqs/; Biodiesel emissions compared to conventional diesel. Date of Access: 30 December 2006. http://www.soypower.net/BiodieselPDF/BiodieselEmissions.pdf.

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[20] Ethanol is hot, Brookings Institution, (Washington), May 2006. Date of Access: 25 April 2007. http://www.brookings.edu/dybdocroot/views/articles/fellows/sandalow_20060522.pdf.

[21] Ethanol is hot, Brookings Institution, (Washington), May 2006. Date of Access: 25 April 2007. http://www.brookings.edu/dybdocroot/views/articles/fellows/sandalow_20060522.pdf.

With respect to efficient mass transit, Brazil has announced only two new initiatives. The first is a high-speed train route linking Rio de Janeiro and Sao Paulo. An economic feasibility study was approved (with reservations) in May 2007, but implementation will be subject to further approval.[22] The hope is that the new service will reduce car and air traffic between the two cities,[23] and that this may result in net carbon emissions savings.[24] The second initiative was announced by the Ministry of Mines and Energy (MME) on 14 November 2006, setting out plans for the Brazilian Hydrogen Bus Program for the city of Sao Paulo beginning in November 2007.[25] Besides improvements in urban air quality as a result of reduced CO_2 emissions, nitrous oxides, and other particulates, the project also aims to develop Brazil's expertise in manufacturing, operating, and maintaining hydrogen buses in an attempt to propel the country to the forefront of hydrogen technology. The program is hoped to be the first step towards developing a widespread, secure, and efficient hydrogen ground transport capacity and infrastructure, a particularly commendable goal given that the country relies heavily on buses for mass transit. Brazil has the world's largest market for buses, and is also its biggest bus producer (19,000 per year).[26]

Despite growth in the Brazilian biofuels industry, petroleum-based fuels still dominate the country's transport sector. The government has announced few policies specifically focused on providing consumer incentives for either efficient vehicles or clean-fuelled mass transit systems. The Brazilian Hydrogen Bus Program and the Rio de Janeiro – Sao Paulo Rail Shuttle are still far from being implemented. In addition, officials have not considered the fact that the climate change-related impacts on agriculture pose a serious threat to the country's planned increases in biofuel production.[27] Better policies and more action towards implementation are necessary to constitute full compliance with this commitment, and therefore a score of 0 is awarded.

Author: Carlos Sayao

Alternative and renewable energy: 0

It is clear that the Brazilian government is concentrating its climate change-related efforts on developing alternative and renewable energies. However, the reasons for this policy include not only environmental concerns, but also energy security and good business opportunities. Although the government is trying to facilitate the diversification of the country's energy mix, its chosen method can be criticized for giving too much attention to certain solutions, like biofuels and hydropower, at the expense of others, such as biomass, solar, or wind power.

On 27 February 2007, the MMA (Brazilian Environment Ministry) released a study on climate change and its impacts on biodiversity.[28] The study indicated that global warming, rise in sea levels, and change in rainfall patterns will have a definite effect on Brazil. In order to mitigate the impact of climate change, the Brazilian government believes that it is crucial to reduce carbon emissions from fossil fuel combustion – particularly in developed countries. The Brazilian governments favour the common but differentiated responsibility approach.

[22] Project of high-speed line between Rio and São Paulo was approved by the Treasury, O Globo (Rio de Janeiro), 25 April 2007. Date of Access: 8 May 2007. http://oglobo.globo.com/economia/mat/2007/04/25/295512398.asp.
[23] Rail Shuttle, O Globo Print Edition, (Rio De Janeiro), 26 April 2007.
[24] High Speed rail and greenhouse gas emissions in the US, Center for Clean Air Policy and Center for Neighborhood Technology, (Chicago), January 2006. Date of Access: 10 May 2007. www.cnt.org/repository/highspeedrailemissions.pdf.
[25] MME announces hydrogen-powered bus project, 14 November 2006. Date of Access: 26 December 2006. http://www.mme.gov.br/site/news/detail.do?newsId=10842&currentArea=.
[26] MME announces hydrogen-powered bus project, 14 November 2006. Date of Access 26 December 2006. http://www.mme.gov.br/site/news/detail.do?newsId=10842&currentArea=.
[27] Global warming will affect ethanol growth, O Globo online, (Brasilia), 03 April 2007. Date of Access: 25 April 2007. http://oglobo.globo.com/economia/mat/2007/04/03/295204210.asp.
[28] Studies Point Effects of Global Warming in Brazil, Agencia Estado, (Sao Paulo), 28 February 2007. Date of Access: 28 February 2007. http://noticias.correioweb.com.br/materias.php?id=2700207&sub=Brasil.

Its government argues that since developed countries have been polluting for many more years than currently developing countries, the developed countries must be responsible for taking the appropriate measures to combat climate change now. Developing countries should therefore take no binding measures if developed countries do not take further commitments. That does not mean that developing countries will not contribute to combating climate change; the Brazilian Environmental Ministry, Marina Silva, said that Brazil will "lead by example" and influence its regional partners.[29]

The Brazilian government favours the use of biofuels as the key element in its policy of emissions reduction. However, it recognizes that biofuel production needs environmental guidelines to avoid negative side-effects, such as the assurance that biofuels are carbon-neutral via appropriate crops choice and the use of suitable procedures.[30] This is a way to promote Brazilian biofuels on the international market. On his visit to Brazil in early March 2007, Achim Steiner, UNEP's Executive Director, noted the country's leadership on biofuels, but at the same time called for greater control of that sector in order to protect the environment and prevent a loss of biodiversity.[31]

Brazilian leadership in the biofuels development sector was built on the experience of running an ethanol fuel program for more than 30 years. The Brazilian government is confident that it can manage to supply, enough ethanol by 2025 to replace up to 10% of the gasoline used in the world (equivalent to 205 billion litres).[32] The government also plans to introduce a legal framework for the production of ethanol, which includes the definition of technical and legal aspects related to the topic, such as definition, origin, use, fines, incentives, etc. One objective of legislating production is to prevent additional deforestation or loss of biodiversity arising from unregulated ethanol development, as the case has been in Indonesia (with palm oil trees); a more sustainable alternative is to use already degraded lands or areas more suitable for such biofuel crops.[33]

Several official institutions are studying how to increase sugar cane yields in order to guarantee a steady supply of biofuel to meet both domestic and foreign demand. (The Brazilian ethanol program had experiences a number of shortages in the past, which have undermined consumer confidence in ethanol as a reliable source of energy). One possibility is to use the chemical element molybdenum on sugar-cane crops to increase the yield. Embrapa's (the Brazilian Agro-animal Research Company) research showed that molybdenum can reduce the need for fertilizers in up to 50% of cases (fertilizers, however, have a significant carbon footprint, which can cancel out the advantages of ethanol). Another option under consideration is to distribute 60 million disease-free sugar cane sprouts to small and medium producers in Northeast Brazil, where productivity is 28% below the national average. Combined with proper farming techniques and inputs, this could lead to up to 30% higher yields.[34]

The Brazilian government declared on 9 March 2007 that its territory is to be mapped on a more detailed scale later this year.[35] The same plan also calls for the integration of several maps of the Amazon region under a single directory to be hosted in the MMA's website.

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[29] Brazil reinforces participation in global environmental agenda, Ministry of Environment (MMA), (Brasilia), 02 March 2007. Date of Access 20 April 2007. http://www.mma.gov.br/ascom/ultimas/index.cfm?id=3159.

[30] Marina Silva Brings up Benefits Sharing to the Ministerial Meeting in Germany, Ministry of Environment, (Brasilia), 12 March 2007. Date of Access: 20 April 2007. http://www.mma.gov.br/ascom/ultimas/index.cfm?id=3183.

[31] Lula renews commitment of economic development with sustainability, Ministry of Environment, (Brasilia), 05 March 2007. Date of Access: 20 April 2007. http://www.mma.gov.br/ascom/ultimas/index.cfm?id=3165.

[32] Center of Management and Strategic Studies' Analysis will Guide Public Policies for Ethanol Production Expansion, Ministry of Science and Technology, (Brasilia), 21 March 2007. Date of Access: 20 April 2007. http://agenciact.mct.gov.br/index.php/content/view/43604.html.

[33] The Amazon and biofuels production, Ministery of Science and Technology, (Brasilia), 19 March 2007. Date of Access: 20 April 2007. http://agenciact.mct.gov.br/index.php/content/view/43568.html.

[34] Genetic Enhancement, Ministry of Science and Technology, (Brasília), 03 April 2007. Date of access: 20 April 2007. http://agenciact.mct.gov.br/index.php/content/view/43754.html.

[35] Brazilian Territory will have a new mapping, Ministry of Environment, (Brasilia), 9 March 2007. Date of Access: 20 April 2007. http://www.mma.gov.br/ascom/ultimas/index.cfm?id=3177.

Among other benefits, these initiatives will allow a more in-depth understanding of the possibilities for energy generation, especially in the agro-energy sector.[36]

The Brazilian government is aware that it might lose its lead-position in ethanol research because of significant developments in the US and EU on lignocellulosic ethanol. During a meeting with representatives of the business community on 12 March, presidential staff officer, Minister Dilma Roussef, called for early investments in that technology. According to Minister Roussef, the country could maintain its leadership if there is early investment in new technologies, as Brazil's geographic features already create a competitive advantage in agriculture.[37]

The focus on renewable energy goes beyond national borders. On 18 December 2006, Brazil and the US, with support from the Inter-American Development Bank (IADB), created the Inter-American Commission on Ethanol (ICE) whose goals are to promote increased ethanol-blended fuel, promote technical-scientific development, and provide recommendations for the creation of an ethanol market.[38] Soon thereafter, President Bush visited Brazil in March, followed immediately by President Lula's visit to the US to discuss ethanol, which provided a big push for biofuels.[39] The deal attracted much attention, both positive and negative. Cuban leader Fidel Castro, for instance, spoke out against this agreement, alleging that it would help power the US industry at the expense of the poor, leading to an "internationalization of genocide."[40] In contrast, Senator Barack Obama commended Brazil for incentivizing its renewable fuel industry and noted that the US should follow suit—without fostering US dependence on Brazilian ethanol.[41]

During the first South American Energy Summit in Venezuela in April 2007, South American countries approved a proposal to foster regional integration, starting with the energy sector and paying special attention to biofuel and renewables.[42] Brazil offered technical support to interested countries hoping that an integrated region would attract more foreign investment.[43] During a joint meeting promoted by the UN, the World Bank, and the Japanese government in Nairobi in March 2007, Mr. Steiner said that African countries should follow Brazil's example in biofuels,[44] which seems consistent with President Lula's motto that "Biofuels are an exit for the world's poor."[45]

However, this degree of attention devoted to biofuels has impeded progress in other areas. For example, according to ANEEL (Electric Energy National Agency), in 2006 PROINFA (the Brazilian Incentive Program for Alternatives Sources of Energy) added only 23 renewable initiatives: 18 micro hydropower plants and 5 wind power plants. Together they generate

[36] Brazilian Territory will have a new mapping, Ministry of Environment, (Brasilia), 9 March 2007. Date of Access: 20 April 2007. http://www.mma.gov.br/ascom/ultimas/index.cfm?id=3177.
[37] Without Research, Country Risks Losing its Leadership in Ethanol, said Minister, Folha de Sao Paulo, (Sao Paulo), 13 March 2007. Date of Access: 13 March 2007. http://www.mre.gov.br/portugues/noticiario/nacional/selecao_detalhe.asp?ID_RESENHA=319022.
[38] Florida, Brazil, and IDB Launch Interamerican Ethanol Commission, Marketwire, (Los Angeles), 18 December 2006. Date of Access: 26 April 2007. http://www.marketwire.com/mw/release_html_b1?release_id=195102.
[39] USA are the supporters of Brazilian Ethanol, Gazeta Mercantil, (SP or RJ), 13 March 207. Date of Access: 13 March 2007. http://www.mre.gov.br/portugues/noticiario/nacional/selecao_detalhe.asp?ID_RESENHA=319215.
[40] Fidel did not Understand the Ethanol Program, said Marco Aurelio, BBC, (London), 04 April 2007. Date of Access: 16 April 2007. http://www.bbc.co.uk/portuguese/reporterbbc/story/2007/04/070404_fidelrespostadb.shtml.
[41] Brazilian Biofuels are an Example for the US, said Obama, BBC, (London), 15 March 2007. Date of Access: 16 April 2007. http://www.bbc.co.uk/portuguese/reporterbbc/story/2007/03/070314_obamabiocombustiveisbg.shtml.
[42] South American Summit Discuss Brazilian Ethanol, BBC (London), 16 April 2007. Date of Access: 16 April 2007. http://www.bbc.co.uk/portuguese/reporterbbc/story/2007/04/070416_danielcupula_mp.shtml.
[43] Lula Wants an Energetic Integration Policy for South America, Folha de Sao Paulo (Sao Paulo), 16 April 2007. Date of Access: 26 April 2007. http://www1.folha.uol.com.br/folha/brasil/ult96u91199.shtml.
[44] Africa should Follow Brazil on the Energy Area, says UN, BBC (London), 22 March 2007. Date of access: 16 April 2007. http://www.bbc.co.uk/portuguese/noticias/story/2007/03/070322_africabrasilexemploonufn.shtml.
[45] Venezuelan President Denies Opposition to Brazilian Ethanol, France Press (Paris), 17 April 2007. Date of access: 26 April 2007. http://www1.folha.uol.com.br/folha/dinheiro/ult91u116186.shtml.

436.4 MW of Energy – merely 0.45% of Brazil's total installed capacity of 96,294.5 MW.[46] The MMA says that PROINFA has an annual emission reduction potential of 2.9 million tons of CO_2 (corresponding to 3,300 MW of renewable energy managed by the Program). In December 2006, ANEEL listed PROINFA's budget for 2007 as R$633.7 million (approximately US$312 million) for an expected supply of 4.2 million MWh;[47] the agency also established a new regulation to provide more incentives for the production of electricity from renewable sources.[48] The objective is to facilitate access by renewable energy-producers to the distribution grid and to offer consumers (using more than 500 kW) additional supply options.[49]

Obtaining access to the main grid and the prohibitive cost of using it are two key difficulties faced by Brazilian renewable energy-producers. In February 2007, ANEEL proposed to increase from 50% to 100% the discount to access the grid to incentivize the production of energy from biomass or biogas.[50] A renewable energy auction is scheduled for 24 May 2007 to define 30-year contracts for micro hydro plants and 15-year contracts for initiatives relying on other power sources, such as wind or biomass.[51]

Brazil is investing time, money, and human capital in the alternative and renewable energy sector both domestically and abroad. The release of the latest IPCC report acted as a catalyst in this process, supporting Brazil's claims about the need to reduce fossil fuel emissions. Nevertheless, the government's emphasis on biofuels carries negative socio-environmental side-effects which Brazil has yet to grapple with; it has also helped obscure other potential and/or viable renewable and alternative energy sources. As a result, Brazil is awarded a score of 0.

Author: Marcio Pontual

UNFCCC/Kyoto: +1

Brazil is striving to remain at the forefront of the international efforts to combat climate change. The trajectory of Brazilian involvement with the Kyoto Protocol illustrates its historical commitment in this area: Brazil hosted the 1992 UN meeting at which the UNFCCC was conceived; it also signed (1998) and ratified (2002) the Protocol.[52] As a developing country, Brazil is not a party to Annex I to the UNFCCC or Annex B to the Protocol, and therefore does not have mandatory obligations to reduce its greenhouse gas (GHG) emissions. It has also traditionally been opposed to measures that represent 'foreign interference' and may constrain domestic development, such as emission caps.[53] Since the St. Petersburg Summit, Brazil has supported the UNFCCC ideals through the development of a proposal for an international fund to provide financial incentives for reducing deforestation in developing countries. The country is also offering financial assistance for development of

[46] Generation expanded 3,935.5 MW in 2006, Electric Energy National Agency, (Brasilia), 18 January 2007. Date of Access: 25 April 2007. http://www.aneel.gov.br/arquivos/PDF/boletim253.htm#texto1.
[47] Proinfa's Costs Approved by ANEEL, (Brasilia), 21 December 2006. Date of Access: 22 December 2006. http://www.aneel.gov.br/arquivos/PDF/boletim249.htm#texto3.
[48] Parameters for Transaction of Energy from Incentived Sources are Defined. Electric Energy National Agency, (Brasilia), 21 December 2006. Date of Access: 22 December 2006. http://www.aneel.gov.br/arquivos/PDF/boletim251.htm#texto3.
[49] Incentives to Trade Energy from Renewable Sources are Defined, Electric Energy National Agency, (Brasilia), 21 December 2006. Date of Access: 22 December 2006. http://www.aneel.gov.br/arquivos/PDF/boletim251.htm#texto3.
[50] 100% reduction proposal for biogas plants will go to public hearing, Electric Energy National Agency, (Brasilia), 1 February 2007. Date of Access: 25 April 2007. http://www.aneel.gov.br/arquivos/PDF/boletim255.htm.
[51] Today is the Deadline for the Public Hearing about the Renewable Energy Auction, Electric Energy National Agency, (Brasilia), 13 April 2007. Date of Access: 25 April 2007. http://www.aneel.gov.br/arquivos/PDF/boletim264.htm#texto2.
[52] Ratification Status of the Kyoto Protocol - Brazil, UNFCCC (Bonn). Date of Access: 11 May 2007. http://maindb.unfccc.int/public/country.pl?country=BR.
[53] NGOs criticize Brazilian anti-deforestation plan, Folha de Sao Paulo, (Sao Paulo), 16 November 2006. Date of Access: 13 March 2007. http://www1.folha.uol.com.br/folha/bbc/ult272u58642.shml.

CDM projects. It is therefore awarded a score indicating full compliance with the commitment.

The greatest share of estimated net CO_2 emissions in Brazil (approximately 75% in 1994) comes from land-use change, particularly the conversion of forests into lands for agricultural use.[54] The government recognizes the problem and claims that thanks to sustainable forest management practices, the country's deforestation has dropped by 30% in 2005-2006.[55] Such achievement, however, should be considered in the context of global markets; due to decreases in global soy prices during this period, it is unclear whether the reduced deforestation rates should be attributed to policy or market factors.[56] In addition, several NGOs are critical of the fact that Brazil's deforestation rate is still among the highest in the world.[57]

Brazil has been active in discussions on the inclusion of measures to prevent deforestation in the UNFCCC. There are currently two different schemes being considered: a Brazilian proposal outlining a voluntary fund to reward countries that preserve their forests and a proposal from Papua New Guinea, representing the Coalition for Rainforest Nations, describing a market-based scheme to trade deforestation-related emissions reduction credits. Brazilian delegates played an integral role in raising the issue of positive financial incentives at the first UNFCCC Workshop on Reducing Emissions from Deforestation in Developing Countries, held in Rome in August 2006.[58] Subsequently, on 14 November 2006, Brazil submitted to the COP 12 in Nairobi a proposal "focused on policy approaches and positive incentives to reduce emissions from deforestation in developing countries."[59] It outlines a voluntary scheme in which developing countries would receive financial compensation for reducing emissions from deforestation below a reference emission rate. The proposal does not suggest that avoiding deforestation should be covered under the CDM. Brazil's leadership role in the discourse on deforestation is setting an example for developing countries and has made a strong impact on international climate negotiations.[60]

In August 2006, Brazil hosted an international conference on the ethical dimensions of climate change aimed at investigating the ethical implications of the Protocol. The event produced a policy document on the ethics of climate change, which was presented at COP 12 in Nairobi.[61] Concerns have arisen over the fact that many of those who will suffer the worst consequences of climate change have contributed least to the problem.

With regards to Brazil's implementation of the Protocol's flexible mechanisms, it is important to stress that the country is host to 221 CDM projects,[62] ranking third global in terms of the

[54] Brazil's initial national communication to the UNFCCC, UNFCCC (Bonn). Date of Access: 11 May 2007. http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.
[55] Brazil presents positive incentives proposal to avoid deforestation, Ministry of Environment (MMA), (Brasilia), 14 November 2006. Date of Access 12 March 2007. http://www.mma.gov.br/ascom/ultimas/index.cfm?id=2913.
[56] Amazon deforestation rates falls, Environmental News Service, (Brasilia), 7 September 2006. Date of Access: 15 March 2007. http://www.ens-newswire.com/ens/sep2006/2006-09-07-02.asp.
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[58] Report on a workshop on reducing emissions from deforestation in developing countries, UNFCCC, (Nairobi), 11 October 2006. Date of Access: 15 March 2007. http://unfccc.int/resource/docs/2006/sbsta/eng/10.pdf.
[59] Submission from Brazil to the 12th COP, UNFCCC, (Nairobi), 14 November 2006. Date of Access: 14 March 2007. http://unfccc.int/files/meetings/dialogue/application/pdf/wp_21_braz.pdf.
[60] Brazil Demonstrating That Reducing Tropical Deforestation is Key Win-win Global Warming Solution, 16 May 2007. Date of Access: 24 May 2007 http://www.sciencedaily.com/releases/2007/05/070515151140.htm.
[61] Climate change debates need 'ethical dimension', SciDev.net, (Rio de Janeiro), 31 August 2006. Date of Access: 14 March 2007. http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierReadItem&type=1&itemid=3075&language=1&dossier=4.
[62] Current status of the project activities under the CDM in Brazil and the world, Ministry of Science and Technology (MCT), (Brasilia), 22 April 2007. Date of Access: 11 May 2007. http://www.mct.gov.br/index.php/content/view/30318.html.

number of projects taken on, behind only India and China (each of whom has 623 and 446 projects, respectively). Moreover, on 12 December 2006, the Ministry of Science and Technology unveiled a loan and grant scheme valued at US$37 million to fund research and implementation of CDM projects in Brazil. The scheme, which is the first private sector incentive program of its kind in Brazil, will provide companies up to 50% financing for projects costing more than US$233,000.[63] This is a solid indication of the Brazilian government's support for the CDM.

Even though the country has historically adopted a position that developing countries should not have mandatory GHG emission caps that could hinder their economic growth, Brazil has indicated that it might accept caps in the post-Kyoto negotiations.[64] However, officials stress that any future emissions reductions targets for developed countries should be much more rigorous than those for developing countries[65] in accordance with the principle of common but differentiated responsibilities as stated in the Protocol.

In order to coordinate the different measures taken by Brazil to tackle anthropogenic climate change, the government announced in March 2007 that it was developing a *National Plan to Fight Human Induced Climate Change*.[66] The Brazilian Environment Minister hopes to complete and unveil the plan within the next three months.[67]

Overall, Brazil has demonstrated leadership in negotiations and engagement with respect to UNFCCC and Kyoto Protocol commitments. It has been active in international negotiations aiming to include emissions from avoided deforestation under UNFCCC; it has also proposed regional as well as international cooperation projects to address the problem. In addition, Brazil has shown its commitment to hosting CDM projects and financing them with public funds. One of the shortcomings of its climate change policy, namely the lack of a central body or plan to coordinate the different aspects of climate change, is now being addressed with the announced *National Plan to Fight Human Induced Climate Change*. Therefore it receives a compliance score of +1.

Authors: Tarcisio Hardman Reis, Roberto Hanania, Carlos Sayao, and Marcio Pontual

Sustainable Use of Energy: -1

Brazil's efforts in the area of sustainable use of energy contrast starkly with its proactive stance in the area of biofuels, as the government has taken no noteworthy actions since the St. Petersburg Summit. Current policies mostly predate President Lula's government, and are mostly focused on the electric sector.

Procel (the National Program for Electricity Conservation), the main governmental program dealing with reducing electricity waste and increasing energy efficiency, requires distributors to invest 0.25% of their profits in efficiency projects. Unfortunately, no up-to-date information on the savings after 2005 is available on Procel's website.[68] One of the Procel's

[63] Brazil invests US $37 million to fight global warming, SciDev.net, (Rio de Janeiro), 14 December 2006. Date of Access: 11 May 2007.
http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierreaditem&dossier=4&type=1&itemid=3285&language=1.
[64] Brazil reviews its position and accepts to discuss post-Kyoto reduction targets. Folha de São Paulo (São Paulo), 17 November 2006. Date of Access: 11 May 2007.
http://www1.folha.uol.com.br/folha/ciencia/ult306u15523.shtml.
[65] Brazil reviews its position and accepts to discuss post-Kyoto reduction targets. Folha de São Paulo (São Paulo), 17 November 2006. Date of Access: 11 May 2007.
http://www1.folha.uol.com.br/folha/ciencia/ult306u15523.shtml.
[66] Secretary for Biodiversity and Forests announces National Plan, Sustainable Development and Renewable Energy Institute, (Fortaleza), 29 March 2007. Date of Access: 10 May 2007.
http://www.ider.org.br/oktiva.net/1365/nota/42291/.
[67] IPCC shows the way to overcome the climate crisis. Folha de São Paulo (São Paulo), 5 May 2007. Date of Access: 11 May 2007.
http://www1.folha.uol.com.br/folha/ciencia/ult306u16392.shtml.
[68] Introduction PROCEL, Eletrobras, (Brasilia). Date of Access: 26 April 2007

goals is also to decrease emissions. By 2010 it will have helped to reduce Brazil's CO_2 emissions by 230 million tons (or 29% of the total GHG emissions in the country's electricity sector).[69] So far, ANEEL approved R$53.1 million (approx US$26 million) for the 2006-2007 period in efficiency projects financed by the distributors that will allow 88.9 GWh/year savings and removing 27.7 MW from peak time.[70]

Procel's actuation goes beyond producers and distributors; it also targets improving energy efficiency at the consumer level, especially among low income consumers who otherwise would have no resources to pursue increased efficiency. In the 2006-2007 period, 730,000 compact fluorescent lamps will be distributed; 11,000 energy inefficient fridges will be replaced; and some homes will have their electrical installation improved and solar heaters installed.[71]

Since more than 2% (or 7 billion KWh) of Brazil's annual electricity consumption is related to water pumping, sewage treatment, and disposal, a project called Sanear was created to increase efficiency in the processes. The new project goal is to cut that amount by 20% by optimizing water treatment processes and reducing failures and leakages.[72] In October 2006, a consortium involving 14 public universities, the Ministry of Cities, and Eletrobras (Brazil's state owned key electricity holding) was created to develop 150 courses to train 5000 sanitation company employees.

A more socially-oriented initiative is the program called *Luz para Todos* (Light for All) which aims to promote access to electricity. The goal is to provide deprived communities access to energy, especially in public schools. Aside from the obvious socio-economic benefits, consumers are able to use energy produced from renewable sources, such as micro hydroelectric plants and solar panels, which help to reduce the country's level of carbon emissions.[73] A new pilot project was approved in September 2006 by ANEEL to analyze the capacity of solar panels to supply the electricity needs for consumers in remote areas.[74] Power companies favour this solution because of its lower cost and speed of installation when compared to regular grid based systems.

In October 2006, the ANEEL defined the value of the tax that each actor in the electric sector (producers, distributors, transmitters) must allocate to R&D, efficiency, to the MME (Ministry of Mines and Energy), and to the National Fund for Scientific and Technological Development. The agency believes that the new document will make the allocation criteria

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http://www.eletrobras.com/elb/procel/main.asp?ViewID={974CF275-82FE-4483-8551-855F9A98A370}.

[69] The Objectives of PROCEL and the Environment, Eletrobrás, (Brasília). Date of Access: 22 December 2006. http://www.eletrobras.com/elb/main.asp?TeamID={B3AA0142-B1FE-4AAD-AB15-E8426471B739}.

[70] Energy efficiency programs of 15 distributors total R$ 53,1 million, Electric Energy National Agency, (Brasilia), 2 March 2007. Date of Access: 25 April 2007. http://www.aneel.gov.br/arquivos/PDF/boletim258.htm.

[71] Energy efficiency programs of 15 distributors total R$ 53,1 million, Electric Energy National Agency, (Brasilia), 2 March 2007. Date of access: 25 April 2007. http://www.aneel.gov.br/arquivos/PDF/boletim258.htm.

[72] Procel Sanear, the Best Environmental Sanitation Program, Eletrobras, (Brasilia), 10 November 2006. Date of access: 22 December 2006. http://www.eletrobras.com/elb/main.asp?View=%7BEA5783EB%2D3CC4%2D4255%2D995E%2D98B9D1391764%7D&Team=&params=itemID=%7BD4E5F163%2DDD98%2D49CA%2D8DC9%2D43EBF5AD6F2B%7D%3B&UIPartUID=%7BD90F22DB%2D05D4%2D4644%2DA8F2%2DFAD4803C8898%7D.

[73] Brazil Hosts Mercosur's Energy Subgroup Meeting, Ministry of Mines and Energy, (Brasilia), 30 November 2006. Date of access: 21 December 2006. http://www.mme.gov.br/site/news/detail.do?newsId=11021&currentArea=.

[74] Solar Power: Solution for far Away Regions, Eletrobrás, (Brasília), 11 September 2006. Date of access: 22 December 2006. http://www.eletrobras.com/elb/main.asp?View=%7BEA5783EB%2D3CC4%2D4255%2D995E%2D98B9D1391764%7D&Team=&params=itemID=%7BD01A861E%2D20BE%2D4276%2D8FA2%2D22FC1C268F98%7D%3B&UIPartUID=%7BD90F22DB%2D05D4%2D4644%2DA8F2%2DFAD4803C8898%7D.

clearer, thus providing greater savings for companies and the consumers, as well as minimizing the negative impacts on the environment.[75]

In spite of its potential, government has downplayed or ignored the need to encourage the sustainable use of energy. There are few incentives to consumers to seek increased efficiency. It is noteworthy that some results were achieved without governmental support, based mainly on the interest of companies or other such groups who wished to decrease the cost of their electricity bills. Investments in co-generation, enhanced lighting schemes, and improvements in the use of biomass (notably by-products from sugar-cane) are some examples of this trend. Critics point that the government favours traditional energy sources and tends to support big national initiatives, instead of smaller, local ventures that usually are less harmful to the environment.[76] Brazil is therefore awarded a score of -1 in this commitment area.

Author: Marcio Pontual

Innovative Energy Technologies in Hydrocarbon Technology and Use: 0

Despite significant oil and gas use, Brazil benefits from a large hydropower infrastructure which supplies about 75% of its electricity.[77] The country continues to be committed to diversifying its energy mix; in the case of hydrocarbons, the notable developments being in the areas of liquefied natural gas (LNG) and Venezuelan heavy oil. In addition, Brazil is beginning to consider the environmental sustainability of its hydrocarbon production through research into carbon capture and storage (CCS). However, private sector incentives and examples of policy or technology implementation are limited. More action is required for full compliance with this commitment.

A small environmental victory was achieved in October 2006 with the passing of an ANP resolution on decommissioned oil and natural gas plants. The resolution places a heavy weight on controlling the environmental effects of the decommissioning process and stipulates the requirement of regulatory body approval before abandoning production areas.[78] These sites are often contaminated with toxic chemicals; therefore, there are often severe environmental impacts associated with decommissioning. Negligence in these areas can result in seepage of solvents and other contaminants into soil, groundwater reserves, and other sensitive environments. If adequately implemented, this policy will improve the lifecycle environmental impact of oil and natural gas facilities.

In order to compel the industrial sector to adopt cleaner technologies, the government also established limits for the emission of air pollutants from point sources, such as oil and natural gas refineries as well as heavy industrial plants. The resolution, adopted by the National Council for the Environment (CONAMA) on 26 December 2006, contains various technical annexes setting minimum standards for the lifecycle atmospheric release of pollutants from natural gas and oil production, among others.[79]

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[75] Resolution Improves Rules for Allocation of Resources for energy efficiency and R&D, Electric Energy National Agency, (Brasilia), 26 October 2006. Date of Access: 23 December 2006.
http://www.aneel.gov.br/arquivos/PDF/boletim243.htm.

[76] About Biomass Energy, INEE - National Institute for Energy Efficiency, (Rio de Janeiro). Date of access: 22 February 2007.
http://www.inee.org.br/biomassa_sobre.asp?Cat=biomassa.

[77] 2006 National Energy Balance – Section 2.1: Aggregate Data and Energy Analyses, Ministry of Mines and Energy, (Brasilia). Date of Access: 27 April 2007.
http://www.mme.gov.br/site/menu/select_main_menu_item.do?channelId=1432&pageId=10780.

[78] ANP Resolution No 27, National Petroleum Agency, (Brasilia), 18 October 2006. Date of Access: 18 December 2006.
http://nxt.anp.gov.br/NXT/gateway.dll?f=templates&fn=default.htm&vid=anp:10.1048/enu.

[79] CONAMA Resolution N. 382/2006, Ministry of the Environment, (Brasilia), 02 January 2007. Date of Access: 9 May 2007.
http://www.mma.gov.br/port/conama/res/res06/res38206.pdf.

Petrobras dominates Brazil's oil and gas markets. In 2005, the company had a 98% market share in oil production and 94% in natural gas;[80] therefore, its activities are crucial when evaluating the country as a whole. Petrobras has recently secured partnerships aimed at diversifying its resource mix. For example, on 25 April 2007 it signed contracts with Nigerian and Norwegian companies. As a result of the agreements, Brazil will acquire supplies of Nigerian LNG to be re-gasified at terminals planned for Rio de Janeiro and Pacem, Ceara.[81] The Norwegian firm, Golar LNG Ltd, will provide vessels for re-gasification and storage. Petrobras hopes to use the additional natural gas to meet the expected future increase in demand for this resource in Brazil.[82] Natural gas has lower carbon intensity than oil or coal, but there are serious safety concerns over re-gasification of LNG, which have not yet been addressed in company or government statements.

On 14 November 2006, the Venezuelan minister for oil and energy announced a partnership between Petrobras and a Venezuelan firm to produce and process 45.5 billion barrels of heavy crude oil in the Carabobo I block of Venezuela's Orinoco Oil Belt.[83] Heavy crude has a high viscosity and thus requires upgrading to synthetic crude prior to refining and distribution. If and when production becomes successful, the additional oil will contribute to Brazil's efforts towards achieving energy security by reducing its import requirement. Because this unconventional oil resource is both a consumer and source of energy, its associated CO_2 emissions are higher than those released with conventional crude. In addition, water use is higher for heavy oil production. These severe environmental impacts have yet to be addressed.

Despite its lack of consideration for the environmental damages of Venezuelan heavy oil production, Petrobras hosted an International Seminar on Carbon Sequestration and Climate Change from 24 to 27 October 2006 in Rio de Janeiro. Over 70 specialists representing 17 countries were in attendance, including participants from the public, private and non-governmental sectors. The aim of the seminar was to engage the Brazilian scientific community into the discourse on low-carbon technologies, namely CCS. Petrobras' Research Center (Cenpes) plans to develop a pilot project based on the technologies presented at the conference to be deployed by 2008.[84]

It seems that the Brazilian government and Petrobras are aware of the need for diversification of the country's energy mix by securing alternative sources of hydrocarbons; however, there have been few improvements in the environmental sustainability of hydrocarbon production since St. Petersburg. New technologies and policy are still in the early stage of development, and additional action is needed to ensure that implementation occurs. Brazil's score in this commitment area therefore remains a 0.

Author: Carlos Sayao

[80] Petrobras Investor Relations: Competition, Petrobras online, (Rio de Janeiro). Date of Access: 27 April 2007. http://www2.petrobras.com.br/ri/ing/ConhecaPetrobras/Concorrencia/Concorrencia.asp.
[81] Petrobras signs an LNG purchase agreement, Noticias Petrobras, (Rio de Janeiro), 26 April 2007. Date of Access: 27 April 2007.
http://www.noticiaspetrobras.com.br/interna.asp?id_noticia=2897&id_editoria=23.
[82] Petrobras approves natural gas regasification vessel chartering, Noticias Petrobras, (Rio de Janeiro), 20 April 2007. Date of Access: 25 April 2007.
http://www.noticiaspetrobras.com.br/interna.asp?id_noticia=2887&id_editoria=22.
[83] Brotherly Love, Economist.com, (London), 17 November 2006. Date of Access: 18 December 2006
http://www.economist.com/agenda/PrinterFriendly.cfm?story_id=8190742.
[84] Petrobras debates technologies to minimize carbon dioxide emissions, Noticias Petrobras, (Rio de Janiero), 24 October 2006 Date of Access: 18 December 2006.
http://www.noticiaspetrobras.com.br/interna.asp?id_noticia=2225&id_editoria=9.

2. Canada

Background

Canada's compliance with climate change and sustainable energy commitments made at the St. Petersburg G8 Summit can be summarized as partial and incomplete. The January interim report noted that Canada was neglecting its G8 environmental commitments, primarily because previous initiatives had been radically cut without any action taken to replace or improve them.[85] Criticism was directed at the government from all angles for its environmental policy, most notably from former Prime Minister Brian Mulroney.[86]

In response to this upsurge in public opinion, the Environment Minister was replaced in January and a host of new environmental initiatives have since been announced.[87] The preliminary report, released just after this change, gave Canada five scores of -1 for non-compliance with G8 commitments. In the wake of these political changes, Canada's evaluation has improved slightly to four scores of 0 and one score of -1. Although Canada appears to be taking its environmental commitments more seriously, many of these initiatives replace programs that were cut earlier in the year.[88]

In October 2006, the government proposed a national strategy to combat climate change, entitled the *Clean Air Act*. The objective of the proposed Act is to establish targets for national short-, medium- and long-term reductions in greenhouse gas emissions.[89] It was met with comprehensive criticism from opposition parties, environmental pundits, and the public, and the government was accused of missing significant targets as outlined under Canada's 1998 signing of the Kyoto Protocol.[90] The *Clean Air Act* has not been passed by Parliament at the time of writing and it has been subject to extensive proposals for revisions from opposition parties.[91]

Most recently, the government announced a "Green Budget" and the Environment Minister publicized *Turning the Corner*, a national plan intended to reduce Canada's greenhouse gas emissions 20% below 2006 levels by the year 2020.[92] Elements of the new budget and plan have allowed Canada to earn partial compliance scores with four of its G8 commitments, but recent initiatives largely reproduce programs the government had previously cut. The *ecoEnergy Efficiency Initiative* essentially replaces the *EnerGuide* program cut in late 2006.[93] The *ecoEnergy Renewable Initiative* reintroduces the incentives for wind power production that were previously eliminated.[94] In other areas, the government has continued old programs under new names or simply recommitted funding to ongoing environment programs. Several areas, however, do indicate new steps towards compliance. These

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[85] Canada: Interim Report, Governing Global Climate Change, G8 Research Group, (Oxford), April 2006.
[86] Environment key to courting middle-class vote: Mulroney, CBC News, (Ottawa), 13 December 2006. Date of Access: 4 January 2007. http://www.cbc.ca/canada/story/2006/12/13/mulroney-environment.html.
[87] Harper announces major cabinet shuffle, drops Ambrose from environment, Canadian Press, (Ottawa), 4 January 2006. Date of Access: 4 January 2007. http://www.canada.com/topics/news/national/story.html?id=a013e89b-82bc-44ef-8e30-72ecb004d6d4&k=14824.
[88] Canada's New Plan "Pretends" to Curb Emissions, Say Activists, Inter Press Service News Agency, (Brooklyn), 26 April 2007. Date of Access: 30 April 2007. http://www.ipsnews.net/news.asp?idnews=37512.
[89] Notice of intent to develop and implement regulations and other measures to reduce air emissions, Canada Gazette, (Ottawa), 21 October 2006. Date of Access: 13 December 2006. http://canadagazette.gc.ca/partI/2006/20061021/html/notice-e.html#i3.
[90] A Preliminary Analysis of Bill C-30 – The Clean Air Act, Mark S. Whitfield: Pembina Institute, (Ottawa-Gatineau), 20 October 2006. Date of Access: 13 December 2006. http://www.pembina.org/climate-change/pubs/doc.php?id=1315.
[91] Liberals bog down clean air act committee with amendments: MPs, CBC News, (Ottawa), 22 March 2007. Date of Access: 15 April 2007. http://www.cbc.ca/canada/story/2007/03/22/cleanair-committee.html#skip300x250.
[92] Text of speech by Environment Minister John Baird, The Globe and Mail, (Toronto), 25 April 2007. Date of Access: 25 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070425.wkyotospeech0425/BNStory/National.
[93] Backgrounder: EcoENERGY Efficiency Initiative, Natural Resources Canada, April 2007. Date of Access: 24 April 2007. http://www.nrcan.gc.ca/media/newsreleases/2007/200704a_e.htm.
[94] Tories announce $1.5 billion renewable energy plan, CBC News, 19 January 2007. Date of Access: 26 April 2007. http://www.cbc.ca/canada/story/2007/01/19/tories-environment.html.

include banning traditional light-bulbs, providing rebates on the purchase of hybrid vehicles and adding levies to the fuel inefficient cars, and supporting home and small business retrofitting with energy efficient upgrades.

Although there are signs that Canada is taking environmental issues more seriously, the government has begun to renege on its international commitments related to the Kyoto Protocol. A previous C$5 million pledge to help least developed countries adapt to the impacts of climate change was withdrawn in December 2006.[95] The new Environment Minister has ruled out the possibility of Canadian companies engaging in carbon emissions trading.[96] Most discouraging has been the government's outright resistance to continue Canada's support for the Kyoto Protocol. Opposition parties succeeded in passing the *Kyoto Protocol Implementation Act* through Parliament in February 2007, which (if passed by the Senate) would require the government to develop an effective action plan in full compliance with Kyoto targets within six months of enactment.[97] Actions by the government, such as openly discussing the possibility of joining an alternative international coalition to the Kyoto Protocol,[98] suggests that it is unlikely to offer its full support to the Protocol without severe pressure from public pressure groups and opposition parties.

Although Canada has received improved compliance scores as compared to the interim report, this by no means indicates that Canada is emerging as an international leader in the field of climate change and sustainable energy. As noted above, Canada is awarded three scores of 0 (partial compliance) and two scores of -1 (non-compliance) for its inability to develop sufficient targets as addressed under the Kyoto Protocol. The government appears to be responding reluctantly to significant public pressure, and its actions with respect to the environment have been tentative and cautious. The interim report noted Canada's poor score according to the Climate Change Performance Index,[99] which ranked Canada 51st out of 56 countries studied.[100] Canada was ranked 45th for its emissions levels, 31st for its emission trends, and 55th for the effectiveness of government policies.[101] Ottawa's current actions do not appear to be sufficient to reverse these trends.

Author: Geoffrey Cameron

Clean and Efficient Energy in the Transport Sector: 0

The Canadian government has partially complied with its commitment to promote the adoption of clean diesel and hybrid vehicles by consumers and municipalities. The interim report initially gave Ottawa a score of -1 because climate change legislation proposed in late 2006 failed to promote clean and efficient energy use in the transport sector. More recently, however, the 2007 Budget has included new incentives for consumers to adopt efficient vehicles, and Transport Canada has devoted greater funds to urban transportation

[95] Stephen Leahy, Climate Change: Kyoto gets a slap in the face from Canada, IPS News Service, 9 December 2006. Date of Access: 20 December 2006. http://ipsnews.net/news.asp?idnews=35785.
[96] Baird warns Canadian firms off trading in emissions credits, The Globe and Mail, (Toronto), 22 March 2007. Date of Access: 23 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070322.wbaird22/BNStory/National/.
[97] Bill C-288, House of Commons of Canada, (Ottawa), 2006-07. Date of Access: 26 April 2007. http://www2.parl.gc.ca/HousePublications/Publication.aspx?pub=bill&doc=C-288&parl=39&ses=1&language=E&File=24.
[98] Is Canada's Shift on Climate Change Part of a Larger Trend?, American.com, 18 April 2007. Date of Access: 22 April 2007. http://www.american.com/archive/2007/april-0407/is-canada2019s-shift-on-climate-change-part-of-a-larger-trend.
[99] The Climate Change Performance Index is compiled by German Watch and the Climate Action Network Europe.
[100] Government of Canada Next to Bottom of the Class in Fighting Climate Change, Pembina Institute, (Nairobi), 13 November 2006. Date of Access: 13 December 2006. http://www.pembina.org/climate-change/pubs/media-release.php?id=1335.
[101] Government of Canada Next to Bottom of the Class in Fighting Climate Change, Pembina Institute, (Nairobi), 13 November 2006. Date of Access: 13 December 2006. http://www.pembina.org/climate-change/pubs/media-release.php?id=1335.

schemes in Vancouver and Toronto,[102] which, at present, does not include the introduction of more efficient diesel or hybrid transportation systems. Nevertheless, as indicated by its improved performance in the transport sector, the Canadian government appears to be taking its environmental commitments more seriously since the replacement of the Environment Minister in January 2007.[103]

Before the 2007 Budget, Ottawa's major environmental initiative since the St. Petersburg Summit was the introduction of the *Clean Air Act* in October 2006.[104] The Act was strongly criticized by opposition parties, environmental NGOs, and think-tanks for its weak transportation sector regulations. In this respect, it updates the *Motor Vehicle Fuel Consumption Standards Act* (1981) but explicitly delays implementing a new regulatory agenda until 2010. Till that time, the existing Memorandum of Understanding signed between the previous government and Canadian automakers would stay in effect, whereby the industry would voluntarily reduce GHG emissions in the transportation sector.[105] Moreover, John Bennett, Senior Policy Advisor for the Sierra Club of Canada and Executive Director of the Climate Action Network, points out that even the regulations that will be put in place in 2010 are still inadequate, as they merely match the US fuel efficiency standards.[106] "This announcement [of the *Clean Air Act*] is nothing more than a recipe for delay," Bennett remarked, "Adopting the Bush Administration's standards will not lower emissions from vehicles."[107] Although the government presented the *Clean Air Act* as a piece of "historic legislation,"[108] it has yet to be voted on by the Parliament (dozens of proposed amendments have held it up in a parliamentary committee).[109]

With the replacement of the Environment Minister in January, the government has been more active in responding to public demands for action on climate change. Although widely criticized for several shortcomings,[110] the 2007 Budget was praised by even the harshest of critics for creating consumer incentives to adopt more fuel-efficient vehicles. The Green Budget Coalition, a consortium of prominent environmental groups, reported that this measure is one of several "modest, though groundbreaking, steps towards broader ecological fiscal reform in Canada."[111] The new C$160 million scheme will add a fee of up to C$ 4,000 to the price of fuel inefficient vehicles while providing rebates of up to C$2,000 on hybrid vehicles.[112] Alongside the purchasing incentives, the Budget dedicates C$36 million to continue funding an existing program to remove old and inefficient vehicles from the

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[102] Canada's New Government Starts Canada Down the Road to a Cleaner Environment With New Transportation Initiatives, Department of Finance, (Ottawa), 21 March 2007. Date of Access: 14 April 2007. http://www.fin.gc.ca/news07/07-024e.html.

[103] Harper announces major cabinet shuffle, drops Ambrose from environment, Canadian Press, (Ottawa), 4 January 2006. Date of Access: 4 January 2007. http://www.canada.com/topics/news/national/story.html?id=a013e89b-82bc-44ef-8e30-72ecb004d6d4&k=14824.

[104] Notice of intent to develop and implement regulations and other measures to reduce air emissions, Canada Gazette, (Ottawa), 21 October 2006. Date of Access: 13 December 2006. http://canadagazette.gc.ca/partI/2006/20061021/html/notice-e.html#i3.

[105] Automakers Agreement to Reduce GHG Emissions, Natural Resources Canada, (Ottawa), 17 July 2006. Date of Access: 13 December 2006. http://oee.nrcan.gc.ca/transportation/ghg-memorandum/index.cfm?attr=8.

[106] No more idling: California standards needed now!, Sierra Club of Canada, (Ottawa), 19 October 2006. Date of Access: 14 December 2006. http://www.sierraclub.ca/national/media/item.shtml?x=1020.

[107] No more idling: California standards needed now!, Sierra Club of Canada, (Ottawa), 19 October 2006. Date of Access: 14 December 2006. http://www.sierraclub.ca/national/media/item.shtml?x=1020.

[108] Canada's New Government Acting Now to Clean Up the Air We Breathe, Environment Canada, (Ottawa), 14 November 2006. Date of Access: 13 December 2006. http://www.ec.gc.ca/press/2006/061114_n_e.htm.

[109] Liberals bog down clean air act committee with amendments: MPs, CBC News, (Ottawa), 22 March 2007. Date of Access: 15 April 2007. http://www.cbc.ca/canada/story/2007/03/22/cleanair-committee.html#skip300x250.

[110] 'Green' budget falls short for environmental groups, CBC News, (Ottawa), 19 March 2007. Date of Access: 14 April 2007. http://www.cbc.ca/canada/story/2007/03/19/budget-environment.html#skip300x250.

[111] Green Budget Coalition News Release: 19 March 2007, Green Budget Coalition, (Ottawa), 19 March 2007. Date of Access: 14 April 2007. http://www.sierraclub.ca/national/media/item.shtml?x=1079.

[112] Environment: New levy can add $4000 to price of SUVs -- Fuel-efficient cars get big discounts, Globe and Mail, 20 March 2007. Date of Access: 14 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070319.wbudgetenvironment/BNStory/.

road.[113] The government has clearly complied with its commitment to provide a range of incentives for consumers to adopt more efficient vehicles, although the same cannot be said for its initiatives in the public transit sector.

Although the Canadian government has dedicated new funds to improving public transit and making it more widely available in cities, these initiatives have not complied with its commitment to introduce on a large-scale, efficient public hybrid and/or clean-diesel transportation systems. The government has recently introduced a new *ecoMobility* program for Toronto and Vancouver, which involves investing up C$10 million in improving public transit infrastructure.[114] This program appears to build on the previous government's initiative – the Urban Transportation Showcase Program – which was part of an earlier strategy to combat climate change.[115] Neither the earlier Showcase Program nor the new ecoMobility program includes details about introducing more fuel-efficient transportation systems in these cities. Although Ottawa's new actions to encourage consumers to adopt fuel-efficient vehicles have been commendable, it has entirely neglected the second part of its G8 commitment to promote clean and efficient energy in the transport sector. As a result, Canada has earned a partial compliance score of 0.

Author: Geoffrey Cameron

Alternative and Renewable Energy: 0

The current Canadian government has minimally complied with its commitment to make wider use of renewables and to develop and introduce innovative technologies in the energy sector. While it continues to support some of the previous government's alternative-energy initiatives, it has also cut many programs and subsequently replaced many of them with near-duplicates. Canada is consequently awarded a compliance score of 0 since, on the whole, it is in the same position as it was before making its commitment to promote a wider use of renewables and innovative technology development.

The government continues to support the pre-existing Sustainable Development Technology Canada (SDTC) foundation. In December 2006, SDTC approved C$30 million in new funding allocated to 13 projects covering the development and demonstration of clean technologies that benefit both the environment and the economy.[116] While this is a positive contribution to advancing innovation in environment technology, it only continues a funding commitment which began in 2002.[117] The *Clean Air Act*,[118] introduced in October 2006 as

[113] Canada's New Government Starts Canada Down the Road to a Cleaner Environment With New Transportation Initiatives, Department of Finance, (Ottawa), 21 March 2007. Date of Access 14 April 2007. http://www.fin.gc.ca/news07/07-024e.html.

[114] ecoTransport Strategy, Transport Canada, (Ottawa), February 2007. Date of Access: 14 April 2007. http://www.tc.gc.ca/mediaroom/releases/nat/2007/07-gc010e.htm#BG.

[115] Urban Transportation Showcase Program, Transport Canada, (Ottawa), November 2006. Date of Access: 13 December 2006. http://www.tc.gc.ca/mediaroom/releases/nat/2006/06-h163e.htm#UTSP.

[116] For specific programs see: Canada's New Government Announces R&D Investment in Environment-Friendly Vehicle Parts Manufacturing, Industry Canada, 6 December 2006. Date of Access: 15 December 2006. http://news.gc.ca/cfmx/view/en/index.jsp?articleid=260669; and Canada's New Government Announces $29 Million Investment In Innovative Environmental Projects, Technology Partnerships Canada, 14 November 2006. Date of Access: 15 December 2006. http://tpc-ptc.ic.gc.ca/epic/internet/intpc-ptc.nsf/en/hb00534e.html.

[117] "$30 Million in Clean Tech Funding Announced by Sustainable Development Technology Canada", Sustainable Development Technology Canada, News Releases, 6 December 2006. Date of Access: 15 December 2006. http://www.sdtc.ca/en/news/media_releases/media_12062006.htm. Sustainable Development Technology Canada is a foundation created by the that operates a C$550 million fund to support the development and demonstration of clean technologies — solutions that address issues of climate change, clean air, clean water, and clean soil to deliver environmental, economic and health benefits to Canadians. SDTC continues to be on track to allocate all of its funds up to December 2010. Since April 2002, SDTC has completed nine funding rounds, committed C$241 million to 109 clean technology projects, and leveraged C$617 million from project consortia members, for a total portfolio value of C$858 million.

[118] The Clean Air Act – Bill C-30, Parliament of Canada, (Ottawa), 19 October 2006. Date of Access: 26 December 2006. http://www2.parl.gc.ca/HousePublications/Publication.aspx?Language=E&Parl=39&Ses=1&Mode=1&Pub=Bill&Doc=C-30_1.

the government's unique approach to environmental issues, does not introduce any new programs beyond support for SDTC. All the while, existing programs that contribute to further innovation were cut.

Before last year's G8 Summit in St. Petersburg, the government announced a cut to almost all existing environmental programs in its April 2006 budget, which included funding for several scientific and research programs. This was a major step backward in developing new technologies in the energy sector. The government also cut funding for the Wind Power Production Incentive which subsidizes the installation of wind power.[119] In December 2006, a C$5 million pledge to help the least developed countries adapt to the impacts of climate change was also withdrawn.[120]

The government justified these cuts by arguing that it seeks to support only effective initiatives. However, in response to criticism, the Conservative government announced two new programs in January 2007. The first is the so-called ecoEnergy Renewable Initiative, which is intended to fund alternative energy technologies; Prime Minister Stephen Harper announced that it would amount to C$1.5 billion of incentive-based funding over 10 years.[121] Specifically, the program is meant to fund eligible projects relating to wind, solar, and other forms of renewable energy. The first component of the initiative constitutes the bulk of the program and is called ecoEnergy for Renewable Power; it is intended to increase the supply of clean electricity from renewable sources. The second component is called ecoEnergy for Renewable Heat, intended to provide incentives to individuals to utilize clean renewable technologies in their homes and offices. The second new program unveiled by the Conservative government is the ecoEnergy Efficiency Initiative, as announced in January 2007. Specifically, this initiative will provide C$300 million over four years, in order to retrofit homes and render them more energy efficient.

Although the introduction of such programs would seemingly suggest that the government is living up to its alternative and renewable energy commitment, these announcements must be seen in the context of past cuts and the elimination of previous programs. Opposition MPs welcomed these changes, but were quick to point out that the new Conservative government was simply resurrecting old Liberal initiatives that it had previously cancelled.[122] For example, the *ecoEnergy Renewable Initiative* effectively restarted the Wind Power Production Incentive that had been halted after the election of the Harper government in January 2006.[123] Similarly, the *ecoEnergy Efficiency Initiative* roughly duplicates the former *EnerGuide for Homes* retrofit program, but falls slightly short, in that the number of targeted home retrofits is 140,000 and not the previous target of 270,000. Therefore, although the Conservative government has made good on their pledge to introduce new initiatives, they have effectively filled a gap that they had created themselves by cutting existing programs.

In February 2007, the House of Commons passed a private member's bill entitled the *Kyoto Protocol Implementation Act*,[124] which seeks to ensure that the government meets its Kyoto commitments by requiring Ottawa to table a detailed plan of Canada's strategy to reduce its greenhouse gas emissions. The bill passed by a vote of 161-133, despite the Conservatives'

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[119] Kyoto Protocol, David Suzuki Foundation, (Vancouver), Date of Access: 15 December 2006. http://www.davidsuzuki.org/Climate_Change/Kyoto/.

[120] Stephen Leahy, Climate Change: Kyoto gets a slap in the face from Canada, IPS News Service, 9 December 2006. Date of Access: 20 December 2006. http://ipsnews.net/news.asp?idnews=35785.

[121] Tories announce $1.5 billion renewable energy plan, CBC News, 19 January 2007. Date of Access: 26 April 2007. http://www.cbc.ca/canada/story/2007/01/19/tories-environment.html.

[122] Tories announce $1.5 billion renewable energy plan, CBC News,v19 January 2007. Date of Access: 26 April 2007. http://www.cbc.ca/canada/story/2007/01/19/tories-environment.html.

[123] Canada's Kyoto Commitment Must be Honoured, Greenpeace Canada, 16 March 2007. Date of Access: 26 April 2007. http://www.greenpeace.org/canada/en/campaigns/climate-and-energy/recent-developments/canada-s-kyoto-commitment-must.

124 Bill C-288, The Kyoto Protocol Implementation Act. Date of Access: 26 April 2007. http://www2.parl.gc.ca/HousePublications/Publication.aspx?pub=bill&doc=C-288&parl=39&ses=1&language=E.

attempt to have the bill killed on technical grounds,[125] and is currently being reviewed by the Senate. This episode suggests that the government's recent initiatives in the realm of alternative and renewable energy have not been well received by the public and in the political circles, which are pressuring the Conservatives to return to the Kyoto principles.

Overall, there has been minimal action to make wider use of renewables and to develop and introduce innovative technologies throughout the entire energy sector. Canada is consequently awarded a compliance score of 0.

Author: Jessica Prince

UNFCCC/Kyoto: -1

As a signatory to the Kyoto Protocol, and despite increasing pressures on the Canadian government to live up to its Kyoto objectives, Prime Minister Stephen Harper's Conservative government has yet to reaffirm any of its prior commitments under the UNFCCC. Since the G8 Summit in St. Petersburg in 2006, the government's policies regarding its Kyoto obligations have generated a large amount of attention; however, massive public pressure has produced very few tangible results.

Critics of Stephen Harper's numerous attempts to devise an acceptable plan on climate change in 2006-2007 have called Canada's commitment to the Kyoto Protocol 'dead'.[126] In October 2006, the Canadian government released the *Clean Air Act* to announce national short-, medium-, and long-term air pollution targets.[127] The *Clean Air Act* proposed an absolute reduction in GHG emissions between 45 and 65% from 2003 levels by the year 2050.[128] Under the Kyoto Protocol, signatory states agreed to a minimum 6% reduction in overall GHG emissions below 1990 levels by the year 2012.[129] As a result, the Act has been criticized for abandoning Canada's original commitment to Kyoto, undermining immediate incentives to tackle GHG emissions, and delaying any significant action until initial phases of the Act come into effect in 2020.[130]

Following a hostile national response to the *Clean Air Act*, opposition parties of Canada's minority government motioned a number of significant improvements to the Act. On 14 February 2007, the House of Commons passed Bill C-288 *Kyoto Protocol Implementation Act*, which seeks to ensure that "Canada takes effective and timely action to meet its obligations under the Kyoto Protocol and help address the problem of global climate change."[131] Pending the passing of Bill C-288 through the Senate, the government would have 6 months to devise an action plan to fully meet its Kyoto targets by the end of the first commitment period in 2012. Proponents of Bill C-288 expressed hopes of a 'Canadian comeback' on the climate change front.[132]

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[125] Opposition MPs pass Kyoto Bill Despite Tory resistance, CBC News, 14 February 2007. Date of Access: 26 April 2007. http://www.cbc.ca/canada/story/2007/02/14/kyoto-vote.html.
[126] Baird has declared clean air act dead, critics say, The Globe and Mail, (Toronto), 24 April 2007. Date of Access: 26 April 2006. http://www.theglobeandmail.com/servlet/story/LAC.20070424.GREEN24/TPStory/National.
[127] Notice of intent to develop and implement regulations and other measures to reduce air emissions, Canada Gazette, (Ottawa), 21 October 2006. Date of Access: 13 December 2006. http://canadagazette.gc.ca/partI/2006/20061021/html/notice-e.html#i3.
[128] Notice of intent to develop and implement regulations and other measures to reduce air emissions, Canada Gazette, (Ottawa), 21 October 2006. Date of Access: 13 December 2006. http://canadagazette.gc.ca/partI/2006/20061021/html/notice-e.html#i3.
[129] Article 3, Paragraph 1, Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1998. Date of Access: 29 December 2006. http://unfccc.int/resource/docs/convkp/kpeng.html.
[130] Opposition, environmental groups slam clean air act, CBC News, (Toronto), 19 October 2006. Date of Access: 29 December 2006. http://www.cbc.ca/canada/story/2006/10/19/air-react.html.
[131] Bill C-288, House of Commons of Canada, (Ottawa), 2006-07. Date of Access: 26 April 2007. http://www2.parl.gc.ca/HousePublications/Publication.aspx?pub=bill&doc=C-288&parl=39&ses=1&language=E&File=24.
[132] Kyoto Protocol stages Canadian comeback, Sierra Club of Canada News Release, 16 February 2007. Date of Access: 23 April 2007. http://www.sierraclub.ca/national/media/item.shtml?x=1060.

Despite evident commitment from opposition parties to meet Canada's Kyoto obligations, the governing Conservatives remain sceptical of the implications of Kyoto for the Canadian economy. On April 19, Minister of the Environment John Baird released a detailed economic impact report of Bill C-288 prepared by the Government of Canada entitled *The Cost of Bill C-288 to Canadian Families and Business*.[133] The report concludes, "The Government of Canada believes that C-288 represents an unbalanced approach [to meeting Kyoto targets] that would hurt workers, families and businesses."[134] These statements, it should be noted, follow the international release of the UK Stern Review which found that the economic costs of failing to reverse climate change would be 20 times greater than the costs of fighting it.[135]

Turning the Corner, the government's latest plan (announced on 25 April 2007), indicates another change in emission reduction commitments relative to both Kyoto and the *Clean Air Act*. In this plan, the Conservatives announced that they would halt the rise in GHG emissions over the next three to five years, and that they would reduce Canada's current emissions by 20% by the year 2020.[136] This plan, however, is still not in line with Canada's Kyoto obligations; if successful, it would leave Canadian emissions 5% *above* 1990 levels by 2020 – in contravention of the Kyoto Protocol obligation of bringing emissions in line with the 1990 levels.[137]

More backlash to Canada's Kyoto strategy was encountered when the government announced interest in joining the Asia-Pacific Partnership on Clean Development and Climate (AP6). The AP6 is an alternative to the Kyoto Protocol and comprises a six-nation coalition, including Australia, China, India, Japan, South Korea and the United States, which focuses on voluntary emissions-reductions and technology transfers.[138] By joining the AP6, Canada would essentially be withdrawing its earlier commitment to achieving Kyoto targets.

Despite these indications of a lack of support for the Protocol, in 2007 Canada did fulfill its commitment to Article 7(4) of the Kyoto Protocol regarding GHG accounting. *Canada's Initial Report under the Kyoto Protocol* is a demonstration that Canada has confirmed and implemented requirements for accounting for GHG emissions under the Kyoto Protocol.[139] As a result, the report is meant to facilitate participation in Kyoto and may be assessed as a step forward in Canada's commitments under the UNFCCC.

In addition to Canada's controversial national performance, Canada's commitments to the international community have also faltered.[140] Under Kyoto, two international mechanisms of importance are open to Canada and have historically been of significant consideration for Canada's previous Kyoto strategies: emissions trading and Clean Development Mechanisms

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[133] Economic Analysis Shows Implementing Bill C-288 Would Plunge Canada into a Recession, Environment Canada, News Release, 19 April 2007. Date of Access: 22 April 2007. http://www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=2EF3E5A6-6015-46E8-A0E5-08B1C88FB4C0.

[134] The Cost of Bill C-288 to Canadian Families and Business, Government of Canada, (Ottawa). Date of Access: 22 April 2007. http://www.ec.gc.ca/doc/media/m_123/toc_eng.html.

[135] Stern Review: The Economics of Climate Change, HM Treasury, (London), October 2006. Date of Access: 26 April 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.

[136] Text of speech by Environment Minister John Baird, The Globe and Mail, (Toronto), 25 April 2007. Date of Access: 25 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070425.wkyotospeech0425/BNStory/National.

[137] Critics blast environment plan as 'out of sync' with science, The Globe and Mail, (Toronto), 25 April 2007. Date of Access: 26 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070425.wbaird0425/BNStory/National/home.

[138] Is Canada's Shift on Climate Change Part of a Larger Trend?, American.com, 18 April 2007. Date of Access: 22 April 2007. http://www.american.com/archive/2007/april-0407/is-canada2019s-shift-on-climate-change-part-of-a-larger-trend.

[139] *Canada's Initial Report under the Kyoto Protocol* is available for download at http://www.ec.gc.ca/climate/initial_Kyoto_Rep_e.pdf. (Date of Access: 26 April 2007).

[140] Under the UNFCCC, "Industrialized nations agree under the Convention to support climate-change activities in developing countries by providing financial support above and beyond any financial assistance they already provide to these countries." Date of Access: 30 December 2006. http://unfccc.int/essential_background/feeling_the_heat/items/2914.php.

(CDMs). In March 2007, the government announced that Canadian companies will not be allowed to participate in international emissions trading on the Kyoto emissions market.[141] Despite rumours in late 2006 that the former Minister of the Environment, Rona Ambrose, was in discussion with the Montreal Stock Exchange on the establishment of an industry-led carbon-trading exchange, current Minister of the Environment John Baird later stated his government is "not looking at international emissions trading."[142]

With respect to CDMs, in September 2006 the Conservative government reneged on a US$1.5 million contribution to the UN Climate Change Secretariat in support of CDMs and Article 12 of the Kyoto Protocol. Most recently, Minister Baird has announced that Canadian firms will have access to CDMs in order to meet speculative "strict targets for industry,"[143] with no further follow-up. With CDM projects and carbon trading markets being two of the major responsibilities required of Annex I countries to reduce the global GHG emissions, Canada is failing to meet its commitments to both the Kyoto Protocol, and to the international community.

Despite some progress – evidenced by the passing of Bill C-288 through the House of Commons – the resulting controversy and backlash from the ruling Conservative party is currently stalling Canada's ability to meet its international commitments under the UNFCCC and Kyoto. Increased public attention and debate about Kyoto targets in Canada, however, does not constitute compliance in the absence of the government's action. As a result, Canada is given a score of -1 on its Kyoto/UNFCCC commitment.

Author: Samantha Boardley

Sustainable Use of Energy: 0

Canada's success in promoting the sustainable use of energy has varied during the compliance period. Following strong public concern about government cuts to environmental programs in April 2006 a flawed *Clean Air Act* in October 2006, the government introduced the EcoEnergy Efficiency Initiative in January 2007. EcoEnergy promises C$300 million to promote sustainable energy use. Canada is thus awarded a 0 for compliance, because progress in one area (returning to its previous political and financial commitments to smart-energy use) has been offset by backward steps in promoting industry standards for energy efficiency.

The April 2006 budget severely cut demand-side programs. In May 2006, the government withdrew over C$300 million in funding for the EnerGuide program which gave Canadians cash incentives to make their homes more energy efficient.[144] Funding to groups promoting the One Tonne Challenge was also cut. This was an initiative of the previous Liberal government to encourage Canadians to do their bit to cut down greenhouse gas

[141] Baird warns Canadian firms off trading in emissions credits, The Globe and Mail, (Toronto), 22 March 2007. Date of Access: 23 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070322.wbaird22/BNStory/National/

[142] Baird warns Canadian firms off trading in emissions credits, The Globe and Mail, (Toronto), 22 March 2007. Date of Access: 23 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070322.wbaird22/BNStory/National/.

[143] Text of speech by Environment Minister John Baird, The Globe and Mail (Toronto), 25 April 2007. Date of Access: 25 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070425.wkyotospeech0425/BNStory/National.

[144] What About EnerGuide for Houses, Green Communities Canada, 26 October 2006, Date of Access: 30 December 2006. http://gca.ca/indexcms/index.php?news. For an overview of the EnerGuide program go to: Ottawa urged to restore popular EnerGuide for Houses Programs, 11 May 2006. Date of Access: 30 December 2006. http://gca.ca/indexcms/downloads/EGH%20factsheets.pdf.

emissions.[145] Funding for 40 public information offices were also cut, drastically slimming the environmental agencies available to promote sustainable use of energy in Canada.[146]

In 2006-2007, there have been some federal efforts to encourage wider use of renewables through support for environmentally friendly industry initiatives. The Western Economic Diversification Canada (WD) committed C$1 million to support Petroleum Technology Alliance Canada (PTAC) in implementing Phase II of the Technology for Emission Reduction and Eco-Efficiency (TEREE) initiative.[147] In the budget, the government also committed to provide accelerated capital cost allowance for investment in certain forestry bioenergy equipment. This will encourage additional investment in technologies that reduce greenhouse gas emissions and air pollutants.[148] Other joint-government-industry initiatives have been named, but there is a long consultation period scheduled into implementing any first steps and, consequently, the actual strength of the said promises is currently ambiguous. Despite these efforts, there was little mention of increasing the sustainability of national energy consumption in Canada's most recent environmental plan, *Turning the Corner*.

Following significant public criticism of the government scaling back its commitment to sustainable energy in 2006, Canada announced the *EcoENERGY Efficiency Initiative*, a commitment of C$300 million over four years to promoting smart energy use across all sectors of society. This new initiative spreads information and gives incentives to improve energy efficiency in housing, buildings, and industrial processes. The program has three components: *EcoENERGY Retrofit* (C$220 million); *EcoENERGY* for buildings and houses (C$60 million); and *EcoENERGY* for Industry (C$20 million).

EcoENERGY Retrofit targets homeowners and small businesses. The aim is to set out a list of energy efficient upgrades combined with financial support in order to encourage Canadian homeowners and small businesses to be smart energy users. The average grant is expected to be more than C$1000 and result in a 30% reduction in energy use and cost. *EcoENERGY* for buildings and houses targets the construction and operation of new buildings. Through rating, labelling and training projects, the aim is to make new buildings 35% more energy efficient than the current building codes. Finally, the EcoENERGY for Industry is designed to help large industry deal with the regulations introduced as part of the *Clear Air Act*. This program will encourage "information-sharing on new technologies and best practices in energy use; training for energy managers to identity and put in place energy-saving projects; and cost-shared assistance for energy assessments that identity a wide range of ways to improve energy use."[149] While this certainly shows the new government's commitment to sustainable energy use, critics have argued that *EcoENERGY* is simply a re-introduction of the *EnerGuide* program, which actually reduces the number of targeted homes from 270,000 to 140,000.[150]

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[145] Martin Mittelstaedt, Ottawa Stops Funding for One Tonne Challenge, Globe and Mail, 1 April 2006. Date of Access: 30 December 2006. http://www.theglobeandmail.com/servlet/story/RTGAM.20060331.wxchallenge01/BNStory/National/home.

[146] Kyoto and Beyond, *CBC News*, 11 October 2006, Date of Access: 30 December 2006, http://www.cbc.ca/news/background/kyoto/timeline.html.

[147] PTAC is a not-for-profit association that facilitates innovation, collaborative research, and technology development, demonstration and deployment for a responsible western Canadian upstream hydrocarbon energy industry. The goal of Phase II of TEREE is to provide industry with specification for more cost efficient equipment and processes that can be written into new design and retrofit situations to improve overall efficiencies and emission reductions on a wide scale.

[148] Canada's performance 2006: The Government of Canada's Contribution, Treasury Board of Canada Secretariat, 23 November 2006. Date of Access: 15 December 2006. http://www.tbs-sct.gc.ca/report/govrev/06/cp-rc05_e.asp.

[149] Backgrounder: EcoENERGY Efficiency Initiative, Natural Resources Canada, April 2007. Date of Access: 24 April 2007. http://www.nrcan.gc.ca/media/newsreleases/2007/200704a_e.htm.

[150] Canada's Kyoto Commitments Must Be Honoured, Greenpeace, 16 March 2007. Date of Access: 25 April 2007. http://www.greenpeace.org/canada/en/campaigns/climate-and-energy/recent-developments/canada-s-kyoto-commitment-must.

In addition to the EcoENERGY Efficiency Initiative, a recently announced ban on traditional light bulbs will also facilitate the sustainable use of energy. According to national sources, Canada will be one of the first countries in the world to ban the purchase of traditional light bulbs, thus making more efficient types mandatory.[151] Despite contributing only 1.5% of Canada's total national GHG emissions, the ban on traditional light bulbs provides another example of Canada's attempts to achieve greater levels of sustainability in national energy consumption.

The new government has announced a variety of initiatives aimed at sustainable energy use in Canada. Although a re-introduction of earlier programs, the EcoENERGY Efficiency Initiative has committed considerable resources to encouraging smart energy use in Canada. It has been widely publicized and is likely to encourage more sustainable energy demand. Further, the ban on traditional light bulbs provides a step in establishing tangible emissions reductions and sustainable use of energy. This shows explicit action being taken to achieve the commitments made at the St. Petersburg Summit. Nonetheless, with minimal additional guidelines on sustainable energy use outlined in *Turning the Corner Plan*, any earlier momentum has been slowed, and Canada is awarded a compliance score of 0.

Author: Samantha Wright

Innovative Energy Technologies in Hydrocarbon Production and Use: -1

The Canadian government has minimally complied with its commitment to facilitate the development of innovative technologies that would improve the efficiency and environmental sustainability of hydrocarbon production and use. Although the present government has continued some of the programs begun by its predecessors, new state action since the St. Petersburg Summit has been limited, and as a result, a perfect score for compliance cannot be granted. In fact, the only substantial new development (other than the proposed Canadian Technology Fund, which seems unlikely to materialize), is the proposed ecoEnergy Technology Initiative, which has yet to be put into action. As a result, the Canadian government is awarded a compliance score of -1.

In the past decade, several federal programs have been introduced to foster the development of innovative technologies that would improve the efficiency of hydrocarbon production and use, but these programs pre-date the St. Petersburg Summit and they have not been significantly altered since that time.[152] In 1998, Technology Early Action Measures (or TEAM) was established as part of the federal government's Climate Change Action Plan.[153] An interdepartmental technology investment program, TEAM "supports late-stage development projects and first-time demonstration projects designed to reduce GHG emissions" in an economically and socially sustainable fashion. Specifically, there are five major priority areas, including cleaner fossil fuels, energy-efficiency technology, and decentralized energy production.[154] TEAM works closely with large and small-sized Canadian companies by funding projects that lead to GHG reductions. As of March 2004, the program had supported 98 projects in 64 cities across the country.

Similarly, in 1996, Technology Partnerships Canada (TPC) was founded by the federal government to provide funding for strategic research and development that will provide economic, social and environmental benefits.[155] Specifically, TPC supports Canadian companies during the R&D phase, in order to bring the new technologies closer to the

[151] Canada to ban traditional light bulbs, The Globe and Mail, (Toronto), 26 April 2007. Date of Access: 27 April 2007. http://www.theglobeandmail.com/servlet/story/LAC.20070426.ENVIRO26/TPStory/National.
[152] However, the fact that these programs continue to exist and receive government support indicates a basic willingness on the part of the government to tackle the issue of innovative technology in hydrocarbon production and use.
[153] Technology Early Access Measures. Date of Access: 26 December 2006. http://www.team.gc.ca/english/.
[154] Technology Early Access Measures. Date of Access: 26 December 2006. http://www.team.gc.ca/english/.
[155] Technology Partnerships Canada. Date of Access: 26 December 2006. http://tpc-ptc.ic.gc.ca/epic/internet/intpc-ptc.nsf/en/Home.

market. This organization addresses both the production and use of hydrocarbon, as it funds technologies to reduce industrial pollution and wastage in the production phase, as well as to reduce greenhouse gas emissions in consumer usage.[156] In general, TPC seeks to support environmentally sustainable technologies and work towards the goal of reduced emissions, but as an arm of Industry Canada, it also has an eye to the interests of industry. Once again, TPC forwards the commitment of facilitating the development of innovative technologies that would both improve the efficiency and environmental sustainability of hydrocarbon production and use. However, since this program pre-dates the St. Petersburg Summit, the only credit that is due to the present government is that they continued to support this program.

The present government has initiated little action itself on this commitment. In a speech in October 2006 announcing the *Clean Air Act*, the then Environment Minister, Rona Ambrose, claimed that the federal government would be "[working] with provinces, territories and industry…to encourage early investment and reductions through technology such as CO_2 sequestration."[157] In that same speech, as well as at the UN Climate Change Conference in November, the Minister mentioned the crucial role of "technology as a solution to addressing climate change."[158] Specifically, "a Canadian technology fund" was proposed, in which any industry that exceeds their greenhouse gas limits will be fined and pay into the fund.[159] That money, in turn, will be reinvested into technology designed to reduce greenhouse gases. However, this technology fund does not yet exist. As a portion of the *Clean Air Act*, this fund comprises part of a piece of legislation that has yet to pass into law and, according to political observers, is effectively dead.[160] As a result, it would seem that the proposed Canadian Technology Fund will not come to fruition.

Apart from the Canadian Technology Fund proposal, the government announced the establishment of the ecoEnergy Technology Initiative in January 2007. This proposed C$230 million program will invest in the research and development of clean-energy technologies over a four-year period. It will purportedly target specific technologies, such as CO_2 sequestration, clean coal, clean oil sands production, and renewable energy; the ultimate aim is to foster the next generation of technology, eventually leading to emissions-free energy production and energy use.[161] However, the government has yet to take any actual steps with this new program; in fact, they do not plan on receiving applications for ecoEnergy Technology Initiative funding from interested parties until late 2007.[162] Therefore, while this proposal seems a step in the right direction, until the government actually begins to fund the research and development of new technologies, in order to improve the efficiency and environmental sustainability of hydrocarbon production and use, it cannot be deemed to be in compliance with that commitment.

The only other measures the federal government has undertaken to fulfill this commitment have been vague statements of goals and public information provision. Specifically, Industry Canada has published the *Sustainable Development Strategy 2006-2009*, setting out three broad goals to be introduced during the next three years: namely, "increased

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[156] Technology Partnerships Canada. Date of Access: 26 December 2006. http://tpc-ptc.ic.gc.ca/epic/internet/intpc-ptc.nsf/en/Home.

[157] Minister Rona Ambrose's Announcement Concerning *Canada's Clean Air Act*, Parliament Foyer (Ottawa), 19 October 2006. Date of Access: 27 December 2006. http://www.ec.gc.ca/minister/speeches/2006/061019_s_e.htm.

[158] Minister Rona Ambrose's Address to the United Nations Climate Change Conference (Nairobi, Kenya), 15 November 2006. Date of Access: 26 December 2006. http://www.ec.gc.ca/minister/speeches/2006/061115_s_e.htm.

[159] Minister Rona Ambrose's Announcement Concerning *Canada's Clean Air Act*, Parliament Foyer (Ottawa), 19 October 2006. Date of Access: 27 December 2006. http://www.ec.gc.ca/minister/speeches/2006/061019_s_e.htm.

[160] Baird has declared clean-air act dead, critics say, Globe and Mail, (Toronto), 24 April 2007. Date of Access: 26 April 2007. http://www.theglobeandmail.com/servlet/story/RTGAM.20070424.wxgreen24/BNStory/National/home/.

[161] Canada's New Government Launches ecoEnergy Technology Initiative, Natural Resources Canada Newsroom. 17 January 2007. Date of Access: 26 April 2007. http://www.nrcan.gc.ca/media/newsreleases/2007/200701_e.htm.

[162] ecoEnergy Technology Initiative - Frequently Asked Questions, Government of Canada. Date of Access: 26 April 2007. http://www.ecoaction.gc.ca/ecoenergy-ecoenergie/faq-1-eng.cfm.

development, commercialization, adoption and diffusion of environmental, energy and bio-based technologies," "increased use by firms, industries and institutions of sustainability and corporate social responsibility practices," and "increased implementation within Industry Canada of sustainable operations and practices, and integration of sustainable development principles into planning, performance measurement and evaluation frameworks."[163]

While these goals might facilitate the development of innovative technologies which would both improve the efficiency and environmental sustainability of hydrocarbon production and use, the document, beyond the rhetoric of sustainable development, neither enforces nor implements quantifiable standards.[164] In terms of information provision, Industry Canada contains links to several websites about environmental impact reduction.[165] However, as already noted, these measures are solely concerned with information provision or goal-setting; no concrete action has been taken to implement or actualize the commitment.

Although the present government has continued to support pre-existing programs and stated their commitment to establishing new initiatives to facilitate the development of innovative technologies that would improve the efficiency and environmental sustainability of hydrocarbon production and use, at this point in time, little substantial action has been undertaken. As such, the government had received a -1 score for compliance.

Author: Jessica Prince

[163] Sustainable Development Strategy 2006-09, Industry Canada. Date of Access: 26 December 2006. http://www.strategis.gc.ca/sd.

164 Similarly, on the Prime Minister's official website, "environmental protection" is cited as one of four pillars of government strategy for the fall and winter of 2006-2007. It states that the government plans to "take bold, practical measures to improve our air quality through a new Clean Air Act as well as stricter environmental standards and proper enforcement," however, this is only a goal and no actual action has been taken in this regard. See: Prime Minister of Canada: Priorities website. Date of Access: 26 December 2006. http://www.pm.gc.ca/eng/feature.asp?featureId=5.

[165] For example, Canadian Environmental Solutions is a free directory for providers of environmental goods and services and their clients, while Canada's Clean Energy Technologies Portal details Canadian climate change mitigation expertise and relevant domestic events and initiatives. Canadian Environmental Solutions. Date of Access: 26 December 2006. http://strategis.ic.gc.ca/epic/internet/inces-sec.nsf/en/Home; and Canada's Clean Energy Technologies Portal. Date of Access: 26 December 2006. http://www.cleanenergy.gc.ca/index_e.asp -.

3. China

Background

As soon as the question of developing a global strategy to combat climate change is raised, all eyes turn to China – the world's most populous country and its second largest emitter of CO_2 (after the US, and ahead of the entire EU).[166] Over the next 25 years, the planet will suffer an "ecological catastrophe" if China's population were to adopt current US lifestyles: "Climate change," as Lester Brown of the Earth Policy Institute warned, "could spiral out of control."[167] As it stands right now, China is expected to surpass the US as the world's top energy producer[168] and the biggest emitter of greenhouse gases (GHG) by 2009, according to the International Energy Agency.[169]

As a developing nation, however, China is not tied to any quantitative restrictions on its GHG emissions under the Kyoto Protocol (2008-2012) and, as most of its developing partners in the Group of 77 (G-77), it is adamantly refusing to accept caps on its emissions – and its economic development.[170] In the absence of binding international commitments, any progress toward meeting the challenge of climate change in China will have to be *domestically*-driven. But the central government has not yet recognized the reality that, as the second larger polluter in the world, it must rethink its development strategy.[171]

Broadly speaking, there are three main obstacles to the Chinese government's ability, and its willingness, to move more forcefully in the area of environmental protection and climate change. The first is China's commitment to sustained economic growth and energy self-sufficiency. At current growth rates, China may overtake Germany to become the world's third-largest economy by 2008, tailing only Japan and the United States.[172] China's growth in recent years has been highly energy-intensive. After years of shortages, China has managed to attain a temporary balance in its electricity production and consumption in mid-2006 – but these gains are likely to be reversed if the booming economy overtakes the country's capacity to meet an ever-increasing demand.[173] China is already an energy powerhouse, which in 2005 was the world's sixth largest oil producer, the second largest

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[166] China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone, January 2005. Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en.

[167] E.g. At these rates, by 2031, China would use up 99m barrels of crude oil a day; worldwide daily production is currently 79m barrels. China would burn 2.8m tons of coal per year; the current annual global production is 2.5m tons. See Learning from China: Why the Western Economic Model Will Not Work for the World, Lester Brown, Eco-Economy Update, 9 March 2005; China: The Sky Darkens, Agnès Sinai, Le Monde Diplomatique, April 2006. Date of Access: 24 March 2007. http://mondediplo.com/2006/04/13chinapollution.

[168] According to the Bureau of Energy with China's National Development and Reform Commission (NDRC). See China Needs to Move Quickly on Energy Savings, Worldwatch Institute, November 21, 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4747.

[169] The IEA puts China's CO_2 emissions in 2009 at 5.8 billion tons. China's CO_2 emissions are projected to grow by 65% between 2000 and 2010. See, also, China preparing national plan for climate change, Chris Buckley, Reuters, 5 February 2007. Date of Access: 24 March 2007. http://today.reuters.co.uk/news/CrisesArticle.aspx?storyId=PEK279914&WTmodLoc=World-R5-Alertnet-3; China's Climate Change Performance Worsening, Worldwatch Institute, 23 November 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4748; China Needs to Move Quickly on Energy Savings, Worldwatch Institute, 21 November 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4747; China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone, January 2005 Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en.

[170] China's basic approach to international management of the climate problem, as with most other developing countries, is the principle of "common but differentiated responsibilities," whereby developing countries could continue emitting increased rates of GHG in pursuit of economic development. China: The Sky Darkens, Agnès Sinai, Le Monde Diplomatique, April 2006. Date of Access: 24 March 2007. http://mondediplo.com/2006/04/13chinapollution.

[171] China is still defending its position with the argument of economic development, i.e. that its per capita emissions are only one-seventh of the US figure. China: The Sky Darkens, Agnès Sinai, Le Monde Diplomatique, April 2006, Date of Access: 24 March 2007. http://mondediplo.com/2006/04/13chinapollution.

[172] China preparing national plan for climate change, Chris Buckley, Reuters, 5 February 2007. Date of Access: 24 March 2007.

[173] Hydropower: A Viable Solution for China's Energy Future?, Worldwatch Institute, 13 February 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4908.

electricity producer, and the largest hydropower producer; China also accounted for 37.4% of the global coal production.[174] Limited (and dwindling) supplies of hydrocarbons are driving China's search for energy alternatives – such as hydropower, nuclear power, wind, and solar energy – yet none of these sources is expected to become significant enough to meet energy demand.[175] Coal, China's top energy source (two-thirds of its total supply),[176] will therefore continue to dominate China's energy mix in the coming years.[177] However, this stands in the way of reaching the goal of energy-saving and environmental sustainability, as coal combustion releases nearly two times more CO_2 per unit of energy than natural gas.[178] In the absence of cleaner coal combustion technologies and carbon capture and storage (CCS) options, China's CO_2 emissions are poised to rise rapidly in the coming years. Technological innovation, modernization, and investment in China's industrial facilities are needed to increase both the efficiency and the environmental sustainability of its coal-processing sector.[179] The government's goal of reducing coal use is being counteracted by rapid growth in other polluting sectors, such as ground transportation.[180]

Another problem is that the environment in general is still not a significant factor in government planning and, even when considered, the resulting policy impact is limited.[181] For instance, hydropower could decrease China's reliance on fossil fuels, but its environmental and social impact (e.g. forced human displacement) makes it a controversial and not necessarily a sustainable choice.[182] The third, related, issue is internal governance. China's central Environmental Protection Administration (SEPA) has moved to implement a series of promising policies, but its enforcement authority is limited; moreover, local-level environmental agencies, which are more responsive to local officials, are inadequate "gatekeepers" of environmental protection.[183]

But there are also some encouraging signs. Chinese officials have issued a new policy on cutting energy consumption by 20% per unit of GDP (between 2006 and 2010), at an

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[174] China Needs to Move Quickly on Energy Savings, Worldwatch Institute, 21 November 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4747.

[175] Hydropower: A Viable Solution for China's Energy Future?, Worldwatch Institute, 13 February 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4908.

[176] China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone 2005/1. Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en.

[177] Hydropower: A Viable Solution for China's Energy Future?, Worldwatch Institute, 13 February 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4908.

[178] China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone 2005/1. Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en.

[179] For instance, better technology and management could have saved at least 70 million tons of coal in 2004, according to *Xinhua News* (NDRC: Energy-efficiency could save China 300 mln tons coal annually, Xinhua News, 4 August 2006. Date of Access: 24 March 2007. http://english.people.com.cn/200608/04/eng20060804_289773.html). See, also, China Needs to Move Quickly on Energy Savings, Worldwatch Institute, November 21, 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4747.

[180] E.g. booming car sales – with a per capita income only about one eighth that of the US and GDP growth of 8% in the coming years, energy demand is project to continue surging (China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone 2005/1. Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en).

[181] For instance, a recent agreement between China's forestry authority and one of its energy giants to develop biofuels plantations (an important step toward endorsing *non-fossil* energy sources) has caused serious concerns about the environmental damage (to forests, biodiversity, etc.). See Chinese Biofuels Expansion Threatens Ecological Disaster, WorldWatch Institute, 13 March 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4959); Hydropower: A Viable Solution for China's Energy Future?, Worldwatch Institute, 13 February 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4908.

[182] Hydropower: A Viable Solution for China's Energy Future?, Worldwatch Institute, 13 February 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4908.

[183] In early 2005, SEPA suspended many projects that failed to meet EIA requirements and expressed a desire for greater media and public pressure to assist in its efforts to attain stronger environmental protection. Hydropower: A Viable Solution for China's Energy Future?, Worldwatch Institute, 13 February 2007. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4908.

annual rate of 4%.[184] China also plans to increase the share of renewable energy in its total energy mix from the current 7% to 16% by 2020.[185] (Despite seeing the 20% energy-reduction goal as attainable and necessary in the long term, most Chinese policymakers are pessimistic about reaching their target for 2006-2007.)[186]

Our interim report had also registered optimism about Beijing's intention to release its first ever national strategy to combat climate change after more than two years of negotiations among a dozen government bodies, which would have reportedly set targets for cutting CO_2 (similar to what developed countries are obliged to do under Kyoto).[187] The plan would have signalled China's willingness to engage seriously with global efforts to combat global warming.[188] However, the national action plan on climate change was "delayed indefinitely" on 23 April 2007,[189] adding to the pervasive international pessimism about China's recalcitrant position on climate change. This topic was conspicuous by its absence in subsequent statements by Chinese Premier Wen Jiabao, who made no mention of possible emissions caps and was wary of tying himself to concrete commitments.[190] Instead, Beijing has used the argument about the industrialized world's historical responsibility for global warming to resist international pressure to modify its development trajectory.

This reported 'disinterest' China's leadership in emissions caps[191] runs counter the government's 'rising alarm' about the domestic impact of global warming.[192] China's first official National Communication on Climate Change to the UNFCCC (presented at COP 10 in 2004) described the 1990s as one of the warmest decades in China in the last century, warning that an unabated rise in global temperatures would lead to further shrinking of mountain glaciers, the submersion of the coastal parts of southern China, and a loss in agricultural yield.[193] In January 2006, the former chief of energy research in China's National Development and Reform Commission warned that climate change and environmental degradation have become a "major constraint" on the country's economic development.[194] It is estimated that various climate-related disasters (e.g. floods, droughts, and storms) are already costing at least 2% of China's potential GDP every year—a number which is projected to grow with worsening climate change.[195] The socioeconomic costs of global warming for China would be nothing short of disastrous, as the country is

[184] See China's Climate Change Performance Worsening, Worldwatch Institute, 23 November 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4748.
[185] To meet this goal, the NDRC signed agreements on energy saving in July 2006 with all provincial and municipal governments and 14 top state companies, setting out their individual responsibilities. The NDRC, with the National Bureau of Statistics (NBS) and the National Energy Office, will announce publicly the energy consumption per unit of GDP of all local administrative units starting in 2006. The central government has also launched various energy conservation projects (e.g. energy-saving light bulbs nationwide and energy-efficient buildings) See China Needs to Move Quickly on Energy Savings, Worldwatch Institute, November 21, 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4747.
[186] China Needs to Move Quickly on Energy Savings, Worldwatch Institute, November 21, 2006. Date of Access: 24 March 2007. http://www.worldwatch.org/node/4747.
[187] It is awaiting approval from the State Council. China preparing national plan for climate change, Chris Buckley, Reuters, 5 February 2007. Date of Access: 24 March 2007.
[188] China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone 2005/1. Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en.
[189] China delays climate change plan indefinitely, Richard McGregor, FT, April 23 2007. Date of Access: 31 May 2007. http://www.ft.com/cms/s/be763e8c-f1d6-11db-b5b6-000b5df10621.html.
[190] China's Wen hedges on climate change response, Emma Graham-Harrison and Chris Buckley, Reuters, 16 Mar 2007. Date of Access: 31 May 2007. http://www.alertnet.org/thenews/newsdesk/PEK138134.htm.
[191] China's Wen hedges on climate change response, Emma Graham-Harrison and Chris Buckley, Reuters, 16 Mar 2007. Date of Access: 31 May 2007. http://www.alertnet.org/thenews/newsdesk/PEK138134.htm.
[192] China Beyond 2012: China needs to become a leading partner in efforts to 'decarbonize development,' Maya Papineau, Cicerone 2005/1. Date of Access: 24 March 2007. http://www.cicero.uio.no/fulltext.asp?id=3484&lang=en.
[193] The submission by the People's Republic of China (2004) is available on the UNFCCC website.
[194] China preparing national plan for climate change, Chris Buckley, Reuters, 5 February 2007. Date of Access: 24 March 2007.
[195] China preparing national plan for climate change, Chris Buckley, Reuters, 5 February 2007. Date of Access: 24 March 2007.

already having to contend with decreased grain production and severe water shortages.[196] There is therefore reason to believe that a looming domestic crisis may prompt Beijing to take more meaningful measures in the coming months to tackle climate change.

For the current compliance period, however, China has scored in the 0 to -1 range on all of its St. Petersburg commitments. Despite issuing ambitious targets on reducing energy use, investing in renewables, and new vehicle emissions standards, the premium the Chinese leadership sets on economic growth has meant that any progress made in this area has been dwarfed by a spiralling energy demand and CO_2 emissions.

Author: Maria Banda

Clean & Efficient Energy in the Transport Sector: 0

China has taken some steps to comply with the St. Petersburg commitment to promote clean and efficient energy in the transport sector relating to personal vehicles. On 4 October 2006, China announced new motor vehicle emissions standards to cut automobile pollutants by 30% in 2007. These new standards will be equivalent to Euro III standards in the European Union (Euro IV Standards introduced on 1 January 2006).[197] On 11 November 2006, Beijing announced that 13,000 outdated taxis would be taken out of circulation and replaced with new models that meet Euro III standards.[198] On 7 December 2006, China announced revised gasoline standards to cut sulphur levels for lead-free gasoline to 150 parts per million to further meet Euro III norms by 2009.[199] Another key change was announced on 28 February 2007, when the Chinese government stated that it would impose a fuel tax before 2010.[200] By April 2007, China raised its consumption tax up to 20% on gas-guzzlers and cut the tax to 1% for cars with fuel-efficient engines. The Chinese government is currently studying a tax incentive for buyers of hybrid vehicles.[201] However, despite these measures, China has taken sufficient action in the area of biofuels and thus receives a score of 0.

On 18 April 2007, China issued draft regulations regarding the development of vehicles that run on alternative fuels and also on alternative propulsion systems. The central government then solicited expert opinions on how to speed up the development of alternative fuel vehicles. Furthermore, Beijing also said it would offer incentives to manufacturers, universities and research institutes, including interest-free loans, to support 'green-car' research.[202] On 20 April 2007, under pressure from the government to produce more fuel efficient cars, Chinese automakers unveiled a broad array of prototypes for fuel-cell, gasoline-electric hybrid, and electric battery cars at the Shanghai auto show.[5]

Second, China has also taken some steps to comply with the St. Petersburg commitment to introduce clean and efficient vehicles for large scale public transportation systems. Beijing

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[196] See the National Assessment Report on Climate Change by the Ministry of Science and Technology (MOST), the China Meteorological Administration (CMA) and the Chinese Academy of Sciences (CAS) See Global warming could wreak havoc in China, Sun Xiaohua, *China Daily*, 27 December 2006. Date of Access: 24 March 2007. http://www.chinadaily.com.cn/china/2006-12/27/content_768331.htm.

[197] China to Enforce New Motor Emission Standards in 2007. Chinese Government Website, (China), 8 October 2006. Date of Access: 31 December 2006. http://english.gov.cn/2006-10/08/content_407273.htm

[198] Beijing Scraps 13000 Outdated Taxis to Reduce Pollution, Eastday Online, (China), 12 November 2006. Date of Access: 31 December 2006 http://english.eastday.com/eastday/englishedition/nation/userobject1ai2500609.html

[199] China to Adopt New Unleaded Gasoline Sulfur Standard Report., Forbes Online, (USA), 7 December 2006. Date of Access: 31 December 2006. http://www.forbes.com/markets/feeds/afx/2006/12/07/afx3238479.html

[200] China to Impose Fuel Tax by 2010. ABC Money Website, (UK), 28 February 2007. Date of Access: 21 April 2007. http://www.abcmoney.co.uk/news/28200730786.htm.

[201] China's Automakers, with Beijing's Prodding, Show Alternative-Fuel Cars, The New York Times Online, (New York). 21 April 2007. Date of Access: 21 April 2007. http://www.nytimes.com/2007/04/21/automobiles/21cars.html?ref=business

[202] China Drafts New Green-Car Regs, Edmunds Website, (USA), 18 April 2007. Date of Access: 21 April 2007 http://www.edmunds.com/insideline/do/News/articleId=120476

successfully completed the Hydrogen Refuelling Station for fuel cell buses on 8 November 2006 as part of the Fuel Cell Bus Commercial Demonstration Project.[203] The project has three fuel cell buses in formal operation for public use. Additionally, 2,000 buses in Beijing were replaced by 2,760 clean gas-driven buses.[204] On 19 April 2007, China announced that the first hybrid-electric super-capacity bus was put into trial use in Shanghai. The vehicle travels 300 km on each charge and the cost of electricity used is one third to one fourth that of the cost of diesel or gas. Additionally, it produces no noise and no emissions. The Chinese government expects that over 10,000 hybrid-electric super-capacity buses across Beijing, Shanghai, Tianjin, Wuhan, and Qingdao will be in use by 2010.[205]

Although China pursued some clean energy initiatives within the transport sector, in the week of 22 December 2006 China published rules to prevent companies from "jumping on the [biofuel] bandwagon" that utilize grains to produce oils that mix with gasoline and diesel to reduce vehicle emissions.[206] This rule was enforced in order to decelerate the rate of decrease of arable land area available for food crops.[207] Consequently, on 26 April 2007, a study showed that the cost of food in China has risen by 6% partly as a result of diversion of corn to biofuels.[208] However, China continues to focus on increasing its renewable energy sources such as biofuels which can help improve not only China's energy structure but also its international reputation by showing its willingness to reduce global CO_2 emissions.[209]

In conclusion, China has made some effort to comply with the St Petersburg commitment within the personal vehicle segment. It has begun providing tax-incentives for its citizens to purchase fuel-efficient cars; studying additional tax-incentives for purchases of hybrid vehicles; as well as offering manufactures, universities, and research institutes such incentives as interest-free loans for green-car research. China has also expanded its development of clean and efficient buses for large scale public transportation from the city of Beijing and expects over 10,000 clean buses to be in use in major Chinese cities by 2010. China still has a difficult task of balancing its commitment to clean energy in the transport sector with its population's basic food requirements. China therefore receives a score of 0.

Author: Wayne Tu

Alternative and Renewable Energy: 0

China has taken additional steps towards complying with its commitment to adopt renewable sources of energy. The continued enforcement of its renewable energy law, political support for and approval of several large power generation projects, and subsidies and tax breaks for biofuels, are all promising steps toward adopting alternative energy technologies. However, lack of research funding in the renewables sector and unclear signals from the government on feed-in tariffs are hampering growth and investment. The

[203] Hydrogen Refuelling Station Operation Started on Nov. 8th, 2006, Demonstration Project For Fuel-Cell Bus Commercialization in China Website, (China), 8 November 2006. Date of Access: 21 February 2007 http://www.chinafcb.org/xwdt/html(e)/061228_01(e).htm

[204] First Electric Bus Trialed Shanghai, English People's Daily Online, (Beijing), 19, April 2007. Date of Access: 21 April 2007. http://english.people.com.cn/200704/19/eng20070419_368001.html

[205] First Electric Bus Trialed Shanghai, English People's Daily Online, (Beijing), 19, April 2007. Date of Access: 21 April 2007. http://english.people.com.cn/200704/19/eng20070419_368001.html

[206] China's Need for Crops May Curb Biofuel Plans, Digital Journal, (USA), 23 December 2006. Date of Access: 31 December 2006.

[207] China's Need for Crops May Curb Biofuel Plans, Digital Journal, (USA), 23 December 2006. Date of Access: 31 December 2006. http://www.digitaljournal.com/article/78609/China_s_need_for_crops_may_curb_biofuel_plans

[208] Unintended Consequences, International Herald Tribune Online, (UK), 23 April 2007. Date of Access: 25 April 2007. http://www.iht.com/articles/2007/04/23/opinion/edgolany.php

[209] Bumpy Road as China Drives Biofuels to Market. SperoNews (USA). 9 April 2007. Date of Access: 25 April 2007. http://www.speroforum.com/site/article.asp?idarticle=8903.

rate of development in the renewable energy sector as a whole must increase if the government is to achieve its stated goal of generating 16% of its energy from renewables by 2020, up from 7% currently.[210]

The renewable energy law, which came into effect on 1 January 2006, continues to attract investment in the renewable energy sector through pricing incentives. Wind power investment is booming, and capacity nearly doubled to 2.3 GW at the end of 2006.[211] The total capacity is likely to reach the 2010 target of 5 GW two years ahead of schedule, according to the secretary general of the China Association of Comprehensive Resource Utilization.[212] Growth in this sector has prompted Ernst and Young to list China as the third most attractive country for wind energy investment in the long-term,[213] up from sixth place a year ago.[214] As a result of the boom in demand, foreign and domestic investment has been soaring, with both Chinese and Danish firms investing in China-based manufacturing facilities capable of churning out 200-400 MW of turbines annually.[215] As imported turbines accounted for 77% of the Chinese market at the end of 2005,[216] this increase in local manufacturing should reduce the price of turbines, and hopefully spur further growth in the industry. China is currently aiming for 30 GW of installed capacity by 2020, which would represent 3% of the country's needs but is still well within the 250GW onshore and 750GW offshore potential,[217] and much less than what some experts believe could be achieved if obstacles such as grid weakness, expansion delays, and lack of regulatory transparency and incentives can be overcome.[218] The primary obstacle to more widespread adoption is the uncertainty surrounding the feed-in tariff for wind power generation, which is based on an auction system and has led to price volatility and discouraged domestic and foreign investment in new developments.[219] Changing to a fixed-tariff could further accelerate growth and investment in this sector.

Hydro-power generating capacity rose 9.5% year-on-year, from 117 GW at the end of 2005 to 128 GW by the end of 2006.[220] Planning and construction in the Jinsha portion of the Yangtze, upstream from the almost completed Three Gorges Project,[221] has been particularly active. Work on the Xiluodu dam (12.6 GW) continues following its initiation last year, while work on the Xiangjiaba dam (6 GW) began this year. A feasibility study has also been completed for the 12 GW Baihetan, which will begin construction in 2009 and be

[210] Massive Capital for Renewable Power, China Daily, (Beijing), 26 October 2006. Date of Access: 2 January 2007. http://www.china.org.cn/english/BAT/186080.htm.
[211] Shanghai to Build Wind Power Plant, China Daily, (Beijing), 27 February 2007. Date of Access: 19 April 2007. http://www.chinadaily.com.cn/bizchina/2007-02/07/content_803827.htm
[212] Installed Capacity of Wind Power Expected to Top 5M kw Next Year, Xinhua, (Beijing), 31 March 2007. Date of Access: 21 April 2007.
http://www.chinadaily.com.cn/bizchina/2007-03/31/content_840923.htm
[213] India, China Rise Up Renewables Ranks, Carbonpositive, (London), 11 May 2007. Date of Access: 15 May 2007. http://www.carbonpositive.net/viewarticle.aspx?articleID=694
[214] Renewable Energy Country Attractiveness Indices, Ernst & Young, (London), 31 October 2006. Date of Access: 21 May 2007.
http://www.ey.com/Global/download.nsf/International/Industry_Energy_Country_Attractiveness_Indices_-_Q3-2006/$file/EY_CountryAttractivenessIndices_Q32006.pdf
[215] China Renewable Energy and Sustainable Development Report, Renewable Energy Access, (Peterborough), 20 April 2007. Date of Access: 20 April 2007.
http://www.renewableenergyaccess.com/rea/news/infocus/story?id=48204
[216] Wind Blows Strong for Power Generation, China Daily Business Weekly, (Beijing), 7 March 2007. Date of Access: 19 April 2007.
http://www.chinadaily.com.cn/bw/2007-03/07/content_822014.htm
[217] Wind Blows Strong for Power Generation, China Daily Business Weekly, (Beijing), 7 March 2007. Date of Access: 19 April 2007. http://www.chinadaily.com.cn/bw/2007-03/07/content_822014.htm.
[218] Vestas Says China to be World's Top Wind Power Market in 3-5 Years, AFX News Limited, (Beijing), 18 May 2007. Date of Access: 15 May 2007. http://www.forbes.com/business/feeds/afx/2007/05/18/afx3735016.html.
[219] Policy Takes the Wind out of Investors' Sails, China Daily, (Beijing), 27 December 2006. Date of Access: 2 January 2007. http://www.chinadaily.com.cn/bizchina/2006-12/27/content_768452.htm.
[220] China's Power Generating Capacity Tops 622 mln Kilowatts, Xinhua, (Beijing), 22 January 2007. Date of Access: 22 April 2007. http://english.people.com.cn/200701/23/eng20070123_343745.html
[221] Work on Three Gorges Dam 90% complete, Xinhua, (Beijing), 24 March 2007. Date of Access: 20 April 2007. http://www.chinadaily.com.cn/china/2007-03/24/content_851134.htm.

complete by 2020. In total, the Three Gorges Dam Development Corporation has plans for 22 more hydropower stations on the Yangtze River.[222] China Power Investment, one of mainland China's five state-owned power groups, received approval in December 2006 to build a 7.39 billion yuan hydropower project in the Guangxi region, as part of a larger goal to double the company's hydropower generation capacity by 2010.[223] The Ministry of Water Resources has stated that it wants to tap 250 GW (or 46% of China's 540 GW hydropower potential), by 2020.[224]

On 21 November 2006 China announced the construction of a 100 MW photovoltaic (PV) plant, the world's largest, in Dunhuang.[225] This announcement has been met with scepticism by some experts, who claim that as of 11 January 2007 there was little evidence of any contracts or building preparations for such a large scale project.[226] Regardless of whether this planned project comes to fruition, 100 MW is only 0.1% of China's 100 GW annual growth in electricity production, and in general solar electricity production has not seen enough development to be significant on the national scale (only 300 MW installed by the end of October 2006).[227] The May 2007 China Renewable Energy and Sustainable Development Report from China Strategies, LLC, lists several reasons for this, including the lack of a comprehensive national PV plan, lack of facilities and funding for PV research institutes, and weak educational and training opportunities for PV scientists and technologists in China.[228] One positive development in this sector has been the substantial investment in polycrystalline silicon production, a global shortage of which has been constraining the worldwide growth of the solar photovoltaic market of late. The State Development and Reform Commission approved seven projects in this area, and China is on track to produce 60,000 tons of polycrystalline silicon per year, which would exceed total production capacity globally.[229] In addition to the PV activity, the Chinese government is encouraging new buildings and major users of heated water (e.g. hospitals and swimming pools) to install solar water heaters, although they have yet to formulate a national policy requiring their installation.[230]

On 29 November 2006, the government agreed to a package of measures aimed at boosting the bio-energy sector, which includes subsidies to suppliers (to cover losses during periods of low oil prices), raw materials developers, and technologically-innovative model projects.[231] Apart from an obvious economic rationale, it is not at all clear at this stage how effective this subsidy policy will be in minimizing the environmental impact of energy production, nor whether the government has considered this at all in its plans. In January the State Forestry Administration (SFA) signed an agreement with PetroChina to develop

[222] Hydropower Stations Dot Yangtze River, China Daily, (Beijing), 26 November 2006. Date of Access: 19 April 2007. http://www.chinadaily.com.cn/china/2006-11/26/content_743002.htm
[223] China Power to build 7billion yuan hydro project, South China Morning Post, (Hong Kong), 15 December 2006. Date of Access: 19 February 2007. http://www.sp-china.com/news/powernews/200612150002.htm
[224] Hydropower Stations Dot Yangtze River, China Daily, (Beijing), 26 November 2006. Date of Access: 19 April 2007. http://www.chinadaily.com.cn/china/2006-11/26/content_743002.htm
[225] China Wants Largest Solar Project, Red Herring, (Belmont), 21 November 2006. Date of access: 23 February 2007. http://www.redherring.com/Article.aspx?a=19864&hed=China+Wants+Largest+Solar+Project
[226] China to Build One of the Largest Solar Power Plants in the World, Energo Solar, (Budapest), 11 January 2007. Date of Access: 2 February 2007. http://energosolar.com/news/solar_news.php?article=2&study=China_to_build_one_of_the_largest_solar_power_plants_in_the_world
[227] Country Sets Renewable Energy Target, China Daily, (Beijing), 27 February 2007. Date of Access: 19 April 2007.http://www.chinadaily.com.cn/bizchina/2007-02/27/content_814883.htm
[228] China Renewable Energy and Sustainable Development Report: May 2007, Renewable Energy Access, (Peterborough), 18 May 2007. Date of Access: 21 May 2007. http://www.renewableenergyaccess.com/assets/documents/2007/China-Strategies-May-2007.pdf
[229] China Renewable Energy and Sustainable Development Report: April 2007, Renewable Energy Access, (Peterborough), 20 April 2007. Date of Access: 20 April 2007. http://www.renewableenergyaccess.com/download/2007-04-China-RE-Report.pdf
[230] China to Push Use of Solar Hot Water Heaters, World Watch Institute, (Washington), 8 May 2007. Date of Access: 15 May 2007. http://www.worldwatch.org/node/5060
[231] China to Provide Subsidies to Bioenergy Sector, Xinghua News Agency, (Beijing), 30 November 2006. Date of Access: 19 December 2006. http://news.xinhuanet.com/english/2006-11/30/content_5414815.htm.

biofuel crop plantations in the Yunnan and Sichuan provinces, each with a biofuels production capacity of 10,000-30,000 tons.[232] An SFA spokesperson stated to the press on 7 February 2007 that the country was ready to devote more than 13 million hectares of forestland to biofuel production. These new plantations will be funded by PetroChina, and although both parties have stated that these efforts are being undertaken in the interest of national sustainability, there is suspicion that both these actors are more interested in fast and lucrative returns.[233] Apart from the problem of further deforestation (a significant contributor to global warming), it should also be noted that the International Monetary Fund (IMF) has expressed concern, in the recently published *World Economic Outlook*, that competition between biofuels and food consumption will continue to lead to increased crop prices worldwide.[234]

While public and private investment in renewable energy has been improving, thanks in part to the Renewable Energy Law, and the fact that China received three-fifths of the US$4.8 billion of CDM funding for renewables projects in developing countries last year,[235] there has been little if any investment in the past year geared towards fostering innovation in the renewable energy sector. China must push forward more urgently in all areas of renewable energy research and development if it is to achieve its long-term goals in this area.

Overall, China has certainly made progress towards the adoption of more renewable sources of energy. However, in order to reach its stated goal of generating 16% of its energy from renewable sources by 2020, the rate of installation of wind, solar, hydro, and biofuel generators must be increased. According to the State Electric Grid Corporation, electricity consumption will grow at an annual rate of 10.5% until 2010, and the China Electricity Council stated that China's power generating capacity rose 20.3% in 2006 to reach 622 GW by the end of last year.[236] Much of this increase was met by a 23.7% increase in generation capacity of thermal power plants (coal, oil, and natural gas). Hydropower capacity was increased by only 9.5%, and while production from both wind and solar nearly doubled, the small size of these industries means that their overall contribution to energy production remains less than 1% of the country's total. If China is serious about making these targets for its overall energy production mix, it must first make sure that 16% or more of any added capacity comes from renewables. China therefore receives a compliance score of 0 in this area.

Author: Aaron Barkhouse

UNFCCC/Kyoto: 0

Although China has taken some steps towards meeting its commitments on climate change, its success has been limited. The country has devoted a great deal of rhetoric to the issue, yet practical measures have generally been ineffectual. As a non-Annex 1 signatory to the Kyoto Protocol, China is not bound by any greenhouse gas emissions targets set under the Protocol.[237] However, commitments to both the Asia-Pacific Partnership on Clean

[232] China Biofuels Expansion Threatens Ecological Disaster, The Worldwatch Institute, (Washington), 13 March 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4959
[233] China Biofuels Expansion Threatens Ecological Disaster, The Worldwatch Institute, (Washington), 13 March 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4959
[234] China Renewable Energy and Sustainable Development Report: May 2007, Renewable Energy Access, (Peterborough), 18 May 2007. Date of Access: 21 May 2007. http://www.renewableenergyaccess.com/assets/documents/2007/China-Strategies-May-2007.pdf
[235] China and India Set to Top Renewables Table, edie.net, (Surrey), 1 May 2007. Date of Access: 15 May 2007. http://www.edie.net/news/news_story.asp?id=13004&channel=0
[236] China's Power Generating Capacity Tops 622 mln Kilowatts, Xinhua, (Beijing), 22 January 2007. Date of Access: 22 April 2007. http://english.people.com.cn/200701/23/eng20070123_343745.html.
[237] China Energy Data, Statistics and Analysis, Energy Information Agency, (US), August 2006. Date of Access: 4 December 2007. http://www.eia.doe.gov/emeu/cabs/China/Environment.html.

Development and Climate and the UNFCCC do place certain obligations on the country, notably to develop national programs to slow climate change.[238]

A number of policy initiatives have been introduced over the past year, although initial evidence suggests that few have been successful. In a joint statement with India, Japan, the Republic of Korea, and the United States, the Chinese energy Minister reaffirmed the country's commitment to improving its energy efficiency and diversifying its energy sources.[239] The recent speech by Premier Wen Jiabao advocating laws which would constrain the energy-intensive industry is evidence of the commitment of China's political elite to taking action to combat emissions.[240] Moreover, China has adopted very ambitious domestic goals to reduce by 20% energy consumption per unit of GDP from 2006 to 2010.[241]

Unfortunately, recent evidence suggests these targets have not been met; indeed, energy per unit of GDP actually rose by 0.8% during 2006.[242] Given that China has also experienced double-digit GDP growth over the past year,[243] this can certainly not be considered a successful "national program to slow climate change," as required under the UNFCCC.[244] Indeed, high energy-consuming industries have grown particularly rapidly in recent months, with steel and aluminium production both expanding at record rates.[245]

China has taken some action to restrict greenhouse gas emissions. Under a new scheme launched on 7 January 2007, the People's Bank of China is working with the State Environmental Protection Administration to implement a nationwide credit system that would factor environmental information into loan applications.[246] No independent assessments of the program's effectiveness or environmental impact are yet available.

Furthermore, China has experienced success in non-emissions related areas. Parties to the UNFCCC are also required to take climate change into account in such areas as agriculture, and China has been one of the few countries to report an increase in its forest cover over the past two years,[247] as required by UNFCCC Article 4(1b). Moreover, recent technological advances have increased the likelihood that the country's large rapeseed stocks could be processed into biofuel.[248]

Yet China's record on greenhouse gas emissions remains poor. The country is still investing in new technology with twice the emission intensity of new investment in the United States.[249] A new deal between Russian and Chinese firms in October 2006 will see US$10

[238] Essential Background, the United Nations Framework Convention on Climate Change (UNFCCC). Date of Access: 20 December 2007. http://unfccc.int/essential_background/feeling_the_heat/items/2914.php.
[239] Joint Statement of Five Country Energy Ministers' Meeting, China Daily, (Xinhua), 17 December 2006. Date of Access: 10 January 2007 http://www.chinadaily.com.cn/china/2006-12/17/content_760792.htm.
[240] Wen Calls for Reduction in Pollution, China Daily, (Beijing), 8 May 2007. Date of Access: 9 May 2007. http://www.chinadaily.com.cn/china/2007-05/08/content_867261.htm
[241] What Stern said about China, China Dialogue, (London), 13 November 2006. Date of Access: 9 January 2007. http://www.chinadialogue.net/article/show/single/en/537-What-Stern-said-about-China-part-one-.
[242] Green Goal Missed by Big Margin, China Daily, (Beijing), 10 January 2007. Date of Access: 10 January 2007. http://www.chinadaily.com.cn/china/2007-01/10/content_779106.htm.
[243] Country Briefings: China, Economist Intelligence Unit, The Economist, 10 January 2007. Date of Access: 11 January 2007. http://www.economist.com/countries/China/profile.cfm?folder=Profile%2DEconomic%20Data.
[244] Essential Background, the United Nations Framework Convention on Climate Change (UNFCCC). Date of Access: 20 December 2007. http://unfccc.int/essential_background/feeling_the_heat/items/2914.php.
[245] High energy-consuming industries overheat, China Daily, (Beijing), 5 May 2007. Date of access: 9 May 2007. http://www.chinadaily.com.cn/bizchina/2007-05/05/content_865733.htm
[246] PBOC Launches Green Scheme, China Daily, (Beijing), 7 January 2007. Date of Access: 8 January 2007. http://www.chinadaily.com.cn/bizchina/2007-01/10/content_779252.htm.
[247] China sees Tackling Climate Change as Urgent – News Conference by Nicolas Stern, as reported by Planet Ark 4 December 2006. Date of Access: 10 January, 2007 http://www.planetark.com/dailynewsstory.cfm/newsid/39310/story.htm.
[248] Oil-thirsty China turns to farmland for diesel oil, China, People's Dailly Online (Beijing), 28 March 2007. Date of Access: 9 May 2007. http://english.people.com.cn/200703/28/eng20070328_361851.html.
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billion invested in building coal-fired power plants in northeast China,[250] while on average one coal-fired power station opens in China every four days.[251] The resultant increase in CO_2 emissions from these developments is anticipated to make China's record even worse and undercut any positive measures in other areas. Although the opening of a carbon trading market in Beijing may allow developed countries to contribute to carbon-offsetting projects in China,[252] this is more indicative of the scale of the existing problem than any great commitment to reform.

Finally, despite recent efforts,[253] China still lacks a comprehensive inventory of its GHG emissions, as expected under the UNFCCC Article 4(2b).[254] This lack of information and transparency has been the cause of confusing messages on the country's progress. The relationship between the administrative centre in Beijing and China's periphery has further compounded this problem, because the performance of local governments (which factors into the country's overall emissions) is being gauged quantitatively by output values and economic growth rates – to the neglect of energy consumption and the environment. This is particularly damaging from the environmental standpoint since resource prices are often distorted due to a central (state) pricing system still in operation in China (relying on the inertia of the old planned economy).[255] Although new measures suggest a desire both to encourage local governments to act[256] and to remove tax breaks and subsidies offered to energy-intensive industries as part of the export-promotion push of the 1990s,[257] it is too soon to comment on the effectiveness of these reforms.

In conclusion, China has made considerable legislative efforts to meet its St. Petersburg commitments under the UNFCCC. Although these steps have met with limited success so far, they are consistent with the UNFCCC requirement that countries limit emissions in ways that will not hinder their economic progress.[258] However, in the case of China, the central government's directives often obscure a reality of rising energy intensity and emissions, as evidence suggests. Moreover, without an accurate inventory of China's GHG emissions, it is unlikely that much progress towards meeting its obligations will be made. Thus, the government's partial attempts to meet its obligations under Kyoto as a non-Annex 1 country warrant a score of 0.

Author: Steve Burn-Murdoch

Sustainable Use of Energy: 0

Over the past year, China has aimed to take significant steps to make its use of energy more environmentally sustainable and to encourage the use of clean energy technologies for tackling climate change. These commitments were reiterated in a meeting between the energy ministers of China, India, Japan, South Korea, and the United States in Beijing on 16

[250] Russia's '$10bn China power deal', BBC News, (London), 12 October 2006. Date of Access: 29 December 2006. http://news.bbc.co.uk/1/hi/business/6043388.stm.
[251] Analysis: China's Premier Wen in the UK, BBC News, (London), 13 September 2006. Date of Access: 29 December 2006. http://news.bbc.co.uk/1/hi/world/asia-pacific/5343486.stm.
[252] China Becomes one of Kyoto's Largest Carbon Provider (sic), China View (Beijing), 17 March 2007. Date of Access: May 9 2007. http://news.xinhuanet.com/english/2007-03/17/content_5858357.htm.
[253] China in Pollution Drive, China Digital Times, 23 October 2006. Date of Access: 11 January, 2007. http://chinadigitaltimes.net/2006/10/china_in_pollution_drive_andrew_yeh.php.
[254] Essential Background, the United Nations Framework Convention on Climate Change (UNFCCC). Date of Access: 20 December 2007. http://unfccc.int/essential_background/feeling_the_heat/items/2914.php.
[255] Big Lesson Learnt, China Daily, (Beijing), 5 June 2006. Date of Access 10 January 2007. http://www.chinadaily.com.cn/bw/2006-06/05/content_608221.htm.
[256] New Program will take Climate Fight to Provinces, China Daily (Beijing), 18 April 2007. Date of Access 9 May 2007. http://www.chinadaily.com.cn/cndy/2007-04/18/content_852872.htm
[257] Wen calls for more efforts to cut pollution, China News, (Beijing), 7 May 2007. Date of Access: 9 May 2007. http://www.chinanews.cn//news/2007-05-08/35640.html
[258] Essential Background, the United Nations Framework Convention on Climate Change (UNFCCC). Date of Access: 20 December 2007. http://unfccc.int/essential_background/feeling_the_heat/items/2914.php.

December 2006 to discuss ways to promote energy security, stability, and sustainability.[259] However, despite all of the governments' stated intentions to increase sustainability by diversifying their energy mix, to expand the use of clean and alternative energy (e.g. nuclear energy, clean coal, and renewables), and to improve energy conservation and sustainability, China fell short of meeting the commitments it made at the St. Petersburg Summit in July 2006.

In early February 2007, a joint carbon finance project was launched by the Chinese government and the UN Development Programme (UNDP) that would utilize carbon trades in China's less-developed regions to help reach the UN Millennium Development Goals, including poverty alleviation and environmental sustainability. The goal of the three-year, US$1.7 million project is to channel international 'green' investment into local sustainable development, especially renewable energy use – and set up technical service centres in 12 selected provinces, including Hubei, Inner Mongolia, Jilin, Qinghai, and Xinjiang.[260] It is possible that this project will make some headway in supporting sustainable development in rural areas, but more efforts in this area are needed in order to make a major impact.

More recently, the Chinese government has taken three major steps to increase nationwide energy savings: the move to shut down smaller coal-fired power plants, to target the top energy consumers in the power and steel industries, and to address the contribution of manufacturing to the national economy. At the opening of the National People's Congress on 5 March 2007, the Chinese government vowed to stick to its goal of reducing energy consumption per unit of GDP by 20% by 2010, despite failing to meet the annual target in 2006.[261] In 2007, smaller coal-fired power plants with a total capacity representing 10 million kilowatts have been asked to shut down.[262] The iron and steel industry, known for its wasteful use of energy, is required to cut its low-efficient production of iron and steel (by 30 million tons and 35 million tons respectively) this year; the goal for 2010 is a reduction of up to 100 million tons and 55 million tons of each material.[263] Beijing's fundamental strategy for achieving its ambitious goals on energy efficiency is to adjust the country's domestic economic structure. The National Development and Reform Commission estimate that switching 1% of the GDP from manufacturing to the service industry will save 1% of energy per unit of GDP.[264]

One area in which the Chinese government has great potential to induce change is in speeding up the introduction of legislation to reduce overall energy use. Approximately one quarter of the country's greenhouse gas emissions rise from buildings, and China overall spends two to three times as much energy per unit of building area as other industrialized countries.[265] While 95% of the existing buildings are energy-intensive, this problem is intensified by the greater than 80% of new buildings built every year that also fail to meet energy standards.[266] China's government stands firm on its commitment to adopt energy-efficient technologies as a means to ease the energy crisis, but has yet to firmly institute legislation to encourage developers to build green buildings by compensating for the higher

[259] Joint statement of five-country energy ministers' meeting, China Daily (Beijing), 17 December 2006. Date of Access: 2 January 2006
http://www.chinadaily.com.cn/china/2006-12/17/content_760792.htm
[260] China Boosts Carbon Finance, Addressing Poverty and Climate Change. The Worldwatch Institute. (Washington, D.C.), 15 February 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4922
[261] China Focusing on Long-term Achievement of Energy-Efficiency Goal. The Worldwatch Institute. (Washington, D.C.), 8 March 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4950
[262] China Focusing on Long-term Achievement of Energy-Efficiency Goal. The Worldwatch Institute. (Washington, D.C.), 8 March 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4950
[263] China Focusing on Long-term Achievement of Energy-Efficiency Goal. The Worldwatch Institute. (Washington, D.C.), 8 March 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4950
[264] China Focusing on Long-term Achievement of Energy-Efficiency Goal. The Worldwatch Institute. (Washington, D.C.), 8 March 2007. Date of Access: 15 April 2007. http://www.worldwatch.org/node/4950
[265] Buildings are China's Energy "Black Holes", The Worldwatch Institute. (Washington, DC), 19April 19, 2007. Date of Access: 21 May 2007. http://www.worldwatch.org/node/5036
[266] Buildings are China's Energy "Black Holes", The Worldwatch Institute. (Washington, DC), 19 April 2007. Date of Access: 21 May 2007. http://www.worldwatch.org/node/5036

construction cost of energy-efficient structures (approximately US$13-19 per square meter higher than standard buildings).[267]

Similarly, while China produces nearly 80% of the world's supply of compact fluorescent lamps (CFLs), a more efficient alternative to standard incandescent light bulbs, the lack of government regulations and initiative in China itself to encourage consumers to purchase more energy efficient lighting, has stifled progress in this area.[268] If 12 million Chinese residents each replaced a 60-watt incandescent light bulb with an equivalent 10-watt CFL, the resultant energy saving per year would be equivalent to that generated by the entire Three Gorge Dam hydropower project[269] – suggesting that the government would do well to consider a change in strategy in aiming to achieve a sustainable level of energy consumption.

From a legislative perspective, China released several plans in late 2006 that promise a more sustainable future. The Ministry of Construction draft energy-saving regulation had passed through first-round evaluation by the State Council in November 2006 and is currently pending final approval.[270] The new initiative aims to reduce building and architectural energy consumption by 50% in less-developed areas and by 65% in four economically developed municipalities (Beijing, Tianjin, Shanghai, and Chongquing) by 2010, as well as to address the overall problem of energy inefficiency (i.e. the fact that China's per unit energy consumption in both residential and industrial buildings far exceeds that of its foreign counterparts).[271] Firmly legislating such substantial decreases in energy consumption by a combination of energy-saving rules and guidance for new buildings, the renovation of existing buildings, energy efficiency administration and evaluation, and a penalty system, will represent a significant step towards China's 11th Five-Year Plan (2006-2010), which aims for a 20% reduction in energy consumption per unit of gross domestic product by 2010.[272]

While these efforts indicate some slow progress, there is a lingering conflict between China's goals of preserving its natural environment and reduce its resource depletion on the one hand and its focus on rapid economic growth and urbanization on the other. Further efforts have been made in 2007 to develop more sustainable energy sources, but there is much room for improvement, particularly in introducing consumer incentives for energy conservation. Greater innovation and effort is required in order to meet China's energy goals for the next five years, and the Chinese government has not achieved full compliance with its St. Petersburg commitments in the area of sustainable energy use.

Author: Arani Kajenthira

Innovative Energy Technologies in Hydrocarbon Production and Use: -1

China has not complied with its commitment to incorporate innovative technologies in hydrocarbon production and use in order to diversify its energy mix. China relies on coal as much as ever; the first quarter of 2007 was the first time China's coal imports exceeded its exports, and it is believed that 2007 will be the first year in which no coal will be exported.[273] Oil consumption has followed a similar trend, with exports down by 83.2% in

[267] China Pushing for Energy-Efficient Buildings. The Worldwatch Institute. (Washington, DC), 25 January 2007. Date of Access: 21 May 2007. http://www.worldwatch.org/node/4874
[268] Demand for Chinese Energy-Efficient Light Bulbs Grows Overseas, Remains Dim at Home. The Worldwatch Institute. (Washington, DC), 22 March 2007. Date of Access: 21 May 2007. http://www.worldwatch.org/node/4972
[269] Demand for Chinese Energy-Efficient Light Bulbs Grows Overseas, Remains Dim at Home. The Worldwatch Institute. (Washington, DC), 22 March 2007. Date of Access: 21 May 2007. http://www.worldwatch.org/node/4972
[270] Energy-Saving Spotlight Falls on Building Sector, China Internet Information Centre. 8 November 2006. Date of Access: 4 January 2007. http://www.china.org.cn/english/environment/188275.htm
[271] Energy-Saving Spotlight Falls on Building Sector, China Internet Information Centre. 8 November 2006. Date of Access: 4 January 2007. http://www.china.org.cn/english/environment/188275.htm
[272] Energy-Saving Spotlight Falls on Building Sector, China Internet Information Centre. 8 November 2006. Date of Access: 4 January 2007. http://www.china.org.cn/english/environment/188275.htm
[273] Coal Imports Hit New High, China Daily, (Beijing), 19 April 2007. Date of Access: 24 April 2007.

2006 and imports up by 8.8% in the same period,[274] despite Petrochina's March 2007 discovery of a 2.2 billion barrel reserve.[275] As a result, China has dropped the import levies on oil and coal, and has instead added a 5% levy to their export,[276] further cementing the role of coal and oil at the heart of China's energy industry. According to the Chief Economist at the International Energy Agency (IEA), 90% of the 800 GW of new electricity-generating capacity to be installed in China over the next eight years will come from coal-fired power plants.[277] In addition to the absence of diversification, China's lack of determination to shut down small, inefficient coal-fired power plants accounts largely for Beijing's failure to meet its targets on the per-capita energy use and emissions reduction for 2006.[278] The (state-owned) Shenhua Corporation's coal liquification project will go into operation in 2008, producing one million tons of oil per year, and will produce 3.2 million tons per year by 2009.[279] All of this comes at a time when China is likely, within this year, to surpass the US as the world's number one emitter of CO_2.[280] China therefore seems more concerned with protecting its energy security than with diversifying its energy mix.

There have been some small but positive moves away from coal and oil. Coal bed methane (CBM) production increased to 200 million cubic meters (m^3) in 2006, and is expected to more than double to 450 million m^3 in 2007.[281] This still lags somewhat behind the National Development and Reform Commission (NDRC) goal of 10 billion m^3 of production by 2010. In order to spur development in this area, as of 1 January 2007 CBM production is now exempt from the value-added tax, and no corporate tax will be levied on incremental output arising from the use of innovative technologies from R&D operations.[282] There are also plans to increase natural gas production using new technologies and increased offshore exploration,[283] but no specifics are available at this time.

The Shenhua Corporation (a state-owned company) is refining its direct liquefaction procedures to turn coal into synthetic oil at a coal-to-fuels plant in Northern China. It anticipates creating 20,000 barrels of synthetic oil per day by the end of 2007.[284] While this station was designed using advanced technology to enhance efficiency and reduce waste, it is unlikely to reduce the overall environmental impact of coal use and is geared more towards increasing energy security than efficient resource use. The process of transforming coal into gas and/or oil is energy and water intensive. If the energy requirements of making synthetic fuel are taken into account, synthetic oil and gas generate more emissions than their conventional counterparts. The incredible amount of water demanded by the process (at least 10 tons of water per ton of synthetic oil), combined with the sheer scale of

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http://www.chinadaily.com.cn/bizchina/2007-04/19/content_854131.htm

[274] Oil Exports Nosedive; Imports Up, China Daily, (Beijing), 25 April 2007. Date of Access: 25 April 2007. http://www.chinadaily.com.cn/china/2007-04/25/content_859094.htm

[275] Oil Exports Nosedive; Imports Up, China Daily, (Beijing), 25 April 2007. Date of Access: 25 April 2007. http://www.chinadaily.com.cn/china/2007-04/25/content_859094.htm

[276] Oil Exports Nosedive; Imports Up, China Daily, (Beijing), 25 April 2007. Date of Access: 25 April 2007. http://www.chinadaily.com.cn/china/2007-04/25/content_859094.htm
Coal Imports Hit New High, China Daily, (Beijing), 19 April 2007. Date of Access: 24 April 2007. http://www.chinadaily.com.cn/bizchina/2007-04/19/content_854131.htm

[277] The Great Pall of China, The Independent, (London), 25 April 2007. Date of Access: 25 April 2007. http://news.independent.co.uk/environment/climate_change/article2483839.ece

[278] China Renewable Energy and Sustainable Development Report: April 2007, Renewable Energy Access, (Peterborough), 20 April 2007. Date of Access: 20 April 2007. http://www.renewableenergyaccess.com/download/2007-04-China-RE-Report.pdf

[279] China to Produce Liquid Fuel from Coal, Xinhua, (Beijing), 30 March 2007. Date of Access: 23 April 2007. http://www.chinadaily.com.cn/china/2007-03/30/content_840641.htm

[280] The Great Pall of China, The Independent, (London), 25 April 2007. Date of Access: 25 April 2007. http://news.independent.co.uk/environment/climate_change/article2483839.ece

[281] China Digs into Coalbed Methane, China Daily, (Beijing), 23 March 2007. Date of Access: 23 April 2007. http://www.chinadaily.com.cn/bizchina/2007-03/23/content_834743.htm

[282] China Digs into Coalbed Methane, China Daily, (Beijing), 23 March 2007. Date of Access: 23 April 2007. http://www.chinadaily.com.cn/bizchina/2007-03/23/content_834743.htm

[283] China to Rely More on Cleaner Energy, China Daily, (Beijing), 12 April 2007. Date of Access: 24 April 2007. http://www.chinadaily.com.cn/china/2007-04/12/content_848969.htm

[284] Part I: China's Coal Future, Technology Review, (Cambridge), 4 January 2006. Date of access: 4 January 2006. http://www.technologyreview.com/Energy/17963/.

the plant, will also put a strain on the local environment. All of this means that, while contributing to energy independence, the coal-to-fuels process is likely to increase emissions of CO_2 and harm the environment.

In late October 2006, a 25-year deal was signed between Shanghai LNG Co. Ltd. (a joint venture between the state-owned energy company CNOOC, and the Shenergy Group) and a subsidiary of the Malaysian state oil company Petronas, to help meet Shanghai's energy demands, overcome energy inefficiency, and cut emissions.[285] This arrangement does reveal some progress in China's stated aim to move away from coal as its main source of electricity generation, as natural gas produces less than half the amount of CO_2 per unit of electricity than natural gas.[286] Liquefied natural gas (LNG) has now become cost-competitive with piped-in gasoline, and the process of liquefaction is surprisingly efficient, with only a negligible amount of the originally harvested gas being lost in the process.[287]

The abundance of China's coal reserves (the second largest in the world behind the US)[288] means that coal will continue to play a central role in China's energy mix for years to come. Thus, the most important action China can take to comply with its commitment in this area is to develop and incorporate clean-coal technologies in its coal-fired electricity plants.

In spite of this, China only built its first ultra-supercritical coal-fired power station (46% efficient compared to a worldwide average of 31% for hard-coal plants), with a generating capacity of 1 GW, last year.[289] While there should be two more 1 GW units coming on line in 2007,[290] the fact that this is an established technology means that its adoption should be much more widespread. China also has no integrated gasification combined cycle (IGCC) plants (which have the potential to be 56% efficient) due to their increased construction costs relative to traditional, more polluting architectures.[291] To put this in perspective, in 2006 China installed an average of five 300 MW coal-fired power plants each week,[292] for a total of 1.5 GW per week, which dwarfs the few GW of cleaner, more sophisticated plants constructed to date.

In an effort to crack down on the most polluting plants, the NDRC has announced that almost 700 small thermal (coal) plants will be closed by 2010.[293] It is yet to be seen whether this will be pursued more aggressively than the previously planned closures mentioned above. According to previous mandates, more than 600 of these plants should have been closed before 2002, but worsening power shortages nationwide prevented their closure.[294] To make matters worse, a lack of oversight by the central government meant

[285] China and Malaysia Sign Gas Deal, BBC News, (London), 31 October 2006. Date of Access: 29 December 2006. http://news.bbc.co.uk/1/hi/business/6101604.stm
[286] Can Coal Be Clean?, The Economist, (London), 2 December 2006. Date of Access: 18 February 2007. http://www.precaution.org/lib/06/ht061214.htm#Can_Coal_Be_Clean
[287] Liquid Assets: Should Enviros Embrace Liquefied Natural Gas?, Grist: Environmental News & Commentary, (Seattle), 6 November 2003. Date of Access: 18 February 2007. http://www.grist.org/news/powers/2003/11/06/assets/
[288] China's Energy – How Clean Can Coal Be?, Ethical Corporation, (London), 11 January 2007. Date of Access: 15 May 2007. http://www.ethicalcorp.com/content.asp?ContentID=4782
[289] China's Energy – How Clean Can Coal Be?, Ethical Corporation, (London), 11 January 2007. Date of Access: 15 May 2007. http://www.ethicalcorp.com/content.asp?ContentID=4782
[290] Ultra-Supercritical Technology Powers China into the Future, Engineer Live, (London), 22 May 2007, Date of Access: 22 May 2007. http://www.engineerlive.com/power-engineer/operation-and-maintenance/14422/ultrasupercritical-technology-powers-china-into-the-future.thtml
[291] China's Energy – How Clean Can Coal Be?, Ethical Corporation, (London), 11 January 2007. Date of Access: 15 May 2007.http://www.ethicalcorp.com/content.asp?ContentID=4782
[292] China's Energy – How Clean Can Coal Be?, Ethical Corporation, (London), 11 January 2007. Date of Access: 15 May 2007. http://www.ethicalcorp.com/content.asp?ContentID=4782
[293] China to Shut Down Smaller Power Plants; Effects Remain to Be Seen, World Watch Institute, (Washington), 8 February 2007. Date of Access: 15 May 2007. http://www.worldwatch.org/node/4899
[294] China to Shut Down Smaller Power Plants; Effects Remain to Be Seen, World Watch Institute, (Washington), 8 February 2007. Date of Access: 15 May 2007. http://www.worldwatch.org/node/4899

that local governments invested in many new small plants during this period, and received tax revenues and environmental protection fees in return.[295]

If there is one bright spot in China's efforts to develop innovative technologies, it lies in international cooperation agreements. On 5 April 2007, China and Australia signed a joint agreement to "work intensively…to develop clean-coal technologies."[296] Indeed, China's 5-year program on International Cooperation in Science and Technology states that scientific institutions, universities, and national labs are required to expand cooperation and exchange with foreign counterparts.[297] Another positive development was the decision to contribute US$10 million to join the government steering committee of the *FutureGen* program. The China Huaneng Group, a state-owned enterprise, will be one of 10 companies globally contributing a total of US$250 million towards the cost of the program. The program began in 2003 as a 10-year effort to build a coal-burning power plant capable of producing both electricity and hydrogen, all the while capturing and sequestering CO_2, making it the world's first zero-emission coal fired power plant.[298] The government is expected to sign a formal agreement of participation this year. If successful, the demonstration plant could provide a blueprint for the participants, especially the US and China, to generate clean electricity from coal, as well as providing hydrogen for use in fuel cell vehicles. Both outcomes have the potential to dramatically impact the level of emissions in countries like China, which rely so heavily on coal for power generation. It should be noted, however, that the US$10 million which China will contribute is a miniscule amount relative to the amount invested each year in new (traditional) coal power plants. Finally, in his visit to the United Kingdom in September 2006, China's Premier Wen Jiabao, along with Prime Minister Tony Blair, stressed the importance of the EU-China *Near Zero Emissions Coal Initiative*, which aims to produce a demonstration plant by 2012 that would incorporate the capture of carbon dioxide.[299]

Overall, while China has made some small steps towards compliance in this commitment area, including harvesting coal bed methane and increasing its natural gas usage, and joining international efforts to developing clean-coal technology, there has not been enough activity in either the development or application of innovative technologies for hydrocarbon production and use, especially in the area of high-efficiency coal-fired power generation technology. As coal will undoubtedly remain China's number one source of energy for years to come, it is absolutely essential that the country adopt the most efficient generator technology available, and stands by its promise to close the smaller, more polluting plants, in order to minimize emissions and environmental damage. Increased research and development is also needed to develop and implement clean, affordable, and widely applicable alternatives to China's coal-based power production, and this requires more investment and guidance from government. China thus receives a compliance score of -1.

Authors: Aaron Barkhouse and Wayne Tu

[295] China to Shut Down Smaller Power Plants; Effects Remain to Be Seen, World Watch Institute, (Washington), 8 February 2007. Date of Access: 15 May 2007. http://www.worldwatch.org/node/4899
[296] Australia, China to Co-operate in Developing Clean Coal Technologies, AHN, (Las Vegas), 5 April 2007. Date of Access: 21 April 2007. http://www.allheadlinenews.com/articles/7006964406
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[299] China's Premier Wen in the UK, BBC News, (London), 13 September 2006. Date of Access: 29 December 2006. http://news.bbc.co.uk/1/hi/world/asia-pacific/5343486.stm

4. European Union

Background

An assessment of the EU's level of compliance with its G8 commitments requires consideration of the different levels of government responsible for policy making and implementation. While policymaking often occurs at the level of EU institutions, policy implementation is ultimately a matter for individual member states. Policy implementation is, therefore, dispersed, although the EU often tries to monitor each member state's progress. Key institutions of the EU include: the European Council, comprised of heads of state or government of the member states; the Council of Ministers of the EU, comprised of government ministers of the member states; the European Commission, comprised of individuals nominated by the governments of the member states and approved by the European Parliament; and the European Parliament itself, with members who are elected every five years by national electorates in EU member states.[300] The European Parliament and the Council of Ministers of the EU share the responsibility for enacting European legislation, while any laws must first be proposed by the European Commission.[301] The European Commission is also responsible for ensuring that member states abide by the European legislation, and it can initiate legal proceedings against those that do not comply in the European Court of Justice.[302]

The EU membership currently includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.[303] Bulgaria and Romania acceded to the EU on 1 January 2007 and thus their compliance with EU commitments cannot yet be assessed.[304] Croatia, the Former Yugoslav Republic of Macedonia, and Turkey are currently candidate countries and are also not considered in this analysis.[305]

The EU has registered full compliance with each of the five G8 environmental commitments analyzed. Key initiatives include: a binding target for renewable energy; the Energy Policy for Europe, with binding greenhouse gas emissions reduction targets; stringent assessment of member states' 2008-2012 National Allocation Plans for greenhouse gas emissions; and the Energy Efficiency Action Plan (EEAP). In addition, the EU has committed financing for the development of sustainable energy in developing countries through the European Neighbourhood and Partnership Instrument.

The EU announced a number of EU-wide targets to curb its negative impact on climate change. One ambitious, binding target was set for renewable energy; member states will be required to have 20% of their total energy consumption come from renewable energy sources by 2020. EU member states also recently agreed to binding targets that require them to cut greenhouse gas emissions by 20% from 1990 levels by 2020, or by 30% by 2020 if other developed countries also make significant commitments. With regards to its UNFCCC and Kyoto commitments, the European Commission took a stringent approach to assessing the EU ETS National Allocation Plans (NAPs) of member states. Finally, the EU has also set a significant binding target in reducing energy use, whereby member states will

[300] How is the EU Organised?, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/panorama/howorganised/index_en.htm.
[301] How is the EU Organised?, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/panorama/howorganised/index_en.htm.
[302] How is the EU Organised?, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/panorama/howorganised/index_en.htm.
[303] European Countries, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/european_countries/index_en.htm.
[304] Member States of the EU: Bulgaria, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/european_countries/eu_members/bulgaria/index_en.htm; Member States of the EU: Romania, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/european_countries/eu_members/romania/index_en.htm.
[305] Candidate Countries, Europa. Date of Access: 16 February 2007. http://europa.eu/abc/european_countries/candidate_countries/index_en.htm.

be required to reduce energy use by 20% by 2020, relative to 1990 levels. The Energy Efficiency Action Plan (EEAP) outlined a diverse array of targets, policy initiatives and regulatory reforms that should help towards this goal, and member states are required to submit their national action plans to the European Commission by 30 June 2007.

The EU has also made significant progress in complying with its commitments regarding clean and efficient energy in the transport sector. Finding that the previous voluntary measures were not working, the European Commission proposed that all new vehicles be required to reach key efficiency targets. Further, it has proposed further research to reduce emissions from new cars to an average of 95g CO_2/km by 2020.

It is largely through the EEAP that the EU has also taken major steps towards encouraging innovative energy technologies in hydrocarbon production and use. Through it, the European Commission has both directly funded alternative energy research projects and announced that it will work towards encouraging private sector funding. It has also separately engaged with Russia through the EU-Russia Energy Efficiency Initiative to pursue further reductions in hydrocarbon production and use. This initiative includes identifying regulatory initiatives that could further support the development of energy-efficient technologies and renewable energy, undertake pilot projects and establish institutional links between energy efficiency centers in the EU and Russia.

The EU is awarded a score of +1 in recognition of its full compliance with each of the five environmental G8 commitments analyzed.

Author: Eva Vivalt

Clean and Efficient Energy in the Transport Sector: +1

The EU has registered full compliance with its St. Petersburg commitment to promote clean and efficient energy in the transport sector. The EU has advanced a number of initiatives to meet this commitment, including providing incentives for consumers to choose efficient vehicles and initiating auto industry regulation. As a result, the EU has been awarded a score of +1.

The European Commission proposed on 7 February 2007 a comprehensive new strategy to reduce CO_2 emissions from new cars and vans sold in the EU.[306] The previous strategy for reducing CO_2 emissions was based on voluntary commitments by the car industry, provision of information to consumers (such as car labelling), and fiscal measures to encourage purchases of more fuel-efficient cars. Upon reviewing that strategy, the European Commission concluded that voluntary commitments were not successful and that its target of 120g CO_2/kg would not be met on time without *mandatory* regulation.[307] Under the new plan, the Commission will address the European Parliament and the Council of Ministers and, based on their responses, launch a strategy based on the measurements listed below. The Commission will also consult with stakeholders on the proposed strategy design and undertake an impact assessment. As a result, it aims to propose new legislation by the end of 2007 (or mid-2008 at the latest) under which average emissions from new cars sold in the EU27 would have to reach a target of 120g CO_2/km by 2012. Improvements in motor technology would have to reduce average emissions to no more than 130g CO_2/km, while complementary measures would reduce emissions by up to 10g CO_2/km. These

[306] Commission plans legislative framework to ensure the EU meets its target for cutting CO_2 emissions from cars, European Commission, (Brussels), 7 February 2007. Date of Access: 17 April 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/155&format=HTML&aged=0&language=EN&guiLanguage=en.

[307] Results of the review of the Community Strategy to reduce CO2 emissions from cars European Commission, (Brussels), 7 February 2007 Date of Access: 21 May 2007. http://66.102.9.104/search?q=cache:AejA0W4g-E0J:eur-lex.europa.eu/LexUriServ/LexUriServ.do%3Furi%3DCOM:2007:0019:FIN:EN:PDF+Results+of+the+review+of+the+Community+Strategy+to+reduce+CO2+emissions+from+cars&hl=en&ct=clnk&cd=5.

complementary measures include efficiency improvements for car components with the highest impact on fuel consumption, and a gradual reduction in the carbon content of road fuels, notably through greater use of biofuels. Efficiency requirements will be introduced for these car components. For vans, the fleet average objectives would be 175g by 2012 and 160g by 2015, compared with 201g in 2002.

Besides direct legislation, there are also complementary measures to promote research and implementation such as: (1) support for research efforts aimed at further reducing emissions from new cars to an average of 95g CO_2/km by 2020; (2) promotion of fuel-efficient vehicles, notably by amending the car labelling directive and encouraging member states to base their levy road tax on vehicular CO_2 emissions; (3) support for the adoption of the European Commission's proposal on road taxes; and, (4) an EU code of good practices in car marketing and advertising to promote more sustainable consumption patterns.[308] The European Commission will invite car manufacturers to sign up to the new strategy by mid-2007. These measures will be included in the new strategy—as mandatory rather than voluntary actions

In addition, on 31 January 2007, the EU proposed new standards[309] for transport fuels that would reduce their contribution to climate change and air pollution, including through greater use of biofuels. Fuel suppliers will have to reduce the GHG emissions caused by the production, transport, and use of their fuels by 10% between 2011 and 2020. The European Commission believes that this will cut CO_2 emissions by 500 million tons by 2020 – equivalent to the total emissions of Spain and Sweden combined. Moreover, a new petrol blend will require a higher content of ethanol in bio-diesel, while sulphur and gas oil levels will be cut to reduce emissions of dangerous dust particles.

On 19 October 2006, the European Commission announced it would fund up to 50 new environmental innovation projects in 14 countries, including *BIO TYRE*, a project in Luxembourg which will develop a tire with a 30% lower rolling resistance, using bio fillers made from renewable materials and a new design.[310]

During a conference on *Transport and Environment: A Global Challenge – Technological and Policy Solutions* on 19-21 March 2007, the European Commission launched two studies on sustainable transport.[311] The first, TRAENVIA, will assess and compare the environmental and socio-economic impact of different transport modes along the extended Trans-European Corridor V, running from Lisbon to Kiev. The second is the *Collaborative Research Project for Air Pollution Reduction in Lombardia*, which will focus on particulate matter and emission remediation options for that Italian region.

[308] Commission plans legislative framework to ensure the EU meets its target for cutting CO_2 emissions from cars, European Commission, (Brussels), 7 February 2007. Date of Access: 17 April 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/155&format=HTML&aged=0&language=EN&guiLanguage=en.

[309] Stricter fuel standards to combat climate change and reduce air pollution, European Commission, (Brussels), 31 January 2007. Date of Access: 17 April 2007 http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/120&format=HTML&aged=0&language=EN&guiLanguage=en.

[310] LIFE-Environment 2006: Commission funds 50 innovation projects in 14 countries with EUR 66 million, 19 October 2006, Brussels. Date of Access: 30 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1430&format=HTML&aged=0&language=EN&guiLanguage=en

[311] Commission launches two studies looking at sustainable transport, 20 March 2007 Brussels. Date of Access: 17 April 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/348&format=HTML&aged=0&language=EN&guiLanguage=en.

The European Commission has declared that it will also support research into sustainable transport with the 7th Research Framework Program, which has allocated €4.1 billion for transport-related research over the next seven years.[312]

The European Commission also called for improved energy efficiency in other modes of transport. While these initiatives do not constitute compliance for the purposes of this report, they do indicate a comprehensive approach by the EU to tackling the problem of emissions in the transport sector. For instance, it is advocating the use of market-based instruments in the maritime sector.[313] Second, the European Commission will promote energy efficiency in rail transport by completing the implementation of its legal framework by 2007.[314] Finally, the European Commission has proposed legislation to bring greenhouse gas emissions from civil aviation into the EU ETS.[315]

In summary, the EU has taken major steps to meet its commitment on clean and efficient energy in the transport sector. It seems that a more resolute strategy has been implemented which, together with a revision of the EU fuel quality standards, may enable the EU to reach its long-time objective of limiting average CO_2 emissions to 120 grams per km by 2012. As such, it is awarded a score of +1.

Author: Orly Babitsky

Alternative and Renewable Energy: +1

The EU has registered full compliance with its commitment to expand its use of alternative and renewable energy. As required by this commitment, it has both dedicated itself to making wider use of renewables as well as provided for further development of the sector, in this case by research funding and a competitiveness and innovation program.

The most significant step that the EU has taken in encouraging alternative and renewable energy has been to set a binding target at the Spring European Council, on 8-9 March 2007, to have 20% of all EU energy consumption come from renewable sources by 2020. Each member state will decide on national targets for electricity, heating and cooling, and other specific sectors, and then be required to submit National Action Plans that include their sectoral targets for review.[316]

It is as yet unclear, however, how the burden of the 20% target will be shared among member states. The European Commission is working on a methodology to determine this, but it will be predicated on the extent to which member states already use renewables and how easy it will be for them to expand these programs.[317] Countries that already meet much of their energy needs from renewables will be expected to contribute more, as will those who have greater potential to meet their energy needs from renewables, such as

[312] Commission launches two studies looking at sustainable transport, 20 March 2007 Brussels. Date of Access: 17 April 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/348&format=HTML&aged=0&language=EN&guiLanguage=en.

[313] Communication from the EC, Action Plan for Energy Efficiency: Realising the Potential, 19 October 2006, Brussels. Date of Access: 30 December 2006. http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.

[314] Communication from the EC, Action Plan for Energy Efficiency: Realising the Potential, 19 October 2006, Brussels. Date of Access: 30 December 2006. http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.

[315] Climate change: Commission proposes bringing air transport into EU Emissions Trading Scheme, 20 December 2006. Date of Access: 30 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1862&format=HTML&aged=0&language=EN&guiLanguage=en.

[316] EU Makes Bold Climate and Renewables Commitment, Euractiv, 9 March 2007. Date of Access: 27 April 2007. http://www.euractiv.com/en/energy/eu-bold-climate-renewables-commitment/article-162373; EU Renewable Energy Policy, Euractiv, 24 April 2007. Date of Access: 27 April 2007. http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536.

[317] Presidency Conclusions of the Brussels European Council, Council of the European Union, 9 March 2007. Date of Access: 27 April 2007. http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/93135.pdf.

those that have access to additional hydropower.[318] Currently, Latvia obtains over 40% of its energy from renewables, with Sweden second at around 30%; in contrast, countries like Malta and Cyprus each produce around 1%.[319]

Concerns have been raised that the 20% figure will be difficult to achieve, especially since Europe only met 6.4% of its energy needs with renewables in 2005 and much of this was through hydropower, which cannot always be expanded.[320] The European Commission had previously set a target of a 12% reduction by 2010 in 1997, which will now not be met; instead, a 9% reduction is expected.[321] However, the targets are a positive step and will likely help steer investment towards renewables.[322] It is possible that energy efficiency plans will also help the EU meet this target.

To meet this target, the European Commission suggests increasing the use of biofuel and geothermal and solar installations, although this will vary between member states.[323] Indeed, as part of the overall 20% target for 2020, the European Commission wants each member state to ensure that a minimum of 10% of their transport fuel comes from biofuels. A binding resolution to this effect was made, although it notes that this is "subject to production being sustainable", as there have been recent fears about the extent to which biofuel truly is environmentally friendly.[324] Heating and cooling, in particular, will likely have to be addressed to meet this target, as they comprise approximately 50% of overall EU energy consumption and member states have thus far incorporated renewable energy sources into them only minimally.[325]

Still, this binding target should be seen as a major step forward. Previously, at a meeting on 23 November 2006, the Council of Ministers of the EU declined to set binding targets regarding the use of renewable energies. They recognized that the use of renewable energy sources should be increased and suggested that "R&D programs at all levels should contribute to the development of new and improved technology, with a view to making renewable energies competitive."[326] However, they remained concerned with sovereignty and maintaining flexibility in establishing national goals.[327] In particular, France wanted emphasis to be placed on nuclear energy before proceeding with further talks on renewables.[328] This plan was heavily criticized by some civil society and political groups opposed to the use of nuclear energy.[329] However, with the development of the current

[318] EU Renewable Energy Policy, Euractiv, 24 April 2007. Date of Access: 27 April 2007. http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536.
[319] Energy for the Future: Renewable Sources of Energy, Europa, 20 April 2007. Date of Access: 27 April 2007. http://ec.europa.eu/energy/res/index_en.htm.
[320] Energy for the Future: Renewable Sources of Energy, Europa, 20 April 2007. Date of Access: 27 April 2007. http://ec.europa.eu/energy/res/index_en.htm.
[321] Policy Summary, Euractiv, 24 April 2007. Date of Access: 27 April 2007. http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536#summary. Energy for the Future: Renewable Sources of Energy, Europa, 20 April 2007. Date of Access: 27 April 2007. http://ec.europa.eu/energy/res/index_en.htm.
[322] Targets and Tools for the Transition Period: What Steps Next?, Centre for European Policy Studies, 21 March 2007. Date of Access: 27 April 2007. http://www.ceps.be/files/ECP/ECP_targets_Fin.pdf.
[323] Renewable Energy Roadmap, European Commission, Date of Access: 27 April 2007. http://ec.europa.eu/energy/energy_policy/doc/03_renewable_energy_roadmap_en.pdf.
[324] Policy Summary, Euractiv, 24 April 2007. Date of Access: 27 April 2007. http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536#summary.
[325] Renewable Energy Roadmap, European Commission, Date of Access: 27 April 2007. http://ec.europa.eu/energy/energy_policy/doc/03_renewable_energy_roadmap_en.pdf.
[326] 2765th Council Meeting: Transport, Telecommunications and Energy, (Brussels), 23 November 2006. Date of Access: 2 January 2007. http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/trans/91848.pdf.
[327] Energy choices proving complex for EU, Euractiv, 24 November 2006. Date of Access: 2 January 2007. http://www.euractiv.com/en/energy/energy-choices-proving-complex-eu/article-160004.
[328] Energy choices proving complex for EU, Euractiv, 24 November 2006. Date of Access: 2 January 2007. http://www.euractiv.com/en/energy/energy-choices-proving-complex-eu/article-160004; EU Energy Strategy: EP Committee Calls for Meaningful Renewable Targets in EU Energy Strategy, Greens and European Free Alliance, 23 November 2006. Date of Access: 17 February 2007. http://www.greens-efa.org/cms/default/dok/158/158245.eu_energy_strategy@en.htm.
[329] Energy choices proving complex for EU, Euractiv, 24 November 2006. Date of Access: 2 January 2007. http://www.euractiv.com/en/energy/energy-choices-proving-complex-eu/article-160004; EU Energy

target, France may be able to continue relying on nuclear power for electricity, as it currently does, as the target for renewables is set for the EU overall and will vary between member states.[330]

This resolution also follows the European Parliament's adoption, on 14 December 2006, of the European Commission's Green Paper of March 2006 that had called for the EU to produce 25% of its primary energy through renewables. The European Parliament foresaw 25% of primary energy coming from renewables by 2025 and hoped to develop a road-map to have renewables reach 50% of primary energy production by 2040.[331] Although the current target is lower, it is to be achieved sooner and, more importantly, it is binding.

Apart from setting this new target, the EU has made progress in other areas regarding increasing the proportion of energy that comes from renewable sources. On 6 July 2006, national representatives and representatives from the European Commission held a First Meeting on National Biomass Action Plans. At the time, circulated drafts of the proposed energy policy package were met with concerns from NGOs, who worried that the European Commission was not taking renewables seriously enough since the package contained only a loose system for addressing this energy source.[332] However, at the meeting itself, participation was strong, with experts from 24 member states exchanging national experiences, and a follow-up meeting was later held on 13 March 2007, where participation was also high.[333] Overall, the initiation of these National Biomass Action Plan meetings is promising for the future.

In terms of information exchange and regional efforts, on 17 April 2007, six European regions launched the Renewable Energy Regions Network (RENREN)[334] with the aim of facilitating information exchange on best practice, enhancing co-operation between private companies, and raising public awareness on renewable energy via educational programs.[335] The regions were chosen on the basis of their already high levels of energy production from renewable sources.

The EU also announced plans for a *European Neighbourhood and Partnership Instrument* at the EU/G8 Conference *Energy Efficiency – Shaping Tomorrow's World* on 19 April 2007,[336] which will provide €11.2 billion by 2013 for regional cooperation in sectors including energy.[337]

Strategy: EP Committee Calls for Meaningful Renewable Targets in EU Energy Strategy, Greens and European Free Alliance, 23 November 2006. Date of Access: 17 February 2007. http://www.greens-efa.org/cms/default/dok/158/158245.eu_energy_strategy@en.htm.

[330] EU Trying to Solve Renewable Energy "Headache", Euractiv, 21 March 2007. Date of Access: 27 April 2007. http://www.euractiv.com/en/energy/eu-trying-solve-renewable-energy-headache/article-162634.

[331] Report on a Strategy for Biomass and Biofuels, (Brussels), 12 October 2006. Date of Access: 2 January 2007. http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A6-2006-0347+0+DOC+PDF+V0//EN.

[332] Parliament Stands Up To Commission Over Shake-Up of Renewable Energy Sector, Greenpeace, 14 December 2006. Date of Access: 17 February 2007. http://www.greenpeace.eu/downloads/energy/PRMorganReport061214EN.pdf.

[333] National Biomass Action Plans, Europa, 16 May 2007. Date of Access: 23 May 2007. http://ec.europa.eu/energy/res/biomass_action_plan/nationa_bap_en.htm.

[334] Including Oberösterreich (Austria), Schleswig-Holstein (Germany), North Sweden and Wales (United Kingdom). See Six European Regions Launch Renewable-Energy Network, Euractiv, first published 19 April 2007. Date of Access: 26 April 2007. http://www.euractiv.com/en/energy/european-regions-launch-renewable-energy-network/article-163270

[335] Six European Regions Launch Renewable-Energy Network, Euractiv, first published 19 April 2007. Date of Access: 26 April 2007. http://www.euractiv.com/en/energy/european-regions-launch-renewable-energy-network/article-163270

[336] EU/G8 Conference on "Energy Efficiency – Shaping Tomorrow's World," press release, German EU Presidency, 20 April 2007. Date of Access: 26 April 2007. http://www.eu2007.de/en/News/Press_Releases/April/0420BMBVBSEnergie.html

[337] The German Environment Minister suggested solar energy projects in North Africa and wind energy schemes in Morocco, Egypt, and the Caucasus as examples of possible investment in renewables; EU Boosts Aid to Neighbours on Renewable Energy, Yahoo News. Date of Access: 26 April 2007. http://uk.news.yahoo.com/afp/20070419/tsc-eu-germany-energy-4de741d.html

Finally, the EU has encouraged the development of renewables by providing research funding. On 15 December 2006, the European Council approved €1.175 billion to be used for non-nuclear renewables research over the next seven years. The European Parliament's original plan, in June 2006, had sought more than €2.4 billion for renewables, but was then cut dramatically. This new statement of what will be spent, starting in January 2007, has increased the most recently proposed funding by approximately 40%, while still providing less than 50% of the funding suggested in the original proposal.[338]

Further funding for research into renewables was agreed to on 12 October 2006 by the Council of Ministers of the EU, based on a proposal first presented to establish a Competitiveness and Innovation Framework Program (CIP) to devote €384 million to promoting eco-innovation.[339] Other funding for research remains available under the 7th Research Framework Program, the latest edition of previous funding schemes.[340] It has been announced that a Strategic Energy Technology Plan (SET-Plan), to be created later in 2007, would build off of these two programs' funding.[341]

In summary, the new ambitious and binding target that was set for increasing the use of renewable energies as well as the various funding and research initiatives merits the EU a compliance score of +1 with its alternative and renewable energy commitment.

Author: Eva Vivalt

UNFCCC/Kyoto: +1

The EU registered significant compliance with its commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. If particular conditions, outlined below, are met, the 15 EU member states which are collectively party to the Kyoto Protocol will meet their Kyoto commitments by 2010. The German Presidency achieved agreement on a binding target of a 20% reduction of GHG emissions on 1990 levels by 2020, and a possible 30% reduction in the context of a broader global agreement. The EU has also engaged in sharing of information on policies and best practice with external powers such as the US and Russia. Furthermore, the European Commission has proposed the creation of a €100 million global risk capital fund to boost the energy efficiency and the use of renewables in developing countries, thus seeking to contribute to the provision of financial support to developing countries. On the basis of the above, the EU has been awarded a score of +1, though it must be noted that implementation of policies agreed at the EU level is, for the most part, ultimately left up to individual member states.

The European Community, as well as its then-15 member states, is party to the Kyoto Protocol. Under the Protocol, the European Community has a reduction target of 8% below 1990 levels by the commitment period of 2008-2012.[342] Under a 'burden-sharing'

[338] Council Approves EU Research Programmes for 2007-2013, (Brussels), 18 December 2006. Date of Access: 2 January 2007. http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/misc/92236.pdf; Council Increases Renewables-Research Funding, Euractiv, 19 December 2006. Date of Access: 31 December 2006. http://www.euractiv.com/en/energy/council-increases-renewables-research-funding/article-160566.

[339] Council Adopts EU's Competitiveness and Innovation Programme for 2007-2013, (Luxembourg), 12 October 2006. Date of Access: 2 January 2007. http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/misc/91292.pdf.

[340] European Research Area – EU Framework Programmes: Framework Research Programme (FRP) and Competitiveness and Innovation Programme (CIP), Federal Department of Economic Affairs. Date of Access: 23 May 2007. http://www.bbt.admin.ch/kti/dienstleistungen/00249/00252/index.html?lang=en.

[341] Energy Technology for Cheaper Renewables, Greater Efficiency and Global Leadership of the European Industry, EC press release, Memo/07/14, 10 January 2007. Date of Access: 25 April 2007. http://www.europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/14&format=HTML&aged=0&language=EN&guiLanguage=en; Towards a European Strategic Energy Technology Plan, (Brussels), 10 January 2007. Date of Access: 23 May 2007. http://ec.europa.eu/energy/energy_policy/doc/19_strategic_energy_technolgy_plan_en.pdf.

[342] Annex B of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. Date of Access: 4 January 2007. http://unfccc.int/resource/docs/convkp/kpeng.html.

agreement,[343] the EU member states agreed to set different emissions reduction targets for each member state. Eight of the ten 2004 EU Accession States also have emission reduction targets under the Protocol,[344] as do Romania and Bulgaria, which joined the EU on 1 January 2007, and these targets range from 6% to 8% below 1990 levels. However, the European Community's commitments under the Protocol only refer to the pre-2004 15 member states (EU15).[345] The most recent figures (for 2004) show that the EU15 emissions were 0.9% below 1990 levels.[346] Current projections indicate that the EU15 are on target to meet their Kyoto Protocol commitments by 2010, provided that the following objectives are met: (a) that all additional measures currently under discussion at the European or at the national level are fully enacted in time to influence the emissions during the commitment period; (b) that the Kyoto mechanisms[347] are used to the full extent planned; and, (c) that removals from carbon sinks contribute to the extent projected by the member states.[348] If so, ten of the EU15 will use the Kyoto mechanisms to achieve reductions of over 30% of the total reductions required under the Kyoto commitment period (2008-2012).[349]

The most significant development in the EU during the commitment period was the decision taken by EU heads of state and government at a meeting of the European Council on 9 March 2007 to set binding targets for the EU's greenhouse gas emissions. EU member states agreed to reduce emissions by 20% below 1990 levels by 2020 and, possibly, by 30% "provided that other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities."[350] In this context, the European Commission has been asked to undertake a technical analysis of the criteria for an internal 'burden-sharing' agreement. Furthermore, the European Council called for a 2007 launch of international negotiations on a post-2012 Kyoto framework, which are meant to be concluded by 2009.[351]

The EU ETS is the central element of the EU approach to reducing GHG emissions. Critics argue that the Scheme as a whole focuses too heavily on industry, and neglects other areas such as the transport sector.[352] Furthermore, it now seems clear that there has been an over-allocation of emission permits in the first two years of the EU ETS, 2005 and 2006.[353]

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[343] Council Decision 2002/358/CE of 25 April 2002 concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfillment of commitments thereunder, Council of Ministers of the European Union, (Brussels). Date of Access: 29 December 2006.
http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_130/l_13020020515en00010020.pdf.

[344] Cyprus and Malta do not have emission reduction targets: see Annex B of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. Date of Access: 4 January 2007.
http://unfccc.int/resource/docs/convkp/kpeng.html.

[345] The European Community's initial report under the Kyoto Protocol, European Environment Agency, (Copenhagen), 2006. Date of Access: 29 December 2006.
http://reports.eea.europa.eu/technical_report_2006_10/en/eea_technical_report_10_2006.pdf

[346] Greenhouse gas emission trends and projections in Europe 2006, European Environment Agency, (Copenhagen), 2006. Date of Access: 29 December 2006.
http://reports.eea.europa.eu/eea_report_2006_9/en/eea_report_9_2006.pdf

[347] Joint Implementation, Clean Development Mechanism and International Emissions Trading.

[348] Report from the Commission (COM(2006) 658 final), Progress Towards Achieving The Kyoto Objectives, European Commission, (Brussels), 27 October 2006. Date of Access: 29 December 2006.
http://ec.europa.eu/environment/climat/pdf/kyotoreport_en.pdf

[349] Joint Implementation, Clean Development Mechanism and International Emissions Trading Report from the Commission (COM(2006) 658 final), Progress Towards Achieving The Kyoto Objectives, European Commission, (Brussels), 27 October 2006. Date of Access: 29 December 2006.
http://ec.europa.eu/environment/climat/pdf/kyotoreport_en.pdf

[350] Brussels European Council, 8-9 March 2007, Presidency Conclusions, Council of the European Union (Brussels). Date of Access: 25 April 2007. http://www.consilium.europa.eu/uedocs/cmsUpload/st07224.en07.pdf.

[351] Brussels European Council, 8-9 March 2007, Presidency Conclusions, Council of the European Union (Brussels). Date of Access: 25 April 2007. http://www.consilium.europa.eu/uedocs/cmsUpload/st07224.en07.pdf.

[352] Emission Trading in the EU, Climate Action Network Europe, (Brussels). Date of Access: 22 February 2007.
http://www.climnet.org/EUenergy/ET.html.

[353] EU 2006 Carbon Data Show Emission Targets Too Lax, Planet Ark Website, 3 April 2007. Date of Access: 26 April 2007.

Building on this experience, the European Commission took a tougher approach in its assessment of individual National Allocation Plans (NAPs) for the second trading period (2008-2012) of the EU ETS.[354]

The Commission has also initiated legal proceedings against six member states for their failure to provide relevant information on GHG emissions.[355]

The European Commission has initiated a review process of the EU ETS for the period beyond 2012.[356] It has also proposed legislation that would include emissions from aviation in the EU ETS.[357] Such a law would treat all airlines equally, whether EU- or foreign-based. It is proposed that, from 2011, all domestic and international flights between EU airports would be covered and that, from 2012, the scope would be expanded to all international flights arriving at or departing from EU airports. The estimated reductions of CO_2 could amount to as much as 46% (or 183 million tons) by 2020.[358] Furthermore, on 16 April 2007, the Commission announced that its new legislation (to be drafted by the end of 2007) would include emissions from the shipping industry in the EU ETS. Shipping is thought to account for double the emissions of aviations at present, and emissions from this sector could grow by as much as 75% over the next 15 to 20 years if no action is taken.[359]

The EU also enhanced its dialogue with external countries on climate change issues. The Finnish Presidency of the EU hosted the inaugural meeting of the EU-Russia Permanent Partnership Council on Environmental Protection on 9-10 October 2006.[360] Climate change is one of the three central themes of this ongoing dialogue, and a Subgroup on Climate Change has been established as part of the dialogue.[361] On 24-25 October 2006, the Finnish Presidency also hosted the inaugural meeting of the EU-US High Level Dialogue on *Climate Change, Clean Energy and Sustainable Development* in Helsinki, which aims to advance the 2005 G8 Gleneagles *Plan of Action for Climate Change, Clean Energy and Sustainable Development*. Both sides agreed to strengthen bilateral cooperation on a range of issues within the context of the UNFCCC.[362] Furthermore, the current German Presidency of the EU has identified "Energy and Climate Change" as one of the priority themes of its

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http://www.planetark.com/dailynewsstory.cfm?newsid=41228&newsdate=03-Apr-2007.

[354] Emissions trading: Commission decides on first set of national allocation plans for the 2008-2012 trading period, European Commission, (Brussels), 29 November 2006. Date of Access: 30 December 2006. http://ec.europa.eu/environment/climat/ip_1650.htm.

[355] The six countries are Bulgaria, Estonia, Greece, Italy, Luxembourg, and Malta. See: Climate change: Commission takes legal action against six member states over missing information, European Commission, (Brussels), 22 March 2007. Date of Access: 27 April 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/386&format=HTML&aged=0&language=EN&guiLanguage=en.

[356] Climate change: Commission sets out agenda for revising the EU emissions trading scheme from 2013, European Commission, (Brussels), 13 November 2006. Date of Access: 30 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1548&format=HTML&aged=0&language=EN&guiLanguage=en.

[357] Climate change: Commission proposes bringing air transport into EU Emissions Trading Scheme, European Commission, (Brussels), 20 December 2006. Date of Access: 30 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1862&format=HTML&aged=0&language=EN&guiLanguage=en.

[358] Climate change: Commission proposes bringing air transport into EU Emissions Trading Scheme, European Commission, (Brussels), 20 December 2006. Date of Access: 30 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1862&format=HTML&aged=0&language=EN&guiLanguage=en.

[359] 'EU plans shipping emissions cap', Euractiv Website, 24 April 2007. Date of Access: 26 April 2007. http://www.euractiv.com/en/transport/eu-plans-shipping-emissions-cap/article-163229.

[360] A new basis for EU-Russian environmental co-operation, Finnish Presidency of the European Union, (Helsinki), 10 October 2006. Date of Access: 30 December 2006. http://www.eu2006.fi/news_and_documents/press_releases/vko41/en_GB/170802/.

[361] Terms of Reference for Establishing a Dialogue on Environment Between the Ministry of Natural Resources of the Russian Federation and the Directorate General for Environment of the European Commission. Ministry of the Environment of Finland, (Helsinki). Date of Access: 30 December 2006. http://www.ymparisto.fi/download.asp?contentid=57405&lan=en.

[362] EU and US will continue dialogue on climate change, clean energy and sustainable development, Finnish Presidency of the European Union, (Helsinki), 25 October 2006. Date of Access: 29 December 2006. http://www.eu2006.fi/news_and_documents/press_releases/vko43/en_GB/172262/.

Presidency, which it holds concurrently with the Presidency of the G8.[363] The issue of climate change featured prominently on the agenda of the EU-US Summit in Washington on 30 April 2007. It was claimed that the Summit represented a breakthrough in relations, though many have questioned whether the outcome represents any real shift in approach on the part of the US Administration.[364] The German Presidency of the EU, in conjunction with the European Commission, also hosted a conference on 19 April 2007 on *Energy Efficiency and Renewable Energy – Innovative Policies and Financing Instruments for the EU's Southern and Eastern Neighbours*. This conference convened delegations from 34 countries, including 15 countries represented at ministerial level, and will feed into the European Neighbourhood Policy, the Euro-Mediterranean Partnership, and other relevant international forums.[365]

On 6 October 2006, the European Commission proposed the creation of a €100 million global risk capital fund to boost energy efficiency and the use of renewables in developing countries.[366] The proposed scheme, entitled the *Global Energy Efficiency and Renewable Energy Fund*, aims to facilitate the transfer of environmentally friendly technologies to developing countries. The Fund would be financed by the European Commission (approximately €80 million), with an anticipated €20 million from other public and private sources. The European Commission has sought the views of the Council of Ministers of the EU and the European Parliament, as well as other stakeholders, on the proposal, and hopes to launch the scheme by mid-2007.[367] In addition, on 19 December 2006, EU Trade Commissioner Peter Mandelson called for a zero-tariff World Trade Organization (WTO) agreement on environmental goods.[368] Although negotiations on this subject were initiated by the Doha Ministerial Declaration in 2001,[369] there has been no significant progress to date.

Overall, the EU has made noteworthy progress on its commitments relating to the UNFCCC and Kyoto Protocol, most significant development was the agreement to ambitious binding targets for greenhouse gas emissions by EU member states by 2020. Furthermore, the European Commission has proposed a global fund to promote the transfer of environmentally friendly technologies to developing countries. As was noted above, however, actual implementation of policy in the EU is ultimately a matter for member states, and it remains to be seen how effective EU policies in this area are.

Author: Diarmuid Torney

Sustainable Use of Energy: +1

[363] Press conference launching the German EU Council Presidency – Introductory remarks by Federal Foreign Minister Steinmeier, German Presidency of the European Union, (Brussels), 19 December 2006. Date of Access: 30 December 2006. http://www.eu2007.de/en/News/Press_Releases/January/19_12_AA.html.

[364] US-EU claims of progress on global warming greeted with skepticism, International Herald Tribune, (Washington), 5 May 2007. Date of Access: 24 May 2007.

[365] 'Ministerial Conference under the German Presidency of the EU: Renewable Energy and Energy Efficiency – Innovative policies and financing instruments for the EU's southern and eastern neighbours, Summary and conclusions', (Berlin), 19 April 2007. Date of Access: 26 April 2006. http://www.energy-conference.org/download/summary_and_conclusions.pdf.

[366] Commission proposes €100 million global risk capital fund for developing countries to boost energy efficiency and renewables, European Commission, (Brussels), 6 October 2006. Date of Access: 30 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1329&format=HTML&aged=0&language=EN&guiLanguage=en.

[367] Communication from the Commission to the Council and the European Parliament (COM(2006) 583 final): Mobilising public and private finance towards global access to climate-friendly, affordable and secure energy services: The Global Energy Efficiency and Renewable Energy Fund. European Commissions, (Brussels), October 6 2006. Date of Access: 30 December 2006. http://ec.europa.eu/environment/jrec/pdf/com_2006_583_en.pdf.

[368] Trade and Climate Change: Mandelson calls for WTO zero tariff agreement on key green goods, European Commission, (Brussels), 18 December 2006. Date of Access: 30 December 2006. http://ec.europa.eu/trade/issues/global/environment/pr181206_en.htm.

[369] Paragraph 31 (iii), Doha Ministerial Declaration of 14 November 2001. World Trade Organization, (Geneva), Date of Access: 30 December 2006. http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm.

The EU has complied with its St. Petersburg commitment to foster the sustainable use of energy. During 2006-2007, the German Presidency of the European Council put considerable effort into building an EU-wide consensus on binding targets in this area. The main achievement was the Energy Efficiency Action Plan (EEAP), which outlined a series of separate targets, policy initiatives, and regulatory reforms aimed at reaching the overall energy efficiency target. Given the differences in energy demand, financial resources, and access to renewable energy among EU member states, this represents a significant achievement. However, the EU track record in meeting its energy efficiency targets remains poor, and there is much uncertainty as to whether the new policy measures will be uniformly implemented and enforced across the EU member states, as well as whether they go far enough.[370] On 30 June 2007, EU member states are due to submit national plans to implement the EEAP, which will indicate how the EU-level targets translate into national-level policies and programs. Contentious negotiations on policy implementation are therefore only beginning both between and within EU member states, the outcome of which will determine whether this policy success will lead to meaningful difference in practice.

Numerous policy initiatives in the EU signalled a greater political commitment among EU member states to managing demand-side energy use even before the St. Petersburg Summit.[371] These initiatives culminated in the EEAP on 19 October 2006, which stated that "energy efficiency is first and foremost about controlling and reducing energy demand."[372] The EEAP was endorsed during a meeting of the Council of Ministers of the EU on 19 November 2006.[373] According to the European Commission, the EEAP could start producing effects "in the next six years, many in the coming three," and progress would be assessed in conjunction with the regular Strategic European Energy Reviews.[374] Of the ten "priority actions" identified in the EEAP, four dealt directly with demand-side energy management: appliance and equipment labelling and minimum energy performance standards (priority action 1), building performance requirements and very low energy buildings (priority action 2), spurring energy efficiency in the new member states (priority action 6), coherent use of taxation (priority action 7), raising energy efficiency awareness (priority action 8), and energy efficiency in built-up areas (priority action 9).[375] EU member states are expected to

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[370] Interview with Luigi Meli, director-general of the European Committee of Domestic Equipment Manufacturers (CECED), "EU sets 'ambitious' energy goals", BBC News UK Section, 19 October 2006.-Date of Access: 19 February 2007. http://news.bbc.co.uk/1/hi/sci/tech/6060608.stm;
Europe can gain much more than 20 % with energy efficiency, INFORSE-Europe, 20 October 2006. Date of Access: 19 February 2006. http://www.inforse.dk/europe/pdfs/INFORSE-on-Energy-Eff-Actionplan.pdf.

[371] The following initiatives are not included in the assessment, but place the achievements of 2006-2007 in a broader context. On 8 March 2006, the European Commission released a Green Paper, which amongst other policy goals, identified energy efficient consumption as a central element of EU energy policy. (A European Strategy for Sustainable, Competitive and Secure Energy, EC Green Paper, COM(2006) 105 final, 8 March 2006. Date of Access: 23 May 2007. http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_document_en.pdf) On 23/24 March 2006, the European Council called for the formulation of an action plan to realize a 20% increase in energy efficiency within the EU by 2020. (Presidency Conclusions of the European Council, 23/24 March 2006, 7775/1/06 REV1. Date of Access: 23 May 2007.
http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/89013.pdf). On 5 April 2006, the European Parliament and Council advocated the "need for improved energy end-use efficiency, managed demand for energy and promotion of the production of renewable energy. (On End-Use Efficiency and Energy Services, EC Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006. Date of Access: 23 May 2007. http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2006/l_114/l_11420060427en00640085.pdf.)

[372] Action Plan for Energy Efficiency: Realising the Potential, EC White Paper, COM(2006)545 final, 19 October 2006. Date of Access: 31 December 2006.
http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.

[373] Speech by Energy Commissioner Andris Piebalgs delivered at Round table on Energy Efficiency in the Committee of Regions, Speech/06/793, (Brussels), 7 December 2006.Date of Access: 23 May 2007.
http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/06/793&format=HTML&aged=1&language=EN&guiLanguage=en.

[374] Action Plan for Energy Efficiency: Realising the Potential, EC White Paper, COM(2006)545 final, 19 October 2006. Date of Access: 31 December 2006.
http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.

[375] Action Plan for Energy Efficiency: Realising the Potential, EC White Paper, COM(2006)545 final, 19 October 2006. Date of Access: 31 December 2006.
http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.

submit their national energy efficiency action plans to the European Commission by 30 June 2007.[376]

On 7 December 2006, numerous local and regional authorities in the EU signed a declaration pledging a commitment to renewable energy and energy efficiency. In conjunction with this development, EU Energy Commissioner Andris Piebalgs urged more regions to set quantitative targets for renewable energy and energy efficiency. In terms of research funding, the European Council reached agreement on 15 December 2006 to grant renewables and energy end-use efficiency at least €1.175 billion of the budget for non-nuclear energy research over the next seven years, as part of the EU's 7th Research Framework Program.[377] In 2007, the European Commission will create a "Covenant of Mayors," a permanent network of mayors of 20-30 of Europe's largest and most pioneering cities, and hold its first annual Sustainable Energy Week.[378]

In the area of product standards, the EEAP presented a detailed timetable for implementing *Ecodesign of Energy-Using Products* Directive identifying minimum energy performance standards for a range of priority product groups, including boilers, water heaters, consumer electronics, copying machines, televisions, standby modes, chargers, lighting, and electric motors. According to the timetable, the European Commission would adopt individual Directives sometime in 2008, and in cases where products did not meet the agreed minimum requirements, the EEAP stated that they may not be put on the market.[379] The European Commission would also update and expand the scope of the Framework Directive on Eco-Labelling in 2007 to include a broader range of energy-using equipment, including commercial refrigeration, and upgrade product classifications every five years in line with technological innovation.[380]

On 21 November 2006, the European Commission services held a workshop to inform stakeholders and Member States representatives on the implementation of the Ecodesign of Energy-Using Products Directive.[381] On 11 December 2006, EU Energy Commissioner Andris Piebalgs stated that forthcoming measures at the EU level would include a revision of the Ecodesign of Energy-Using Products Directive that would reserve the "A" label standard for the "10-20% most efficient appliances."[382] On 25 October 2006, the EU reached an agreement with the United States to expand bilateral cooperation in a number of areas relevant to mitigating climate change, including the promotion of energy efficiency of buildings and appliances.[383] On 21 December 2006, the EU and the US signed a new Agreement to continue the Energy Star program for office equipment for another five years.[384] The EU expects the agreement to yield 30 TWh electricity savings – the

[376] Germany Wants 'Energy pPassport' for Buildings, Euractiv, first published 23 April 2007. Date of Access: 26 April 2007. http://www.euractiv.com/en/energy/germany-wants-energy-passport-buildings/article-163297.
[377] Council Increases Renewables-Research Funding, Euractiv, first published 19 December 2006. Date of Access: 31 December 2006. http://www.euractiv.com/en/energy/council-increases-renewables-research-funding/article-160566.
[378] Speech by Energy Commissioner Andris Piebalgs delivered at the Round table on Energy Efficiency in the Committee of Regions, Speech/06/793, (Brussels0, 7 December 2006.
[379] Action Plan for Energy Efficiency: Realising the Potential, EC White Paper, COM(2006)545 final, 19 October 2006, p.10. Date of Access: 31 December 2006.
http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.
[380] Action Plan for Energy Efficiency: Realising the Potential, EC White Paper, COM(2006)545 final, 19 October 2006. Date of Access: 31 December 2006.
http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.
[381] Energy Efficiency, EC website. Date of Access: 23 May 2007.
http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm#directive
[382] Regions Commit to Energy Savings, Euractiv, first published 11 December 2006, Date of Access: 31 December 2006. http://www.euractiv.com/en/energy/regions-commit-energy-savings-renewables/article-160368
[383] EU and US will continue dialogue on climate change, clean energy and sustainable development, Joint EU-US Press Release, 26 October 2006. Date of Access: 31 December 2006.
http://useu.usmission.gov/Dossiers/Energy/Oct2506_High_Level_Dialogue.asp.
[384] The Agreement features energy efficiency criteria for computers, copiers, printers, and computer monitors. See EU and USA sign new Agreement on Energy Efficiency of Office Equipment, press release 21 December 2006. Date of Access 4 January 2007.

approximate equivalent of the total electricity demand in Hungary – in the EU over the next three years.

In the case of the building sector, the European Commission committed to revising and updating the Energy Performance of Buildings Directive by 2009, but urged EU member states and regions to voluntarily go beyond the existing legislation by lowering the 1,000 m^2 benchmark for minimum efficiency requirements.[385] The EEAP also committed the EU to implement a Work Plan designed to develop an internal market for additional energy-using products by 2010, with the aim of building demand for energy-efficient products. As part of this effort, the European Commission would examine EU state-aid rules and eliminate guidelines that explicitly prohibit—governmental support for the production of energy-efficient goods.[386] In terms of enforcement, individual EU member states are required to adopt National Energy Efficiency Action Plans with a dedicated national authority or agency.[387] Under existing EU legislation, EU member states are required to define "unambiguous objectives" when signing voluntary agreements, and revise or add measures when these are not met.

A contentious process of consensus-building among EU member states on concrete energy efficiency and GHG emissions reduction targets began at the start of 2007. On 10 January 2007, the European Commission announced its ambition to source 20% of its overall energy mix from renewable energy, and at least 10% from biofuels, by 2020. As an element of reaching this target, the European Commission presented a proposal for a new European Strategic Energy Technology Plan (SET-Plan) to "lower the costs of renewable energy, increase the efficient use of energy and ensure that European industry is at the global forefront."[388] To implement the plan, the European Commission committed to invest annually approximately €1 billion between 2007 and 2013 in energy technology research and innovation, in part to help stimulate the market uptake of innovative technologies across the Community.[389] As part of increasing consumer demand for energy technologies, the plan reaffirmed a commitment to a wide variety of policy instruments, including, but not limited to, performance regulations, energy labelling, feed-tariffs, quotas, obligations, and grants for early adopters. [390]

On 19 April 2007, Germany hosted the EU/G8 Conference on *Energy Efficiency – Shaping Tomorrow's World* in Berlin, which focused on the promotion of energy efficiency and energy conservation, particularly in the building sector.[391] In the meeting, Germany proposed the introduction of so-called 'energy passports', or mandatory energy certification for buildings, providing tenants and purchasers more information about the energy costs they will be

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http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1884&format=HTML&aged=0&language=EN&guiLanguage=en.

[385] Regions Commit to Energy Savings, Euractiv, first published 11 December 2006. Date of Access: 31 December 2006. http://www.euractiv.com/en/energy/regions-commit-energy-savings-renewables/article-160368

[386] According to EU rules, governments need approval from the EC to provide 'state aid' for certain undertakings, which refer to subsidies and other types of public support. Interview with Energy Commissioner Andris Piebalgs, Regions Commit to Energy Savings, Euractiv, first published 11 December 2006. Date of Access: 31 December 2006. http://www.euractiv.com/en/energy/regions-commit-energy-savings-renewables/article-160368

[387] Directive on energy end-use efficiency and energy services (2006/32/EC), 5 April 2006, Date of Access: 4 January 2007,
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006L0032:EN:HTML.

[388] Energy Technology for Cheaper Renewables, Greater Efficiency and Global Leadership of the European Industry, EC press release, Memo/07/14, 10 January 2007. Date of Access: 25 April 2007.
http://www.europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/14&format=HTML&aged=0&language=EN&guiLanguage=en

[389] Towards a European Strategic Energy Technology Plan, EC White Paper, COM(2006) 847 final, 10 January 2007. Date of Access: 23 May 2007.
http://ec.europa.eu/energy/energy_policy/doc/19_strategic_energy_technolgy_plan_en.pdf.

[390] Towards a European Strategic Energy Technology Plan, EC White Paper, COM(2006) 847 final, 10 January 2007. Date of Access: 23 May 2007.
http://ec.europa.eu/energy/energy_policy/doc/19_strategic_energy_technolgy_plan_en.pdf.

[391] EU/G8 Conference on "Energy Efficiency – Shaping Tomorrow's World, press release, German EU Presidency, 20 April 2007. Date of Access: 26 April 2007.
http://www.eu2007.de/en/News/Press_Releases/April/0420BMBVBSEnergie.html.

confronted with. On 14-15 May 2007, EU Energy Commissioner Andris Piebalgs told a ministerial meeting at the International Energy Agency (IEA) that the world should engage in a multilateral partnership for energy efficiency focusing on areas such as regulatory co-operation, information exchange on energy-saving strategies, measurement methods, and research co-operation on energy efficient technologies.[392]

Despite lofty declarations and ambitious targets, the policy impact of the EEAP is still uncertain.

For example, relative to energy performance in buildings, Friends of the Earth, World Wildlife Fund, and Greenpeace argue that "education and voluntary measures are not going to cut it alone."[393] The European Alliance of Companies for Energy-Efficient Buildings remarked that the 'energy passport' proposed by Germany is in fact already a mandatory requirement within the EU under the Energy Performance of Buildings Directive, yet has not been implemented by member states.[394] The International Network for Sustainable Energy (INFORSE) argues that more resources should be allocated to revise and upgrade standards in response to rapid technological developments and that the overall policy goals are not ambitious enough.[395] In relation to the product standards announced in the EEAP, a senior industry official commented that they were already in effect in the United States, and would soon be introduced in China.[396] There is thus a degree of consensus across industry and civil society that the enforcement measures proposed in the EEAP are too weak to eliminate free-riding.[397]

In conclusion, the EEAP represents a comprehensive plan for improving energy efficiency in EU member-states in line with the EU's commitment to promote sustainable energy. Coupled with investment schemes for renewable energy research, innovation, and pilot projects in the EU and developing countries, these policy announcements reflect a broader and deeper engagement with energy efficiency issues at the EU level. Furthermore, by creating preparatory study groups to consider energy efficiency standards for a variety of product groups, the European Commission continued to implement the Ecodesign of Energy-Using Products Directive of 22 July 2005. However, uncertainty remains with regards to how demand-side energy efficiency targets will be achieved, given existing regulatory barriers, growing consumer demand for energy, and the lack of investment capital in the new EU member states. Some answers will be available on 30 June 2007, the deadline for member states to produce national plans for implementing the EEAP. Notwithstanding these uncertainties, the assessment records a strong level of compliance with the commitment to promote sustainable use of energy.

Author: Christopher Wright

Innovative Energy Technologies in Hydrocarbon Production and Use: +1

The EU registered a high level of compliance with its G8 commitment to innovative energy technologies in hydrocarbon production and use. Its most significant action was to begin

[392] Commission pushes for global energy-savings deal , Euractiv, first published 16 May 2007. Date of Access: 23 May 2007. http://www.euractiv.com/en/energy/commission-pushes-global-energy-savings-deal/article-163830.
[393] Interview with Mahi Sideridou, Greenpeace's EU climate and energy director, "EU sets 'ambitious' energy goals", BBC News UK Section, 19 October 2006. Date of Access: 20 February 2007, http://news.bbc.co.uk/1/hi/sci/tech/6060608.stm.
[394] Energy passports already in place, Euractiv, 2 May 2007. Date of Access: 23 May 2007. http://www.euractiv.com/en/energy/energy-passports-place-andrew-warren-euroace-director/article-163477.
[395] Europe can gain much more than 20 % with energy efficiency, INFORSE-Europe, 20 October 2006. Date of Access: 19 February 2006. http://www.inforse.dk/europe/pdfs/INFORSE-on-Energy-Eff-Actionplan.pdf.
[396] Interview with Luigi Meli, director-general of the European Committee of Domestic Equipment Manufacturers (CECED), EU sets 'ambitious' energy goals, BBC News UK Section, 19 October 2006.–Date of Access: 19 February 2007. http://news.bbc.co.uk/1/hi/sci/tech/6060608.stm.
[397] Interview with Luigi Meli, director-general of the European Committee of Domestic Equipment Manufacturers (CECED), EU sets 'ambitious' energy goals, BBC News UK Section, 19 October 2006.–Date of Access: 19 February 2007. http://news.bbc.co.uk/1/hi/sci/tech/6060608.stm.

working with the private sector to finance the utilization of innovative technologies and the funding of new projects as listed below.

On 20 February 2007, the Council of Ministers of the EU recognized the need for "sustainable heat and power generation from fossil fuels in the European and the global energy mix in view of the climate and energy objectives." [398] The European Commission has decided to promote research and development within the EU and call upon member states and emerging economies with increasing fossil fuel consumption to do so. The research will aim to bring environmentally safe Carbon Capture and Storage (CCS) technology to markets by 2020, if possible, and to promote the construction and operation of up to 12 large-scale demonstrations of sustainable fossil fuels technologies in commercial power generation by 2015.[399]

In addition, on 19 October 2006, the European Commission published the Energy Efficiency Action Plan (EEAP), which declared that the Commission will call upon the banking sector to offer financing packages specifically aimed at small and medium enterprises (SMEs) and Energy Service Companies to adopt energy-efficiency savings identified in energy audits.[400] Access to community financing will be made available for promoting eco-innovations. This is one important way in which the EU has tried to involve the private sector in increasing the use of innovative technologies.

The EEAP also included funding for research into new ways to use hydrocarbon energy sources. Although at an early stage, the following projects are currently being funded by the EU: a project in Denmark called "DEMO SOFC" that seeks to demonstrate cleaner and more efficient power generation using Solid Oxide Fuel Cells (SOFCs), thereby cutting GHG emissions; a project in Germany (run by a German-Czech partnership) called "ZEM/SHIPS" that will develop the first hydrogen and fuel cell powered ship; a project in Italy called "VOICE" – Vegetable Oil Initiative for a Cleaner Environment – an initiative to cut GHG emissions, demonstrating the use of pure vegetable oil in decentralized energy generation and transport; and "BioSOFC," a project in Spain at four facilities which aims to showcase the energy savings and other environmental and economic benefits of using a Combined Heat and Power system using two 5 kW solid oxide fuel cells (SOFCs) fed with biogas. [401]

The EU has also continued to engage in dialogue about innovative energy technologies in hydrocarbon production and use. On 24 November 2006, parties to the EU-Russia Energy Dialogue (launched in October 2000[402]) released its 7th Progress Report.[403] The parties acknowledged that energy efficiency is one of the key objectives for both the EU and Russia, and agreed that the joint Energy Technology Centre should increase its focus on this important issue across all energy sector, should be provided with adequate funding to implement its activities, and should submit an Action Plan by June 2007. On 21 September 2006, the EU-OPEC Energy Dialogue hosted a joint conference on CCS in Riyadh.[404]

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[398] Press Release, 2785th Council Meeting Environment Brussels, 20 February 2007. Date of Access: 18 April 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=PRES/07/25&format=HTML&aged=0&language=EN&guiLanguage=en

[399] Press Release, 2785th Council Meeting Environment Brussels, 20 February 2007. Date of Access: 18 April 2007.

[400] Action Plan for Energy Efficiency: Realising the Potential, EC White Paper, COM(2006)545 final, 19 October 2006. Date of Access: 31 December 2006. http://ec.europa.eu/energy/action_plan_energy_efficiency/doc/com_2006_0545_en.pdf.

[401] Press Release, LIFE-Environment 2006: Commission funds 50 innovation projects in 14 countries with EUR 66 million, (Brussels), 19 October 2006. Date of Access: 31 December 2006. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1430&format=HTML&aged=0&language=EN&guiLanguage=en.

[402] The parties to this dialogue are the Minister of Industry and Energy of the Russian Federation and the European Commissioner for Energy. See EU-Russia Energy Dialogue, Euractiv, 28 November 2005. Date of Access: 4 January 2007. http://www.euractiv.com/en/energy/eu-russia-energy-dialogue/article-150061.

[403] Seventh Progress Report – EU-Russia Energy Dialogue, 24 November 2006. Date of Access: 4 January 2007. http://ec.europa.eu/energy/russia/joint_progress/doc/progress7_en.pdf.

[404] Further steps forward in the EU-OPEC Energy Dialogue, press release, 7 June 2006, Date of Access: 4 January 2007. http://www.ue2006.at/en/News/Press_Releases/June/0706EU-OPEC.html.

In summary, the European Commission has made the following efforts towards complying with their commitment regarding innovative energy technologies and hydrocarbon production and use: first, the Commission has directly funded alternative energy research projects. Second, it has made an effort to create a framework for private sector funding. Finally, it has engaged in dialogue with energy exporting countries and bodies such as Russia and OPEC to increase awareness and emphasize the importance of these kinds of energy sources for the EU in the long run. This comprehensive and forward-looking approach addresses technological, financial, and geopolitical issues in adopting innovative technologies while realistically trying to spread the effort between private and public sectors.

Author: Orly Babitsky

5. France

Background

France has made a significant attempt to meet its St. Petersburg Summit commitments on climate change and energy, though not all of its actions match the public rhetoric. France is moving forward with initiatives aimed at harnessing and utilizing clean energy. The country currently produces 15% of the EU's total renewable energy supply.[405] In the wake of rising oil prices, France is also taking a leading role in the provision of clean public transportation, as well as the development of cleaner hydrocarbon options. Still, France is not advancing on its commitment to expand innovative energy technologies in hydrocarbon production and use.

After the 1970s oil crisis, France pledged to develop energy independence, a goal which it continues to pursue in the area of nuclear power. France's nuclear program is also seen as critical component of the nation's environmental protection plan.

Overall, France has implemented some of its climate change programs, but these actions are not accompanied by the government's willingness to take on additional commitments, most notably at the recent negotiations at the European Council's Spring Summit. The important role of nuclear power sources in the energy infrastructure may be limiting progress on efficient energy use. Finally, the majority of successful programs to date have taken the form of private-public partnerships and improved energy use rather than direct legislation or enforcement measures. They were also sectorally limited to those sectors, such as transport, that are not technologically-locked in the same manner as (nuclear) energy generation.

Author: Jennifer Helgeson

Clean and Efficient Energy in the Transport Sector: +1

France has taken considerable measures since 2000 to improve energy efficiency in the ground transport sector, namely through short-term price adjustments and medium- and long-term investment programs, and has attained full compliance with this commitment.

During a press conference on 1 September 2006, French Prime Minster Dominique de Villepin asserted that "we have entered the post-oil era, and I intend to do whatever is necessary in order to give a real boost to energy-saving measures and to the use of renewable energies."[406] De Villepin outlined "three key components" of this energy policy in the transport sector: energy savings, the development of renewable energies, and greater investment.[407]

The French government has occasionally pursued strategies that favoured economic performance over environmental protection, as recent developments in the fuel sector have shown. Following higher fuel prices in late 2006, for example, the French government authorized short-term measures to reduce the price rise for trucking and agriculture[408] by securing commitments from several oil companies that they would immediately lower prices

[405] France and the Fight Against Global Warming, France Diplomatie. Date of Access: 19 December 2006. http://www.diplomatie.gouv.fr/en/france-priorities_1/environment-sustainable-development_1097/environmental-diplomacy_4155/climate_4596/france-and-the-fight-against-global-warming_7440.html.

[406] Preparing for the Post-oil era, Prime Minster's Report, 3 November 2005. Date of Access: 18 December 2006. http://www.premier-ministre.gouv.fr/en/information/reports_98/meeting_the_challenges_of_536/preparing_for_the_post_54305.html.

[407] The Energy Policy Act of 2005: Legislative Achievement or Management Fiasco?, Global Public Media, 5 September 2005. Date of Access: 18 December 2006. http://www.globalpublicmedia.com/articles/478.

[408] Preparing for the Post-oil era, Prime Minster's Report, 3 November 2005. Date of Access: 18 December 2006. http://www.premier-ministre.gouv.fr/en/information/reports_98/meeting_the_challenges_of_536/preparing_for_the_post_54305.html.

at gas stations and phase in any cost increases over a longer time horizon.[409] Thus, with definitive price increases over the longer term, the French government's actions are on the whole pointing in the direction of improved environmental performance. Specifically, to meet the goal of reduced use of private vehicles and to encourage the use of cleaner fuels, the petrol prices have come back in-line with those of the rest of Europe since the onset of 2007.

Beyond these short-term actions, the French government has also reaffirmed its long-term goal of accelerating the development of alternative energies—which would also serve to reduce domestic oil consumption and, thus, decrease the country's energy dependence.[410] France aims to use tax incentives to encourage new consumer choices (e.g. clean vehicles and renewable-energy equipment). The tax credit for clean cars was increased from €1,525 to €2,000.[411] In the future, the cost of car registration documents will depend on each vehicle's level of polluting emissions. There will be an extra charge of €2 per additional gram of CO_2 between 200 and 250 grams of CO_2 emitted; and €4/g over 250g of CO_2.[412]

Additionally, a number of research programs seek to enable greater use of biofuels and biomass energy in transport.[413] The goal is to have biofuels account for 5.75% of total fuel consumption by 2008 (two years ahead of the stated EU goal).[414] To achieve this goal, the Prime Minister intends to increase tax initiatives put in place for biofuel plants; already, a call for tenders has been put out for the production of 1.8 million tons of biofuel.[415]

France will launch a €100 million R&D program with the goal of establishing a low-consumption vehicle over the coming five years.[416] Additionally, round-table talks with Thierry Breton, French Minister of Economy, Finance, and Industry, and François Loos, Minister Delegate for Industry, have resulted in increased private investment by leading French oil companies towards cleaner vehicle development.[417] As of May 10, cars in France will bear a new label, introduced by Nelly Olin, the Minister of Ecology and Sustainable Development. This small sticker will provide potential car buyers with specific information on the energy consumption of their vehicle. To encourage French people to buy non-polluting cars, a €2000 tax credit will be offered for the purchase of a clean vehicle. This represents one of the key measures which ought to ensure that the 2004-2012 Climate Plan (see below) will allow France to meet its commitments under the Kyoto Protocol.

During the 12 November 2006 meeting of the Inter-ministerial Committee for Sustainable Development, the French government confirmed the Climate Plan 2004-2012 which emphasizes reduced energy use in the transport sector.[418]

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[409] EuroBiO 2006, 23 October 2006. Date of Access Date: 19 December 2006. http://www.eurobio2006.com/index_fr.php

[410] Preparing for the Post-oil era, Prime Minster's Report, 3 November 2005. Date of Access: 18 December 2006. http://www.premier-ministre.gouv.fr/en/information/reports_98/meeting_the_challenges_of_536/preparing_for_the_post_54305.html.

[411] Environment: "Energy label": French government monitors overconsumption., French Embassy in the United Kingdom. Date of Access: 20 April 2007. http://www.ambafrance-uk.org/Environment-Energy-label-French.html.

[412] Preparing for the Post-oil era, Prime Minster's Report, 3 November 2005. Date of Access: 18 December 2006. http://www.premier-ministre.gouv.fr/en/information/reports_98/meeting_the_challenges_of_536/preparing_for_the_post_54305.html.

[413] France Among the Leaders for Biofuels, French Embassy in the United Kingdom. Date of Access: 18 April 2007. http://www.ambafrance-uk.org/E85-France-among-the-leaders-for.html http://www.ambafrance-uk.org/E85-France-among-the-leaders-for.html.

[414] Biodiesel Demand Continues Pushing Rapeseed Area Up In the EU. Date of Access: 22 December 2006. http://www.pecad.fas.usda.gov/highlights/2006/06/europe_20_june_2006/.

[415] Biodiesel Demand Continues Pushing Rapeseed Area Up In the EU. Date of Access: 22 December 2006. http://www.pecad.fas.usda.gov/highlights/2006/06/europe_20_june_2006/.

[416] Preparing for the Post-oil era, Prime Minster's Report, 3 November 2005. Date of Access: 18 December 2006. http://www.premier-ministre.gouv.fr/en/information/reports_98/meeting_the_challenges_of_536/preparing_for_the_post_54305.html.

[417] Eco-Products and Eco-Design: Functions of Environmental Technology. Date of Access: 23 April 2007. http://ec.europa.eu/environment/etap/techno_functions_en.htm.

[418] Speech by Dominique de Villepin, Prime Minister. Interministerial Committee for Sustainable Development, 13 November 2006. Date of Access: 22 December 2006. http://www.ambafrance-

France is also partnering with civil society and the private sector, seen most recently in signing of the charter for the development of Super Ethanol E85. The government is not only financing large-scale research projects, but is also delivering on its promise to make cleaner fuels publicly available. The Finance Minister recently unveiled France's E85 flex-fuel pump for E85—a biofuel consisting of a mixture of 85% ethanol (max.) and 15% petrol.[419] In a year's time, France is to have 500 such pumps. The French government is hoping to achieve a biofuel incorporation rate of 5.7% by the end of 2008. While the European Commission has set a target of 5.75% of petrol stations delivering biofuels by 2010, France aims to attain 7%.[420]

There are also regional programs set up to support the broader national efforts concerning clean and efficient transportation throughout France. A new tramway was opened on 16 December 2006 in Paris.[421] The mayor of Paris, Bertrand Delanoe, asserted that the tramway, which travels along an 8-kilometer (5 mile) would be "an answer to pollution;" thus far, the tramway serves some 80,000 people a day—30,000 more than the old bus system.[422] The 17-stop tramway has also reduced automobile traffic in the area by 25%.[423] However, the tramway has met with political opposition because of financial interests: the governing right party sees the €311.5 million project as a barrier between the French capital and towns immediately south of Paris.[424] However, the Green Party (in charge of transportation policy) is planning to extend the tram to Porte la Chapelle by 2012.[425] Although this is not a federal-level policy, it nonetheless indicates growing interests in France in developing a more sustainable transport system.

Additionally, a number of tools has been implemented to monitor changes in atmospheric pollution caused by the transport sector. For instance, the Primequal program incorporates experimental studies in atmospheric dynamics and the Paris-wide transport and diffusion of pollutants through numerical modeling and physio-chemical modules.[426]

The French Environment and Energy Control Agency (ADEME) is stepping up its efforts to reduce pollution in the transport sector by changing individual behaviour, e.g. by advertising the public transport system or promoting such activities as the "European Free-Car Day."

France has taken serious steps in 2006-7 to develop and adopt clean and efficient energy in the transport sector. The government has authorized short-term measures to reduce the high petrol prices, but has also looked ahead to long-term R&D projects, especially in the development and use of ethanol-based fuels. Finally, the issue of cleaner transport is becoming a local as well as a national concern with projects at all levels getting attention and funding from government and private donors alike.

Author: Jennifer Helgeson

Alternative and Renewable Energy: -1

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us.org/news/statmnts/2006/environment_committee_speech_villepin111306.asp.
[419] France Among the Leaders for Biofuels, French Embassy in the United Kingdom. Date of Access: 18 April 2007. http://www.ambafrance-uk.org/E85-France-among-the-leaders-for.html http://www.ambafrance-uk.org/E85-France-among-the-leaders-for.html.
[420] France Among the Leaders for Biofuels, French Embassy in the United Kingdom. Date of Access: 18 April 2007. http://www.ambafrance-uk.org/E85-France-among-the-leaders-for.html http://www.ambafrance-uk.org/E85-France-among-the-leaders-for.html.
[421] Paris' latest form of public transport hits the rails, 16 December 2006. Date of Access: 23 December 2006. http://www.iht.com/articles/ap/2006/12/16/europe/EU_GEN_France_Paris_Tramway.php.
[422], InfosTram. Date of Access: 22 December 2006. http://www.tramway.paris.fr/tram.asp?section=F&lapage=infos/F2.asp.
[423] InfosTram. Date Accessed: 22 April 2007. http://www.tramway.paris.fr/tram.asp?section=F&lapage=infos/F2.asp.
[424] Paris' Latest Form of Public Transport Hits the Rails, 16 December 2006. Date of Access: 23 December 2006. http://www.iht.com/articles/ap/2006/12/16/europe/EU_GEN_France_Paris_Tramway.php.
[425] New Paris Tramway a success, Date of Access: 22 April 2007..http://paris.wantedineurope.com/news/news.php?id_n=2907.
[426]Ministry of Transport. Date of Access: 23 April 2007. http://www.equipement.gouv.fr/.

France has made some progress to comply with its St. Petersburg commitment on alternative and renewable energy. However, the country's continued emphasis on the development of costly nuclear energy has hampered investments in renewable energy developments in addition to downplaying the country's need for a more diversified energy system. The French government's firm stance on not diversifying its energy systems was made clear during the European Council's energy plan negotiations in March 2007, as detailed below.

On 9 March 2007, the EU drafted the Union's energy policy targets for the next 10 years during the European Council's Spring Summit. One objective of the energy plan called for 20% of Europe's energy needs to be addressed by renewable energy, such as hydropower, biomass, and wind energy, by 2020.[427] France, however, was one of the few countries to object to the renewable energy target, explaining that it would accept the terms only if the target allowed the use of energy sources with low carbon emissions.[428] France was clearly attempting to include nuclear energy, its main source of electricity, in the list of accepted forms of renewable energy used to reach the EU's 20% target. Despite its opposition to the energy package proposed to the European Council, France eventually caved in under considerable pressure from its EU partners who supporting the 20%-by-2020 objective.[429]

On 13 November 2006, French Prime Minister Dominique de Villepin chaired an inter-ministerial Committee on Sustainable Development planning how to accelerate the use of biofuels in the country's transport industry.[430] One step taken by the country to achieve this objective was a proposal to sign an Ethanol E-85 Charter for the development of Super Ethanol E85, a fuel consisting of a maximum 85% ethanol.[431] This would be a multi-lateral project involving the government and social and business partners.[432] No additional information has been specified, however, regarding the objectives and specific targets of this charter, and nothing has been signed as of yet. In the same month, the government also stated it would accelerate the development of biofuel technologies in 2007 by increasing biofuel funding.[433] Although no specific plan was outlined, the government stated that districts wishing to use and test certain biofuels could do so with the government's help.[434]

The French government is also hopeful that the country can further increase the use of biofuels in gasoline and diesel hybrids. According to François Loos, the Minister of Industry, France wants to increase its biofuel production from approximately 500,000 tons produced

[427]Politique énergétique : La France en flagrant délit de double discours, Greenpeace France, (Paris), 28 February 2007. Date of Access: 20 April 2007. http://www.greenpeace.org/france/news/20070228-politique-energetique-la-france-en-flagrant-delit-de-double-discours.

[428]Politique énergétique : La France en flagrant délit de double discours, Greenpeace France, (Paris), 28 February 2007. Date of Access: 20 April 2007. http://www.greenpeace.org/france/news/20070228-politique-energetique-la-france-en-flagrant-delit-de-double-discours.

[429]CONSEIL EUROPEEN DES 8 ET 9 MARS 2007 : La volonté politique enfin au rendez-vous, Euros du Village , (Paris), 12 March 2007. Date of Access: 20 April 2007. http://www.eurosduvillage.com/CONSEIL-EUROPEEN-DES-8-ET-9-MARS.html.

[430] Sustainable Development: Unveiling the Climate Plan and the Charter for Flexible Fuel, Prime Minister's website, (Paris), 13 November 2006. Date of Access: 19 December 2006. http://www.premier-ministre.gouv.fr/en/information/latest_news_97/sustainable_development_unveiling_the_57272.html.

[431] Thierry Breton s'engage sans réserve pour le lancement en France dès 2007 du 'Flex Fuel-Ethanol E85 premier carburant de l'après-pétrole', Ministère de l'Économie, des finances et de l'industrie, (Paris), 26 September 2006. Date of Access: 19 December 2006. http://www.minefi.gouv.fr/fonds_documentaire/archives/communiques/2006/c0609261.php.

[432] Thierry Breton s'engage sans réserve pour le lancement en France dès 2007 du 'Flex Fuel-Ethanol E85 premier carburant de l'après-pétrole', Ministère de l'Économie, des finances et de l'industrie, (Paris), 26 September 2006. Date of Access: 19 December 2006. http://www.minefi.gouv.fr/fonds_documentaire/archives/communiques/2006/c0609261.php.

[433] Le Gouvernement veut accélérer le développement des biocarburants en France, Prime Minister's website, (Paris), 4 December 2006. Date of Access: 3 January 2007. http://www.premier-ministre.gouv.fr/information/actualites_20/gouvernement_veut_accelerer_developpement_57356.html.

[434] Le Gouvernement veut accélérer le développement des biocarburants en France, Prime Minister's website, (Paris), 4 December 2006. Date of Access: 3 January 2007. http://www.premier-ministre.gouv.fr/information/actualites_20/gouvernement_veut_accelerer_developpement_57356.html.

in 2006 to over 3.5 million tons in 2007.[435] To date, however, no significant projects have been initiated in order to meet this objective.

That much of France's commitment to invest in the development of renewable energy technologies and infrastructure is still for the most part empty rhetoric is further evidenced in the country's 2007 Energy Research Budget, which has allocated only 11.5% of France's total energy research funding to alternative energy technologies.[436] If France is to reach its target under the EU's 20% by 2020 renewable energy goal, a different funding structure is required. For instance, one step would be to reallocate some of the massive subsidies for nuclear energy to the development of renewable and alternative energy technologies and projects. Doing so would enable France to play a significant role in helping the EU achieve its renewable energy target.[437]

Overall, France has yet to engage decisively with the areas of alternative and renewable energy. Following President Chirac's hesitance to endorse alternative energy during the St. Petersburg Summit, the country has not made any commitments to expand its hydroelectric, solar, or wind power. It is widely believed that the resources invested into the recently authorized nuclear facility, should have been used to develop renewable and alternative energies.[438] France is also accused of outdated, conservative approaches to energy policy.[439] In short, the country has failed to take significant new actions to meet the St. Petersburg Summit goals for renewable/alternative energy. It is therefore awarded a score of -1.

Author: Denise Noblot-Celeghin

UNFCCC/Kyoto: 0

France remains committed to its goal of reducing CO_2 emissions in accordance with the UNFCCC and the related mechanisms. Above and beyond policy statements, France has taken an active role in promoting environmental policies on both domestic and international scale. Efforts such as fiscal reforms and a restrictive emissions target suggest that the French government is on the right path to combat climate change. However, it has failed to make sufficient progress in other areas which could help to meet Kyoto targets. France has been therefore been awarded a score of 0.

The French government has made numerous public statements regarding its efforts to reduce emissions. On 11 January, the Minister of Ecology and Sustainable Development, Olin Nelly, presented the updates from the second 'Climate Plan' meeting, since the project started in 2004.[440] The meeting concluded that the French government aims to further reduce its CO_2 emissions from 6 to 8 million tons annually and that it will apply new fiscal laws to that end.[441] Since 2004, the government has committed more than €2 billion to

[435] Le Gouvernement veut accélérer le développement des biocarburants en France, Prime Minister's website, (Paris), 4 December 2006. Date of Access: 3 January 2007. http://www.premier-ministre.gouv.fr/information/actualites_20/gouvernement_veut_accelerer_developpement_57356.html.
[436] Le programme budgétaire spécifique 'Recherche dans le domaine de l'énergie', Ministère de l'Économie, des finances et de l'industrie, (Paris), 8 December, 2006. Date of Access: 3 January 2007. http://www.budget2007.gouv.fr/bleus/BLEUSHTM/DBGPGMPRESPGMACTPGM188.htm
[437] EU Makes Bold Climate and Renewables Commitment, 9 March 2007. Date of Access: 20 April 2007 http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536.
[438] EU Makes Bold Climate and Renewables Commitment, 9 March 2007. Date of Access: 20 April 2007 http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536.
[439] EU Makes Bold Climate and Renewables Commitment, 9 March 2007. Date of Access: 20 April 2007 http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536.
[440] Rendez-vous Climat : Poursuivre la Lutte Contre le Changement Climatique, Prime Minister's Website, (Paris), 11 January 2007. Date of Access: 3 April 2007. http://www.premier-ministre.gouv.fr/information/actualites_20/rendez_vous_climat_poursuivre_57531.html.
[441] Rendez Vous Climat 2007: 2ème bilan annuel du Plan Climat Sommaire Discours de Madame Olin, Ministre de l'Ecologie et du Développement Durable, (Paris), 28 March 2007. Date of Access: 3 April 2007. http://www.ecologie.gouv.fr/IMG/pdf/dossier_de_presse_bilan_plan_climat.pdf.

help counter global warming through domestic initiatives.[442] Through small-scale steps such as adding surplus taxes on cars that emit more than 200g of CO_2/km and increasing government support from €1,500 to €2,000 for CO_2 friendly cars, the government hopes to help curb GHG emissions within the transport sector (which remains the country's largest source of CO_2 emissions.)[443]

Another domestic measure to reduce greenhouse gases is the joint effort between the Ministry of Ecology and the Ministry of Economy, Finance, and Industry in enforcing restrictions on CO_2 emissions in all new contracts for building, transport and industrial projects. On 7 March, both ministers announced the government's effort to install judicial and financial measures to help reduce CO_2 emission in these sectors.[444] Moreover, in a meeting with the council of ministers on 28 March, Olin Nelly urged her colleagues to increasingly integrate environmental considerations into public policy.[445]

Internationally, France has also been at the forefront of global efforts to reduce greenhouse gases. In February, Jacques Chirac hosted a two-day international conference, 'Citizens of the Earth', in an effort to highlight the need for greater environmental awareness. With over 50 nations represented, the French President urged the creation of a UN organization for the environment. Moreover, Chirac emphasized France's technological, economic, and organizational commitment to reducing GHGs and encouraged other nations to do the same.[446] In an interview the day before the conference on 1 February, the President also encouraged the EU to impose financial sanctions on nations which exceeded their CO_2 emission targets.[447] The President has expressed strong faith in the EU, and, on 8 March, expressed public support for the EU's commitment to curb CO_2 emissions.[448] On 6 April, he also issued a press release defending the IPCC proposal to further reduce GHGs, and maintained that France aims to halve its CO_2 emissions by 2050.[449] This figure is significantly less ambitious than the one provided by Facteur 4 in August 2006, which aimed to 'divide by four' the CO_2 emissions in France by 2050.[450]

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[442] Rendez-vous Climat : Poursuivre la Lutte Contre le Changement Climatique', Prime Minister's Website, (Paris), 11 January 2007. Date of Access: 3 April 2007. http://www.premier-ministre.gouv.fr/information/actualites_20/rendez_vous_climat_poursuivre_57531.html.

[443] Climate Change: Facts and Figures, French Environment and Energy Management Agency, (Paris). Date of Access: 7 April 2007. http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=17568#tit6.

[444] 'Fixation du cadre juridique du nouvel instrument financier permettant la réalisation de projets de réduction de gaz à effet de serre', (Paris), 7 March 2007. Date of Access: 3 April 2007. http://www.ecologie.gouv.fr/Thierry-BRETON-et-Nelly-OLIN.html.

[445] L'intégration de l'environnement dans les politiques publiques, Conseil des Ministres, (Paris), 5 April 2007. Date of Access: 6 April 2007 http://www.premier-ministre.gouv.fr/acteurs/gouvernement/conseils_ministres_35/conseil_ministres_28_mars_899/integration_environnement_dans_les_58058.html.

[446] Citoyens de la terre: Conference de Paris pour une gouvernance ecologique mondiale, Minister of Ecology homepage, (Paris), 3 February 2007. Date of Access: 3 April 2007 http://www.ecologie.gouv.fr/conference/?Appel-de-Paris.

[447] Interview de M. Jacques Chirac, Président de la République, à l'occasion de la Conférence de Paris pour une gouvernance écologique mondiale 'Citoyens de la terre', Palais de l'Élysée, (Paris), 1 February 2007, Date of Access: 9 April 2007. http://www.elysee.fr/elysee/elysee.fr/francais/interventions/interviews_articles_de_presse_et_interventions_televisees/2007/fevrier/interview_du_president_de_la_republique_a_l_occasion_de_la_conference_de_paris_pour_une_gouvernance_ecologique_mondiale.71469.html.

[448] Énergie et climat: éléments d'intervention de M. Jacques Chirac, Président de la République, lors du Conseil européen de Printemps, (Bruxelles), 8 March 2007. Date of Access: 10 April 2007, http://www.elysee.fr/elysee/elysee.fr/francais/interventions/discours_et_declarations/2007/mars/energie_et_climat_elements_d_intervention_du_president_de_la_republique.73951.html.

[449] Communiqué de la Présidence de la République concernant les conclusions du Groupe d'experts intergouvernemental sur l'évolution du climat (GIEC) sur les effets du réchauffement climatique, (Paris), 6 April 2007. Date of Access: 8 April 2007. http://www.elysee.fr/elysee/elysee.fr/francais/salle_de_presse/communiques_de_la_presidence/2007/avril/communique_concernant_les_conclusions_du_giec_sur_les_effets_du_rechauffement_climatique.75177.html.

[450] 'Rapport du Groupe de travail : Division par quatre des émissions de gaz à effet de serre de la France à l'horizon 2050, sous la présidence de Christian de Boissieu, Ministère de l'Ecologie et du Développement Durable', (Paris),

France is also taking significant short-term measures to reduce CO_2 emissions. In November 2006, the country withdrew its initial version of the National Allocation Plan (NAP), which proposed allowances totalling 155.6 million tons of CO_2 from 2008 to 2012. The government's revised edition of December 28 reduced its emission allowances to 132.8 million tons of CO_2.[451] In response, the EC Environment Commissioner Stavros Dimas praised the country's significant cuts, noting: "I welcome France's sound revision of its national allocation plan. The French government has clearly shown the need to ensure that the Emissions Trading Scheme remains a successful weapon for fighting climate change."[452] Similarly, Greenpeace France, which had criticized the government for its initial NAP emissions rates (and suggested they be lowered to 137.4 tons[453]) positively acknowledged the government's amendments.[454]

While the French domestic and international efforts suggest that the country is committed to both Kyoto and the UNFCCC, it is questionable whether France is in line with its reduction requirements. Contributing to the problem are conflicting interpretations of France's actual CO_2 reduction obligations. Under Kyoto, France is obliged to reduce its CO_2 emissions by 8% below the 1990 levels.[455] However, the EU target (under the EU Burden-sharing Agreement adopted at the EU Environment Council in June 1998) was less ambitious: a mere stabilization of emissions (i.e. at the 1990 levels). Thus, the government's claims about average reductions of 2% below the 1990 level over the last few years—while going beyond the requirements of the EU Burden-sharing agreement—nonetheless indicate that France is still failing to meet its Kyoto reduction commitments.[456]

The French government has also largely overlooked the use of other effective measures to reduce CO_2 emissions, such as the carbon sequestration technology. In a conference entitled 'Clean Carbon: Myth or Reality' in Le Havre on 8-9 March, a government official from the Ministry of Ecology and Sustainable Development Ministry of admitted that carbon capture and storage technologies were insufficiently developed in France.[457] Expanding such technologies would certainly help reduce France's CO_2 emissions even further.

Overall, France has taken strong political, financial, and institutional steps, both domestically and internationally, to reduce its GHG emissions. From tightening emission quotas to starting fiscal reform, the country appears dedicated to its St Petersburg pledge on Kyoto and the UNFCCC. However, France will need to reduce its CO_2 emissions more rigorously and further develop carbon capture and storage technologies if it is to reach the goal of 8% below 1990 level by 2008-2012, as promised under the Kyoto Protocol.

Author: Linn Norman

August 2006. Date of Access: 25 December 2006. www.ecologie.gouv.fr/IMG/pdf/rapport-final-logos.pdf. For English translation see http://www.industrie.gouv.fr/energie/prospect/pdf/facteur4-rapport-final-engl.pdf.

[451] Ministere de l'ecologie et du developpement durable – Projet de plan national d'affection, Des quotas d'emission de gaz a effect de serre (PNAQ II) – Period: 2008 à 2012, (France), 28 December 2006. Date of Access: 9 April 2007. http://www.ecologie.gouv.fr/IMG/pdf/PNAQII_2006_12_26.pdf. See also, EC Approves France's Emissions Trading Plan for 2008-2012, 27 March 2007. Date of Access: 9 April 2007. http://engineers.ihs.com/news/eu-en-natl-allocation-plan-3-07.htm.

[452] EC Approves France's Emissions Trading Plan for 2008-2012, Published as a news service by HIS, 27 March 2007. Date of Access: 9 April 2007, http://engineers.ihs.com/news/eu-en-natl-allocation-plan-3-07.htm.

[453] Deuxième plan d'allocation des quotas de CO2 : La France sur un mauvais cap, Greenpeace, (France), 23 June 2006. Date of Access: 9 April 2007, http://www.greenpeace.org/france/news/2eme-plan-quota-co2.

[454] Lutte contre les changements climatique: Un nouveau plan de quotas de CO2 satisfaisant, Greenpeace, (France), 19 December 2006. Date of Access: 7 April 2007. http://www.greenpeace.org/france/news/nouveau-plan-de-quotas-de-co2-satisfaisant.

[455] Kyoto Protocol to the United Nations Framework Convention on Climate Change, 16 March 1996. Date of Access: 6 April 2007. http://unfccc.int/resource/docs/convkp/kpeng.html.

[456] Programmes d'actions, Strategie Nationale de Developpement Durable, (France), November 2006. Date of Access: 25 December 2006. http://www.ecologie.gouv.fr/article.php3?id_article=6575.

[457] Charbon Propre: mythe ou réalité ? Au cœur de l'équation énergie - climat, le captage et stockage de CO_2, Intervention d'ouverture de Christian Brodhag, Délégué Interministériel au Développement Durable, (Le Havre), 7 March 2007. Date of Access: 11 April 2007. http://www.cawa.fr/charbon-propre-mythe-ou-realite-article00910.html.

Sustainable Use of Energy: 0

On 13 November 2006, the French Prime Minister, Dominique De Villepin, presented the government's five-year proposal on the topic, "The National Strategy for Sustainable Development Report.""[458] The report focused on fiscal regulations and other economic and political measures to curb polluting energy sources while promoting more environmentally friendly ones (e.g. taxes on coal combustion, lowered purchase tariffs, tax rebates on cleaner forms of energy technologies).[459] Although such steps suggest that France is seriously committed to promoting more sustainable use of energy, the government has made few public statements or adopted new initiatives in the area of sustainable energy use since November 2006.

According to 'The National Strategy for Sustainable Development Report', France is eager to promote civic awareness and responsibilities on sustainable energy use. The French government intends to expand current energy-saving information centers, from 170 to 300 centers, nationwide by next year.[460] It is also committed to introducing a sustainable development curriculum in schools (as of next academic year). In a similar vein, France recently launched its fifth annual 'Sustainable Development Week' (1-7 April), which received much publicity.[461] On this annual occasion, the Ministry of Ecology and Sustainable Development published and distributed both local and national energy-saving information pamphlets. In Bretagne alone the local council provided over 30,000 editions of various energy-saving booklets.[462] These efforts demonstrate that the government is effectively targeting the demand-side of energy consumption at grassroots level. Moreover, these government initiatives appear effective as recent surveys from I'IFOP reveal that twice as many French citizens were aware of sustainable energy-saving measures in 2006 than in 2002.[463]

The French government is also trying to promote financial incentives for sustainable domestic energy sources. In a November 2006 Report, the government vouched it would halve regional council property taxes on buildings that complied with new energy efficient technologies.[464] These fiscal exemptions will apply to both renovation works on old buildings as well as construction of new ones. On 4 November 2006, France doubled financial support to renewable domestic heating sources (now totalling €40 million).[465] Since 1 January, France has further committed €10 billion to be divided into individual loans, ranging from €4600 to €6000, for domestic housing that uses sustainable energy

[458] Discours devant les Etats généraux des entreprises et du développement durable, intervention du premier ministre, (Paris), 1 June 2007. Date of Access: 25 May 2007, http://www.archives.premier-ministre.gouv.fr/villepin/acteurs/interventions_premier_ministre_9/discours_498/discours_devant_les_etats_56122.html.

[459] Comite Interministeriel pour le Developpement Durable, French Government document, (Paris), 13 November 2006. Date of Access: 25 December 2006. http://www.ecologie.gouv.fr/IMG/pdf/devdurable_v51.pdf

[460] Programmes d'actions, in Strategie Nationale de Developpement Durable, (France), November 2006. Date of Access: 25 December 2006 http://www.ecologie.gouv.fr/article.php3?id_article=6575.

[461] The Minister of Ecology and Sustainable Development also organized a competitive project which received over 600 proposals on the theme: 'Biodiversity is in danger. Your mission: to create a visual that will transform our attitudes'; there were more than 1,970 project proposals, which according to a local environment agency, was 7.5% more than the previous year. See 'La Lettre d'information n °2
Semaine du développement durable 2007', Ministry of Ecology and Sustainable Development, (Paris), 27 February 2007. Date of Access: 11 April 2007. http://www.ecologie.gouv.fr/IMG/pdf/lettre_sdd_n2-%2021-fevrier-07%20.pdf; also, Semaine du Développement durable : plus de 1600 manifestations seront organisées en France', 27 March 2007. Date of Access: 12 April 2007. http://www.actu-environnement.com/ae/news/semaine_developpement_durable_2007_manifestations_2367.php4.

[462] Se Procurer les affiches, livrets, etc., La Semaine de développement durable en Bretagne, (Bretagne), 15 March 2007. Date of Access: 19 May 2007. http://www.bretagne-environnement.org/semaine-developpement-durable/.

[463] Les Français sont plus sensibilisés au concept du développement durable, article published by ACTU environnement, 8 June 2006. Date of Access: 25 May 2007, http://www.actu-environnement.com/ae/news/1752.php4.

[464] Comite interministeriel pour le developpement durable, French Government Report, (France), 13 November 2006. Date of Access: 25 December 2006. http://www.ecologie.gouv.fr/IMG/pdf/devdurable_v51.pdf.

[465] Sustainable development: unveiling the Climate Plan and the charter for flexible fuel, Prime Minister's homepage, 13 November 2005. Date of Access: 25 December 2006. http://www.premier-ministre.gouv.fr/en/information/latest_news_97/international_agreement_on_iter_57326.html.

sources.[466] In addition, the government has promised up to 50% tax credit on the domestic instillation of solar energy panels and other energy-efficient technologies.[467]

The government also aims to impose its sustainable development policies on industry. Environmental groups have criticized the government for not regulating and enforcing its energy-saving requirements in the private sector.[468] Since October 2006, the Minister of Ecology and Sustainable Development has held seven meetings with business groups in an effort to create a more effective political dialogue between the private and public sectors on sustainable development.[469] It is unclear, however, whether these monthly meetings have been effective. Nonetheless, the government's tax on industrial polluting activities currently amounts to €45 million and the French Prime Minister has warned that new tax penalties on coal combustion will further increase this figure (according to the November 2006 Report, these fiscal fees on coal consumption will come into effect in 2007.[470])

Overall, the French government has taken considerable measures to promote sustainable use of energy through public awareness, economic incentives, and public dialogue. It remains questionable, however, whether the French Government's sustainable development 'Strategy in Action' is effective. France has made few significant or substantial updates on the governments' sustainable development webpage since November 2006, suggesting that little movement has been made since the crucial report was released. It is also difficult to find concrete and quantifiable evidence of any direct improvements thus far. As a result, France has been awarded a score of 0.

Author: Linn Normand

Innovative Energy Technologies in Hydrocarbon Production and Use: 0

France took some steps to comply with its 2006 St. Petersburg objective on innovative energy technologies in hydrocarbon production and use, including the development of carbon capture and storage and the expansion and improvement of efficiency in oil-refining, petrochemical and gas processing industries.[471] Most of France's efforts have taken the form of joint programs with industry and its partners in the EU. The St. Petersburg Summit Plan of Action for Energy stressed that hydrocarbons are expected to play a leading role in total energy consumption well into the century, maintaining that states must work with the private sector in the development and expansion of clean and efficient technologies. Yet France has not borne its share of this responsibility, nor has it provided the necessary funding for the majority of the joint energy and hydrocarbon technology projects. Instead, most of the funding of any such shared projects is attributable to French industry actors and the European Commission.

France is also a member of the Carbon Sequestration Leadership forum,[472] where, through the Institut Français du Pétrole (IFP), a state-industry interface,[473] France is working on two

[466]Développement durable : une stratégie en action, Prime Minister's hompage, 27 December 2006. Date of Access: 12 April 2007. http://www.premier-ministre.gouv.fr/information/les_dossiers_actualites_19/developpement_durable_une_strategie_876/pistes_progres_57467.html.
[467] Comite Interministeriel pour le Developpement Durable, French Government Document, (Paris), 13 November 2006. Date of Access: 25 December 2006. http://www.ecologie.gouv.fr/IMG/pdf/devdurable_v51.pdf.
[468] Les Français sont plus sensibilisés au concept du développement durable, article published by ACTU environnement, 8 June 2006. Date of Access: 25 May 2007, http://www.actu-environnement.com/ae/news/1752.php4.
[469] Les rencontres thématiques du Forum des entreprises et du développement durable, 26 October 2006. Date of Access: 10 April 2007. http://www.ecologie.gouv.fr/-Les-rencontres-mensuelles-du-FEDD-.html.
[470] Nouvelles mesures, in Actualisation 2006 du Plan Climat 2004-2012, French Government, (France), 15 November 2006. Date of Access: 25 December 2006. http://www.ecologie.gouv.fr/IMG/pdf/liste_mesures_actua_PC_PdMV10nov.pdf.
[471] St. Petersburg G8 Summit Official Overview of: Global Energy Security, St. Petersburg G8 Summit official website, (St. Petersburg), 16 July 2006. Date of Access: 19 December 2006. http://en.g8russia.ru/docs/11.html.
[472] Carbon Sequestration Leadership Forum. Date of Access: 20 April 2007, http://www.cslforum.org/index.htm.

ongoing carbon sequestration projects. The first project is CASTOR, a four-year program which began in 2004 and has a €15.8 million budget. It should be noted, however, that although France and Norway proposed to lead the CASTOR project, the European Commission and industry are funding the project. Although France, in conjunction with Norway and the European Commission, proposed the project, the country's specific role in the operation, implementation and funding of the project is not yet clear. The second carbon sequestration project France is involved with, with Germany, is ENCAP[474] – a five-year program which began in 2004 and has a €22.2 million budget (almost 50% of which is funded by the European Commission).[475] As with CASTOR, apart from France's title as Nominator of the project, the precise role of the government in the operation, implementation and funding of the project is not clear.

France is also working in conjunction with the IFP in a carbon sequestration project in China. The Action Within CO_2 Capture and Storage China-EU (COACH), which France is coordinating, [476] has 12 European and 8 Chinese partners composed of private, public, and institutional members. [477] COACH is a three-year project which began in November 2006 and has a total budget of €2.6 million, half of which comes from the EU.[478] The project's objective is to develop technologies for carbon sequestration within China for both CO_2 emissions reduction and for enhanced oil and gas recovery.[479]

Lastly, according to France's 2007 Energy Research Budget, the state will allocate 22.3% of energy research funding to the development of new infrastructure and the diversification of reserves in the hydrocarbon sector.[480] Published by the Ministry of Economy, Finance, and Industry, the document outlines what types of projects the budget will fund. It makes clear that the development of clean hydrocarbon technologies and the expansion of CCS research are not a key priority for the country at the moment and that the budget will focus on maximizing hydrocarbon exploitation and efficiency.[481]

France's policies relating to innovative energy technologies in hydrocarbon production and use address only two of the St. Petersburg Summit Plan of Action for Energy points in this area. Apart from a few smaller initiatives, France has not adopted or implemented any new major policies on the hydrocarbon front. As a result, the country has only partially met its St. Petersburg compliance goals in this area, and is awarded a score of 0.

Author: Denise Noblot-Celeghin

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[473] L'Institut Français du Pétrole. Date of Access: 20 April 2007, http://www.ifp.fr
[474] Carbon Sequestration Leadership Forum, Projects. Date of Access: 20 April 2007 http://www.cslforum.org/projects.htm.
[475] Carbon Sequestration Leadership Forum, Projects. Date of Access: 20 April 2007 http://www.cslforum.org/projects.htm.
[476] L'Institut Français du Pétrole. Date of Access: 4 April 2007. http://www.ifp.fr/ifp/Search.jsp.
[477] CCS Developments in China, UK Energy Research Centre (UKERC), (Edinburgh), 6-7 July 2006. Date of Access: 24 April 2007. www.ukerc.ac.uk/component/option,com_docman/task,doc_download/gid,722/.
[478] KTH Research Project Database, Cooperation Action within CO2 capture and storage (CCS) China-EU – COACH. Date of Access: 20 April 2007. http://researchprojects.kth.se/index.php/kb_1/io_9837/io.html.
[479] KTH Research Project Database, Cooperation Action within CO2 capture and storage (CCS) China-EU – COACH. Date of Access: 20 April 2007. http://researchprojects.kth.se/index.php/kb_1/io_9837/io.html.
[480] L'effort public en matière de recherche sur l'énergie- "Le programme budgétaire spécifique 'Recherche dans le domaine de l'énergie', Ministère de l'Économie, des finances et de l'industrie, (France), 8 December 2006. Date of Access: January 3, 2007. http://www.budget2007.gouv.fr/bleus/BLEUSHTM/DBGPGMPRESPGMACTPGM188.htm.
[481] France's energy situation, Ministère de l'Économie, des finances et de l'industrie, (France), 20 November 2006. Date of Access: 3 January 2007. http://www.industrie.gouv.fr/cgi-bin/industrie/frame23e.pl?bandeau=/energie/politiqu/be_polit.htm&gauche=/energie/politiqu/me_polit.htm&droite=/energie/politiqu/se_pol_a.htm.

6. Germany

Background

For Germany, a net energy importer, securing energy supplies is of paramount concern.[482] Yet Germany faces an additional challenge: while striving to meet its ambitious CO_2 reduction targets,[483] the government has committed itself to phasing out nuclear energy by 2020/1. This implies that the country, to ensure a reliable supply, will need to replace 40,000 MW of energy (derived from nuclear power) over the next 20 years, while at the same time honouring its environmental commitments: to reduce CO_2 emissions by 21% against 1990 levels in the period 2008-12; to increase the share of renewables to 12.5% by 2010; to double energy productivity by 2020; and to phase out nuclear energy by 2020/1.

Germany's attempts to secure compliance with its St Petersburg commitments have been comprehensive; however, apart from the area of renewable energy, many of its policies have yet to see the desired impacts. Overall, Germany's compliance can be judged as "work in progress," however committed.

The efforts to introduce clean and efficient energy in the transport sector are illustrative: while much progress has been made on alternative fuels (e.g. biofuels), it has not been accompanied by a reduction in CO_2 emissions to which the car industry had committed *itself* (130mg/km); yet, instead of introducing stringent regulations, Chancellor Merkel has shied away from holding the car industry accountable.[484] That said, progress has been made in other areas of the transport sector, such as the vehicle tax bill introduced in March 2007 or the innovation program for low-emission Heavy Goods Vehicles. Germany's efforts to spur innovation in the hydrocarbon sector have also been mixed: the government has not paid much attention to innovative technologies, nor has it encouraged efficient use of existing technologies such as Combined Heat and Power technology (CHP); at the same time, some of Germany's dependence on coal-based energy supply has been offset. In terms of sustainable use of energy, even though Germany is focusing on reshaping consumer demand through extensive information dissemination and awareness activities, there appears to be insufficient uptake of sustainable energy, not least seen from the fact that energy consumption has continuously increased since 1993.[485] In contrast, the renewable energy commitment has witnessed tangible results: Germany successfully implemented an incentive scheme to support the uptake of renewable energies, supported the research and development of alternative energy sources and reported a reduction of CO_2 intensity per kilowatt hour (kWh) by 15%,[486] thus earning Germany a score of full compliance.

Finally, Germany has played a commendable leadership role on climate change issues at the international level which should be emphasized.

In sum, Germany has shown many praiseworthy activities across all commitments, and it is only a step away from full compliance with its commitments. However, to achieve that, further work is required.

Author: Marie Karaisl

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[482] Zukunft wachkuessen: Leitlinien fuer ein nachhaltiges Regierungsprogramm, Politische Oekologie, (Wuppertal), December 2006-January 2007. Date of Access: 21 December 06. http://www.wupperinst.org/de/info/detailseite_mit_datum/index.html?&beitrag_id=328&bid=170.

[483] Germany has just proposed a road map to reduce climate change emissions by 40% by 2020. See Hintergrundpapier: Klimaagenda 2020: Der Umbau der Industriegesellschaft. BMU, Berlin, 18 April 2007. Date of Access: 25 April 2007.

[484] Mildernde Umstände? Zur Debatte um die Minderungsverpflichtungen der PkW –Hersteller, Wuppertal Institute, (Wuppertal), 1 February 2007. Date of Access: 21 February 2007. http://www.wupperinst.org/de/info/detailseite_mit_datum/index.html?&beitrag_id=494&bid=11.

[485] Stromsparen ist wichtig fuer den Klimaschutz, Umweltbundesamt, (Berlin), 3 April 2007. Date of Access: 23 April 2007. http://www.umweltdaten.de/publikationen/fpdf-l/3191.pdf

[486] Entwicklung der spezifischen Kohlendioxid-Emissionen des deutschen Strommix, (Dessau), April 2007. Date of Access: 23 April 2007. http://www.umweltdaten.de/publikationen/fpdf-l/3195.pdf.

Clean and Efficient Energy in the Transport Sector: 0

The commitment addressing clean and efficient energy in the transport sector consists of two distinct sub-sections: the creation of incentives for consumers to use efficient vehicles (through measures such as tax-breaks), and the introduction of efficient public transport systems using hybrid and/or clean diesel technology. Germany has complied with the first sub-commitment by introducing numerous programs supporting alternative fuels (e.g. biofuels), funding R&D, and introducing and proposing consumer incentive schemes. However, it has failed to develop efficient public transportation systems or to expand existing systems on a large scale.

The German government has reaffirmed its commitment to efficient vehicles in formulating the agenda for the G8 Summit,[487] where energy efficiency will be a core issue. Furthermore, the Federal Minster of Transport, Wolfgang Tiefensee, hosted the International Environmentally Friendly Vehicles Conference[488] on improving energy efficiency in November 2007, and presided over the European Transport, Telecommunications, and Energy Council in March 2007.[489] At the latter, Minister Tiefensee stated that the German European Council Presidency would like to kick-start a process of reducing energy consumption and emissions in all ,modes of transport.[490] He put particular emphasis on improving the efficiency of drive-train technologies, supporting the use of alternative and renewable fuels (e.g. through tax-incentives), and establishing a Joint Technology Initiative for Hydrogen and Fuel Cells through the European Commission.[491]

The German government has introduced numerous programs which support biofuels in the transportation sector. First, the governing Grand Coalition has decided that the share of biofuels in petrol and diesel will double in the coming years.[492] Second, Chancellor Angela Merkel has emphasized that Germany's aim at the G8 Summit in Heiligendamm is to achieve verifiable and attainable goals, and to enhance the use of alternative fuels, in particular biofuels.[493] As President of the European Council, Merkel has been decisive in achieving an agreement by the EU Heads of State and Government on 9 March 2007 to raise the share of biofuels in petrol and diesel to 10% by 2020.[494] This was the first time the EU states have agreed to binding targets in this area.[495] Third, Germany is already the

[487] Focuses of the German G8 presidency, German Federal Government, (Berlin), 18 October 2006. Date of Access: 20 May 2007. http://www.bundesregierung.de/Content/EN/Artikel/2006/10/2006-10-18-schwerpunkte-deutsche-g8-pr_C3_A4sidentschaft__en.html.

[488] 3rd International Environmentally Friendly Vehicles Conference, Federal Ministry of Transport, Building and Urban Affairs, (Dresden), 19 November 2007. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.990665/Artikel/dokument.htm.

[489] Transport, Telecommunications and Energy Council, (Brussels), 20 March 2007. Date of Access: 20 May 2007. http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/trans/93236.pdf.

[490] Statement given by the Federal Minister of Transport, Building and Urban Affairs, Wolfgang Tiefensee, Federal Ministry of Transport, Building and Urban Affairs, (Brussels), 21 March 2007. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.989812/Reden/dokument.htm.

[491] Statement given by the Federal Minister of Transport, Building and Urban Affairs, Wolfgang Tiefensee, on the evening before the Transport Council, Federal Ministry of Transport, Building and Urban Affairs, (Brussels), 21 March 2007. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.989812/Reden/dokument.htm.

[492] Sigmar Gabriel: Laying the foundations for a post-2012 climate protection agreement, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 13 November 2006, BMU-Pressedienst No. 290/06. Date of Access: 20 May 2007. http://www.bmu.de/english/climate/press_statements_speeches/pm/38164.php.

[493] Ulrich Schäfer, Vertrauliches Programm für den Weltwirtschaftsgipfel 2007, Sueddeutsche Zeitung, 15 October 2006. Date of Access: 22 December 2006. www.sueddeutsche.de/wirtschaft/artikel/758/88670.

[494] Minister Gabriel welcomes the results of the EU summit, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 9 March 2007. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/38874.php.

[495] Historical agreement on climate protection, Federal Government, (Berlin), 9 March 2007. Date of Access: 20 May 2007. http://www.g-8.de/nn_94646/Content/EN/Artikel/2007/03/2007-03-09-historischer-durchbruch-in-bruessel.html.

largest producer of bio-diesel in the world,[496] which has been at least partly achieved through tax exemptions (as part of its larger eco-tax reform, which does not fall under the compliance period).[497] Fourth, the Government announced that it will further expand the use of biofuels through compulsory blending regulations.[498] This initiative aims to offset the negative effect on biofuels consumption from a higher tax on biofuels, which the Federal Government implemented to comply with an EU requirement.[499] The overall effect on biofuels consumption from these latter two initiatives remains uncertain. Nevertheless, considering the above initiatives, it can be concluded that the German government has significantly encouraged the introduction of alternative fuels in the transport sector, which evidences a degree of compliance with the first sub-commitment.

The German government continues to supports R&D in transport technologies, particularly fuel cell technology. On 30 October 2006, a *National Innovation Program for Hydrogen and Fuel Cell Technologies* was jointly launched by three federal ministries (Ministry of Transport, Building and Urban Affairs, Ministry of Economics and Technology, and Ministry of Education and Research),[500] which involves 24 companies from the hydrogen and fuel-cell sector, with investments in research totalling €1 billion, of which the Federal Ministry of Transport will provide €500 million (the rest is to come from industry sources).[501] Further, on 13 July 2006, Volkswagen joined the Clean Energy Partnership (CEP), sponsored by the Transport Ministry,[502] to test the use of hydrogen as an alternative fuel.[503] With such private-public projects, the National Innovation Program is a significant contribution towards developing cleaner energy in the transport sector.

The German government aims to reduce CO_2 emissions in the transport sector through three policy instruments: emissions taxes, carbon-ceilings, and emissions trading. First, it aims to tax vehicles based on their emissions (in accordance with the Coalition Agreement of the governing Grand Coalition).[504] On 19 October 2006, Minister Tiefensee announced an innovation program for the promotion of low-emission HGVs.[505] This scheme makes available €100 million annually for the purchase of environment-friendly HGVs, awarded

[496] Ministers Wieczorek-Zeul and Gabriel: Worldwide investments in renewable energy sources reach a record high, BMU-Pressedienst No. 216/06, (Berlin), 29 August 2006. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/37749.php.
[497] Renewable energy sources in figures - national and international development, Berlin, May 2006. Date of Access: 20 May 2007. http://www.bmu.de/files/english/renewable_energy/downloads/application/pdf/broschuere_ee_zahlen_en.pdf.
[498] Renewable energy sources in figures - national and international development, Berlin, May 2006. Date of Access: 20 May 2007. http://www.bmu.de/files/english/renewable_energy/downloads/application/pdf/broschuere_ee_zahlen_en.pdf.
[499] Reform der Energiebesteuerung 2006, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), November 2006, Date of Access: 20 May 2007. http://www.bmu.de/oekologische_finanzreform/downloads/doc/37802.php.
[500] Tiefensee: Germany wants to achieve market leadership for fuel cell and hydrogen technologies, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 30 October 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.981716/Tiefensee-Germany-wants-to-ach.htm?global.back=/en/Press/-%2c1933%2c0/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.
[501] Tiefensee: Germany wants to achieve market leadership for fuel cell and hydrogen technologies, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 30 October 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.981716/Tiefensee-Germany-wants-to-ach.htm?global.back=/en/Press/-%2c1933%2c0/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.
[502] Volkswagen AG has joined the Clean Energy Partnership. Clean-Energy-Partnership. Berlin, 13 July 2006. Date of Access: 20 May 2007. http://www.cep-berlin.de/presse/pdfs/CEP_PM_VW_060713_en.pdf.
[503] Mobile with hydrogen - Clean Energy Partnership (CEP). Federal Ministry of Transport, Building and Urban Affairs. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.962994/Artikel/dokument.htm.
[504] German government aiming for further reduction of greenhouse gases - What is the German government doing to help prevent climate change?. Federal Government, (Berlin), 13 November 2006. Date of Access: 20 May 2007. http://www.bundesregierung.de/nn_6516/Content/EN/Artikel/2006/11/2006-11-13-gabriel-klimakonferenz__en.html.
[505] Tiefensee: Financial assistance program promoting the purchase of low-emission vehicles notified to the European Commission, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 19 October 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.981502/Pressemitteilung/dokument.htm.

through the Kreditanstalt für Wiederaufbau (Reconstruction Loan Corporation - KfW),[506] a program approved by the European Commission.[507] Then, in March 2007, the German Parliament passed an amendment to the vehicle tax bill[508] which incorporates significant tax incentives for the retro-fitting of diesel engines with particle filters.[509] Second, Minister Tiefensee has expressed support for *mandatory* carbon-ceilings for the European automotive industry in order to reduce CO_2 emissions from passenger vehicles.[510] He also plans to introduce a complementary "climate-passport" for all new vehicles by the end of 2007 (to enable consumers to make more informed purchasing decisions).[511] It is important to note that, to-date, there have been no concrete negotiations or plans to introduce the latter two schemes. Third, Minister Tiefensee has welcomed proposals by the European Commission to introduce emissions trading in the aviation sector in the EU, which will reward investment in modern aircraft and clean engines, and thereby reduce CO_2 emissions throughout the transport sector.[512] Even though this is not counted towards compliance, it represents an important example of the positive attitude of the German government towards emissions trading.

The German government has not yet complied with the second sub-commitment to introduce public transportation systems using hybrid and/or clean diesel technologies. In a recent study, the Federal Ministry of Transport concluded that the car will remain the preferred transport choice for the foreseeable future.[513] Hence, Minister Tiefensee concluded that, in addition to making cars more environmentally friendly, the efficiency of the public transport systems has to be improved.[514] Furthermore, the Minister listed higher levels of investment in public transport systems as one of the objectives of the German Presidency of the European Council.[515] However, no action has been undertaken as of yet, and it remains unclear if the investment will be used to introduce cleaner technology in the public transport sector.

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[506] Tiefensee: Financial assistance program promoting the purchase of low-emission vehicles notified to the European Commission, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 19 October 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.981502/Pressemitteilung/dokument.htm.

[507] Tiefensee: Brussels gives the green light to HGV innovation program; Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 24 January 2007. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.985428/Tiefensee-Brussels-gives-the-g.htm?global.back=/en/Press/-%2c1933%2c1/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.

[508] The Bundestag passed the amendment on 1 March 2007, BT-Drs, 16/4010. Date of Access: 10 March 2007. http://dip.bundestag.de/btd/16/040/1604010.pdf.

[509] Sigmar Gabriel: Environmental policies strengthen innovation and create more jobs, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, Berlin, 16 January 2007, No. 014/07. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/38584.php

[510] Tiefensee: Fuel consumption has to be significantly reduced, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 7 February 2007. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.986055/Tiefensee-Fuel-consumption-has.htm?global.back=/en/Press/-%2c1933%2c0/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.

[511] Joint action needed to counteract climate change, Federal Government, (Berlin), 6 April 2007. Date of Access: 20 May 2007. http://www.g-8.de/Content/EN/Artikel/2007/04/2007-04-06-ippc-bericht__en,layoutVariant=Druckansicht.html..

[512] Tiefensee: Limits should be imposed on carbon dioxide emissions, not on air transport, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 20 December 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.984077/Tiefensee-Limits-should-be-imp.htm?global.back=/en/Press/-%2c1933%2c1/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.

[513] Minister Tiefensee: Car will remain number one transport choice, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 17 September 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.976563/Minister-Tiefensee-Car-will-re.htm?global.back=/en/Press/-%2c1933%2c1/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.

[514] Minister Tiefensee: Car will remain number one transport choice, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 17 September 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.976563/Minister-Tiefensee-Car-will-re.htm?global.back=/en/Press/-%2c1933%2c1/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.

[515] Objectives and Priorities of the German Council Presidency, Federal Ministry of Transport, Building and Urban Affairs. (Brussels), 23 January 2007. Date of Access: 20 May 2007. http://www.bmvbs.de/en/dokumente/-,1872.985010/Reden/dokument.htm.

On 9 November 2006, the contracting parties of the Alpine Convention[516] discussed a report[517] aimed at diverting road-based traffic to rail-based traffic following the success of previous action on this issue.[518] The Ministers[519] resolved to extend the mandate of the Transport Working Group, which had prepared the report.[520] However, this program does not qualify for compliance for Germany, because it lacks specific national commitments to expand public transport systems.

In conclusion, Germany has provided incentives for consumers to use efficient vehicles by supporting alternative fuel R&D and programs and by creating consumer incentive schemes. However, Germany has failed to comply with the second sub-commitment regarding large scale public transportation system. In view of its partial compliance with the commitment, it is awarded a score of 0.

Author: Christoph Lakner

Alternative and Renewable Energy: +1

The analysis of this commitment has to differentiate between three separate sub-commitments: developing alternative energy;[521] making wider use of renewables (excluding nuclear energy); and, developing and introducing innovative technologies throughout the entire energy sector. Germany has demonstrated full compliance with all sub-commitments.

In formulating the preliminary agenda for the G8 Summit in Heiligendamm, Chancellor Angela Merkel has emphasized the need for verifiable and attainable goals to enhance the use of alternative fuels, biofuels in particular.[522] On Chancellor Merkel's initiative, in her capacity as European Council President, the EU members agreed for the first time to binding targets to increase the share of renewable energy to 20% by 2020,[523] which specifically excludes nuclear power.[524] However, the Council failed to reach consensus on how the increase of renewables should be divided between the member states, which will prove to be the more difficult part of the negotiations.

The key law governing (and supporting) the use of renewables in Germany is the Renewable Energy Sources Act (EEG) passed in 2000.[525] The EEG guarantees a fixed feed-in price[526]

[516] The Alpine Convention includes Germany.
[517] Cooperation on Alpine Railway Corridors - Report by the Transport Working Group. German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), November 2006. Date of Access: 20 May 2007. http://www.bmu.de/english/international_environmental_policy/downloads/doc/38195.php.
[518] IXth Conference of Contracting Parties to the Alpine Convention on 9 November 2006 in Alpbach, Austria, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 15 November 2006. Date of Access: 20 May 2007.
http://www.bmu.de/english/international_environmental_policy/alpine_convention/doc/38317.php.
[519] The German government was represented by Parliamentary State Secretary at the Federal Environment Ministry Michael Mueller.
[520] IXth Conference of Contracting Parties to the Alpine Convention on 9 November 2006 in Alpbach, Austria. German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 15 November 2006. Date of Access: 20 May 2007.
http://www.bmu.de/english/international_environmental_policy/alpine_convention/doc/38317.php.
[521] Low-carbon energy is included in the commitment of 'Innovative Energy Technologies in Hydrocarbon Production and Use'.
[522] Ulrich Schäfer, Vertrauliches Programm für den Weltwirtschaftsgipfel 2007, Sueddeutsche Zeitung, 15 October 2006. Date of Access: 20 May 2007, www.sueddeutsche.de/wirtschaft/artikel/758/88670.
[523] Historical agreement on climate protection, Federal Government, (Berlin), 9 March 2007, Date of Access: 20 May 2007.
http://www.g-8.de/nn_94646/Content/EN/Artikel/2007/03/2007-03-09-historischer-durchbruch-in-bruessel.html.
[524] Minister Gabriel welcomes the results of the EU summit, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 9 March 2007. Date of Access: 20 May 2007.
http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/38874.php.
[525] Renewable Energy Development in Germany. German Ministry of Environment, Nature Conservation and Nuclear Safety, (Mexico), 1 February 2006. Date of Access: 20 May 2007.
https://www.bmu.de/english/renewable_energy/press_statements_speeches/doc/36601.php.
[526] That is, producers of electricity from renewable sources are paid a guaranteed price when they feed the energy into the electricity system.

for 20 years to electricity producers who use renewable sources.[527] It also demands that by 2020 at least 20% of all electricity be produced from renewable sources.[528] On 13 October 2006, an amendment to the EEG improved consumer protection by giving more power to the Federal Network Agency, but it also legislated a decrease in the costs for certain energy-intensive companies.[529] The latter, obviously, provides a *disincentive* to conserve energy, but, in these energy-intensive sectors, there is already some pressure to save energy because of the emissions trading scheme.[530] Therefore, this amendment does offer evidence of a degree of compliance because, significantly, it prevents electricity utilities from charging consumers excessive prices: by making electricity from renewable sources more affordable, it encourages the use of green electricity.

In addition, the Environment Minister Sigmar Gabriel announced that the 'market incentive program' would be expanded by €39 million in 2007 to a total of €213 million.[531] This program encourages the use of renewable energy in heating.[532] As such, this program is another step towards making renewable energy more widely available. Furthermore, Germany, Spain, and Slovenia have agreed to cooperate in promoting renewable energies, and to share their experiences with certain policy tools, such as feed-in tariffs.[533] This cooperation is expected to contribute towards improving policies supporting renewable energy.

The German government continues to support R&D in innovative energy technology through a number of substantial financial commitments. First, on 2 October 2006, Minister Gabriel approved an offshore wind energy test site in northern Germany, and allocated €50 million over a period of five years for technology R&D on this particular project. [534] In addition, he aims to increase European cooperation in developing offshore wind energy.[535] Second, Minister Gabriel opened the innovation conference on 30 October 2006, which examined how Germany could compete better internationally in sectors such as energy generation and efficiency technology.[536] Third, through the *National Innovation Program for Hydrogen and*

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[527] Renewable Energy Development in Germany, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Mexico), 1 February 2006. Date of Access: 20 May 2007. https://www.bmu.de/english/renewable_energy/press_statements_speeches/doc/36601.php.

[528] Renewable energies: driving force for the economy and employment, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 10 July 2006. Date of Access: 20 May 2007. https://www.bmu.de/english/press_statements_speeches/pm/37923.php.

[529] Relief for energy-intensive companies clears final hurdle: Bundesrat does not raise any objections to amendment of the Renewable Energy Sources Act (EEG), German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 13 October 2006. Date of Access: 20 May 2007. https://www.bmu.de/english/renewable_energy/current/doc/38009.php.

[530] Reform der Energiebesteuerung in 2006, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), November 2006. Date of Access: 20 May 2007. http://www.bmu.de/oekologische_finanzreform/downloads/doc/37802.php.

[531] Sigmar Gabriel: Laying the foundations for a post-2012 climate protection agreement, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 13 November 2006. Date of Access: 20 May 2007. http://www.bmu.de/english/climate/press_statements_speeches/pm/38164.php.

[532] German government aiming for further reduction of greenhouse gases - What is the German government doing to help prevent climate change?, Federal Government, (Berlin), 13 November 2006. Date of Access: 20 May 2007. http://www.bundesregierung.de/nn_6516/Content/EN/Artikel/2006/11/2006-11-13-gabriel-klimakonferenz__en.html.

[533] Germany, Spain and Slovenia cooperate in promoting renewable energies, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 30 January 2007. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/38649.php.

[534] Federal Minister Gabriel: Go-ahead for development of offshore wind energy in Germany, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 2 October 2006. Date of Access: 20 May 2007. http://www.bmu.de/english/renewable_energy/press_statements_speeches/doc/38008.php.

[535] Europe is moving offshore: member states discuss electricity generation from offshore wind energy, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 23 February 2007. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/38782.php.

[536] Sigmar Gabriel Advocates "New Deal" of the Economy, Environment and Employment, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 30 October 2006. Date of Access: 20 May 2007. https://www.bmu.de/english/miscellaneous/current/pm/38146.php.

Fuel Cell Technologies launched on 30 October 2006,[537] the German government supports R&D and application of fuel cell technology throughout the energy sector, including domestic energy supply.[538] Fourth, the German government will increase funding for energy research from €40 million in 2005 to €100 million in 2009.[539] On 2 February 2007, the Federal Ministry of Education and Research agreed to provide an additional €255 Million[540] for climate research including research on new innovative technologies.[541] Furthermore, on 21 September 2006, Federal Research Minister Annette Schavan announced government investments in R&D amounting to €15 billion by 2009.[542] It remains unclear what share of these funds will flow into R&D in the environment sector, but it has been specified as a key investment of the plan.[543] The German government is clearly supporting the development of innovative technologies in the energy sector, which qualifies as compliance with the third sub-commitment.

The German government also supports the use of renewable energy and technology in developing and emerging countries. On 20 November 2006, the EU introduced the Global Efficiency and Renewable Energy Fund (GEREF) at the Climate Conference in Nairobi, Kenya,[544] at Minister Gabriel's initiative.[545] The fund has a total volume of €100 million, initially for four years, of which Germany will contribute €24 million.[546] Furthermore, the Federal Development Minister Heidemarie Wieczorek-Zeul and the Federal Environment Minister Sigmar Gabriel hosted a conference of energy and environment ministers from the EU and its southern and eastern neighbours in April 2007.[547] The conference discussed renewable energies and energy efficiency, and in particular what financial support can be provided in those regions.[548] Despite Germany's substantial financial investment, since support for renewable energy in developing countries is supplemental to domestic policy, these actions of themselves do not amount to full compliance.

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[537] For more information on this program, see the section on clean and efficient energy in the transport sector.
[538] Tiefensee: Germany wants to achieve market leadership for fuel cell and hydrogen technologies, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 30 October 2006. Date of Access: 20 May 2007. http://www.bmvbs.de/en/Press/Press-releases-,1933.981716/Tiefensee-Germany-wants-to-ach.htm?global.back=/en/Press/-%2c1933%2c0/Press-releases.htm%3flink%3dbmv_liste%26link.sKategorie%3d.
[539] German government aiming for further reduction of greenhouse gases - What is the German government doing to help prevent climate change?, Federal Government, (Berlin), 13 November 2006. Date of Access: 20 May 2007. http://www.bundesregierung.de/nn_6516/Content/EN/Artikel/2006/11/2006-11-13-gabriel-klimakonferenz__en.html.
[540] Klimawandel: Es bleibt nicht mehr viel Zeit, Federal Government, (Berlin), 2 February 2007. Date of Access: 20 May 2007. http://www.g-8.de/nn_93938/Content/DE/Artikel/2007/02/2007-02-02-wissenschaftler-bestaetigen-den-zunehmenden-klimawandel.html.
[541] Forscher legen internationalen IPCC-Bericht zum Klimawandel vor, Federal Ministry of Education and Research, (Berlin), 2 February 2007. Date of Access: 20 May 2007. http://www.bmbf.de/press/1964.php.
[542] From a land of ideas to a land of innovative products, Federal Government, (Berlin), 21 September 2006. Date of Access: 20 May 2007. http://www.bundesregierung.de/Content/EN/Artikel/2006/09/2006-09-21-vom-land-der-ideen-zum-land-der-taten__en.html.
[543] From a land of ideas to a land of innovative products, Federal Government, (Berlin), 21 September 2006. Date of Access: 20 May 2007. http://www.bundesregierung.de/Content/EN/Artikel/2006/09/2006-09-21-vom-land-der-ideen-zum-land-der-taten__en.html.
[544] Climate change conference approves aid for developing countries, Federal Government, G8 Summit – Heiligendamm, (Berlin), 20 November 2006. Date of Access: 20 May 2007. http://www.g-8.de/nn_94646/Content/EN/Artikel/2006/11/2006-11-20-klimakonferenz-beschliesst-hilfen-fuer-entwicklungslaender__en.html.
[545] Germany promotes use of renewable energies in developing countries with €24 million, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 17 November 2006. Date of Access: 20 May 2007. https://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/38228.php.
[546] Climate change conference approves aid for developing countries, Federal Government, G8 summit – Heiligendamm, (Berlin), 20 November 2006. Date of Access: 20 May 2007. http://www.g-8.de/nn_94646/Content/EN/Artikel/2006/11/2006-11-20-klimakonferenz-beschliesst-hilfen-fuer-entwicklungslaender__en.html.
[547] EU Ministers discuss renewable energies and energy efficiency with EU's southern and eastern neighbours in Berlin, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 18 April 2007. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/39194.php.
[548] EU Ministers discuss renewable energies and energy efficiency with EU's southern and eastern neighbours in Berlin, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 18 April 2007. Date of Access: 20 May 2007. http://www.bmu.de/english/press_releases_as_of_22_november_2005/pm/39194.php.

In short, the amendment to the Renewable Energy Sources Act, and the incentive program in the heating sector, clearly encourage wider use of renewable energy. The support for offshore wind-farms counts towards the development of alternative energy, as does the substantial financial support for R&D in innovative technology. Overall, Germany has fully complied with this commitment on renewable and alternative energies, and is therefore awarded a score of +1.

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UNFCCC/Kyoto: 0

Germany's actions toward meeting its Kyoto/UNFCCC obligations are evaluated based on a) its policy measures towards meeting its climate change emissions reductions (of 21% against 1990 levels in the period 2008-2012), and b) its policies under the UNFCCC. Despite a series of high-level announcements pledging that it would treat climate change as a priority issue at the next G8 Summit since assuming the presidency of both the EU and the G8, Germany has achieved only partial compliance with this St. Petersburg commitment.

Germany is well under way to meet its climate change emissions reductions under Kyoto. According to estimates, Germany had reduced its emissions by 18% against the base year of 1990 already in 2006.[549] Yet, these achievements are due to actions and activities implemented previous to the period in consideration, and therefore cannot count as compliance. In contrast to the swift declines in the 1990s, the decrease in emissions reductions has slowed down since then. In fact, 2006 saw an *increase* in CO_2 emissions of 0.6% relative to 2005[550] due to economic growth.[551] Still, the German government appears confident that it can achieve the additional 2% of reduction in time, provided that it can implement more rigorous measures.[552]

Several actions provide evidence that Germany is preparing for a viable decrease in GHG emissions. First, the government has reacted swiftly to the "failure of its carbon emissions trading scheme"[553] and has rectified its controversial Second National Allocation Plan (NAP), which had initially been rejected by the EU.[554] The German government accepted the EU's revised CO_2 allocations and agreed to reduce its total annual emissions allocations from 465 to 453 million tons in the second half of the emissions trading period.[555] Furthermore, the German Cabinet has introduced measures to make emission trading more transparent and efficient, rewarding the highly efficient energy suppliers and punishing those using obsolete

[549] Hintergrundpapier: Klimaagenda 2020: Der Umbau der Industriegesellschaft, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 18 April 2007. Date of Access: 25 April 2007. http://www.bmu.de/files/pdfs/allgemein/application/pdf/hg_emissionshandel2008_2012.pdf.

[550] Hintergrundpapier: Klimaagenda 2020: Der Umbau der Industriegesellschaft, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 18 April 2007. Date of Access: 25 April 2007. http://www.bmu.de/files/pdfs/allgemein/application/pdf/hg_emissionshandel2008_2012.pdf.

[551] Emissionshandel: Kohlendioxidausstoß 2006 leicht gestiegen, Deutsche Emissionshandelsstelle, (Berlin), 2 April 2007. Date of Access: 16 April 2007. http://www.dehst.de/nn_932758/SharedDocs/Presse/Presseinformationen/2007/016-2007_VET_2006.html.

[552] Sigmar Gabriel: Wir gehen mit anspruchsvollen Regeln beim Klimaschutz voran, German Ministry of Environment, Nature Conservation and Nuclear Safety, 18 April 2007. Date of Access: 23 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/39176.php.

[553] In January 2007, the recorded price per ton of CO_2 reached a record low of €0.86 and thus there is no valuable incentive to reduce CO_2 emissions. This price drop has been the consequence of an oversupply of CO_2 emissions allocated to the participating industry in the first period of the emissions scheme in Spiegel Special, Neue Energien. Wege aus der Klimakatastrophe. Nr 1/2007, p. 118

[554] Germany's National Allocation Plan was prepared before the Petersburg Summit. Thus compliance will not be judged on the rejection itself but based on Germany's reactions to EU criticisms.

[555] Emissionshandel: Kohlendioxidausstoß 2006 leicht gestiegen, Deutsche Emissionshandelsstelle, (Berlin), 2 April 2007. Date of Access: 16 April 2007. http://www.dehst.de/nn_932758/SharedDocs/Presse/Presseinformationen/2007/016-2007_VET_2006.html.

or inefficient technologies.[556] However, due to economic considerations, existing power plants—because of international competition—have to meet a reduction target of only 1.25%. In addition, some of the more complex and often counterproductive special regulations seen in the first emissions trading period have been cancelled.[557] Second, there is now increasing focus on the transport sector, which was largely absent from the agenda in the last trading period (especially concerning passenger vehicles and aviation, as two significant contributors to GHG emissions – the former is discussed under the transport commitment). Third, Minister Gabriel presented an 8-step plan to reduce Germany's emissions by 40% by 2020,[558] which, if approved, represents the first initiative to meet the EU-mandated emissions reductions of 30% by 2020. Fourth, the same plan foresees a doubling of the Combined Heat and Power technology (CHP)[559] which, though identified as a priority under Germany's Climate Action Plan, had received little attention thus far.[560] However, while Minister Gabriel has incorporated this strategy as critical point in its 8-step plan, the Federal Ministry of Economics and Innovation claims that CHP is no longer competitive in certain areas of the EU's liberalized energy market.[561]

As far as other UNFCCC obligations are concerned, Germany, whose contributions to CDM and JI mechanisms have been marginal in the past,[562] has taken various steps since St. Petersburg to address these shortcomings. First, at the UNFCCC Conference in Nairobi, Minster Gabriel announced Germany's support for Kofi Annan's initiative to promote CDMs in Africa[563] in the form of €24 million for the Global Efficiency and Renewable Energy Fund (GEREF) over the next four years.[564] Germany also signed CDM agreements with Peru[565] and China[566] in 2006. In March 2007, Minister Sigmar Gabriel and his Tunisian counterpart, Environment Minister Nadhir Hamada, signed a declaration securing CDM cooperation between Germany and Tunisia.[567]

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[556] Sigmar Gabriel: Wir gehen mit anspruchsvollen Regeln beim Klimaschutz voran, German Ministry of Environment, Nature Conservation and Nuclear Safety, 18 April 2007. Date of Access: 23 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/39176.php.

[557] Sigmar Gabriel: Wir gehen mit anspruchsvollen Regeln beim Klimaschutz voran, German Ministry of Environment, Nature Conservation and Nuclear Safety, 18 April 2007. Date of Access: 23 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/39176.php..

[558] Hintergrundpapier: Klimaagenda 2020: Der Umbau der Industriegesellschaft, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 18 April 2007. Date of Access: 25 April 2007. http://www.bmu.de/files/pdfs/allgemein/application/pdf/hg_emissionshandel2008_2012.pdf.

[559] Gabriel: Klimaschutz bedeutet Umbau der Industriegesellschaft, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 26 April 2007. Date of Access: 16 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/39237.php.

[560] Die beste Energie: Sparen. Spiegel Special, Neue Energien. Wege aus der Klimakatastrophe. Nr 1/2007, pp 125 – 133.

[561] Energieeinsparung, Bundesministerium fuer Wirtschaft, (Berlin), April 2007. Date of Access: 16 April 2007. http://www.bmwi.de/BMWi/Navigation/Energie/energieeinsparung.html.

[562] Wuppertal Institute: JIKO Info Special, (Wuppertal), 2006. Date of Access: 21 December 2006. http://www.wupperinst.org/uploads/tx_wibeitrag/JIKO-Info_Special_Africa.pdf.

[563] Gabriel: Wir muessen dem Klimawandel entschlossenes Handeln entgegensetzen, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 15 November 2006. Date of Access: 20 December 2006. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38174.php.

[564] Gabriel: Nairobi hat das Fundament fuer die Fortentwicklung des Kyoto Protokolls gelegt, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 20 November 2006. Date of Access: 20 December 2006. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38218.php.

[565] Deutschland und Peru vereinbaren Zusammenarbeit im Klimaschutz, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 9 November 2006. Date of Access: 20 December 2006. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38133.php.

[566] Deutschland und Peru vereinbaren Zusammenarbeit im Klimaschutz, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 9 November 2006. Date of Access: 20 December 2006. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38133.php.

[567] Deutschland und Tunesien bauen Zusammenarbeit im Klimaschutz aus, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 26 March 2007. Date of Access: 16 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/39022.php.

Apart from actions directly related to the reduction of GHG under Kyoto, Germany has achieved full compliance in meeting its commitments under the UNFCCC, promoting domestic and international cooperation to adapt to the impacts of climate change.

Germany has intensified its domestic actions to adapt to the future challenges of climate change. In November 2006, Parliamentary State Secretary of the Federal Environment Ministry Michael Mueller, representing Germany at the Alpine Convention, signed a declaration on climate change, the aim of which will be to investigate the economic consequences of climate change in the Alpine Region[568] and to develop a regional Action Plan.[569] Second, the Ministry for Education and Research has launched a competition to identify adaptation mechanisms across the country and to foster more innovative adaptation techniques. According to Thomas Rachel, Parliamentary Secretary of State, the Ministry of Education and Research is committing €75 million into this competition. The results will be shared beyond Germany's borders.[570]

Germany has fully complied with its commitment to international cooperation under the UNFCCC, taking advantage of its position as the current President of the EU and G8. On 9 March 2007, the EU member states agreed to an 'historic' post-Kyoto climate change plan under the leadership of German Chancellor Merkel. The plan commits the EU to reduce its climate change emissions by 20% by the year 2020, and by 30%—provided that industrialized countries and the five newly industrializing countries commit to equivalent reductions.[571] Under the leadership of Minister Sigmar Gabriel, the "Outreach 5" countries for the first time participated at a meeting of the G8 Environmental Ministers, held in March in Potsdam;[572] during which the participants confirmed their conviction that the negotiation process under the UNFCCC and Kyoto remained the appropriate forum for future agreements, agreed that international process needed to be accelerated, and agreed to "intensify their dialogue."[573]

These actions and activities reflect a high commitment to combating climate change and Germany's desire to prove its leadership role. However, criticism from the research community and contradictory signals from within the ruling coalition raise doubts about the government's willingness and, thus, the BMU's ability to implement these policies. For instance, Chancellor Angela Merkel rejected the introduction of strict regulatory measures to enforce emissions ceilings for cars—even though the car industry had already committed itself to the same target in the 1990s.[574] The Chancellor furthermore rejected highway speed limits, which could contribute significantly to a reduction in national CO_2 emissions and are easy to implement.[575] Though Minister Gabriel announced a move away from

[568] Alpenlaender beraten gemeinsame Strategie gegen regionale Folgen des Klimawandels, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 8 November 2006. Date of Access: 20 December 2006. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38123.php.

[569] Alpen sollen for Folgen des Klimawandels besser geschuetzt werden, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 9 November 2006. Date of Access: 20 December 2006. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38137.php.

[570] Konsequenzen des Klimawandels für Forschung und Gesellschaft, German Ministry of Environment, Nature Conservation and Nuclear Safety and Ministry of Education and Research, (Berlin), 16 April 2007. Date of Access: 23 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/39161.php.

[571] Hintergrundpapier: Klimaagenda 2020: Der Umbau der Industriegesellschaft, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 18 April 2007. Date of Access: 25 April 2007. http://www.bmu.de/files/pdfs/allgemein/application/pdf/hg_emissionshandel2008_2012.pdf.

[572] Sigmar Gabriel eröffnet G8-Umweltministertreffen, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 15 March 2007. Date of Access: 16 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38877.php.

[573] Chairs Conclusions of the G8 Environment Minister's Meeting, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), March 2007. Date of Access: 16 April 2007. http://www.bmu.de/files/pdfs/allgemein/application/pdf/g8_potsdam_chair_conclusions_03_07.pdf.

[574] Mildernde Umstände? Zur Debatte um die Minderungsverpflichtungen der PkW –Hersteller, Wuppertal Institute, (Wuppertal), 1 February 2007. Date of Access: 21 February 2007. http://www.wupperinst.org/de/info/detailseite_mit_datum/index.html?&beitrag_id=494&bid=11.

[575] Klimaschutz und PkW-Verkehr. Einordnung aktuell diskutierter Ansaetze, (Wuppertal), April 2007. Date of Access: 14 April 2007. http://www.wupperinst.org/uploads/tx_wibeitrag/klimaschutz-pkw.pdf.

vehicle taxation based on engine size towards taxation based on CO_2 emissions, this announcement was refuted by the Ministry of Finance, which does not see a possibility for this change in the timeframe suggested by the Environment Minister.[576] Finally, while Minister Gabriel has incorporated Combined Heat and Power technology (CHP) as part of his 8-step plan to reduce emissions by 40% by 2020, the Ministry of Economics and Technology has expressed doubts about the economic feasibility of this technology.[577]

In summary, even though Germany will achieve its targeted reductions in CO_2 emissions by 2012, that achievement is due to actions implemented prior to St. Petersburg Summit. In contrast, other actions on Kyoto and the UNFCCC at this stage do not provide sufficient evidence of effective implementation or a positive final impact. Thus, overall, Germany's actions should be considered to constitute a 'work in progress.'

Author: Marie Karaisl

Sustainable Use of Energy: 0

Germany has taken significant steps to strengthen its existing policies and programs that promote sustainable development and the use of energy through demand-side actions. Nevertheless, progress reports reveal that these programs have not sufficiently raised energy efficiency to-date, suggesting that the Federal Government has to do more to improve the country's record on the sustainable use of energy.

Germany has shown partial compliance in this area by, for instance, continuing and strengthening programs to stimulate sustainable use of energy across households, the industry, and the public sector.

First, Germany has markedly enhanced its building renovation program through loan facilities at reduced interest rates, subsidies (from 1 January 2007 onwards), and tax incentives.[578] In total, an annual amount of €1.4 billion will be made available until 2009, which amounts to a fourfold increase compared to previous years.[579] In addition, with effect from 1 January 2007, the structure and organization of the scheme was simplified to make it more accessible for applicants.[580] Second, the project for Renewable Energies of the Kreditanstalt für Wiederaufbau (KfW) was reopened in 2007, providing government support for climate-friendly technologies under the market incentive program.[581] Thirdly, it has provided incentives to use cleaner fuels in home heating. As part of the energy tax reform, the German government has introduced taxes on coal used for heating.[582] Furthermore, the German Parliament decided on 26 October 2006, as part of the introduction of compulsory blending regulations for biofuels, to reduce the sulphur content in heating oil.[583] This will

[576] Autoabgase - Neue Schadstoffsteuer schon Anfang 2008?, Frankfurter Allgemeine Zeitung, 19 February 2007. Date of Access: 20 February 2007.
http://www.faz.net/s/RubA5A53ED802AB47C6AFC5F33A9E1AA71F/Doc~ED8366E1320F14F6A8DC673F130B6FF3C~ATpl~Ecommon~Scontent.html
[577] Energieeinsparung, Bundesministerium fuer Wirtschaft, (Berlin), April 2007. Date of Access: 16 April 2007.
http://www.bmwi.de/BMWi/Navigation/Energie/energieeinsparung.html.
[578] Kurzinfo: CO_2 Gebaeudesanierungsprogramm, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), January 2007. Date of Access: 17 April 2007.
http://www.bmu.de/energieeffizienz/gebaeude/sanierungsprogramme/doc/37942.php.
[579] Kurzinfo Energieeffizienz, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), October 2006. Date of Access: 17 April 2007. http://www.bmu.de/energieeffizienz/kurzinfo/doc/37891.php.
[580] 213 Millionen Euro für erneuerbare Energien im Wärmebereich, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 8 January 2007. Date of Access: 14 April 2007.
http://www.erneuerbare-energien.de/inhalt/38495/36302/.
[581] For a discussion of this project, see the section on the UNFCCC/Kyoto.
[582] Reform der Energiebesteuerung 2006, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), November 2006. Date of Access: 20 April 2007.
http://www.bmu.de/oekologische_finanzreform/downloads/doc/37802.php.
[583] Bundestag für schwefelarmes Heizöl, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 27 October 2006. Date of Access: 22 April 2007.
http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38086.php.

not only reduce sulphur emissions from conventional boilers, but also allow the introduction of more innovative boiler technology, which will reduce CO_2 emissions by at least 10%.[584] Fourthly, Minister Tiefensee announced plans to publish an annual CO_2 energy report with the aim of informing homeowners where they can save energy-costs.[585] Fifth, on 17 November 2006, the Ministers of Transport and Finance agreed to extend considerably the energy certificate scheme for buildings,[586] which was originally introduced in 2002.[587] On 25 April 2007, the federal government agreed to a step-by-step introduction of the energy certification scheme for buildings, which will enable tenants and buyers to gain a clear overview of the energy efficiency of their properties.[588]

With respect to its own record of sustainable use of energy, the Federal Ministry of Environment, Nature Conservation, and Nuclear Safety (BMU) and the Umweltbundesamt renewed their contracts with green energy providers for the period of 2007 to 2009, leading to an estimated reduction in CO_2 emissions of 4,400 tons per year.[589] The BMU also provided advisory support to the United Nations, which switched its electricity supply to renewables with an estimated saving of 3,100 tons of CO_2 annually.[590] Fourth, as a demonstration project for the private sector, the BMU is supporting a research project "Logistics towards Sustainability" initiated by Tchibo, which aims to enhance energy efficiency and reduce GHG emissions throughout the supply chain.[591]

Apart from financial support, the BMU is pursuing several other activities to enhance awareness and disseminate information regarding energy efficiency to consumers, including youth. First, the Ministry is regularly publishing information materials for consumers and households (e.g. *Energy Efficiency: Tips to Protect the Climate and Save Money*, a brochure to educate the public about energy and electricity usage). To enhance energy awareness in schools, the BMU has made DVDs of Al Gore's film *An Inconvenient Truth* available free of charge. In addition, on 18 March 2007, the Ministry[592] organised information events for teachers in 26 German cities, and provided extensive materials for their classes.[593]

In support of the overall goal of creating an enabling environment for a sustainable use of energy, the BMU has initiated discussions on how extend the ecological tax reform, focusing on issues such as enhanced harmonization of energy taxation across Europe, the

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[584] Bundestag für schwefelarmes Heizöl, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 27 October 2006. Date of Access: 22 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38086.php.

[585] Tiefensee: Durch Gebäudesanierung bis 2020 40 Milliarden Euro Heizkosten sparen, Jährlicher CO2-Energiereport angekündigt, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 6 March 2007. Date of Access: 22 April 2007. http://www.bmvbs.de/dokumente/-,302.988033/Pressemitteilung/dokument.htm.

[586] Tiefensee und Glos bringen Energieausweise für Gebäude und Wohnungen auf den Weg, Federal Ministry of Transport, Building and Urban Affairs, (Berlin), 17 November 2006. Date of Access: 6 March 2007. http://www.bmvbs.de/-,302.980291/Tiefensee-und-Glos-bringen-Ene.htm?global.printview=2.

[587] Die neue Energieeinsparverordnung (EnEV), 20 November 2006. Date of Access: 6 March 2007. http://www.dena-energieausweis.de/page/fileadmin/waermewert/dokumente/Projekte/Energieppass/Infotext_Referententwurf.pdf.

[588] Bundesregierung beschließt die Einführung von Energieausweisen, EnEV-online Medienservice, (Stuttgart), 25 April 2007. Date of Access: 24 May 2007. http://medien.enev-online.de/infos_2007/070425_bmvbs_energieausweis.htm.

[589] Umweltressort bezieht auch in Zukunft Ökostrom, German Ministry of Environment, Nature Conservation and Nuclear Safety/Umweltbundesamt, (Berlin), 26 November 2006. Date of Access: 17 April 2006. http://www.erneuerbare-energien.de/inhalt/38251/36302/.

[590] Öko-Strom für die Vereinten Nationen in Bonn erspart dem Klima 3.100 Tonnen, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 22 January 2007. Date of Access: 16 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38563.php.

[591] Tchibo-Logistik auf Klimaschutz-Kurs. German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 1 March 2007. Date of Access: 16 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38802.php.

[592] With support from Bildungscent e.V., dem Unternehmen CinemaxX, dem Finanzdienstleister Stephan Goetz, der Umweltstiftung WWF, Paramount Deutschland und Universal Pictures International.

[593] 6.000 Kopien des Klimaschutzfilms "Eine unbequeme Wahrheit" für deutsche Schulen, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), 13 February 2007. Date of Access: 16 April 2007. http://www.bmu.de/pressemitteilungen/pressemitteilungen_ab_22112005/pm/38682.php.

introduction of economic instruments in the aviation industry, and an eco-oriented reform of motor vehicle taxation.[594] The federal government is aiming to double the nation's energy productivity by the year 2020 relative to the base year of 1990.[595]

In terms of Germany's total energy consumption, the Bundesumweltamt reports an overall increase by one-fifth in the period between 1993 and 2005—which outstrips the increase of energy supplied from renewables and clean technologies.[596] Still, thanks to the diversification of energy sources, the average CO_2 emissions per kWh have dropped by 15%.[597]

Thus, it seems that despite great efforts by the BMU to inform and motivate households and the private sector to use energy in a more sustainable manner, there is little evidence of a change in consumption patterns. According to the Bundesumweltamt, the BMU has so far prioritized the energy supply side—i.e. the efficient generation of energy from primary sources and the increased use of renewable sources of energy—at the expense of the other critical factor—the demand-side (i.e. a less intense and more sustainable energy use).[598] Peter Hennicke, President of the Wuppertal Institute, among others, is concerned that the end-users of electricity are still not sufficiently informed about their options on how to reduce energy consumption in everyday life.[599] Given this discrepancy between the government's policies and their practical impacts, coupled with the government's general reluctance to consider a more integrated approach (including regulatory measures to motivate the sustainable use of energy), Germany has been awarded a compliance score of 0.

Author: Marie Karaisl and Jenny Datoo

Innovative Energy Technologies in Hydrocarbon Production and Use: 0

The German government's actions to comply with its commitment on hydrocarbon production and use have been partly countered by the incentives it provides for continued development of fossil fuel power plants. Germany has thus achieved only partial compliance with this St. Petersburg commitment.

Since the German government has put priority on reducing fossil fuel *consumption*, R&D in the area of hydrocarbon *production* (specifically carbon capture and storage) has been limited to date.[600] Although Germany has set a target to generate 20% of its electricity from renewable energies by 2020, 80% of electricity requirements must still be met from other sources. Since the country aims to phase out nuclear power – and because the 80% short-fall in electricity generation cannot be met by energy efficiency measures alone – fossil fuel-derived electricity will remain important.[601] Therefore, Germany intends to invest

[594] Kurzinfo: Oekologische Finanzreform. German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), September 2006. Date of Access: 17 April 2007. http://www.bmu.de/oekologische_finanzreform/kurzinfo/doc/4027.php.
[595] Kurzinfo Energieeffizienz, German Ministry of Environment, Nature Conservation and Nuclear Safety, (Berlin), October 2006. Date of Access: 17 April 2007. http://www.bmu.de/energieeffizienz/kurzinfo/doc/37891.php.
[596] Stromsparen ist wichtig fuer den Klimaschutz, Umweltbundesamt, (Berlin), 3 April 2007. Date of Access: 23 April 2007. http://www.umweltdaten.de/publikationen/fpdf-l/3191.pdf.
[597] Entwicklung der spezifischen Kohlendioxid-Emissionen des deutschen Strommix, (Dessau), April 2007. Date of Access: 23 April 2007. http://www.umweltdaten.de/publikationen/fpdf-l/3195.pdf.
[598] Stromsparen ist wichtig fuer den Klimaschutz, Umweltbundesamt, (Berlin), 3 April 2007. Date of Access: 23 April 2007. http://www.umweltdaten.de/publikationen/fpdf-l/3191.pdf.
[599] Badewanne ohne Stoepsel, Interview with Peter Hennicke, Spiegel Special, Neue Energien, Wege aus der Klimakatastrophe. Nr 1/2007, pp 150-152
[600] State of CO_2 Capture and Subsurface Storage Activities in Germany, Nato Science Series, Springer Netherlands, (Netherlands), 2 January 2006. Date of Access: 19 April 2007. http://www.springerlink.com/content/w4p56424742r0j22/.
[601] Germany Remains at the Forefront of Climate Protection, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, (Germany), 29 June 2006. Date of Access: 17 April 2007. http://www.bmu.de/english/emissions_trading/current/doc/37401.php.

in low carbon emission fossil fuel production.[602] Given the large share of hydrocarbons in Germany's energy mix, further action is to be expected in this area—at least for as long as the proportion of electricity produced from alternative and renewable sources is not increased.

Over the next 20 years, 40,000 MW of Germany's power generation capacity will need to be replaced.[603] In August 2006, the Federal Ministry of Education and Research launched a High-Tech Strategy[604] in which existing and new funds will be allocated to start R&D in 17 fields, including energy through, for instance, funding for highly efficient coal and gas power station technologies.[605] Moreover, the government has established several projects with the private sector to develop low-carbon emission power plants.[606]

However, despite this seeming progress, critics note that Germany is currently in the process of building or planning at least 26[607] and perhaps as many as 40 new coal-fired power stations (according to the Federal Network Agency).[608] Although the government is investing in low-carbon emissions solutions, it is unclear whether these would be ready for use in the new power plants.[609] Researchers at the Federal Environment Agency suggest that replacing old power plants by new coal-fired ones is not likely to reduce GHG emissions by more than 14%, which makes Chancellor Merkel's declared goal of reducing emissions by 40% relative to 1990 levels by 2020 difficult to achieve.[610] Moreover, others are critical of the government's continued incentives for new coal power plants, which emit more CO_2 than either gas or nuclear power plants. For example, under the second National Allocation Plan (NAP II) for European emissions trading, every new power station built between 2008 and 2012 will have the option to opt out of the CO_2 emission restrictions for 14 years (in order to give coal an opportunity to compete with gas).[611]

On the supply side, Germany has attempted to reduce hydrocarbon use by means of combined heat and power (CHP) technology. However, the country's fourth national report under the Kyoto Protocol stated that no definitive assessment on progress in this area has

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[602] Germany Remains at the Forefront of Climate Protection, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, (Germany), 29 June 2006. Date of Access: 17 April 2007. http://www.bmu.de/english/emissions_trading/current/doc/37401.php.

[603] Carbon Capture and Storage Activities in Germany, BMWA Federal Ministry of Economics and Labour, (Berlin), September 2005. Date of Access: 16 April 2007. http://www.cslforum.org/documents/GermanCCS.pdf.

[604] The High-Tech Strategy for Germany, Federal Ministry of Education and Research (BMBF), (Bonn, Berlin), 2006. Date of Access: 17 April 2007. http://www.bmbf.de/pub/bmbf_hts_lang_eng.pdf.

[605] New Impetus for Energy and Growth – The Six Billion Euro Programme for Research and Development, Federal Ministry of Education and Research (BMBF), (Bonn, Berlin), 2006. Date of Access: 19 April 2007. http://www.bmbf.de/en/6075.php.

[606] For example, in 2006 COORETEC, with the Ministry of Economics and Labor commenced work on a pilot 300-400MW power plant intended to generate almost no CO_2 emissions and able to generate synthetic fuels. See Carbon Capture and Storage Activities in Germany, BMWA Federal Ministry of Economics and Labour, (Berlin), September 2005. Date of Access: 16 April 2007. http://www.cslforum.org/documents/GermanCCS.pdf. Furthermore, in May 2006, Chancellor Merkel inaugurated the construction site of the world's first CO_2 free carbon power plant, developed by Vattenfall, and it is expected to be operational by 2008. See Germany Breaks Ground on First Non-Polluting Coal Power Plant, Deutsche Welle, (Bonn), 29 May 2006. Date of Access: 19 April 2007. http://www.dw-world.de/dw/article/0,2144,2035398,00.html.

[607] Despite Climate Concerns, Germany Plans Coal Power Plants, Deutsche Welle, (Bonn), 21 March 2007. Date of Access: 17 April 2007. http://www.dw-world.de/dw/article/0,2144,2396828,00.html.

[608] Atomlügner oder Klimasünder?, Die Zeit, 04 April 2007, Nr. 15, Accessed: 23 April 2007, http://www.zeit.de/2007/15/Klimaschutz. See also: Lügen beim Umweltschutz – Bundesregierung fördert neue Kohlekraftwerke, Frontal 21, 3 April 2007. Date of Access: 23 April 2007. http://www.zdf.de/ZDF/download/0,5587,5000608,00.pdf.

[609] Germany Plans Boom in Coal-Fired Power Plants – Despite High Emissions, Spiegel Online International, (Germany), 21 March 2007. Date of Access: 19 April 2007. http://www.spiegel.de/international/germany/0,1518,472786,00.html.

[610] Germany Plans Boom in Coal-Fired Power Plants – Despite High Emissions, Spiegel Online International, (Germany), 21 March 2007. Date of Access: 19 April 2007. http://www.spiegel.de/international/germany/0,1518,472786,00.html.

[611] Germany set to clash with EU on CO_2 pollution quotas, EurActiv, (Kent, UK), 29 June 2006. Date of Access: 17 April 2007. http://www.euractiv.com/en/sustainability/germany-set-clash-eu-co2-pollution-quotas/article-156468.

taken place.[612] Further measures to utilize innovative technologies that burn hydrocarbons efficiently and with minimal environmental impact are expected when Germany releases its main energy policy blueprint (for the period until 2020) in mid-2007.[613]

The German government has introduced some measures to improve the efficiency and environmental sustainability of hydrocarbon extraction, production, and use. However, given the incentives for the expansion of fossil fuel power plants, the investments for mitigating their environmental impacts are not sufficient. Germany has not fully complied with this commitment, and is therefore awarded 0.

Authors: Alex Conliffe and Christoph Lakner

[612] Fourth National Report under the Kyoto Protocol to the United Nations Framework Convention on Climate Change by the Government of the Federal Republic of Germany, United Nations Framework Convention on Climate Change, July 2006. Date of Access: 17 April 2007. http://unfccc.int/resource/docs/natc/gernc4.pdf.
[613] The High-Tech Strategy for Germany, Federal Ministry of Education and Research (BMBF), (Bonn, Berlin), 2006. Date of Access: 17 April 2007. http://www.bmbf.de/pub/bmbf_hts_lang_eng.pdf.

7. India

Background

Little doubt remains that, unaddressed, climate change will have widespread and devastating consequences for India.[614] The melting of glaciers in the Himalayas as a result of rising global temperatures are increasingly threatening the water supply of tens of millions of Indians, while rising sea levels threaten to flood large coastal cities including Calcutta and Mumbai. Changed weather patterns, particularly during the monsoon season, could also intensify droughts, with detrimental economic effects.[615] The predicted health consequences of climate change for India include an increase in malnutrition, heat stress, and vector borne diseases.[616] The Stern Review estimates that climate change could cost India as much as 9-13% of its GDP by 2010.[617]

India is a rapidly industrializing country, as reflected both by its high rate of economic growth[618] and the dubious honour of having the top annual growth rate in energy-related CO_2 emissions for the decade 1992-2002 (4.3% per year).[619] From 2004 to 2030, it is predicted that India's coal consumption will increase by 3% per year (this compares to a 0.6% increase in the OECD area).[620] India ratified the UN Framework Convention on Climate Change (UNFCCC) on 1 November 1993 as a 'Non-Annex I party,' reflecting its status as a developing country; UNFCCC commitments remain legally binding only for Annex I members (mostly developed countries).[621] Despite India's acknowledged vulnerability to climate change,[622] the announcement of some positive initiatives in alternative energy and CDM (see below) and a new National Environmental Policy, the Indian government appears reluctant to undertake and implement large scale measures to decrease GHG emissions and combat climate change, stating its intention to focus instead on fighting poverty in India rather than reducing "CO_2 emissions so the developed world can breathe easier."[623] The Indian government's position on climate change initiatives relies heavily on the principle of "historical responsibility" – i.e. that developed countries, which are responsible for the largest share of the current GHG levels,[624] should now bear the brunt of the problem-solving. India's stance is also supported by the UNFCCC acknowledgement that "per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development

[614] Government of India Ministry of Environment & Forests Website, Vulnerability and Adaptation. Date of Access: 27 February 2007. http://envfor.nic.in/cc/adapt.htm; The Stern Review: The Economics of Climate Change. Date of Access: 27 February 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
[615] Greenpeace. Climate change and its possible impact on India. Date of Access: 27 February 2007. http://www.greenpeace.org/india/campaigns/choose-positive-energy/what-is-climate-change/climate-change-its-possible.
[616] The Stern Review: The Economics of Climate Change. Date of Access: 27 February 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
[617] The Stern Review: The Economics of Climate Change. Date of Access: 27 February 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
[618] Economy Watch, India Economy Overview. Date of Access: 27 February 2007. http://www.economywatch.com/indianeconomy/indian-economy-overview.html.
[619] The Stern Review: The Economics of Climate Change. Date of Access: 27 February 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
[620] The Stern Review: The Economics of Climate Change. Date of Access: 27 February 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
[621] India on UNFCCC, UNFCCC Secretariat, (Bonn). Date of Access: 22 February 2007. http://maindb.unfccc.int/public/country.pl?country=IN.
[622] Government of India Ministry of Environment & Forests Website, Vulnerability and Adaptation. Date of Access: 27 February 2007. http://envfor.nic.in/cc/adapt.htm; The Stern Review: The Economics of Climate Change. Date of Access: 27 February 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.
[623] Ronald Bailey, Reason Magazine, (Nairobi, Kenya), 14 November 2006. Date of Access: 20 February 2007. http://www.reason.com/news/show/116724.html.
[624] Economy Watch, India Economy Overview. Date of Access: 27 February 2007. http://www.economywatch.com/indianeconomy/indian-economy-overview.html.

needs."[625]

Thus, this report concludes that, despite the vulnerability of India's economy and society to changes in climate, the steps taken by the Indian government towards meeting its commitments in this area are insufficient to register full compliance.

Author: Kim Rutherford

Clean and Efficient Use of Energy in the Transport Sector: 0

The Government of India registered partial compliance with its G8 commitments on clean and efficient use of energy in the transport sector. Many of its actions are continuations of past activities, and new initiatives are limited.

The Automotive Mission Plan 2006-2016,[626] introduced in September 2006, highlights several initiatives to boost overall growth in this sector including R&D. The projects under this initiative aim to facilitate the introduction of world-class automotive safety, emission, and performance standards in India and also to ensure seamless integration of the Indian automotive industry with the global industry. The National Hydrogen Energy Board under MNES has prepared a National Hydrogen Energy Roadmap, and the Board will be playing the coordinating role among various concerned agencies involved in research, development, and commercialization in the area of hydrogen energy. The National biofuel Development Board under MNES[627] will be requested to coordinate strategies for the development of alternative fuels and fiscal incentives.

The emission roadmap, as given in the Committee for Auto Fuel Policy, has envisaged the introduction of BS IV emission norms (Euro IV equivalent norm) in 11 cities with effect from 1 April 2010 and BS III emission norms in the rest of the country.[628] It would be possible to comply with this roadmap subject to the availability of the required fuel in all retail outlets at least one year ahead of the introduction of emission norms.

In April 2007, the Chief Minister of the state Andhra Pradesh announced the nationwide launch of 5% Ethanol Blended Petrol (EBP) Program at Hyderabad.[629] The launch of the program marks a significant step in the direction of utilizing alternative renewable energy sources like ethanol for the transportation sector. To implement the program nationwide, the Ministry of Petroleum and Natural Gas had earlier notified 20 States and 4 Union Territories to implement EBP Program, effective from November 2006.

Additional action has taken place at the sub-federal level. Although regional and municipal initiatives do not constitute compliance for the purpose of this report, they are indicative of potentially broader progress by the national authorities in the future. For instance, in April 2007, the Calcutta State Transport Corporation (CSTC) announced[630] that it would employ 20 new buses with Euro III engines, in an attempt to bring down the air pollution level in the city. This is the first time the state government will introduce Euro III buses, which will be in use by the end of April 2007. The vehicles will run on almost all major routes connecting Calcutta to other state capitals and large cities. According to CSTC officials, the engines will help bring down the pollution level in comparison to buses with Euro II engines.

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[625] United Nations Framework Convention on Climate Change. Date of Access: 27 February 2007. http://unfccc.int/resource/docs/convkp/conveng.pdf.
[626] Draft Automotive Mission Plan, Ministry of Heavy Industries & Public Enterprises, September 2006. Date of Access: 19 January 2006. www.siam.in/Upload/draft_amp.pdf.
[627] Draft Automotive Mission Plan, Ministry of Heavy Industries & Public Enterprises, September 2006. Date of Access: 19 January 2006. www.siam.in/Upload/draft_amp.pdf.
[628] Center for Science and Environment. Date of Access: September 2006. http://www.cseindia.org/campaign/apc/roadmap.htm.
[629] The Equitybulls, (India). Date of Access: April 2007. http://www.equitybulls.com/admin/news2006/news_det.asp?id=10451.
[630] The Telegraph, (India). Date of Access: 19 April 2007. http://www.telegraphindia.com/1070419/asp/calcutta/story_7663091.asp.

In addition, the private sector has also engaged with this issue-area. In September 2006, the Society of Indian Automobile Manufacturers (SIAM) and the German automobile manufacturers association, VDA, signed a Memorandum of Understanding[631] to facilitate collaboration on sustainable development of road transport in the two countries. According to the terms of the MoU, the two associations will exchange information on technology of mutual interest pertaining to increased fuel efficiency, alternative fuels, and the reduction of emissions from passenger cars and commercial vehicles. Apart from facilitating dialogue between members on new technologies for abatement of harmful emissions, the two associations will also further technical trade and economic ties between members. Again, while SIAM's self-initiative does not represent compliance in this assessment, it does indicate that the industry's willingness to support a more progressive policy framework, should the government develop one.

The Indian government continues to grant incentives for small car purchases. The 2006 Union Budget has mandated a reduction in the excise duty from 24% to 16% for small cars. The more relaxed limit for diesel cars has brought a large number of diesel cars to qualify for the tax cut. The small car concession has resulted in price cuts for diesel cars by about $250 to $500. Smaller cars tend to be more energy-efficient because of light weight and lower fuel consumption.[632]

However, while new vehicles are cleaner and consistent with more stringent emission requirements, the benefits are not reflected in India's air quality due to the presence of a large number of old polluting vehicles. The government is also planning to provide incentives to modernize the vehicle fleet through *Project Modernfleet*.[633] Industry has suggested that vehicles older than 15 years could be phased out through the provision of incentives. The primary objective is to reduce pollution by accelerating normal fleet turnover so that new, cleaner vehicles can be put into use. If it is to be successful, the proposed scheme requires the joint support from both the national and state governments (e.g. fiscal incentives for fleet modernization). *Project Modernfleet* suggests a fixed percentage (50%) rebate in excise and sales tax for different type of vehicles but is yet to be accepted by the government.

Another barrier to India's meeting its G8 commitment are its currently high duties on imported cars. This makes hybrids particularly unattractive, because the same models (such as the Honda Civic) are often available in the Indian market without the hybrid technology.[634] Local manufacturing of hybrids is not currently possible for technical reasons.[635]

Overall, most new initiatives seem to be undertaken by the industry rather than the government. For instance, various manufactures like Maruti and GM are planning the launch of CNG-based vehicles for personal use for 2007, which are currently restricted to public transportation in big cities. In February 2007, GAIL India Ltd and Indian Oil Corporation (IOC) formed a joint venture company[636] to undertake gas distribution in Calcutta and other parts of Bengal. Until now, liquefied petroleum gas (LPG) had been seen as the sole option for cleaner fuel as bringing CNG to the city was not deemed feasible. The new company plans to change that by sourcing gas from western India through a cross-country pipeline. GAIL is planning to lay an 867-km pipeline connecting Jagdishpur in Uttar Pradesh with Haldia to bring natural gas to the state. Another private sector player,

[631] The BusinessLine, India. Date of Access: 10 September 2006. http://www.blonnet.com/2006/09/11/stories/2006091102250300.htm.
[632] The National Public Radio. Date of Access: 22 May 2007. http://www.npr.org/templates/story/story.php?storyId=5362373.
[633] Pre Budget Memorandum, Society of Indian Automobile Manufacturers (SIAM). Date of Access: 19 January 2006. http://www.siamindia.com/scripts/pre-budget-memorandum5.aspx.
[634] Until recently, hybrids cars were generally exclusive models which were not offered in the regular-fuel variants.
[635] Shipping of fragile components (such as the large battery pack) is unfeasible; as a result, hybrid cars must be imported as fully-built units.
[636] The Telegraph, (India). Date of Access: 12 April 2007. http://www.telegraphindia.com/1070412/asp/calcutta/story_7636169.asp.

O2Diesel Corporation,[637] a world leader in the development of clean fuel technology, announced in May 2007 that it will be supplying over 70,000 litres of its proprietary fuel technology (ethanol blended diesel fuel) to Energenics, a company which is helping the Karnataka Road Transport Corporation (KSRTC) replace the first 2,500 of its 16,000 bus fleet to the proprietary ethanol diesel blend. Again, there is no indication of the Indian central government's measures to restructure its import regime to make hybrids more accessible to consumers or to support domestic production, or of its plans to support the private sector initiatives on CNG-vehicles.

Although the government of India has reaffirmed its prior commitments and launched various policies and road maps, tangible results are not obvious at this stage. Some of the more promising proposals, like the modernization of older vehicles and the introduction of hybrid cars, are private sector initiatives which are yet to receive the government's support. Based on these facts, India is awarded a score of 0 for partial compliance.

Author: Debananda Misra

Alternative and Renewable Energy: 0

India has registered partial compliance with its commitments to alternative and renewable energy made at the St. Petersburg Summit.

In May 2007, a Chief Ministers Conference of Power was held under the chairmanship of the Prime Minister, Dr. Manmohan Singh to develop a time bound closely monitored action program for power capacity addition, loss reduction, and promotion of energy efficiency.[638] While not much emphasis was placed on alternative energy, the action plan also highlighted the need for immediate steps to be taken to expedite development of hydro power and renewable sources.[639]

Brazil and India are preparing for an energy summit in June 2007, where leaders intend to discuss technology transfer and other areas of cooperation between both countries in nuclear and ethanol fuel.[640]

During the compliance period, the Indian Ministry of New and Renewable Energy (MNRE), responsible for implementation of programs for development, demonstration, and utilization of various renewable energy-based technologies, has implemented several new, centrally-sponsored schemes in technologies such as solar thermal, wind power generation, biomass combustion/cogeneration, mini/micro hydro power, geothermal for heat applications, and tidal power generation which have made India's renewable energy program among the largest in the world.[641]

As noted in the Transport Section, in April 2007, the Chief Minister of Andhra Pradesh announced the nationwide launch of 5% Ethanol Blended Petrol (EBP) Program at Hyderabad.[642] The launch of the program marks a significant step in the direction of utilizing alternative renewable and environment friendly sources of energy within the country.

In January 2007, government leaders from across Asia and the Pacific,[643] including India, agreed to reduce their dependence on fossil fuels and promote cleaner technologies that

[637] The Australian Information Source. Date of Access: 1 May 2007. http://au.sys-con.com/read/369430.htm.
[638] Press Release Bureau, Government of India. Date of Access: 28 May 2007. http://pib.nic.in/release/release.asp?relid=28272.
[639] Press Release Bureau, Government of India. Date of Access: 28 May 2007. http://pib.nic.in/release/release.asp?relid=28272.
[640] United Press International, Date of Access: 24 May 2007 http://www.upi.com/Energy/Analysis/2007/05/23/analysis_brazil_india_meet_on_energy/6909/.
[641] Publications of MNRE, MNRE, (New Delhi). Date of Access: 19 January 2007. http://mnes.nic.in/frame.htm?publications.htm.
642 The Equitybulls, (India). Date of Access: April 2007. http://www.equitybulls.com/admin/news2006/news_det.asp?id=10451.
[643] Environment News Service. Date of Access: April 2007.

address air pollution and greenhouse gas emissions. The energy pact signed by the leaders of the 10 member Association of Southeast Asian Nations (ASEAN) and its partners calls for a concerted region-wide effort to harness alternative sources of energy to ensure continuous energy supply for their growing economies in the face of dwindling world oil reserves.

Also in January 2007, in a bid to increase the efficiency of solar energy devices, the Union Ministry of New and Renewable Energy launched a scheme[644] to provide 100% funding to institutes that are working on the research and development aspects of solar photovoltaic cells. The state of Karnataka is set to increase its wind energy capacity by 1,000 MW in about a year. Karnataka Renewable Energy Development Limited (KREDL) is about to allocate 250 small wind energy projects in different districts with adequate wind velocity.[645]

In December 2006, Alcoa signed a Memorandum of Understanding (MOU) with India's Council of Scientific & Industrial Research (CSIR) to partner in collaborative research projects that address critical global issues such as energy efficiency,[646] alternative and renewable energy sources, environmental technologies, and multi-material engineered solutions. Some of the areas of initial action include energy innovations to ensure long-term sustainability of operations, environmental innovations that use nano-technology and biotechnology to convert waste to products, packaging innovations that provide next-generation solutions to customers, and multi-material engineered solutions for a number of markets.

In November 2006, the MNRE announced the implementation of a Solar Photovoltaic (SPV) Program to provide Central Financial Assistance to deploy SPV systems including solar home systems, street lighting systems, SPV power plants, and new applications of SPV technology as a means to reduce consumption of kerosene and improve quality of life in rural areas through use of environment-friendly technologies.[647] However, the scope of this scheme was restricted to areas not covered under the Remote Village Electrification (RVE) projects of the ministry. This program was in continuation to the Solar Lantern Program announced in October 2006 with the same objectives[648] but with a broader coverage.[649] In July 2006, the MNRE conveyed the sanction of the President of India in continuing to provide financial support for R&D in Development of Solar Photovoltaic Technology in India.[650]

The MNRE had taken up programs on three new technologies, namely chemical sources of energy, hydrogen energy, and alternative fuels for surface transportation. While chemical sources of energy involve development and application of environmentally-sound fuel-cell technology to produce energy, hydrogen energy projects have begun to develop a clean fuel and an energy carrier that can be used for a broad range of applications as a possible substitute to fossil fuels.[651] However, it is still not possible to assess progress made under these programs.

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http://www.ens-newswire.com/ens/jan2007/2007-01-17-05.asp

[644] The Hindu: Karnataka State Edition. Date of Access: April 2007. http://www.hindu.com/2007/01/06/stories/2007010606380500.htm

[645] The Hindu: Date of Access: April 2007 http://www.thehindu.com/2007/01/06/stories/2007010606380500.htm.

[646] Reuters News. Date of Access: April 2007. http://today.reuters.com/news/articleinvesting.aspx?view=PR&symbol=AA&storyID=178460+16-Jan-2007+BW&type=qcna

[647] No.32/01/ 2006-07/PVSE, MNRE SPV Group. Date of Access: 19 January 2007. http://mnes.nic.in/pdf/spv-aa0607.pdf.

[648] No.32/37/ 2006-2007/PVSE, MNRE SPV Group. Date of Access: 19 January 2007. http://mnes.nic.in/pdf/solar_lantern.pdf.

[649] No. 21/1/2006-07/PVSE, MNRE SPV Group. Date of Access: 19 January 2007. http://mnes.nic.in/pdf/solar_water_pump.pdf.

[650] No. 31/1/2005-06/PV-R&D, MNRE SPV Group. Date of Access: 19 January 2007. http://mnes.nic.in/pdf/spv_technology.pdf.

[651] Publications of MNRE, MNRE, (New Delhi). Date of Access: 19 January 2007. http://mnes.nic.in/frame.htm?publications.htm.

Through the MNRE, the Government of India has taken several small steps in the right direction. India's initiatives on nuclear energy, though an alternative to GHG-emitting fuels, does not make up for a relative lack of progress in the development of alternative and renewable energy sources. Most of the other announced initiatives and projects have a potential future value, but their actual impact depends on effective implementation. Given this, and the small scale of the current measures, India's partial compliance with this commitment warrants a score of 0.

Author: Sudheer Perla

UNFCCC/Kyoto: 0

The Government of India registered only partial compliance with its St. Petersburg Summit commitments related to the UNFCCC. While India has undertaken some positive steps towards fulfilling these commitments in its national policies, its attitude towards its responsibility for reduction of GHG emissions remains ambivalent, if not negative.

As a 'Non-Annex I party' under the UNFCCC, India is only required to submit information on GHG emissions in national communications. India submitted its initial national communication in June 2004, and has not been required to submit further communications since the St. Petersburg Summit.[652]

The Indian Ministry of Environment and Forests has published a guide to *Good Practices in Environmental Regulation* on its website.[653] However, without further evidence of efforts to disseminate the guide to major stakeholders or the public at large, India cannot be considered to be in full compliance with the UNFCCC commitment to "share information on… best practices."[654]

In November 2006, the Ministry of New and Renewable Energy (MNRE) announced the implementation of a Solar Photovoltaic (SPV) Program. The program will provide SPV systems, including solar home systems, street lighting systems, and SPV power plants.[655] The Automotive Mission Plan introduced in September 2006 aims to facilitate the introduction of world-class automotive emission standards in India.[656] In February 2007, the 100 Village EmPower Partnership Program of DESI power – a bio-mass gasification project undertaken by India in collaboration with DASAG and the Energy and Resources Institute – entered into its construction phase.[657] The aim of the project is to provide rural villages in the Bihar region of India with affordable access to electricity through the installation of biomass power plants and cultivation of crops on wastelands to serve as bio-diesel.[658] The BERI project inaugurated in January 2007 tests the application of biomass energy technology on a large scale by providing high quality rural energy services for economic development. The project is expected to avoid 1,200 tons of CO_2 emissions annually, while the planting of fast-growing local species for biomass is expected to

[652] FAQ on UNFCCC GHG Emissions Data, UNFCCC Secretariat, (Bonn). Date of Access: 18 January 2007. http://unfccc.int/ghg_emissions_data/frequently_asked_questions/items/3826.php; India on UNFCCC, UNFCCC Secretariat, (Bonn). Date of Access: 22 February 2007. http://maindb.unfccc.int/public/country.pl?country=IN.
[653] Government of India Ministry of Environment and Forests Website, The Secretary of the Ministry of Environment & Forests. Date of Access: 18 January 2007 http://envfor.nic.in/; UNFCCC Convention Introduction, UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.
[654] UNFCCC Convention Introduction, UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.
[655] No.32/01/ 2006-07/PVSE, MNER SPV Group, (New Delhi), July 2006. Date of Access: 19 January 2007. http://mnes.nic.in/pdf/spv-aa0607.pdf.
[656] Draft Automotive Mission Plan, Ministry of Heavy Industries and Public Enterprises, September 2006. Date of Access: 19 January 2006. www.siam.in/Upload/draft_amp.pdf.
[657] Status of the 100 Village EmPower Partnership Project, February 2007. Date of access: 28 April 2007. http://www.desipower.com/100VillageStatus/main.htm.
[658] Sustainable Energy for Rural Progress through Employment and Power (EmPP) Partnership Program. Date of Access: 28 April 2007. http://www.desipower.com/100Village/writeUp100Village.htm.

sequester a further 5,000 tons of CO_2.[659] In May 2007, the Ministry of Environment and Forests formed an expert committee to study the impact of climate change on India and identify possible measures to be taken with respect to it.[660] India has publicized its new national policies, thus meeting its UNFCCC commitment to "share information on national policies" and to "launch national strategies for addressing greenhouse gas emissions."[661]

The Ministry of Environment and Forests has recognized that "[in] India, climate change could represent additional pressure on ecological and socio-economic systems."[662] In November 2006, the Ministry presented the regional action plan of the Asia-Pacific Partnership of six countries on clean development and climate to concretize and implement sustainable solutions in eight key sectors, including coal and steel.[663] India played host to the "International Conference on Adaptation to Climate Variability and Climate Change" in December 2006.[664] In January 2007, India, along with ASEAN and its regional partners, signed the Cebu Declaration on East Asian Energy Security with a view to develop efficient use of energy and reduce development on fossil fuels through increased investment in renewable energy sources and development of a common standard for the use of bio fuels in engines and motor vehicles.[665] This fulfils India's UNFCCC commitment to "cooperate in preparing for adaptation to the impacts of climate." [666]

India is an active participant in CDM. An impressive 114 of the 391 projects approved by the UNFCCC are registered from India, the highest for any country.[667] "We have been educating associations, NGOs, individual companies about the significance of CDM. It's a win-win proposition," says R.K. Sethi, Director of Climate Change at the Ministry of Environment and Forests.[668] Further, the Industrial and Development Bank of India (IDBI) has entered into several non-exclusive agreements with financial institutions such as the German Bank KfW[669] and the IFC[670] to assist domestic companies undertaking CDM projects.

However, India demonstrated that it has a qualified approach to combating climate change at the recent UNFCCC conference in Nairobi. At the COP12 in November 2006, R.K. Sethi asked the conference whether India should reduce its CO_2 emissions simply "so the

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[659] United Nations Development Program, Global Environment Facility, Tackling Climate Change Now: GEF Project in India's Karnataka State Shows How. Date of Access: 28 April 2007 http://www.undp.org/gef/05/spotlight/CEO_india.html.

[660] Diyya Gandhi, Committee on Climate Change Set Up, The Hindu, 11 May 2007. Date of Access: 22 May 2007. http://www.hindu.com/2007/05/11/stories/2007051102381300.htm.

[661] UNFCCC Convention Introduction, UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.

[662] Vulnerability and Adaptation, The Ministry for Environment and Forests. Date of Access: 19 January 2007. http://www.envfor.nic.in/cc/adapt.htm.

[663] Asia Pacific Eco Plan Presented, The Economic Times, 2 November 2006. Date of access: 29 April 2007. http://www.cseindia.org/AboutUs/news/climate.htm.

[664] India – International Conference on Adaptation to Climate Variability and Climate Change: Towards a Strategic Approach, World Bank, (Washington, DC), 7 December 2006. Date of Access: 19 January 2007. http://www.worldbank.org.in/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/INDIAEXTN/0,,contentMDK:21151994~menuPK:295589~pagePK:64027988~piPK:64027986~theSitePK:295584,00.html.

[665] Wang Yu, Southeast Asian Nations Reach Energy Agreement, 16 January 2007. Date of Access: 28 April 2007. http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierreaditem&dossier=4&type=1&itemid=3342&language=1.

[666] UNFCCC Convention Introduction, UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.

[667] Abishek Kapoor, India Inc Tops Charts with 53% of Global Carbon Credits Demand, The Indian Express, (Gandhinagar), 25 October 2006. Date of Access: 19 January 2007. http://www.indianexpress.com/story/15394.html.

[668] Abishek Kapoor, India Inc Tops Charts with 53% of Global Carbon Credits Demand, The Indian Express, (Gandhinagar), 25 October 2006. Date of Access: 19 January 2007. http://www.indianexpress.com/story/15394.html.

[669] IDBI, KfW Tie Up for Carbon Credit Trading, The Hindu Business Line, 19 January 2007. Date of Access: 29 April 2007. http://www.blonnet.com/2007/01/20/stories/2007012003640600.htm.

[670] IDBI, IFC Join Hands on Carbon Projects, The Hindu Business Line, 15 December 2006. Date of Access: 29 April 2007. http://www.thehindubusinessline.com/2006/12/16/stories/2006121605280300.htm.

developed world can breathe easier?"[671] India's international negotiating position relies heavily on the principle of historical responsibility, which acknowledges that developed countries are responsible for most past and current greenhouse emissions.[672] At the recent session of the Intergovernmental Panel on Climate Change (IPCC) in May 2007, India, along with China and Brazil, was accused of trying to evade discussion of its responsibility for emissions by insisting that the developed world acknowledge its historic responsibility for them.[673] The Kyoto Protocol states that "the share of global emissions originating in developing countries will grow to meet their social and development needs." There is concern that the government of India is using this statement as a justification for its perceived lack of cooperation in negotiations on introducing binding commitments for rapidly industrializing countries.[674]

For India, its main priority is still poverty-reduction. Sethi, Director of Climate Change stated that "My choice is to improve the lot of India's poor or reduce CO_2 emissions… I do not have the funds for both."[675] He went on to explain that Indians already pay the highest rate in purchasing power parity (PPP) terms for energy in the world, and that the average Indian household spends 1.5 times more on energy than it does on food.[676] At the meeting on climate change convened by the Prime Minister, in May 2007, the Ministry of Environment indicated its support for nuclear and clean coal technologies as viable options for meeting its commitment towards reducing global warming. The Ministry emphasized that India must consider these alternatives, as use of energy efficient and renewable technologies on a large scale could impede India's economic growth.[677]

Despite some positive initiatives in national policies, co-operation for adaptation and CDM, India's steps towards fulfilling this commitment remain ad-hoc, small-scale, and in some cases, unimplemented. With GHG emissions rising rapidly in India and the government's reluctance to take responsibility for addressing this significant concern, as witnessed at the Nairobi conference and the recent IPCC session, India is given a score of 0 for the UNFCCC/Kyoto commitment.

Authors: Neha Jain, Kim Rutherford, and Niel Bowerman

Sustainable Use of Energy: -1

The government of India registered no compliance with its commitment on sustainable use of energy. Despite India's acknowledged vulnerability to climate change there has been a rapid increase in its GHG emissions with its economic growth. Although a new National

[671] Ronald Bailey, Reason Magazine, (Nairobi, Kenya), 14 November 2006. Date of Access: 19 January 2007. http://www.reason.com/news/show/116724.html.
[672] Pretty Bhandari, India's pragmatic approach to climate change, Science and Development Network, 31 August 2006. Date of Access: 19 January 2007. http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierReadItem&type=3&itemid=518&language=1&dossier=4.
[673] India, China, Brazil Hold up Climate Change Talks, Agence France-Presse, 2 May 2007. Date of Access: 21 May 2007. http://www.hindustantimes.com/StoryPage/StoryPage.aspx?id=a1eb8a3f-ead5-4037-aa36-80e3ef5abfc6&ParentID=6649f9ac-3be1-44bb-81de-3a16295c3bb4&&Headline=India%2c+others+firm+on+climate+change+issue.
[674] Full text of the convention, UNFCCC, UNFCCC Secretariat, (Bonn), 21 March 1994, Date of Access: 19 January 2007. http://unfccc.int/essential_background/convention/background/items/1350.php; P. Bhandari, India's pragmatic approach to climate change, Science and Development Network, 31 August 2006. Date of Access: 19 January 2007. http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierReadItem&type=3&itemid=518&language=1&dossier=4.
[675] Ronald Bailey, Reason Magazine, (Nairobi, Kenya), 14 November 2006. Date of Access: 19 January 2007. http://www.reason.com/news/show/116724.html
[676] Ronald Bailey, Reason Magazine, (Nairobi, Kenya), 14 November 2006. Date of Access: 19 January 2007. http://www.reason.com/news/show/116724.html
[677] Mahendra Singh and Nitin Sethi, Climate Change: Govt Clears Air, The Times of India, 23 May 2007. Date of Access: 24 May 2007. http://timesofindia.indiatimes.com/India/Climate_change_Govt_clears_air/articleshow/2067922.cms.

Environment Policy to foster sustainable energy use has been announced to address this, the government has been reluctant to undertake and implement measures to drive down the rising energy consumption and reduce its GHG emissions.

A new National Environment Policy (NEP) was formulated and approved in May 2006 to mainstream environmental concerns in all developmental activities, fill in gaps and to build on earlier policies in the country.[678] The objectives of the NEP 2006 included, *inter alia,* minimizing adverse environmental impacts of energy use by improving efficiency in environmental resource use and reducing their use per unit of economic output. At a macro level, the NEP 2006 outlines several regulatory, procedural, and substantive reforms to carry out its stated objectives. Despite the framework outlined by the NEP 2006, however, no credible action has been taken after the policy came into effect. This has been highlighted during the 14th Lok Sabha (Parliament of India) on 30 November 2006, where the Standing Committee on Energy, an independent watchdog for the Ministry of New and Renewable Energy (MNRE),[679] released its latest report entirely devoted to policy development and actions taken in the various programs outlined by the MNRE for development and utilization of renewable technologies. Among its key findings was a shortfall in utilization of funds which had been allocated for major programs on the demand-side, such as Energy Recovery from Urban and Industrial Waste, Village Electrification and Solar Energy etc. In a similar Standing Committee meeting held earlier on 22 May 2006, the committee had made additional recommendations to overcome problems of implementation and to monitor its progress. This included setting up of District Advisory Committees for grassroots-level monitoring and assigning responsibility for India's individual states to different Ministry scientists.[680] The Ministry has, however, not provided any details of steps taken to implement these recommendations.

In fact, there is much that the central government could have done to increase energy efficiency and sustainability at the end-user level. For instance, the Standing Committee had also recommended the establishment of a strong agency to fast-track and increase R&D in wind turbines and related equipment to both reduce cost and also develop a low-cost wind turbine regime.[681] There is no evidence of progress on this front.

The Committee had also noted that while the MNRE was in charge of development of a National Policy on biofuels, other aspects of promoting use of biofuels was allocated to five other different Ministries/Departments of the government, which greatly reduced the effectiveness of implementation.[682] The MNRE Solar Energy Program was described as an ambitious one, and the MNRE was urged to follow through on it in earnest, as northeastern Indian states had recorded poor performance in implementing it.[683]

This is not to say that India is not aware of the need to control the exploding growth in energy consumption and its environmental consequences. In recognition of this, in April 2007, the Deputy Chairperson of India's planning commission paid a two-day visit to China to initiate dialogue and share information on the manner in which both countries, the world's two fastest-growing economies, could meet the challenge of ensuring sustainable and energy-efficient development.[684] With the aim of learning from China's failure to meet its ambitious internal targets to reduce energy consumption per unit of output by 4%, Mr.

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[678] National Environment Policy 2006, Ministry of Environment and Forests, 18 May 2006. Date of Access: 20 January 2007. http://www.envfor.nic.in/nep/nep2006e.pdf.
[679] Name changed from Ministry of Non Conventional Energy w.e.f 20 October 2006
[680] 17th Report of the Standing Committee on Energy (Fourteenth Lok Sabha), Lok Sabha Secretariat, (New Delhi), 30 November 2006. Date of Access: 20 January 2007. http://164.100.24.208/ls/CommitteeR/Energy/17rep.pdf.
[681] 17 Report of the Standing Committee on Energy (Fourteenth Lok Sabha), Lok Sabha Secretariat, (New Delhi), 30 November 2006. Date of Access: 20 January 2007. http://164.100.24.208/ls/CommitteeR/Energy/17rep.pdf.
[682] 17 Report of the Standing Committee on Energy (Fourteenth Lok Sabha), Lok Sabha Secretariat, (New Delhi), 30 November 2006. Date of Access: 20 January 2007. http://164.100.24.208/ls/CommitteeR/Energy/17rep.pdf.
[683] 17th Report of the Standing Committee on Energy (Fourteenth Lok Sabha), Lok Sabha Secretariat, (New Delhi), 30 November 2006. Date of Access: 20 January 2007. http://164.100.24.208/ls/CommitteeR/Energy/17rep.pdf.
[684] Ahluwalia meets Chinese official, The Hindu: International. Date of Access: 1 June 2007 http://www.thehindu.com/2007/04/27/stories/2007042702321500.htm

Montek Singh Ahluwalia explained, "We underestimate the value of simply knowing what the other is doing."[685]

Similarly, detailing his government's steps on sustainable development, India's Ambassador to the UN, Mr. Nirupam Sen, told the Security Council in April 2007 that there has been an effective de-linking between India's energy sector growth and economic growth. He explained that while India maintained its GDP growth rate of 8%, its primary energy consumption growth was only 3.7%.[686]

External actors have also recognized India's predicament of ensuring sustainability and growth while reversing harmful energy consumption patterns. Marco Gonzalez, UNEP's Executive Secretary, Ozone Secretariat, said that US$220 million had been transferred to the country to promote and adopt clean technology.[687]

In another initiative, the Central Power Research Institute (CPRI), the power house of the Indian electricity industry set up by the Government of India and now running as an autonomous research body under the Union power ministry envisaged a "time-bound" roadmap for India's power sector to implement a sustainable energy system with clean power technology.[688]

While India formulated and approved a National Environment Policy to highlight the need for and to promote and adopt clean technology on the demand-side of its energy sector, the government has largely failed to effectively implement both new and existing policy decisions for sustainable energy use with no evidence of consumer-level schemes to encourage energy conservation or private sector initiatives to incentivize energy efficiency. These shortcomings and other implementation issues are highlighted by the Standing Committee on Energy. Based on this, India receives a score of -1.

Author: Sudheer Perla

Innovative Energy Technologies in Hydrocarbon Production and Use: 0

India's compliance with its G8 commitments on innovative technologies in hydrocarbon production and use has been partial. Despite a degree of progress through international partnerships, there is little evidence of the Indian government's engagement with the private sector at home. Most steps seem to be merely 'work in progress,' such as the various public sector units like the HPCL (Hindustan Petroleum Corporation Limited) and the ONGC (Oil and Natural Gas Corporation), while other projects have experienced difficulty getting off the ground.

India has approved an Integrated Energy Policy for the period 2006-2010 that includes measures to expand access to cleaner technology for the poor and to increase energy efficiency. However, there is no evidence to date that this project has been approved or implemented. The US Department of Energy (DOE) signed an agreement with India in April 2006, making it the first country to join the US on the government steering committee for the *FutureGen Initiative*.[689] India's participation in the US$1 billion *FutureGen* project builds on the US-India Energy Dialogue launched in May 2005, which aims to increase bilateral

[685] Ahluwalia meets Chinese official, The Hindu: International. Date of Access: 1 June 2007 http://www.thehindu.com/2007/04/27/stories/2007042702321500.htm.
[686] Energy consumption, GDP growth effective delinked, Domain-b Business. 18 June 2007. Date of Access: 1 June 2007. http://www.domain-b.com/economy/environment/20070418_consumption.html.
[687] Global warming could rain on India's growth parade: Stern report, InfoChange, November 2006. Date of Access: 20 January 2007. http://www.infochangeindia.org/EnvironmentItop.jsp?recordno=4743&section_idv=6#4743. .
[688] Shri Anil Razdan, takes over as Secretary, Minister of Power, CPRI News, January-March 2007. Date of Access: 1 June 2007. http://www.cpri.in/cpri_news/cpri%20news%20100.pdf
[689] FutureGen is a joint project to build and operate the world's first coal-based power plant that captures and sequesters CO_2 while producing electricity and hydrogen (see http://www.fossil.energy.gov/programs/powersystems/futuregen/.)

trade and investment in the Indian energy sector.[690] While this is a positive development, it has not been followed up by new steps since the St. Petersburg Summit.

Another international-level initiative was undertaken on 1 November 2006, when India and Australia announced the new action plan of the Asia-Pacific Partnership on Clean Development and Climate Task Force (AP6).[691] Many AP6's projects will focus on CO_2 capture and storage, coal gasification, and gas-handling infrastructural improvement.[692] India's participation in the AP6 provides an indication of the country's interest in this issue-area, but in itself does not constitute compliance.

At domestic level,[693] India had taken up pilot projects and the Ministry had decided to fund a Neyveli Lignite Corporation (NLC) proposal for a pilot-scale test in the UCG for lignite reserves in Rajasthan. The NLC had entered into a memorandum of understanding with the Oil and Natural Gas Corporation (ONGC) to conduct studies in Tamil Nadu and Rajasthan. Fiscal incentives and tax concessions, now applicable under another clean coal technology — coal bed methane – might be necessary for attracting the private sector. Moreover, a mechanism for the allotment of coal blocks would have to be developed.

As for India's global private partnerships, in August 2006, the Oil and Natural Gas Corporation was in negotiations with Royal Dutch Shell for the proposed ventures in underground and surface coal gasification (as per the MoU signed between both the partners), with Shell providing the necessary technology.[694] Also, India "will have a privilege" of taking part in the exploration and production of crude and natural gas from the Sakhalin-III field in far-eastern Russia.

Much of the initiative is again coming from the private sector. In January 2007, Oil and Natural Gas Corp, India's largest explorer,[695] and OAO Rosneft, Russia's state oil company, signed an agreement to jointly bid for exploration and refining projects. As per the MoU, Rosneft and ONGC would jointly study the possibilities for mutual projects in exploration, production and marketing as well as other projects related to the hydrocarbon industry, including joint bidding for oil and gas stakes in Russia, India, and third countries. Another industry example are the growing exploration activities in the domestic hydrocarbon sector by the C K Birla Group company, Birla Technical Services (BTS).[696]

The country has witnessed a surge in exploration activities under the new exploration licensing policy (NELP). NELP-VI, the biggest round for oil and gas exploration, saw 24 deep sea blocks, mostly in the eastern coast, six shallow offshore and 25 on land being put on the blocks. BTS already represents a number of multinational companies to offer specialized equipment, skid-mounted process packages and consumables to the oil and gas industry in India, particularly for exploration and production, gas processing, and downstream oil processes.

Finally, in the domestic context, the HPCL launched a Clean Fuel project worth US$400 million to manufacture petrol and diesel complying with Bharat II and Euro III norms at Visakh Refinery at Vizag. Originally scheduled for completion by December 2006, this project is now more likely to be completed by May 2007. As noted by the Stern Report,

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[690] FutureGen – Tommorow's Pollution-Free Power Plant, US Department of Energy, February 2003. Date of Access: 20 January 2007. http://www.fossil.energy.gov/programs/powersystems/futuregen/index.html.
[691] Asia-Pacific Partnership on Clean Development and Climate, December 2006. Date of Access: 25 December 2006. http://www.asiapacificpartnership.org/.
[692] Asia-Pacific Partnership on Clean Development and Climate, Australian Government Department of Foreign Affairs and Trade, November 2006. Date of Access: 19 January 2007. http://www.dfat.gov.au/environment/climate/ap6/index.html.
[693] The Hindu Online. Date of Access: 13 November 2006. http://www.hindu.com/2006/11/13/stories/2006111302471100.htm
[694] Pratim Ranjan Bose, ONGC in talks with Shell for coal gasification projects, The Hindu Business Line, 26 July 2006. http://www.thehindubusinessline.com/2006/07/26/stories/2006072604500200.htm.
[695] The Outlook India. Date of Access: 25 January 2007. http://www.outlookindia.com/pti_news.asp?id=446214.
[696] The Hindu Online. Date of Access: 6 November 2006. http://www.hindu.com/thehindu/holnus/006200611060310.htm

India is taking action to decouple its economic growth from the growth in GHG emissions.[697] This was the only home-grown initiative with a fixed budget and clear targets that can be counted toward compliance.

Therefore, overall, India's participation in international initiatives to support innovative energy technologies in hydrocarbon production and use is a positive development, which may eventually help prod decision-makers into more concerted action at home. Private organizations like the Birla Group, HPCL, etc. are starting to launch new initiatives targeted towards use of modern technologies for hydrocarbon production but the usage of hydrocarbon has still been limited to conventional methods in most cases, especially in case of end consumers. Most of the initiatives are geared towards the industrial sectors only. Based on this, India is accorded a score of 0.

Author: Debananda Misra

[697] For most developing countries like India, there is a direct link between a rising GDP and surging GHG emissions, while progress from decoupling these emissions from growth has been slow.

8. Italy

Background

The Italian political landscape has changed dramatically since the St. Petersburg Summit. In particular, the presence of the Greens in Romano Prodi's new coalition government suggests that a pro-environment agenda is more likely to emerge than in the previous government of Silvio Berlusconi.[698]

Significant action has already been initiated: on 19 July 2006 Environment Minister Alfonso Pecoraro voiced his intent to ensure that 25% of the country's energy production would come from renewable sources by 2011,[699] while joint science and technology agreements with the United States, along with international funding agreements for the six least developed African countries, promise progress in the development and implementation of hydrogen technologies and energy efficiency, respectively.

In the transport sector, new consumer incentive schemes are expected to encourage the use of fuel-efficient cars for private purposes, as well as a greater reliance on public transport. Public sector plans to encourage car sharing, hybrid vehicles for the police, and hydrogen technologies are also imminent.

In a reversal of the former government's policy, Italy has also renewed its commitment to the Kyoto Protocol beyond 2012. Italy, moreover, was one of only five countries to give its businesses too few permits in 2006.[700] Italy is now implementing plans for a national registry for EU allowances and Kyoto units for greenhouse gases, as well as pioneering the world's first hydrogen-fuelled, zero-emission power plant. Despite this, Italy is poised to miss the EU Emissions targets and will need to do more to avoid EU fines of between €3-5 billion.[701]

Finally, in the area of innovative hydrocarbons-related technologies, plans are underway that include expansions at CHP (combined heat and power) stations, increased-efficiency electricity generators, forest sinks, and legislation for energy efficiency. Research is also ongoing into uses for waste methane and CO_2 removal and storage in coalmines under the *Methane to Markets* Partnership. Italy has committed itself as of 13 February 2007 to "work along with all 27 EU member states and our major partners; the industrialized countries of the G8 primarily, but of course not only them – to define a 'new environmental order,' a mechanism that, after 2012, will allow us to limit greenhouse gas emissions."[702]

Authors: Alexander Dragonetti and Michael Erdman

Clean and Efficient Energy in the Transport Sector: 0

Italy has partially complied with its St Petersburg commitment on surface transportation. Most of the compliance commitments were endorsed by January 2007, when the Italian Budget Law, Legge Finanziaria, for the years 2007 to 2009 entered into force. Since then, commitments have been developed and reinforced with further public announcements and action. Italy successfully provided incentives for consumers to adopt more environmentally efficient vehicles. However, although taking some steps towards a large-scale cleaner

[698] Turning Over A New Leaf - Renewable Energy In Italy, The Roman Forum ,(Rome), October 2006. Date of Access: 7 January 2006. http://www.theromanforum.com/articolo.asp?ID=250.
[699] Energia: Pecoraro, Un Ddl Per Le Fonti Rinnovabili, Ministerio dell'Ambiente, (Rome), 19 July 2006. Date of Access: 6 January 2006. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/19luglio.xml.
[700] EU Carbon Market Gives Emitters Easy Ride in 2006, Planet Ark, 3 April 2007. Date of Access 28 April 2007. http://www.planetark.com/dailynewsstory.cfm?newsid=41225&newsdate=03-Apr-2007.
[701] Energia: Pecoraro, 3-5 Mld Penalità Senza Taglio Emissioni, Ministerio dell'Ambiente, (Rome), 12 July 2006. Date of Access: 6 January 2006. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/12luglioVI.xml.
[702] Energy Security and Italian Foreign Policy, the European Perspective, Ministerio degli Affari Esteri, (Rome), 13 February 2007. Date of Access 28 April 2007, http://www.esteri.it/eng/6_38_227_01.asp?id=2882&mod=3&min=1.

public transportation system, Italy did not fully operationalize the commitment during the commitment period, and achieved a compliance score of 0.

More people use cars on a daily basis in Italy than in any other European country. Cars represent 82% of the total transport sector, with 60 cars for every 100 inhabitants, but only 24 bicycles for every 1000 inhabitants.[703] Addressing mounting civil society concern about the transport system, the 2007-2009 Budget Law included several incentives for consumers to adopt more environmentally efficient vehicles, such us rebates and tax exemptions for those switching to clean diesels and liquefied propane gas (LPG) or methane fuel vehicles (up to €800 per vehicle), together with free annual travel cards for public transport, which are available to those scrapping their old car without buying a new one (in case they do not own any other vehicle). [704] Those buying a new LPG, hydrogen, electric or methane fuel vehicles can have an incentive from € 1,500 to 2,000.[705] Similarly, those converting a vehicle (not older than three years) from traditional to methane or LPG fuels will receive up to € 650 until 2009.[706] Following the entry into force of the Budget Law in January, its text was further developed in order to allow for rebates to cover the cost of scrapping old cars, rather than limiting rebates only to the purchase of a new vehicle.[707]

Together with incentives for less polluting vehicles, the government legislated disincentives for those which are less environmentally friendly. While the road tax for Euro IV and V vehicles[708] (92% of total Italian cars) remained the same, there was a tax increase for vehicles from Euro 0 to Euro III, which decreases according to the polluting potential of the vehicle (from €1.29 to 1.5 per kW for cars with more than 100 cm^3).[709] Initially the Budget Law was meant to be much more punitive for highly polluting cars, such as SUVs, but that text was subsequently amended.[710] Eventually, despite NGOs lobbying operation, the final version of the budget law does not include specific taxation on SUVs.[711]

As for the use of hybrid and clean diesel for public transport, the Budget Law allocated €140 million every year from 2007 to 2009 to improve the quality of air in urban areas; it also allocated €90 million every year for three years to minimize the emissions of pollutant dusts. Moreover, of the €600 million allocated to compliance with Kyoto's regulations, €200 million will be employed each year to make public transport cleaner.[712] A governmental roundtable was created to decide upon the specific allocation of the resources above in 30 November 2006, with the purpose of delivering projects on cleaner public transport (Tavolo Nazionale sulla Mobilità Sostenibile). The roundtable is in fact a cross-ministerial instrument of consultation, with participants from the Ministries for Environment, Transports, and Health, in partnership with Italian Regions, Railways, the World Health Organization (WHO),

[703]Ambiente Italia 2007. La gestione dei conflitti ambientali, Legambiente, (Milano), 7 March 2007. Date of Access: 23 May 2007. http://www.legambiente.com/documenti/2007/0301_ambiente_italia.php.
[704] La Legge Finanziaria e le Misure Economiche per il 2007, Office of the Prime Minister, (Rome), 15 December 2006. Date of Access: 4 Jan 2007.
http://www.governo.it/GovernoInforma/Dossier/finanziaria_2007/comunicato_attuazione_programma.html.
[705]Finanziaria 2007 Novità Importanti, Ecomobile News, (Bologna), February 2007. Date of Access: 23 May 2007. http://www.ecomobile.it/finanziaria-2007-gas.htm.
[706] Finanziaria 2007 Novità Importanti, Ecomobile News, (Bologna), February 2007. Date of Access: 23 May 2007. http://www.ecomobile.it/finanziaria-2007-gas.htm.
[707] Auto: Pecoraro, bene estensione contributo rottamazione, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Rome), 30 November 2006. Date of Access: 25 April 2007.
http://www.minambiente.it/index.php?id_doc=794&id_oggetto=2.
[708] The least polluting vehicles under European law.
[709] Governo Informa: Dossier Finanziaria 2007, Office of the Prime Minister, (Rome), 21 May 2007. Date of Access: 23 May 2007. http://www.governo.it/GovernoInforma/Dossier/finanziaria_2007/slide/bollo_auto.pdf.
[710] Governo Informa: Dossier Finanziaria 2007, Office of the Prime Minister, (Rome) 21 May 2007. Date of Access: 23 May 2007. http://www.governo.it/GovernoInforma/Dossier/finanziaria_2007/slide/bollo_auto.pdf.
[711] Ambiente Italia 2007. La gestione dei conflitti ambientali, Legambiente, (Milano), 7 March 2007. Date of Access: 23 May 2007. http://www.legambiente.com/documenti/2007/0301_ambiente_italia.php.
[712] Governo Informa: Dossier Finanziaria 2007, Office of the Prime Minister, (Roma), 23 November 2007. Date of Access: 23 May 2007.
http://www.governo.it/GovernoInforma/Dossier/finanziaria_2007/slide/Ambiente_23_11_2006.pdf.

and the Italian Agency for Environment.[713] The scope of the first meeting, held on 30 January 2007, was to monitor the management of €90 million allocated by the Budget Law for cleaner and efficient energy in the transport sector. Minister for the Environment Pecoraro Scanio stated during the meeting (and on other occasions prior to May 2007) that a considerable amount of that money would be spent on improving public transport, both by building up new infrastructure and by implementing the use of hybrid and clean diesel technology.[714] Moreover, the Ministry of the Environment allocated additional funds for cleaner transports: specifically, it assigned €70 million to regional plans, €20 million to promote methane fuel vehicles, and €10 million to promote car sharing. [715]

However, although Minister Pecoraro's public speeches often prioritize cleaner transport as a key instrument for the Italian environmental policies, an efficient large scale program for cleaner and/or hybrid public transportation is yet to be implemented. In March 2007, WWF Italy presented a position paper addressing the shortcomings of Italian policy on Public Transports. [716] While welcoming the enhanced government's attention to the issue, the paper underlined that most of the government's new budget is being spent on less polluting road vehicles, rather than providing incentives for alternatives to cars. For example, 49% of the budget has so far been spent on more efficient motorways, and only 11% on providing more efficient railways for short distance commuting.[717]

Both Prime Minister Romano Prodi and Minister Pecoraro Scanio have agreed to work more closely with local authorities (the so-called 'Regioni,' Italian regions) to endorse a joint action with the central government to introduce a cleaner public transport system. [718] However, the regions retain the ultimate authority over how the funds allocated by the central government are to be employed and whether cleaner and hybrid public transport is to be given priority. Some regions (and some cities), usually in Central and Northern Italy (Emilia Romagna, Lombaria, Lazio) are more responsive than others. Often the money allocated to enhance cleaner public transport is employed to increase the number of public vehicles and their efficiency, rather than focusing on hybrid or cleaner vehicles.[719]

The plans presented by the government in January 2007 for the police force to switch to hybrids vehicles in protected areas such as marine and natural parks are still in force. There will be an evaluation at the end of 2007 to decide whether to implement this policy on a larger scale.[720] Also ongoing is a joint plan between the Ministry of the Environment and the Ministry of Research to enhance investment in new technology for public transports,

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[713] Ambiente: istituito al ministero tavolo per la mobilità sostenibile, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Rome), 30 November 2006. Date of Access: 25 April 2007. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/30novembre.xml.

[714] La Priorità del Governo e' di Ridurre le emissioni di CO2, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Rome), 19 May 2007. Date of Access: 23 May 2007. http://www.minambiente.it/index.php?id_doc=945&id_oggetto=2.

[715] Ambiente: Pecoraro apre tavolo per la mbilita' sostenibile, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Rome), 30 November 2006. Date of Access: 25 April 2007. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/30novembre.xml.

[716] Position Paper del WWF Italia per una politica dei Trasporti Ragionevole nel Nord Italia, WWF Italia, (Rome), March 2007. Date of Access 23 May 2007. http://www.peraltrestrade.it/download/Position_paper.pdf.

[717] Position Paper del WWF Italia per una politica dei Trasporti Ragionevole nel Nord Italia, WWF Italia, (Rome), March 2007. Date of Access 23 May 2007. http://www.peraltrestrade.it/download/Position_paper.pdf.

[718] Ambiente: domani Ministro a presentazione rapporto sulla qualità dell'ambiente APAT, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Rome), 30 November 2006. Date of Access: 25 April 2007. http://www.minambiente.it/index.php?id_doc=787&id_oggetto=2. Seminario Caserta: Agenda per la crescita, Presidenza del Consiglio dei Ministri (Rome), 12 January 2007. Date of Access: 25 April 2007. http://www.governo.it/Presidente/Comunicati/dettaglio.asp?d=30483.

[719] Ticket Antismog e piu' bus, LA Repubblica, (Roma), 10 May 2007. Date of Access: 23 May 2007. http://milano.repubblica.it/notizie-dal-web/ticket+antismog.

[720] Ambiente: auto ibride per Capitanerie di porto, Ministero dell'Ambiente e della Tutela del Territorio e del Mare, (Rome), 27 July 2006. Date of Access: 4 January 2007. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/27luglio.xml.

particularly concerning research on hydrogen fuel cell cars.[721] That informal platform is still in place, while local authorities are being urged by the central government to offer wider services for electric car users, employing part of the budget to enhance cleaner transport from the Budget Law.[722] Generally, regional and local authorities (especially in Central and Northern Italy) are playing a great role in following up on the St. Petersburg commitments, particularly in promoting large scale cleaner transportation systems, education plans, and car sharing.[723]

In conclusion, the Italian government has partially complied with its commitment on clean and efficient energy in the transport sector. The Budget Law for the years 2007 to 2009 offers incentives for consumers to adopt cleaner vehicles, including diesel and hybrids. However, although there is evidence of increased governmental attention to the issue, efficient public hybrid and/or public transportation systems are yet to be introduced on a large scale.

Author: Paola Cadoni

Alternative and Renewable Energy: 0

Promotion of energy diversification in favour of renewable sources has been on the Italian government's agenda since 1991, a goal that has helped turn Italy into a leading innovator on renewables. However, recently there have been few significant breakthroughs, and the country has fallen behind not only its European neighbours, but also its own targets. This survey of the current system shows some promising signs, but also a number of problems which need to be rectified if Italy is to achieve full compliance with this G8 commitment.

The incentives framework for the promotion of renewables today includes several certification schemes (e.g. the "Green Certificates," "White Certificates," IAFR, and RECS), with authority for their implementation being shared by several Italian public agencies and Ministries. Furthermore, the incentives are demanded under EU legislation.

Italy's first national legislation on new and renewable energy sources (no. 10/91) specified solar, wind, hydro, geothermal, sea, and wave sources as qualifying for benefits (which today also include bio-mass).[724] The GSE (Gestore dei Servizi Elettrici – Italy's public utility company) is one of the main actors involved in promoting, incentivizing, and developing renewable energy sources in the country.[725] The GSE is supported in its role by the AEEG (Autorità per l'Energia Elettrica e il Gas – the Italian Regulatory Authority for Electricity and Gas), the implementing body for incentives on electricity generation from PV solar

[721]Ambiente: Pecoraro, un tour nella capitale su bus a idrogeno, Ministero dell'Ambiente e della Tutlea del Territorio e del Mare, (Rome), 22 November. Date of Access: 25 April 2007. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/22novembreIII.xml.

[722] Ambiente: martedi conferenza "in città senza la mia auto", Ministrero dell'Ambiente e della tutela del Territorio e del Mare, (Rome), 15 September 2006. Date of Access: 25 April 2007. http://www.minambiente.it/st/Ministero.aspx?doc=ufficiostampa/2006p/15settembre.xml.

[723] Autobus ad idrogeno "fuel cell" IRIBUS,Ministero delle Infrastrutture e dei Trasporti, (Rome). Date of Access: 25 April 2007. http://www.infrastrutturetrasporti.it/page/standard/site.php?p=cm&o=vd&id=2033.

[724] See FENR (fonti energetiche nuove e rinnovabili), Renergy. Date of Access: 28 March 2007. http://www.renergysociale.it/fenr.php. Subsequent laws include DPR 412/93 (Decree to implement the law 10/91); Deliberations by the Comitato Interministeriale per la Programmazione Economica (CIPE) of 2 August 2002 on "Strategia d'azione ambientale per lo sviluppo sostenibile in Italia" (Deliberazione n. 57/2002), also addressing the *Agenda 21* program of action adopted in Rio in June 1992 by UNCED. For the relevant legislation, see Norme per l'attuazione del Piano energetico nazionale in materia di uso razionale dell'energia, di risparmio energetico e di sviluppo delle fonti rinnovabili di energia, Renergy. Date of Access: 28 March 2007. http://www.renergysociale.it/pdf/lp_001.pdf.

[725] The company's single shareholder is the Ministry of Economy and Finance, which exercises its shareholder rights together with the Ministry of Economic Development. GSE has two off-shoots, Acquirente Unico (AU) and Gestore del Mercato Elettrico (GME). The GSE is in charge of granting the Guarantee of Origin (GO) for electricity generated from renewables under Legislative Decree no. 387 (29 Dec. 2003), implementing EU Directive 2001/77/EC on the promotion of the electricity produced from renewable energy source in the internal electricity market. See Guarantee of Origin, GSEL. Date of Access: 28 March 2007. http://www.gsel.it/eng/Renewables/GuaranteeofOrigin.asp.

sources.[726] Within ENEA, the Department of Technologies for Energy, Renewable Sources and Energy Conservation focuses on increasing energy efficiency and achieving a low-carbon economy.[727]

The market in "Green Certificates" (issued by the GSE following IAFR certification[728]) is based on 1999 legislation for encouraging electricity generation from renewables.[729] Between 2004 and 2006, the minimum renewables obligation was increased annually by 0.35%; the increases for the 2007-2009 and 2010-2012 periods are yet to be determined (by the Ministry of Economic Development).[730] In 2005, the GSE issued 88,200 Green Certificates – up by 47% from 2004 – at a price of 108.92 €/MWh.[731] "White certificates," managed by the AEEG since 1 January 2005, are also a step toward meeting the Kyoto-related efficiency objectives.[732] The AEEG is responsible for administrating, monitoring, and enforcing the whole mechanism, with the aim of reaching by the end of the first five-year period (2005-2009) annual energy savings of 2.9 million toe (ton of oil equivalent); that figure corresponds to the annual increase of Italy's energy consumption registered in the period 1999-2001.[733] The "Renewable Energy Certificate System" (RECS) complements the Italian legislation on Green Certificates as an alternative scheme for renewable-energy plants that have been excluded from the Ministerial Decree of November 1999.[734]

There are also ministry-level programs for the promotion of renewable energy sources and the efficient use of energy.[735] In late 2006, both the Minister of the Environment, Pecoraro

[726] Decree of the Ministry of Productive Activities of 28 July 2005. The AEEG is also tasked with specifying the requirements that combined heat-and-power generation must meet to qualify for the "*co-generation*" status and benefit from the Italian legislation. Under the Legislative Decree 79/99. The relevant regulations are specified in the AEEG Decision 42/02 of 19 March 2002. Co-generation, GSEL. Date of Access: 28 March 2007. http://www.gsel.it/eng/Renewables/Co-generation.asp.

[727] See ENEA (www.enea.it).

[728] The criteria are set out under the Decree of the Ministry of Industry (11 November 1999), the Decree of the Ministry of Economic Development (18 March 2002) and Legislative Decree no. 387 (29 December 2003).

[729] Art. 11 of Decree 79/99, which superseded a scheme based on tariff incentives ("CIP-6").Provisions on energy generation from renewable sources and on the promotion and incentive scheme based on Green Certificates are laid out in Legislative Decree no. 387 (2003). Law no. 239 of 23 August 2004 (Marzano law) reduced the value of the "Green Certificate" from the initial 100 to 50 MWh. See Certification of Plants Fed by Renewables (IAFR plants), GSEL. Date of Access: 28 March 2007. http://www.gsel.it/eng/Renewables/CertificationPlantsFedIAFRplants.asp.

[730] Under this scheme, *demand* is represented by the producers and importers' obligation to inject annually a set "proportion" of electricity from renewables into the power grid, which must equal 2% of the electricity from conventional sources generated and/or imported in the previous year. (Art. 4.1, no. 387/2003). *Supply* is represented by the number of Green Certificates issued to operators with IAFR certification (from GSE), plus those Green Certificates that GSE has issued itself for electricity generated by CIP-6 plants. In 2005, the value of demand (4.3 TWh) was almost entirely covered by Green Certificates offered by private operators.

[731] Incentive Scheme for Renewables: 2005 Bulletin and Green Certificates, GSEL. Date of Access: 28 March 2007. http://www.gsel.it/eng/Renewables/GreenCertificates.asp.

[732] 16 passi verso Kyoto, WWF Italy, (Rome), 14 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1422007_3835.tmp&nArgomento=49&Titolo=16+passi+verso+Kyoto.

[733] Under the Decree of 20 July 2004. AEEG informs the Ministry of Environment, the Ministry of Economic Development, and the Electricity Market Operator (GME) about non-compliance and sanctions applied. See Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.

[734] At a minimum value of 1 MWh, RECS subsidizes "green" power generation by plants that could otherwise not meet the costs of production. The RECS project was launched by the EU to promote the development of an international voluntary market in green certificates. The Europe-wide system has over 100 members in 17 countries, such as electricity producers, traders and certification companies. Italy's GSE is a member of RECS, along with 15 other energy suppliers, distributors, and traders (AceaElectrabel Trading, AEM Trading, AGSM Verona, ASM Brescia, APER, Assoelettrica, CVA, Dalmine Energie, Edison Trading, Electra Italia, Endesa Italia, Enel Trade, Ferderpern, La220, Multiultility); it is also an Issuing Body. See RECS Certificates, GSEL. Date of Access: 28 March 2007. http://www.gsel.it/eng/Renewables/RECSCertificates.asp.

[735] E.g. Verso un modello energetico sostenibile: Atti Conferenza Nazionale Energia e Ambiente, Ministero dell'Ambiente, (Rome), 1998. Date of Access: 28 March 2007. http://www.minambiente.it/index.php?id_sezione=1135.

Scanio, and the Minister of Economic Development, Pierluigi Bersani, reaffirmed their government's support for sustainable energy production and renewable sources, especially in the context of the Kyoto Protocol. On 27 November 2006, Minister Scanio announced a national conference in 2007 to revise the national energy policy and acknowledged the importance of renewable sources.[736] Minister Bersani presented Italy's plan to promote and develop renewables at a meeting of the EU Council on 22-23 November 2006 which dealt with issues of sustainable energy for Europe, efficiency, and climate change.[737] Much of his focus, however, was on energy security.[738] No specifics on renewables were provided by either Ministry.

The government's policy on photovoltaic (PV) solar plants is one area showing promise.[739] As of 15 October 2006, there were 320 PV plants and systems already in operation (with an overall capacity of 2.14 MW) and some 2,000 more that had secured incentivizing tariffs to start construction.[740] The current incentives system is criticized for skewed tariff rates that are not based on efficiency criteria.[741] However, a new (third) Ministerial Decree was passed on 19 February 2007, although it will only apply to those individuals and entities that request application within 60 days of the approval of the new Decree.[742] The new tariff structure segregates consumers based on their usage and the level of integration of PV technology. The tariffs are guaranteed until December 31, 2008. Between 1 January 2009 and 31 December 2010, the tariffs may increase at a rate of 2% per annum, except for non-integrated large users, for whom the rates may increase by 5% per annum.[743]

In March 2007, Minister of the Environment Pecaro Scanio was present at the announcement of a €40 million government investment in a joint project between ENEA and Enel known as "Archimede."[744] The project focuses on the development of a high-efficiency energy station that produces electricity through the combined use of PV technology and gas. ENEA announced that Archimede has now progressed from the laboratory stage to the production stage and it hopes to have the technology, with a 5 MW capacity, available for industrial use by 2009.

On 20 April 2007, Minister Pecoraro Scanio announced that thermosolar (TS) technology was in fact growing much more quickly in Italy than was originally thought. "There is more

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[736] Pecoraro Scanio alla Conferenza Nazionale per l'energia sostenibile, Ministero dell'Ambiente, 27 November 2006. Date of Access: 28 March 2007. http://www.minambiente.it/index.php?id_doc=6&id_oggetto=26.

[737] Energia: Domani Bersani A Bruxelles Per Consiglio UE, Ministero dello Sviluppo, (Rome), 23 November 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/comunicati/phpY6XOUM.pdf.

[738] Bersani encouraged his EU colleagues to organize a Summit or a Conference on energy with the principal energy (oil and gas) producers such as Norway, Russia, and other regions to discuss energy diversification. See Workshop internazionale sulla sicurezza energetica in un mondo incerto: una prospettiva Italo-Tedesca (Berlin, 5-6 October 2006), Bozza di intervento del Ministro Bersani, Ministero dello Sviluppo, (Rome), 23 November 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/interventi/php2kKjfc.pdf; Verso una politica esterna dell'energia per l'Unione Europea per garantire un alto grado di sicurezza dell'approvvigionamento, (Brussels), 20 November 2006; Bozza intervento del Ministro Bersani, Ministero dello Sviluppo, (Rome), 21 November 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/interventi/phpcJ4LNs.pdf.

[739] As per Art. 7.1 of no. 387/2003, incentives for PV electricity generation are contained in a Ministerial Decree of 28 July 2005 (issued jointly by the Ministries of the Environment and Economic Development), extended and supplemented by a second decree (6 Feb. 2006). On 14 September 2005, the AEEG (Decision 188/05) identified the GSE as the "implementing body" in charge of granting such incentivizing tariffs.

[740] *Conto Energia* (Feed-In), Assignment of Incentives to PV Solar Generation, GSEL, (Rome). Date of Access: 28 March 2007. http://www.gsel.it/eng/Fotovoltaico/Results.asp.

[741] Arriva il fotovoltaico nelle case degli italiani, WWF Italy, (Rome), 13 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1322007_9291.tmp&nArgomento=49&Titolo=Arriva+il+fotovoltaico+nelle+case+degli+italiani.

[742] Photovoltaics, GSEL (Rome). Date of Access: 28 March 2007. http://www.gsel.it/eng/Fotovoltaico/Photovoltaics.asp.

[743] Nuovo conto energia: Richiesta di concessione delle tariffe, Gestori Servizi Elletrici, (Rome). Date of Access: 4 May 2007. http://www.gsel.it/ita/fotovoltaico/NuovoContoEnergia.asp.

[744] Enel and ENEA: Onward with the Archimede Project, a high efficiency solar plant, ENEA, (Rome), 26 March 2007. Date of Access: 23 May 2007. http://titano.sede.enea.it/Stampa/skin2col.php?page=comunicatodetail&id=205.

solar power than we had thought: last year 200,000 m^2 of thermosolar panels were installed when we believed only 50,000 [were installed]."[745] He also called on the TS industry to reach a capacity of 1,200 MW by 2010 and 1,600 MW by 2016.[746] The Minister credited Italy's extremely favourable policy towards solar technologies for the unexpected growth in this sector.[747]

The final element of the framework is determined by the European Commission. Under Directive 2001/77/EC on the promotion of renewable energy, for instance, the EU approved a target that 21% of overall electricity generated in the Community should come from renewable energy sources by 2010.[748] Italy pledged that 25% of its domestic electricity would be generated from renewables.

Indeed, Italian electricity generation from renewables in 2006 increased by 4.5% from 2005 (totalling 52 GWh), with a "boom" in the wind power-plants (3.2 GWh, + 37%), PV (35 GWh, + 12.9%), bio-mass and waste (6.7 GWh, +9.2%), hydro (36.6 GWh, +1.6%), and geothermal sources (5.5 GWh, + 3.8%).[749] Italy is also the "undisputed European leader" in geothermal sources, with over 95% of all installed capacity in the EU.[750]

On the whole, Italy is not doing well to meet its obligations on renewables.[751] Italy is now ranked 22nd out of the EU-25 in terms of its progress on reaching its 25% renewables quota.[752]

The incentives and emissions trading systems have both come under severe criticism from civil society groups. Several environmental organizations expressed concern about political favouritism in the quota allocation, lack of planning,[753] and a lack of transparency, and called on the government to give priority in the NAP to those energy operators that use technologies which would significantly reduce the country's GHG emissions.[754] WWF-Italy

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[745] Eco-energia: solare; Pecaro Scanio: "Installati più 200 mila mq", Ministry of the Environment, (Rome), 20 April 2007. Date of Access: 23 May 2007. http://www.minambiente.it/index.php?id_doc=916&id_oggetto=2.

[746] Eco-energia: solare; Pecaro Scanio: "Installati più 200 mila mq", Ministry of the Environment, (Rome), 20 April 2007. Date of Access: 23 May 2007. http://www.minambiente.it/index.php?id_doc=916&id_oggetto=2.

[747] Eco-energia: solare; Pecaro Scanio: "Installati più 200 mila mq", Ministry of the Environment, (Rome) 20 April 2007. Date of Access: 23 May 2007. http://www.minambiente.it/index.php?id_doc=916&id_oggetto=2.

[748] The EU directive 2001/77 provides for differentiated targets for every member state. See EU almost on track in reaching its 2010 renewable electricity target, MEMO/07/12, EU Commission, (Brussels), 10 January 2007. Date of Access: 28 March 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/12&format=HTML&aged=0&language=EN&guiLanguage=en.

[749] Rapporto sulle attivita' del gestore dei servizi elettrici Anno 2006, GSE, (Rome), 5 March 2007. Date of Access: 28 March 2007. www.gse.it.

[750] EU almost on track in reaching its 2010 renewable electricity target, MEMO/07/12, EU Commission (Brussels), 10 January 2007. Date of Access: 28 March 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/12&format=HTML&aged=0&language=EN&guiLanguage=en.

[751] Italia fanalino di coda in Europa sulle rinnovabili , WWF Italy, (Rome), 1 January 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1112007_1394.tmp&nArgomento=49&Titolo=WWF+critico+sul+Piano+europeo+dell%27energia.

[752] See EU almost on track in reaching its 2010 renewable electricity target, MEMO/07/12, EU Commission, (Brussels), 10 January 2007. Date of Access: 28 March 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/12&format=HTML&aged=0&language=EN&guiLanguage=en; Come far decollare il Protocollo di Kyoto in Italia, WWF Italy, (Rome), 14 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/newsArticolo.asp?Articolo=1422007_3529.tmp.

[753] E.g. it has given excessive subsidies to inadequate projects in wind energy, rather than allowing for the development of small and micro wind project or bio-mass sources, which are in real need of support. Le fonti di energia rinnovabile, WWF Italy, (Rome), Date of Access: 28 March 2007. http://www.wwf.it/powerswitch/fonti.asp; Italia fanalino di coda in Europa sulle rinnovabili , WWF Italy, 1 January 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1112007_1394.tmp&nArgomento=49&Titolo=WWF+critico+sul+Piano+europeo+dell%27energia.

[754] See joint letter by WWF Italy, Legambiente, and Greenpeace to the Minister of Economic Development, Pierluigi Bersani, and the Environment Minister, Alfonso Pecoraro Scanio. See Greenpeace, Legambiente e WWF scrivono ai ministry, WWF Italy, (Rome), 2 November 2006. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=2112006_9355.tmp&nArgomento=49&Titolo=Greenpeace%2C+Legambiente+e+WWF+scrivono+ai+ministri.

argued that a new mechanism ought to be put in place to promote efficient and sustainable green energy sources capable of meeting the Kyoto objectives and the EU Directive (2001/77/EC) to which Italy had committed itself. It also stated that such a move had to be accompanied by tariff and fiscal reforms that could have an impact on the demand side – by reducing energy consumption (also in line with the 2001/77/EC).[755]

The EU Commission sent a final written warning to Italy on 24 January 2007 for failing to submit national allocation plans (NAPs) for the second trading period of the EU Emissions Trading Scheme (EU ETS). This follows a first written warning sent in October 2006, with which the Italian government failed to comply.[756] On 21 March 2007, Italy was subject to a warning and press release by the European Commission on its failure to comply with previous requests for the publication of pertinent information on climate change.[757] On following day, the Ministry of the Environment in Rome noted the need for a concerted effort among all of Italy's ministries to combat the effects of global warming and greenhouse gases. No comment, however, was made on the warning and press release issued by the European Commission.[758] Similarly, the President has made ambivalent statements about the need for multilateral action involving the EU and other states to combat climate change, with no direct reference to Italy's own failure to comply with EC regulations.[759]

Italy's presumed "advantage" in renewables, boasted broadly in recent years, was founded on achievements of past governments which had promoted hydroelectric energy to decrease the country's dependence on foreign fossil fuels. As a result, despite all the incentives in place, the results of Italian policies are not yet evident, while other EU states have leapt ahead.[760] The current incentives mechanisms were designed with a different goal in mind than what is needed today.[761] For instance, 70% of the publicly financed "CIP6 program" for renewables ends up supporting conventional power stations (i.e. burning fossil fuels or

[755] Ecco cosa ci aspettiamo dal Governo; Energia e cambiamenti climatici: il WWF chiede al Governo quattro passi importanti, WWF Italy, (Rome), 20 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=2022007_7130.tmp&nArgomento=49&Titolo=Ecco+cosa+ci+aspettiamo+dal+Governo.

[756] The deadline for submitting the NAP was 30 June 2006. If a Member State fails to respond, or submits an inadequate response, the Commission can take it to the European Court of Justice (as per directive 87/2003/EC). See Energy & Emissions Trading, January/February 2007, http://www.consultnet.ie/enerjan07.htm "Commission asks Member States to provide important information in the fight against climate change," IP/06/1364, (Brussels), 12 October 2006, http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1364&format=HTML&aged=0&language=EN&guiLanguage=en.

[757] Climate Change: Commission takes legal action against six member states over missing information, European Commission, (Brussels), 22 March 2007. Date of access: 2 May 2007. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/386&format=HTML&aged=0&language=EN&guiLanguage=en.

[758] Environment: Percaro: According to Prodi, environmental policy is a national priority, Ministerio dell'Ambiente, (Rome), 22 March 2007. Date of access: 2 May 2007. http://www.minambiente.it/index.php?id_doc=890&id_oggetto=2.

[759] Environment: Percaro: According to Napoletano, now is the time to relaunch EU initiatives with other states, Ministerio dell'Ambiente, (Rome), 11 April 2007. Date of access: 2 May 2007. http://www.minambiente.it/index.php?id_doc=902&id_oggetto=2.

[760] Italia fanalino di coda in Europa sulle rinnovabili, WWF Italy, (Rome), 1 January 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1112007_1394.tmp&nArgomento=49&Titolo=WWF+critico+sul+Piano+europeo+dell%27energia.

[761] Italia fanalino di coda in Europa sulle rinnovabili, WWF Italy, (Rome), 1 January 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1112007_1394.tmp&nArgomento=49&Titolo=WWF+critico+sul+Piano+europeo+dell%27energia.

waste).[762] The "Green Certificates" mechanism, for instance, is seen as doling out special privileges to producers unrelated to renewable energy generations.[763]

According to industry representatives, "the Italian sector of renewable resources is advancing, but not thriving."[764] The current state of impasse on renewables in Italy is blamed on two issues: (1) the government's lack of energy planning and (2) insufficient public engagement. The first obstacle is partly connected with the change of administration in 2006; while the new administration has reaffirmed its commitment to sustainable energy, it has yet to outline a clear plan for the role of renewables in its national energy strategy.[765] There is no national energy policy plan in place with directions for both the national and regional authorities. The resultant lack of certainty in the business sector is undermining the efficacy of the existing incentives programs, as well as Italy's industrial competitiveness (ranked last in the EU).[766] It is a paradox, business groups point out, that Italy is both one of the largest net producers of "green energy" and that it lacks a domestic manufacturing sector that could aid energy generation from renewables (unlike its EU neighbours).[767] With backing from the industry – and with potential economic benefits (e.g. a more favourable trade balance and employment) – it is conceivable that the Italian government may focus more in the coming months on supporting the development of a productive capacity and applied research on renewables.

The second major problem is that the government in Rome, when it made its 25% promise, neither consulted the regional authorities, which are often the implementing agents,[768] nor communicated to the general public the magnitude of this challenge.[769] Certain regions are ahead of the curve,[770] but many are showing resistance to support directives from Rome and Brussels. As APER points out, of the many public utilities and energy-related

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[762] Italia fanalino di coda in Europa sulle rinnovabili, WWF Italy, (Rome), 1 January 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1112007_1394.tmp&nArgomento=49&Titolo=WWF+critico+sul+Piano+europeo+dell%27energia.

[763] Italia fanalino di coda in Europa sulle rinnovabili, WWF Italy, (Rome), 1 January 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1112007_1394.tmp&nArgomento=49&Titolo=WWF+critico+sul+Piano+europeo+dell%27energia.

[764] Roberto Longo, APER President (*Associazione Produttori Energia da fonti Rinnovabili* – Association of Energy Producers from Renewable Sources) in Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[765] Roberto Longo, APER President (*Associazione Produttori Energia da fonti Rinnovabili* – Association of Energy Producers from Renewable Sources) in Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[766] Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Roberto Longo, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[767] Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Roberto Longo, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[768] Direct incentives are still for the most part a regional competency; the State intervenes mainly through fiscal and financial initiatives tied to innovation, development, or entrepreneurship. See Osservatorio ENEA sulle politiche energetico-ambientali regionali e locali, ENEA. Date of Access: 28 March 2007; http://enerweb.casaccia.enea.it/enearegioni/UserFiles/OSSERVATORIO/Sito/Link/link.htm; Contributi nazionali, FIRE. Date of Access: 28 March 2007. http://www.fire-italia.it/Incentivi.

[769] Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Roberto Longo, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[770] E.g. Piedmont set up a White Certificates market as part of the "Sustainable Energy Europe 2005-8" Partnership; the CO2 reduction associated with the savings in energy will be available in the forthcoming final report in March 2007 Piedmont Region energy efficiency strategy, Partnership database. Date of Access: 28 March 2007. http://www.sustenergy.org/tpl/page.cfm?pagID=15&id=418&submod=details. Similar efforts are being led by the Local Energy Agency of Cosenza and Legambiente to raise public awareness and promote renewable energy sources (also under the "Sustainable Energy Europe" Campaign 2005-2008). See "Bioedilizia," Ministero dello sviluppo economico, (Rome), 22 December 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/documenti/php3MlomB.pdf.

institutions in Italy (i.e. from the Ministries of the Environment or Economic Development to ENEA) at least *one* should have taken up the task of explaining to Italian citizens the basics about renewables.[771] Flashy policy pamphlets cannot replace effective communication, such as coordinated awareness-raising campaigns.[772]

This assessment is supported by one of the most resounding critiques of Italy's energy policy, delivered by the EU Commission in January 2007 in its progress report on Energy Policy for Europe: "Despite strong developments in the wind, biogas, and biodiesel sectors, Italy is still very far from reaching the objectives fixed at either the national or the European level."[773] The Report went on to identify the factors contributing to this situation: (1) "a significant element of uncertainty due to recent political changes and ambiguities of the current policy design;" (2) "administrative restrictions like a complex system of procedures for authorization at the local level;" (3) "financial barriers which greatly raise the costs of connection to the grid." Brussels also blames Eni and Enel for dominating their respective markets.[774]

On 16 February 2007, it was announced on the website of the Ministry of Economic Development that Prime Minister Prodi and Ministers Bersani (Economic Development) and Pecaro Scanio (Environment) would hold a joint news conference outlining broad plans for the encouragement of renewable energy and energy efficiency, among other topics.[775] The conference was scheduled for 19 February 2007. However, no such conference was ever held, nor was any announcement made through official channels concerning the supposed framework for the promotion of energy efficiency and renewables production.

On 20 February 2007, WWF Italy published it own demands for government action on renewable energy generation.[776] It called on the government to scrap the existing system of incentives and replace it with a framework that ensures the efficient use of energy in line with the Kyoto Protocol and to embark on policies of energy efficiency and renewable energy without opening new facilities that generate power through the use of coal or other fossil fuels.[777] The Prodi Government has yet to respond to this statement.

On the whole, Italy's renewables policies are in a state of stagnation. Apart from the framework already in place, which is failing to meet Italy's EU and Kyoto objectives, no significant steps were taken to make wider use of renewables and to develop innovative technologies for the entire energy sector. The government will have to engage citizens, the industry, and local administrations if it is to meet its targets on renewable sources. While further progress is expected in the 2007 Budget,[778] for the time being Italy has achieved only partial compliance with this supply-side commitment on diversifying energy production with environmentally sound alternatives.

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[771] Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Roberto Longo, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[772] Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Roberto Longo, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

[773] Author's translation. See Votato il documento della Commissione per la riduzione dei gas serra; Energia, il piano Ue: «Serve una rivoluzione», Il Corriere della Sera, (Rome), 11 January 2007. Date of Access: 28 March 2007. http://www.corriere.it/Primo_Piano/Cronache/2007/01_Gennaio/10/energia.shtml.

[774] Author's translation. See Votato il documento della Commissione per la riduzione dei gas serra; Energia, il piano Ue: «Serve una rivoluzione», Il Corriere della Sera, (Rome)m 11 January 2007. Date of Access: 28 March 2007. http://www.corriere.it/Primo_Piano/Cronache/2007/01_Gennaio/10/energia.shtml.

[775] Climate and Energy Efficiency, Ministry of the Environment, (Rome), 16 February 2007. Date of Access: 23 May 2007. http://www.attivitaproduttive.gov.it/pdf_upload/comunicati/php6FpVPn.pdf.

[776] Here is what we expect from the government, WWF Italy, (Rome), 20 February 2007. Date of Access: 23 May 2007. http://beta.wwf.it/client/ricerca.aspx?root=11688&content=1.

[777] Here is what we expect from the government, WWF Italy, (Rome), 20 February 2007. Date of Access: 23 May 2007. http://beta.wwf.it/client/ricerca.aspx?root=11688&content=1.

[778] Rinnovabili: quale strategia per il futuro? Ostacoli da superare e potenzialità da cogliere per lo sviluppo del settore in Italia, Roberto Longo, Energia Italia, (Rome), 1 March 2007. Date of Access: 28 March 2007. http://dev.energiaitalia.com/cat_home.php?id=48.

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Italy has partially complied with its St. Petersburg climate change commitments by taking part in the UN Climate Change Conference in Nairobi and by renewing its commitment to the Kyoto Protocol post-2012. This represents a reversal in the policy of the former Italian government, which had stated that it would pull out of Kyoto after 2012.[779] Furthermore, Italy has implemented a national carbon emission-trading scheme to reduce emissions. However, Italy is Europe's third largest emitter of GHGs, which are now 12.1% higher than in 1990; in the meantime, Italy is bound under Kyoto to reduce its emissions by 6.5% during 2008-2012.[780] Therefore, in light of the fact Italy is unlikely to meet its Kyoto targets, its failure to cooperate with EU on programs to meet Kyoto objectives, and its failure to establish concrete measures to improve this situation, Italy cannot be considered to have complied in full with its St Petersburg climate change commitments

In the recent Italian Report on Demonstrable Progress under Article 3.2 of the Kyoto Protocol, Italy reported that it is implementing a number of measures to meet Kyoto targets. These include the establishment of a national registry for managing EU allowances and Kyoto units, implementation of the EU Emissions Trading Scheme and the appointment of the National Authority (DNA) for CDM and JI. The Italian government also stated that it is in the process of developing a national system for GHG inventory estimation, reporting, and archiving, as well as establishing a national registry for issuing and certification of carbon credits (RMUs) from activities under the Kyoto Protocol.[781] However, no clear timeframes were provided for these policy objectives.

On 2 April 2007, Italy's voluntary emissions-trading market came into operation under the management of Gestore Mercato Elettrico (GME), the authority responsible for transactions in the Italian electricity market. The Italian carbon emissions-trading scheme was introduced under European Directive 2003/8/EC, which aims to develop national GHG emissions allowance trading within the larger framework of the EU Emissions Trading Scheme (EU ETS). [782] Under the scheme, Italian companies are able to trade EUAs (European Unit Allowances) and CERs (Certified Emission Reductions) issued for the first Kyoto period (2005-2007) and the second period (2008-2012). The scheme is also designed for the trading of credits accrued from CDM (Clean Development Mechanism) and JI (Joint Implementation) projects.[783] In a joint statement, the Italian Ministries of the Environment and Economic Development announced that the market would allow "Italy to catch up on a delay it has accumulated compared to other European countries in realization of a platform for CO_2 trading" and provide Italian companies with an efficient way to reduce emissions.[784] In a positive development, the EU recently reported that Italy was among the few European countries that had not undercut the quota of free allowances under the EU ETS, which

[779] "Italy swings its support back to Kyoto and beyond", Reuters News Service, 7 November 2006. Date of Access: 20 December 2006. http://today.reuters.com/News/CrisesArticle.aspx?storyId=L07733778.
[780] Italy swings its support back to Kyoto and beyond, Reuters News Service, 7 November 2006. Date of Access: 20 December 2006. http://today.reuters.com/News/CrisesArticle.aspx?storyId=L07733778; Commission of the European Commission, Report from the Commission Progress Towards Achieving Kyoto Objectives, (Brussels), 27 October 2006, COM (2006) 658 final, 5.
[781] Italian Report On Demonstrable Progress Under Article 3.2 Of The Kyoto Protocol (2006). Date of Access: 1 January 2006. http://unfccc.int/resource/docs/dpr/ita1.pdf.
[782] Italy starts emissions trading market on 2 April, Green Prices Newsdesk, 21 March 2007. Date of Access: 15 April 2007. http://www.greenprices.com/eu/newsletter/GPBE_44_070322/Market.asp; Italy to Launch CO2 Emissions Exchange in April, Planet Ark World Environment News, 15 March 2007. Date of Access: 15 April 2007. http://www.planetark.com/avantgo/dailynewsstory.cfm?newsid=40869.
[783] Italy starts emissions trading market on 2 April, Green Prices Newsdesk, 21 March 2007. Date of Access: 15 April 2007. http://www.greenprices.com/eu/newsletter/GPBE_44_070322/Market.asp; Italy to Launch CO2 Emissions Exchange in April, Planet Ark World Environment News, 15 March 2007. Date of Access: 15 April 2007. http://www.planetark.com/avantgo/dailynewsstory.cfm?newsid=40869.
[784] Italy to Launch CO2 Emissions Exchange in April, Planet Ark World Environment News, 15 March 2007. Date of Access: 15 April 2007. http://www.planetark.com/avantgo/dailynewsstory.cfm?newsid=40869.

increases financial incentive for Italian companies to reduce emissions.[785] However, the European Commission announced in March that it was considering legal action against Italy for failing to provide information needed for the EU's climate change policies. Italy was to be sent final warnings before legal action will be taken for Italy's failure to provide important technical data relating to their greenhouse gas emission targets under the Kyoto Protocol.[786]

Furthermore, it was announced in December 2006 that Italy would build the world's first industrial scale hydrogen-fired and zero-emission power plant, funded jointly by government and industry.[787] However, Italian environmental groups report that Italy is still one of Europe's worst environmental performers: it is lagging behind in the types of environmental innovation needed to reduce carbon emissions and remains heavily reliant on fossil fuels.[788] Burning hydrocarbons accounts for 88% of its total energy consumption, whereas renewables account for less than 6% (most of which is hydroelectric power), with wind and solar power making up just 0.3%.[789]

Italy has made a significant contribution to assist developing countries in achieving their UNFCCC objectives. Italy recently committed to contributing €8 million over four years to a European risk capital fund created to transfer clean technologies to developing countries and ensure equitable distribution of the Kyoto CDM projects.[790] Italy has provided significant cooperation assistance to China for developing climate change projects within the aims and programs of the UNFCCC and Kyoto.[791] It also hosted the UNFCCC workshop on "Reducing emissions from deforestation in developing countries" from 30 August to 1 September 2006.[792]

However, despite these measures, Italy projects that it will not reach its Kyoto emission reduction targets and will have to identify further emission reduction policies and measures.[793] While the government has indicated that it is currently reviewing existing national greenhouse policies with a view to identifying additional policies and measures to meet Kyoto targets,[794] no concrete proposals or timeframes have been announced. Then, on 15 May 2007 the European Commission ruled that Italy must cut its proposed cap on industrial CO_2 emissions by 6.3% in 2008-2012 and limit its use of foreign credits allowed

[785] See European Environmental Agency (EEA), Application of the Emissions Trading Directive by EU Member States, EEA Technical Report No 4/2007, 2007. Date of Access: 15 April 2007. http://reports.eea.europa.eu/technical_report_2007_4/en/technical_report_4_2007.pdf. See also EU Carbon Market Easy on Emitters During 2006, Reuters News Service, 3 April 2007. Date of Access: 15 April 2007. http://www.energia.gr/indexengr.php?newsid=13777&page=2&lang=en..

[786] EU takes action over climate, landfill failures, Reuters News Service, 22 March 2007. Date of Access: 15 April 2007. http://www.reuters.com/article/environmentNews/idUSL2218657720070322.

[787] The project will involve Italian energy corporation, ENEL, investment of €40 million over the next five years and more than €4 million in support from the Veneto Region for research and development: Italy to Build World's First Hydrogen-Fired Power Plant, Environment News Service, 18 December 2006. Date of Access: 1 January 2006. http://www.ens-newswire.com/ens/dec2006/2006-12-18-05.asp.

[788] These figures were reported by the Italian environmental group Lembiante. See: Robin Pomeroy, Car-addicted Italians lag Europe on environment, Reuters News Service, 2 March 2007. Date of Access: 15 April 2007. http://www.reuters.com/article/environmentNews/idUSL0160041420070303.

[789] These figures were reported by the Italian environmental group Legambiente. See: Robin Pomeroy, Car-addicted Italians lag Europe on environment, Reuters News Service, 2 March 2007. Date of Access: 15 April 2007. http://www.reuters.com/article/environmentNews/idUSL0160041420070303.

[790] Europa Press Relsease, IP/06/1584, (Brussels/Nairobi), 17 November 2006. Date of Access: 1 January 2006.http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1584&format=HTML&aged=0&language=EN

[791] Italy-China Cooperation Week for the Environment and Sustainable Development, 3-7 July 2006. Date of Access: 20 December 2006. http://www.yidalinian.org/english/2006/07/five_years_of_sinoitalian_coop.php.

[792] UNFCCC Website. Date of Access: 1 January 2007. http://unfccc.int/resource/docs/2006/sbsta/eng/10.pdf .

[793] Commission of the European Commission, Report from the Commission Progress Towards Achieving Kyoto Objectives, Brussels, 27 October 2006, COM (2006) 658 final, 4.

[794] Italian Report On Demonstrable Progress Under Article 3.2 Of The Kyoto Protocol, 2006. Date of Access: 1 January 2006. http://unfccc.int/resource/docs/dpr/ita1.pdf.

under Kyoto to 15% of its annual permit allocation in order to meet its Kyoto and EU ETS targets.[795]

Italy's renewed commitment to setting binding emission reduction targets under the Kyoto Protocol after 2012, the implementation of a national carbon emission trading scheme to participate in the EU ETS, and its assistance for developing countries in line with the objectives of the UNFCCC and Kyoto Protocol are key actions in the fulfillment of Italy's St. Petersburg commitment to "reaffirm its shared commitment under the UNFCCC." However, in light of the fact Italy is unlikely to meet its Kyoto targets and in the absence of concrete measures and policy objective timeframes to improve this situation, Italy cannot be considered to have complied in full with its St Petersburg climate change commitments. It is therefore awarded a score of 0.

Author: Jennifer Robinson

Sustainable Use of Energy: 0

The Italian government has had measures in place for years to cut energy use in the country on the micro-level (i.e. individual businesses and consumers), but it has taken only minimal steps to renew, improve, or expand the existing incentives system (energy use/consumption) in the period under assessment. This section considers briefly the old policy framework on the demand-side of the energy sector, gaps in the implementation, and some of Rome's more recent measures to meet its commitment in this area.

Beyond the principal ministries (Environment and Economic Development), the authority for Italy's energy schemes and renewables is shared across a number of other public agencies. There is Escoitalia SpA, an "Energy Service Company" (ESCo);[796] ENEA, which has been involved in the European Energy Efficient Residential Lighting Initiative (ENERLIN) since January 2006;[797] as well as the GSE and AEEG (see the section on Renewable/Alternative Energy).

A number of specific policy options are available to the Italian authorities to create an enabling environment for households and consumers and encourage the use of energy-efficient products. The government has been called on to "energy-certify" all buildings in the country; eliminate value-added tax (IVA) on all high-efficiency appliances; target "stand-bys" that use up excessive amounts of energy; require commercial and industrial installations to draw a set quantity of electricity from renewable energy providers; demand that the public sector leads by example in energy conservation; introduce energy education at the primary and secondary school level; and promote "co-generation" and "micro-generation" (by eliminating charges on those users who can generate at least 50% of their consumptions from own production).[798] There is, however, little evidence to date that these measures have been actively pursued during the compliance period.

There was, however, some progress on other fronts. For instance, the government announced it would introduce a new policy on photovoltaic (PV) energy, as urged by environmental watchdogs, which see PV as one of the most promising technologies in the fight against climate change. If implemented, this would be the first incentives program to benefit Italian households and individual consumers (unlike the existing CIP6 schemes,

[795] EU tells Italy to cut its CO_2 cap by 6.3 pct, Reuters News Service, 15 May 2007. Date of Access: 24 May 2007. http://www.reuters.com/article/environmentNews/idUSL1539936220070515?pageNumber=1.

[796] *Escoitalia* comprises a network of regional groups that are jointly promoting energy efficiency using a financial instrument ("Finanziamento Tramite Terzi"); the cost of such initiatives if paid for by the savings generated through efficiency gains. See www.escoitalia.it.

[797] The project is co-financed by the EU Commission (Intelligent Energy for Europe). For information on ENEA's participation, see www.enerlin.enea.it; ENERLIN, ENEA (Ente per le Nuove tecnologie, l'Energia e l'Ambiente), (Rome). Date of Access: 28 March 2007. http://www.wwf.it/stampa/documenti/Enerlin_%20questionario.pdf.

[798] 16 passi verso Kyoto, WWF Italy, (Rome), 14 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1422007_3835.tmp&nArgomento=49&Titolo=16+passi+verso+Kyoto.

which are applicable only to large firms).[799] The policy was adopted in February 2007. Environmental groups are now preparing for the implementation stage of the policy, which will involve the promotion of research and the development of PV technology.[800]

Energy-efficient buildings are another important component of any sustainability strategy.[801] The Italian government passed a Legislative Decree on 6 October 2006 on energy efficiency in buildings, *Bioedilizia*, in line with the measures on energy efficiency already contained in the last budget, to encourage the Italian construction industry to adopt technological innovation and energy savings.[802] The Decree foresees a graduated certification requirement for buildings to allow the market to adjust. As part of the *Bioedilizia* program, the Ministry of the Environment seeks to encourage the use of post-construction mechanisms, such as solar protectors, to decrease the need for energy consumption by consumers in the form of air-conditioning and other post-construction goods.[803] The measures are to be phased in over two years, with the first application of the new construction codes to large dwellings and buildings beginning on 1 July 2007.[804] The Decree also requires regional authorities, in cooperation with local public utilities, to launch a public sensitization program and review the energy consumption in the real estate market by 31 December 2008.[805] Meanwhile, the Sino-Italian Eco-efficient Building (SIEEB) was launched in 2007 to showcase low-carbon technologies in the building of permanent commercial structures.[806] Nevertheless, at home, the Italian government is being urged to go further and make new building permits conditional on efficiency and sustainability standards.[807]

Italian families account for 30% of the total energy consumption and 27% of total GHG emissions, and their demand is witnessing a rapid upward trend.[808] Reducing energy demand from individual households is therefore vital for the success of the government's energy efficiency policy, which means that the government must spread the conservation message among the Italian public and must raise public awareness of so-called green products. The Italian authorities, however, have largely failed to educate consumers about

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[799] Arriva il fotovoltaico nelle case degli italiani, WWF Italy, (Rome), 13 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1322007_9291.tmp&nArgomento=49&Titolo=Arriva+il+fotovoltaico+nelle+case+degli+italiani.

[800] Arriva il fotovoltaico nelle case degli italiani, WWF Italy, (Rome), 13 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1322007_9291.tmp&nArgomento=49&Titolo=Arriva+il+fotovoltaico+nelle+case+degli+italiani.

[801] The building sector contributes a substantial share of the EU-wide CO_2 emissions, and it has the largest potential to reduce these emissions in the immediate term. See Strict and binding measures needed to improve buildings' energy efficiency, EUKN News, 21 March 2007. Date of Access: 28 March 2007. http://www.eukn.org/italy/news/2007/03/Alain-Sagne_1037.html.

[802] The new decree approved by the Italian Council of Ministers supersedes the decree n.192 (19 August 2005) enacting the EU directive on energy efficiency in buildings (2002/91/CE); it is now awaiting opinions from regional authorities. See "Bioedilizia" per consumare meno energia (Sintesi del Decreto Legislativo del 6 ottobre 2006 in tema di efficienza energetica negli edifice), Ministero dello sviluppo economico, (Rome), 8 October 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/documenti/php6MRQGx.pdf.

[803] "Bioedilizia": Per consumare meno energia, Ministero dello sviluppo economico, (Rome), 22 December 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/documenti/php3MlomB.pdf.

[804] "Bioedilizia": Per consumare meno energia, Ministero dello sviluppo economico, (Rome), 22 December 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/documenti/php3MlomB.pdf.

[805] "Bioedilizia": Per consumare meno energia, Ministero dello sviluppo economico, (Rome), 22 December 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/documenti/php3MlomB.pdf.

[806] Italian Carbon Fund, World Bank, (Washington), 2006. Date of Access 28 April 2007, http://carbonfinance.org/docs/AR_CFU_2006/Italian_Carbon_Fund_AR_2006.pdf.

[807] Arriva il fotovoltaico nelle case degli italiani, WWF Italy, (Rome), 13 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1322007_9291.tmp&nArgomento=49&Titolo=Arriva+il+fotovoltaico+nelle+case+degli+italiani.

[808] Gli efficienti risparmiano fino ad un terzo della bolletta, WWF Italy, (Rome), 30 November 2006. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=30112006_5863.tmp&nArgomento=49&Titolo=Gli+efficienti+risparmiano+fino+ad+un+terzo+della+bolletta; L'enea Promuove "Il Campus Per L'energia," ENEA, (Rome), 30 November 2006. Date of Access: 28 March 2007. http://titano.sede.enea.it/stampa/skin2col.php?page=comunicatodetail&id=186.

the benefits of green products or the need to save energy. There have been information campaigns in the past,[809] but to little effect. As recent public polls have revealed, these campaigns are falling short of the mark: the general public has not yet accepted the imperative of energy-efficient alternatives and conservation in the household. They are largely unfamiliar with the incentives system in place[810] and are unsure of who is actually in charge of Italy's energy policy (the majority thinks it is ENEL).[811] There is concern about climate change in the country – protests against construction of new power-plants are cropping up across the country – but this has not yet changed behaviour at home, despite the fact that switching to more energy-efficient appliances and choosing energy-saving alternatives in everyday life would allow Italy to shut down *seven* power plants.[812] Most commentators believe that the responsibility for the general apathy lies with the administrative and political authorities in the country. For instance, a law imposing energy certification on buildings has been in existence since 1991, but has never been implemented, nor was it accompanied by an executive decree.[813] It is hoped that the 2007 Budget might rectify this with more decisive policies on energy efficiency. Civil society has taken the lead instead. With the support of several government agencies, the environment watchdog WWF-Italy launched the *GenerAzione Clima: efficiency for nature* event in 100 Italian cities on 2-3 December 2006 with a twofold objective: (1) to promote the adoption of a national plan on energy efficiency by 30 June 2007 (in line with the EU energy conservation directive)[814] and (2) to sensitize, inform, and assist the general public on questions of energy consumption and climate change.[815]

The government has been urged to provide special incentives for low-income earners that would enable them to access energy from renewable sources.[816] Environmental groups and

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[809] E.g. Energia pulita, l'energia che serve: Campagna di informazione, comunicazione ed educazione a sostegno delle fonti rinnovabili, del risparmio e dell'uso efficiente dell'energia, Published jointly by Ministero dello sviluppo economico, Ministero dell'mbiente, APAT, and Renael, 5 January 2006. Date of Access: 28 March 2007. http://www.attivitaproduttive.gov.it/pdf_upload/documenti/phpNjk2db.pdf; Gestione energia, Joint publication by ISNOVA (Istituto per la promozione dell'innovazione tecnologica), ENEA, and FIRE (Federazione Italiana per l'uso Razionale dell'Energia, February 2006. Date of Access: 28 March 2007. www.energiaitalia.com. On 29-30 November - 1 December, ENEA launched its second "*Campus per l'energia*" program to promote energy efficiency in the general public (see footnote 9).

[810] E.g. *Energy Service Company* and *Finanziamento Tramite Terzi* (if FTT were actually operationalized in Italy, as urged vocally by the EU Commission, the public could benefit from using energy efficient alternatives—at no extra cost).

[811] The findings were released at a roundtable with "Is the Italian home ready for energy efficiency? Photography of a country," organized with ENEA, Confartigianato, Confapi, CNA, Escoitalia, Environment Ministry and Ministry for Economic Development. See "Efficienza energetica, questa sconosciuta, WWF Italy, (Rome), 23 November 2006. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=23112006_1030.tmp&nArgomento=49&Titolo=Efficienza+energetica%2C+questa+sconosciuta; Efficienza domestica e stili abitativi: Una Ricerca (conducted by Makno & Consulting), WWF–RAS (Gruppo Allianz), November 2006. Date of Access: 28 March 2007. http://www.wwf.it/stampa/documenti/Rapporto%20%20WWF-RAS%20Makno.pdf. Risparmio energetico, il Wwf denuncia: 'In Italia siamo ancora analfabeti,' La Repubblica, (Rome), 23 November 2006. Date of Access: 28 March 2007. http://www.repubblica.it/2006/11/sezioni/ambiente/efficienza-energetica/efficienza-energetica/efficienza-energetica.html.

[812] Risparmio energetico, il Wwf denuncia: 'In Italia siamo ancora analfabeti,' La Repubblica, (Rome), 23 November 2006. Date of Access: 28 March 2007. http://www.repubblica.it/2006/11/sezioni/ambiente/efficienza-energetica/efficienza-energetica/efficienza-energetica.html.

[813] "Risparmio energetico, il Wwf denuncia: 'In Italia siamo ancora analfabeti,' La Repubblica, (Rome), 23 November 2006. Date of Access: 28 March 2007. http://www.repubblica.it/2006/11/sezioni/ambiente/efficienza-energetica/efficienza-energetica/efficienza-energetica.html.

[814] Directive 2006/32/CE on end-use energy efficiency and energy services calls on the EU member-states to implement an annual reduction of 1.5% in the end-use energy consumption of the public sector (see Verso un Piano nazionale di efficienza energetica, WWF Italy, (Rome), 1 December 2006. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1122006_6794.tmp&nArgomento=49&Titolo=Verso+un+Piano+nazionale+di+efficienza+energetica.)

[815] The President of the Republic, Giorgio Napolitano, greeted the efforts of WWF Italy in promoting energy efficiency and focusing the public's collective attention to such questions. Other partners included ENEA, Escoitalia, Confartigianato, CNA, Confai, with the support of the Environment Ministry.

[816] 16 passi verso Kyoto, WWF Italy, (Rome), 14 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1422007_3835.tmp&nArgomento=49&Titolo=16+passi+verso+Kyoto.

research institutes have also proposed generous tax incentives scheme in the new financial law to improve energy efficiency in Italian homes, while ensuring that these incentives are understood and their use is encouraged by final consumers. Energy audits are suggested as one component of this strategy.[817] But there is no evidence yet that these or other schemes to make eco-efficient products more affordable and more easily accessible to consumers have been put in place.

In terms of cleaner electricity options, a number of smaller or newer Italian electricity suppliers have launched green or combined products during 2006 to their customers (e.g. *Surgenia* and *Multiutility*). None of the energy giants established during the monopoly regime (e.g. ENEL and the municipal utilities) have followed suit.[818] One major problem to greener choice is that, at least until the full deregulation of the Italian energy market (scheduled for mid-2007), only business customers have been able to choose their own supplier.[819] This is slowly changing, although business customers are *less* likely than individual households to choose green energy.[820] This means that further incentives need to be put in place, as Italians are still paying higher electricity rates than their EU neighbours in France, Germany, or Spain, mainly due to infrastructural limits and the behaviour of ENI and ENEL, the two dominant operators.[821] Nevertheless, even with liberalization, it is feared that the market might lack a sufficient choice of green supply.[822]

Non-governmental entities, however, are seeking to help increase sustainable practices among Italian firms. Confapi,[823] the organization responsible for representing Italian small and medium enterprises (SMEs) at the national and international levels, co-hosted the *Intelligent Energy for SMEs Forum 2006*, a forum for the discussion of energy efficiency, distributed generation and renewable sources of energy (9-10 November 2006). Other agencies responsible for the organization of the forum included CNA,[824] Confagricoltura, Confartigianato, Confcommercio, and Confesercenti, all of which are representative of

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[817] Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, (Rome), November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.

[818] Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, (Rome), November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.

[819] Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, (Rome), November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.

[820] Some 36.8% of customers at "*La 220*" (one of Italy's few suppliers selling green energy) have signed up for a green product. Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, (Rome), November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.

[821] Antonio Catricalà, President of the Authority on Competition and Markets, in Concorrenza e regolazione per mercati più trasparenti e competitive, Rome, 8 August 2006.

[822] Antonio Catricalà, President of the Authority on Competition and Markets, in Concorrenza e regolazione per mercati più trasparenti e competitive, Rome, 8 August 2006.

[823] Rappresenta oltre 50 mila aziende con circa un milione di addetti. Favorisce la diffusione di pratiche positive orientate all'innovazione e alla ricerca scientifica nel settore energetico, con particolare riferimento alle fonti rinnovabili, alla microgenerazione e all'efficienza energetica negli usi finali. www.confapi.org.

[824] Costituisce il sistema nazionale ed unitario di rappresentanza generale dell'impresa italiana, con particolare riferimento all'Artigianato e alle Piccole e Medie Imprese. In ambito energetico promuove politiche per il risparmio e l'efficienza energetica e la generazione distribuita come strumenti necessari ed innovativi per le Piccole e Medie imprese Italiane. www.cna.it.

entrepreneurs in various sectors of the Italian economy. The forum stems from a 2005 agreement to promote a "culture of energy efficiency" among Italian businesses. Last year's event included both workshops and exhibitions in which firms demonstrated innovative means of saving energy and new products designed to tackle energy waste and the use of non-renewable resources.[825] The forum is part of the larger *Intelligent Energy for SMEs* project launched by the six different federations with the goal of making proposed legislation on energy efficiency more practical and successful over the triennial 2005-2007. In addition to increasing awareness about energy waste and the need for links between SMEs and other non-state actors, the organizers of the project also hope to launch several pilot projects involving: biomass fuels; increasing the energy efficiency of standing structures and dwellings; management of self-sufficient eco-parks in which energy reliance on outside sources is minimized; and reduction of the energy intensity of current production processes and technologies.[826]

A more sustainable use of energy can also be promoted through disincentives to consumption. When the Italian energy market was completely regulated, the government used the tariff structure as an important policy instrument (e.g. to counter increases in consumption);[827] this is believed to be one cause of a relatively low energy-intensity of the Italian economy.[828] The old tariff structure and the limits on consumption that it provided have been partly dismantled by the tariff reform undertaken by AEEG in December 1999. The Italian electricity market will be fully liberalized in 2007, but the tariff is expected to be maintained as a reference point for customers. The reform of electricity tariffs is due to be completed by 1 July 2007.[829]

On 16 February 2007, it was announced on the website of the Ministry of Economic Development that Prime Minister Prodi and Ministers Bersani (Economic Development) and Pecaro Scanio (Environment) would hold a joint news conference outlining broad plans for the encouragement of renewable energy and energy efficiency, among other topics.[830] The conference was scheduled for 19 February 2007. However, no such conference was ever held, nor was any announcement made through official channels concerning the supposed framework for the promotion of energy efficiency and renewables production.

On 20 February 2007, WWF Italy published it own demands for government action on energy efficiency.[831] It called on the government to reform electricity tariffs in order to encourage energy efficiency in line with European directives and introduce new legislation to reduce the pollution created by modes of transport and to streamline such legislation along

[825] Intelligent Energy for SMEs Forum 2006, PMI ed energia, (Rome). Date of access: 3 May 2007. http://www.energiaintelligentepmi.eu/forum2006.html.
[826] Intelligent Energy SMEs, PMI ed energua, (Rome). Date of access: 3 May 2007. http://www.energiaintelligentepmi.eu/energia_intelligente_PMI.html.
[827] See Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, (Rome), November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.
[828] Options for the integration of energy end-use efficiency and energy services into green power products and labels (WP 3.1 Report), Prepared as part of the EIE project *Clean Energy Network for Europe* (CLEAN-E), G. Ruggieri (eERG – end-use Efficiency Research, Politecnico di Milano) and WWF Italy, November 2006. Date of Access: 28 March 2007. http://www.leonardo-energy.org/drupal/taxonomy/term/52http://www.eugenestandard.org/mdb/publi/11_CLEAN-E%20WP%203.1%20report%20efficiency%20(D6)%20final.pdf.
[829] 16 passi verso Kyoto, WWF Italy, (Rome), 14 February 2007. Date of Access: 28 March 2007. http://www.wwf.it/news/NewsArticolo.asp?Articolo=1422007_3835.tmp&nArgomento=49&Titolo=16+passi+verso+Kyoto.
[830] Climate and Energy Efficiency, Ministry of the Environment, (Rome), 16 February 2007. Date of Access: 23 May 2007. http://www.attivitaproduttive.gov.it/pdf_upload/comunicati/php6FpVPn.pdf.
[831] Here is what we expect from the government, WWF Italy, (Rome), 20 February 2007. Date of Access: 23 May 2007. http://beta.wwf.it/client/ricerca.aspx?root=11688&content=1.

transport varieties and regional requirements.[832] The Prodi Government has yet to respond to these proposals.

In sum, although the Italian government has registered some progress in promoting a more sustainable use of energy in households in recent months, its policies have not gone far enough to compensate for a lack of improvement in other areas. One key obstacle to effective policy implementation in Italy is the degree of administrative duplication not only within different government agencies but also between the national and regional levels of government. The government has not taken significant steps to create an enabling environment for industry to become more energy-efficient or to encourage the development and transfer of clean energy technologies to help tackle climate change, e.g. by introducing fiscal measures to tax pollution. While more progressive measures on this front are expected in the coming months, for the time being Italy has achieved only partial compliance with its St. Petersburg commitment.

Authors: Michael Erdman and Maria Banda

Innovative Energy Technologies in Hydrocarbon Production and Use: 0

Italy has not yet attained compliance in the area of sustainable hydrocarbon use and production. Although several legislative acts and research projects are currently being planned and while a few older partnerships have been given new aims, sufficient action to fulfil the commitment in its entirety has not yet been taken.

The Italian Report on Demonstrable Progress under Kyoto lists several aims for the government over the course of 2007.[833] In terms of the country's energy supply, specific legislation is under consideration for the expansion of small CHP (Combined Heat and Power) plants, which produce heat and electricity simultaneously; it is projected that such a move could reduce emissions by 8 Mt of CO_2 per year. In industry, Italy is looking to replace existing electrical engines with more efficient modern ones; again, specific legislation is under consideration, this time with a saving of 2.8 Mt of CO_2 per year.[834]

In energy use, the federal government notes that it is "almost certain" it will renew and strengthen legislation for end-user energy efficiency; this, combined with new rules for residential-areas and buildings efficiency could create a combined reduction of 11.5 Mt CO_2 per year.[835]

Italy is also looking to make use of its existing partnerships. The Italian contribution to the *Methane to Markets* partnership, for example, focuses on finding and using methane deposits in coalmines at depths of 800-1,500m.[836] The project aims to relate carbon capture and sequestration (CCS) to methane capture – an option to be tested during the initial phases of the project. Two projects funded by Italian government agencies – the ENEA (National Agency for New Technologies, Energy ad the Environment) and INGV (National Institute of Geophysics and Vulcanology) – support this aim. The first seeks to increase understanding of the Sulcis coal basin by studying the outflow of methane and CO_2

[832] Here is what we expect from the government, WWF Italy, (Rome), 20 February 2007. Date of Access: 23 May 2007. http://beta.wwf.it/client/ricerca.aspx?root=11688&content=1.
[833] Italian Report on Demonstrable Progress Under Article 3.2 of the Kyoto Protocol, United Nations, (New York), 11 November 2006. Date of Access: 5 January 2007. Website: http://unfccc.int/resource/docs/dpr/ita1.pdf.
834 Italian Report on Demonstrable Progress Under Article 3.2 of the Kyoto Protocol, United Nations, (New York), 11 November 2006. Date of Access: 5 January 2007. Website: http://unfccc.int/resource/docs/dpr/ita1.pdf.
835 Italian Report on Demonstrable Progress Under Article 3.2 of the Kyoto Protocol, United Nations, (New York), 11 November 2006. Date of Access: 5 January 2007. Website: http://unfccc.int/resource/docs/dpr/ita1.pdf
836 Methane to Market Partnership, Coal Mine to Market Subcommittee, Country profile: Italy, Methane to Markets, (Washington D.C.), October 2006. Date of Access: 3 January 2007. www.methanetomarkets.org/partners/country/italy.htm.

absorption.[837] The second is comprised of a research project (currently in its early stages) for the design, building, and testing of a pilot plant for the production of high environmental value fuel gas such as hydrogen from Sulcis coal, carried out by Sotocarbo in collaboration with ENEA. Initially, the plant will focus on coal gasification, gas cleaning, CO_2-shift conversion, CO_2 and hydrogen separation, and energy production, before integrating with small size turbines and fuel cells. The main aim is to set up and test processes in all sections of the pilot plant.[838]

In February 2007, new aims of the Carbosulcis spa project in Sardinia have been drawn up, including the construction of a pilot pump for extraction and storing CO_2. The aim of the project is to make the Sulcis Coal Basin a "Pole for Scientific Studies and Research about CBM-ECBM developing technologies" and greater international collaboration.[839] More recently, some of the new technologies are being assessed by Italian experts and investors for use in China; the principal aim of that project is to facilitate the "ongoing extension of this expertise to geological CO_2 sequestration," in addition to attaining greater efficiency in the petrochemical sector.[840] The environmental impact of Italy's *Methane to Market* partnership is not clear, and nor is the practical success of its other projects.

The Italian Carbon Fund, helping developing countries to reduce their GHG emissions and increase energy efficiency,[841] is also continuing its activities. This includes a project in Nigeria to reduce technical and non-technical energy losses by upgrading the Karu Distribution Cluster, as well as reducing SF_6 (sulphur hexafluoride) emissions in High-Voltage Transmission/Distribution systems by installing a new transformer, capacitor banks, and compensation units. This work is being supported by the Italian Ministry of the Environment, as well as the private sector.[842] The private firm Eni has also been involved in Nigeria, installing "flaring" technology at Kwale in order to capture GHG emitted during the extraction of fossil fuels.[843] In China, the Nanjing Iron and Steel Co Ltd has signed a greenhouse gas emission reductions purchase agreement with the World Bank on behalf of the Italian Carbon Fund – the first energy efficiency project in China under the CDM – introducing a set of converter gas recovery and power generation systems, recovering gas produced in steel production to be used for future electricity production, and replacing that from the East China Grid which is coal-fired; this project should amount to 600,000 tons in CO_2 emission reductions.[844] Currently, energy efficiency and SF_6 recovery account for 9% of the ICF portfolio of project allocations.[845] The Italian government has to date contributed

837 Methane to Market Partnership, Coal Mine to Market Subcommittee, Country profile: Italy, Methane to Markets, (Washington D.C.), October 2006. Date of Access: 3 January 2007. www.methanetomarkets.org/partners/country/italy.htm.
838 Methane to Market Partnership, Coal Mine to Market Subcommittee, Country profile: Italy, Methane to Markets, (Washington D.C.), October 2006. Date of Access: 3 January 2007. www.methanetomarkets.org/partners/country/italy.htm.
839 CBM-ECBM Project in the Sulcis Area, European Commission, (Brussels), 9 February 2007. Date of Access: 28 February 2007. http://ec.europa.eu/research/energy/pdf/gp/gp_events/krakow_09feb07/pisanu_en.pdf.
840 Methane to Market Partnership, Coal Mine to Market Subcommittee, Country profile: Italy, Methane to Markets, (Washington D.C.), October 2006. Date of Access: 3 January 2007. www.methanetomarkets.org/partners/country/italy.htm.
841 Italian Carbon Fund, Sino-Italian Cooperation Program for Environmental Protection, (Beijing), Date of Access: 28 April 2007. http://www.sinoitaenvironment.org/ReadNewsex.asp?NewsID=740.
842 Italian Carbon Fund, World Bank, (Washington), 2006. Date of Access: 28 April 2007, http://carbonfinance.org/docs/AR_CFU_2006/Italian_Carbon_Fund_AR_2006.pdf.
843 Gianni Silvestrini, Qual'energia, (Rome), 20 February 2007. Date of Access: 23 May 2007. http://qualenergia.it/UserFiles/Files/paq%2004-07%20QE%20n.1%202007.pdf.
844 First Industrial Energy Savings Carbon Project For China, World Bank, (Washington), 30 June 2006. Date of Access: 23 May 2007. http://go.worldbank.org/47PSVB98C0
845 Italian Carbon Fund, World Bank, (Washington, D.C.), 2006. Date of Access: 28 April 2007, http://carbonfinance.org/docs/AR_CFU_2006/Italian_Carbon_Fund_AR_2006.pdf.

US$108 million to the Italian Carbon Fund,[846] as well as US$7 million to the Community Development Carbon Fund and US$2.5 million to the BioCarbonFund.[847]

Italy's ENEA is also exploring advanced high-efficiency combustion technologies for coal-fired power plants in an agreement with semi-public energy sector partners, Enel and Itea. The project builds on knowledge from a previous project in which residual materials from energy production are converted into a combustion gas composed essentially of CO_2, which can then be removed and stored.[848] The process is based on Isotherm technology, involving pressurized oxy-fuel combustion. If the first phase is successful, the second will be to construct a commercial plant, the first in Italy with 'near-zero' emissions, a project that will take three years to complete.[849] Corrado Clini, Italy's Global Environment Facility (GEF) representative, has recently reaffirmed his country's commitment to progress in the field of clean coal, noting that "We should work in partnership [with emerging economies] to support the adoption of clean coal [and] energy efficiency."[850] The National Study for Energy Efficiency and Renewable Energy has also noted that "clean coal technologies may foster the coal option."[851]

Public involvement with private and semi-private industry is also being cultivated; on 14 December 2006, Enel, Italy's largest energy producer, announced an investment of €4.1 billion in emissions reduction technologies, of which €800 million will go towards new technologies for renewable and zero-emission plants. Enel reports its initiative is due to the government's incentives, such as the use of green certificates.[852]

Despite this, new coal plants continue to open,[853] and the budget for "clean energy generation from fossil fuels" under the CNR (National Research Council) has fallen from €7.44 million in 2005 to €7.09 million for 2007.[854] The implications for Italy's commitment to a more sustainable hydrocarbon development and use are not yet obvious, but could be substantial.

On the whole, while the Italian government has made some progress in certain areas and more projects underway, its policy statements have yet to be matched by tangible results. This, coupled with a trimmed-down budget for cleaner fuels, means that Italy has attained only partial compliance with its Summit commitment on hydrocarbons.

Authors: Alexander Dragonetti and Michael Erdman

[846] Italian Carbon Fund, World Bank, (Washington, D.C.), 2006. Date of Access: 28 April 2007, http://carbonfinance.org/docs/AR_CFU_2006/Italian_Carbon_Fund_AR_2006.pdf.
[847] Mediterrean and National Strategies for Sustainable Development, Plan Bleu, March 2007. Date of Access: 1 June 2007. http://www.planbleu.org/publications/atelier_energie/IT_National%20Study_Final.pdf.
[848] ENEL, Enea and Itea launch testing project to reduce emissions at coal-fired power plants to near zero, ENEL, (Rome), 26 October 2006. Date of Access: 23 May 2007. http://www.enel.it/eWCM/salastampa/comunicati_eng/1483497-1_PDF-1.pdf.
[849] ENEL, Enea and Itea launch testing project to reduce emissions at coal-fired power plants to near zero, ENEL, (Rome), 26 October 2006. Date of Access: 23 May 2007. http://www.enel.it/eWCM/salastampa/comunicati_eng/1483497-1_PDF-1.pdf.
[850] Statement by Mister Corrado Clini, GEF Representative for Italy, Global Environmental Facility, (Washington D.C.), 30 August 2006. Date of Access 28 April 2007, http://www.thegef.org/3rd_assembly/Italy.pdf.
[851] Energy Efficiency and Renewable Energy: Italy – National Study, Plan Bleu, (Valbonne, France), March 2007. Date of Access 28 April 2007. http://www.planbleu.org/publications/atelier_energie/IT_National%20Study_Final.pdf.
[852] Enel to Invest €4.1 billion in Renewable Energy, 14 December 2006. Date of Access: 29 December 2007. http://www.iht.com/articles/2006/12/14/business/enel.php.
[853] Italy to build World's First Hydrogen-Fired Power Plant, 18 December 2006. Date of Access: 5 January 2007. http://www.ens-newswire.com/ens/dec2006/2006-12-18-05.asp.
[854] CNR Three Year Plan 2005-2007. Date of Access: 6 January 2007. http://www.cnr.it/documenti/PT_2005_2007_english_version.pdf

9. Japan

Background

The oil shocks of the 1970's exposed Japanese dependency on potentially unreliable foreign energy sources. Since then, the Japanese government has worked to cultivate long term policies that have made Japan one of the most energy efficient countries in the industrialized world. As such, it is not surprising that Japan has embraced the message of the St. Petersburg communiqué regarding energy security, economic growth, and environmental protection. Nonetheless, while Japan has made, and continues to make, significant strides in terms of environmentally-friendly energy production and energy technology, its compliance with its commitments in this regard has not been complete. Its existing policies and the already high levels of energy efficiency make further progress difficult. In many cases, the progress Japan has made falls outside the commitment period, and a sustained effort from here will be necessary if the country is to meet its emissions reductions targets under the Kyoto Protocol.

Japan has made significant efforts to meet its emissions reductions targets under the Kyoto Protocol, as set out in its Kyoto Targets Achievement Plan (KTAP). Nonetheless, Japan's existing energy efficiency, growing economy, and other recent setbacks (including industry opposition to a carbon taxation plan) suggest that it may struggle to achieve its Kyoto targets without significant further effort. As the KTAP is due for review later this year, much will hinge on the outcome of that process, and the policies that arise from it.

The promotion of alternative and renewable energy technology is a focus of Japanese policy and remains one of the country's strengths. The New Energy and Industrial Technology Development Organization (NEDO) co-ordinates and funds a large number of programs aimed at promoting the development and adoption of such technologies, both domestically and abroad. At the same time, Japan has made significant efforts in the development of innovative hydrocarbon-related technologies, focusing in particular on gas to liquid technology, gas hydrates, and clean coal.

In the transport sector, some progress has been made to tighten regulations on sulphur emissions and fuel efficiency. The government also provides rebates and tax breaks for the purchase of low emission vehicles. However, the effect of these efforts is relatively small. Moreover, the government has made little progress towards a cleaner public transportation system during the compliance period.

Similarly, in promoting the sustainable use of energy more generally, while Japanese consumers have a strong culture of conservation, due in part to the plethora of governmental initiatives aimed at reducing demand, most of these were in place well before the commitment period, and Japan's failure to implement a carbon tax in the face of business opposition weighs heavily against it.

In summary, while Japanese policy often lines up well with the objectives of the St. Petersburg communiqué, this is largely due to the coherence of those objectives with long-standing policy goals. Japanese policy is particularly strong in the promotion and adoption of technological solutions to environmental issues – where environmental goals fit well with a vision of technology-led economic growth. However, there remain some significant weaknesses in Japanese policy, and the country's commitment to environmental objectives seems less secure in areas where economic sacrifices may be called for, such as renewable energy production targets, emissions trading, and carbon taxes.

Authors: Glen Goldsmith, Mie Miyazaki, and Janelle Knox

Clean & Efficient Energy in the Transport Sector: 0

Japan is a leading country on emissions reduction and the development of environmentally friendly vehicles and transportation systems primarily through technological advancements.

The country has many policies, projects, and pilot programs to promote environmentally friendly and sustainable transportation. However, it came short of fully implementing commitments made at the St Petersburg G8 summit, and thus receives a score of 0.

The Japanese government continues to strengthen regulations for motor vehicle exhaust emissions. On 30 November 2006, the Ministry of Environment (MOE) made a partial amendment to the "Permissible Limits for Properties and Substances Contained in Automobile Fuel" under the *Air Pollution Control Law*, reducing the permissible limit of the sulphur content in gasoline and diesel oil from previous level of 0.005% to 0.001% (by weight).[855] Furthermore, a joint council of the Ministry of Economy, Trade and Industry (METI) and the Ministry of Land, Infrastructure and Transport (MLIT) decided to propose an increase for passenger car fuel efficiency from the current level of 13 kilometres per litre (km/l) to 16.8 km/l. The proposal, to be implemented by the spring of 2007, will make the Japanese standard the toughest in the world. The current regulation requires carmakers to achieve this fuel efficiency by 2010, but 80% of car models in Japan have already attained the target of 13.6 km/L. The new regulation is expected to encourage further technological development for low-emission vehicles.[856] Some prefectures and local governments also have bylaws and ordinances to protect the environment and to encourage further use of environmentally friendly transportation systems.[857]

Japan has encouraged the use of zero- and low-emission vehicles through rebates and tax breaks for buyers. It has recently renewed the policy for the 2007 fiscal year.[858] However, although the tax benefit has been in place for some years, the incentive does not greatly reduce the tax and is hence not the sole reason for consumer decisions to buy environmentally friendlier cars. The Japanese government provides financial support to local governments, companies, and organizations to purchase low emission vehicles,[859] which are not available to individual consumers.

The Japanese environmental transportation policies are not limited to regulatory measures. The MOE and other governmental agencies have launched public campaigns and held exhibitions to publicize the use of environmentally friendly vehicles and various technologies for cleaner transportation which are either currently available or are being developed. The Japanese government designated November 2006 as an "Eco-Drive" month to encourage the public to engage in more environmentally friendly and fuel-efficient driving.[860] The MLIT has also launched an "Eco-Road" campaign for October 2006 to March 2007.[861] The government also encourages the use of public transportation and environmentally friendlier freight transportation by shifting from motor vehicles to railroad and shipping.[862] The MLIT accredits products and companies which utilize railway transportation and gives "Eco-Rail-Mark."[863] In December 2006, MLIT selected another 12 regions as environmental project

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[855] Permissible Limit for the Sulfur Content in Gasoline and Diesel Oil to be Tightened, 30 November 2006. Date of Access: 6 January 2007 http://www.env.go.jp/en/headline/headline.php?serial=226

[856] Kuruma no nenpi kijun, sekai-ichi kibishii 16.8 kiro ni hikiage he (Fuel efficiency standard for cars to be brought up to 16.8 km, the toughest in the world, The Sankei Shimbun Website, 16 December 2006. Date of Access: 6 January 2007 http://www.sankei.co.jp/keizai/sangyo/061216/sng061216001.htm; Japan Proposes Tougher Fuel Economy Regulations, Green Car Congress, Nihon Keizai Shimbun, 15 December 2006. Date of Access: 6 January 2007 http://www.greencarcongress.com/2006/12/japan_proposes_.html#more.

[857] These include "no vehicle" days, park & ride, car pooling and PTPS; a list of schemes can be obtained at http://www.erca.go.jp/taiki/est/jirei.html.

[858] Tei Kougaisha tou no dounyu ni taisuru zeiseijyouno yuuguu sochi seido (For purchase of low emission vehicles and tax incentive programs). Date of Access: 27 April 2007 http://www.env.go.jp/air/car/mado/gaiyo.pdf

[859] Tei Kougaisha tou no Dounyu ni taisuru yuushi seido (For funding of low emission vehicles).

[860] Eco Drive suishin gekkan ni tsuite (Regarding the month of Eco Drive), 31 October 2006. Date of Access: 6 January 2007 http://www.env.go.jp/press/press.php?serial=7644

[861] Eco-Road kyanpehn no jisshi ni tsuite (Regarding implementation of Eco-Road campaign), 28 September 2006. Date of Access: 6 January 2007 http://www.mlit.go.jp/kisha/kisha06/06/060928_.html

[862] Chikyu ondanka mondai heno taiou (Solving Global Warming Issues). Date of Access: 6 January 2007 http://www.mlit.go.jp/sogoseisaku/kankyo_site/1.ondan/index.htm

[863] Dai 9 kai eco reiru mahku no nintei ni tsuite (The 9th certification of Eco-Rail-Mark), 16 April 2007. Date of Access: 26 April 2007 http://www.mlit.go.jp/kisha/kisha07/08/080314_.html

model areas (in addition to the pre-existing 31 regions selected in 2005);[864] each area has different environmental focuses. In addition, in April 2007, the MOE selected Osaka prefecture for a test plan in establishing a regional system for practical use of eco-fuel.[865] It is hoped to address the criticism that there is a lack of service stations which provide alternative fuels thus discouraging the purchase of environmentally friendlier vehicles.

In addition, Japan has supported the development of environmental policies and projects in the wider Asian region through bilateral and multilateral programs with other countries. MOE initiated and held the second Asia Environmentally Sustainable Transport Regional Forum in cooperation with the United Nations Center for Regional Development and the Indonesian Ministry of the Environment in December 2006 in Jogjakarta.[866] The government also held the Asian Mayor's Policy Dialogue for the Promotion of Environmentally Sustainable Transport in Cities in April 2007 in which cities shared common issues and best practices.[867]

The Japanese private sector also compliments these efforts to reduce emissions and become more environmentally friendly by sharing technologies and examples of environmental programs.[868] The Japanese government and businesses corporate to develop technologies, making the country a market forerunner.

The Japanese government has numerous programs and economic instruments in place to encourage the use and development of technologies for cleaner transportation. However, it has not implemented any new schemes to give consumers incentives to purchase more environmentally friendly vehicles, nor has it introduced large scale public transportation systems based on hybrid and/or clean diesel for the period of this research. Given Japan's demonstration of considerable commitment to energy efficiency in the transportation sector despite these shortcoming, it is appropriate to award Japan a score of 0

Author: Mie Miyazaki

Alternative and Renewable Energy: +1

Japan continues to promote the development of alternative energy and innovative energy sector technology, as well as encouraging wider use of renewables both domestically and internationally. Despite some weaknesses in its policy on fostering renewable energy generation, Japan can still be said to have complied with its commitments in this regard.

METI has committed to a new technological economic growth initiative with a 2007 (financial year) budget of ¥1.0093 trillion.[869] The initiative includes a budget for the new national energy strategy of ¥145.3 billion.[870] The government announced extensive plans in December 2006 to: strengthen coordination between industry, academia, public organizations, and the government; prioritize R&D of strategic areas in which there should

[864] Kokudo Koutsuu Sho kankyou koudou keikaku moderu jigyou no jisshi chiiki no sentei ni tsuite (Regarding selection of MLIT environmental action model projects regions), 25 December 2006. Date of Access: 6 January 2007. http://www.mlit.go.jp/kisha/kisha06/00/001225_2_.html

[865] Heisei 19 nendo eko nenryo jitsuyouka chiiki sisutemu jissho jigyou no saitaku annkenn ni tsuite (Regarding adoptation of a plan for the programme for the establishment of a regional system for practical use of eco-fuel in FY2007), 13 April 2007. Date of Access: 26 April 2007. http://www.env.go.jp/press/press.php?serial=8268

[866] Dai 2 kai Asia EST Chiiki Foramu no kaisai ni tsuite (Regarding the 2nd Asia EST Regional Forum) 1 December 2006. Date of Access: 13 December 2006. http://www.env.go.jp/press/press.php?serial=7754

[867] the Asian Mayor's Policy Dialogue for the Promotion of Environmentally Sustainable Transport in Cities. Date of Access: 21 May 2007. http://www.iges.or.jp/en/est2007/index.html.

[868] Chikyuu ondanka boushisaku jirei shuu (Examples of preventing global warming), 11 April 2007. Date of Access: 26 April 2007 http://www.keidanren.or.jp/japanese/policy/2007/029.html.

[869] FY 2007 Economic and Industrial Policy: Key Points, Ministry of Economy Trade and Industry, August 2006. Date of Access: 30 December 2006. www.meti.go.jp/english/information/downloadfiles/FY18METIjuuten_rev.pdf.

[870] FY 2007 Economic and Industrial Policy: Key Points, Ministry of Economy Trade and Industry, August 2006. Date of Access: 30 December 2006. www.meti.go.jp/english/information/downloadfiles/FY18METIjuuten_rev.pdf.

be two-way coordination between research and the market; quickly grant rights such as patents; promote international standardization; and develop an environment in which R&D findings can lead to the generation of initial demand.[871] Although the plan is in its initial stages, it is expected to have a considerable impact on the development of energy technologies in Japan in the next ten years.[872]

The New Energy and Industrial Technology Development Organization (NEDO) is the primary vehicle through which the Japanese government promotes the development of alternative energy technologies. NEDO is currently undertaking a variety of ongoing projects related to the development of Fuel Cells and Hydrogen Technology (¥20.55 billion), Photovoltaic (¥16.31 billion) and Wind Power (¥60 million), Biomass and Waste Energy (¥7.24 billion), Superconducting and Ultra-Pure Metals (¥5.31 billion), and Grid Connected Systems (¥6.89 billion).[873] Japan is also a participant in the International Partnership for the Hydrogen Economy (IPHE), which met in Reykjavik on 26-27 September 2006.[874]

In addition, NEDO continues to promote the domestic adoption of new energy technologies. Funding allocations in the current fiscal year include continued subsidies for "Establishing New Energy Visions at the Local Level" (¥1.54 billion), "Promoting the Local Introduction of New Energy" (¥4.6 billion), "Promotion of Non-profit Activities on New Energy and Energy Conservation" (¥140 million), "Promoting the Introduction of High-efficiency Housing/Building Energy Systems" (¥5.2 billion), "Developing Small and Medium-sized Hydroelectric Power Plants" (¥690 million), "Geothermal Power Generation Development" (¥440 million), "Geothermal Development Promotion Surveys" (¥1.74 billion), as well as providing debt guarantees for New Energy Operators (¥35.3 billion).[875] A further ¥290 million was allocated to the development of wind power guidelines, and ¥90 million to the general introduction and promotion of new energy measures.[876]

NEDO is involved in two further initiatives to promote the adoption of new energy technologies throughout Asia: the International Cooperative Demonstration Project Utilizing Photovoltaic Power Generation Systems (¥50 million) and the International Cooperative Demonstration Project for Stabilized and Advanced Grid-connection PV Systems (¥750 million).[877] In May 2007, the Japanese government also announced that it will provide up to US$2 billion in loans and US$100 million in separate funds to promote investment in alternative energy projects in Asia, through the Enhanced Sustainable Development for Asia Initiative.[878]

To complement NEDO initiatives, the Japanese government passed the Renewables Portfolios Standard (RPS) Law in 2002, mandating targets for the use of solar, wind, biomass, small-medium hydro, and geothermal electricity by electricity retailers, progressively increasing from 7.32 TWh in 2003 to 12.2 TWh by 2010.[879] In February 2007, the government announced a new target of 16 TWh by 2014, which would amount to 1.63%

[871] FY 2007 Economic and Industrial Policy: Key Points, Ministry of Economy Trade and Industry, August 2006. Date of Access: 30 December 2006. www.meti.go.jp/english/information/downloadfiles/FY18METIjuuten_rev.pdf.
[872] See, for example: Project Making Plastics from Plants. Nikkei Weekly. 14 May 2007.
[873] Outline 2006-2007, New Energy and Industrial Technology Development Organization, (Kawaskai City). Date of Access: 1 January 2007 http://www.nedo.go.jp/english/activities/index3.html.
[874] International Partnership for the Hydrogen Economy Website. Date of Access: 1 January 2007 http://www.iphe.net/.
[875] Project Outline 2006-2007, New Energy and Industrial Technology Development Organization, (Kawaskai City). Date of Access: 1 January 2007 http://www.nedo.go.jp/english/activities/index3.html.
[876] Project Outline 2006-2007, New Energy and Industrial Technology Development Organization, (Kawaskai City). Date of Access: 1 January 2007 http://www.nedo.go.jp/english/activities/index3.html.
[877] Project Outline 2006-2007, New Energy and Industrial Technology Development Organization, (Kawaskai City). Date of Access: 1 January 2007 http://www.nedo.go.jp/english/activities/index3.html.
[878] Aiding middle-income Asia ADB's future role? The Japan Times. 8 May 2007.
[879] What is RPS System in Japan, RPS Website. Date of Access: 1 January 2007 http://www.rps.go.jp/RPS/new-contents/top/toplink-english.html

of energy production.[880] However, with the industry currently significantly exceeding the existing targets, and with even the new target well below those of other countries (such as the EU target of 21% of energy production in renewables by 2010), many doubt whether the new quotas will have much effect.[881]

More recently, the government has signalled plans to promote the use of biofuels, and is preparing legislation for the 2008 Diet session.[882] The government aims to have the equivalent of 500,000 kilolitres of biofuel in use by 2010.[883] To this end, subsidies for gas stations selling blended biofuels were announced in April (to begin in 2008),[884] though disagreements between government and industry over blending standards have yet to be resolved.[885] In production, the government's attempts to increase domestic biofuel capacity to 6 million kilolitres include Agriculture Ministry plans to build three large facilities in Hokkaido and Okinawa under the budget for the fiscal year 2007, and Environment Ministry plans to produce bioethanol from wood chips in Osaka.[886]

Overall, despite weaknesses in the RPS law, Japan's efforts to promote the development and adoption of renewable energy, both through NEDO, and more recent efforts to promote biofuels, earn it a score of +1.

Author: Glenn Goldsmith

UNFCCC/Kyoto: 0

Japan has made reasonable progress towards meeting some of its commitments under the UNFCCC and the Kyoto Protocol. However, future success in achieving Japan's Kyoto targets hinges on the outcome of the upcoming review of the government's Kyoto Targets Achievement Plan (KTAP) expected later this year and the measures implemented as a result. Consequently, Japan has only partially complied with this commitment.

Under Kyoto, Japan is committed to reducing greenhouse gas (GHG) emissions to 6% below 1990 levels by 2010.[887] The most recent data reported to the UNFCCC (August 2006) indicate that in 2004 emissions were still 7.4% above 1990 levels.[888] Japan's difficulties in meeting its reduction targets will be compounded by the country's recent economic growth, as well as continued difficulties with some of its nuclear powers stations, which have led to increased fossil fuel generation.[889] Moreover, a Forestry Agency report issued in May suggests that, absent significant further investment, Japan may have overestimated the extent to which it can rely on its forests to offset emissions.[890] Nonetheless, despite doubts

[880] Govt Presents New Target For Use Of Renewable Energy Sources, Nikkei News, 29 January 2007. Date of Access: 23 April 2007 http://www.nni.nikkei.co.jp/AC/TNKS/Search/Nni20070129D29JF971.htm.
[881] Renewable energy under clouds, Nikkei News, 5 March 2007. Date of Access: 23 April 2007 http://www.nni.nikkei.co.jp/AC/TNW/Search/Nni20070305IN5ENER1.htm. New initiative fails to spark enthusiastic response, Nikkei News, 5 March 2007. Date of Access: 23 April 2007. http://www.nni.nikkei.co.jp/AC/TNW/Search/Nni20070305IN5ENER2.htm.
[882] Govt Seeks New Legislation To Promote Ethanol, Nikkei News, 24 January 2007. Date of Access: 23 April 2007. http://www.nni.nikkei.co.jp/AC/TNKS/Search/Nni20070123D23JFF03.htm; Govt Eyes Biofuel Target Of 6mn Kilolitres By '30, Nikkei News, 23 February 2007. Data of Access: 23 April 2007. http://www.nni.nikkei.co.jp/AC/TNKS/Search/Nni20070223D22JFA16.htm.
[883] Closing the biofuel gap, Japan Times Online, 19 December 2006. Date of Access: 2 January 2007. http://search.japantimes.co.jp/cgi-bin/ed20061219a1.html.
[884] Govt To Subsidize Ethanol Stations To Promote Biofuel Use, Nikkei News, 11 April 2007. Date of Access: 23 April 2007. http://www.nni.nikkei.co.jp/AC/TNKS/Search/Nni20070411DA1J4113.htm.
[885] Government Biogasoline Effort Stalls,The Daily Yomiuri, April 28 2007.
[886] Closing the biofuel gap, Japan Times Online, 19 December 2006. Date of Access: 2 January 2007. http://search.japantimes.co.jp/cgi-bin/ed20061219a1.html.
[887] United Nations, Kyoto Protocol to the United Nations Framework Convention On Climate Change, 1998. Annex B. Date of Access: 1 January 2007. http://unfccc.int/resource/docs/convkp/kpeng.pdf.
[888] The Government of Japan, Report on Japan's Assigned Amount, August 2006. Date of Access: 1 January 2007 http://unfccc.int/files/national_reports/application/pdf/aarepjpn_4.1e.pdf.
[889] Shika N-plant suspension likely to lead to rise in CO2, The Daily Yomiuri, 18 March 2007.
[890] Nation's Forests May Fall Short of Kyoto Target, The Daily Yomiuri. 22 May 2007.

expressed in the media regarding Japan's ability to meet its Kyoto targets,[891] the government remains committed to reaching these goals and further developing the Kyoto framework. Prime Minister Abe reiterated Japan's commitment to the Kyoto targets in his Basic Policies Speech in September 2006[892] and again on 26 January 2007,[893] and has recently spearheaded efforts to involve the US and China in "post-Kyoto" efforts to combat global warming.[894] In a major speech on 24 May 2007, Mr. Abe called on all world leaders to embrace a new initiative to halve global warming emissions by 2050.[895]

Following a review of policy progress in 2004, the Japanese Cabinet adopted the KTAP in April 2005, which sets out in concrete terms its strategy for meeting its obligations under the Protocol.[896] Many of the new steps set out in the plan – including the amendment of the *Energy Conservation Law* to promote green construction standards,[897] expanding the coverage of "Top-Runner" environmental standards,[898] and reinforcing the *Law Concerning the Recovery and Destruction of Fluorocarbons*[899] – were undertaken prior to the St. Petersburg Summit. But a comprehensive progress review of these policies is scheduled for later this year, with new measures to be implemented from 2008.[900] Consequently, much of Japan's compliance activity in the period since the St. Petersburg Summit has been focused on the continuation of previous initiatives.

Such initiatives include: the "Team -6%" campaign,[901] designed to promote public awareness of and involvement in emissions reduction; the successful "Cool Biz" (and complementary "Warm Biz") initiatives which encourage the reduction of unnecessary expenditure on heating and cooling;[902] promotion of sectoral voluntary action programs; continued investigation of the potential of a cap and trade system via the Japanese Voluntary Emissions Trading System (JVETS);[903] and a commitment to subsidizing the development and use of alternative energy sources (including nuclear and renewable energy) both domestically and abroad, through the New Energy and Industrial Technology Development Organization (NEDO).[904]

In December 2006, the government announced tougher new standards for vehicle fuel efficiency, (requiring a 23.5% improvement by 2015)[905] and has also increased mandatory

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[891] Japan Risks Falling Short of Greenhouse Gas Reduction, Nikkei Weekly, 13 November 2006. Emissions Down in Industry, But Kyoto Goals Still Elusive, Nikkei Weekly, 13 February 2007.
[892] Shinzo Abe, Basic Policies, 26 September 2006. Date of Access: 1 January 2007 http://www.kantei.go.jp/foreign/abespeech/2006/09/26houshin_e.html.
[893] Shinzo Abe, Policy Speech, 26 January 2007. Japan Economic Newswire, 27 January 2007.
[894] Abe, Bush to boost cooperation on post-Kyoto global warming efforts, Japan Economic Newswire, 21 April 2007. Working With China, Japan Times, 13 April 2007.
[895] Abe Urges Emissions Halved by '50 Globally, The Japan Times, 25 May 2007.
[896] Government of Japan, Kyoto Protocol Target Achievement Plan, 25 April 2005. Date of Access: 1 January 2007 http://www.kantei.go.jp/foreign/policy/kyoto/050428plan_e.pdf.
[897] The Energy Conservation Center, Japan, Japan Energy Conservation Handbook 2005/2006. Date of Access: 1 June 2007. http://www.eccj.or.jp/databook/2005-2006e/pdf/chapter4.pdf.
[898] Top Runner Program, The Energy Conservation Center, Japan. Date of Access: 1 January 2007 http://www.eccj.or.jp/top_runner/index.html.
[899] State of Fluorocarbons Recovery from Commercial Freezer/Air Conditioner in FY 2005, Ministry of the Environment, 24 November 2006. Date of Access: 1 January 2007 http://www.env.go.jp/en/earth/ozone/srdj/061124.html.
[900] Government of Japan, Kyoto Protocol Target Achievement Plan, 25 April 2005. Date of Access: 1 January 2007 http://www.kantei.go.jp/foreign/policy/kyoto/050428plan_e.pdf.
[901] Team -6%, Ministry of the Environment, (Tokyo0. Date of Access: 1 January 2007. http://www.team-6.jp/.
[902] Result of Cool Biz Campaign, Ministry of the Environment, (Tokyo). Date of Access: 1 January 2007. http://www.env.go.jp/en/press/2005/1028a.html.
[903] Kunihiko Shimada, Japan's Policies and Measures to Achieve Kyoto Target and Beyond. Date of Access: 1 January 2007. http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/kunihiko_shimada_-_japans_policies_and_measures_to_achieve_kyoto_targets_and_beyond.pdf
[904] Project Outline 2006-2007, New Energy and Industrial Technology Development Organization, (Kawaskai City). Date of Access: 1 January 2007. See also the section on Alternative and Renewable Energy.
[905] Emissions Down in Industry, But Kyoto Goals Still Elusive, Nikkei Weekly, 13 February 2007. Ministries to Call for Greener Vehicles, Asahi Shimbun. Date of Access: 1 January 2007 http://www.asahi.com/english/Herald-asahi/TKY200612060133.html.

targets for the sale of renewable energy under the RPS Law.[906] However, following opposition from the Ministry of Economy, Trade, and Industry (METI), previous Ministry of Environment (MOE) plans to introduce a carbon tax in January 2007 seem unlikely to be realized,[907] and, while plans to open Japan's first Emissions Exchange in June were announced in February,[908] the future of emissions trading in Japan remains unclear, particularly given the government's reliance on voluntary emissions reductions for industry.[909] MOE officials have admitted to a general perception that "regarding economic tools [to reduce emissions], Japan is lagging behind."[910]

Given an expected shortfall of 1.4% from domestic reductions and carbon sinks, Japan also intends to obtain credits via the Kyoto Mechanisms to meet the remainder of its obligations.[911] To this end, on 1 September 2006, NEDO launched the Kyoto Mechanisms Credit Acquisition System, in which it signalled its intention to rely primarily on the Clean Development Mechanism (CDM) for the credit acquisition.[912] As of 27 April 2007, the Government had approved 165 CDM/Joint Initiative (JI) Programs.[913] The Japanese and Czech governments recently reached an agreement in principle for Japan to purchase up to 20 million tons of emissions quotas, and the Japanese government intends to pursue similar deals with Russia and the Ukraine.[914]

Overall, while Japan currently appears to be making satisfactory progress, much will depend on the results of the upcoming review of the KTAP, and the policies emerging from it. It is thus awarded a compliance score of 0.

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Sustainable use of Energy: 0

Japan is one of the most energy efficient countries in the industrialized world,[915] with strong social norms of energy consumption[916] and numerous programs aimed at encouraging demand-side energy saving.[917] However, most of these were in existence prior to the commitment period, and while many have been modified or expanded since, these efforts need to be weighed against potential problems facing the development of an emissions trading system, and the Japanese government's failure to implement proposals for a carbon tax. Consequently, Japan receives a score 0 for partial compliance with this commitment.

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[906] Renewable Energy Goal Under Review, The Asahi Shimbun, 7 November 2006. Date of Access: 1 January 2007. http://www.asahi.com/english/Herald-asahi/TKY200611070155.html.

[907] Japan Feels Heat over Kyoto Protocol, Japan Today, 6 June 2006. Date of Access: 1 January 2007 http://www.japantoday.com/jp/comment/947; Time Has Come for a Green Tax, Daily Yomiuri, March 24 2007.

[908] Japan's 1st exchange for CO_2 emissions rights to be set up in June, Japan Economic News Wire, 27 February 2007.

[909] Business Opposition Hampers Emission Credit Trading In Japan, Asia Pulse, 12 April 2007.

[910] Kunihiko Shimada, Japan's Policies and Measures to Achieve Kyoto Target and Beyond. Date of Access: 1 January 2007. http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/kunihiko_shimada_-_japans_policies_and_measures_to_achieve_kyoto_targets_and_beyond.pdf.

[911] NEDO Launches Kyoto Mechanisms Credit Acquisition Program, NEDO, 1 September 2006. Date of Access: 1 January 2007. http://www.nedo.go.jp/english/archives/180901/180901.html; Think Emission Credits, Not Cuts. Nikkei Weekly, 7 May 2007.

[912] NEDO Launches Kyoto Mechanisms Credit Acquisition Program, NEDO, 1 September 2006. Date of Access: 1 January 2007. http://www.nedo.go.jp/english/archives/180901/180901.html.

[913] List of CDM/JI Project Approved by the Government of Japan (as of 27 April 2007), Kyoto Mechanisms Information Platform. Date of Access: 22 May 2007 http://www.kyomecha.org/e/List_of_CDMJI.php.

[914] Japan, Czech Rep. OK greenhouse gas trade deal, The Daily Yomiuri, 7 April 2007.

[915] E.g. Japan claims to have the lowest primary energy consumption per dollar of GDP in the world. Energy Conservation Center, Energy Conservation Policy & Measures in Japan, March 2007. Date of Access: 24 May 2007, http://www.eccj.or.jp/summary/local0703/eng/01_01_04.html.

[916] According to the New York Times, the average home energy use in Japan is less than half that of the US. The Land of Rising Conservation, New York Times, 6 January 2007.

[917] Martin Fackler, Japan's Energy Conservation Obsession, International Herald Tribune, 7 January 2007. Date of Access: 1 March 2007 http://www.iht.com/articles/2007/01/07/news/energy.php.

Japan has a somewhat bewildering array of demand-side initiatives in place aimed at reducing energy consumption.[918] There are "Energy Conservation Days" on the 1st of every month, "Energy Conservation Month" in February, "General Check Up Days For Energy Conservation" on 1 August and 1 December each year, and METI-sponsored commendation programs for "excellent energy management."[919] Most of these were in place prior to the commitment period,[920] but others have either been renewed or expanded since June 2006.

Adopted in 1998, the "Top-Runner" energy efficiency standards set mandatory targets for improvements in energy efficiency for 18 product categories, including office and household appliances, vehicles etc. The standards are continually revised as available technology develops (with the new standard being set at the performance of the best technology available on the market at the time of revision), and the standards for passenger and freight vehicles, air conditioners and electric refrigerators/freezers were amended in July 2006.[921] A related energy saving labelling system for retailers was launched in October 2006.[922]

The Japanese government is also heavily involved in attempts to stimulate demand for energy efficient technologies and services. Examples include tax breaks for businesses purchasing equipment that contributes to efficient energy use,[923] subsidies of around US$51,000 for home fuel cells (which generate energy by transforming natural gas to hydrogen),[924] and the ESCO (Energy Service Company) Demonstration Project at METI. (Running from 2005-2009, the project is designed both to improve energy conservation at the Ministry, and promote energy conservation services to the private sector.[925])

In April 2005, the government launched the "Team -6%" initiative, designed to promote public awareness of, and involvement in emissions reduction. To date, 1.8 million Japanese citizens have pledged to take six steps to achieve the goal, such as turning off the lights.[926] Two signature parts of this initiative have been the "Cool Biz" and corresponding "Warm Biz" campaigns, encouraging office workers to dress cooler in summer and warmer in winter to reduce cooling and heating needs.[927] The former mandates the thermostats of public buildings be set no lower than 28°C in the summer, and encourages private businesses to follow suit, while the latter encourages a maximum of 20°C for private businesses and 19°C

[918] See, for example: Japan Energy Conservation Handbook 2005/2006, The Energy Conservation Center, (Japan). Date of Access: 10 May 2007. http://www.eccj.or.jp/databook/2005-2006e/pdf/chapter4.pdf; Energy Conservation Policy and Measures in Japan, Energy Conservation Center, (Japan), March 2007. Date of Access: 24 May 2007. http://www.eccj.or.jp/summary/local0703/eng/01_01_04.html.
[919] Japan Energy Conservation Handbook 2005/2006, The Energy Conservation Center, (Japan). Date of Access: 10 May 2007. http://www.eccj.or.jp/databook/2005-2006e/pdf/chapter4.pdf.
[920] For example, the 2005 amendments to the Energy Conservation Law designed to (among other objectives) strengthen requirements in respect of green construction standards. Japan Energy Conservation Handbook 2005/2006, The Energy Conservation Center, (Japan). Date of Access: 10 May 2007. http://www.eccj.or.jp/databook/2005-2006e/pdf/chapter4.pdf.
[921] Joakim Nordqvist, Evaluation of Japan's Top Runner Program, 3 July 2006. Date of Access: 25 May 2007. http://www.aid-ee.org/documents/018TopRunner-Japan.pdf.
[922] Energy Conservation Policy and Measures in Japan, Energy Conservation Center, (Japan), March 2007. Date of Access: 24 May 2007. http://www.eccj.or.jp/summary/local0703/eng/01_01_04.html.
[922] Japan Energy Conservation Handbook 2005/2006, The Energy Conservation Center, (Japan). Date of Access: 10 May 2007. http://www.eccj.or.jp/databook/2005-2006e/pdf/chapter4.pdf.
[923] Japan Energy Conservation Handbook 2005/2006, The Energy Conservation Center, (Japan). Date of Access: 10 May 2007. http://www.eccj.or.jp/databook/2005-2006e/pdf/chapter4.pdf. Though these were introduced prior to the commitment period, they require an ongoing financial commitment, and are therefore relevant to the current commitment period.
[924] Renée Loth, Japan's Energy Wisdom, International Herald Tribune, 26 March 2007. Date of Access: 10 May. http://www.iht.com/articles/2007/03/26/opinion/edloth.php?page=1.
[925] Energy Conservation Policy and Measures in Japan, Energy Conservation Center, (Japan), March 2007. Date of Access: 24 May 2007. http://www.eccj.or.jp/summary/local0703/eng/01_01_04.html.
[926] Renée Loth, Japan's Energy Wisdom, International Herald Tribune, 26 March 2007. Date of Access 10 May. http://www.iht.com/articles/2007/03/26/opinion/edloth.php?page=1.
[927] Result of Cool Biz Campaign, Ministry of the Environment, (Tokyo), 28 October 2005. Date of Access: 1 January 2007. http://www.env.go.jp/en/press/2005/1028a.html.

for government.[928] Launched in 2005, the programs were continued in 2006, with claimed reductions from "Cool Biz" equivalent to 1.14 million tons of CO_2. The government has recently announced the re-launch of "Cool Biz" for 1 June 2007.[929]

Progress also continues on development of an emissions trading system. October 2006 saw the first trade of emissions credits under the government subsidized JVETS test which ran from April 2006 to March 2007. The next, unsubsidized, stage of the program began recruiting firms to participate in February.[930] However, the future of emissions trading in Japan remains somewhat unclear, especially given significant opposition by the Japanese Business Federation.[931]

Moreover, balancing against Japan's positive efforts is the failure of Ministry of Environment (MOE) plans to impose a carbon tax on fossil fuels (equivalent to ¥1.5 per litre in the case of gasoline) at the beginning of 2007. As with previous proposals to introduce forms of environmental taxation, the move was unable to surmount the Ministry of Economy, Trade, and Industry's (METI) argument that the plan would damage Japanese international competitiveness, and now looks unlikely to be realized.[932]

In summary, while Japan is highly energy efficient, and has in place a large number of initiatives to improve energy use, much of its progress in this area falls outside the commitment period. Coupled with potential problems facing the development of an emissions trading system, and the lack of progress on carbon taxation, it is appropriate to award Japan a score of 0 for partial compliance with this commitment.

Authors: Glen Goldsmith, Janelle Knox, and Ruth Brandt

Innovative Energy Technologies in Hydrocarbon Production and Use: +1

Japan's domestic energy resources can cover only around 20% of its current energy demand.[933] The Japanese government has continued to actively encourage the exploration of alternative energy sources and new technologies in energy production, contributing to Japan's energy stability as well as fulfilling its international commitments. There are two main types of policy which contribute to Japan's compliance with its St. Petersburg commitment to pursue more efficient and cleaner technologies in hydrocarbon production and use: the development of gas to liquid technologies and research into gas hydrates. Though these areas of innovation existed long before the St. Petersburg Summit, Japan has also made further steps to reinforce these processes since July 2006. Therefore Japan receives a score of +1 for compliance with this commitment.

Natural gas consumption places fewer burdens on the environment than the main alternative sources of hydrocarbon.[934] Yet many gas fields are too small or too rich in CO_2

[928] Cool Biz & Warm Biz, Ministry of the Environment, (Tokyo). Date of Access: 24 May 2007. www.env.go.jp/earth/info/coolbiz/.
[929] Japanese dress down again for Cool Biz, Business Week, 11 May 2007. The Japanese government has also encouraged other Asian countries to join the campaign. Japan Invites Asia to Join 'Cool Biz' Energy Saving Drive, Terra Daily, 17 May 2006. Date of Access: 24 May 2007. http://www.terradaily.com/reports/Japan_invites_Asia_to_join_Cool_Biz_energy_saving_drive.html.
[930] Firms Vie For Spot in Govt Emission-Trading Test, The Daily Yomiuri, 9 May 2007.
[931] Business Opposition Hampers Emission Credit Trading In Japan, Asia Pulse, 12 April 2007.
[932] Hisane Masaki, Happy Birthday to Kyoto, but…, Asia Times, 9 February 2007. Date of Access: 24 May 2007, http://www.atimes.com/atimes/Japan/IB09Dh01.html. Though it should be noted that, due in part to existing taxes and prices controls, gasoline is around twice as expensive in Japan as in the US: Martin Fackler, Japan's Energy Conservation Obsession, International Herald Tribune, 7 January 2007. Date of Access: 1 March 2007. http://www.iht.com/articles/2007/01/07/news/energy.php.
[933] Energy and Resources: Japan's Current Energy Profile. Date of Access: 5 January 2007. http://web-japan.org/factsheet/energy/profile.html
[934] US Department of Energy: Energy Efficiency and Renewable Energy. Date of Access: 5 January 2007. http://www.eere.energy.gov/afdc/altfuel/natural_gas.html

to make their exploitation commercially viable using current technologies.[935] As announced in October 2006, a Japanese public-private research consortium is now moving forward with the commercialization of a new gas-to-liquid technology which would permit the exploitation of such fields as well. The main part of the funding for the project (¥24 billion out of the ¥36 billion five-year budget) is being provided by the Japan Oils, Gas, and Metals National Corporation (JOGMEC),[936] an incorporated administrative agency of the Japanese government.[937]

The Japanese government also stated in December 2006 that it will start transporting gas commercially in the form of solid gas hydrates by 2008.[938] The initial capital investment required for a natural gas hydrate plant could be as much as half of that required for a liquid natural gas plant, and extraction would be also be cost-efficient from smaller fields which are not currently commercially viable. In addition, the transport costs for natural-gas hydrates are also estimated to be lower over distances of less than 6000 km.[939] Making use of this new technology would therefore be likely to reduce reliance on other hydrocarbons that place a heavier burden on the environment.

The seafloor around Japan contains large reserves of methane hydrate, which, according to some experts, could provide as much energy for the country as a 100-year supply of conventional natural gas.[940] JOGMEC has conducted test drills for methane hydrate, and has continued research on making the exploitation of methane hydrates commercially viable.[941] Japan's Methane Hydrate Exploitation Program, prepared by the Ministry of Economy, Trade, and Industry, is currently in the first phase of its three-phase program aimed at developing technologies for its commercial production, and evaluating its environmental impact.[942] The natural release of methane hydrates is thought to have had a major negative impact on climate change in the past. Some argue, therefore, that the commercial extraction of this energy source may also contribute to the long-term mitigation of the environmental impact of methane release events by reducing the amount of methane hydrates that may be in danger of erupting spontaneously.[943]

In addition to the above, Japan is also promoting cooperation with energy-exporting countries in the application of cleaner and more efficient technologies in various upstream hydrocarbon services. In November 2006, Japan's Minister of Economy, Trade, and Industry agreed with his Indonesian counterpart to "promote and ensure technical assistance cooperation in the areas of commercialization of coal liquefaction, efficient production of coal, technology for utilizing low-grade coal (known as brown coal), and technology for the clean use of coal."[944] The environmental effects of this cooperation are

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[935] Green Car Congress: Japanese Consortium Developing Lower-Cost Gas-to-Liquids Process with CO_2 Input, 5 October 2006. Date of Access: 20 December 2006. http://www.greencarcongress.com/2006/10/japanese_consor.html

[936] Green Car Congress: Japanese Consortium Developing Lower-Cost Gas-to-Liquids Process with CO_2 Input, 5 October 2006. Date of Access: 20 December 2006. http://www.greencarcongress.com/2006/10/japanese_consor.html.

[937] Introduction to Incorporated Administrative Agencies. Date of Access: 5 January 2007. http://www.meti.go.jp/english/aboutmeti/data/aOrganizatione/keizai/dokurituqyousei/01.htm

[938] Daily Yoimuri Online: New gas-transportation method eyed, 7 December 2006. Date of Access: 5 January 2007. http://www.yomiuri.co.jp/dy/national/20061207TDY01002.htm

[939] Daily Yoimuri Online: New gas-transportation method eyed, 7 December 2006. Date of Access: 5 January 2007. http://www.yomiuri.co.jp/dy/national/20061207TDY01002.htm

[940] Methane Hydrate, a Future Energy Source Hidden Deep Under the Ocean Floor, Web Japan, Nipponia No. 28, Special Feature, 15 March 2004. Date of Access: 5 January 2007. http://web-japan.org/nipponia/nipponia28/en/feature/feature10.html.

[941] JOGMEC: Our business, Technology R&D Group. Date of Access: 5 January 2007. http://trc.jogmec.go.jp/english/ourbusiness05.html.

[942] Research Consortium for Methane Hydrate Resources in Japan. Date of Access: 5 January 2007. http://www.mh21japan.gr.jp/english/mh21-2.html.

[943] Energy Information Administration Natural Gas Hydrates Update 1998-2000. Date of Access: 5 January 2007. http://tonto.eia.doe.gov/FTPROOT/features/update.pdf.

[944] Joint Statement between The Ministry of Economy, Trade and Industry of Japan and The Ministry of Energy and Mineral Resources of the Republic of Indonesia on The Cooperation in Energy and Mineral Resources, especially 2(c). Date of Access: 20 December 2006. http://www.enecho.meti.go.jp/topics/indonesia/jpn-indonesiajs.pdf.

expected to be unambiguously positive. Similarly, in April 2007, Japan and China reached an agreement to cooperate on a number of energy-related issues, including the promotion of technologies for cleaner use of coal at coal-fired power plants.[945]

Japan also runs a clean coal program that so far appears to have been a success. Clean coal technologies, including integrated gasification combined cycle and integrated coal gasification fuel cell combined cycle, are finding their way in the Japanese economy on an experimental basis as of December 2006. [946] In addition, Japan has been disseminating clean coal technology in the region through an instruction program for engineers and managers from seven Asian nations. This commitment to progress in clean hydrocarbon research was reinforced when the country joined a similar international program together with Australia, China, India, South Korea, and the USA in the Cleaner Fossil Energy Task Force in October 2006.[947] Within this framework, among other projects, Japan has been co-sponsoring clean coal workshops with the US, and has been collaborating with Australia towards improving coal bed methane and carbon dioxide sequestration technologies.

Japan therefore receives a score of +1 for having further strengthened a number of projects with innovative uses of technology in hydrocarbon production and use in the period under consideration. The country has continued the exploration of methane hydrate fields, and it has been running a successful clean coal program. The biggest progress has been achieved in the field of natural gas production, where Japan has moved forward with the commercialization of natural gas technologies that are more environmentally friendly and efficient.

Author: Anna Dimitríjevics

[945] Japan, China agree to expand nuclear power, Reuters, 11 April 2007. Date of Access: 12 April 2007. http://www.alertnet.org/thenews/newsdesk/T354259.htm.
[946] Japan transferring clean coal technology for own energy security, Kyodo News, 22 December 2006. Date of Access: 2 January 2007.http://home.kyodo.co.jp/modules/fstStory/index.php?storyid=289897.
[947] The Japan Times Online: Japan's clean coal push self serving as well, 9 January 2007. Date of Access: 12 April 2007. http://search.japantimes.co.jp/cgi-bin/nn20070109f1.html; Bureau of Oceans and International Environmental and Scientific Affairs, Asia-Pacific Partnership of Clean Development and Climate, Cleaner Fossil Energy Task Force summary of action plan and projects. Date of Access: 12 April 2007. http://www.state.gov/g/oes/rls/fs/2006/75364.htm.

10. Mexico

Background

Most of Mexico's climate change concerns are linked to a desire for economic and social development.[948] However, despite a commitment to continued economic growth, Mexico has acknowledged the threat of climate change and was the first large oil-producing nation to ratify the Kyoto Protocol.[949] The 2001-2006 National Development Plan for Mexico established sustainable development as one of its 12 basic principles.[950]

National Development Plans are six-year programs established by the President at the beginning of the presidential term.[951] Despite a contentious presidential election which occurred during the compliance period and had a contested outcome that seemed to halt the Mexican government's activities,[952] President Felipe Calderon's 2007-2012 National Development Plan for Mexico will be published on 31 May 2007.[953] Fernando Tudela Abad, Vice-Minister for Planning and Environmental Policy of the Ministry of the Environment and Natural Resources of Mexico, said Calderon had reaffirmed his commitment to sustainable development, making the environment one of his top five priorities.[954]

Mexico has remained quite active in both national and international discussions of climate change, hosting and attending a number of meetings. This compliance period also saw the publication of both *Towards a National Climate Change Strategy* in 2006[955] and *National Climate Change Strategy* in 2007[956] by Mexico's Interministerial Commission on Climate Change (ICCC) to outline plans to deal with GHG emissions and to build national capacity for adaptation in areas of vulnerability.[957]

In line with both documents, Mexico's government was active in initiating legislation and projects associated with utilizing renewable energy sources and lowering energy demand. Its actions include the introduction of a bill requiring a certain percentage of the country's

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[948] Towards a National Climate Change Strategy Executive Summary, Interministerial Commission on Climate Change, November 2006. Date of Access: 6 February 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

[949] Climate Change Mitigation in Developing Countries: Brazil, China, India, Mexico, South Africa, and Turkey, Pew Center on Global Climate Change, October 2002. Date of Access: 7 February 2007. http://www.pewclimate.org/docUploads/dev%5Fmitigation%2Epdf.

[950] Mexico Case Study Analysis of National Strategies for Sustainable Development, International Institute for Sustainable Development, June 2004. Date of Access: 6 February 2007. http://www.iisd.org/pdf/2004/measure_sdsip_mexico.pdf.

[951] Mexico Case Study Analysis of National Strategies for Sustainable Development, International Institute for Sustainable Development, June 2004. Date of Access: 6 February 2007. http://www.iisd.org/pdf/2004/measure_sdsip_mexico.pdf.

[952] Calderon declared Mexico's president-elect; Court rules in favour of conservative candidate 2 months after disputed vote**,** Associated Press, 5 September 2006. Date of Access: 28 May 2007. http://www.msnbc.msn.com/id/14672039/.

[953] ProMexico and a New National Development Plan, MexiData, 23 April 2007. Date of Access: 21 April 2007. http://www.mexidata.info/id1334.html.

[954] Sustainable Development Commission Hears Call for Urgent, Concerted Action on Climate Change, as it Begins High-Level Segment, States News Services, 9 May 2007. Date of Access: 29 May 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1518205306&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T1518205309&cisb=22_T1518205308&treeMax=true&treeWidth=0&csi=8058&docNo=12.

[955] Towards a National Climate Change Strategy Executive Summary, Interministerial Commission on Climate Change, November 2006. Date of Access: 6 February 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

[956] Comision Intersecretaraial de Cambio Climatico, 25 May 2007. Date of Access: 27 May 2007. http://www.semarnat.gob.mx/Documents/Estrat_nal_Sintesis.pdf.

[957] Towards a National Climate Change Strategy Executive Summary, Interministerial Commission on Climate Change, November 2006. Date of Access: 6 February 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

electricity to come from renewable energy resources,[958] the creation of a bioenergy bill allowing for the production of ethanol,[959] the implementation of a large-scale renewable energy program to support several wind projects,[960] and the setting of energy standards for household appliances.[961]

While these initiatives are positive steps toward reducing the impact of climate change, Mexico's energy demand has been rapidly growing and at present fossil fuels account for 73% of Mexico's power.[962] A draft version of the Calderon Administration's energy policy indicates the need for reform within the fuel and electricity sectors to operate more efficiently[963] because in its current state, Mexico's fuel sector may one day have trouble simply keeping up with rising energy demands at home.[964] This fossil fuel usage comes not only from the transport sector, but from buildings as well.[965] The federal government has done little to improve emissions caused by such fossil fuel usage despite the administration's stated intent.[966] Rather, *municipalities* have had to make advancements in such areas as clear air transport[967] and sustainable building.[968]

More worryingly still, a recent report written in 2006 by the United Nations Environment Programme (UNEP) in collaboration with the Mexican Ministry of the Environment and Natural Resources noted that emissions are barely counteracted by investments and renewable energy projects, while poverty and deforestation continue to increase vulnerability to climate change.[969] The report, *Climate Change in Latin America and the Caribbean 2006*, cites several reasons for the lack of preparedness in the face of global climate change in the region including: lack of information on how to adapt, uncertainty regarding the interaction between climate change and other pressures, a lack of long-term planning, and limited ways for the public to participate.[970] "The region has made great progress in terms of civil defence measures to deal with the disasters arising from climate change, but it has not done so in the area of adaptation," noted Ricardo Sanchez, UNEP's

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[958]Renewable Energy: Mexican senate to consider RPS bill, Greenwire, 20 October 2006. Date of Access: 6 February 2007. http://web.lexis-nexis.com.proxy.lib.umich.edu/universe/document?_m=a703d569dd4c548442bb370263555f30&_docnum=1&wchp=dGLbVzW-zSkVA&_md5=eb5d68fe05e59c728fcc004abecd6320.

[959]Incluyen al maíz en ley sobre etanol, Nuevo Excelsior, 26 April 2007. Date of Access: 26 April 2007. http://www.nuevoexcelsior.com.mx/27_1952.htm

[960]Mexico's Proposal for Large-Scale Renewables Comes Up Short, Critics Charge, Renewable Energy Report, 2 April 2007. Date of Access: 21 April 2007. http://proquest.umi.com.proxy.lib.umich.edu/pqdweb?did=1255375481&sid=1&Fmt=3&clientId=17822&RQT=309&VName=PQD

[961] México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidas Sobre El Cambio Climático. Date of Access: 6 February 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.

[962]Hybrid Solar Thermal Power Plant Project Information Document, World Bank, 4 October 2006. Date of Access: 7 February 2007. http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000104615_20061005164413.

[963] Felipe Calderon's Energy Policy Draft 6, Date of Access: 20 April 2007. http://www.washingtonpost.com/wpsrv/world/documents/Calderon_energy_policy_v6.pdf.

[964] Output Falling in Oil-Rich Mexico, and Politics Gets the Blame, New York Times, 9 March 2007, Date of Access: 21 April 2007. http://www.nytimes.com/2007/03/09/business/worldbusiness/09pemex.html?ex=1331096400&en=cf6df1aa7e9756d5&ei=5088&partner=rssnyt&emc=rss

[965]World Mayors to Meet in NY to Fight Global Warming, Reuters, 11 May 2007. Date of Access: 29 May 2007. http://www.alertnet.org/thenews/newsdesk/N10480374.htm.

[966]Mexico and the UK: Strengthening the Strategic Partnership,UK-Mexico Joint Declaration, (London), 29 January 2007. Date of Access : 25 February 2007. http://www.presidencia.gob.mx/en/search/index.php?contenido=28822&pagina=1&palabras=climate+change.

[967]DF looks to add 10 Metrobus lines, Business News Americas, 6 July 2006. Date of Access: 7 February 2007. http://www.bnamericas.com/story.jsp?idioma=I&sector=5&noticia=359137.

[968] 16 Cities to Get Financing to 'Go Green', Wired News and AP News, 16 May 2007. Date of Access: 29 May 2007. http://news.wired.com/dynamic/stories/C/CLIMATE_SUMMIT?SITE=WIRE&SECTION=HOME&TEMPLATE=DEFAULT.

[969] Climate Change: Latin America Failing to Adapt, Inter Press Service, 15 November 2006. Date of Access: 7 February 2007. http://ipsnews.net/news.asp?idnews=35495.

[970] Climate Change: Latin America Failing to Adapt, Inter Press Service, 15 November 2006. Date of Access: 7 February 2007. http://ipsnews.net/news.asp?idnews=35495.

Regional Director for Latin America and the Caribbean.[971] Mexico has made progress in terms of identifying areas of vulnerability;[972] however, a more wide-ranging and drastic response is necessary as "climate change will increasingly be a development problem in the region which is already suffering economic and human losses as a result of the phenomenon."[973]

Overall, while Mexico still struggles with climate change issues due to its ever-expanding population, economy, energy intensity, and fossil fuel usage,[974] in certain areas the government has been relatively pro-active in discussing, studying, and initiating projects pertaining to its climate change commitments for the compliance period. As a result, Mexico has received mixed compliance scores.

Author: Nadia Siddiqui

Clean and Efficient Energy in the Transport Sector: 0

Mexico's transport sector is a major contributor to climate change; in 2002, approximately 27% of the country's GHG emissions were transport-related.[975] In January 2007, in a joint declaration between UK and Mexico, President Felipe Calderon acknowledged the challenge of developing sustainable transport and expressed a desire to search for solutions: "The UK and Mexico are facing many similar energy challenges, such as the development of renewable sources, increasing efficiency and reducing carbon emissions through increasing efficiency, methane recovery and sustainable housing and transportation, among others. We will continue to share expertise and experience, particularly in the context of UNFCCC and in joint co-operation projects."[976] At the end of May 2007, in an Energy Ministry (Sener) statement, Calderon reiterated Mexico's commitment to improvements in transport. Specifically, the President stated that contaminants in petrol will be reduced as part of the "grey agenda" in Mexico's climate change strategy.[977] By the end of 2006, low sulphur petrol had been introduced in the Mexico City metropolitan area.[978] Despite these expressions of intent, Mexico's federal government failed to take significant action to improve energy efficiency in the transport sector during the compliance period. Thus, the government failed to comply with its St. Petersburg commitment and is awarded a score of 0.

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[971] Climate Change: Latin America Failing to Adapt, Inter Press Service, 15 November 2006. Date of Access: 7 February 2007. http://ipsnews.net/news.asp?idnews=35495.

[972] Towards a National Climate Change Strategy Executive Summary, Interministerial Commission on Climate Change, November 2006. Date of Access: 6 February 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

[973] Climate Change: Latin America Failing to Adapt, Inter Press Service, 15 November 2006. Date of Access: 7 February 2007. http://ipsnews.net/news.asp?idnews=35495.

[974] Towards a National Climate Change Strategy Executive Summary, Interministerial Commission on Climate Change, November 2006. Date of Access: 6 February 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

[975] F. Manzini, Inserting renewable fuels and technologies for transport in Mexico City Metropolitian area, International Journal for Hydrogen Energy, Vol 31, 327-335, 2006.

[976] Mexico and the UK: Strengthening the Strategic Partnership,UK-Mexico Joint Declaration, (London), January 29, 2007. Date of Access: 25 February 2007. http://www.presidencia.gob.mx/en/search/index.php?contenido=28822&pagina=1&palabras=climate+change.

[977] Calderón; Climate change strategy includes renewables, Business News Americas – English, 28 May 2007. Date of Access: 29 May 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1587275049&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T1587275052&cisb=22_T1587275051&treeMax=true&treeWidth=0&csi=256776&docNo=19.

[978] Sustainable Development Commission hears calls for urgent, concerted action on climate change as it begins high-level segment, States News Service, 9 May 2007. Date of Access: 11 May 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1518205306&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T1518205309&cisb=22_T1518205308&treeMax=true&treeWidth=0&csi=8058&docNo=12.

It is important to note, however, that progress has been taking place at the state and municipal level. During the past five years, Mexico City has made significant advances in sustainable public transport.[979] With funding from the Global Environment Facility (GEF), the new bus system, Metrobus, began operation in June 2005. In November 2006, Metrobus celebrated its 100 millionth passenger.[980] During the past year Mexico City has further invested in public transport. Mexico City's newly elected mayor, Marcelo Ebrard, has set "Sustainable City" criteria, making clean transport a major part of his governing platform.[981] In July 2006, Ebrard announced plans to extend the existing Metrobus system by another 10 lines.[982] In October 2006, Mexico City announced plans to spend 150 million pesos (US$14.3 million) on road repairs below Metrobus lines. The first 40 million pesos were spent on repairs between October and December 2006.[983] An agreement has also been signed with Azure Dynamics Corporation to convert 1,000 municipal Nissan Taurus gasoline vehicles to electric vehicles. Mayor Ebrard was expected to drive the first converted vehicle to the International Electric Vehicle Forum, held in Mexico City on 8 May 2007.[984]

Another meeting related to sustainable transport was held in Mexico City during October 2006. During the second annual Sustainable Transport Congress, sponsored by EMBARQ, delegates discussed topics such as rational auto use, integrated transit system, non-motorized transport, and air quality.[985]

Public transport improvements are being planned in other cities and states as well. EMBARQ reports that the Mexican Secretary of Social Development (Sedesol) has obtained a Bank line of credit which will finance further construction of 20 confined bus lanes in 20 cities.[986] Metrorrey director Rolando Valle announced that the Monterrey subway system will become the first subway system in Latin America to run on biofuel. The subway system in Mexico's third-largest city serves 180,000 commuters a day. It will switch from electricity to biofuel

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[979] In 2002 EMBARQ, the World Resources Institute's Center for Sustainable Transport initiated a partnership with the Government of Mexico City and the Centro de Transporte Sustentable de Mexico (CTS-Mexico) to develop a 20-kilometer bus system. The system replaced hundreds of small buses with 97 diesel powered buses, retrofitted with catalytic converters and ultra low sulfur diesel to help reduce emissions. It is estimated that the Metrobus system will reduce emission of up to 70,000 tons of CO_2 annually. (Mexico City on the Move, World Resources Institute and Center for Sustainable Transport. Date of Access: 5 February 2007. http://embarq.wri.org/documentupload/EMBARQ_MexCity_english.pdf.)

[980] Mexico City Bus Rapid Transit System Celebrates 100 Millionth Passenger: Innovative System Cuts Travel Times and Exposure to Pollution, US Newswire, 16 November 2006. Date of Access: 5 February 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192166589&format=GNBFI&sort=RELEVANCE&startDocNo=1&resultsUrlKey=29_T1192166591&cisb=22_T1192166590&treeMax=true&treeWidth=0&csi=8296&docNo=1.

[981] Azure Dynamics Signs Supply Agreement With Electro Autos of Mexico for 1,000 Electric Vehicle Systems, PR Newswire Europe including UK Disclose, 9 April 2007. Date of Access: 27 April 2007. http://proquest.umi.com.proxy.lib.umich.edu/pqdweb?did=1251903071&sid=3&Fmt=3&clientId=17822&RQT=309&VName=PQD.

[982] DF looks to add another ten Metrobus lines, Business News Americas, 6 July 2006. Date of Access: 5 February 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192264125&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T1192264127&cisb=22_T1192264126&treeMax=true&treeWidth=0&csi=256776&docNo=13

[983] I. Sosa, Mexico City injects '150 million' pesos into Metrobus road repair, La Reforma, 15 October 2006. Date of Access: 6 February 2007. http://embarq.wri.org/en/Article.64.aspx.

[984] Azure Dynamics Signs Supply Agreement With Electro Autos of Mexico for 1,000 Electric Vehicle Systems, PR Newswire Europe including UK Disclose, 9 April 2007. Date of Access: 27 April 2007. http://proquest.umi.com.proxy.lib.umich.edu/pqdweb?did=1251903071&sid=3&Fmt=3&clientId=17822&RQT=309&VName=PQD.

[985] Environmental challenges facing Mexico City are substantial. Mexico City is one of the world's most populous cities, and accounts for approximately 20% of Mexico's GHG emissions. In 2000, 55% of Mexico City's CO_2 emissions originated in the transport sector. Over the last five years, the number of vehicles circulating in the city has risen by 8-9% annually

[986] Sustainable Mobility, EMBARQ and the Center for Sustainable Transport, Vol. 1 October 2006. Date of Access: 5 February 2007. http://embarq.wri.org/documentupload/BRTingles.pdf. Note: this claim has not been verified, and does not appear as an approved World Bank project on http://web.worldbank.org/external/projects/main?pagePK=217672&piPK=95916&theSitePK=40941&menuPK=223661&category=regcountries&regioncode=7&countrycode=MX.

for 82% of its energy needs.[987] The governor-elect of western Mexico's Jalisco state, Emilio González, has promised to discourage the use of private vehicles and make public transport a priority during his six-year term of office.[988] Authorities in central Mexico's Aguascalientes state have requested a feasibility study funded by the US Trade and Development Agency (TDA) to evaluate the modernization of public transport in Aguascalientes city.[989]

Finally, the private sector is also taking action. In January 2006, Honda began selling a hybrid version of its popular Honda Civic, making Mexico the first Latin American country in which hybrids are available.[990]

In conclusion, while progress has been made towards clean and efficient energy in the transport sector, most programs have been initiated at the state and city level. Felipe Calderon has expressed a desire to improve Mexico's infrastructure and address inefficient transport. However, the goal of these improvements may not be environmental. According to the Alliance for Security and Prosperity of North America, transport improvements may help better realize US export advantages over Asian nations.[991] Even at the state and city level, the authorities have focused primarily on basic improvements in public transport, rather than clean energy. In order for Mexico's federal government to comply with its St. Petersburg commitments in this area, considerable investment in the transport sector and nation-wide clean and efficient energy programs are required.

Author: Zinta Zommers

Alternative and Renewable Energy: 0

In the area of alternative and renewable energy, the Mexican government has demonstrated only partial compliance. This is not to say there has been no progress. Recently, the World Bank approved two large wind and solar power initiatives in Mexico,[992] which may assist the development of the renewable energy sector and enable the newly-elected President Felipe Calderon (given his previous experience as the head of Mexico's Energy Ministry) to promote renewable energy. Pre-St. Petersburg legislation on renewable energy, however, is still under consideration. Until it has been passed, Mexico can receive only a score of 0.

Mexico holds not only large fossil fuel deposits, but also enormous potential for alternative and renewable energy generation. According to the Renewable Energy and Energy Efficiency Partnership, there are more than 60 private renewable energy projects generating

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[987] Monterrey, Mexico's metro to run on biofuel, Business News Americas, 28 June 2006. Date of Access: 27 February 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192166589&format=GNBFI&sort=RELEVANCE&startDocNo=1&resultsUrlKey=29_T1192166591&cisb=22_T1192166590&treeMax=true&treeWidth=0&csi=10903&docNo=24.

[988] Jalisco governor-elect plans to overhaul public transport, Business News Americas, 1 December 2006. Date of Access: 27 February 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192166589&format=GNBFI&sort=RELEVANCE&startDocNo=1&resultsUrlKey=29_T1192166591&cisb=22_T1192166590&treeMax=true&treeWidth=0&csi=256776&docNo=3.

[989] Aguascalientes solicits TDA study on modernizing public transport, Business News Americas, 19 July 2006. Date of Access: 27 February 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192166589&format=GNBFI&sort=RELEVANCE&startDocNo=1&resultsUrlKey=29_T1192166591&cisb=22_T1192166590&treeMax=true&treeWidth=0&csi=256776&docNo=4.

[990] Hybrids in the Third World?, Business Week Online, 31 July 2006. Date of Access: 5 February 2007. http://www.businessweek.com/autos/content/jul2006/bw20060728_570187.htm.

[991] R. Castillo, Hope for Infrastructure Development in Mexico? Logistics Today, (Cleveland), February 2007, Vol.48, Iss. 2; pg. 9. Date of Access: 27 April2007. http://proquest.umi.com.proxy.lib.umich.edu/pqdweb?did=1237265081&sid=3&Fmt=3&clientId=17822&RQT=309&VName=PQD.

[992] Mexico Active Projects, World Bank. Date of Access: 27 February 2007. http://web.worldbank.org/external/default/main?menuPK=338429&pagePK=141155&piPK=141124&theSitePK=338397.

more than 500 MW of clean energy.[993] A variety of government projects exist as well. [994] The Energy Ministry plans to build a new dam and hydroelectric plant at Parota, although the exact size and cost of the project are as yet unknown.[995] Concerns also exist about the environmental and financial sustainability of dam construction.[996] The Energy Ministry estimates that there is further potential for power generation from renewable sources: i.e. approximately 5,000 MW from wind power, 1,000 MW from biomass, and 150 MW from biogas drawn from landfills[997]. Reflecting the country's location in a tectonically active region, there are an estimated 960 MW of capacity in the geothermal sector.[998] Mexico's geothermal energy enterprises are particularly prevalent in the central volcanic belt, as well as in the states of Durango, Chihuahua, Baja California and Baja California Sur. Mexico is already the third largest worldwide producer of geothermal electricity, after the United States and the Philippines.[999] In addition, Mexico's average solar energy is estimated to produce 5 kWh/m^2 per day.[1000] Finally, two tidal areas in the Gulf of California have been examined for energy production. The potential annual energy output of one site in the Colorado estuary has been assessed as 5.4 TWh.[1001] However, to date there appears to be little progress in establishing energy production in these areas.

During 2006, federal government attention was focused on pushing forward through parliament the Renewable Energy Law, which specifies a range of transmission conditions to better capture the electricity generated from renewables. It also facilitates the connection of privately operated renewable energy sources to the national grid, and supports the development of emerging technologies based on renewable energy sources. Further, the bill proposes the implementation of a trust fund to assist research and development activities focused on those renewable energy technologies considered most promising.[1002] The Mexican Wind Energy Association spokesman, Oscar Galindo, summarized the importance of this legislation: "We have been working to remove the barriers in the growth

[993] Supporting regulations for renewable energy in Mexico, REEP. Date of Access: 27 February 2007. http://www.reeep.org/index.cfm?articleid=1366.

[994] Government efforts to develop renewable energy have been assisted by the National Renewal Energy Laboratory (NREL). The NREL has been actively working in Mexico for the last ten years to advance renewable energy and energy efficiency markets by retrofitting diesel systems with renewable energy technologies, evaluating the possibilities for large-scale wind power, and facilitating the development of energy service companies for the industrial and hotel sector. Six hybrid power systems are in operation as a result of the partnership in the Yucatan and Baja California provinces. NREL has also assisted the Ministry of Energy in implementation of the rural energy program (Environmental Applications, National Renewable Energy Laboratory. Date of Access: 8 February 2007. http://www.nrel.gov/environment/mexico.html.).

[995] Noticias Recientes, SENER. Date of Access: 23 February 2007. http://www.energia.gob.mx/wb2/SenerNva/asNotRecientes.

[996] J. DeLong, Dam Fools, Reason Online. Date of Access: 27 February 2007. http://www.reason.com/news/show/30592.html.

[997] Address by Secretary of Energy, Fernando Clariond Channels at the ceremony of the inauguration of the Colloquy the International Renewable Use of the Energy for Rural Development, A vision towards the future, 25 May 2006. Date of Access: 7 February 2007. http://www.energia.gob.mx/wb/SenerNva/Sene_energias_renovables_para_la_agricultura

[998] Address by Secretary of Energy, Fernando Clariond Channels at the ceremony of the inauguration of the Colloquy the International Renewable Use of the Energy for Rural Development, A vision towards the future, 25 May 2006. Date of Access: 7 February 2007. http://www.energia.gob.mx/wb/SenerNva/Sene_energias_renovables_para_la_agricultura.

[999] Mexico, Extract from the Survey of Energy Resources, Word Energy Council. Date of Access: 7 February 2007. http://www.worldenergy.org/wec-geis/edc/countries/Mexico.asp.

[1000] Mexico, Extract from the Survey of Energy Resources, Word Energy Council. Date of Access: 7 February 2007. http://www.worldenergy.org/wec-geis/edc/countries/Mexico.asp.

[1001] Mexico, Extract from the Survey of Energy Resources, Word Energy Council. Date of Access: 7 February 2007. http://www.worldenergy.org/wec-geis/edc/countries/Mexico.asp.

[1002] World Bank Project: Hybrid Solar Thermal Power Plant Project, Project Information Document, World Bank, (Washington, D.C.). Date of Access: 8 February 2007. http://wwwwds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000104615_20061005164413.

of wind energy. This law is very important and is the first step for Mexico to support this sector."[1003]

The Renewable Energy Law is not without its critics. While it authorizes incentives to promote the use of renewables, the law is vague and ambiguous about the type of incentives that will be used.[1004] (Such decisions will be left largely to the Ministry of Energy, SENER). Other details of the program to encourage renewables are yet to be finalized. SENER will manage a trust for grant requests (Fideicomiso para el aprovechamiento de fuentes renovables de energía), although the total size of the trust is unclear. The Lower House indicated that funding would be drawn from a number of sources, including federal appropriations, unidentified duties, contributions from state governments and municipalities, voluntary contributions by individuals and companies, contributions by international organizations, and proceeds from the sale of renewable energy certificates to individuals or entities in Mexico and abroad.[1005]

Final approval of Renewable Energy Law has been delayed, although the Lower House of Congress passed the bill in 2005. In February 2006, at the International Renewable Energy Forum in Mexico City, Mexico's Energy Minister Fernando Canales reported that a new law would soon allow renewable energy projects in Mexico to sell their power through the national transmission grid.[1006] However, the law has yet to be voted on in the Upper House. Concern has been expressed by a variety of different organizations at this delay in legislative approval. In October 2006, experts at the Border Energy Forum in Tampico noted, "Renewable energy industry growth in Mexico is still hampered by an excessive number of permits, a lack of accessible transmission lines and a lack of incentives."[1007]

A variety of other initiatives are also under development. Two major projects have already been launched with funding assistance from the World Bank. The World Bank's Board of Directors approved a US$25 million grant from the Global Environment Facility (GEF) for Mexico, in order to remove barriers to the development of renewable energy technologies and markets. The World Bank's Large-Scale Renewable Energy Development Project will assist Mexico in developing initial experience in commercially-based, grid-connected renewable energy applications. It will do so by supporting the construction of an approximately 101 MW independent power producer wind farm, designated as La Venta III, which will build on the Federal Electric Commission's 2 MW demonstration plant (La Venta I) and the 85 MW La Venta II.[1008] In October 2006, the World Bank also announced funding for a $50 million Hybrid Solar Thermal Power Plant Project: The Solar Thermal Project Agua

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[1003] Renewable Energy: Mexican senate to consider RPS bill, Greenwire, 20 October 2006. Date of Access: 6 February 2007.
http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192091623&format=GNBFI&sort=RELEVANCE&startDocNo=26&resultsUrlKey=29_T1192091625&cisb=22_T1192091624&treeMax=true&treeWidth=0&csi=8322&docNo=31.

[1004] United State: Mexico encourages renewables, Mondaq Business Briefing, 30 March 2006. Date of Access: 8 February 2007.
http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192091623&format=GNBFI&sort=RELEVANCE&startDocNo=1&resultsUrlKey=29_T1192091625&cisb=22_T1192091624&treeMax=true&treeWidth=0&csi=149522&docNo=3.

[1005] United State: Mexico encourages renewables, Mondaq Business Briefing, 30 March 2006. Date of Access: 8 February 2007.
http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1192091623&format=GNBFI&sort=RELEVANCE&startDocNo=1&resultsUrlKey=29_T1192091625&cisb=22_T1192091624&treeMax=true&treeWidth=0&csi=149522&docNo=3.

[1006] Independent power producers in Mexico are prevented by law from selling power to private companies through the national transmission network. Companies such as the state power company CFE (Federal Commission of Electricity) are currently building transmission networks to connect independent wind power producers to the national grid. However, these networks have limited operations due to existing restrictions on private investment in the sector and the CFE's own limited financial resources. Wind projects need new law to connect to grid, Newswire, Bnamericans.com, 7 February, 2007. Date of Access: 8 Feb 2007.

[1007] 2006 Annual Report, Texas General Land Office. Date of Access: 8 February 2007.
http://www.glo.state.tx.us/energy/border/forum/13/reports_presentations.html.

[1008] IEA Wind Energy Annual Report. Chapter 21 Mexico, IEA. Date of Access: 8 February 2007.
www.ieawind.org/AnnualReports_PDF/2005/15%20Mexico.indd.pdf.

Prieta II seeks to demonstrate the benefits of integrating a solar field with a large conventional thermal facility, contribute to reducing the long-term costs of the technology, and reduce global GHG emissions. The total emissions reduction over the 25-year operation of the plant is estimated at 391,270 tons of CO_2.[1009] Finally, in November 2006, the Secretary of Energy, Fernando Channels, proposed the creation of an Inter-secretarial Commission for the Renewable Energies, which would partner with universities, research institutions, and private and public sectors.[1010] As of May 2007, however there appeared to be little or no progress in its inception.

In May 2007, President Calderón proposed new strategic and political actions that will serve as the basis for the development of the national climate change program, which will form part of the national development plan scheduled to be presented this week. The strategy consists of two parts—the "green agenda" and "grey agenda"—which respectively correspond to vegetation and land use requirements, and power generation. The grey agenda calls for power generation using renewable sources and efficient energy consumption.[1011] It is too early to say if this is merely hype before the G8 Summit in Germany at the beginning of June, or a more focused and concerted attempt to finally pass the Renewable Energy Bill.

In summary, Mexico has made an effort to increase use of renewable energy. The most significant action has been aided by the World Bank. Other projects have been proposed, including legislation for green and renewable energy sources. However, significant action has been limited. The Renewable Energy Bill remains stuck in the Upper House, despite assurances by President Calderón that he is committed to green energy.[1012] Without the bill being passed, it would be hard to justify a rating of more than 0.

Author: Tim Myatt

UNFCCC and Kyoto: +1

Mexico registered a high level of compliance with its commitment to address climate change and sustainable development. The country made significant steps to introduce new or strengthen existing policies and programs in support of the shared commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and its related mechanisms.

On 2 October 2006, the Mexico GHG Program[1013] transitioned from a pilot project to a permanent program hosted and coordinated by the Secretariat of Environment and Natural Resources of Mexico (SEMARNAT) with technical support from the World Resources Institute and the World Business Council for Sustainable Development. In addition, the GHG Program is advised by a committee of experts from local NGOs (e.g. the Centre of Public Policy for Sustainable Development and the Private Sector Commission for Sustainable Development),

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[1009] World Bank Project, The Solar Thermal Project Agua Prieta II: Project Information Document, World Bank, (Washington, D.C.), 5 October 2006. Date of Access: 8 February 2007. http://web.worldbank.org/WBSITE/EXTERNAL/BANCOMUNDIAL/NEWSSPANISH/0,,contentMDK:21150308~pagePK:34370~piPK:34424~theSitePK:1074568,00.html.

[1010] SENER website: Senator proposes to create Inter-secretarial Commission of renewable sources. Date of Access 25 February 2007. http://www.energia.gob.mx/wb/SenerNva/Sene_boletin_no_048

[1011] Calderón, Climate change strategy includes renewables, Business News Americas – English, 28 May 2007. Date of Access: 29 May 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1587275049&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T1587275052&cisb=22_T1587275051&treeMax=true&treeWidth=0&csi=256776&docNo=19.

[1012] Mexican President Felipe Calderón Inaugurates Electrification Works, Office Of The President, 14 December 2006. Date of Access 24 February 2007. http://www.presidencia.gob.mx/en/search/index.php?contenido=28410&pagina=1&palabras=energy.

[1013] *Programa GEI México*, Official website of the Mexico GHG Program. Date of Access: 30 January 2007. http://www.geimexico.org/; Mexico Adopts Standards to Measure Greenhouse Gas Emissions, National Institute of Ecology, 2 March 2006. Date of Access: 2 March 2007. http://www.ine.gob.mx/dgicurg/cclimatico/ingles/toi_mex_gge.html.

local business and industry associations (e.g. the National Confederation of Industrial Chambers of Mexico), and government environmental agencies (e.g. the National Institute of Ecology and the Registry for the Emission and Transference of Pollutants).[1014] Initially launched on 25 August 2004, the GHG Pilot Program aimed at developing a two years voluntary reporting platform on greenhouse gases emissions for Mexican businesses.[1015] The GHG Program partners now organize training workshops and provide information, calculation tools, and technical assistance to participants (i.e. private- or public-sector organizations with operations in Mexico) for preparing corporate GHG inventories, identifying GHG reduction opportunities, and participating in GHG markets.[1016]

From 3-4 October 2006, Mexico hosted the second Ministerial session of the Gleneagles Dialogue on Climate Change, Clean Energy and Sustainable Development.[1017] The meeting complemented the UNFCCC discussions and focused on the challenges of tackling causes of dangerous climate change in energy production, consumption systems and development pathways, as well as on the need to promote economic growth and adapt to long term changes, particularly in developing countries.

From 6-17 November 2006 in Nairobi, Kenya, Mexico participated in the second Meeting of the Parties to Kyoto Protocol (COP/MOP 2) and twelfth session of the Conference of the Parties (COP 12). Fernando Tuleda Abad, Mexico's Head of Delegation and Under-Secretary for Planning and Environmental Policy, and Secretary José Luis Luege Tamargo, Minister of Environment and Natural Resources, presented Mexico's Third National Communication to the UNFCCC.[1018] The Communication included a *National Greenhouse Gas Inventory*[1019] indicating that Mexico's growth in GHG emissions from 1990 to 2002 was approximately 30% (in CO_2 equivalent), which represents an average annual growth of 2.2%.[1020] The document also described research and projects realized in order to mitigate and adapt to global climate change, thus attesting to Mexico's compliance with the obligation to report the steps taken to implement the UNFCCC (Articles 4.1 and 12). Mexico was the first non-Annex I country to present a Third National Communication.

During the COP/MOP 2 meeting, Mexico also presented developments made in the implementation of the Mexican Carbon Fund[1021] (FOMECAR). The Mexican Carbon Fund was created as a result of the joined efforts of the Ministry of Environment and Natural Resources of Mexico, Centro Mario Molina, and the Mexican Bank for Foreign Trade (BANCOMEXT) in order to provide Mexican companies and public entities with technical and financial support to develop Clean Development Mechanism (CDM) projects. The fund became fully operational at the end of 2006[1022] and is currently managed and run by the Mexican Bank of Foreign Trade. Since July 2006, 52 new projects were registered in Mexico

[1014] *Programa GEI México*, Official website of the Mexico GHG Program. Date of Access: 30 January 2007. http://www.geimexico.org/.
[1015] *Programa GEI México*, Official website of the Mexico GHG Program. Date of Access: 30 January 2007. http://www.geimexico.org/.
[1016] *Programa GEI México*, Official website of the Mexico GHG Program. Date of Access: 30 January 2007. http://www.geimexico.org/.
[1017] Address by Katherine Sierra, Vice President of the World Bank for Sustainable Development, (Washington, D.C). Date of Access: 2 March 2007. http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/EXTESSDNETWORK/0,,contentMDK:21125660~pagePK:64159605~piPK:64157667~theSitePK:481161,00.html.
[1018] *Tercera Comunicación Nacional*, Mexico's Third National Communication to the UNFCCC,. Date of Access: 5 April 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.
[1019] *Inventario de emisiones 1990-2002*.
[1020] Mexico's Third National Communication to the UNFCCC,. Date of Access: 27 February 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.; Necesario intensificar los esfuerzos internacionales para contrar el cambio climático (press release from SEMARNAT), 30 March 2006. Date of Access: 13 April 2007. http://www.semarnat.gob.mx/comunicacionsocial/boletindeprensa/Pages/18506.aspx.
[1021] Bancomext y el Centro Mario Molina establecen el Fondo Mexicano de Carbono (press release form Bancomext), 22 November 2006. Date of Access: 15 April 2007. http://www.bancomext.com/Bancomext/aplicaciones/boletines/documentos/53-2006a.doc.
[1022] Crean el Fondo Mexicano de Carbono, La Jornada,, 20 October 2006. Date of Access: 2 March 2007. http://www.eco2site.com/News/oct06/fondomex.asp.

under the CDM established by the Kyoto Protocol, in partnership with Switzerland, the Netherlands, the UK, Japan, and Spain.[1023]

Mexico's Interministerial Commission on Climate Change (ICCC) was established in April 2005 with the purpose of coordinating the federal government actions relating to the design and implementation of national policies for preventing and mitigating GHG emissions, adapting to the effects of climate change, and, in general, promoting the development of climate change action programs and strategies geared to the fulfillment of the commitments made by Mexico within the UNFCCC and other instruments deriving from it. In November 2006, the ICCC published *Towards a National Climate Change Strategy,*[1024] which seeks to promote a nationwide, broad, inclusive process for building social consensus in order to 1) identify GHG mitigation opportunities and conduct emissions reduction projects; 2) acknowledge the vulnerability of different sectors and launch local and national capacity-building for adaptation; and 3) submit to the consideration of the new Calderón government (which took office on 1 December 2006) the guidelines and actions proposed in the document as a platform within the framework of the National Development Plan 2006-2012, for the purpose of adopting a Special Climate Change Program.[1025]

From 7-18 May 2007, Mexico participated to the twenty-sixth sessions of the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) of the UNFCCC held in Bonn, Germany.[1026]

On 25 May 2007, Mexican President Felipe Calderón presented Mexico's *National Climate Change Strategy.*[1027] This document produced by Mexico's ICCC identifies ways of reducing GHGs and the greenhouse effect caused by transportation, industry, agriculture, and energy production.[1028]

In the light of the present analysis, Mexico's level of compliance with its commitment to address climate change and sustainable development under the UNFCCC and the Kyoto Protocol appears to be high. The Mexican government made significant steps to introduce new or strengthen existing policies and programs (e.g. GHG Program, FOMECAR, CDM projects), and produced important documents (e.g. Third National Communication to the UNFCCC, *Towards a National Climate Change Strategy* and *National Climate Change Strategy*) in support of this commitment. Moreover, by hosting second Ministerial session of the Gleneagles Dialogue on Climate Change, Clean Energy and Sustainable Development, and by actively participating to the COP/MOP 2, COP 12 and Bonn meetings, Mexico demonstrated a firm political will to engage in the international dialogue to address the issues of climate change and sustainable development. It is therefore awarded a compliance score of +1.

Author: Dominique Henri

[1023] UNFCCC official website. Date of access: 12 April 2007. http://cdm.unfccc.int/Projects/projsearch.html.

[1024] *Hacia una Estrategia Nacional de Acción Climática,* Final report of the public consultation that lead to the publication of *Towards a National Climate Change Strategy*. Date of Access: 2 February 2007. http://www.semarnat.gob.mx/spp/sppa/dgapcc/reporte.html; *Towards a National Climate Change Strategy*,. Date of Access: 15 April 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070117%20HENAC.Intro.compl.pdf and http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

[1025] *Towards a National Climate Change Strategy*. Date of Access: 29 May 2007. http://www.semarnat.gob.mx/queessemarnat/cambioclimatico/Documents/enac/sintesis/070110%20TNCCS.ExSumm_eng.pdf.

[1026] Session of the subsidiary bodies, (Bonn, Germany), 7-18 May 2007. Date of access: 29 May 2007. http://unfccc.int/meetings/sb26/3919.php.

[1027] *Hacia una Estrategia Nacional de Acción Climática,* Final report of the public consultation that lead to the publication of *Towards a National Climate Change Strategy*. Date of Access: 2 February 2007. http://www.semarnat.gob.mx/spp/sppa/dgapcc/reporte.html.

[1028] Presenta Calderón Estrategia Nacional del Cambio Climático, Notimex, 25 May 2007. Date of access: 29 May 2007. http://www.semarnat.gob.mx/Pages/inicio.aspx and http://www.jornada.unam.mx/ultimas/2007/05/25/presenta-calderon-estrategia-nacional-del-cambio-climatico.

Sustainable Use of Energy: 0

Mexico earned only partial compliance with respect to the sustainable use of energy. While the government continued to implement existing programs and introduced new initiatives to reduce the demand for energy, government-run energy sectors such as Pemex and the Federal Electric Commission (CFE) have limited the effect of such policies. Additionally, there was little new governmental action to develop more sustainable buildings and shift tax base away from polluting industries.

Mexico's National Commission of Energy Savings (CONAE) and Electrical Energy Savings Trust (FIDE) were both active in their initiatives during this compliance period. CONAE promulgated additional official national mandatory regulations for energy efficiency (NOMS) of all new products and appliances (e.g. air conditioners).[1029] The additional savings resulting from NOMS are estimated at 16,065 MW of energy over the course of the year.[60] FIDE, in conjunction with National Chamber of Electrical Manufacturers (CANAME) and the CFE, announced plans for joint operations in the participation, investigation, and spread of electricity savings within Mexico's industrial sector.[3] FIDE also reports 12,990 GW hours and 2,800 MW hours in accumulated energy savings in 2006.[4] This is attributed to a refrigerator and air conditioner substitution program allowing consumers finance credits for purchasing and using more energy efficient appliances in areas where electricity is provided by CFE,[5] replacement of nearly 20% of all incandescent lamps in residential buildings with longer lasting compact fluorescent lamps,[6] and financing industries who exchange inefficient equipment for more energy saving models.[7]

This was in addition to projects aimed at increasing the use of energy-efficient technologies and practices in government buildings and beginning in residential sectors as well.[8]

In the same vein, Semarnat expanded its pilot program, led by the North American Commission for Environmental Cooperation (CEC), to use green cleaning products in its office tower.[9] In January 2007, the ministry was expected to include green cleaning guidelines in its public tenders for cleaning services and by May, all of Semarnat's buildings were to employ green cleaning products and methods, including odourless, non-acidic chemicals that degrade quickly and using dry micro-fibre cloths over wet mops.[10] No confirmation of whether this occurred was found however given the higher cost of green cleaning products and the fact that there are no Mexican standards for cleaning products, Semarnat coordinator Saul Pereyra Garcia concedes that the program does not "have overwhelming results in the change of cleaning products."[11]

[1029] México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidas Sobre El Cambio Climático. Date of Access: 6 February 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.

[60] México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidas Sobre El Cambio Climático. Date of Access: 6 February 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.

[3] Convenio CANAME-FIDE, Permitier a Reducir de 30 a 70%, el Ahorro de Electricid ad en la Grande, Pequena, y Mediana Industria Nacional**,** 27 February 2007. Date of Access: 20 April 2007. http://www.fide.org.mx/Noticias/noticia42.html.

[4] 2006 Power Savings. Date of Access: 22 April 2007. http://www.fide.org.mx/english/06ps.html.

[5] Sustitucion de Refrigeradores y Aire Acondicionado, FIDE. Date of Access: 20 April 2007. http://www.fide.org.mx/residencial/refri.html.

[6] Residenital Lighting Program. Date of Access: 22 April 2007. http://www.fide.org.mx/english/programs2.html

[7] Comercios y Servicios, FIDE. Date of Access: 28 May 2007. http://www.fide.org.mx/Comercios_y_Servicios/comerserv.html.

[8] CFE y FIDE contribuyen con sus proyectos y programas, a la construcción de viviendas sustentables: Asociación de Empresas para el Ahorro de Energía en la Edificación, A.C., FIDE, 24 March 2007. Date of Access: 28 May 2007. http://www.fide.org.mx/Noticias/prensa/2007.html.

[9] Pilot Project Highlights Green Cleaning Products in Mexico, TRIO, Winter 2007. Date of Access: 20 April 2007. http://www.cec.org/trio/sstories/index.cfm?varlan=english&ed=21&ID=201.

[10] Pilot Project Highlights Green Cleaning Products in Mexico, TRIO, Winter 2007. Date of Access: 20 April 2007. http://www.cec.org/trio/sstories/index.cfm?varlan=english&ed=21&ID=201.

[11] Pilot Project Highlights Green Cleaning Products in Mexico, TRIO, Winter 2007. Date of Access: 20 April 2007. http://www.cec.org/trio/sstories/index.cfm?varlan=english&ed=21&ID=201.

While green cleaning products will reduce health and environmental impacts to cleaners and persons working in these buildings, Mexico is interested in thinking more broadly in terms of green development and design as building themselves contribute to a great proportion of GHG emissions.[12]

Mexico hosted and participated in a public workshop sponsored by the North American CEC in February 2007 to address the opportunities and challenges in green building across North America.[13] Mexico also participated in the *Green Building in North America: International Symposium,* again sponsored by CEC, held in Seattle, Washington over 1-2 May 2007.[14] Presenting the case for institutional approaches to foster green building in Mexico, Ramiro Barrios of the Mario Molina Center, noted that local building rules derived originally from the Federal Government's National Development Plan do not yet include concepts such as energy efficiency, water reuse, urban planning, and green building.[15] Despite the fact that most government documents within the National Development Plan or derived from it mention the need for sustainable development, none specifically address the concept of green building.[16]

This sentiment is shared by David Morillon of Autonomous National University of Mexico (UNAM), who is currently working with CEC to provide a broad-ranging report and recommendations for the Mexican government with respect to sustainable buildings: "the development of 'green building' is new and the governments have no core policy in this area."[17] As the completion of government sponsored eco-friendly construction for low-income residents comes to a close in 2007 with some 5,000 housing units, Evangelina Hirata, director of Mexico's Housing Development Commission (CONAFOVI) is hopeful that this project will provide verifiable data that "imposes the need to head towards sustainable construction"[18] and that "within a year the Mexican financial system begins to offer green mortgages"[19] to low-income residents. The eco-housing in Mexico aims to reduce electricity and water consumption but does not include solar energy or systems for treating wastewater.[20]

While no direct plans for green mortgages were listed in President Calderon's 2007 *National Climate Change Strategy* released on 25 May,[21] the document called for more efficient energy consumption,[22] including use of wind power and solar energy in homes, and increasing independent power generation and co-generation alongside the state oil and gas monopoly Pemex.[23] In addition Calderon notes that environmentally "perhaps our biggest

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[12] Uphill Effort for Eco-Friendly Housing, Inter Press Service News Agency, 3 April 2007. Date of Access: 29 May 2007. http://ipsnews.net/news.asp?idnews=37199.

[13] Green Building in North America, TRIO, Winter 2007. Date of Access: 20 April 2007. http://www.cec.org/trio/stories/index.cfm?ed=21&ID=211&varlan=english.

[14] Green Building in North America, TRIO, Winter 2007. Date of Access: 20 April 2007. http://www.cec.org/trio/stories/index.cfm?ed=21&ID=211&varlan=english.

[15] Institutional Approaches to Foster Green Building in North America: Mexican Case, Centro Mario Molina, 1 May 2007. Date of Access: 28 May 2007. http://cec.org/greenbuildings/symposium/pres/BG-Seattle-Barrios-ppt.pdf.

[16] Institutional Approaches to Foster Green Building in North America: Mexican Case, Centro Mario Molina, 1 May 2007. Date of Access: 28 May 2007. http://cec.org/greenbuildings/symposium/pres/BG-Seattle-Barrios-ppt.pdf.

[17] Uphill Effort for Eco-Friendly Housing, Inter Press Service News Agency, 3 April 2007. Date of Access: 29 May 2007. http://ipsnews.net/news.asp?idnews=37199.

[18] Uphill Effort for Eco-Friendly Housing, Inter Press Service News Agency, 3 April 2007. Date of Access: 29 May 2007. http://ipsnews.net/news.asp?idnews=37199.

[19] Uphill Effort for Eco-Friendly Housing, Inter Press Service News Agency, 3 April 2007. Date of Access: 29 May 2007. http://ipsnews.net/news.asp?idnews=37199.

[20] Uphill Effort for Eco-Friendly Housing, Inter Press Service News Agency, 3 April 2007. Date of Access: 29 May 2007. http://ipsnews.net/news.asp?idnews=37199.

[21] Comision Intersecretaraial de Cambio Climatico, 25 May 2007. Date of Access: 27 May 2007. http://www.semarnat.gob.mx/Documents/Estrat_nal_Sintesis.pdf.

[22] Calderon; Climate Change Strategy Includes Renewables, Business News Americas, 28 May 2007. Date of Access: 29 May 2007. http://www.lexisnexis.com/uk/business/results/docview/docview.do?risb=21_T1587175592&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T1587175595&cisb=22_T1587175594&treeMax=true&treeWidth=0&csi=256776&docNo=19.

[23] Mexico avoids gas emission targets in climate plan, Reuters, 26 May 2007. Date of Access: 28 May 2007. http://www.alertnet.org/thenews/newsdesk/N25205160.htm.

challenge is in our own government-owned companies"[24] and laid out plans for more efficient operations for Pemex, CFE, and Luz y Fuerza.

These proposed policies along with Calderon's reinstitution of the Puebla-Panama Plan Summit in Campeche, Mexico, to integrate Mexico and Central America in development of energy,[25] indicate that Mexico and Latin America are looking to secure energy independence and ownership of natural resources in the region. While these initiatives may promote and induce sustainable development, critics claim that in order to accomplish these goals, more resource depletion and environmental destruction will ensue.[26] Critics of Calderon's *National Climate Change Strategy* say it lacks specific targets to cut GHG emissions and "Unfortunately the plans are very ambiguous, there is no concrete methodology, no measurable goals. It is not enough," said Greenpeace spokeswoman Cecilia Navarro.[27] More detailed sustainable energy use programs are found in local municipalities; Mexico City is an active member of the C40 Large Cities Climate Change summit and is serving as one of the 16 cities involved in the Clinton Climate Initiative to create more sustainable and efficient buildings and skylines.[28]

As a Non-Annex 1 country, Mexico has neither specified nor bound itself to a target for the energy intensity of development. It also appears not to have altered the taxation of pollution.

The sustainable use of energy will remain an enormous challenge for Mexico as it develops over the coming years. Mexico's Third National Report to the UNFCCC indicates that the amount of energy required to produce each unit of GDP in Mexico is increasing—and is projected to continue to rise.[29] In particular, the difficult issue of the fiscal treatment of energy consumption will need to be addressed. While Mexico has made some progress in decreasing energy demand and proposing energy reforms, these reforms may act to expand further fossil fuel usage in the region. Thus Mexico is granted a 0 in its sustainable energy use commitment.

Author: Nadia Siddiqui

Innovative Energy Technologies in Hydrocarbon Production and Use: 0

During the compliance period, the Mexican government has repeatedly acknowledged the importance of efficiency in hydrocarbon production and use[1030] and continued to implement existing programs to improve efficiency in the industry.[1031] However, few new, concrete measures were introduced to help realize this objective. As a result, Mexico has attained only partial compliance with this commitment.

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[24] Mexico avoids gas emission targets in climate plan, Reuters, 26 May 2007. Date of Access: 28 May 2007. http://www.alertnet.org/thenews/newsdesk/N25205160.htm.

[25] Central America-Mexico: Leaders Revive Development Plan, Global Information Network, 11 April 2007. Date of Access: 21 April 2007. http://proquest.umi.com.proxy.lib.umich.edu/pqdweb?index=0&did=1252997501&SrchMode=1&sid=10&Fmt=3&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1177710709&clientId=17822.

[26] Program in the Americas: Plan Puebla Panama (PPP), Global Exchange. Date of Access: 20 April 2007. http://www.globalexchange.org/countries/americas/mexico/ppp/ppp.html.

[27] Mexico avoids gas emission targets in climate plan, Reuters, 26 May 2007. Date of Access: 28 May 2007. http://www.alertnet.org/thenews/newsdesk/N25205160.htm.

[28] 16 Cities to Get Financing to 'Go Green', Wired News and AP News, 16 May 2007. Date of Access: 28 May 2007. http://news.wired.com/dynamic/stories/C/CLIMATE_SUMMIT?SITE=WIRE&SECTION=HOME&TEMPLATE=DEFAULT.

[29] México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidas Sobre El Cambio Climático. Date of Access: 6 February 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.

[1030] See, for example, at 121, México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidos Sobre El Cambió Climático. Date of Access: 6 February 2007 http://unfccc.int/resource/docs/natc/mexnc3.pdf.

[1031] Including the 2005 revised NOM which mandates that hydrocarbons be produced to a higher quality, thereby resulting in lower emission combustion at the moment of final consumption. México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidos Sobre El Cambió Climático. Date of Access: 6 February 2007. http://unfccc.int/resource/docs/natc/mexnc3.pdf.

Mexico has a large domestic oil industry that is run entirely by the state-owned Petróleos Mexicanos (PEMEX, Mexican Petroleum) and its subsidiaries. The daily output of the sector is roughly 3.3 million barrels.[1032] Because of the large volume of production, efficiency in the production of hydrocarbons is a critical environmental issue in Mexico. As the industry is state-owned, efficiency savings can be attributed to government action either when they are the result of external government regulation of PEMEX or when they are achieved through independent action by PEMEX itself in line with stated government-wide policy objectives.

SENER is the government ministry charged with regulating the extraction and refining of hydrocarbons by PEMEX. On April 20, SENER concluded its public consultation process in the development of the Energy Sector Program, which will form part of the 2007-12 National Development Plan.[1033] Energy efficiency across the entire sector is one of the objectives of that Program, but it is too early for any of the specific policy objectives of the Plan to be available.[1034] The measures, if any, in the new National Development Plan to improve efficiency in hydrocarbon production and use are unlikely to become clear until the middle of 2007.[1035] As such, SENER has not yet succeeded in translating this commitment into operation.

The CONAE 2006 annual accounts are slightly more specific in that they list a program for improving energy efficiency government-owned companies (empresas paraestatales), including PEMEX. The details of this program are not specified, nor do the accounts indicate that any concrete measures were taken during the review period, or that any are scheduled for the future. Furthermore, it is the only energy efficiency program listed in the CONAE annual account that does not attempt to quantify the expected energy savings.[1036]

PEMEX itself reports annually on its carbon emissions in its comprehensive annual reports on sustainable development. The 2005 Annual Report indicated that 6 million tons of CO_2 in annual efficiency savings were planned for 2006.[1037] The specific projects by which these savings were to be achieved were not detailed. At the time of writing, PEMEX had not yet released its annual report on sustainable development for 2006, which will quantify any changes in efficiency in hydrocarbon production.[1038]

Looking to the future, President Calderon's draft energy plan for 2007 specifically focuses on reform and opening up PEMEX to private investment and operation while maintaining state ownership of the energy companies.[16] More private involvement would increase strategic alliances between government-run energy companies for the purposes of exploration and research. In terms of sustainable energy use, the draft policy aims to reduce industrial accidents, upgrade the pipeline network to reduce the risk of oil and fuel spills, reduce natural gas flaring (at present, oil rigs burn off natural gas rather than process it[17]) and

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[1032] Producción Nacional de Petróleo Crudo. Date of Access: 21 April 2007 http://www.sener.gob.mx/work/sites/SenerNva/resources/LocalContent/5510/1/prodnalpetcru.xls

[1033] Boletín 10. 2007 SENER Sala de Prensa. Date of Access 24 April 2007 http://www.sener.gob.mx/webSener/portal/index.jsp?id=190

[1034] Plan Nacional de Desarrollo y Programa Sectorial de Energía 2007 – 2012. Date of Access: 24 April 2007 http://www.sener.gob.mx/webSener/portal/index.jsp?id=57

[1035] Que es el Plan Nacional de Desarrollo? Date of Access: 22 April 2007. http://www.consultaciudadana.gob.mx/quees.php.

[1036] Programas y Resultados Obtenidos en la Gestión del 01 Enero al 30 Noviembre de 2006. Date of Access: 5 February 2007. http://www.conae.gob.mx/work/sites/CONAE/resources/LocalContent/4248/2/3etapaIRC2000-2006.pdf.

[1037] PEMEX 2006 Annual Report: Environmental Performance. Date of Access: 7 February 2007 http://www.pemex.com/files/content/environmental_performance.pdf.

[1038] PEMEX Informes Anuales. Date of Access: 29 May 2007. http://www.pemex.com/index.cfm?action=content&sectionID=2&catID=2624&subcatID=2626

[16] Felipe Calderon's Energy Policy Draft 6. Date of Access: 20 April 2007. http://www.washingtonpost.com/wpsrv/world/documents/Calderon_energy_policy_v6.pdf.

[17] Output Falling in Oil-Rich Mexico, and Politics Gets the Blame, New York Times, 9 March 2007. Date of Access: 21 April 2007. http://www.nytimes.com/2007/03/09/business/worldbusiness/09pemex.html?ex=1331096400&en=cf6df1aa7e9756d5&ei=5088&partner=rssnyt&emc=rss

promote biofuels and renewable fuel additives.[18] None of these policies have yet been formalized or implemented.

Mexico is a member of the international Carbon Sequestration Leadership Forum[1039] but is not currently pursuing any projects to implement carbon sequestration.

Overall the lack of information on the effectiveness of Mexico's measures taken during the compliance period makes it difficult to evaluate its efforts to achieve efficiency in hydrocarbon use and production. It is relevant to note that from 2001 to 2005 PEMEX recorded an annual *reduction* in emissions that averaged 7%.[1040] This represents a remarkable improvement in efficiency, given that production was more or less stable over the period[1041] and demonstrates that PEMEX has a history of realizing the emissions savings purported to flow its efficiency projects. It is important to recognize that, although the Mexican government has been scored 0 for failing to take steps to achieve full efficiency in hydrocarbon production and use, Mexico may nevertheless have achieved meaningful efficiency gains during the compliance period.

Author: Jonathan Bonnitcha

[18] Felipe Calderon's Energy Policy Draft 6. Date of Access: 20 April 2007. http://www.washingtonpost.com/wpsrv/world/documents/Calderon_energy_policy_v6.pdf

[1039] México Tercera Comunicación Nacional Ante La Convención Marco De Las Naciones Unidos Sobre El Cambió Climático. Date of Access: 6 February 2007 http://unfccc.int/resource/docs/natc/mexnc3.pdf

[1040] PEMEX 2006 Annual Report: Environmental Performance. Date of Access: 5 March 2007. http://www.pemex.com/files/content/environmental_performance.pdf.

[1041] Petróleos México: Summary of Operating Statistics. Date of Access: 5 March 2007. http://www.pemex.gob.mx/files/content/Yearbook_06_Pemex.pdf.

11. Russia

Background:

Russia's compliance with climate change and sustainable energy commitments made at the St. Petersburg G8 Summit can be summarized as partial and incomplete. Although Russia has taken several steps to implement some of its commitments as compared to the situation described in the interim report (alternative and renewable energy, UNFCCC/Kyoto, and sustainable use of energy), for which it was awarded a score of 0, it has taken almost no measures to fulfil some of the other commitments (innovative energy technologies in hydrocarbon production and use and clean and efficient energy in the transport sector), for which it has been awarded a score of -1.

The following needs to be kept in mind when evaluating Russia's compliance with the commitments it undertook at the G8 Summit in St Petersburg.

First, Russia's economy is highly energy intensive; according to Russian government officials, the energy intensity level of the Russian economy is twice as high (adjusted for purchasing power parity) as that of the United States, 2.3 times higher than the world average, and three times higher than in Western Europe and Japan.[1042] This is in part explained by the cold climate, but also by the large share of energy-consuming industries in the Russian economy, as well as by the obsoleteness and inefficiency of the technologies used. According to government estimates, there is a potential for improving energy efficiency by 60% by 2020.[1043]

Secondly, Russia has the world's largest gas reserves, the second largest coal reserves, and the eighth largest oil reserves,[1044] which reduces the incentives for Russia to embrace alternative sources of energy.

It should also be noted that the Russian domestic energy sector is dominated by a small number of state-owned energy firms. In particular, the natural gas sector is predominantly concentrated in the hands of the state-controlled gas company Gazprom, and the electric energy sector is monopolized by the state-controlled Russian Joint-Stock Company United Energy Systems – Russia ("RJSC UES – Russia"), which controls all of the country's electric energy facilities, except for nuclear energy. Therefore, for the purposes of the present report, the measures undertaken by state-controlled energy monopolists can be, to a certain extent, considered as counting towards compliance with Russia's G8 commitments.

Despite its wealth in carbon-based sources of energy and independence from energy imports, Russian officials have expressed a political commitment to the development of alternative and renewable energy resources; notably, President Putin has publicly acknowledged the importance of diversifying Russia's energy mix.[1045] Russia's commitment to the development of renewable energy was reiterated by Russian officials at a number of international meetings.

However, the actual steps taken by the Russian government often fell short of the political declarations.

Russia has partially complied with its alternative and renewable energy obligations. In particular, Russia has prioritized the development of its hydro-energy industry in policy

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[1042] Andrey G.REUS, Deputy Minister of Industry and Energy of the Russian Federation, at EU/G8 Energy Efficiency Conference (German G8 Presidency), (Berlin), 20-21 April 2007,. Date of Access: 26 April 2007. http://www.minprom.gov.ru/eng/appearance/43.

[1043] Andrey G.REUS, Deputy Minister of Industry and Energy of the Russian Federation, at EU/G8 Energy Efficiency Conference (German G8 Presidency), (Berlin), 20-21 April 2007. Date of Access: 26 April 2007. http://www.minprom.gov.ru/eng/appearance/43.

[1044] Russia: Background., Energy Information Administration: Official Energy Statistics from the US Government. Date of Access: 24 April 2007. http://www.eia.doe.gov/emeu/cabs/Russia/Background.html.

[1045] Statement by Vladimir Putin at a Meeting of the G8 Energy Ministers. Official Website of the G8 Presidency of the Russian Federation, 2006. 16 March 2006. Date of Access: 28 December 2006. http://en.g8russia.ru/news/20060316/1145793-print.html.

documents concerning the long-term development of its electric energy industry, as well as unveiled several new major projects for the construction of hydroelectric power stations which involve state financing. However, apart from a state-supported project for the production of motor biofuel, no new measures have been taken for the development of other alternative sources of energy, and the announced hydro-energy projects have raised some concern within civil society due to possible environmental implications.

Russia has also partially complied with its commitments under UNFCCC/Kyoto. It has submitted the Fourth National Communication Report as well as the Common Reporting Format of the GHG Inventory for 2007, but is still behind in publishing the National Inventory Report for 2007. It has prepared a draft of government regulations enabling carbon credits trading which was not yet put in force at the time of writing. Most importantly, Russia has been unable to curb the recent trend in growth of its GHG emissions.

Russia's compliance with its commitments on the sustainable use of energy has likewise been partial. Several draft laws promoting energy efficiency on the demand side have been prepared by the government, but not yet submitted to parliament. Some steps aiming to reduce energy consumption have been taken as part of the housing reform. Russia has also participated in several international initiatives on energy efficiency. Yet there is no evidence that Russia is implementing a consistent policy aimed at the reduction of energy consumption on the demand side.

Russia's compliance with its obligations regarding innovative energy technologies in hydrocarbon production and use is unsatisfactory. Apart from a projected dismantling of outdated equipment on coal and gas power stations by 2020, no other measures were announced or taken towards the fulfilment of this commitment.

Russia has likewise failed to comply with its commitments with respect to the promotion of clean and efficient energy in the transport service. The only concrete measures taken were the introduction of new environmentally-friendly standards in the Russian car industry, as well a ban on the import of vehicles not meeting modern energy efficiency standards. Russia has made no changes to the public transportation system to further energy efficiency.

Overall, although there have been certain improvements with respect to the fulfilment of some of Russia's G8 climate change commitments, notably alternative and renewable energy and UNFCCC/Kyoto, Russia is by no means a leader with respect to climate change policies.

Authors: Evgeniya Rubinina and Alexander Volsky

Clean and Efficient Energy in the Transport Sector: -1

In order to meet full compliance in its commitment to clean and efficient energy in the transport sector, Russia must meet the two criteria set out in the commitment: a) it must implement consumer incentive programs for the adoption of efficient vehicles must be, and b) it must introduce large-scale public transportation systems on hybrid and/or clean diesel technologies. During the compliance period, however, Russia took only minimal action to implement programs aimed at making vehicles more clean and efficient and took no actions at all to improve the public transit systems, and thus a score of -1 is awarded.

Russian policy changes in the realm of vehicle efficiency were limited to the following major initiatives: first, the Deputy Minister of Economic Development and Trade announced that the government would support the introduction of new environmentally-friendly engines for Russia's automotive industry, which would be compliant with European environmental standards. More specifically, Russia would implement the EU's Euro III standard in the year

2008 and Euro IV in the year 2010.[1046] Second, in October 2006 the government announced a ban on the import of used vehicles which do not meet the Euro II emission standards.[1047] Third, a draft law *On the Use of Alternative Types of Motor Fuel*, providing for state support of owners of vehicles using alternative types of motor fuel, has been prepared and submitted to Parliament.[1048] However, the government has not sought to introduce any consumer incentives to encourage fuel efficiency.

With regards to changes in the public transport system, Russia has made no progress during the compliance period.

Therefore, because the government has taken only minimal action in the area of fuel efficiency and no action in terms of public transportation, it is awarded a score of -1.

Author: Polina Shaganenko

Alternative and Renewable Energy: 0

The Russian government has registered partial compliance with its alterative and renewable energy commitments made at the St. Petersburg Summit. During the Summit, President Putin repeatedly proclaimed his intention to diversify Russia's energy mix, with particular reference to hydroelectric energy.[1049] This commitment has been followed up with a significant expansion in hydroelectricity. However, given the questionable environmental impact of hydro power plants as well as the failure to take action in other possible areas, Russia is awarded a compliance score of 0.

Government ministers have repeatedly reaffirmed Russia's commitment to renewable energy during the compliance period. In September 2006, at a meeting with foreign journalists and academics, Putin explained that the Russian Academy of Sciences and private enterprises, in cooperation with the Russian Government, were working on renewable energy sources and hydroelectric energy.[1050] Putin noted that the potential of solar energy is low in Russia given its northern location, but added that its hydro-energy potential is the second highest in the world, after China.[1051]

Moreover, at a European Conference in Helsinki in November 2006, Putin reiterated his "willingness to enhance cooperation in the fields of energy efficiency and renewable energy."[1052] This general commitment was echoed by presidential aide Igor Shuvalov in December, who explained that Russia would develop all sectors of its energy industry, specifically hydroelectric power, while "gas will be used in power generation only where

[1046] Russian Government Will Help to Develop Ecologically Clean Vehicles, 12 September 2006. Informational Agency Lenta.ru. Date of Access: 12 January 2007. http://auto.lenta.ru/news/2006/09/12/rusengine/.
[1047] Order of the Minsitry of Internal Affairs N 659, Industry and Energy Ministry N 192, Federal Customs Service N 804, 24 August 2006, Rossiskaya Gazeta N 233, 18 October 2006, entered into force on 29 October 2006. See "A ban on the import of foreign cars that do not comply with Euro-2 has entered into forc"e [Вступил в силу запрет на ввоз иномарок, не соответствующих "Евро-2"], RIA Novosti, 31 October 2006. Date of Access: 24 March 2007. http://rian.ru/society/expert/20061031/55263939.html.
[1048] Draft Law N 130858-4 "On the Use of Alternative Types of Motor Fuel". Date of Access: 14 May 2007. http://base.consultant.ru/cons/cgi/online.cgi?req=doc;base=PRJ;n=49761;fld=134;dst=4294967295;div=LAW.
[1049] Joint Statement by Prime Minister of Canada Stephen Harper and President of the Russian Federation Vladimir Putin on Canada-Russia Energy Cooperation, President of Russia Official Web Portal, (St. Petersburg), 15 July 2006. Date of Access: 26 April 2007. http://www.kremlin.ru/eng/text/docs/2006/07/108761.shtml.
[1050] Transcript of Meeting with Participants in the Third Meeting of the Valdai Discussion Group, (Novo-Ogaryovo), President of Russia Official Web Portal, 9 September 2006. Date of Access: 26 April 2007. http://www.kremlin.ru/eng/text/speeches/2006/09/09/1209_type84779_111165.shtml.
[1051] Transcript of Meeting with Participants in the Third Meeting of the Valdai Discussion Group, (Novo-Ogaryovo), President of Russia Official Web Portal, 9 September 2006. Date of Access: 26 April 2007. http://www.kremlin.ru/eng/text/speeches/2006/09/09/1209_type84779_111165.shtml.
[1052] Political Declaration on the Northern Dimension Policy , (Helsinki), 24 November 2006. Date of Access: 26 April 2007. http://ec.europa.eu/comm/external_relations/north_dim/doc/pol_dec_1106.pdf.

there are clear-cut reasons to do so and no other fuels are available."[1053] He did not elaborate further what steps would be taken to move away from gas-generated electricity.

Among the most significant steps taken by Russia in furthering the implementation of its commitments regarding alternative and renewable energy were measures for the development of hydro-energy, most notably the construction of several hydroelectric power stations. For instance, the government announced in July 2007 the launch of a project for the construction of three hydroelectric power stations with a joint capacity of 710 MW on the Amur River in Russia's Far East.[1054] The project was conceived in 1982, but was resuscitated only in 2006.[1055] The cost of the project is estimated at US$1.2 billion.[1056] One component of the project will be financed from state funds, but most of the financing is expected to come from private investors.[1057] Another major project, unveiled in October 2006, involves the construction of a hydroelectric power station on the Angara River in Central Siberia with a capacity of 660 MW.[1058] In addition to these projects for the construction of high-capacity power stations on lowland rivers, in December 2006, RJSC UES – Russia, the state-controlled energy monopoly company, announced plans for the construction of seven low-capacity hydroelectric power stations (6-25 MW each) on the mountain rivers in Northern Caucasus.

According to a report by the Industry and Energy Ministry, the overall production of electricity in hydroelectric power plants between January and March 2007 has increased by 20.8%.[1059] The share of electric energy produced on hydroelectric power stations in January-March 2007 amounted to 16.5%, as compared to 13.4% in January-March 2006.[1060]

In April 2007, the Industry and Energy Ministry unveiled the Draft General Scheme of Construction of Electric Energy Facilities until 2020. The Draft Scheme, which is subject to Cabinet approval, prioritizes the development of hydro and nuclear energy-generating facilities. While it is envisaged that a number of obsolete coal and gas power stations will be shut down rather than renovated, all existing hydroelectric power stations will be preserved; it is hoped that the construction of all hydroelectric stations commenced in Soviet times be completed, and that a number of new hydroelectric stations be constructed in Siberia and the Far East of Russia.[1061] However, the development of other sustainable sources of energy does not feature prominently in the Draft Scheme. The rationale for prioritizing the development of hydroelectric energy appears to be primarily the relatively

[1053] Russia to Focus on Hydropower and Nuclear Power Generation – Presidential Aide, 24 December 2006. Date of Access: 26 April 2007. http://en.g8russia.ru/news/20061224/1272982.html.
[1054] Construction of three new hydro electric power stations has begun in the Amur Region [V Amurskoy oblasti nachaty raboty po stroitelstvu trekh novykh GES], Amurenergo energy company website.19 July 2006. http://www.amurenergo.ru/?d=19&m=7&y=2006&p=&exc=&news=1148.
[1055] The Amur Region to gain three new hydro electric power stations [Priamurie prirastet tremia GES] Pavel Koshelenko, Kommersant – Khabarovsk, 20 July 2006 http://www.kommersant.ru/region/khabarovsk/page.htm?year=2006&issue=131&id=171035&rubric=1200.
[1056] The Amur Region to gain three new hydro electric power stations [Priamurie prirastet tremia GES] Pavel Koshelenko, Kommersant – Khabarovsk, 20 July 2006 http://www.kommersant.ru/region/khabarovsk/page.htm?year=2006&issue=131&id=171035&rubric=1200..
[1057] The Amur Region to gain three new hydro electric power stations [Priamurie prirastet tremia GES] Pavel Koshelenko, Kommersant – Khabarovsk, 20 July 2006 http://www.kommersant.ru/region/khabarovsk/page.htm?year=2006&issue=131&id=171035&rubric=1200..
[1058] Novoboguchansk hydro electric power station to be constructed in the Krasnoyarsk region [V Krasnoyarskom krae poyavitsya Novoboguchanskaya GES] Kommersant – Krasnoyarsk, 3 October 2006. http://www.kommersant.ru/region/krasnoyarsk/page.htm?year=2006&issue=184&id=180659&rubric=2430.
[1059] News report by the Russian Industry and Energy Ministry, 26 April 2007. Date of Access: 1 June 2007. http://www.minprom.gov.ru/activity/energy/news/307.
[1060] News report by the Russian Industry and Energy Ministry, 26 April 2007. Date of Access: 1 June 2007. http://www.minprom.gov.ru/activity/energy/news/307.
[1061] Report by Victor Khristenko, Industry and Energy Minister, at Cabinet session of 19 April 2007, on the Draft General Scheme of Construction of Electric Energy Facilities until 2020. Date of Access: 13 May 2007. http://www.minprom.gov.ru/activity/electro/appearance/13/.

low level of expenses associated with the development of existing facilities as compared to power stations on fossil fuels rather than environmental considerations *per se*.[1062]

In March 2007, Russian Minister of Agriculture Alexei Gordeyev announced the inauguration of Russia's production of an environmentally friendly motor biofuel. Gordeyev stated that a plant to produce bio-ethanol from grain is being built in the Siberian city of Omsk, and that another rapeseed bio-diesel refinery is expected to be constructed in western Russia in the near future.[1063]

However, although hydroelectric power plants do constitute a type of alternative energy resource, large capacity hydroelectric power plants involving the construction of dams on lowland rivers are still problematic from the environmental standpoint[1064] and have caused concern in civil society and NGOs.[1065] It appears that the recent surge in development of hydroelectric sources of energy is motivated by concerns other than environmental: most of the projects were conceived in Soviet times, but had not been implemented due to lack of funding; the main purpose of the project on the Amur is to produce electric energy for export to China,[1066] whereas the aim of the project on the Angara is produce energy for a new aluminium plant.[1067]

Apart from the planned investments in several hydroelectric power plants, where budgetary and resources allocations were made, as well as the announcement of a general strategy for prioritizing the development of hydro-energy, and the Minister of Agriculture's commitment to expand biofuel, most of the compliance Russia has registered since the St. Petersburg Summit is yet to be implemented. Although Russia employs geothermal energy for heating and electricity production in Northern Caucasus and the Russian Far East,[1068] its use has not been expanded during the compliance period.

In sum, Russia has registered partial compliance with its G8 commitments on alternative and renewable energy. Its commitment to the expansion of hydro power is in contrast with its lack of action in other areas and questionable commitment to environmentalism.

Authors: Evgeniya Rubinina and Alexander Volsky

UNFCCC/Kyoto: 0

[1062] See Report by Victor Khristenko, Industry and Energy Minister, at Cabinet session of 19 April 2007, on the Draft General Scheme of Construction of Electric Energy Facilities until 2020. Date of Access: 13 May 2007. htpp://www. Mingrom.gov.ru/activity/electro/appearance/13/.

[1063] Russia Set to Produce Motor Bio-Fuel. Russian News and Information Agency: Novosti. 15 March 2007. Date of Access: 26 April 2007. http://en.rian.ru/russia/20070315/62056597.html.

[1064] For example, the dams required to produce hydroelectric power are often criticised for damaging ecosystems, as the temperature, content, and oxygen levels of water are altered and wildlife is decimated by dam turbines. For a summary of this debate, see 'Hydro' Hindered by Environmentalist Dam, Philip Crawford, International Herald Tribune, 6 December 1993. Date of Access: 26 April 2007. http://www.iht.com/articles/1993/12/06/hydropow.php.

[1065] Nineteen Russian NGOs have expressed concern regarding, i.a., the construction of new high-capacity hydroelectric power plants. See NGO joint statement dated 28 February 2007 on Greenpeace Russia's website. Date of Access: 12 May 2007. http://www.greenpeace.org/raw/content/russia/ru/press/reports/919376.doc. Local residents have held protests against the construction of one of the hydroelectric power plants on the Angara river, fearing that if the dam is constructed at the level planned, this would cause the flooding of several local villages. Angara region residents demand that the Boguchansk hydroelectric power station be moved [Zhiteli Priangaria trebuyut podvinut Boguchanskuyu GES]. Kommersant – Khabarovsk, 3 November 2006. http://www.kommersant.ru/region/khabarovsk/page.htm?year=2006&issue=207&id=185620&rubric=1596.

[1066] The Amur Region to gain three new hydro electric power stations [Priamurie prirastet tremia GES] Pavel Koshelenko, Kommersant – Khabarovsk, 20 July 2006 http://www.kommersant.ru/region/khabarovsk/page.htm?year=2006&issue=131&id=171035&rubric=1200.

[1067] Novoboguchansk hydro electric power station to be constructed in the Krasnoyarsk region [V Krasnoyarskom krae poyavitsya Novoboguchanskaya GES] Kommersant – Krasnoyarsk, 3 October 2006. http://www.kommersant.ru/region/krasnoyarsk/page.htm?year=2006&issue=184&id=180659&rubric=2430.

[1068] Russia: Energy Overview, BBC News, (London), 13 February 2006. Date of Access: 26 April 2007. http://news.bbc.co.uk/2/hi/europe/4699942.stm.

The Russian Federation has not fully complied with its commitments to combat climate change. As a signatory of both the UNFCCC and the Kyoto Protocol, Russia is responsible for the implementation of a number of specific measures to combat climate change going above and beyond emissions reduction in line with the Protocol. Despite these obligations, Russia has made little progress in any of these areas during the compliance period.

During the second half of the assessment period, Russia sped up its fulfillment of reporting obligations under UNFCCC/Kyoto by submitting the Fourth National Communication Report as well as Common Reporting Format of the GHG inventory for 1990-2004.[1069] However, it has failed to publish the National Inventory Report for 2007; instead, in January 2007, it submitted the report overdue since April 2006.

More importantly, Russia has not shown significant national action in curbing GHG emissions growth as a result of its economic development. Russia claims that it will not exceed its Kyoto-prescribed levels of GHG emissions.[1070] While Russia's structural economic reform resulted in a decrease of GHG emission levels in the 1990-1999 period, in 2004 GHG emissions grew by 7.2% relative to 1999.[1071] This is despite a decrease in the average energy-output ratio of 5% per year in the period from 1998 to 2005.[1072] Overall, Russia favours *voluntary* targets, technology transfers, and financial initiatives for the post-2012 period instead of penalties, even though it is not at all clear how that approach will ensure compliance.[1073]

The Joint Implementation Mechanism (JI) of the Kyoto Protocol would open up the GHG reduction potential of Russia's industry by giving enterprises an economic incentive to invest or attract investments for implementation of projects leading to GHG emission reductions. As an Annex-1 (developed) country, Russia is under an obligation to introduce the JI approval system, calculate its Assigned Amount Units (AAUs), and set-up a National Registry to allow trade in carbon credits. These regulations have not yet been adopted, but work is said to be in progress. The Russian government has reportedly been working on drafts of regulations necessary to implement a carbon credits trading scheme. Notably, on 13 April 2007, Victor Khristenko, Minister for Industry and Energy, stated at the Russia-Germany Energy Forum that a draft of the regulations was prepared, had been accepted by the relevant ministries, and was undergoing final approval; Khristenko expected it to be signed and put in force "in the near future."[1074]

Pending the entry into force of the regulations on the trade in carbon credits, state-controlled Russian energy firms have been signing memorandums of understanding with foreign counterparts providing for the realization of JI projects as soon as the necessary regulations are put in force. For example, in November 2006 the Russian electric energy monopoly RJSC UES – Russia signed a memorandum of understanding to that effect with the Finnish energy company Fortum;[1075] in April 2007, a similar agreement was concluded by RJSC UES – Russia with the German energy company RWE.[1076] The government-

[1069] National Inventory Submissions 2007. Date of Access: 26 April 2007. http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3929.php.
[1070] Doklad ob ochevidnom progresse v vipolnenii obiazatel'stv Rossiiskoi Federacii po Kiotskomy Protocoly. p.13. Date of Access: 20 April 2007. L http://www.meteorf.ru/pub/get-file.aspx?OT=Document&PN=DocFile&ID=ee486b20-1f29-4268-9ced-71a9dad344f2&FN=progres_report_RF_07.pdf&CT=application/pdf.
[1071] Initial National Report Moscow, 2007, p.8.
[1072] See ft. 1069.
[1073] Workshop Report: Russian Voluntary Targets Proposal by Anna Korpoo. Climate Strategies. Date of Access: 18 May 2007. http://www.climate-strategies.org/uploads/Voluntary_targets_workshop_report.pdf.
[1074] Khristenko expects the signing of Government Regulations regulating the implementation of the Kyoto Protocol in the Russian territory in the near future (Khristenko ozhidaet podpisanie postanovleniya pravitelstva, regulirueschego ispolnenie Kiotskogo Protocola na territorii RF, v blizhayshee vremia_. 13 April 2007. Date of Access: 11 May 2007. http://www.prime-tass.ru/news/show.asp?id=678236&ct=news.
[1075] Statement on RJSC UES – Russia website. 23 November 2003. Date of access: 12 May 2007. http://www.rao-ees.ru/ru/news/news/pr_archiv/pr_2006/show.cgi?pr231106rao.htm
[1076] Energy efficiency outide the law [Energoeffectivnost vne zakona]. Andrey Uspensky, RBC-Daily. 26 April 2007. Date of Access: 12 May 2007. .http://www.rbcdaily.ru/2007/04/26/tek/273790

appointed management of RJSC UES – Russia has stated that it eagerly anticipates the implementation of the regulations necessary to bring JI projects to life; it has already planned more than 40 JI projects with a potential for reducing CO_2 emissions by more than 35 million tons.[1077]

Despite the lack of legislative action, Russia appears to agree with the international community on the importance of energy security, the minimization of environmental effects, and the importance of promoting cleaner energy, more efficient technologies, and biofuels. This opinion is revealed by the Russian decision to sign the Hanoi Declaration during the Fourteenth APEC Economic Leaders Meeting.[1078] However, as the Declaration does not bind Russia to any specific actions or commitments in this area, it cannot be counted toward compliance with this commitment.

Thus, because of Russia's progress on reporting to the UNFCCC and Kyoto Protocol but failure to comply with other major aspects of its UNFCCC/Kyoto obligations, it is awarded a score of 0 for the entire compliance period.

Authors: Tatiana Faizoullina and Evgeniya Rubinina

Sustainable use of energy: 0

One of the St. Petersburg Summit commitments included the obligation to promote the sustainable use of energy, a goal that encompasses the promotion of environmentally sound policies and strategies on energy savings and energy efficiency, specifically on the demand-side. Although Russia has made significant progress during the compliance period toward improving energy efficiency at federal as well as regional and local levels and took the first steps toward developing demand-side measures in the household sector, it has not made significant changes in developing new strategies and policies which could create incentives for industries and households to use energy in a more sustainable manner and decrease the overall energy consumption. Thus it receives a score of 0.

There have been five significant areas in which the Russian government has taken action to promote sustainable energy use: First, a number of draft laws to amend the existing legislation have been prepared. The most important among them is an amendment to the law *On Energy Saving* which requires that an energy efficiency standard be introduced in the economic activities of companies as well as economic incentives for efficient energy use by consumers. This would be defined as an economically viable level of energy resources use, given current equipment and technology development levels. While energy efficiency investments would be getting federal support in various forms, violating these standards would result in a charge. There is also an amendment to the law *On Supporting Renewable Energy Use*, which aims to facilitate federal regulation and to promote the use of renewable energies, as well as the delimitation of responsibilities between federal and regional authorities.[1079] However, it is important to note that these proposal are currently only in the draft stage, having been prepared by the executive but not yet submitted to Parliament.

Second, the new draft of Federal Target Program *Improving Energy Efficiency in the Russian Federation* until 2015 was issued with the aim of decreasing specific energy intensity of the GDP by 2015 to 62.5% of the 2006 level as well as a 60% increase in energy efficiency projected by the year 2020 as compared to the 2000 level.[1080] In addition, the Russian

[1077] Russia to start work on JI Kyoto projects – Ministry.RIA Moskovskye Novosti, 3 April 2006. Date of Access: 29 December 2006 http://www.en.rian.ru/business/20060403/45120670.html.
[1078] Ha Noi Declaration. Date of Access: 23 December 2006 http://www.moga.go.jp/policy/economy/apec/2006/declaration.pdf.
[1079] Andrey G.REUS, Deputy Minister of Industry and Energy of the Russian Federation, at EU/G8 Energy Efficiency Conference, 20-21 April 2007, Berlin. Date of Access: 26 April 2007. http://www.minprom.gov.ru/eng/appearance/43.
[1080] Andrey G.REUS, Deputy Minister of Industry and Energy of the Russian Federation, at EU/G8 Energy Efficiency Conference (German G8 Presidency), 20-21 April 2007, Berlin. Date of Access: 26. April 2007. http://www.minprom.gov.ru/eng/appearance/43.

government announced that one of its main priorities relating to the energy sector is to develop a new energy market – a "market of energy savings." To this end, the government is trying to (a) develop norms on energy efficiency and consumption; (b) standardize energy efficiency at the national and local levels; and, (c) establish a system of energy consumption controls to ensure a rational and effective use of energy, foster the practice of voluntary certification, as well as revise rules and standards in the building construction sector.[1081]

Third, Russia has signed several bilateral and multilateral agreements on energy efficiency and future cooperation, including the "Memorandum of Cooperation in Energy Efficiency" with the Netherlands, the Hanoi Declaration,[1082] the Political Declaration on "Northern Dimension,"[1083] and the Declaration on Energy Cooperation.[1084] These declarations require joint efforts by the signatories in the development of new and renewable energy sources and technologies and improved energy efficiency and conservation.

The fourth step is the cooperation between Russia and the EU on joint energy efficiency initiatives in the context of the Energy Dialogue which opened in 2006. Since the Dialogue began, two meetings have been held in Moscow and Kazan to discuss specific measures to be taken. One of the key programs in this framework is the new project "Enhancing Energy Efficiency at the Regional Level in the Kaliningrad, Archangelsk and Astrakhan Oblasts," which implies consistent economic regional growth, not only through fossil fuel extraction but also through energy supply saving. The most significant result of this project will be the development of a plan on energy efficiency enhancement activities for the period 2007-2011.[1085] Even though sub-federal initiatives do not constitute compliance for the purposes of this report, it is encouraging that more than 600 energy efficiency programs are being implemented at the regional level and that 24 energy saving funds are being set up in 47 districts.[1086]

Finally, the Russian government took steps regarding demand-side energy reductions, such as housing installation of hot and cold water meters (as part of the larger housing reform), which has already resulted in a 10-15% reduction of energy consumption in the affected buildings.[1087]

While these are positive signs that the Russian government is increasingly turning its attention to energy conservation, there is also some concern that it has not provided sufficient means, penalties, and/or incentives to achieve that goal. As one example, David Halcyon, a board member of the OAO RAO Unified Energy Systems (UES) – the state monopoly in the electricity supply sector which has formally listed energy efficiency as its priority – says that the government has offered no real economic incentive for the company to pursue energy efficiency and decrease its energy demand.[1088]

[1081] Anatoly Yanovsky, the Director of the Fuel and Energy Complex in the Minister of Industry and Energy, Russian-German Forum on Energy Efficiency, 13 April 2007. Date of Access: 22. May 2007. http://www.minprom.gov.ru/appearance/showAppearanceIssue?url=activity/energy/appearance/29.

[1082] 14th APEC Economic Leaders' Meeting Ha Noi Declaration, 19 November 2006. Date of Access: 26 April 2007. http://www.apec2006.vn/uploads/doc/1163921984_46.pdf.

[1083] Political Declaration on Northern Dimension Policy, President of Russia Official Web Portal, (Helsinki), 24 November 2006. Date of Access: 26 April 2007. http://www.kremlin.ru/text/docs/2006/11/114466.shtml.

[1084] Declaration on Energy Cooperation signed by the President of Russian Federation, the President of Bulgaria, and the Prime-Minister, President of Russia Official Web Portal, (Athens), 4 September 2006. Date of Access: 26 April 2007. http://www.kremlin.ru/text/docs/2006/09/110664.shtml.

[1085] Energy Efficiency Incubators, Department of the Fuel and Energy Complex Official Web Portal, 17 November, 2006. Date of Access: 26 April 2007. http://www.minprom.gov.ru/eng/press/news/166.

[1086] Anatoly Yanovsky, the Director of the Fuel and Energy Complex in the Minister of Industry and Energy, Russian-German Forum on Energy Efficiency, 13 April 2007. Date of Access: 22. May 2007. http://www.minprom.gov.ru/appearance/showAppearanceIssue?url=activity/energy/appearance/29.

[1087] Andrey G.REUS, Deputy Minister of Industry and Energy of the Russian Federation, at EU/G8 Energy Efficiency Conference (German G8 Presidency), 20-21 April 2007, Berlin. Date of Access: 26 April 2007. http://www.minprom.gov.ru/eng/appearance/43.

[1088] Simon Shuster, UES Banking on Wasteful Homes, The Moscow Times, 20 April 2007. Date of Access: 1 June 2007. http://www.themoscowtimes.com/stories/2007/04/20/011.html.

In conclusion, the major actions taken by Russian government in the area of energy use and energy intensity are related mainly to increasing energy efficiency on the *supply-side* and reducing the industry's consumption. There is evidence of only one step taken toward developing demand-side measures, and no evidence at all of a more fundamental change in the Russian approach towards its strategy of energy development. In the light of this, Russia is awarded a score of 0 in this area.

Author: Polina Shaganenko

Innovative Energy Technologies in Hydrocarbon Production and Use: -1

The St. Petersburg Summit commitment on innovative energy technologies in hydrocarbon production and use requires the G8 countries to improve both the efficiency and environmental sustainability of oil, gas, and coal extraction, production, and use, for instance, by securing energy supplies and environmental protection (including through liaising with the private sector to meet these ends). Russia has taken almost no action in this area, warranting a compliance score of -1.

Under Russia's long-term energy strategy (laid out in 2003 and in place until 2020), the use of such technologies is not given primacy; while the adverse ecological impact of hydrocarbon extraction is broadly acknowledged, the government has taken no concrete measures to address this issue.[1089] Russia has also not taken any measures to signal to the private sector that such innovations are necessary in order to reduce the negative environmental impact associated with the production and use of fossil fuels.

However, there is evidence that this attitude may be changing. Innovative energy technologies in hydrocarbon productions featured prominently on the agenda of the "Russia Oil, Gas, and Energy Forum" in St. Petersburg on 10-12 April 2007,[1090] which involved representatives from government, business, and academia. Second, opening the session of the Presidential Council on Science, Technology and Education, President Putin stated, "We are implementing programs designed to reequip companies with technological resources. And these programs are, first and foremost, in electrical energy, the oil and gas sector, in transport, and in the military industrial complex."[1091] But Putin did not elaborate on what new technologies he had in mind, or how sustainable and clean these might be.

Furthermore, the *Draft General Scheme of Construction of Electric Energy Facilities until 2020*, presented by the Industry and Energy Ministry in April 2007, provides for the gradual dismantlement of obsolete and inefficient equipment on coal and gas electric power stations and for its replacement by modern efficient equipment.[1092] Despite the potential to make Russia's oil and gas industry more sustainable, there is no evidence yet that this plan has been implemented.

Overall, however, Russia has failed to take action to fulfill this commitment, thus earning a score of -1.

Author: Tatiana Faizoullina

[1089] Summary of the Energy Strategy of Russia for the Period up to 2020, The Ministry of Energy of the Russian Federation, (Moscow), 2003. Date of Access: 24 March 2007. http://ec.europa.eu/energy/russia/events/doc/2003_strategy_2020_en.pdf.
[1090] Investments and Innovations in Russian Fuel and Energy Industry, (St. Petersburg). Date of Access: 24 March 2007. http://www.forumtek.ru/conferences.en.html.
[1091] Opening Address at the Session of the Presidential Council on Science, Technology and Education, (Zelenograd), 17 October 2006. Date of Access: 27 December 2006 http://www.kremlin.ru/eng/speeches/2006/10/17/2310_type82913_112622.shtml.
[1092] Report by Victor Khristenko, Industry and Energy Minister, at Cabinet session of 19 April 2007, on the Draft General Scheme of Construction of Electric Energy Facilities until 2020. Date of Access: 13 May 2007. http://www.minprom.gov.ru/activity/electro/appearance/13/.

12. South Africa

Background

South Africa's response to the St. Petersburg energy and climate change commitments has been mixed. Some of the country's policy responses have been relatively progressive, and it has played a key role in international climate diplomacy, as well as signed several agreements on climate and energy with foreign governments. However, the extent to which domestic policies have been implemented is varied, and there are some cases where government actions have contradicted its stated intentions. In particular, in situations of domestic economic difficulties, the South African government has tended to fall back on traditional modes of energy production and use. The measures that the government has implemented have, with a few exceptions, also tended to be small-scale, such as localized CDM projects, small wind farms, and low-cost demand-side interventions. This is at odds with its fairly environmentally-conscious demand-side policies aimed at altering consumer behaviour, the level of awareness apparent in the statements of government ministers, and several alternative energy initiatives, including a large biofuels project aimed at the transport sector. There is thus a noticeable lack of consistency in government actions, which suggests that climate and clean energy considerations are to some extent secondary to other development priorities.[1093]

The South African energy market is dominated by coal, which supplies 77% of the country's primary energy requirements.[1094] The country is a net energy exporter with production moderately exceeding consumption.[1095] South Africa is the continent's primary energy consumer, and it currently also ranks second (behind Algeria) as its top producer.[1096] Moreover, energy parastatal Eskom is responsible for supplying two thirds of Africa's electricity.[1097] South Africa enjoys among the cheapest electricity supply in the world—again, owing to its abundant coal reserves.[1098] (This in contrast to the relatively high costs associated with renewable energy sources such as solar and wind power.) This already explicable preference for cheap (i.e. fossil fuel) power is intensified by its status as a developing nation.

Grid power aside, South Africa's relative energy independence is also demonstrated by its leading position in the synthetic fuels industry (mainly through proprietary Fischer-Tropsch technology).[1099] A legacy of the apartheid years, during which massive government subsidies were invested as means of protecting the country against fuel embargoes, South Africa has developed internationally-renowned capabilities in the Coal-to-Liquid (CTL) and Gas-to-Liquid (GTL) fields.[1100] The local synthetic fuels industry currently accounts for 36% of South Africa's total liquid fuel requirements.[1101]

[1093] For instance, the government has a mandate – under the Accelerated and Shared Growth Initiative for South Africa (AsgiSA) – to halve poverty and unemployment by 2014. The solution to this redistributive challenge is primarily seen as a function of economic growth (with 6% year on year growth seen as the magic benchmark). See: Accelerated and Shared Growth Initiative for South Africa (AsgiSA), South African Government Information Website, 19 February 2007. Date of Access: 15 March 2007. http://www.info.gov.za/asgisa/asgisa.htm.

[1094] Department of Minerals and Energy. Date of Access: 15 March 2007. http://www.dme.gov.za/energy/coal.stm.

[1095] Carbon Sequestration Leadership Forum Date of Access: 16 March 2007. http://www.cslforum.org/safrica.

[1096] Carbon Sequestration Leadership Forum Date of Access: 16 March 2007.http://www.cslforum.org/safrica.

[1097] Department of Minerals and Energy. Date of Access: 15 March 2007. http://www.dme.gov.za/energy/electricity.stm.

[1098] Department of Minerals and Energy. Date of Access: 15 March 2007. http://www.dme.gov.za/energy/electricity.stm.

[1099] Department of Minerals and Energy. Date of Access: 15 March 2007. http://www.dme.gov.za/energy/liquid.stm.

[1100] For instance, see 'Sasol Limited', Funding Universe Website. Date of Access: 15 March 200. http://www.fundinguniverse.com/company-histories/Sasol-Limited-Company-History.html; or Search for New Oil Sources Leads to Processed Coal, Matthew L. Wald, New York Times, 5 July 2006. Date of Access: 15 March 2007. http://www.nytimes.com/2006/07/05/business/05coalfuel.html?ei=5090&en=212ba22ab2b1f382&ex=1309752000&partner=rssuserland&emc=rss&pagewanted=all.

[1101] Department of Minerals and Energy. Date of Access: 15 March 2007.

South Africa's heavy reliance on coal, while impeding the mitigation of climate change, has also forced a significant response the area of hydrocarbons. South Africa is home to one of the worlds most advanced underground coal gasification projects and is also a member of the Carbon Sequestration Leadership Forum.

Unfortunately, the heavy reliance on coal for all its energy production has resulted in South Africa producing excessive per capita greenhouse gas (GHG) emissions – even by the standards of other middle-income developing countries.[1102] There is hope that developments in the field of clean coal production (e.g. carbon sequestration) could substantially improve the country's environmental record.

The major barrier to South Africa's meeting the St. Petersburg climate and energy commitments appears to be institutional inertia within the country. South Africa has taken many positive steps towards meeting the St. Petersburg goals such as establishing international cooperation, investing in research, policy development, and infrastructure, and introducing new legislation. However, most of these initiatives have yet to yield tangible results. In order to make alternative and sustainable technologies commercially viable, it is reportedly imperative that South Africa open up the electricity market, beyond Eskom, through a more competitive pricing structure. In terms of encouraging sustainable energy, the government appears to have limited its approach too narrowly to the public sector and has failed to generate sufficient incentives in the private sector. South Africa's public transport sector is set to be formalized (so that it is no longer reliant on the poorly regulated mini-bus taxi industry for mass transit) in time for the 2010 Soccer World Cup it will host; as part of making this sector greener and more sustainable, the government has also envisaged a crucial role for biofuels.

South Africa has generally incomplete compliance with its St. Petersburg commitments. This is primarily due to the fact that South Africa's historical and geographic isolation, as well as the contemporary developmental social contract between the state and its citizens, has locked South Africa into carbon intensive means of production. This has resulted in much of South Africa's action on climate change being limited to creating institutions which seek to 'unlock' it from such carbon intensive processes. Illustrative of this is the manner in which South Africa has largely failed to address issues of renewable and alternative energy, while the country's immersion in coal fired power has made it a current world leader in carbon sequestration.

Authors: Grant McDermott and James Morrissey

Clean and Efficient Energy in the Transport Sector: 0

South Africa has been unable to achieve full compliance with its St. Petersburg surface transportation commitments. The government is employing biofuels (and to a lesser extent non-motorized transport options) as a means of improving the sustainability and environmental impact of South Africa's surface transportation. The country has advanced a number of initiatives to this end, but most have yet to be properly operationalized, thus precluding the possibility of a full compliance score. It should be noted that several key policy documents and proposals were pending final examination and could well be passed into legislation within or near the required timeframe. As such, a score of 0 represents the country's progress in meeting its surface transportation commitments.

First, in terms of providing incentives for the adoption of cleaner fuels, the recommendations made by a special task team regarding possible reforms to South Africa's liquid fuel sector are encouraging. Originally commissioned by Finance Minister Trevor Manuel in May 2006, the task team submitted its report to the Treasury on 9 February

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http://www.dme.gov.za/energy/liquid.stm.

[1102] South Africa Year Book 2006/2007, Chapter 16: Minerals, energy and geology. Date of Access: 15 March 2006. http://www.gcis.gov.za/docs/publications/yearbook/chapter16.pdf.

2007.[1103] Significantly, biofuels were seen as providing potentially greater benefits to South Africa than synthetically derived fuels, and it was thus recommended that they be given precedence in the government's supply-side interventions. The task team's proposals included lowering fuel levies on both biodiesel and bioethanol (relative to other liquid fuels).[1104] At the time of writing, Minister Manuel was considering comments from various stakeholders before delivering his final decision, which will likely be announced by 31 July 2007. The proposals are expected to take effect from 1 January 2008.[1105]

In July 2006, the Department of Transport issued the *National Land Transport Strategic Framework* (NLTSF), providing an overarching strategy for all transport issues in South Africa over the next five years until 2011. The NLTSF identifies the development of an environmentally sustainable transport system as one its top priorities, but does not specify how this is to be achieved. With regards to consumer incentive programs, the document is also vague, although it does assert that "Government will promote the use of more efficient vehicle technologies and fuels."[1106]

As host of the 2010 FIFA World Cup, South Africa has an incentive to improve its public transportation system in anticipation of a massive tourist influx. On 14 December 2006, Environmental Affairs and Tourism Minister Marthinus van Schalkwyk announced that South Africa would look to follow the successful 2006 'Green Goal' initiative undertaken by previous hosts Germany.[1107] Minister Van Schalkwyk declared that the development of an efficient and environmentally-friendly public transport system was one of the central pillars aimed at ensuring South Africa achieved its goal of "greening the 2010 World Cup."[1108]

The planned transport overhaul, ahead of the 2010 event was bolstered by the Global Environment Facility's (GEF) announcement of an environmental co-initiative with the South African Government on 28 August 2006. This will be undertaken as an extension of the government's 'Public Transport Infrastructure Fund' scheme which finances the upgrading of all bus and rail services and is specifically aimed at greening the country's public transport system in the build-up to 2010. In terms of this partnership, projects are to be developed in all nine host cities that provide mass transit alternatives to car commuting and deliver greenhouse gas reductions "above and beyond those currently planned." [1109] Special focus is to be given to a particular project demonstrating the benefits of alternative fuels and technologies such as biodiesel, bioethanol, and fuel cells.

Following the GEF announcement, the Deputy Director-General for integrated planning and inter-sphere coordination in the Department of Transport, Mathabatha Mokonyama, noted on 30 August 2006 that all public transport projects for 2010 would tie in with the government's (R885 million) taxi recapitalization program, which is directed at regulating, modernizing, and improving the safety standards of South Africa's taxi industry. Mr.

[1103] Report by Task Team to investigate the fiscal regime applicable to windfall profits in the liquid fuels sector, with particular reference to synthetic fuels, National Treasury, (Pretoria), 23 February 2007. Date of Access: 24 April 2007. http://www.info.gov.za/speeches/2007/07022612151002.htm.
[1104] Possible reforms to the fiscal regime applicable to windfall profits in South Africa's liquid fuel energy sector, with particular reference to the synthetic fuels industry, National Treasury, (Pretoria), 9 February 2007. Date of Access: 24 April 2007. http://www.treasury.gov.za/.
[1105] Report by Task Team to investigate the fiscal regime applicable to windfall profits in the liquid fuels sector, with particular reference to synthetic fuels, National Treasury, (Pretoria), 23 February 2007. Date of Access: 24 April 2007. http://www.info.gov.za/speeches/2007/07022612151002.htm.
[1106] National Land Transport Strategic Framework (2006 – 2011), Department of Transport, (Pretoria), July 2006. Date of Access: 26 December 2006. http://www.transport.gov.za/library/docs/strategy/Final%20NLTSF.pdf
[1107] See http://fifaworldcup.yahoo.com/06/en/030331/4/az.html.
[1108] South Africa (SA) committed to a green 2010 World Cup, Ministry of Environmental Affairs and Tourism, (Pretoria), 14 December 2006. Date of Access: 24 December 2006. http://www.info.gov.za/speeches/2006/06121411151001.htm.
[1109] Green Team Climbs Aboard South Africa's World Cup Transport Plan, Global Environment Facility, (Cape Town), 28 August 2006. Date of Access: 26 December 2006. http://www.gefweb.org/WorldCupSustainableTransport.html.

Mokonyama added that government was now also considering the possibility of fuelling recapitalized taxis and buses with 'greener' fuels such as bioethanol.[1110]

The South African biofuels industry has become an area of increased focus and scrutiny for the country's government. The Accelerated and Shared Growth Initiative for South Africa (AsgiSA) is now obliged to provide special support to the local biofuels industry and develop it as one of three priority sectors in the country.[1111] It is also noteworthy that President Thabo Mbeki has championed the case of biofuels publicly and – in his State of the Nation address on 9 February 2007 – identified biofuels as a key growth sector for the South African economy.[1112] Furthermore, President Mbeki has also engaged in various dialogues with other international leaders on the subject. One such instance was the first summit meeting of the India-Brazil-South Africa Dialogue Forum (IBSA) on 13 September 2006, where it was agreed to "enhance and promote the use of (bio-) ethanol as a vehicular fuel" in each of these respective countries.[1113]

The 'Draft Biofuels Industry Strategy,' released by the Department of Minerals and Energy on 14 December 2006, represents possibly the most significant stride made by South Africa toward formally operationalizing its St Petersburg surface transportation commitments.[1114] Informed by a detailed feasibility study, the document proposes a strategy regarding the development of a biofuels industry in South Africa, in addition to outlining the Government's "support and approach to developing policy, regulations and incentives for biofuels."[1115] Among other points, the Draft Strategy proposes (mandatory) national blending specifications of 10% ethanol (E10) and 2% biodiesel (B2) for use in petroleum-based fuels. Another notable recommendation is that the government should subsidize a national bus services program, which would use biofuels as a chief fuel source. The Draft Strategy has been circulated among various stakeholder groups, with the cabinet-appointed Biofuels Task Team holding consultations with industry representatives throughout the country during February and March 2007.[1116] A final copy will be brought before parliament in June 2007, and it is expected that the finalized Biofuels Industry Strategy document will be passed into legislature in July 2007.[1117]

South Africa's tertiary and research institutions have played a key role in driving developments in the area of surface transportation. This has mostly been achieved with the help of government funding for grants and research chair positions. For instance, in 2007 the Department of Science and Technology appointed three Competence Centres to develop hydrogen technology in South Africa (awarded to the University of Cape Town, Council for Scientific and Industrial Research and the University of the Western Cape).[1118] The Catalysis Competence Centre established at the University of Cape Town, for example, will receive

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[1110] 'Greening' the 2010 World Cup, Shaun Benton, Official South Africa Information Website, 30 August 2006. Date of Access: 24 December 2006. http://www.southafrica.info/ess_info/sa_glance/sustainable/update/green_transport290806.htm.

[1111] Accelerated and Shared Growth Initiative for South Africa (AsgiSA), South African Government Information Website, 19 February 2007. Date of Access: 24 April 2007. http://www.info.gov.za/asgisa/asgisa.htm.

[1112] State of the Nation Address of the President of South Africa, Thabo Mbeki, The Presidency, (Pretoria), 9 February 2007. Date of Access: 24 April 2007. http://www.info.gov.za/speeches/2007/07020911001001.htm

[1113] Joint declaration on the first IBSA (India-Brazil-South Africa Dialogue Forum) Summit, Department of Foreign Affairs, (Brasilia), 13 September 2006. Date of Access: 22 December 2006. http://www.info.gov.za/speeches/2006/06092212151001.htm.

[1114] Media Release: Draft Biofuels Industry Strategy, Communications Chief Directorate, Department of Minerals and Energy, (Pretoria), 14 December 2006. Date of Access: 24 December 2006. http://www.dme.gov.za/pdfs/media_release/Media_release_biofuels.pdf.

[1115] Draft Biofuels Industry Strategy of the Republic of South Africa, Department of Minerals and Energy, (Pretoria), November 2006. Date of Access: 24 December 2006. http://www.dme.gov.za/pdfs/energy/renewable/Biofuels_Strategy_SA.pdf.

[1116] Govt begins consultation on biofuels strategy, Mariaan Olivier, Engineering News, 12 February 2007. Date of Access: 23 April 2007. http://www.engineeringnews.co.za/article.php?a_id=101684.

[1117] Government's Programme Of Action – 2007, South African Government Information Website, 10 May 2007. Date of Access: 24 May 2007. http://www.info.gov.za/aboutgovt/poa/report/economic.htm.

[1118] Fuel for the future, Monday Paper, University of Cape Town, (Cape Town), 23 April 2007. Date of Access: 26 April 2007. http://www.news.uct.ac.za/mondaypaper/?id=6278.

R30 million over five years and is foreseen as "a virtual hub that will develop advanced hydrogen and fuel-cell technologies in South Africa."[1119]

On 17 April 2007, the South African National Energy Research Institute (SANERI), a subsidiary of the Central Energy Fund (CEF),[1120] awarded a Chair for research into Biofuels (and other renewable energy sources) to a team based at Stellenbosch University.[1121] Specifically, the initiative includes the Biofuels Research Program (BRP), which will drive postgraduate training and research in biofuels and clean alternative fuels. The long-term aim of the project is to develop leading biofuel technologies and a skills base, as well as adapt existing technologies for South African conditions.

Finally, South Africa hosted the International Non-Motorised (INM) and Intermediate Means of Transport (IMT) Conference and Exhibition on 22 February 2007 in Johannesburg. In his opening address, Minister of Transport Jeff Radebe committed himself to integrating non-motorized forms of transport such as cycling into the broader transport network. He further emphasized the virtuous impact of such activities (e.g. by helping create sustainable transport solutions, especially in poorer communities and congested cities), as well their desirable affects on health and the environment.[1122]

To conclude, South Africa has given significant policy attention to its transport sector. It appears that biofuels are set to play an increasingly important role in the South African economy, with strong political support for developing the industry. The country's public transport system is also set to be reformulated due to the 2010 FIFA World Cup. However, most of the related policy developments have not yet been fully operationalized. As important, there is no evidence that the government has taken steps to meet the second sub-component of this commitment relating to vehicles for personal use through incentives, rebates, or emissions standards. As such, a score of 0 is a fitting representation of South Africa's compliance with its St. Petersburg Surface Transportation commitments.

Author: Grant McDermott

Alternative and Renewable Energy: 0

South Africa has demonstrated partial progress in its commitment to Renewable and Alternative Energy in the period since the 2006 St. Petersburg Summit. The government has been vocal about its intent to foster a renewable and alternative energy sector. Yet, in practice, its dedication has been less convincing. Progress in this sphere has been hampered by: 1) the nature of South Africa's response to power outages; 2) its stance regarding the optimum composition of its long-term energy mix; and 3) obstacles to private investment in renewable and alternative energy generation.

In the State of the Nation Address on 9 February 2007, South African President Thabo Mbeki declared the government's intention to "expedite our work to ensure greater reliance on nuclear power generation, natural gas, and the various forms of renewable sources of energy."[1123] That government has prioritized the development of the renewable and alternative energy sector is attested by a number of positive measures taken in 2006. In August, the South African National Energy Research Institute (Saneri), a sub-division of the

[1119] Fuel for the future, Monday Paper, University of Cape Town, (Cape Town), 23 April 2007. Date of Access: 26 April 2007. http://www.news.uct.ac.za/mondaypaper/?id=6278.
[1120] The Central Energy Fund is a private company, wholly owned by the State and controlled by the Minister of Minerals and Energy (who appoints the board of directors). See: http://www.cef.org.za/content/view/3/10/.
[1121] New research chair in biofuels research, Faculty of Science, Stellenbosch University, (Stellenbosch), 17 April 2007. Date of Access: 23 April 2007. http://www.sun.ac.za/News/NewsItem_Eng.asp?Lang=2&ItemID=11978.
[1122] Keynote address by the Minister of Transport, Mr Jeff Radebe, MP, at the official opening of the International Non-Motorised (INM) and Intermediate Means of Transport (IMT) Conference and Exhibition, Department of Transport, (Midrand), 22 February 2007. Date of Access: 23 April 2007. http://www.info.gov.za/speeches/2007/07022309451001.htm.
[1123] President Thabo Mbeki, State of the Nation. Date of Access: 21 April 2007. http://www.info.gov.za/speeches/2007/07020911001001.htm.

Central Energy Fund (CEF), designated Stellenbosch University as the principal institution for post-graduate research in renewable and alternative energy.[1124] The goal of this initiative is to explore methods of enhancing the country's capacity in these fields.[1125] In October, South Africa entered a joint communiqué with Germany, agreeing to exchange expertise and collaborate on policy conditions favourable to the development of renewable energy applications.[1126] Finally, in November, the CEF announced plans to invest over R30 billion in new energy projects over the next 4 years.[1127] Part of this funding would be administered by the Energy Development Corporation (ECD), which invests specifically in renewable and alternative fuels. However, the government did not disclose which portion of the funding had been earmarked for renewable and alternative energy. As noted in the UNFCCC/Kyoto section, there has also been official interest in developing wave power in South Africa in the future.

In contrast, the government's response to the significant power outages throughout the country in 2006 drastically counteracted these positive steps. South Africa relies on coal-fired power stations for 87% of its power, and the country's vast coal reserves have allowed Eskom, the state power utility, to run the economy on some of the cheapest electricity in the world.[1128] The government now plans to build an additional 15 coal-fired power stations in order for Eskom to address this capacity shortfall.[1129] This expansion contravenes the government's previous environmental agreements and "breaches…an undertaking by Eskom chairperson, Valli Moosa, at a National Conference on Climate Change last October to reduce South Africa's reliance on coal-fired power by 10% by 2012."[1130]

In addition to the planned expansion of Eskom's coal-powered generation capacity, which will form part of a five-year rolling plan which is now underway, Eskom has indicated that it is channelling significant funds toward clean energy production and renewable generation capacity.[1131] Addressing science graduates at the University of Witwatersrand recently, Eskom's Dr. Steven Lennon has indicated that R150 billion, five-year rolling plan will encompass a broad portfolio of technology projects, including, "underground coal gasification (Eskom producing their first gas in January this year) large-scale solar power, carbon capture and storage, advanced nuclear, biomass, ocean-current energy, high voltage, direct current, or HVDC, transmission, and advanced energy efficient technologies."[1132]

The country's electricity capacity shortfall similarly illuminates the government's preoccupation with nuclear energy, as evidenced by the President's 2007 State of the Nation Address. In his speech on 2 October 2006, Alex Erwin, Minister of Public Enterprises, explained the government's opinion that, in relation to other renewable energy sources, nuclear power is the "only green solution" to South Africa's growing energy demands.[1133]

[1124] Hub awarded to SU for Renewable Sustainable Energy, Stellenbosch University, School of Public Management and Planning, (Stellenbosch), 16 August 2006. Date of Access: 30 January 2007. http://www.sopmp.sun.ac.za/news/main/view_article.asp?news_id=33.

[1125] Saneri launches energy hub at Stellenbosch, Central Energy Fund, (Stellenbosch), 30 November 2006. Date of Access: 30 January 2007.

[1126] Joint Communique on the fifth session of the German – South Africa Binational Commission, Department of Foreign Affairs, (Berlin), 24 October 2006. Date of Access: 29 January 2007. http://www.dfa.gov.za/docs/2006/germ1024.htm.

[1127] CEF to invest R30bn in new projects, Central Energy Fund, 30 November 2006. Date of Access: 30 January 2007. http://www.cef.org.za/content/blogcategory/0/11/.

[1128] SA must start to kick its coal habit' Crispain Olver, Business Day, 23 February 2007. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A393898.

[1129] .Power Plan For A Dark Age, Fiona Macleod, Mail & Guardian, 25 August 2006. Date of Access: 29 January 2007. http://www.mg.co.za/articlePage.aspx?articleid=281966&area=/insight/insight__national/.

[1130] Power Plan For A Dark Age, Fiona Macleod, Mail & Guardian, 25 August 2006. Date of Access: 29 January 2007. http://www.mg.co.za/articlePage.aspx?articleid=281966&area=/insight/insight__national/.

[1131] SA aims to save 3000 MW over six years through R10 billion energy-efficiency drive, Terence Creamer, Polity, 11 April 2007. Date of Access: 21 April 2007. http://www.polity.org.za/print_version.php?a_id=107123.

[1132] SA aims to save 3000 MW over six years through R10 billion energy-efficiency drive, Terence Creamer, Polity, 11 April 2007. Date of Access: 21 April 2007. http://www.polity.org.za/print_version.php?a_id=107123.

[1133] Address to the High Temperature Reactor Conference, Department of Public Enterprises, (Pretoria), 2 October 2006. Date of Access: 29 January 2007. http://www.dpe.gov.za/home.asp/home.asp?id=539.

Therefore, investment in nuclear energy as the government's preferred 'alternative' fuel has led to relative underinvestment in other renewables, and places a constraint on South Africa's ability to diversify its energy supply mix.

This lack of diversification is further compounded by Eskom's monopolization of the electricity market, which bars open access to private power producers, including those that generate power from renewable and alternative fuels. Heavy government subsidies allow Eskom to sell electricity below competitive prices, thereby crowding out any potential independent renewable or alternative energy operations. This has undermined South Africa's commitment to diversify its energy mix and develop a portfolio of low-carbon energy sources, even though a number of renewable generation technologies are currently technically feasible for the country.[1134] These include, for example: co-generation projects with pulp and paper, or sugar; the refurbishment of large hydro schemes that have fallen into disrepair; and wind technologies,[1135] all of which will only become commercially viable if the electricity market is opened up to the independent power producers in South Africa through a more competitive pricing structure. Until the price of power is freed from the limitations of the power purchase agreements dictated by Eskom, South Africa will not undergo the necessary diversification of the energy sector in order to meet its 2013 targets.

However, South Africa has had some success in collaborating with the international community in the development of its nascent biofuels industry.[1136] On 4 February 2007, Riaan Aucamp, spokesman for Environmental Affairs and Tourism Minister, Marthinus van Schalkwyk, announced that Ministerial talks were taking place between representatives from South Africa and the European Union.[1137] He stated that cooperation could result in "access to the EU's fund to help promote renewable energy projects and energy efficiency, support for SA's biofuel strategy, and research and co-operation on energy and climate change."[1138]

On 20 February 2007, Minister Sonjica also announced the finalization of the Biofuels Industrial Draft Strategy (released for broader stakeholder consultation in December 2006).[1139] The strategy has been established to fulfil the 2003 White Paper on Renewable Energy target of 10,000 GWh by 2013, with biofuels contributing up to 75% of renewable energy needs and 4.5% of motor-vehicle fuel.[1140] This will require private investment of R6 billion which the government will seek to obtain through a variety of incentives, such as Fuel Levy exemption mechanisms, an Equalization Fund set up by the Central Energy Fund (CEF) to mitigate against oil price fluctuations, and the elimination of imported feedstock tariffs.[1141] (For further discussion of the biofuels and renewables in South Africa, see the transport section).

Operations in the private sector attest to investor confidence as a result of the government's biofuels draft strategy. For example, Tongaat-Hulett, a major sugar consortium, has expressed a longer-term goal in the production of ethanol from sugar and biodiesel from

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[1134] SA must start to kick its coal habit, Crispian Olver, Business Day, 23 February 2007. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A393898.
[1135] SA must start to kick its coal habit, Crispian Olver, Business Day, 23 February 2007. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A393898.
[1136] While biofuels are largely given over to discussion in the Surface Transportation section of this report, a brief discussion of this energy source follows, with particular reference to its contribution to South Africa's overall renewable energy mix.
[1137] SA taps EU funds to manage climate, Benjamin, C., Business Day, 5 Febraury 2007. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/article.aspx?ID=BD4A376038.
[1138] SA taps EU funds to manage climate, Benjamin, C., Business Day, 5 Febraury 2007. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/article.aspx?ID=BD4A376038.
[1139] Opening address at the French-South African Energy Conference, (Cape Town), 20 February. Date of Access: 21 April 2007. http://www.dme.gov.za/ministry/media.stm.
[1140] Media release of the Draft Biofuels Industry Strategy, the Department of Minerals and Energy, 14 December 2006. Date of Access: 21 April 2007. http://www.dme.gov.za/ministry/media.stm.
[1141] Draft Biofuels Industrial Strategy of the Republic of South Africa, Department of Minerals and Energy, November 2006. Date of Access: 21 April 2007.
http://www.dme.gov-za.

maize.[1142] Tongaat-Hulett CEO Peter Straud stated, "Renewable energy will remain with us, whatever the oil price, because governments have renewable-energy targets that they have to meet."[1143] This indicates that private corporations both acknowledge the government's objectives and perceive the biofuels industry to be viable.

On the other hand, plans by Sasol and the CEF to build a biofuels plant in SA have hit a major obstacle, with the estimated cost of establishing the plant far exceeding expectations.[1144] The enormous operating cost involved indicates that government will need to introduce greater subsidies if it is to incentivize the private sector to invest R6 billion in the industry. However, the government has not indicated in the biofuels draft paper that a fund will be established to assist private investors with the operating costs of new renewable energy generation projects. With only modest government support, private investors will not be able to make a significant contribution to the 2013 target.

Despite government measures to harness collaboration with the international community and to fund research in new and innovative technologies, significant obstacles remain to the development of an economy-wide renewable and alternative energy industry. Nuclear energy has attracted a disproportionate amount of government investment and attention, to the detriment of other alternative fuels. A closed electricity market makes it financially implausible for independent power producers to focus on renewable and alternative energies. Finally, the government's plan to increase coal-intensive energy production indicates that the government is still not taking its responsibility seriously enough. Given these factors, South Africa's efforts have been awarded a score of 0.

Author: Davina Mendelsohn

UNFCCC/Kyoto: 0

South Africa has taken only limited measures to address its UNFCCC and Kyoto obligations in the intervening period since the St. Petersburg Summit. Much of the work that has occurred on climate change in the last twelve months has centred on creating the necessary institutions required for the smooth and effective implementation of more concrete mitigation and adaptation policies. Policy plans have been established for the sectors of science and technology, agriculture, and minerals and energy.[1145] South Africa has also displayed some commitment through investment and the implementation of legislation.

As part of an attempt to reduce emissions, South Africa has initiated various Clean Development Mechanism (CDM) projects,[1146] which are currently focusing on energy-efficient construction and adaptation in the low-income housing sector[1147] in, for example, Knysna and Khayelithsa.[1148] In March 2007, the country sought to further reduce grid demand through the construction of 500 solar water-heaters as part of a new solar water-

[1142] Tongaat posts record growth in earnings, West, E., Business Day, 20 February. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A390165.
[1143] Tongaat posts record growth in earnings, West, E., Business Day, 20 February. Date of Access: 21 April 2007. http://www.businessday.co.za/articles/topstories.aspx?ID=BD4A390165
[1144] Viability of biofuels plan questioned, Le Roux, M., Business Day, 8 November 2006. Date of Access: 21 April 2006. http://www.businessday.co.za/articles/companies.aspx?ID=BD4A312768.
[1145] Speech during National Assembly debate on Budget Vote 27 of the Department of Environmental Affairs and Tourism by Minister Marthinus van Schalkwyk, 6 June 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06060612151001.htm.
[1146] Minister's residence 'Greened' to mark first anniversary of Kyoto Protocol, 13 February 2006. Date of Access: 1 February 2007. http://www.info.gov.za/speeches/2006/06021315151001.htm,
[1147] United Nations Commission for Sustainable Development twelfth session 14 – 30 April 2004, South Africa's progress report: Human settlements, Department of Housing. Date of Access: 31 January 2007. http://www.info.gov.za/otherdocs/2004/csd.pdf.
[1148] Minister's residence 'Greened' to mark first anniversary of Kyoto Protocol, 13 February 2006. Date of Access: 1 February 2007. http://www.info.gov.za/speeches/2006/06021315151001.htm.

heater test rig.[1149] While the aim of the project is to reduce electricity consumption, it is also to create better market conditions for solar water-heaters, whose second phase will include the construction of 9,000 further solar water-heaters over the next five years.[1150]

Apart from reducing demand, South Africa has also sought to decrease its reliance on coal-based power by conducting studies into the feasibility of wave power with the completion of a preliminary site evaluation and selection process for a 20 MW wave energy project in April 2007.[1151]

The South African Department of Trade and Industry implemented a plan in April 2007 to fast-track growth in the environmental goods and services industry, which is in line with the global initiative to increase investment in environmentally sustainable programs in an effort to mitigate the effects of climate change.[1152] Similarly the Department of Environmental Affairs and Tourism announced in April 2007 that it will adapt its sustainable fisheries policy to mitigate the negative impacts of climate change.[1153] This is hoped to be achieved primarily through incentives for aquaculture in the private sector.[1154]

In an attempt to strengthen links between developing and developed countries on climate change-related issues, South Africa has added to its existing cooperation with the United States,[1155] and forged new links with Australia,[1156] Germany, [1157] India,[1158] Brazil,[1159] and China.[1160] Similarly, in November 2006, South Africa chaired the G77 & China negotiating bloc at the UNFCCC COP12 and the Kyoto COP/Meeting of the Parties (MOP2) in Nairobi, Kenya. At Nairobi, South Africa committed to taking concrete action on activities to adapt to climate variability and climate change. The South African government also took action on establishing an adaptation fund to aid developing countries in dealing with climate change.[1161] In March 2007, South Africa also entered into talks with the United Kingdom through the establishment of the South Africa-UK High-Level Dialogue on Sustainable

[1149] Brief address by Minister of Science and Technology, Mr Mosibudi Mangena, at the media breakfast launch of the Solar Water Heater (SWH) Test Rig, South African Bureau of Standards (SABS), (Pretoria), 5 March 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07030912151001.htm.
[1150] Brief address by Minister of Science and Technology, Mr Mosibudi Mangena, at the media breakfast launch of the Solar Water Heater (SWH) Test Rig, South African Bureau of Standards (SABS), (Pretoria), 5 March 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07030912151001.htm.
[1151] Finavera Plans 20 MW Wave Energy Project in South Africa, Renewable energy access, 20 April 2007. Date of Access: 27 April 2007. http://www.renewableenergyaccess.com/rea/news/story?id=48215.
[1152] South Africa: Move to Boost Environmental Goods And Services Sector, Mathabo Le Roux, Business Day, 4 April 2007. Date of Access: 27 April 2007. http://allafrica.com/stories/200704040150.html.
[1153] End of commercial fishing by middle of the century unless alternatives such as aquaculture are developed, 10 April 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07041112451001.htm.
[1154] End of commercial fishing by middle of the century unless alternatives such as aquaculture are developed, 10 April 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07041112451001.htm.
[1155] SA, US agree to work together on climate change, Mail and Guardian, 30 July 2003. Date of Access: 1 February 2007. http://www.mg.co.za/articledirect.aspx?articleid=25804&area=%2fbreaking_news%2fbreaking_news__international_news%2f.
[1156] Joint Communiqué on the fifth session of the German - South African Binational Commission, Berlin, 24 October 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06102510151001.htm.
[1157] South Africa and Australia boost international co-operation on climate change, Statement by the office of the Minister of Environmental Affairs and Tourism, Marthinus van Schalkwyk, 6 December 2006. Date of Access: 31 January 2007. http://www.info.gov.za/speeches/2006/06120713451001.htm.
[1158] Remarks by the President of South Africa, Thabo Mbeki, during the India-Brazil-South Africa (IBSA) Meeting of Heads of State and Government with CEO's, Brasilia, Brazil, 13 September 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06091408451001.htm.
[1158] Minister Hendricks hosts her Chinese counterpart, 20 June 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06062108151001.htm.
[1159] Remarks by the President of South Africa, Thabo Mbeki, during the India-Brazil-South Africa (IBSA) Meeting of Heads of State and Government with CEO's, Brasilia, Brazil, 13 September 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06091408451001.htm.
[1160] Minister Hendricks hosts her Chinese counterpart, 20 June 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06062108151001.htm.
[1161] Statement by Marthinus van Schalkwyk, Minister of Environmental Affairs and Tourism, following the conclusion of the United Nations Framework Convention on Climate Change (UNFCCC) COP12 and Kyoto (Conference of the Parties) COP/ Meeting of the Parties (MOP2) in Nairobi, Kenya, 19 November 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06111916151001.htm.

Development which includes a Working Group on climate change.[1162] The key themes of the dialogue are: climate change and energy for sustainable development; sustainable consumption and production; environmental enforcement; and mainstreaming sustainable development.[1163] South Africa's provinces are also supporting similar efforts.[1164]

In terms of public education, South Africa has implemented climate change awareness projects at schools in the province of Mpumalanga[1165] as well as convening 50 camps to train 10,500 youths in the Western Cape on issues pertaining to climate change.[1166] Beyond this, the government launched the 'Out of the Box Environmental Education Program' in April 2007 amending the educational curriculum so as to formally include debates on environmental issues, including climate change.[1167]

Climate change has been incorporated into legislation pertaining to coastal management, enabling the government to intervene in developmental initiatives to ensure their protection against rising sea levels and dynamic coastal responses to climate change.[1168] The city of Cape Town has created bylaws which will require all future development initiatives to make use of environmentally friendly building methods.[1169] The city has finished a draft version of the *Green Building Guidelines* and it is hoped that the law will be passed in the next five years.[1170] The bylaw is explicitly aimed at cutting the country's carbon emissions[1171].

In order to access and collect more data on climate change and its impacts, South Africa has invested in space technologies through the construction of SumbandilaSAT, a satellite that will provide cheap access to remotely sensed data as a means of monitoring climate change impacts.[1172] The South Africa Weather Service has committed over R6 million to expand its weather radar network in 2006.[1173]

South Africa has focused primarily on policies for adaptation and mitigation both to address its own vulnerability and that of other African nations. However, aside from the exploration of wave power, South Africa has managed relatively little in terms of reducing emissions other than to seek that certain new developments are designed to minimize their carbon footprint. Notably, regional centres and metropoles have taken the initiative to implement low-carbon legislation. South Africa has also shown great enthusiasm for the expansion of clean development mechanisms (CDM). In sum, the South African government has taken

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[1162] South Africa and the United Kingdom (UK) boost co-operation on sustainable development and climate change 16 March 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07031909451001.htm.
[1163] For instance, a Memorandum of Understanding (MoU) regarding cooperation on climate change and sustainable water management was signed in April 2007 between the Premier of KwaZulu-Natal and premier of Queensland (Australia). South Africa: Government to Boost Climate Change Cooperation With the UK, Bongani Mlangeni, BuaNews, 18 March 2007. Date of Access: 25 March 2007. http://allafrica.com/stories/200703191030.html
[1164] Remarks by the Honourable Premier Mr Sibusiso Ndebele at the signing of the Memorandum of Understanding (MoU) between the Premier of KwaZulu-Natal and Premier of Queensland (Australia), Hilton Hotel, (Durban), 23 March 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07032315451001.htm.
[1165] Mpumalanga tackles issues of global warming and climate change, 22 November 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06112412151002.htm.
[1166] Western Cape on 50th anniversary of youth uprising in 1976, 2 June 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06060614451002.htm.
[1167] Address by the Minister of Education Naledi Pandor at the Old Mutual Out of the Box Environmental Education Programme launch, (Johannesburg), 25 April 2007. Date of Access: 28 April 2007. http://www.info.gov.za/speeches/2007/07042611151001.htm.
[1168] Integrated Coastal Management Bill to preserve the integrity of South Africa's coastline, 8 December 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06120816151001.htm.
[1169] South Africa: Cape Town Plans Greener Building Methods, Patrick Burnett and Steve Kretzmann, BuaNews, 23 April 2007. Date of Access: 27 April 2007. http://allafrica.com/stories/200704230340.html.
[1170] South Africa: Cape Town Plans Greener Building Methods, Patrick Burnett and Steve Kretzmann, BuaNews, 23 April 2007. Date of Access: 27 April 2007. http://allafrica.com/stories/200704230340.html
[1171] South Africa: Cape Town Plans Greener Building Methods, Patrick Burnett and Steve Kretzmann, BuaNews, 23 April 2007. Date of Access: 27 April 2007. http://allafrica.com/stories/200704230340.html
[1172] Keynote address by the Minister of Science and Technology, Mr Mosibudi Mangena, at the launch of 2006-2007 Department of Science and Technology- National Research Foundation (DST-NRF) Internship Program, (Pretoria), 21 September 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06092210151001.htm.
[1173] Speech by Deputy Minister Rejoice Mabudafhasi at the Environmental Affairs and Tourism Budget Vote, 6 June 2006. Date of Access: 3 February 2007. http://www.info.gov.za/speeches/2006/06060713151002.htm.

steps to meet the obligations set out in Kyoto and the UNFCCC, even if such actions have not yet significantly reduced carbon emissions. For these reasons South Africa has scored a 0 in this category.

Author: James Morrissey

Sustainable Use of Energy: 0

The government has shown a willingness to engage with the challenges of creating an economy driven on the sustainable use of energy. This is demonstrated by its positive steps towards developing a national framework for efficient and sustainable energy use, which is consistent with the country's broader development goals. However, the government has been slow to deliver on its statements of intent, owing to the prioritization of its general economic development goals over the development of a sustainable energy sector in its own right.

In the build-up to and immediately following the St. Petersburg Summit in July 2006, the South African government established guidelines for the sustainable use of energy. This included the *Energy Efficiency Strategy of 2006 and Beyond* (EEM2006+), amending the *Energy Efficiency Strategy of 2005* (which targets a 12% reduction in energy use by 2015). The EEM2206+ aims at promoting awareness of energy efficiency and alternative energy technologies, as well as demand-side strategies, such as appliance labelling.[1174] In August 2006, seven more members of the National Business Initiative (NBI) – a body comprising 140 of South Africa's leading corporations – signed the Energy Efficiency Accord (EEA), a voluntary agreement between the NBI and the government on energy efficient business practices.

Finally, in September 2006, the Department of Environmental Affairs and Tourism submitted a policy document for public comment detailing several measures for reducing dependency on coal-intensive energy and encouraging energy efficiency.[1175] These include implementing incentives to promote renewable energy such as solar water heaters, investment in clean coal production and carbon sequestration technologies, as well as increasing the price of coal-generated power to incentivize renewable energy use.[1176] The document mentions the establishment of a regulatory framework, including "economic instruments to stimulate renewable energy generation, cleaner technology and energy efficiency, and encourage major cities to commit to using green energy."[1177] As noted in the UNFCCC/Kyoto section, there has also been progress on the *Green Building Guidelines*.

In a speech on 17 August 2006, Minister of Minerals and Energy Buyelwa Sonjica reported that government is committed to leading by example, with all state-owned enterprises requested to make energy efficiency "a part of their way of conducting business."[1178] This has been put into action with Eskom, the government's state electricity utility, engaged in a number of initiatives to contribute to the government's energy efficiency targets. Eskom

[1174] Energy Efficiency Strategy of South Africa. Date of Access: 24 April 2007. http://www.dme.gov.za/energy/documents.stm#2.
[1175] People-Planet-Prosperity: A strategic framework for sustainable development in South Africa, p. 131, Department of Environmental Affairs and Tourism. Date of Access: 1 January 2007. http://environment.gov.za/nssd_2005/public_participation/NSFD-Draft%20for%20Public%20Comment%20PDF.pdf.
[1176] People-Planet-Prosperity: A strategic framework for sustainable development in South Africa, p. 131, Department of Environmental Affairs and Tourism. Date of Access: 1 January 2007. http://environment.gov.za/nssd_2005/public_participation/NSFD-Draft%20for%20Public%20Comment%20PDF.pdf.
[1177] People-Planet-Prosperity: A strategic framework for sustainable development in South Africa, p. 131, Department of Environmental Affairs and Tourism. Date of Access: 1 January 2007 http://environment.gov.za/nssd_2005/public_participation/NSFD-Draft%20for%20Public%20Comment%20PDF.pdf.
[1178] Address on Energy Efficiency Month 2006 and beyond campaign by Ms Buyelwa Sonjica, Minister of Minerals and Energy. Date of Access: 1 January 2007 http://www.info.gov.za/speeches/2006/06081812151001.htm.

and the Department of Minerals and Energy have embarked on a R10 billion program to reduce demand for electricity by 3,000 MW over the next 6 years.[1179] This has occurred in the wake of severe generation capacity shortfalls in the Western Cape in 2006, in response to which Eskom implemented a fast-track energy efficiency program by rolling out 5 million energy efficient light bulbs.[1180] The government has recognized the need to put in place a sustainable long-term solution to the existing capacity shortfalls and the prospect of increased energy demand in a growing economy.

International collaboration on sustainable energy was established with cooperation between South Africa's Central Energy Fund (CEF) and the French development agency, Agence Française de Développement (AFD), on a R7.2 million project to develop cleaner and efficient energy for the industrial sector. Mputumi Damane, group CEO of the CEF, a public business searching for viable alternative and renewable energy investments, announced on 30 March 2007 that "The project will specifically target increased energy efficiency in heavy industry, the development of co-generation plants – the most efficient use of energy – the development of biofuels and solar-water heaters."[1181] This is a positive step towards attaining the EEA and NBI's commitment to reduce industry energy demand by 15% by 2013.[1182]

To complement the measures taken by the industrial sector, the Department of Science and Technology, in conjunction with the Department of Minerals and Energy, have launched a Solar Water Heater Test Rig, with the potential to both leverage electricity savings and improve electricity demand management in the domestic sector. In his address on March 2007, Minister of Science and Technology Mosibudi Mangena stated that the major obstacles to the widespread implementation of this technology include standardization, awareness, and financing.[1183] The project entails the installation of 500 solar water heaters and the provision of incentives for the purchase of these geysers by middle- and upper-income households. The costs will decline as the technology becomes more widely accepted. In short, the launch is a positive step toward domestic energy savings, but it is a long-term initiative; it will be even longer before lower-income households can experience solar water heating, even though the government is trying to provide precisely this sector of the population with sustainable and low-cost energy.

While these measures indicate that the government is seriously engaged in strategies for sustainable energy use, it is too soon to gauge how effectively they are being implemented. There are signs that the demand in domestic markets for sustainable energy products is lower than that of international markets. For this reason, South Africa is lagging behind other countries in developing environmentally sustainable services. South Africa ranks 37th out of 47 countries on environmental goods and services competitiveness, and roughly 90% of the country's environmental goods and services supply is concentrated at the lower end of the value chain, such as pollution management operations, rather than energy efficient technologies.[1184] A report by the World Wildlife Fund (WWF) argues that government could exploit international demand by providing incentives (such as subsidies) for the production of sustainable goods for export.[1185] Furthermore, the National Economic Development Forum and Labour Council (Nedlac) recommended at the CEF Conference on 3 April 2007 the development of a customized sector program for the environmental goods and services

[1179] SA aims to save 3000 MW over six years through R10-bin energy-efficiency drive, Terence Creamer, Polity, 11 April 2007. Date of Access: 7 April 2007. http://www.polity.org.za/print_version.php?a_id=107123.
[1180] SA aims to save 3000 MW over six years through R10-bin energy-efficiency drive, Terence Creamer, Polity, 11 April 2007. Date of Access: 7 April 2007. http://www.polity.org.za/print_version.php?a_id=107123.
[1181] Energy fund starts R7.2mn efficiency project, Abdul Milazi, 30 March 2007. Date of Access: 23 April 2007. http://www.businessday.co.za/articles.aspx?ID=BD4A425451.
[1182] Move to boost environmental goods and services, M Le Roux, Business Day, 4 April 2007.
[1183] Brief address by Minister of Science and Technology, Mr Mosibudi Mangena, at the media breakfast launch of the Solar Water Heater (SWH) Test Rig, South African Bureau of Standards (SABS), (Pretoria), 5 March 2007. Date of Access: 21 April 2007. http://www.info.gov.za/speeches/2007/07030912151001.htm.
[1184] Move to boost environmental goods and services, M Le Roux, Business Day, 4 April 2007.
[1185] SA companies keen to go green but government lags, report finds, Sunday Independent, 5 November 2006. Date of Access: 1 January 2007. http://www.sundayindependent.co.za/index.php?fArticleId=3521370.

industry, calling for, *inter alia*, a consideration of further strategic interventions.[1186] However, the government has noted elsewhere that it is difficult to justify energy efficient subsidies in the light of other national development needs.[1187]

There is considerable evidence that the government is aware of the importance of energy efficiency in its strategy for energy development. However, its demand-side regulatory mechanisms have only recently been implemented, and their effect will not be seen in the short-term. Furthermore, there is a feeling in the private sector that the government could be doing more to encourage the development of a sustainable energy sector. Until energy efficient goods and services have become more widespread in the economy, South Africa will not have made the transition to the use of sustainable energy as a driver of economic development. For this reason, South Africa achieves a score of 0.

Author: Davina Mendelsohn

Innovative Energy Technologies in Hydrocarbon Production and Use: 0

After an inauspicious start, South Africa has demonstrated progress towards meeting its St. Petersburg hydrocarbon commitments. The country has initiated an Underground Coal Gasification project, taken steps towards drafting a carbon sequestration policy, and completed a review of windfall profits in its synthetic fuels industry. These actions, as well as the stated commitment to a clean hydrocarbon trajectory by various South African ministers, however, are still falling short of the comprehensive strategy needed to secure full compliance with the St. Petersburg commitment on hydrocarbons and counteract the rising CO_2 emissions from the older installations. Therefore, only a partial compliance score has been awarded.

Coal is responsible for nearly 80% of South Africa's primary energy requirements, making it imperative for the country to foster clean coal technologies if it is to meet its environmental commitments.[1188] On September 2006, Minister of Minerals and Energy Buyelwa Sonjica drew attention to the fact that several new major coal projects were being developed. Ms Sonjica declared that South Africa had a "duty to implement Clean Coal Technologies" whenever building new mines and power stations, although she did not elaborate on the kinds of technologies to be used.[1189] On 6 December 2006, Marthinus van Schalkwyk, Minister of Environmental Affairs and Tourism, signed a letter of co-intent with his Australian counterpart, Senator Ian Campbell, on issues relating to climate change. Specific attention was paid to the area of developing clean coal technologies, with the ministers committing to undertake joint activities that would enable the necessary regulatory and institutional frameworks in each country.[1190]

On 20 January 2007, energy parastatal Eskom launched an Underground Coal Gasification (UCG) project at Majuba Power Station in Mpumalanga province.[1191] The pilot project is the first example of UCG technology being employed upon the African continent and was described as the "frontrunner" in terms of Eskom's research and development of clean coal technologies. Indeed, it has been earmarked as the most advanced project of its kind anywhere in the world. While the project currently yields enough energy only to meet the heating and cooking requirements of 1,000 medium-sized households, a phased expansion

[1186] Move to boost environmental goods and services, M Le Roux, Business Day, 4 April 2007.
[1187] Energy Efficiency strategy of the Republic of South Africa, Department of Minerals and Energy, March 2005, p. 21. Date of Access: 1 January 2007. http://www.dme.gov.za/pdfs/energy/efficiency/ee_strategy_05.pdf.
[1188] Department of Minerals and Energy. Date of Access: 15 March 2007. http://www.dme.gov.za/energy/coal.stm.
[1189] Speech by Minister Buyelwa Sonjica at the SOD Opening Ceremony – RBCT Phase V Expansion, Department of Minerals and Energy, (Richards Bay), 22 September 2006, Date of Access: 24 September 2006. http://www.dme.gov.za/pdfs/speeches/rbct_22-Sept_06.pdf
[1190] South Africa And Australia Boost International Co-operation On Climate Change, Department of Environmental Affairs and Tourism, (Pretoria), 6 December 2006. Date of Access: 28 December 2006. http://www.environment.gov.za/NewsMedia/MedStat/2006Dec6/06122006.htm
[1191] Eskom project revolutionises clean coal technologies, Eskom Press Release, 25 January 2005. Date of Access: 2 May 2007: http://www.eskom.co.za/live/content.php?Item_ID=2931&Revision=en/0.

is expected to increase this considerably—to 1,200 MW of electricity by 2010. Ultimately, it is envisaged that the UCG technology developed at Majuba will enable Eskom to source previously unusable coal resources, potentially increasing its current 41 GW capacity nine-fold.

Another high-profile clean coal technology is carbon sequestration. Already a member of the Carbon Sequestration Leadership Forum, South Africa's government has taken a few tentative steps in this regard and appears to be developing a formalized carbon sequestration strategy.[1192] Speaking at a media briefing on climate change on 14 March 2007, Minister Van Schalkwyk was cautious to point out that more research was needed before a final policy decision for South Africa could be made: "We are looking at it ... but we have a particular problem with the geological structures in [South Africa], which from a carbon storage point of view may make it a risk."[1193] Minister Van Schalkwyk went on to announce that his department, along with the Department of Minerals and Energy, would be presenting a new integrated energy plan to the South African Cabinet before the end of 2007.

South Africa has a very advanced synthetic fuels industry, which supplies roughly a third of the country's liquid fuel needs.[1194] These synfuels are based largely on proprietary Fischer-Tropsch technology and involve world-leading Coal-to-Liquid (CTL) and Gas-to-Liquid (GTL) processes.[1195] While CTL and GTL have substantial benefits in terms of energy security, they are also heavily polluting; CTL, for instance, produces ten times as much CO_2 as conventional refining processes.[1196] This counteracts the actions South Africa has taken to achieve compliance with the St. Petersburg commitment on hydrocarbons.

A recently appointed task team, commissioned by the Treasury to consider fiscal reforms to South Africa's liquid fuels sector, published its report in February 2007.[1197] The task team specifically endorsed the idea of a possible windfall tax in cases of abnormal profits in the synthetic fuels industry. There has been some strong opposition to such a tax, namely that it could act as a disincentive to foreign investment, undermine petrochemical giant Sasol's performance against multinational competitors, and lead to fuel shortages.[1198] However, Finance Minister Trevor Manuel assured all concerned that his government would be cautious in applying any fiscal measures and that a final policy decision would only be made in late July.[1199] Nevertheless, environmental groups are supporting this opportunity to use the generated windfall revenue specifically for climate change mitigation projects (e.g. carbon sequestration) – the first time such action will have been taken in South Africa.[1200] Furthermore, it has been speculated that similar (environmentally-minded) fiscal

[1192] Department of Minerals and Energy. Date of Access: 27 April 2007. http://www.dme.gov.za/energy/coal.stm.
[1193] Govt may stash carbon underground' Richard Davies, Mail & Guardian, (Cape Town), 14 March 2007. Date of Access: 2 May 2007.
http://www.mg.co.za/articlePage.aspx?articleid=302024&area=/breaking_news/breaking_news__national/.
[1194] Department of Minerals and Energy. Date of Access: 15 March 2007.http://www.dme.gov.za/energy/liquid.stm
[1195] For instance, see Sasol Limited, Funding Universe Website. Date of Access: 15 March 200.
http://www.fundinguniverse.com/company-histories/Sasol-Limited-Company-History.html; or
Search for New Oil Sources Leads to Processed Coal, Matthew L. Wald, New York Times, 5 July 2006. Date of Access: 15 March 2007.
http://www.nytimes.com/2006/07/05/business/05coalfuel.html?ei=5090&en=212ba22ab2b1f382&ex=1309752000&partner=rssuserland&emc=rss&pagewanted=all.
[1196] Sasol's Mathutha "looks unlikely", Mathabo Le Roux, Business Day, (Johannesburg), 18 April 2007. Date of Access: 3 May 2007. http://allafrica.com/stories/200704180482.html.
[1197] Report by Task Team to investigate the fiscal regime applicable to windfall profits in the liquid fuels sector, with particular reference to synthetic fuels, National Treasury, (Pretoria), 23 February 2007. Date of Access: 24 April 2007. http://www.info.gov.za/speeches/2007/07022612151002.htm.
[1198] DA warns against proposed windfall tax, Mariaan Olivier, Engineering News, 27 February 2007. Date of Access: 20 April 2007. http://www.engineeringnews.co.za/article.php?a_id=102741.
[1199] Tax: Sasol rivals will benefit, FIN24, 15 August 2006. Date of Access: 23 April 2007.
http://www.fin24.co.za/articles/companies/display_article.aspx?Nav=ns&lvl2=comp&ArticleID=1518-24_1983091
[1200] Fuel Producer Levy May Pass As SA's First Green Tax, Mathabo Le Roux, Business Day, (Johannesburg), 6 March 2007. Date of Access: 23 April 2007. http://allafrica.com/stories/200703060241.html.

intervention might be extended to the rest of the country's resources sector, thus forming a "prelude to green taxes" in South Africa.[1201]

To conclude, South Africa has taken considerable steps to meet its St Petersburg hydrocarbon commitments, but it has still fallen short of a full compliance score. The country has abundant coal reserves and a number of world-renowned technologies on hydrocarbon energy utilization and production. The government's proactive stance towards improving its traditional energy sectors is promising, and it is expected that South Africa will increasingly be playing a leading role in developing environmentally-friendly hydrocarbon technology.

Author: Grant McDermott

[1201] Fuel Producer Levy May Pass As SA's First Green Tax, Mathabo Le Roux, Business Day, (Johannesburg), 6 March 2007. Date of Access: 23 April 2007. http://allafrica.com/stories/200703060241.html.

13. United Kingdom

Background

The UK government has taken significant action to comply with all the commitments undertaken at the St. Petersburg Summit. This has been facilitated by rapid changes in the attitudes to climate change in every sector of UK society over the past year and a half. Following the 'conversion' of high-profile public figures such as David Attenborough, media coverage has been widespread and continuous.[1202] Speeches on the issue by the leader of the opposition, David Cameron,[1203] and subsequently by the Chancellor of the Exchequer, Gordon Brown,[1204] put climate change and energy security firmly on the political agenda. An initial response by the Treasury to the issue of climate change was to commission the Stern Report on the Economics of Climate Change, which was published on 30 October 2006 and concluded that climate change threatens to be the most significant and wide-ranging market failure ever seen, and that government action is essential to minimize economic and social disruption.[1205] The government broadly supported the findings of the Stern Review. However, though the pre-Budget Report, published just a week after the Stern Review, did include new incentives for low-carbon building, increased the costs of driving and flying,[1206] and described the opportunities presented by facing up to climate change,[1207] there was immediate criticism from environmental groups, who accused the Chancellor of "gesture politics"[1208] and of merely "tinker[ing] in the margins,"[1209] rather than making serious changes. More recently, a comprehensive analysis of the pre-budget report by the House of Commons Environmental Audit Committee concluded that it is "a grossly inadequate response" to the challenges of climate change[1210]

However, by the time of the Budget Report of 21 March 2007, greener initiatives had taken a more central stage, with a host of measures from plans for a carbon capture and storage (CCS) plant to new schemes to finance insulation and energy efficiency in the home.[1211] These measures were generally welcomed by environmental groups and householders alike, but once again there was general criticism that these were merely "cautious steps"[1212] and "half measures,"[1213] and that the government's response in general contained a "lack of urgency."[1214]

[1202] Attenborough: Climate is changing, BBC News, 24 May 2006. Date of Access: 18 March 2007. http://news.bbc.co.uk/2/hi/science/nature/5012266.stm.
[1203] Cameron visits Norwegian glacier, BBC News, 20 April 2006. Date of Access: 18 March 2006. http://news.bbc.co.uk/2/hi/uk_news/politics/4925444.stm.
[1204] Climate Change fight 'moral duty', 26 April 2006. Date of Access: 18 March 2007. http://news.bbc.co.uk/2/hi/uk_news/politics/4932988.stm.
[1205] Sir Nicholas Stern, Stern Review on the Economics of Climate Change, 30 October 2006. Date of Access: 18 March 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.
[1206] Brown unveils green tax plans. BBC News, 6 December 2006. Date of Access: 1 June 2007. http://news.bbc.co.uk/2/hi/uk_news/politics/6211176.stm
[1207] Gordon Brown. Pre-Budget Report Speech. 6 December 2006. Date of Access: 1 June 2007. http://www.hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/prebud_pbr06_speech.cfm
[1208] Brown's Green measures "feeble", BBC News, 6 December 2006. Date of Access: 1 June 2007. http://news.bbc.co.uk/1/hi/uk_politics/6214678.stm
[1209] Brown fails green test again, Friends of the Earth Press Release. 6 December 2006. Date of Access: 1 June 2007. http://www.foe.co.uk/resource/press_releases/brown_budget_fails_green_t_06122006.html
[1210] Environmental Audit Fourth Report, 13 March 2007. Date of Access: 25 April 2007. http://www.publications.parliament.uk/pa/cm200607/cmselect/cmenvaud/227/22709.htm.
[1211] Chancellor of the Exchequer's Budget Statement, 21 March 2007. Date of Access: 27 April 2007. http://www.hm-treasury.gov.uk/budget/budget_07/bud_bud07_speech.cfm.
[1212] WWF: Brown must try harder on the Environment, WWF, 21 Mar 2007. Date of Access: 27 April 2007. http://www.politics.co.uk/issueoftheday/economy/economic-policy/budget/wwf-brown-must-try-harder-on-environment-$469034$468983.htm.
[1213] Budget moves in right direction, but not far enough, Friends of the Earth UK, 21 March 2007. Date of Access: 27 April 2007. http://www.foe.co.uk/resource/press_releases/budgetmoves_in_right_direc_21032007.html.
[1214] How green was my Budget, BBC News, 21 March 2007. Date of Access: 25 April 2007. http://news.bbc.co.uk/1/hi/sci/tech/6475095.stm.

Despite these criticisms of the government's fiscal policies to tackle climate change, there has been considerable action from other sections of government, particularly in sustainable housing and business, where the government-funded Carbon Trust has been working closely with business and industry to reduce emissions.

In addition, the Queen's Speech at the opening of this session of parliament announced a Climate Change Bill,[1215] which will set into law the government target to cut emissions from 1990 levels by 60% by 2050, establish an independent "Carbon Committee," and improve monitoring and regulation of emissions reduction.[1216] The bill has since begun to progress through parliament.[1217]

On the basis of these policies and their international stance on climate change, the UK government was ranked second of the top 56 emitting countries in a Climate Change Performance Index, behind only Sweden.[1218] Our findings broadly support the view that by international standards Britain is faring well in efforts to tackle climate change, and has either entirely or almost entirely complied with each of its St. Petersburg commitments. However, despite these efforts, which have helped to give the UK a strong international standing on Climate Change, the carbon emissions of the United Kingdom rose in 2006 for the fourth year in a row, demonstrating the need for more serious action from the G8, the UK government, and communities alike.[1219]

Author: Hector Guinness

Clean and Efficient Use of Energy in the Transport Sector: +1

The UK government has a stated intention to play a leadership role in reducing carbon and other greenhouse gas emissions.[1220] It has embarked on a three-pronged strategy to achieve its stated objective and to comply with its commitments. The first strategy is to make alterations in fuel duty structure designed with the intent of giving incentives to customers to use clean fuels. The second is to use tax measures to punish polluting industries or units and passing on the revenue benefits towards development of cleaner and more sustainable forms of transportation. The final strategy is to try and change people's transportation choices by promoting alternative means of transportation.

The 2007 annual budget shows that average carbon emission from new cars has consistently maintained its downward trend over the past few years.[1221] This can partly be attributed to the government's policy of charging differential vehicle excise duty (VED) based on graduated CO_2 emission bands. In its annual budget for the year 2007, the UK government brought in changes in the VED structure. Rates for more polluting vehicles were raised and the VED for petrol and diesel vehicles were aligned.[1222] The government also announced a discount of 2% on company car tax for vehicles capable of using E85 grade of ethanol.[1223] The EU has established voluntary agreements with car manufacturers to reduce

[1215] The Queen's Speech, 15 November 2006. Date of Access: 1 June 2007. http://www.pm.gov.uk/output/Page10419.asp.
[1216] Climate Bill sets Carbon Target, BBC News, 15 November 2006. Date of Access: 1 June 2007. http://news.bbc.co.uk/2/hi/science/nature/6148416.stm.
[1217] Government Bills 2006/07 Progress Chart, Leader of the House of Commons, (London), 19 December 2006. Date of Access: 28 December 2006. http://www.commonsleader.gov.uk/output/page1436.asp.
[1218] Climate Change Performance Index compiled by German Watch and the Climate Action Network Europe.
[1219] UK greenhouse emissions show rise, BBC News, 29 March 2007. Date of Access: 25 April 2007. http://news.bbc.co.uk/2/hi/science/nature/6506223.stm.
[1220] Powering Future Vehicles: Prime minister's foreword. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_506885-01.hcsp#P16_360.
[1221] HM Treasury annual budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.
[1222] HM Treasury annual budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.
[1223] HM Treasury annual budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.

the CO_2 emission from new cars to the level of 140 g/km by 2008-2009.[1224] However, doubts have been raised on the efficacy of this voluntary agreement by the House of Commons Transport Committee.[1225] Further incentive to users of vehicles running on green fuel is provided by way of reduced fuel tax on certain biofuels. To promote the use of biofuels in the railway sector, the government has allowed fuel duty to be charged at a reduced rate of 7.69 pence per litre (ppl) for pilot projects testing the feasibility of such fuels.[1226] Several changes were also made in the fuel duty rates in order to incentivize people to shift away from conventional fuels towards bio fuels. Main fuel duty was increased by 2 pence per litre (ppl) effective from October 2007. Duty for rebated oils was also increased by 2ppl. However, the 200 ppl duty incentive to given to biofuel was extended further and the RTFO buy-out was set at 15 ppl for the period 2009-2010.[1227] Continued commitment to the Renewable Transport Fuel Obligation (which is set to come in force by April 2008) promises to give a major boost to use of sustainable energy.[1228] The UK has also initiated a joint Task Force with Brazil, South Africa, and Mozambique to promote the development of a sustainable regional biofuels industry in Southern Africa.[1229]

In view of the tax exemption granted to highly polluting aviation kerosene, UK has increased its Air Passenger Duty in order to avoid artificially reduced aviation cost.[1230] Furthermore, the UK is working with the EU to include aviation sector in the EU emissions trading scheme (ETS).[1231] The UK Government has welcomed the publication of the European Commission's draft legislative proposal in this regard and has launched a public consultation on the Commission's proposal.[1232] Although this does not directly affect the UK government's compliance on this commitment (given the G8's unwillingness to address the air transportation sector at St. Petersburg), it does hint at consistency of the government's intention to tackle the issue of climate change.

Government-supported organizations such as Low Carbon Vehicle Partnership are working to help UK meet its carbon emission targets by providing a forum for industries and other stakeholders to engage proactively in the shift to low carbon vehicles and fuels.[1233] However, UK sales weighted tailpipe CO_2 emissions for new cars still remain the fourth highest in Europe (169 g/km in 2005).[1234] In an attempt to address this issue, the government has commissioned a study to examine vehicle and fuel technologies which will help reduce vehicular emission.[1235] The government has also proposed the establishment of an EU-US Task Force to facilitate exchange of skills and R&D in the field of emission

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[1224] HM Treasury annual budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.

[1225] Department of Transport Annual Report 2006: Date of Access: 21 April 2007. http://www.publications.parliament.uk/pa/cm200607/cmselect/cmtran/95/95.pdf.

[1226] HM Treasury Pre-budget report, 2006. Date of Access: 3 January 2007. http://hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm

[1227] HM Treasury annual budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.

[1228] HM Treasury Pre-budget report, 2006. Date of Access: 3 January 2007. http://hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm

[1229] HM Treasury Pre-budget report, 2006. Date of Access: 3 January 2007. http://hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm

[1230] HM Treasury Pre-budget report, 2006. Date of Access: 3 January 2007. http://hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm

1231 HM Treasury annual budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.

[1232] Aviation and the EU ETS, DEFRA. Date of Access: 26 May 2007. http://www.defra.gov.uk/environment/climatechange/trading/eu/future/aviation/index.htm.

[1233] Low Carbon Vehicle Partnership. Date of Access: 3 January 2007. http://www.lowcvp.org.uk.

[1234] Low Carbon Vehicle Partnership secretarial report: Bus targets and powering future vehicles review, October 2006. Date of Access: 3 January 2007. http://www.lowcvp.org.uk/lowcvp-viewpoint/index.asp.

[1235] Low carbon Vehicle Partnership. Date of Access: 21 April 2007. http://www.lowcvp.org.uk/news/613/government-announces-terms-of-reference-of-the-king-review-of-low-carbon-cars/.

reduction.[1236] As a member of the EU, the Euro IV emission standards have already come into force in the UK and the government has announced several incentives for early uptake of Euro V and Euro VI compliant vehicles.[1237]

Apart from the London area, Scotland, and Wales, bus patronage has declined in general in the UK[1238] despite funding of over £2 billion annually to develop bus services that would offer a genuine alternative to the car.[1239] The government is making attempts to increase patronage of public means of transport. A doubling of occupancy rates on buses has the potential to deliver a 62% and a 72% reduction in CO_2 emissions per passenger kilometre for the UK and London respectively.[1240] The adoption of low carbon bus technologies would have the potential to increase this to 73% and 81% respectively.[1241] Rebate is currently provided to public transportation companies through the Bus Service Operator's Grant (BSOG) and is equivalent to 80% of fuel duty paid for diesel and 100% of fuel duty paid on natural gas, LPG, or biofuels.[1242] While it does promote public transportation, organizations such as Low Carbon Vehicle Partnership (LowCVP) counter that it mitigates the incentives provided for use of low-carbon fuels and more fuel-efficient vehicles.[1243] The government is promoting hydrogen and fuel-cell research by providing funds through the *Strategic Framework For Hydrogen Energy Activity in the UK*, which makes available a grant of £15 million over a period of four years starting 2005.[1244] Furthermore, the government has also provided funding of over £450,000 for the trial of hydrogen-powered fuel cell buses in London as part of the EU CUTE (Clean Urban Transport in Europe) project and committed £6.5 million of funding for the fuel cell and low carbon vehicle technology Centre of Excellence (CENEX).[1245] The Department of Transportation has also taken initiatives to examine the practicality and timing of the introduction of the required infrastructure to support hydrogen fuelled vehicles.[1246] To promote use of railways the government is continuing with its commitment to spend over £23 billion on Britain's railways between 2004 and 2009.[1247]

On top of all these measures, the government, through its package of policies entitled *Smarter Choices* has tried to bring about a fundamental change in people's travel choices.[1248] The Government has also doubled *Cycling England's* budget to £30 million over

[1236] HM Treasury Pre-budget report, 2006. Date of Access: 3 January 2007. http://hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm.
[1237] HM Treasury Pre-budget report, 2006. Date of Access: 3 January 2007. http://hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm.
[1238] Low Carbon Vehicle Partnership secretarial report: Bus targets and powering future vehicles review, October 2006. Date of Access: 3 January 2007. http://www.lowcvp.org.uk/lowcvp-viewpoint/index.asp.
[1239] Renewable Transport Fuel Obligation (RTFO), chapter 6. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/divisionhomepage/610328.hcsp.
[1240] Low Carbon Vehicle Partnership secretarial report: Bus targets and powering future vehicles review, October 2006. Date of Access: 3 January 2007. http://www.lowcvp.org.uk/lowcvp-viewpoint/index.asp.
[1241] Low Carbon Vehicle Partnership secretarial report: Bus targets and powering future vehicles review, October 2006. Date of Access: 3 January 2007. http://www.lowcvp.org.uk/lowcvp-viewpoint/index.asp
[1242] Low Carbon Vehicle Partnership: Route Map-UK 2012 low carbon bus target, Department for Transport (London). Date of Access: 3 January 2007. http://www.lowcvp.org.uk.
[1243] Low Carbon Vehicle Partnership secretarial report: Bus targets and powering future vehicles review, October 2006. Date of Access: 3 January 2007. http://www.lowcvp.org.uk/lowcvp-viewpoint/index.asp.
[1244] Renewable Transport Fuel Obligation (RTFO), chapter 6. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/divisionhomepage/610328.hcsp.
[1245] Renewable Transport Fuel Obligation (RTFO), chapter 6. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/divisionhomepage/610328.hcsp.
[1246] Renewable Transport Fuel Obligation (RTFO), chapter 6. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/divisionhomepage/610328.hcsp.
[1247] Renewable Transport Fuel Obligation (RTFO), chapter 6. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/divisionhomepage/610328.hcsp.
[1248] Smarter choices initiative, Department for Transport (London). Date of Access: 18 March 2007. http://www.dft.gov.uk/pgr/sustainable/smarterchoices/.

the next three years starting 2006.[1249] The government launched the *Act on CO_2* climate campaign to encourage motorists to drive in a way that reduces their emissions.[1250]

The government has largely used fiscal measures as an instrument to meet its commitments. However, the actual effects of these initiatives are yet to be seen. While the department of transportation has managed to achieve its efficiency targets,[1251] the LowVCP claims that the government support for technological innovation and environmental communication is not very good as compared to some other EU nations.[1252] Despite these uncertain outcomes, the UK has clearly taken significant steps to meet this commitment, and is therefore awarded a score of +1.

Author: Syed Saif Rahman

Alternative and Renewable Energy: 0

The United Kingdom registered a degree of compliance with its commitment to promote and develop alternative and renewable energy. The government provided a high level of political support for the *Stern Report*,[1253] which was published on 30 October 2006. Both the Prime Minister and the Chancellor of the Exchequer hosted the presentation and gave major speeches supporting the Report's recommendations which included inter alia economic and technological policies for renewables. During the compliance period, the government placed more emphasis on regulatory mechanisms for renewables since they are technically complex (for example, in linking off-shore electricity generation to the on-shore national grid).[1254] The Chancellor's Pre-Budget Report provided some economic incentives, although it was not easy to disentangle new resources with re-allocation of funding already announced in the Budget of April 2006.[1255]

On 20 November 2006, the UK government announced measures for offshore electricity regulation in an open letter from the Department for Trade and Industry (DTI) to industry.[1256] These measures are important for wind energy, which in the UK are often based offshore, as well as for hydro (wave and tidal) energy sources. For transmission of electricity (high voltage), the onshore licensed price control approach will also be used for offshore connections. On the other hand, for distribution (low voltage), a class exemption will be granted regarding the requirement to hold a license. The clarification in the regulatory system, and the exemption granted to small- or low-voltage systems, are expected to act as an incentive for wind energy projects currently in the pipeline (termed Round 1 and Round 2 projects), as well as for future developments in offshore hydro-energy projects.[1257] On 29 March 2007, the DTI announced further important measures regarding

[1249] Renewable Transport Fuel Obligation (RTFO), chapter 6. Date of Access: 3 January 2007. http://www.dft.gov.uk/stellent/groups/dft_roads/documents/divisionhomepage/610328.hcsp.
[1250] Department of Transport website. Date of Access: 21 April 2007. http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=270230&NewsAreaID=2&NavigatedFromDepartment=False.
[1251] Department of Transport Annual Report 2006. Date of Access: 21 April 2007. http://www.publications.parliament.uk/pa/cm200607/cmselect/cmtran/95/95.pdf.
[1252] Low Carbon Vehicle Partnership's submission to the Low Carbon Transport Innovation Strategy. Date of Access: 21 April 2007. http://www.lowcvp.org.uk/assets/viewpoints/LowCVP%20Low%20Carbon%20Transport%20Innovation%20Strategy%20Submission%20-%20Jan%2007.pdf.
[1253] Stern Review Report. Date of Access: 27 April 2007. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.
[1254] Department of Trade and Industry. Date of Access: 27 April 2007. http://www.dti.gov.uk/files/file 35598.pdf.
[1255] Pre-Budget Report, HM Treasury, (London), 28 December 2006. Date of Access: 28 December 2006. http://hm-treasury.gov.uk.
[1256] Department of Trade and Industry. Date of Access: 27 April 2007. http://www.dti.gov.uk/files/file 35598.pdf.
[1257] Department of Trade and Industry. Date of Access: 27 April 2007. http://www.dti.gov.uk/files/file 35598.pdf.

the licensing regime for electricity transmission owners.[1258] Connecting the offshore wind energy sector to the National Grid via a flexible and competitive market process will allow more companies to enter the sector. Lord Truscott, the Energy Minister stated in the press release that: "Offshore wind energy can make a significant contribution to the UK's renewable energy targets. Along with Denmark we are currently leading the world in the offshore sector and we want to keep the momentum going. In the last few months alone the Government has consented three major projects in the Thames Estuary and there will be more to come. The DTI and Ofgem are working closely to put in place a flexible and economic system for getting these vital energy schemes connected up to the mainland."

The Renewables Obligation (RO) is the UK government's principal policy tool to help the growth of renewable source electricity generation. In October 2006, the UK government published its comprehensive renewables consultation paper entitled 'Reform of the Renewable Obligations and Statutory Consultation of the Renewables Obligation Order 2007.' [1259] Although no practical measures are envisaged at this stage, the release of the consultative document and the ensuing discussions demonstrate political support by the government for industries that are concerned about sourcing electricity from renewables. In particular, the government has proposed differentiated support levels, via banding, for different types of renewable technology.

The UK government has supported the Low Carbon Building Program (LCBP) which has a broad remit with major implications for renewables.[1260] The Budget 2007 announced a further £6 million (bringing the total to £18 million) to assist households in the installation of micro generation technologies (such as solar heating and micro-wind), which are the basis of alternative energy sources. The Pre-Budget Report (2006) placed emphasis on the market for biofuels and incentives to develop and extend this market for more intensive use.[1261] The biofuel sector (biodiesel and bio ethanol) now receives a 20 pence per litre (ppl) duty incentive, compared to other fossil fuels, and the buy-out price (that paid by suppliers who fail to meet their obligation of supplying specified amounts of biofuels) stands at 15 ppl.[1262] Effectively, biofuels currently receive a subsidy of 35 ppl.

The majority of economic incentives by the government to environmental protection are provided in the Budget[1263] which was published on 21 March 2007. The 2007 budget confirmed that the fuel duty differential incentive enjoyed by the biofuel sector will continue until 2009-2010. The government also announced an intention to permanently reduce the duty rate for biofuel/rebated gas oil mixtures, although the actual level of the rate reduction is yet to be determined. The government will also continue the enhanced capital allowance (ECA) scheme, to provide state aid to biofuels plants which have the maximum carbon-efficiency and meet the qualifying criterion for a good carbon balance. As regards the economic incentives for the use of alternative energy by households, the Budget announced that from 1 October 2007 all zero-carbon homes costing up to £500,000 will pay no stamp duty, and houses in excess of £500,000 will get a reduction of their total stamp duty bill by £15,000.

The government is also increasingly looking to nuclear power as an alternative to fossil fuels. In November 2006, the UK Atomic Energy Agency announced the country's participation in a major fusion project, the International Thermonuclear Experimental

[1258] Department of Trade and Industry. Date of Access: 27 April 2007. http://www.dti.gov.uk/files/file 35598.pdf.
[1259] Department of Trade and Industry. Date of Access: 27 April 2007. http://www.dti.gov.uk/files/file 34470.pdf.
[1260] Low Carbon Buildings Programme, DTI. Date of Access: 27 April 2007. http://www.lowcarbonbuildings.org.uk/home/.
[1261] Pre-Budget Report, HM Treasury, (London), 28 December 2006. Date of Access: 28 December 2006. http://hm-treasury.gov.uk.
[1262] Pre-Budget Report, HM Treasury, (London), 28 December 2006. Date of Access: 28 December 2006. http://hm-treasury.gov.uk.
[1263] HM Treasury Annual Budget 2007. Date of Access: 21 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.

Reactor (ITER).[1264] The partners – EU, USA, Japan, Russia, China, India, and Korea – signed the ITER agreement in Paris; the €10 billion project reactor will be based in southern France. However, expansion of nuclear energy programs does not count towards compliance for the purposes of this report. Progress in other areas of renewable and alternative energy (as defined by the EU itself for its 2020 goal), however, has been limited.

Although providing political support, refining the legal framework and creating some institutional infrastructure, the government did not introduce many new practical measures in the field of renewables and alternative energy during the compliance period. Hence, it is also difficult to foresee the actual impact of these measures. Some positive steps, particularly in the field of offshore regulation, were clearly initiated, but these legal mechanisms are as yet not significant in terms of their impact. Although the UK is on track on meeting its commitment to the EU minimum renewables directive, its share of renewable energy to total primary energy consumption is one of the lowest in Europe: 1.61% as compared to 6.38% in the EU, based on the latest data available (2005).[1265] The UK government has set a target of 10% of UK electricity supply from renewable energy sources by 2010, rising to 20% by 2020. Currently (data for 2005), it is 4.3% as compared to 14% for the EU.[1266] According to the forecasts[1267] made by a respected group of economics consultants, Cambridge Econometrics, in their 2007 publication *UK Energy and the Environment*, the government will fail to meet these targets. The UK is thus awarded a score of 0.

Author: Samir Deger-Sen

UNFCCC/Kyoto: +1

The UK government registered full compliance with its St. Petersburg Summit commitments relating to the UNFCCC and the Kyoto Protocol.

Since the 2006 G8 Summit, the UK Department for the Environment, Food and Rural Affairs (DEFRA) has worked with National Statistics to gather and release four different datasets detailing information on the UK's GHG emissions.[1268] Thus, the UK has met its UNFCCC commitment to "gather and share information on greenhouse [GHG] emissions."[1269]

The UK government has also launched several schemes to help individuals tackle climate change, starting on 28 December 2006 with the launch of an online guide to encourage individuals to tackle climate change and take up greener lifestyles.[1270] On 11 March 2007, the UK launched their *Act on CO_2* campaign, which aims to make individuals more "CO_2 literate"[1271] while encouraging motorists to "Drive Smarter…to reduce carbon emissions."[1272]

[1264] United Kingdom Atomic Energy Authority Date of Access: 27 April 2007. http://www.ukaea.org.uk/news/2006/21_11_06-2.html.

[1265] European Commission. Date of Access: 25 May 2007. http://ec.europa.eu/energy/res/index_en.htm.

[1266] European Commission. Date of Access: 25 May 2007. http://ec.europa.eu/energy/res/index_en.htm.

[1267] UK Energy and the Environment. Date of Access: 23 May 2007. http://www.camecon.com/press_releases/uk_energy_environment.htm.

[1268] i) Experimental carbon dioxide emission statistics at local authority and Government Office Region level 2004, DEFRA, (London), 27 November 2006. Date of Access: 28 December 2006. http://www.defra.gov.uk/news/2006/061127a.htm; ii) Revision to UK methane emission statistics and climate change sustainable development indicator, DEFRA, (London), 7 August 2006. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2006/060807a.htm. iii) 2005 UK climate change sustainable development indicator and greenhouse gas emissions final figures, DEFRA, (London), 31 January 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070131a.htm. iv) Miliband: emissions figures support need for increased action on climate change, DEFRA, (London), 29 March 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070329b.htm.

[1269] UNFCCC Convention Introduction. UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.

[1270] Government announces measures to encourage individuals to tackle climate change and take up greener lifestyles, DEFRA, (London), 28 December 2006. Date of Access: 28 December 2006. http://www.defra.gov.uk/news/2006/061228a.htm.

[1271] Government backs new campaign to slash CO_2 emissions, DEFRA, (London), 23 April 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070423a.htm.

On 23 April 2007, Prime Minister Tony Blair and Environment Secretary David Miliband launched The Climate Group's '*We're In This Together'* Campaign, which works to provide "practical ideas for how individuals can reduce their CO_2 footprint."[1273] The campaign is a collaboration of government, NGOs and businesses such as B&Q, British Gas, Marks & Spencer, O2, BSkyB, and Tesco.[1274] The UK is also introducing a code of best practice for offsetting, which "will enable people to make informed choices about the most effective offsetting products on the market."[1275] The consultation period closed on 13 April 2007 and the code of practise should become operational in autumn 2007.[1276] All of the above campaigns have contributed to the fulfilment of the UK's commitment to the UNFCCC to "share information on…best practices."[1277]

The UK has publicized its new national policies to "combat the growing level of green house gas emissions,"[1278] thus meeting its UNFCCC commitment to share information on national policies.[1279] Many of these policies were released as part of the UK's budget report[1280] on 21 March 2007, which contained key announcements on the doubling of all rates of air passenger duty, immediate increases in fuel duty rate, phasing out of high energy light bulbs in the UK by 2011, incentives for biofuel development and use, a competition for carbon capture and storage (CCS) demonstration, and a time-limited exemption from stamp duty for all zero-carbon homes.[1281]

On 13 March 2007, the UK government published a draft Climate Change Bill that will set targets for a 60% reduction in CO_2 emissions by 2050.[1282] The bill will include five-yearly 'carbon budgets;' however, opposition parties and NGOs have criticized the bill for not including annual targets, saying the current proposals will "enable responsibility for failure to be shunted on from one government to another."[1283] The bill is currently in its consultation phase, which will end on 12 June 2007.[1284] The UK Government has also opened a new 'Office of Climate Change,' which will assist in the "development of climate change policy and strategy."[1285] Thus the UK has fulfilled its UNFCCC commitment to "launch national strategies for addressing greenhouse gas emissions."[1286]

[1272] Act on CO_2 minister urges motorists, GNN on behalf of Department for Transport, (London).
[1273] Government backs new campaign to slash CO_2 emissions, DEFRA (London), 23 April 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070423a.htm.
[1274] 'We're in this together' say Government and business, Sam Bond, Edie.net, 24 April 2007. Date of Access: 25 April 2007. http://www.edie.net/news/news_story.asp?id=12933&channel=0.
[1275] Government backs new campaign to slash CO_2 emissions, DEFRA, (London), 23 April 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070423a.htm.
[1276] Climate change: Carbon offsetting - Code of Best Practice, DEFRA, (London), 18 January 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/environment/climatechange/uk/carbonoffset/codeofpractice.htm.
[1277] UNFCCC Convention Introduction. UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.
[1278] David Miliband welcomes Pre-Budget Report environment measures, DEFRA, (London), 6 December 2006. Date of Access: 28 December 2006. http://www.defra.gov.uk/news/2006/061206a.htm.
[1279] UNFCCC Convention Introduction, UNFCCC, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.
[1280] Chapter 7: Protecting the Environment, Budget 2007, HM Treasury, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf
[1281] Miliband welcomes Budget as next steps to low-carbon economy, DEFRA, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070321a.htm
[1282] New Bill and strategy lay foundations for tackling climate change – Miliband, DEFRA (London), 13 March 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070313a.htm.
[1283] 'Binding' carbon targets proposed, BBC, (London), 13 March 2007. Date of Access: 25 April 2007. http://news.bbc.co.uk/2/hi/uk_news/politics/6444145.stm.
[1284] Draft Climate Change Bill, DEFRA, (London), 13 March 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/corporate/consult/climatechange-bill/.
[1285] Office of Climate Change starts work, DEFRA, (London), 22 September 2006. Date of Access: 29 December 2006. http://www.defra.gov.uk/news/2006/060922b.htm.
[1286] UNFCCC Convention Introduction. UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.

DEFRA has published the results of their cross-regional research project, which looks at the impacts of climate change locally, and how sectors can adapt.[1287] This fulfils the UK's UNFCCC commitments on "adapting to expected impacts" of climate change.[1288]

The UK government has committed over £40 million to help build developing countries' understanding of how climate change will affect them and to improve integration of climate risks within development plans.[1289] David Miliband, UK Secretary of State for DEFRA, set out a "UK commitment to help deliver low carbon energy to Africa." The UK is also linking London-based carbon market experts with developing projects in Africa.[1290] On 23 January 2007, the governments of India and the UK announced a collaborative project to "provide a detailed assessment of potential impacts of climate change in India and to undertake a pilot regional project to identify and develop adaptation strategies."[1291] In the Budget 2007, it was announced that the UK would set aside £800 million for international environmental protection, and to help developing countries respond to climate change;[1292] £50m of this fund has already been allocated to help ten Congo forest countries control deforestation, which worldwide accounts for 18% of global emissions.[1293] These strategies fulfil the UK's UNFCCC commitment on "the provision of financial and technological support to developing countries."[1294]

The UK government has already surpassed the emissions levels required for the compliance period 2008 to 2012. Additionally, the UK intends to meet its targets "almost twice over" by 2010.[1295] The UK is now working to "ensure that negotiations on a future framework are concluded by 2009,"[1296] while the Prime Minister is reiterating the need for "a binding framework with… a stabilisation goal for greenhouse gas emissions."[1297]

In conclusion, the UK has been awarded a score of +1 as it has fully complied with all of the commitments made at St. Petersburg relating to the UNFCCC and the Kyoto Protocol. The UK is actively reducing emissions at home while pushing for ambitious targets in the international arena.

Author: Niel Bowerman

Sustainable Use of Energy: +1

The UK government registered a high level of compliance with its commitments to foster more sustainable use of energy. Greater incentives for energy efficiency and micro generation, along with increased funding for R&D into low carbon technologies have meant that UK scores +1.

[1287] Defra announces results from cross-regional research climate change projects, DEFRA, (London), 24 October 2006. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2006/061024a.htm.
[1288] UNFCCC Convention Introduction. UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.
[1289] International Climate Talks, DEFRA, (London), 17 November 2007. Date of Access: 28 November 2006. http://www.defra.gov.uk/news/2006/061117a.htm.
[1290] Miliband sets out UK commitment to help deliver low carbon energy for Africa, DEFRA, (London), 15 November 2006. Date of Access: 28 December 2006. http://www.defra.gov.uk/news/2006/061115b.htm.
[1291] Defra announces second phase of key Indian climate change adaptation project, DEFRA, (London), 23 January 2007. Date of Access: 25 April 2007. http://www.defra.gov.uk/news/2007/070123c.htm.
[1292] Chapter 7: Protecting the Environment, Budget 2007, HM Treasury, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf
[1293] Chapter 7: Protecting the Environment, Budget 2007, HM Treasury, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf
[1294] UNFCCC Convention Introduction. UNFCCC Secretariat, (Bonn). Date of Access: 28 December 2006. http://unfccc.int/essential_background/convention/items/2627.php.
[1295] Pre-Budget Report, HM Treasury, (London), 28 December 2006. Date of Access: 28 December 2006. http://www.hm-treasury.gov.uk/media/571/CF/pbr06_chapter7.pdf.
[1296] Important steps forward but more progress essential, say UK and Germany at international climate talks, DEFRA, (London), 17 November 2006. Date of Access: 29 December 2006. http://www.defra.gov.uk/news/2006/061117a.htm.
[1297] Blair, Tony, Clinton Climate Initiative launch speech, 10 Downing Street, (London), 1 August 2006. Date of Access: 28 December 2006. http://www.number10.gov.uk/output/Page9961.asp.

The Communities Minister, Ruth Kelly, announced new measures called the Code for Sustainable Homes to tighten building and planning rules, and introduced a rating system for the energy efficiency of a house, with the explicit aim of making all new homes carbon neutral by 2016,[1298] meaning that each house would return as much electricity to the National Grid as they consume each year.[1299] Along these lines, the Budget announced a relief of Stamp Duty for zero carbon homes until 2012[1300] though experts have predicted that this does not significantly increase the economic incentive for building zero carbon homes,[1301] as stamp duty is a maximum of 1-3% of the value of the house, but the changes needed to become carbon zero are more expensive. In addition, the relief is only applicable to homes worth less than £500,000.

The UK government has also continued developing the Low Carbon Building Program (LCBP),[1302] launched in April 2006 to provide financial incentives and grants for micro-generation technologies in all sectors. The LCBP was bolstered over the past year, particularly in two instances: first, in late October 2006, when Malcolm Wicks, the UK Energy Minister, announced a transfer of £6.2 million to the householder stream of the LCBP to encourage household micro generation,[1303] and, second, with the direct injection of a further £6 million in Gordon Brown's 2007 Budget.[1304] The economic incentives for micro generation by householders were also increased with guarantees that energy sold back to the grid will not be subject to income tax.[1305] However, no measures were taken to ensure that householders would be able to sell surplus power for the same price as they buy it, as environmental groups had suggested.[1306]

Further compliance was demonstrated as the Chancellor developed the Environmental Transformation Fund, which was set up in June 2006 to support renewable energy, biofuels, and other non-nuclear, low-carbon technologies. This will assist in R&D and technology adoption, and is expected to be a public-private partnership. Details of this plan are not fully formulated yet, and financial information will be made public in the 2007 Comprehensive Spending Review.[1307] In addition, funding for the newly established Energy Technologies Institute has increased over the past year, thus helping to speed up the deployment of low-carbon technologies.[1308] These massive increases in spending on R&D of low-carbon technologies will lead to future reductions of UK energy demand and carbon emissions.

Changes have also been made to the duty structure of various transport fuels and measures taken to deal with tax exemption on aviation fuel[1309] including a doubling of the Air

[1298] Zero Carbon Homes Plan unveiled, BBC News UK edition, 13 December 2006. Date of Access 31 December 2006. http://news.bbc.co.uk/1/hi/sci/tech/6176229.stm.
[1299] The Zero Carbon Home Dream, Simon Lambert, This is Money, 9 December 2006. Date of Access: 31 December 2006. http://www.thisismoney.co.uk/mortgages/article.html?in_article_id=415463&in_page_id=8.
[1300] Chancellor of the Exchequer's Budget Statement, 21 March 2007. Date of Access: 25 Apr 2007. http://www.hm-treasury.gov.uk/budget/budget_07/bud_bud07_speech.cfm.
[1301] Royal Institute of Chartered Surveyors, Pre-Budget Report: 10 key points. Date of Access: 31 December 2006. http://www.rics.org/Property/Propertyfinanceandinvestment/RealEstateInvestmentTrusts/Pre-Budget_2007.htm.
[1302] Low Carbon Buildings Program. Date of Access: 18 March 2007. http://www.lowcarbonbuildings.org.uk.
[1303] STA welcomes more Money for Grants for Solar Panels, Solar Trade Association, 26 October 2006. Date of Access: 28 February 2007. http://www.greenenergy.org.uk/sta/news/articles.asp?id=1244.
[1304] Extra £6m for green householders – Darling. Department of Trade and Industry, 21 March 2007. Date of Access: 26 Apr 2007. http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=273009&NewsAreaID=2.
[1305] HM Revenue and Customs, Microgeneration: tax treatment of income from sales of surplus power by householders. Date of Access: 28 February 2007. http://www.hmrc.gov.uk/pbr2006/pbrn19.htm.
[1306] Chancellor must tackle climate change in pre budget report, Friends of the Earth, UK, 30 November 2006. Date of Access: 28 February 2007.
http://www.foe.co.uk/resource/press_releases/chancellor_must_tackle_cli_29112006.html.
[1307] Government announces renewable fund, Energy Saving Trust, 29 June 2006. Date of Access: 28 February 2007. http://www.est.org.uk/aboutest/news/dailynews/index.cfm?mode=view&articleid=17249344.
[1308] Energy Technologies Institute. Date of Access: 24 May 2007. http://www.dti.gov.uk/science/science-funding/eti/index.html.
[1309] Pre-Budget Report, HM Treasury, (London), 28 December 2006. Date of Access: 28 December 2006. http://www.hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/report/prebud_pbr06_repindex.cfm.

Passenger Duty, a rise in Vehicle Excise Duty for the most inefficient cars, and an above-inflation rise in fuel prices.[1310]

In conclusion, the UK has been awarded full compliance with their commitments relating to the sustainable use of energy. The UK has provided incentives to promote initiatives such as micro generation, zero-carbon homes, and more research in renewable technologies.

Author: Hector Guinness

Innovative Energy Technologies in Hydrocarbon Production and Use: +1

The United Kingdom registered full compliance with the commitments it made at the St. Petersburg Summit relating to the production and use of hydrocarbons. The UK has worked extensively with the private sector to launch the Energy Technologies Institute, which has already secured funding of over £500 million.[1311] The UK has also launched the £50 million Hydrogen, Fuel Cell, and Carbon Abatement Technologies Demonstration Program,[1312] alongside a carbon capture and storage (CSS) demonstration competition.[1313] The UK is clearly pushing the development of CSS alongside other projects to reduce the environmental impact of hydrocarbons.

The UK government has been encouraging a "second wave" of North Sea exploration, and has provided incentives, such as the "new licences for small companies with big ideas," to help start-up companies develop new gas discoveries.[1314] Trade and Industry Secretary Alistair Darling also personally chaired the PILOT meeting of oil and gas representatives for the first time,[1315] thus fulfilling the UK's commitment to "work with the private sector to advance more efficient hydrocarbon production."[1316]

The Department for Trade and Industry (DTI) launched the Energy Technologies Institute on 14 September 2006.[1317] The UK government has fulfilled its St. Petersburg commitment to work with the private sector by involving BP, E.ON UK, Shell, EDF Energy, Rolls Royce, and Scottish and Southern Energy in this Institute.[1318] The UK government "is prepared to provide up to half a billion pounds towards the Institute over the next 10 years,"[1319] and "£550 million in public and private contributions has already been raised."[1320] The Institute's aims include developing "technologies to improve efficiency of power generation,"

[1310] Chancellor of the Exchequer's Budget Statement, 21 March 2007. Date of Access: 25 April 2007. http://www.hm-treasury.gov.uk/budget/budget_07/bud_bud07_speech.cfm.
[1311] Pre-Budget Report, HM Treasury, (London), 6 December 2006. Date of Access: 29 December 2006. http://www.hm-treasury.gov.uk/media/571/CF/pbr06_chapter7.pdf.
[1312] Launch of Hydrogen, Fuel Cell, and Carbon Abatement Technologies Demonstration Programme, DTI, (London), 19 September 2006. Date of Access: 30 December 2006. http://www.dti.gov.uk/pressroom/Speeches/page34148.html.
[1313] Chapter 7: Protecting the Environment, Budget 2007, HM Treasury, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf.
[1314] North Sea 'absolutely critical' to UK energy security, Alistair Darling, GNN on behalf of the DTI, (London), 24 November 2006. Date of Access: 29 December 2006. http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=245255&NewsAreaID=2.
[1315] North Sea 'absolutely critical' to UK energy security, Alistair Darling, GNN on behalf of the DTI, (London), 24 November 2006. Date of Access: 29 December 2006. http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=245255&NewsAreaID=2.
[1316] St. Petersburg Global Energy Security Communiqué, The G8 Group, (St. Petersburg), 16 July 2006. Date of Access: 29 December 2006. http://en.g8russia.ru/docs/11.html.
[1317] New investment in energy initiative launched today, GNN on behalf of the DTI, (London), 14 September 2006. Date of Access: 29 December 2006. http://www.gnn.gov.uk/Content/Detail.asp?ReleaseID=227095&NewsAreaID=2.
[1318] Pre-Budget Report, HM Treasury, (London), 6 December 2006. Date of Access: 29 December 2006. http://www.hm-treasury.gov.uk/media/571/CF/pbr06_chapter7.pdf.
[1319] North Sea 'absolutely critical' to UK energy security, Alistair Darling, GNN on behalf of the DTI, (London), 24 November 2006. Date of Access: 29 December 2006. http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=245255&NewsAreaID=2.
[1320] Pre-Budget Report, HM Treasury, (London), 6 December 2006. Date of Access: 29 December 2006. http://www.hm-treasury.gov.uk/media/571/CF/pbr06_chapter7.pdf.

"sustainable approaches to reducing emissions from existing fossil fuel technologies," and "sustainable energy infrastructure and supply technology."[1321]

The UK government announced in the Budget 2007, released on 21 March 2007, that it would launch a competition to develop the UK's first full-scale carbon capture and storage (CCS) demonstration.[1322] However, opposition parties have criticized the scheme, arguing that the Chancellor of the Exchequer, Gordon Brown "still isn't willing to bite the bullet and give the go ahead to the scheme in Peterhead, which has a two year lead on any other facility. Instead he has chosen to launch an unnecessary competition with a delayed decision sometime next year."[1323]

During November 2006, the UK successfully pressed for an amendment in the London Convention – a protocol on dumping waste at sea – to allow for CCS.[1324] The UK is working to develop a regulatory regime to enable CO_2 to be safely and legally stored on- and off-shore and to encourage CCS. According to the Industry Secretary, a consultation on this will be launched later this year.[1325] The UK is also working with Norway on a joint study on the infrastructure needed for CO_2 transport and CCS below the North Sea.[1326]

The Department for Trade and Industry (DTI) launched its £50 million Hydrogen, Fuel Cell, and Carbon Abatement Technologies Demonstration Program on 19 December 2006.[1327] Alongside the development of hydrogen and fuel cells, the program aims to demonstrate technologies that help reduce greenhouse gas emissions from the production and use of hydrocarbons.[1328] The UK Government also intends to set "ambitious targets for zero carbon emissions from new fossil fuel plants."[1329]

The DTI has placed stringent environmental conditions on the National Grid's construction of a new gas pipeline through South Wales.[1330] The DTI has also provided £560,000 to the private sector to develop an underwater radio system that will be 'revolutionary' in fields such as environmental monitoring.[1331] Thus the UK has fulfilled its commitment to "reduce the environmental impact" of the "production and use" of hydrocarbons.[1332]

In conclusion, the UK has been awarded a score of +1 as it has fully complied with all of the commitments made at St. Petersburg relating to innovative energy technologies in the production and use of hydrocarbons. The UK government has collaborated extensively with the private sector while working to improve the efficiency and environmental impact of the production and use of hydrocarbons.

[1321] Energy Technologies Institute Prospectus, DTI, (London), 14 September 2006. Date of Access: 29 December 2006. http://www.dti.gov.uk/files/file34010.pdf.
[1322] Chapter 7: Protecting the Environment, Budget 2007, HM Treasury, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.hm-treasury.gov.uk/media/73B/74/bud07_chapter7_273.pdf
[1323] It's Time for Decisions Not Competitions on Carbon Capture, Alex Salmond, Scottish Nationalist Party (SNP), 21 March 2007. Date of Access: 25 April 2007. http://westminster.snp.org/index.php?option=com_content&task=view&id=2532&Itemid=38.
[1324] Pre-Budget Report, HM Treasury, (London), 6 December 2006. Date of Access: 29 December 2006. http://www.hm-treasury.gov.uk/media/571/CF/pbr06_chapter7.pdf.
[1325] Darling outlines race to lock up Carbon Emissions, GNN on behalf of DTI, (London), 21 March 2007. Date of Access: 25 April 2007. http://www.gnn.gov.uk/content/detail.asp?ReleaseID=272860&NewsAreaID=2.
[1326] Pre-Budget Report, HM Treasury, (London), 6 December 2006. Date of Access: 29 December 2006. http://www.hm-treasury.gov.uk/media/571/CF/pbr06_chapter7.pdf.
[1327] Launch of Hydrogen, Fuel Cell, and Carbon Abatement Technologies Demonstration Programme, DTI, (London), 19 September 2006. Date of Access: 30 December 2006. http://www.dti.gov.uk/pressroom/Speeches/page34148.html.
[1328] HFCCAT Aims and Objectives, DTI, (London), September 2006. Date of Access: 30 December 2006. http://www.hfccat-demo.org/aims_objectives/aims_objectives.htm.
[1329] Prime Minister Tony Blair, Morning Press Briefing, 10 Downing Street, (London), 20 October 2006. Date of Access: 29 December 2006. http://www.pm.gov.uk/output/Page10259.asp.
[1330] Environmental conditions placed on South Wales pipeline, GNN on behalf of DTI, (London), 7 February 2007. Date of Access: 25 April 2007. http://www.gnn.gov.uk/content/detail.asp?ReleaseID=262409&NewsAreaID=2.
[1331] DTI grant to develop 'revolutionary' underwater radio, GNN on behalf of the DTI, (London), 23 March 2007. Date of Access: 25 April 2007. http://www.gnn.gov.uk/content/detail.asp?ReleaseID=273543&NewsAreaID=2.
[1332] St. Petersburg Global Energy Security Communiqué, The G8 Group, (St. Petersburg), 16 July 2006. Date of Access: 29 December 2006. http://en.g8russia.ru/docs/11.html.

14. United States

Background

The United States government registered partial compliance with its St. Petersburg commitments on climate change. Over the last twelve months, Washington has taken numerous positive steps to research, develop, and promote renewable and alternative energy and innovative hydrocarbon energy technology. In addition, the Bush Administration has supported efforts to transfer these technologies to developing countries[1333] and has encouraged US multinationals to consider adopting "green" business practices.[1334] As expected, the Administration continues its opposition to both mandatory cap and trade carbon regimes as methods for reducing greenhouse gas (GHG) emissions. While the Administration has also opposed increased fuel economy standards for vehicles, the Democrat-controlled Congress has recently introduced bills to increase such standards by 40% over the next 10-12 years.[1335]

The Bush administration continues to promote market-based, voluntary measures and technological innovation as pathways for reducing GHG emissions. In particular, the administration has focused on developing private sector partnerships, grant programs, and tax incentives, particularly in biofuels, solar energy, and hybrid and clean diesel technologies. Since the St. Petersburg Summit, US funding for research and development has led to several technological innovations: private sector partners have improved the cellulose-to-ethanol conversion process,[1336] removed SO_2 from the nation's diesel fuel,[1337] set a world-record energy conversion rate for solar concentrator cells,[1338] and opened the world's first geothermal plant using low-temperature technology.[1339] Government funding has generated similar efforts to reduce the environmental impact of hydrocarbon extraction and to develop new carbon sequestration projects.

In terms of international collaboration, the US affirmed its commitment to voluntary emissions reductions and technology development and transfer through its leadership in the six-nation Asia-Pacific Partnership. In addition, the United States and the European Union held the inaugural meeting of the *EU-US High Level dialogue on Climate Change, Clean Energy and Sustainable Development* in Helsinki, Finland, on 24-25 October 2006.[1340] These discussions aimed to strengthen bilateral cooperation on a wide range of climate change challenges, including "policies and measures to promote low greenhouse gas emission technologies; cleaner energy; cleaner and more efficient vehicles; and biodiversity loss."[1341]

[1333] Asia-Pacific Partnership on Clean Development and Climate Executive Summary of Task Force Action Plans, (Washington, DC), 31 October 2006. Date of Access: 22 December 2006. http://www.asiapacificpartnership.org/APP%20Action%20Plans/ExecutiveSummary%20_31%20Oct%2006_%20_2_.pdf.

[1334] EPA Challenges Top Corporations to Double Use of Green Power, US EPA Roxanne Smith, 4 December 2006. Date of Access: 16 December 2006. http://yosemite.epa.gov/opa/admpress.nsf/a4da39135d4e22bb8525701800559d96/689c8c8664496e3a8525723a005d92b0!OpenDocument.

[1335] Library of Congress, Thomas. Date of Access: 7 May 2007. http://thomas.loc.gov/.

[1336] Major Investment in Ethanol Conversion Technology Announced, US Department of Energy, (Washington), 14 December 2006. Date of Access: 23 December 2006. http://www1.eere.energy.gov/news/progress_alerts/progress_alert.asp?aid=206.

[1337] James Connaughton, Current Environmental and Energy Policy Issues in the United States and Germany, US Mission to the European Union, 27 October 2006. Date of Access: 16 December 2006. http://useu.usmission.gov/Dossiers/Climate_Change/Oct2706_Connaughton_Germany.asp.

[1338] New World Record Achieved in Solar Cell Technology, US Department of Energy (Washington), 5 December 2006. Date of Access: 26 December 2006. http://www.energy.gov/4503.htm.

[1339] DOE-funded Geothermal Plant World's First Using Low-Temperature Technology, US Department of Energy (Washington), 22 August 2006. Date of Access: 23 December 2006. http://www1.eere.energy.gov/news/progress_alerts/progress_alert.asp?aid=183.

[1340] US Mission to the European Union 25 October 2006 Press Release. Date of Access: 16 December 2006. http://useu.usmission.gov/Dossiers/Energy/Oct2506_High_Level_Dialogue.asp.

[1341] US Mission to the European Union, Press Release, 25 October 2006. Date of Access: 16 December 2006. http://useu.usmission.gov/Dossiers/Energy/Oct2506_High_Level_Dialogue.asp.

At the same time, the administration's continued refusal to regulate GHG emissions hampered progress at the UNFCCC COP 12 Conference in Nairobi,[1342] provoked several climate change-related lawsuits (which were eventually settled by a recent Supreme Court ruling),[1343] and discouraged "involvement [in emissions reductions] by other big-polluting outsiders such as China and India."[1344]

Many environmental watchdogs, journalists, foreign government officials, and climate change experts contend that the impetus for reducing greenhouse gases lies squarely on the United States' shoulders, a responsibility that the Administration has thus far refused to assume. As *The Economist* succinctly explains, "Developing countries argue, quite reasonably, that, since the rich world has created the problem (of greenhouse gases), it must take the lead in solving it. So, if America continues to refuse to do anything to control its emissions, developing countries won't do anything about theirs. If America takes action, they just might."[1345]

It is worth noting that many of the states do not share the federal government's recalcitrance towards mandating compulsorily policies to reduce global warming emissions. A majority of the states have taken action to address GHG emissions from their utilities, buildings stock, and vehicle fleets. Since late 2006, California and states in the Northeast, have legislated, or regulated by executive decree, measures to significantly reduce CO_2 and other GHG emissions. Notably, in September 2006, California, the fifth largest economy in the world, signed AB 32 into law, which mandates a reduction in California's GHGs by 25% by 2020 via market mechanisms and alternative compliance mechanisms.[1346] On the east coast, on 27 April 2007 Maryland became the tenth state in the Northeast to join the Regional Greenhouse Gas Initiative (RGGI), a GHG cap-and-trade program that requires all participating state governments to reduce GHG emissions by roughly 10% from current levels by 2019.[1347]

The United States is awarded a score of -1 on UNFCCC/Kyoto, a score of 0 on "Sustainable Use of Energy" and "Clean and Efficient Energy in the Transport Sector", and scores of +1 on "Alternative and Renewable Energy" and "Innovative Energy Technologies in Hydrocarbon Production and Use." These positive scores reflect the Bush Administration's efforts to encourage technological innovation in, and usage of, clean energy-related products and initiatives, while negative and mixed scores reflect the country's refusal to take a tougher regulatory stance on energy standards and opposition to substantive, global, GHG-reduction frameworks.

Author: Ethan Kay

Clean and Efficient Energy in the Transport Sector: 0

Since the St. Petersburg summit, the United States has failed to take substantive new action to fulfill its commitment to provide incentives for consumers to purchase hybrid and

[1342] Climate conference settles on next steps to negotiate future emissions cuts, International Herald Tribune, Associated Press, 17 November 2006. Date of Access: 16 December 2006. http://www.iht.com/articles/ap/2006/11/18/africa/AF_GEN_Kenya_Climate_Conference.php.

[1343] US Supreme Court. Massachusetts et al. Environmental Protection Agency et al: Certiorari to the US State Court of Appeals for the District of Columbia. Date of Access: 12 May 2007. http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf.

[1344] Climate in the Court, Washington Post Editorial, 26 November 2006. Date of Access: 16 December 2006. http://www.washingtonpost.com/wp-dyn/content/article/2006/11/25/AR2006112500634.html.

[1345] The Heat is On, Economist, 7 September 2006. Date of Access: 16 December 2006. http://www.economist.com/surveys/displayStory.cfm?story_id=7852924.

[1346] Gov. Schwarzenegger Signs Landmark Legislation to Reduce Greenhouse Gas Emissions, State of California. Office of the Governor. 27 September 2006. Date of Access: 5 May 2007. .http://gov.ca.gov/index.php?/press-release/4111/.

[1347] Governor Martin O'Malley Signs Greenhouse Gas Agreement, Climate Change Executive Order, State of Maryland, Office of the Governor, 20 April 2007. Date of Access: 5 May 2007. http://www.gov.state.md.us/pressreleases/070420.html

clean diesel vehicles, and to introduce large-scale efficient public hybrid and/or clean diesel transportation systems. While tax rebates to consumers purchasing hybrid vehicles, originally legislated in the Energy Policy Act of 2005, went into effect in 2006, no new incentives have been put in place post-St. Petersburg. Also, while the federal government is continuing past commitments to fund hybrid and clean diesel R&D, no new flows of funding have been announced since the St. Petersburg Summit. Furthermore, since the summit, the federal government has actively continued to oppose mandatory increases in fuel economy to reduce GHGs from the transportation sector, which accounts for 33% of total US energy-related CO_2 emissions.[1348]

In regards to the first component of the commitment, while no *new* consumer incentives have been developed since the St. Petersburg summit to advance the sales of hybrid and clean diesel vehicles, incentives were already included in the Energy Policy Act of 2005. Since the summit, those tax incentives have become available for individuals and businesses to apply toward the purchase of hybrid vehicles. Starting in 2006 and continuing through 2010, annual tax credits of between US$250 and US$3,400 per vehicle will be available for some but not all hybrid vehicles sold in the United States.[1349] Similar credits are available for lean-burn diesel vehicles, alternative-fuel vehicles, and fuel-cell vehicles.[1350] However, once a manufacturer has sold 60,000 vehicles in a year, the tax credit is reduced. Further, for electric vehicles purchased after 31 December 2006, the US government has eliminated the US$4,000 tax credit.[1351] On the sub-federal level, many states have also either passed or are debating legislation to offer tax breaks and other incentives for the purchase of hybrid vehicles.[1352]

In addition, the federal government has continued to provide funding for both public and private research on hybrid and clean diesel technology. The EPA research and development programs are done in partnership with automakers at its National Vehicle and Fuel Emissions Laboratory.[1353] Since 2002, the Bush Administration has shifted research funding to hydrogen fuel cells and away from hybrid research through the termination of the Partnership for a New Generation of Vehicles and the corresponding creation of the Freedom Cooperative Automotive Research program.[1354] In order to catch up with the Japanese automakers' hybrid technology, US automakers have recently requested US$500 million in hybrid research funding from the federal government.[1355] During the President's State of the Union address in January 2007, President Bush announced that his FY 2008 budget will request US$2.7 billion for an Advanced Energy Initiative, which calls for increased federal investment in research on hydrogen fuel technology, advanced batteries for hybrids and plug-in hybrids, bio-diesel fuels, and new methods of producing ethanol and other biofuels.[1356]

Also, it should be noted that the Administration has committed to improving the environmental profile of diesel fuel sold domestically. On 27 October 2006, James Connaughton, Director of the White House Council on Environmental Quality, announced

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[1348] Emissions of Greenhouse Gases in the United States 2005, US Energy Information Administration. Date of Access: 7 May 2007. http://www.eia.doe.gov/oiaf/1605/ggrpt/carbon.html.
[1349] State and Federal Hybrid Incentives, Union of Concerned Scientists. Date of Access: 14 January 2007. http://go.ucsusa.org/hybridcenter/incentives.cfm.
[1350] The Energy Policy Act of 2005: What the Energy Bill Means to You, US Department of Energy, (Washington, DC). Date of Access: 14 January 2007. http://www.energy.gov/taxbreaks.htm.
[1351] Federal Climate Change Expenditures: Report to Congress, Office of Management and Budget, Rob Portman, 3 May 2007. Date of Access: 27 May 2007. http://www.whitehouse.gov/omb/legislative/fy08_climate_change.pdf.
[1352] State and Federal Hybrid Incentives, Union of Concerned Scientists. Date of Access: 14 January 2007. http://go.ucsusa.org/hybridcenter/incentives.cfm.
[1353] Clean Automotive Technology, US EPA, (Washington, DC), 27 December 2006. Date of Access: 14 January 2007. http://epa.gov/otaq/technology/#partnerships.
[1354] Bush Trades Hybrid for Hydrogen Model, Science Magazine, 18 January 2002. Date of Access: 12 January 2007. http://www.sciencemag.org/cgi/content/full/295/5554/426?ck=nck.
[1355] Do US carmakers need and jump-start?, The Christian Science Monitor, 18 January 2007. Date of Access: 17 January 2007. http://www.csmonitor.com/2007/0118/p08s02-comv.html.
[1356] Fact Sheet: Strengthening America's Energy Security and Improving the Environment, US White House. Date of Access: 7 May 2007. http://www.whitehouse.gov/news/releases/2007/01/20070124-5.html.

that the United States has removed SO_2 from its diesel fuel nationwide. In his remarks, he commented, "this [measure] is going to enable a new generation of diesel engines that will be 90% free of NOx emissions."[1357] In addition to publicizing this technological breakthrough, he called for further biofuel research and global biofuel standards: "We need to enhance methane recovery, we need to research, develop and deploy second-generation biofuels…we need to come to an agreement on a common [international] standard so that our engine manufacturers can produce engines for a global economy to use biofuels."[1358]

President Bush has also set a goal of reducing by 2017 America's projected annual gasoline use by 20% by increasing alternative energy and improving energy efficiency.[1359] At the 2007 US-EU Summit, the United States reiterated these 2017 goals, pledging to increase fuel economy standards for passenger vehicles (replacing 5% of projected gasoline consumption) and use 35 billion gallons of alternative and renewable fuels (replacing 15% of projected gasoline consumption).[1360]

As for the second component of the commitment, pertaining to the introduction of large-scale efficient public hybrid and/or clean diesel transportation systems, little has been accomplished at the federal level. Currently, only 2% of the nation's 53,971 transit buses are hybrids, and while the US continues to provide funding for clean diesel public transport through the Environmental Protection Agency's (EPA) *National Clean Diesel Campaign*, the campaign has not received any additional funding to supplement its US$35 million annual budget.[1361] However, some progress has been made through federal-state partnerships. At the municipal level, there are examples of clean public transit efforts underway with financial assistance from the federal government. For example, the city of New York ordered 500 diesel-electric hybrid buses in January 2006, and in May 2007, Seattle announced that it will order up to 500 hybrid buses over the next five years, adding those to its 237 hybrids already on the street. Also, in February 2006 the EPA issued US$7.5 million in grants to states to help municipalities fund the cleanup of more than 500 tons of diesel emissions from 4,000 school buses nationwide.[1362]

Overall, the Bush Administration has consistently resisted taking a tougher regulatory stance on transportation-related greenhouse gases. This continued recalcitrance counteracts much of the progress the US has otherwise made towards compliance of the clean transport commitment. The Supreme Court's 2 April 2007 ruling in *Massachusetts v. EPA,* which determined that the EPA possesses the authority to regulate CO_2 emissions from vehicles and granted the EPA Administrator considerable power to create a national ambient air-quality standard for CO_2 (much like those in place for other polluting substances like SO_2, nitrogen oxide, and particulate matter) is a positive sign. However, the ruling does not require the agency to take immediate action to reduce GHGs.[1363]

[1357] Current Environmental and Energy Policy Issues in the United States and Germany, James Connaughton, US Mission to the European Union, 27 October 2006. Date of Access: 16 December 2006. http://useu.usmission.gov/Dossiers/Climate_Change/Oct2706_Connaughton_Germany.asp.

[1358] Current Environmental and Energy Policy Issues in the United States and Germany, James Connaughton, US Mission to the European Union, 27 October 2006. Date of Access: 16 December 2006. http://useu.usmission.gov/Dossiers/Climate_Change/Oct2706_Connaughton_Germany.asp.

[1359] Advancing Cooperation with Brazil on Biofuels, US Department of State Office of the Spokesman, 9 March 2007. Date of Access: 13 May 2007. http://www.state.gov/r/pa/prs/ps/2007/mar/81589.htm.

[1360] 2007 US-EU Summit Statement: Energy Security, Efficiency and Climate Change, 30 April 2007. Date of Access: 13 May 2007. http://www.whitehouse.gov/news/releases/2007/04/20070430-8.html.

[1361] Diesel Hybrid Corner, Diesel Technology Forum. Date of Access: 27 May 2007. http://www.dieselforum.org/technology-spotlight/diesel-hybrid-corner/; EPA's FY 2008 Budget Focuses on Next Phase of Environmental Progress, US Environmental Protection Agency (EPA), 5 February 2007. http://westcoastcollaborative.org/files/news/EPA_2008Budget.pdf.

[1362] CleanSchoolBus.org Campaign Alliance Alert, Union of Concerned Scientists. Date of Access: 27 May 2007. http://www.ucsusa.org/clean_vehicles/big_rig_cleanup/clean-school-bus-alliance-action-alert-7.html#EPA_Gives_School_Bus_GrantsNeed_Overwhel.

[1363] Climate in the Court, Washington Post Editorial, 26 November 2006. Date of Access: 16 December 2006. http://www.washingtonpost.com/wp-dyn/content/article/2006/11/25/AR2006112500634.html; US Democrats Mull Climate Change, Nick Miles, BBC News, 2 December 2006. Date of Access: 16 December 2006. http://news.bbc.co.uk/1/hi/world/americas/6200748.stm.

In the legislative branch, Congress introduced several pieces of legislation at the beginning of 2007 (S. 357, H.R. 1506) that would increase the fleet-wide fuel economy of cars, pickups, minivans, and SUVs from the current 24.6 mile-per-gallon (mpg) to 35 mpg by 2019 (2018 in the House version).[1364] The House bill has yet to be voted on by the House Committee on Energy and Commerce; however, the Senate bill was passed through the Committee on Commerce, Science, and Transportation on 8 May 2007 and will be voted on by the entire Senate soon.[1365] Progress may be moving more quickly at a state rather than federal level. For example, on 9 January 2007 California passed the world's first global warming standard for transportation fuels. The Low Carbon Fuel Standard (LCFS), signed by executive order, will initially reduce the carbon intensity of California's passenger vehicle fuels by at least 10% by 2020.[1366]

Since the St. Petersburg Summit, the United States has eliminated sulphur dioxide from diesel fuel nationwide, has called for further biofuel innovation, and has maintained its tax incentives and research programs to promote cleaner use of energy in the transport sector. Despite the above mentioned positive steps, the Bush Administration refuses to regulate transport-based greenhouse gases, fighting such requirements all the way to the Supreme Court. Therefore, the US is awarded a score of 0 for this commitment.

Authors: Anna Carmichael and Ethan Kay

Alternative and Renewable Energy: +1

The Unites States has fully complied with its G8 commitment to diversify its energy mix. By funding several long-term research projects with the public and private sector, increasing political support, and bringing to fruition new technologies developed with DOE funding, the US Federal Government committed itself to the implementation and development of alternative and renewable sources of energy. For instance, on 8 August 2006, the Department of Energy (DOE) and the Department of Agriculture (USDA) announced US$5.7 million in funding for nine research grants that will accelerate the development of alternative fuels, namely in the use of woody plant tissue (specifically lignocellulosic materials).[1367] On 11 October 2006, the DOE made US$4 million available for biomass genomic research.[1368] The USDA made a further US$12.8 million for biofuel R&D grants available on 11 October 2006.[1369] Significant improvements had already been made in this field due to DOE funding, which, for instance, led to the announcement on 14 December 2006 by Broin Companies that the an ethanol facility would be converted to a new cellulose to ethanol bio-refinery using technology developed under DOE National Renewable Energy Laboratory (NREL) funding.[1370] This new process can produce 27% more ethanol per acre of corn while using 83% less energy during production. Other advances in the development of cellulosic fuels include the establishment of a research alliance between DOE NREL and

[1364] Library of Congress, Thomas. Date of Access: 7 May 2007. http://thomas.loc.gov/.
[1365] Library of Congress, Thomas. Date of Access: 7 May 2007. http://thomas.loc.gov/.
[1366] The Role of a Low Carbon Fuel Standard in Reducing Greenhouse Gas Emissions and Protecting Our Economy, State of California, Office of the Governor. Date of Access: 8 January 2007. http://gov.ca.gov/index.php?/fact-sheet/5155.
[1367] DOE/USDA Award Grants for Biobased Fuels Research, US Department of Energy, (Washington), 10 August 2006. Date of Access: 23 December 2006. http://www.eere.energy.gov.afdc/progs/ddown.cgi?afdc/WHATS_NEW/617/1/1.
[1368] USDA-DOE Make Available $4 Million for Biomass Genomics Research, US Department of Energy, (Washington), 12 October 2006. Date of Access: 26 December 2006. http://www.energy.gov/news/4355.htm.
[1369] Secretaries Bodman & Johanns Kick Off Renewable Energy Conference with 17.5 Million for Biofuels Research and Development Grants, US Department of Energy, (Washington), 11 October 2006. Date of Access: 26 December 2006. http://www.energy.gov/4351.htm.
[1370] Major Investment in Ethanol Conversion Technology Announced, US Department of Energy, (Washington), 14 December 2006. Date of Access: 23 December 2006. http://www1.eere.energy.gov/news/progress_alerts/progress_alert.asp?aid=206.

Chevron Technology Venture LLC to advance the technologies that turn forestry and agricultural cellulosic waste in ethanol and other biofuels.[1371]

In his keynote address at the Advancing Renewable Energy Conference in St. Louis, Missouri, on 12 October 2006, President Bush challenged attendees to make development of alternative energy a national priority, especially in the area of biofuels.[1372] For instance, he said, "it seems like it makes sense to spend money, your money, on researching cellulosic ethanol, so that we could use wood chips, or switch grass, or other natural materials."[1373] Bush also emphasized the recent investment in two new Bioenergy Centers that will accelerate basic genomics research in biofuels.[1374] This US$250 million investment keeps the US on track with the US Energy Policy Act of 2005 (EPAct). This challenge was echoed as well by the Assistant Secretary of Energy, Andy Karsner, who said, "The prospect of massive penetration of renewable sources…is not only possible, it is something that is quantifiable…If we are willing to do what Americans do best: embrace innovation and entrepreneurship, marry science and commerce, think dynamically, and not to be consumed by the seemingly static nature of the status quo."[1375] This was demonstrated by Karsner's encouragement of Silicon Valley investment in solar, plug-in hybrids, and other technologies[1376] and the development of national standards for E-85 technology.[1377]

The United States also demonstrated its commitment towards the development and use of other renewable technologies. For instance, on 2 August 2006, the NREL announced the construction of a new Research Support Facility. This building—while contributing to future research—will also integrate energy-saving design, putting into practice technology developed through DOE funding.[1378] Also on 22 August 2006, through use of DOE funding, the world's first geothermal plant using low-temperature technology came online.[1379] This project will serve as a pilot study, with information shared with industry over a three-year period. On 12 October 2006, US DOE Secretary announced US$13 million to expand solar energy technologies such as more efficient solar panels and photovoltaic devices.[1380] This funding is part of the President Bush's Solar America Initiative (SAI) that aims to make solar energy competitive with conventional energy sources by 2015. An example of recent success of this initiative is the achievement of world-record energy conversion rate for solar

[1371] NREL, Chevron Establish Research Alliance to Advance Cellulosic Biofuels, US Department of Agency (Washington), 4 October 2006. Date of Access: 23 December 2006. http://www.nrel.gov/news/press/2006/445.html.
[1372] President Bush Highlights Support for Advanced EERE Technologies and Programs, US Department of Energy (Washington), 13 October 2006. Dates of Access: 23 December 2006. http://www.eere.energy.gov/news/daily.cfm/hp_news_id=27.
[1373] President Bush Highlights Support for Advanced EERE Technologies and Programs, US Department of Energy (Washington), 13 October 2006. Dates of Access: 23 December 2006. http://www.eere.energy.gov/news/daily.cfm/hp_news_id=27.
[1374] DOE to Invest $250 Million in New Bioenergy Centers, US Department of Energy (Washington), 2 August 2006. Date of Access: 26 December 2006. http://www.energy.gov/news/3883.htm.
[1375] Closing Address at the National Renewable Energy Conference, US Department of Energy (Washington), 12 October 2006. Date of Access: 23 December 2006. http://www.eere.energy.gov/news/speeches/2006-10-12_advancing_renewable_energy.cfm.
[1376] Assistant Secretary Karsner Encourages Silicon Valley to Invest in Renewables, US Department of Energy (Washington), 19 October 2006. Date of Access: 23 October 2006. http://www.eere.energy.gov/news/daily.cfm/hp_news_id=29.
[1377] Department of Energy and Underwriters Laboratory Establish National Standards for E-85 Pumps, US Department of Energy (Washington), 31 October 2006. Date of Access: 23 December 2006. http://www1.eere.energy.gov/news/progress_alerts/progress_alert.asp?aid=183http://www.eere.energy.gov/news/daily.cfm/hp_news_id=29.
[1378] NREL Selects Contractor for New Research Support Facility, US Department of Energy NREL, (Washington), 2 August 2006. Date of Access: 23 December 2006. http://www.nrel.gov/news/press/2006/443.html.
[1379] DOE-funded Geothermal Plant World's First Using Low-Temperature Technology, US Department of Energy (Washington, D.C.), 22 August 2006. Date of Access: 23 December 2006. http://www1.eere.energy.gov/news/progress_alerts/progress_alert.asp?aid=183.
[1380] Energy Secretary Announces $13 Million to Expand Solar Energy Technologies, US Department of Energy (Washington, D.C.), 12 October 2006. Date of Access: 26 December 2006. http://www.energy.gov/4354.htm.

concentrator cells developed by Boeing-Spectrolab with DOE funding through the SAI program.[1381]

Other examples of compliance include the DOE's plans to increase the use and availability of alternate fuels for transportation through an US$8 million funding of 16 projects.[1382] This is accompanied by other programs such as the Federal Transportation Administration's (FTA) 18 October 2006 decision to partner with private sector to demonstrate advanced hybrid-electric hydrogen fuel cell buses in many states.[1383] Finally, other funding of alternative and renewable energy research includes the funding of 25 hydrogen research and development projects totaling US$100 million[1384] announced on 24 October 2006 and the announcement of a US$2 billion federal loan guarantee program to help spur investment in projects that employ new energy technologies.[1385]

The President's 2007 Budget for Climate Change also "called for the elimination of about US$2 billion in tax incentives for oil and gas corporations that were included in the Energy Policy Act of 2005."[1386] Furthermore, the President hoped to make the R&D tax credit – an incentive scheme aimed at developing new energy technologies – a permanent part of the tax code.[1387] The proposed 2008 budget also allocates over US$600 million for the Solar America, Biofuels, and Hydrogen Fuel initiatives,[1388] and an additional US$81 million to accelerate research that would lead to advanced battery technologies to power "plug-in" vehicles that are recharged at night.[1389]
In January 2007, the House of Representatives announced that it aims to cut US$14 billion in federal oil and tax breaks and other benefits over the next 10 years and allocate them instead to renewable-energy programs.[1390] Despite this noticeable reduction in government support for the oil and gas industry, the industry will remain by far the largest recipient of federal energy largesse.[1391] In April 2007, lawmakers on Capitol Hill also began debating the potential of a carbon tax.[1392] The Administration opposes mandatory CO_2 limits, however, and few lawmakers, Democrat or Republican, are eager to pursue this option,

[1381] New World Record Achieved in Solar Cell Technology, US Department of Energy, (Washington, D.C.), 5 December 2006. Date of Access: 26 December 2006. http://www.energy.gov/4503.htm.
[1382] DOE's clean Cities Announces Over $8 million to Increase Use and Availability of Alternative Fuels, US Department of Energy, (Washington, D.C.), 31 October 2006. Date of Access: 23 December 2006. http://www.energy.gov/news/4404.htm.
[1383] FTA Awards $5.67 Million to Demonstrate Economical Hybrid-Electric Fuel Cell Bus, US Department of Energy (Washington, D.C.), 18 October 2006. Date of Access: 23 December 2006. http://www.eere.energy.gov/afdc/progs/ddown.cgi?afdc/WHATS_NEW/643/1/1.
[1384] US Department of Energy Awards $100 Million in Fuel Cell R&D, US Department of Energy, (Washington, D.C.), 24 October 2006. Date of Access: 26 December 2006. http://www.energy.gov/4401.htm.
[1385] Secretary Bodman Announces $2 Billion Federal Loan Guarantee Program as Part of First Anniversary Celebration of Energy Policy Act, US Department of Energy, (Washington, D.C.), 7 August 2006. Date of Access: 26 December 2006. http://www.energy.gov/3904.htm.
[1386] Setting the Record Straight: President Bush's Strong Record of Addressing Climate Change, The White House, 11 July 2006. Date of Access: 16 December 2006. http://www.whitehouse.gov/news/releases/2006/07/20060711-7.html.
[1387] President Bush Discusses Energy at Renewable Energy Conference, The White House, 12 October 2006. Date of Access: 16 December 2006. http://www.whitehouse.gov/news/releases/2006/10/20061012-4.html.
[1388] Bush's FY 08 Budget Request Supports Space Exploration, Science, The United States Mission to the European Union, 5 February 2007. Date of Access: 13 May 2007. http://useu.usmission.gov/Article.asp?ID=99140AD4-EB33-4571-9199-F1F76FDEB30C.
[1389] Bush's FY 08 Budget Request Supports Space Exploration, Science, The United States Mission to the European Union, 5 February 2007. Date of Access: 13 May 2007. http://useu.usmission.gov/Article.asp?ID=99140AD4-EB33-4571-9199-F1F76FDEB30C.
[1390] Edmund Andrews, House Votes to Rescind Oil Drillers' Tax Breaks, The New York Times, 18 January 2007. Date of Access: 13 May 2007. http://www.nytimes.com/2007/01/19/business/19royalty.html?ex=1326862800&en=4c59d407c86249ff&ei=5088&partner=rssnyt&emc=rss.
[1391] Edmund Andrews, House Votes to Rescind Oil Drillers' Tax Breaks, The New York Times, 18 January 2007. Date of Access: 13 May 2007. http://www.nytimes.com/2007/01/19/business/19royalty.html?ex=1326862800&en=4c59d407c86249ff&ei=5088&partner=rssnyt&emc=rss.
[1392] Juliet Eilperin and Steven Mufson, Tax on Carbon Emissions Gains Support, The Washington Post, 1 April 2007 . Date of Access: 13 May 2007. http://www.washingtonpost.com/wp-dyn/content/article/2007/03/31/AR2007033101040.html.

though it is supported by many economists and businesses.[1393] Currently the proposed bills in Congress are all based on the cap-and-trade approach and most people agree that a carbon tax is not likely to happen in the near future.[1394] Only one of the presidential candidate – Senator Christopher J. Dodd (D-Conn.) – is proposing carbon taxing, in combination with emission caps.[1395]

In terms of Washington's multilateral actions, in March 2007 the United States signed a Memorandum of Understanding with Brazil, highlighting its intention to cooperate on biofuels.[1396] The United States and Brazil intend to work through the International Biofuels Forum to examine development of common biofuels standards and codes to facilitate commoditization of biofuels.

Again, it should be noted that most action occurred on the state level. For example, on 7 November 2006, Washington state voters approved ballot initiative 937, setting renewable energy standards for large utility companies in the state, requiring that 15% of their energy be generated through renewable sources by 2020.[1397] In Colorado, two policies were adopted to promote renewable electricity in March 2007; one which will double the state's renewable electricity requirement for large investor-owned utilities from 10% by 2015 to 20% by 2020, and another requiring municipal utilities and rural electric providers to provide 10% of their electricity from renewable sources by 2020.[1398]

Overall, though more remains to be done in the United States to reduce the rising CO_2 emissions by implementing a more robust regulatory framework and signalling a willingness at the highest level of government to reverse global warming, considerable legislative progress, funding initiatives, and tangible results on the ground in the development of alternative and renewable energy sources warrant a score of +1 in this category.

Author: Adam Romero and Ruth Brandt

UNFCCC/Kyoto: -1

The United States is an Annex I party to the United Nations Framework Convention on Climate Change (UNFCCC), but is not party to the Kyoto Protocol – the only G8 country outside the Kyoto framework. The Kyoto Protocol was signed by the United States in 1997, but has never been ratified. In 1997, the Senate passed the Byrd-Hagel resolution, which asked the administration not to sign any UNFCCC protocol that does not also require reduction commitments from developing countries such as India and China.[1399] The Bush administration withdrew from the Kyoto Protocol on 29 March 2001, arguing that the economic consequences of ratifying the Kyoto Protocol would be too costly. The

[1393] Juliet Eilperin and Steven Mufson, Tax on Carbon Emissions Gains Support, The Washington Post, 1 April 2007 . Date of Access: 13 May 2007. http://www.washingtonpost.com/wp-dyn/content/article/2007/03/31/AR2007033101040.html.

[1394] Kristyn Ecochard, Analysis: US carbon market options, United Press International, 23 May 2007. Date of Access: 26 May 2007. http://www.upi.com/Energy/Analysis/2007/05/23/analysis_us_carbon_market_options/3180/.

[1395] Warming Proposals : The presidential candidates and climate change, The Washington Post, 14 May 2007. Date of Access: 26 May 2007. http://www.washingtonpost.com/wp-dyn/content/article/2007/05/13/AR2007051301050.html.

[1396] Memorandum of Understanding Between the United States and Brazil to Advance Cooperation on Biofuels, US Department of State Office of the Spokesman, 9 March 2007. Date of Access: 13 May 2007. http://www.state.gov/r/pa/prs/ps/2007/mar/81607.htm.

[1397] Washington Voters Adopt Renewable Portfolio Standard for Major Utilities, Pew Center on Global Climate, Change. Date of Access: 5 May 2007. http://www.pewclimate.org/what_s_being_done/in_the_states/late_2006_news.cfm.

[1398] Colorado Governor Signs New Renewable Electricity Legislation, Pew Center on Global Climate Change. Date of Access: 5 May 2007. http://www.pewclimate.org/what_s_being_done/in_the_states/late06early07.cfm

[1399] Expressing the sense of the Senate regarding the conditions for the United States becoming a signatory to any international agreement on greenhouse gas emissions under the United Nations Framework Convention on Climate Change, S. Res. 98. Date of Access: 19 March 2007. http://thomas.loc.gov/cgi-bin/query/D?c105:1:./temp/~c105J1eha9.

Administration remains in "fundamental opposition" to "timetables and targets for major cuts."[1400] Recently, US officials made significant eliminations to a draft communiqué prepared in advance of June's G8 summit in Heiligendamm. This document, proposed by Germany and backed by Italy, France, Britain, and Japan, would expand Kyoto's targets with a pledge to cut global GHG emissions by 50% by 2050.[1401] Yet the administration's proposed modifications "significantly reduce the certainty with which the statement addresses climate change."[1402] Outside of the Kyoto framework, the United States has pledged to reduce GHG intensity (amount emitted per unit of economic activity) by 18% from 2002 to 2012.[1403] Despite this commitment, US emissions are continuing to increase, and it appears that this trend will continue.[1404] In sum, unyielding US policy has undermined any meaningful global efforts at curbing greenhouse gas emissions. Since the United States actively impeded negotiations towards global emissions reductions at the November 2006 UNFCCC conference, undermined the broader Kyoto Protocol through its refusal to participate in the treaty, and recently rebuked binding, post-Kyoto commitment plans, it is awarded a score of -1.

In November 2006, the United States attended the UNFCCC 12th Conference of Parties (COP 12) in Nairobi, Kenya. US representatives were vocally opposed to binding reduction commitments in the post-2012 period (when the current Kyoto framework runs out).[1405] Instead of global mandatory emissions targets, the US delegation emphasized clean technology development, voluntary targets, and a focus on reducing GHG intensity.[1406] The reported US intransigence helped make "the 180-nation Nairobi climate conference one of the least productive of the annual two-week meetings."[1407] US priorities at COP 12 were instead focused on adaptation and technology transfer to developing countries.[1408]

In terms of Washington's actions in multilateral forums, the United States is a founding party of the Asia-Pacific Partnership (APP) – a program for technology transfer to promote voluntary emissions reductions. The APP, established in 2005, seeks to encourage the transfer of GHG-reducing technologies from developed countries in the Pacific Rim to China, India, and South Korea.[1409] Its aims are similar to the Clean Development Mechanism under Kyoto. In October 2006, the APP parties met in Jeju, South Korea, where the United States agreed to support projects that reduce GHGs in the renewable energy, power generation and transmission, mining, and construction and manufacturing sectors.[1410] In April 2007, the US Department of Commerce's International Trade Administration led a

[1400] US 'opposes' G8 climate proposals, BBC, 26 May 2007. Date of Access: 26 May 2007. http://news.bbc.co.uk/1/hi/sci/tech/6694227.stm.
[1401] US Rebuffs Germany on Greenhouse Gas Cuts, New York Times, 26 May 2007. Date of Access: 27 May 2007. http://www.nytimes.com/2007/05/26/world/europe/26climate.html?_r=3&th&emc=th&oref=slogin&oref=slogin&oref=slogin.
[1402] US 'opposes' G8 climate proposals, BBC, 26 May 2007. Date of Access: 26 May 2007. http://news.bbc.co.uk/1/hi/sci/tech/6694227.stm.
[1403] National Goal to Reduce Emissions Intensity, US Environmental Protection Agency, (Washington, D.C.), 4 December 2006. Date of Access: 22 December 2006. http://www.epa.gov/climatechange/policy/intensitygoal.html.
[1404] UNFCCC Country Profile: United States of America, United Nations Framework Convention on Climate Change, 28 January 2005. Date of Access: 22 December 2006. http://unfccc.int/resource/country_profile/profile_2005_us.pdf.
[1405] COP 12 Report, Pew Center on Global Climate Change, (Arlington, VA). Date of Access: 22 December 2006. http://www.pewclimate.org/what_s_being_done/in_the_world/cop12/summary.cfm#bus.
[1406] Remarks to the COP 12 Press Conference, Harlan Watson, 6 November 2006. Date of Access: 19 March 2007. http://www.state.gov/g/oes/rls/rm/2006/75644.htm.
[1407] Climate conference settles on next steps to negotiate future emissions cuts, International Herald Tribune, Associated Press, 17 November 2006. Date of Access: 16 December 2006. http://www.iht.com/articles/ap/2006/11/18/africa/AF_GEN_Kenya_Climate_Conference.php.
[1408] Making Progress at the Twelfth Session of the Conference of the Parties to the UN Convention on Climate Change, Remarks by Harlan Watson, Senior Climate Negotiator, 6 November 2006. Date of Access: 22 December 2006. http://www.state.gov/g/oes/rls/rm/2006/75644.htm.
[1409] Asia Pacific Partnership. Date of Access: 19 March 2007. http://www.asiapacificpartnership.org/.
[1410] Asia-Pacific Partnership on Clean Development and Climate Executive Summary of Task Force Action Plans, (Washington, D.C.), 31 October 2006. Date of Access: 22 December 2006. http://www.asiapacificpartnership.org/APP%20Action%20Plans/ExecutiveSummary%20_31%20Oct%2006_%20_2_.pdf.

Clean-Energy Technologies Trade Mission to India and China. This mission aimed to match the participating US companies with opportunities in both countries where it was felt American clean technology goods and services could help improve the environment.[1411] As part of the Fiscal Year 2007 Budget, the President has proposed US$52 million in funding to support the APP's work on Clean Development and Climate,[1412] and an additional US$30 million in funding in 2008.[1413]

At the April 2007 US-EU Summit, the United States acknowledged that global warming is an "urgent" priority.[1414] This was the first time President Bush acknowledged climate change, suggesting a potential shift in future US policy. The United States reaffirmed its commitment to the development of *FutureGen* technology, near-zero emission fossil fuel plants by 2012, and pledged its support for approximately US$200 million for carbon capture and storage (CCS).[1415] Earlier in January 2007, President Bush signed Executive Order 13423 calling for federal agencies to reduce their GHG emissions by cutting their energy intensity 30% by 2015.[1416] Despite these seemingly positive advances, however, the extent of Washington's commitment remains questionable. [1417]

In terms of assisting developing countries to advance appropriate energy technology, the United States has fostered new partnerships to attain this goal. A component of the US Carbon Sequestration Program aims to improve power-generation efficiency while developing emission-free power plants. Under the title, *FutureGen*, the Administration is researching near zero-emission coal-fuelled power plants. The United States has also looked for international partners to help build up the globe's clean technology portfolio: on 15 December 2006, the US and China announced that China will be cooperating with the FutureGen project.[1418] This partnership shows the US commitment to aid other countries in reducing emissions through the development of zero-emission electricity and commercial hydrogen generation.

While the Administration has thus far rejected government regulation of GHG emissions, a US Supreme Court ruling may change this stance. On 2 April 2007 the Court ruled that the federal government has the authority to regulate carbon dioxide and other greenhouse gases produced by motor vehicles.[1419] Republican members of the Senate Environment and Public Works Committee decried the court ruling and warned that precipitous action could harm the economy and lead to higher energy costs.[1420] Nevertheless, the decision opens the way for a new president in 2009 to curb emissions; given that all Democratic and Republican candidates have made climate change a major part of their platforms, this

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[1411] Department of Commerce to Lead Clean-Energy Technologies Trade Mission to India and China, US Department of State Department of Commerce, 29 January 2007. Date of Access: 13 May 2007. http://www.state.gov/g/oes/rls/or/80694.htm

[1412] Asia-Pacific Partnership on Clean Development and Climate, US Department of State Bureau of Public Affairs, 30 October 2006. Date of Access: 16 December 2006. http://www.state.gov/r/pa/scp/2006/60852.htm.

[1413] Federal Climate Change Expenditures: Report to Congress, Office of Management and Budget, Rob Portman, 3 May 2007. Date of Access: 27 May 2007. http://www.whitehouse.gov/omb/legislative/fy08_climate_change.pdf. .

[1414] Steve. Holland, EU-US summit call for 'urgent' climate action, Reuters, 1 May 2007. Date of Access: 13 May 2007. http://www.reuters.com/article/politicsNews/idUSL3022198620070501

[1415] 2007 US-EU Summit Statement: Energy Security, Efficiency and Climate Change, 30 April 2007. Date of Access: 13 May 2007. http://www.whitehouse.gov/news/releases/2007/04/20070430-8.html.

[1416] President Bush Signs Executive Order on Efficiency, Renewable Energy, US Department of Energy, Energy Efficiency, and Renewable Energy, 31 January 2007. Date of Access: 13 May 2007. http://www.eere.energy.gov/buildings/news_detail.html/news_id=10538.

[1417] US seeks softer warming stand at G8 summit, Reuters, 11 May 2007. Date of Access: 13 May 2007. http://www.msnbc.msn.com/id/18614476/,

[1418] US and China Announce Cooperation on FutureGen and Sign Energy Efficiency Protocol at US-China Strategic Economic Dialogue, US Department of Energy, (Washington), 15 December 2006. Date of Access: 21 December 2006. http://www.energy.gov/4535.htm.

[1419] The Court Rules on Warming, The New York Times, 3 April 2007. Date of Access: 5 April 2007. http://select.nytimes.com/search/restricted/article?res=F40E1FFC34540C708CDDAD0894DF404482

[1420] Richard Simon, Bush Administration's Response to Global Warming Under Scrutiny, The Los Angeles Times, 24 April 2007. Date of Access: 13 May 2007. http://www.latimes.com/news/nationworld/nation/la-ex-epa24apr25,1,178525.story?ctrack=1&cset=true.

makes legislation more likely than in the current political climate.[1421] Beyond this, states and local governments have taken up the responsibility to reduce GHG emissions in response to growing domestic and international pressure. As mentioned above, ten states in the Northeast have agreed to adopt cap-and-trade regulation of GHG emissions through the Regional Greenhouse Gas Initiative (RGGI),[1422] and in the West, five states signed an agreement on 26 February 2007 to establish the Western Regional Climate Action Initiative, a joint effort to reduce GHG emissions and address climate change.[1423] Under the agreement, the five states will jointly set a regional emissions target within six months, and, by August 2008, establish a market-based system – such as a cap-and-trade program in multiple economic sectors – to aid in meeting the target.[1424] Additionally, other states and more than 350 cities in the United States have adopted policies to reduce GHG emissions.[1425] At the federal level, progress has been far slower. US Congress is currently debating several prominent pieces of climate change legislation and holding related hearings.[1426] The Senate Commerce Committee has approved legislation for a 35 mile per gallon vehicle standard by 2020, with 4% increases thereafter. Debate has now moved to the full Senate, where the interests of US automakers will be weighed against environmental concerns.[1427]

Overall, while state and local governments are increasingly adopting regulations to limit emissions, the Bush Administration has explicitly ruled out this option for mitigating climate change. The US government instead remains committed to voluntary means of reducing emissions at home and abroad, which it has furthered with bilateral or multilateral initiatives aimed at greater efficiency in the energy sector in developing countries. In recognition of the Administration's continued stonewalling of the Kyoto Protocol and of proposed successor plans, as well as its counterproductive policy stance during the UNFCCC negotiations, the United States is awarded a score of -1.

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Sustainable Use of Energy: 0

The United States partially complied with its G8 commitment on the sustainable use of energy. The administration has implemented tax breaks and credits to industry and private citizens in order to expand demand for energy-efficient technologies and initiatives. The administration also continues to raise public awareness of green power options and has encouraged voluntary environmental pledges from corporations, governmental agencies, and universities. However, the Bush administration does not support using tax penalties or stricter energy standards as methods to discourage GHG emissions consumption, and it remains unlikely that the United States will adopt any such system before the next election.[1428]

[1421] US candidates compete on climate, Financial Times, 21 May 2007. Date of Access: 26 May 2007. http://www.msnbc.msn.com/id/18786520/.
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[1424] Five Western States Establish New Regional Initiative, Pew Center on Global Climate Change. Date of Access: 5 May 2007. http://www.pewclimate.org/what_s_being_done/in_the_states/late06early07.cfm.
[1425] The State of US Emissions, Part I, World Resources Institute, (Washington, D.C.), 17 January 2007. Date of Access: 17 January 2007. http://www.wri.org/climate/topic_content.cfm?cid=4235.
[1426] Global warming becomes hot topic on Capitol Hill, The Hill, (Washington, D.C.), 18 January 2007. Date of Access: 17 January 2007. http://www.thehill.com/thehill/export/TheHill/News/TheExecutive/011807_globalwarming.html.
[1427] Fuel economy measure goes before Senate in June, Detroit Free Press, 23 May 2007. Date of Access: 26 May 2007. http://www.freep.com/apps/pbcs.dll/article?AID=/20070523/BUSINESS01/70523048.
[1428] Juliet Eilperin and Steven Mufson, Tax on Carbon Emissions Gains Support, The Washington Post, 1 April 2007. Date of Access: 13 May 2007. http://www.washingtonpost.com/wp-dyn/content/article/2007/03/31/AR2007033101040.html.

While the US Administration has not supported pollution taxes or more stringent building codes that would mandate household and/or industry cuts in energy use, Washington has shown increasing progress in shifting to a tax policy that rewards green behaviour. The President's Office of Management and Budget's 2008 "Summary of Federal Climate Change Expenditures" projects an administrative outlay of US$5.0 billion in "tax incentives related to climate change" over the five years from 2008 to 2012.[1429] These expenditures include technology credits for (1) the purchase of new solar and geothermal infrastructure (10 – 30% of the tax basis); for (2) tax credits for electricity produced from various alternative energy sources, including for instance, nuclear and wind, solar, biomass, and small irrigation power (0.9 – 1.9 US cents/kWh); and (3) tax incentives for construction and improvement of energy-efficient buildings, homes, and appliances. This latter category includes a tax deduction for buildings that reduce power consumption by 50% compared to ASHRAE industry standard, a credit for new energy-efficient homes, a 10% investment tax credit on efficiency improvements to existing homes, and credits to the manufacturers of efficient household appliances.[1430] Despite these tax incentives, the US has not tightened building codes or set penalties for excessive private energy consumption.

Through the Fortune 500 Green Power Challenge, the EPA is asking Fortune 500 companies to double their current level of green power purchasing.[1431] These corporations can meet this challenge by buying additional energy from providers of environmentally friendly alternatives, including geothermal, biomass, wind, solar, and hydro power. In April 2007 the EPA recognized PepsiCo's commitment to purchase 100% green power. Pepsi has pledged to buy enough renewable energy certificates to equal the quantity of electricity it consumes for all of its US-based manufacturing plants, offices, and distribution centers.[1432] At more than 1.1 billion kWh, this is the largest purchase to date under the agency's Green Power Partner program, and is enough to power 90,000 American homes each year.[1433] The EPA is hoping to increase corporate green power purchasing levels to 5 billion kWh, enough to power more than 400,000 homes.[1434]

Consistent with its overarching preferences for tackling climate change through voluntary measure and financial inducements, the United States has encouraged private citizens as well as the private and public sector to purchase energy-efficient products and products that cut energy use at both the micro- and macro-level. Though progress rewards for green behaviour are evident, the US refuses to punish polluting behaviour and excessive energy consumption. Thus, the administration's overall record is mixed. For this reason the United States is awarded a score of 0.

Authors: Ethan Kay and Aleksandra Gadzala

Innovative Energy Technologies in Hydrocarbon Production and Use: +1

[1429] Federal Climate Change Expenditures: Report to Congress, Office of Management and Budget, Rob Portman, 3 May 2007. Date of Access: 27 May 2007. http://www.whitehouse.gov/omb/legislative/fy08_climate_change.pdf.
[1430] Federal Climate Change Expenditures: Report to Congress, Office of Management and Budget, Rob Portman, 3 May 2007. Date of Access: 27 May 2007. http://www.whitehouse.gov/omb/legislative/fy08_climate_change.pdf
[1431] EPA Challenges Top Corporations to Double Use of Green Power, US EPA Roxanne Smith, 4 December 2006. Date of Access: 16 December 2006. http://yosemite.epa.gov/opa/admpress.nsf/a4da39135d4e22bb8525701800559d96/689c8c8664496e3a8525723a005d92b0!OpenDocument.
[1432] PepsiCo makes huge green-power purchase, Associated Press.
[1433] EPA Recognizes Largest-Ever Corporate Green Power Purchase, US EPA Dave Ryan, 30 April 2007. Date of Access: 13 May 2007. http://yosemite.epa.gov/opa/admpress.nsf/904f6923836bfefe852572a00065593a/4199018af7e69d61852572cd004fc7b1!OpenDocument
[1434] EPA Recognizes Largest-Ever Corporate Green Power Purchase, US EPA Dave Ryan, 30 April 2007. Date of Access: 13 May 2007. http://yosemite.epa.gov/opa/admpress.nsf/904f6923836bfefe852572a00065593a/4199018af7e69d61852572cd004fc7b1!OpenDocument .

The United States is in full compliance with its G8 commitments on hydrocarbons. Through partnerships with the private sector, the Bush Administration has accelerated innovative technologies for hydrocarbon use and production. The US has funded research in new sources of hydrocarbons, reduced environmental impact of current hydrocarbon extraction, and developed new carbon technologies and new carbon sequestration projects.

For instance, on 7 August 2006, the US Department of Energy (DOE) announced the selection of six new projects, both public and private, totalling US$4.6 million to uncover the potential of US methane hydrate resources.[1435] The US Geological Survey estimates that the methane hydrates could contain as much as ten times current US natural gas resource deposits.[1436] DOE and industry have also paired together on research and technology to advance new sources of hydrocarbon energy such as "microhole" drilling[1437] and new stripper well technology.[1438] These technologies allow for greater access to current bypassed reserves. These contribute to national energy security by increasing the volume of oil produced domestically. This was further emphasized when Bush announced US$863 million for US fossil energy program, one of its main features being development of clean carbon and sequestration technologies.[1439]

The United States is also moving forward on its use of carbon sequestration technology, a key aspect of the G8 summit commitments. For instance, on 23 October 2006, Secretary of Energy Bodman announced US$24 million in new grants for carbon sequestration research in collaboration with the public and private sector.[1440] This effort accompanies other research and testing of carbon sequestration technology such as the 12 October 2006 government-industry partnership project to test the sequestration ability of Texas sandstone formations,[1441] as well as the Midwest Regional Carbon Sequestration Partnership critical carbon assessment.[1442] This assessment includes government agencies and industry partners in 38 states and uses seismic technology to assess potential carbon storage of rock formations.

The DOE has also provided US$450 million to advance the commercialization of technology developed from and as a result of carbon sequestration tests.[1443] Such measures are all part of the 2006 Carbon Sequestration Technology Roadmap released on 22 August 2006.[1444] This strategy is, in turn, part of the Carbon Sequestration Program that aims to improve power-generation efficiency while developing emission-free power plants,

[1435] New Projects to Uncover the Potential of America's Methane Hydrate Resource, US Department of Energy, (Washington), 7 August 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06047-Methane_Hydrate_Project_Awards.html.
[1436] Gas (Methane) Hydrates – A New Frontier, US Geological Survey, September 1982. Date of Access: 24 March 2006. http://marine.usgs.gov/fact-sheets/gas-hydrates/title.html.
[1437] DOE-Funded 'Microhole' Drilling Rig Demonstrated Successfully in Midcontinent, US Department of Energy, (Washington, D.C.), 12 December 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06072-Microhole_Drilling_Rig_Successful.html.
[1438] DOE, Industry Consortium Project Deploys New Well Stripper Tool, US Department of Energy, (Washington, D.C.), 4 October 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06056-Vortex_Technology_Success.html.
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[1441] DOE Project Injects 700 Tons of Carbon Dioxide Into Texas Sandstone Formation, US Department of Energy (Washington, D.C.), 12 October 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06057-Frio_CO2_Injection.html.
[1442] Critical Carbon Sequestration Assessment Begins: Midwest Partnership Looks at Appalachian Basin for Storage Sites, US Department of Energy, (Washington, D.C.), 12 September 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06052-Sequestration_Assessment_Begins.html.
[1443] Department of Energy Advances the Commercialization of Climate Change Technology, US Department of Energy, (Washington, D.C.), 31 October 2006. Date of Access: 21 December 2006. http://www.fe.doe.gov/news/techlines/2006/06062-Carbon_Sequestration_Testing_Suppo.html.
[1444] DOE Releases 2006 Carbon Sequestration Technology Roadmap, Project Portfolio, US Department of Energy, (Washington, D.C.), 22 August 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06049-Sequestration_Roadmap_2006.html.

technology that will aid in the development of FutureGen technology, near-zero emission coal-fuelled power plants. FutureGen is a US$1 billion 10-year project launched by President Bush in 2003 culminating with the implementation of a 275 MW prototype plant in 2012.[1445]

The Administration also has promoted the development of technology to produce hydrogen from coal. In September 2006, the DOE funded six new industry cost-shared research projects aimed at technologies that produce commercially viable hydrogen from coal,[1446] while the DOE funded industry partnership to address the production of hydrogen from coal in large-scale facilities.[1447]

Recently the DOE announced the US$9 million funding of five industry-partnered projects aimed at improving the performance and economics of future zero-emission power generation plants.[1448] Recently, the FutureGen project has moved forward with implementation of the budget phase of the project, further allocating about US$43 million for design and final site selection.[1449]

As part of its G8 Summit commitments, the United States has pursued partnerships with industry in the development and promotion of cleaner hydrocarbon technologies. As part of a tax incentive based R&D program created in EPAct 2005, 49 companies submitted applications to the DOE, cumulatively requested US$2.3 billion in tax credit payments to conduct R&D on cutting-edge clean technologies.[1450] The approved projects were passed on to the Internal Revenue Service who on 30 November 2006 approved US$1 billion in tax incentives for industry to develop, implement, and promote clean coal and coal gasification technology.[1451]

The United States has sought to develop innovative energy technologies in hydrocarbon production and use through partnerships with the private sector and government-funded research initiatives. These actions have addressed a variety of elements of the hydrocarbons commitment including carbon sequestration and environmental-friendly extraction methods. Therefore it receives a score of +1 in this area.

Author: Adam Romero and Ruth Brandt

[1445] Fossil Energy Requests $649 Million for FY 2007 Budget, John Grasser, Fossil Energy Press Release,,6 February 2006. http://www.fossil.energy.gov/news/techlines/2006/06006-FY_2007_Budget_Request.html.

[1446] DOE Funds Six New Projects Aimed at Alternative Hydrogen Production and Utilization, US Department of Energy, (Washington, D.C.), 7 September 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06051-Hydrogen_Production_Projects.html.

[1447] DOE Advances Production of Hydrogen from Coal, US Department of Energy, (Washington, D.C.), 6 December 2006. Date of Access: 26 December 2006. http://www.fe.doe.gov/news/techlines/2006/06070-Hydrogen_from_Coal_Projects.html.

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List of Acronyms

AEEG	Autorità per l'Energia Elettrica e il Gas
AFD	Agence Française de Développement
ANEEL	(Brazilian) Electric Energy National Agency
AP6	Asia-Pacific Partnership on Clean Development and Climate
APP	Asia-Pacific Partnership
ASEAN	Association of Southeast Asian Nations
BMU	(German) Federal Ministry of Environment, Nature Conservation, and Nuclear Safety
CBM	Coal bed methane
CCS	Carbon capture and storage
CEC	North American Commission for Environmental Cooperation
CEP	Clean Energy Partnership
CERs	Certified Emission Reductions
CFE	(Mexico's) Federal Electric Commission
CFL	Compact fluorescent lamp
CHP	Combined Heat and Power
CIP	(EU) Competitiveness and Innovation Framework Program
CO_2	Carbon dioxide
CONAE	(Mexico's) National Commission of Energy Savings
COP	Conference of the Parties
CTL	Coal-to-Liquid
DOE	(US) Department of Energy
DTI	(UK) Department for Trade and Industry
EBP	Ethanol Blended Petrol
EEAP	Energy Efficiency Action Plan
ENEA	(Italian) National Agency for New Technologies, Energy ad the Environment
ENERLIN	European Energy Efficient Residential Lighting Initiative
EPA	(US) Environmental Protection Agency
ESCO	Energy Service Company
EU ETS	EU Emissions Trading Scheme
EUAs	European Unit Allowances
FFV	Flex-fuel vehicles
FIDE	(Mexico's) Electrical Energy Savings Trust
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEREF	Global Efficiency and Renewable Energy Fund
GHG	Greenhouse gas
GSE	Gestore dei Servizi Elettrici (Italy's public utility company)
GTL	Gas-to-Liquid
GWh	Gigawatt-hour
HPCL	Hindustan Petroleum Corporation Limited
IADB	Inter-American Development Bank
IBSA	India-Brazil-South Africa Dialogue Forum
ICCC	(Mexico's) Inter-ministerial Commission on Climate Change
ICE	Inter-American Commission on Ethanol
ICF	Italian Carbon Fund
IGCC	Goal Integrated Gasification Combined Cycle
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IPHE	International Partnership for the Hydrogen Economy
ITER	International Thermonuclear Experimental Reactor
JI	Joint Implementation Mechanism
JOGMEC	Japan Oils, Gas, and Metals National Corporation
JVETS	Japanese Voluntary Emissions Trading System
KTAP	(Japan's) Kyoto Targets Achievement Plan
LCBP	(UK) Low Carbon Building Program

LNG	Liquefied natural gas
LPG	Liquefied propane gas
METI	(Japan's) Ministry of Economy, Trade and Industry
MLIT	(Japan's) Ministry of Land, Infrastructure and Transport
MME	(Brazilian) Ministry of Mines and Energy
MNRE	(Indian) Ministry of New and Renewable Energy
MOP	Meeting of the Parties
Mt	Mega tonne
MWh	Megawatt-hour
NAP	(EU) National Allocation Plans
NDRC	National Development and Reform Commission
NEDO	(Japan's) New Energy and Industrial Technology Development Organization
NREL	US National Renewable Energy Laboratory
ONGC	(Indian) Oil and Natural Gas Corporation
PEMEX	Petróleos Mexicanos (Mexican Petroleum)
PPP	Purchasing Power Parity
PROINFA	(Brazilian) Incentive Program for Alternatives Sources of Energy
PV	Photovoltaic
R$	(Brazilian) Real
R&D	Research and development
RECS	Renewable Energy Certificate System
RGGI	(US) Regional Greenhouse Gas Initiative
RJSC-UES	Russian Joint-Stock Company United Energy Systems
RO	(UK) Renewables Obligation
RPS	(Japanese) Renewables Portfolios Standard Law
SANERI	South African National Energy Research Institute
SDTC	Sustainable Development Technology Canada
SENER	(Mexico's) Energy Ministry
SEPA	(China's) Environmental Protection Administration
SME	Small and medium enterprises
SO_2	Sulphur dioxide
TEREE	Technology for Emission Reduction and Eco-Efficiency
TS	Thermo-solar
TWh	Terawatt-hour
UNDP	UN Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USDA	US Department of Agriculture
VED	Vehicle excise duty
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wildlife Fund