The Course and Causes of Compliance with G7 Climate Change Commitments

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Abstract

This paper examines the past and current state of G7/8 compliance and compliance research. First, it finds that G7 compliance has risen to a respectable level of 75%, spreading across policy fields and across all countries including the United States. Second, although causes of compliance remain uncertain, evidence increasingly indicates explanation lies in the G7's own ministerial institutions and particular catalysts embedded in commitments, specifically reference to a core multilateral organization and a one-year time-table priority. Third, the most recent systematic analysis suggests that compliance rises when ministers pertinent to the policy area meet more frequently in conjunction with an accountability mechanism. Fourth, this provides theoretical and empirical grounding for five policy recommendations to increase climate change compliance including reviving and extending the environmental ministerial meetings that ended in 2009 and instituting accountability mechanisms to monitor compliance with sustainable development commitments.

Introduction

How well and why do members comply with the climate change commitments their leaders make at their annual summits of the Group of Seven or Eight (G7/8) major democratic powers? Answering this question is central to the current challenge of controlling this critical global threat at the G7's Elmau Summit in Germany on June 7-8, 2015, where climate change will be a key priority, and then at the 21st United Nations Conference of the Parties (COP-21) meeting in Paris in December 2015. It is also central to the longstanding question of the effectiveness of international environmental regimes and the larger question of the autonomous impact of international regimes and institutions, in either informal plurilateral or formal multilateral forms, binding their member sovereign states in a structurally anarchic world.

The ability of the G7 to have its members comply with its commitments has long been the subject of a debate among several competing schools of thought. It has also led to a progressive research program started with the pioneering work of George von Furstenberg and Joseph Daniels in 1990. Yet after several generations of work by different scholars, there is little consensus on the patterns of compliance and the causes that lie behind, none covering the full 40 years of the G7 summit's life, and none focusing with the latest data on the central issue of climate change.

This paper takes up these tasks. It first briefly reviews the existing work on the course and causes of G7 compliance, including the little that deals directly with climate change. Second, it presents

a more complete, current portrait of overall and climate change compliance, using the 425 compliance assessments in the G8 Research Group's cumulative compliance data base. Third, it explores the causes of this compliance, comparing those in climate change with those in other related issue areas and overall. Fourth, on this basis it suggests how compliance could be improved by greater ministerial interaction and use of accountability mechanisms.

The Historical Conclusions on G7 Compliance

G7/8 summits have been effective in constraining the actions of their members, as judged by the record of the latter in complying with the major, concrete commitments their leaders collectively encode in their Summit communiqués. To be sure, direct overtime comparisons are difficult to make precisely, due to the slightly different methodologies employed for the pre and post 1989 data and due to the stakeholder feedback processes added to assist with data collection and assessment since 2002. Moreover, compliant behaviour may result from factors other than the summit commitments themselves. There is thus only a weak causal claim, in the absence of causal controls and detailed compliance process tracing work (Ikenberry 1988, SDC studies). Nonetheless, the overall pattern suggests that, while compliance varies by year, issue area, country and host, the G8 is emerging as an effective centre of global governance in the domain of delivery, defined as compliance (Kirton, Roudev and Sunderland 2010: 91-96).

Von Furstenberg and Daniels's 1975-89: Weakly Positive, Worth Doing

The seminal study of G7 summit compliance comes from George von Furstenberg and Joseph Daniels, based on detailed empirical work by Daniels of the G7's 209 communiqué-encoded economic and energy commitments from 1975 to 1989 (von Furstenberg and Daniels 1991, 1992a, 1992b, 1995, Daniels 1993). This showed a weak but positive overall performance of +0.307 or 66%. The highest compliance came from United Kingdom and Canada and in the areas of international trade and energy. Four features stand out in their view.

First, **commitments matter** but not very much. As they put it, "Testing the hypothesis of zero average credibility for all 209 commitments together shows that the undertakings had some predicative content. However, the summit undertakings fall well short of complete or full compliance, with an average score of only .310" (Daniels 1993: 276). However at +0.30, on a scale where −100% is possible, G7 summits are still worth doing. Here it is again worth asking what the compliance scores of other international institutions or national governments at home likely are.

Second, there is **no over-time trend** in compliance. Rather there is great volatility, as it varies widely year by year. It features some precipitous plunges, notably for compliance with the commitments at the 14th summit, held in Toronto in 1988. There may be a bounce-back dynamic, where a great failure leads leaders to say they must do much better next time as they cannot afford to fail again. But there is no evidence that they are able to bounce back and that the summit is getting more experienced and thus better at complying with the commitments its leaders set.

Third, compliance **varies widely by issue area**. It is high on international trade at +0.73 or 87%

and energy at +0.66 or 83% — the assessed issue area closest to that of climate change. It is around average on real growth in gross national product (GNP) at +0.40, multi-country inflation at +0.27, aid and schedules at +0.27, fiscal adjustment at +0.26, demand composition at +0.23, interest rates at +0.22, and inflation rates at 22%. It is very low, indeed highly negative, on foreign exchange rates at −0.70. Despite Bergsten and Henning's (1996) suggestion, there was no pre-globalization golden age when G7 leaders effectively governed G7 and global exchange rates. Their G5 and G7 finance ministers may have a better record in this regard.

Fourth, compliance varies widely by **member**. In the top tier are the United Kingdom at +0.41 and Canada at +0.41 or 71% each. In the middle are Germany at +0.35, Italy at +0.27 and Japan at +0.26. Below average are the U.S. at +0.25 and France at +0.24. All members comply in the positive range.

On **climate change** specifically, a detailed study of the compliance with the consensus on climate change at the G7's 1979 Tokyo Summit, where the global governance of climate change began, shows high compliance with its very ambitious content in the following five years (Kirton and Kokotsis 2015). However, the G8 Research Group's special retroactive assessments of five climate change commitments from 1985 to 1989 show an annual compliance average of only +0.139 or 57% (Kirton and Guebert 2009, see also Kirton and Kokotsis 2014). The annual average suggests a declining trend, based on the scores of +0.50 or 75% at Bonn in 1985, +0.29 in Venice in 1987 and an average of −0.10 for the three at Paris in 1989. See Appendix A for an overview.

Kokotsis's 1988-95 Increasingly Positive Performance

The second generation of G7/8 compliance studies was done by Ella Kokotsis (1999, Kokotsis and Kirton 1997, Kokotsis and Daniels 1999). She examined the compliance of the G7's largest member, the U.S. and its smallest member Canada, with 83 G7 leaders' commitments in the areas of the climate change, biodiversity, debt relief for the poorest and assistance to the former Soviet Union between 1988 and 1995. Four findings stand out.

First, overall compliance was **higher** than in the earlier period, reaching a level of +0.43 or 72%. This was well up from the +0.31 that von Furstenberg and Daniels had found for the years before. This was despite the fact that Kokotsis was a harder marker, assigning a grade of −1 if a country merely did nothing, as well as did the opposite of what the commitment said. In all country-issue combinations, compliance was positive, save only for the U.S. on the biodiversity ones.

Second, compliance **increased** within the eight-year period from 1988 to 1995, both overall and for both states. There seemed to be a 1992 breakpoint, perhaps relating to the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro for the environment commitments or the transition from George H. Bush to Bill Clinton where the U.S. was concerned (Stephens 2000).

Third, compliance again **varied by issue area**. There were very high levels of compliance in the area of assistance to Russia. High compliance also came in debt relief for the poorest. It was lower in the environmental areas of climate change and biodiversity.

Fourth, compliance again **varied by country**. Canada again was high at +0.53 and the U.S. again was low at +0.34. But this represented a rise for Canada (from +0.41), and a rise for the U.S. (from +0.25) from 1975 to 1989. Both countries compliance rose, as the cold war and Soviet Union declined and disappeared, especially after 1992.

On **climate change,** compliance across all G7 members for the years 1988 to 1995 the G8 Research Group's 11 special retroactive assessments showed rose to an overall annual average for the period of +0.43 or 72% (See also Kirton and Kokotsis 2014). Within there was a generally rising trend, based on the annual averages of: 1989 = −0.10, 1990 = +0.43, 1991 = +0.38, 1992 at Bonn = +0.71, 1993 = +0.57, 1994 in Naples = +0.71 and 1995 in Halifax = +0.29. This suggests that climate change compliance rose to a high level, until 1995. The first great spike and highest level thus far came from the climate commitments made at the German hosted second Bonn Summit in 1985, where compliance reached 86%.

The G8 Research Group, Rising to Robust Performance

The third generation of G8 compliance research comes from the G8 Research Group, centred at the Munk School of Global Affairs and Trinity College at the University of Toronto. Since 1996 it has conducted annual assessments of compliance with the selected priority, rather than randomly sampled, commitments across all issue areas, taken from the G8's rising output of commitments at each summit. Overall compliance from 1996 to 2006 had **risen to a robust +0.51,** or a respectable mid B grade of 75% (on the popular rather than scientific scale when converted from the 200 point to the far more familiar 100-point scale). The +0.51 represents a clear rise from the +0.43 of the Kokotsis years of 1988-95 and the +0.31 of the von Furstenberg and Daniel period from 1975 to 1989. Given the effort to select commitments for assessment across all issue areas, and the large N of 240 commitment cases over 12 years, this score is sufficiently representative to conclude that the rising overall levels represent a real G8 trend. This G8 has thus been producing steadily rising compliance from its first two seven-year generations from 1975 to 1988, through its third generation from 1989 to 1995, into its fourth and fifth generations starting in 1996.

Within the 1996-2006 period, there is an over time trend of generally **ratcheting up** compliance, with a few great plunges in 1997 to +0.21 and in 2002 to +0.33. More notably, compliance reached a all time high of +0.75 or 88% for compliance with the measured commitments at the Japanese-hosted Okinawa Summit in 2000. Even the much maligned, protest-scarred 2001 Genoa Summit delivered compliance of +0.50.

Compliance again **varies widely by issue area**. It is led by energy at +0.78 and terrorism at +0.76. It is very low in microeconomics at -0.11 and finance at +0.07. The broad pattern suggests that the G8 is a full-strength summit, able to govern effectively across many of the economics, global-transnational and political-security domains. The high compliance scores in energy and terrorism suggest, in accordance with the concert equality model, that the G8 might well be a shock-driven centre of global governance, acting effectively where no dedicated UN functional organization exists.

Compliance again **varies widely by country** (see Appendix D). It is led by the European Union at +0.73, the UK at +0.65, and Canada at +0.64. Low scores come from Russia at +0.25 and Italy at +0.29. This pattern is consistent with earlier data, which also show the UK and Canada ranking first and second. The new element is the first place standing of the newly measured EU, an international institution in its own right as well as a somewhat supranational member of the G8 one. Given the EU's incomplete control over its still sovereign member states, as well as both presidential Russia and parliamentary Italy at the bottom, explanations based on domestic political structure appear less inductively attractive than they once did.

Kirton, 1975-2013, High in Select Issue Areas

The fourth generation of compliance studies, led by John Kirton, consists of intensive studies on selected issue areas, notably finance and development, health, climate change, arms control/nonproliferation and trade. In each case the goal is to assemble enough assessments to identify performance patterns and conduct multiple regression analyses to determine why these patterns arise.

In finance and development commitments, compliance from 1996 to 2004 has been a robust +0.48 or 74%, compared to the overall G8 average during this period of +0.43. During this time, compliance rose (Kirton 2006, Kirton, Roudev and Sunderland 2010: 96-97).

In health, from 1980 through to 2008, the G8 made 234 health-related commitments (Kirton, Roudev, Sunderland, Kunz and Guebert 2010). Of the 46 measured for compliance, the average score was +0.59 or 80%. This was led by AIDS at +0.69, and by the U.S. and Canada at +0.78. Compliance during this time was quite consistently strong, save for a drop into negative territory in 2008.

In climate change, from 1987 to 2006 the G8 members complied at an overall average level of +0.51 or 76% (Kirton and Guebert 2007, Kirton and Boyce 2009). This was above the summit's overall compliance level across all issue areas during this time. The peak came at Gleneagles in 2005 at +0.95 or 98%. It was led by the EU at +1.00, the UK at +0.66, Russia at +0.65, Japan and Germany at +0.61 each and Canada at +0.55. Across the component issues, compliance was highest on renewable energy at +0.86, followed by climate change in general at +0.84, and greenhouse gas emissions at +0.51. See Appendix B for a breakdown of the different stages of G7/8 compliance research discussed above.

Causes of Compliance: No Consensus, Several Candidates

From this historical accumulation of analysis there has emerged no consensus about the causes of G7/8 compliance, although several credible candidates are starting to stand out. Von Furstenburg and Daniels offered only inductive conjectures rather than tested causes to account for their findings on the course of compliance.

In the second generation of compliance studies, Kokotsis (1999) found that multi-level institutionalization mattered, with compliance rising where there was a **strong multilateral organization, strong G8 ministerial institution** and a **strong state co-coordinative centre** to help put the G7 leaders' commitments into effect.

At system level, Quan Li shows that the defection dynamic worked, but only in regard to compliance with inflation commitments from 1975-1989. Kirton subsequently found that members' relative capability and vulnerability did not directly cause compliance with finance and development commitments either, although, consistent with Kokotsis' findings, set ups and follow ups by finance ministers indirectly did (Kirton 2006). Build on Kirton's (2006) finding that G7 finance ministers made a small, special compliance enhancing difference. Kirton and Kulik (2014) found that subsequent G8 foreign ministers follow-up may have helped compliance with G7/8 commitments in regional security cases where the G7/8 approved sanctions or military force.

Summit iteration, with G7/8 leaders' subsequently making commitments on the same subject had a weaker effect (Kirton and Kulik 2014). Such support from surrounding summits also appeared to cause compliance in other plurilateral summit institutions such as the Caribbean Community (CARICOM) on non-communicable diseases (Samuels and Kirton 2014).

At the other, individual end of the levels of analysis, evidence accumulated that G7/8 leaders controlled their own compliance fate, by being able to craft their commitments in ways that contained catalyst that increased compliance with them in the following year. On finance and development from 1996 to 2004 (N=42) Kirton (2006) found that the catalysts of a timetable and priority placement worked best by far.

On health from 1996-2005 (N=30) Kirton, Roudev and Sunderland (2007) found that a one-year timetable and core international organization did (World Health Organization), while reference to another international organization lowered compliance. A year later (N=35), Kirton, Roudev, Sunderland and Kunz (2008) confirmed that a one-year timetable and core international organization helped compliance and that another international organization hurt, but added that a multi-year timetable and reference to G8 finance ministers hurt compliance as well. A subsequent analysis of compliance with 46 health commitments from 1980 to 2009, conducted by Kirton and Guebert (2009), found that each member has a distinctive cocktail of catalysts that caused its compliance to rise or fall.

On climate change, an analysis of 39 commitments from 1987 to 2006 by Kirton, Roudev, and Guebert (2008) found that overall compliance was raised by the catalyst of priority placement and reduced by that of international law. U.S. compliance was lowered by the catalyst of a core international organization (defined, in a way potentially overlapping with international law, as the secretariat of the United Nations Framework Convention on Climate Change). In contrast, Canadian compliance was raised by priority placement and this core international organization, but lowered by the catalysts of a target, specified agent and international law.

The Current Conclusions on the Course of G7/8 Compliance

The fifth and most recent generation of research, comes from the G8 Research Group, which by spring 2015 had assembled the most comprehensive, systematic data set of compliance assessments of 425 G7/8 commitments from 1983 to 2013 (www.g8.utoronto.ca/compliance). This included those done in the regular annual assessments of priority commitments since 1996,

special studies in selected issues areas, and those done since 2012 by students in POL 456/2256Y at the University of Toronto.

This data set showed that G7 summit promises made are largely kept, as compliance averaged a substantial +0.50 or 75% in the year after they were made. Compliance rose from a level of about 65% until the Cold War's end in 1989 to the average of 75% that has prevailed since.

This substantial level of compliance came quite equally on all the economic, sustainable development and political security commitments the G7/8 made. On its economic commitments compliance averaged 73%, led by macroeconomic policy at 85% and energy at 84%. In sustainable development, compliance also averaged 73%, led by information communications and technology (ICT) at 85%, the environment at 78%, food and agriculture at 75% and climate change and health at 73% each. On its political security commitments, it averaged an even higher 76%, led by non-proliferation, regional security, democracy promotion and counterterrorism, all at 80% or above.

By member, overall compliance was led by the UK at 83%, Canada and the EU at 82% each, the U.S. at 80%, and Germany at 78%, or slightly above the summit average of 75%. They are followed by France at 74%, Japan at 73%, Italy at 63% and Russia at 62%.

On climate change, the 72 assessed commitments show overall compliance of 73%. This level has generally risen over the years from 1985 to 2013. Climate compliance has been led by the EU at 90%, followed in turn by the UK at 83%, Germany at 81%, Japan at 77% and Canada at 74% or slightly above the overall average of 73%. Below the average come France at 70%, the US at 66%, Russia at 60% and Italy at 55%.

Those members whose climate compliance exceeds their overall compliance are the EU by 8%, Japan by 4% and Germany by 3%. Those whose climate compliance lags are Russia by 2%, France by 4%, Canada and Italy at 8%, and the U.S. by 14%. See Appendices C, E and E-2 for further breakdown of compliance by issue area.

The Current Conclusions on the Causes of G7/8 Compliance

Quantitative analysis conducted in early 2015 has yielded clear findings about the causes of the these overall G7/8 compliance patterns. Three key conclusions stand out. First, the G7/8 is not a hegemonic institution. In contrast to views that the G7/8 is a follow-the-leader club, United States compliance actually correlates to compliance of other members **the least** of any member.[1] Second and related, analysis of G7/8 compliance shows a strong homogeneity among members. The correlation of each member's compliance to that of others is similar, suggesting that the G7/8 is a **collegial club of reciprocity** more than a hierarchical relationship between leaders and followers. Third, among institutional variables that may explain how reciprocity works, findings indicate that **ministerial meetings under the auspices of a formal accountability mechanism significantly increase the likelihood of compliance**. This section discusses these findings before considering what they mean for increasing compliance with climate change commitments.

[1] Russia and the EU, for methodological reasons, are not part of the following analysis and discussion.

First, theories of hegemony see the maintenance of the post-1945 world order as a project that serves American interests, is underwritten by American power, and leaves institutions as mere throughputs for expressions of American power (Gilpin 2001, Ikenberry 2011, Mearsheimer 1994/5). However, quantitative analysis suggests this view cannot explain G7/8 compliance. American compliance with a given commitment increases the likelihood that other states will comply by 31 percentage points. To be sure, this is a rather large correlation. But all other members in this study have a higher correlation to the compliance of others. Canada and the UK are at the top with a correlation of 40 percentage points (see Appendix F-1). Moreover, this holds true for commitments specific to climate change (see Appendix F-2).

If the above data invalidates hegemonic explanations for G7 compliance, it also indicates a second key finding: the effect of a compliant state on the likelihood that other states comply to the same commitment is similar across G7/8 members. There is no distinct leader or laggard in terms of correlation to the compliance of others. Simply put, all members have similar correlations to the compliance of others. Indeed, the coefficients and significances indicate that theories of reciprocal policy coordination in international institutions best represent the realities of G7/8 compliance (Keohane 1984, 1986, Pauly 2009). This holds true for climate change commitments as it does for general G7/8 commitments.

Operating within this assumption of reciprocity, it is possible to investigate what institutional mechanisms encourage reciprocal compliance. Four testable theories of institutions claim to explain state behaviour. In G7/8 terms, these theories can be understood to hypothesize explanations for G7/8 compliance. Systemic pressure, hosting leadership, ministerial networks and unambiguous expectations have been posited as explanations of compliant behaviour. Quantitative analysis shows that none of these have much effect on compliance in and of themselves on G7/8 compliance overall (see Appendix G and following discussion). However, testing for the interaction of these theories leads to a third key finding: inter-summit ministerial meetings increase the likelihood of compliance with commitments in their policy area when there is a formal accountability mechanism in place (see Appendix G-2).[2]

G20: Systemic Balancing Pressure from Other Groups

One theory is that for a group of relatively homogenous states, external institutional pressure will increase policy alignment among the group. Milner (2006: 123) put forward such a hypothesis when she tried to account for "strategic competition" that may have unified western aid policies during the Cold War. In this view, "heightened external competition should increase the will and capacity of the Western countries to coordinate their aid policies to overcome both free-riding and being exploited by recipients." Applied to contemporary politics, the G20 represents such external competition. Interestingly, the presence of the G20 has no effect on general G7/8 compliance but has a decidedly strong impact on the likelihood of compliance with G7/8 economic and financial commitments (the main purview of the G20; see Appendix G-3). Thus, efforts to "green" the work of the G20 could be a path to increased climate change compliance in the G7/8.

[2] Other findings are similarly interesting, but discussion is focused for this paper.

Hosting: Formal Leadership Position

A second theory is that the host of the given year's summit has control over the commitment writing. The host is delegated the authority, by the rest of the group, to "enjoy discretion in shaping the agenda for their respective periods at the helm" (Tallberg 2010, 258). In this view, the host country should be more likely to comply with commitments because they set the agenda during their term of leadership, as well as ultimately finalize and communicate the language of commitments. Analysis shows the hosting impact on general G7/8 compliance to be real but less than what might be expected. Hosting increases the probability of compliance by five percentage points, at a 5% significance level, but given the control this theory supposes this impact could be interpreted as small vis-à-vis the theory. However, it provides grounds for using the position of summit host to at least reinforce reciprocity on issues such as climate change.

Ministerial Meetings: Network Density

A third theory posits that, in reality, horizontal networks of national ministers govern the globe by issue area. Thus functional networks arise "from a need to work together to address common problems" (Slaughter 2004, 45). In the spirit of functionalism is Slaughter's argument that often "the simple fact of a meeting drives a desire to have some notable outcome" (2004, 37). As the network becomes established, a concern for reputation as an effective policy maker is inescapable (2004, 54). In this view, denser networks should lead to more information sharing and policy coordination (Slaughter 2004, ch. 5). Analysis of the G7/8 shows that ministerial meetings have no effect on, and depending on the model are actually negatively correlated to, compliance. However, ministerial meetings do not operate in a vacuum and interact with other institutional forces. This is discussed further below.

Accountability Mechanism: Clarity and Transparency

A fourth theory problematizes non-compliance. In this view compliance should be expected given G7/8 homogeneity and that states have no reason to agree to commitments that are not in their interests in the first place. Chayes and Chayes take this view and focus on the problems of ambiguity and temporal restraints. The first emphasizes that states cannot comply with unclear commitments or unclear expectations for what compliance ultimately means. The second emphasizes that states are restrained by financial, bureaucratic, and legal realities if a commitment is too ambitious. The two problems can be remedied through clarity of commitments and expectations, as well as transparency and incremental expectations (Chayes and Chayes 1993). The G7/8 instituted an accountability mechanism that provides such solutions. While analysis shows in and of itself the presence of the accountability mechanism does not have a clear impact on compliance, it is important to consider how the accountability mechanism might affect other institutional variables such as ministerial meetings.

Accountability Mechanisms Make Ministerial Meetings Increase Compliance

According to the data, none of the four theories provides satisfactory explanations in and of themselves. However, the factors discussed above do not exist in a vacuum. In particular, there is logic to hypothesizing a connection between theories 3 and 4 just discussed — and analysis bears this connection out. This leads to the third key finding of recent G7/8 compliance work: when there is an accountability mechanism, ministerial meetings increase the likelihood of compliance.

Using an interactive term that measures ministerial meetings differently depending on the presence of an accountability mechanism, analysis shows that such a presence makes ministerial meetings increase the likelihood of compliance.

For all G7/8 commitments, this effect is highly significant around two or three percentage points. For commitments in the sustainable development policy field (which includes climate change commitments and which is the policy focus of the G7/8 accountability mechanisms at this time), ministerial meetings increase the likelihood of compliance by 25 percentage points at the 10% significance level (see Appendix G-2). The significance level can be seen as dubious. But it is clear that accountability mechanisms increase the impact of ministerial meetings in general, and arguably to a large extent in the specific policy field pertinent to those ministers. This argument is also supported if the G20 correlation to G7/8 economic compliance is seen as a similar phenomenon.

Actions to Increase Climate Change Compliance

What is to be done to increase G7/8 compliance with their climate change commitments? These recent findings, built on the history of work on G7/8 compliance, prompt five policy conclusions that should increase climate change compliance. Respectively, they emphasize reciprocity, connecting with the G20, maximizing the utility of hosting summits, implementing accountability mechanisms while increasing ministerial interaction and catalysing compliance through effective commitments.

First, G7 leaders should highlight climate change at the 2015 Elmau Summit, the 2016 Japan summit, the 2017 Italy summit and the 2018 Canada summit. This will utilize the reciprocal, collegial nature of the G7 by further ingraining the importance of climate change in the institution regardless of domestic political processes in the United States.

Second, leaders should emphasize green growth in the G20. Instruments for doing so include reinstating the G20 development accountability report of 2013 and adding meetings of G20 environmental ministers to its repertoire. These measures would connect the G20's effect on G7 economic compliance to sustainable development and climate change compliance.

Third, host leaders should hold G7 summits more often, as in 2014 and 1996, to reinforce the reciprocity that flows from a collegial club of leaders.

Fourth, leaders should reinstate the G7 environmental ministerial meetings. Before 2009, such meetings took place regularly but have not since. In addition, leaders should implement a regular, comprehensive accountability mechanism specifically focused on sustainable development. Evidence shows these two moves, in tandem, will increase compliance.

Fifth, leaders should ensure that climate change commitments contain the catalysts of priority placement in a one-year timetable and, above all, reference to a core multilateral organization.

Overall, this paper has presented historical evidence that supports a proactive approach to G7/8 compliance. Theory and data provide grounding for the five policy prescriptions just discussed. If they take such actions, leaders can use the G7/8 institution as a tool to increase policy

coordination on the pressing issue of climate change.

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Appendix A: G8 Summit Compliance Performance, 1975-2013

Year	Bayne Grade	Number of Commitments	Compliance Score
1975	A−	14	+57.1
1976	D	07	+08.9
1977	B−	29	+08.4
1978	A	35	+36.3
1979	B+	34	+82.3
1980	C+	55	+07.6
1981	C	40	+26.6
1982	C	23	+84.0
1983	B	38	-10.9
1984	C−	31	+48.8
1985	E	24	+01.0
1986	B+	39	+58.3
1987	D	53	+93.3
1988	C−	27	-47.8
1989	B+	61	+07.8
1990	D	78	-14.0*
1991	B−	53	00.0*
1992	D	41	+64.0*
1993	C+	29	+75.0*
1994	C	53	100.0*
1995	B+	78	100.0*
1996	B	128	+36.2**
1997	C−	145	+12.8**
1998	B+	073	+31.8**
1999	B+	046	+38.2**
2000	B	105	+81.4**
2001	B+	058	+49.5**
2002	B+	187	+35.0**
2003		206	+81.5 %%%
2004		253	+77.5
2005		212	+83.0
2006		317	+66.5
2007		329	+77.5
2008		296	+74.0
2009		254	+77.0
2010		73	+74.5
2011		193	+77.5
2012		141	+78.5
2013		214	+78.5

Notes:
Compliance scores are from Von Furstenberg and Daniels for 1975-1989 (on all economic and energy commitments), Kokotsis for 1990-1990-1995 (on four issue sustainable development and Russian assistance areas), and the G8 Research Group for 1996-2002 (on priority commitments across all issue areas). Compiled by John Kirton, October 1, 2003.

Appendix B: G7/G8 Compliance Scores

Summit Year	Von Furstenberg and Daniels Compliance Scores	Kokotsis Compliance Scores	G8RG Compliance Scores	Amalgamated Compliance Scores
1975	57.1%			57.1%
1976	8.9%			8.9%
1977	8.4%			8.4%
1978	36.3%			36.3%
1979	82.3%			82.3%
1980	7.6%			7.6%
1981	26.6%			26.6%
1982	84.0%			84.0%
1983	−10.9%			−10.9%
1984	48.8%			48.8%
1985	1.0%			1.0%
1986	58.3%			58.3%
1987	93.3%			93.3%
1988	−47.8%			−47.8%
1989	7.8%	−50.0%		−50.0%
1990		−14.0%		−14.0%
1991		0.0%		0.0%
1992		64.0%		64.0%
1993		75.0%		75.0%
1994		100.0%		100.0%
1995		100.0%		100.0%
1996			36.2%	36.2%
1997			12.8%	12.8%
1998			31.8%	31.8%
1999			38.2%	38.2%
2000			81.4%	81.4%
2001			49.5%	49.5%
2002				
2003			81.5%	
2004			77.5%	
2005			83.0%	
2006			66.5%	
2007			77.5%	
2008			74.0%	
2009			77.0%	
2010			74.5%	
2011			77.5%	
2012			78.5%	
2013			78.5%	
MEAN	30.8%	39.3%		36.3%

Notes: The above table contains compliance scores from three separate data sets:

1. First and Second Summit Period (1975-1988): Von Furstenberg and Daniels, “Policy Undertakings by the Seven Summit Countries: Ascertaining the Degree of Compliance.” *Carnegie-Rochester Conference Series of Public Policy*. 35 (1991): 267-308, North Holland.
2. Third Summit Period (1989-1995): Kokotsis, Eleonore, *Keeping International Commitments: Compliance Credibility and the G7, 1988-1995*: Appendix. New York: Garland.
3. Fourth Summit Period (1996-2002): G8 Research Group. All information is available online at http://www.g8.utoronto.ca/compliance.

Appendix C: G8 Compliance, 1975-1995

Compliance by Issue Area, 1975-1989

International trade	0.734
Energy	0.660
Real growth in gross national product	0.397
Inflation multicountry	0.266
Aid and schedules	0.265
Fiscal adjustment	0.259
Demand composition	0.233
Interest rate	0.221
Inflation rate	0.221
Foreign exchange rate	−0.700

Compliance by Country, 1975-1989

United Kingdom	0.413
Canada	0.409
Germany	0.346
Italy	0.274
Japan	0.262
United States	0.246
France	0.240

Compliance by Issue Area, Kokotsis, 1988-1995

Total	United States	Canada	
Climate (34)	+34	+18	+50
Biodiversity (15)	−16	−33	+07
Debt (13)	+73	+46	+100
AFSU (21)	+81	+100	+62
Average (Issue)	+43	+33	+55

Appendix D: Annual Compliance Assessments, 1996-2013

Year	United States	Japan	Germany	United Kingdom	France	Italy	Canada	Russia	European Union	Overall
1996 (22)	+0.41	+0.23	+0.64	+0.41	+0.29	+0.38	+0.55	NA	NA	+0.42
1997 (8)	+0.25	+0.38	+0.63	+0.50	+0.13	-0.50	+0.13	-0.17	+1.00	+0.19
1998 (9)	+0.67	+0.50	+0.29	+0.75	+0.43	+0.75	+0.60	+1.00	-1.00	+0.53
1999 (8)	+0.75	+0.63	+0.63	+0.50	+0.38	+0.75	+0.33	+0.33	+0.55	+0.75
2000 (26)	+0.77	+0.77	+0.84	+0.85	+0.81	+0.78	+0.81	+0.50	+0.71	+0.77
2001 (18)	+0.28	+0.33	+0.50	+0.56	+0.56	+0.44	+0.72	-0.08	NA	+0.43
2002 (16)	+0.31	0.00	+0.19	+0.50	+0.56	-0.07	+0.75	0.00	NA	+0.29
2003 (13)	+0.54	+0.46	+0.54	+0.62	+0.62	+0.46	+0.69	+0.31	+0.80	+0.54
2004 (30)	+0.83	+0.43	+0.60	+0.60	+0.47	+0.47	+0.63	+0.21	+0.63	+0.54
2005 (21)	+0.81	+0.52	+0.86	+0.95	+0.57	+0.29	+0.81	+0.14	+0.89	+0.65
2006 (20)	+0.60	+0.40	+0.55	+0.60	+0.40	+0.05	+0.60	+0.45	+0.58	+0.47
2007 (23)	+0.91	+0.30	+0.57	+0.70	+0.52	+0.17	+0.65	+0.30	+0.48	+0.51
2008 (20)	+0.80	+0.30	+0.60	+0.80	+0.20	+0.15	+0.75	+0.20	+0.45	+0.47
2009 (26)	+0.62	+0.77	+0.46	+0.85	+0.46	+0.12	+0.69	+0.27	+0.65	+0.54
2010 (18)	+0.61	+0.33	+0.56	+0.56	+0.50	+0.22	+0.67	+0.56	+0.39	+0.49
2011 (18)	+0.61	+0.56	+0.44	+0.61	+0.50	+0.33	+0.67	+0.61	+0.61	+0.55
2012 (19)	+0.89	+0.58	+0.74	+0.68	+0.58	+0.16	+0.74	+0.16	+0.58	+0.57
2013 (18)	+0.72	+0.33	+0.56	+0.83	+0.61	+0.39	+0.50	+0.50	+0.67	+0.57
Average	+0.58	+0.45	+0.54	+0.65	+0.47	+0.25	+0.65	+0.27	+0.63	+0.50

Appendix E: Compliance by Issue Area, 1983-2007

Issue Area	Number of Commitments	Compliance Score
Energy	2	+78%
Terrorism	9 (11)	+76% (+70%)
Conflict prevention	14 (15)	+70% (+66%)
Social policy	7	+61%
Macroeconomics	6 (8)	+75% (+59%)
Climate change	40 (42)	+56% (+56%)
Environment	8 (10)	+48% (+54%)
Health	35 (38)	+53% (+51%)
Information and communications	9 (10)	+64% (+59%)
Development	28 (30)	+47% (+46%)
Human rights	6 (7)	+52% (+45%)
Migration	1	+44%
Proliferation	15 (18)	+56% (+47%)
Crime	26	+43%
Regional security	6 (7)	+37% (+43%)
Trade	16 (18)	+38% (+37%)
Nuclear safety	1	+29%
United Nations reform	2	+14%
East-West relations	2	+07%
Microeconomics	3 (4)	-11% (-09%)
Finance	4	+07%

Notes:. Number in parentheses includes 2007 G8 Research Group interim scores. G8 Research Group only; compiled by Jenilee Guebert January 28, 2008.

Appendix E-2: Compliance by Issue Area, 1985-2013, N = 425

Economics			
Macroeconomics	12	+0.69	85%
Energy	16	+0.67	84%
Financial crisis and regulation	06	+0.38	69%
Trade	36	+0.29	65%
Labour and employment	03	+0.25	63%
Total/Average	85	+0.46	73%
Sustainable development			
Development	41	+0.39	70%
Social policy	05	+0.39	70%
Environment	10	+0.56	78%
Education	10	+0.32	66%
Food and agriculture	11	+0.50	75%
Health	58	+0.45	73%
Climate change	72	+0.45	73%
Nuclear safety	02	+0.42	71%
Information and communications	14	+0.70	85%
Total/Average	223	+0.46	73%
Security			
Non-proliferation	27	+0.63	82%
East-West relations	02	0.00	50%
Terrorism	20	+0.59	80%
Regional security	18	+0.63	82%
Conflict prevention	08	+0.39	69%
Crime and corruption	37	+0.41	71%
Democracy	07	+0.65	83%
Human rights	03	+0.50	75%
Transparency	02	+0.67	84%
United Nations reform	04	+0.16	58%
Heiligendamm Process	01	+1.00	100%
Total/Average	129	+0.51	76%
Overall	425	+0.45	74%

Appendix F-1: G7/8 Country Coefficients to Other Members' Compliance (All Commitments)

Country as the independent variable	Canada	Canada	Canada	France	France	France	Germany	Germany	Germany
Model #	1	2	3	1	2	3	1	2	3
Coefficient	0.313689***	0.3976778***	0.485186***	0.37237***	0.372312***	0.399784***	0.345245***	0.344723***	0.413635***
Gross domestic product	0.008515^	0.0142171**	0.014545^	0.009063*	0.013618**	0.019621*	0.004838	0.010645*	0.019134*
Host	--	0.057438*	0.070416	--	0.066536*	0.098127*	--	0.052649^	0.077599^
G20	--	0.037552*	0.036184	--	0.03864**	0.064008**	--	0.038356*	0.063209*
Network meetings	--	0.0004401	0.003662	--	−0.009687	−0.017607	--	−0.007996	−0.032599*
N	2,361	2,361	740	2,346	2,346	740	2,340	2,340	736
Intercept	0.301917	0.270527	0.212384	0.396434	0.374574	0.341074	0.395075	0.371060	0.344258
Adjusted R-squared	0.09112	0.1373	0.203	0.1457	0.1504	0.1762	0.1195	0.1229	0.1812
P-value	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16

Country as the independent variable	Italy	Italy	Italy	Japan	Japan	Japan	United Kingdom	United Kingdom	United Kingdom
Model #	1	2	3	1	2	3	1	2	3
Coefficient	0.357178***	0.35548***	0.396232***	0.346023***	0.34787***	.422087***	0.397828***	0.398993***	0.473470***
Gross domestic product	−0.001129	−0.001182	0.010024	0.015345***	0.021318***	0.00798	0.018279***	0.019142***	0.020485*
Host	--	0.072994**	0.064676	--	0.04494	0.079017^	--	0.03938	0.056753
G20	--	0.009206	0.009925	--	0.046788**	0.052033**	--	0.009844	−0.040105
Network meetings	--	−0.006237	0.011525	--	0.006966	−0.046395*	--	0.007151	−0.008359
N	2,245	2,245	696	2,349	2,349	740	2,351	2,351	740
Intercept	0.497117	0.490923	0.406975	0.402687	0.357456	0.494383	0.283951	0.264089	0.289039
Adjusted R-squared	0.137	0.1392	0.1719	0.1274	0.1314	0.2083	0.1329	0.1332	0.1978
P-value	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16	< 2.2e-16

Country as the independent variable	United States	United States	United States
Model #	1	2	3
Coefficient	0.313689***	0.3150241***	0.239887***
Gross domestic product	0.008515^	0.0087545^	0.017164^
Host	--	0.047595^	0.046365
G20	--	−0.0005148	0.021737
Network meetings	--	−0.0089872	−0.023409
N	2,361	2,361	740
Intercept	0.383460	0.386283	0.435141
Adjusted R-squared	0.09112	0.0919	0.04965
P-value	< 2.2e-16	< 2.2e-16	7.79E-08

Notes: Significant codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '^' 0.1 ' ' 1. All intercepts significant at *** 0.1% level. Model 1, only gdp; model 2 insitutional controls; model 3 only security commitments.

Appendix F-2: G7/8 Country Coefficients to Other Members' Compliance (Climate Change Commitments Only)

Country as independent variable	Canada	Canada	France	France	Germany	Germany	Italy	Italy
Model	1	2	1	2	1	2	1	2
Coefficient	0.30415***	0.30481***	0.37288***	0.37732***	0.31173***	0.31432***	0.32302***	0.32729***
Gross domestic product	−0.01431	−0.01381	−0.0113	−0.01336	−0.01806^	−0.01496	−0.02567*	−0.02419*
Host	--	−0.0256	--	−0.03246	--	−0.01758	--	0.01119
G20	--	0.01377	--	0.00245	--	0.0453	--	0.04155
Network meetings	--	0.014	--	0.03087	--	0.02557	--	0.04199
N	395	395	395	395	395	395	395	395
Intercept	0.405940	0.392010	0.423950	0.402910	0.378280	0.338730	0.550160	0.495230
Adjusted R-Squared	0.09589	0.08994	0.1503	0.1467	0.09215	0.08841	0.1226	0.1212
P-value	9.69E-10	6.50E-08	5.08E-15	4.46E-13	2.18E-09	8.82E-08	2.69E-12	1.06E-10

Country as independent variable	Japan	Japan	United Kingdom	United Kingdom	United States	United States
Model	1	2	1	2	1	2
Coefficient	0.35131***	0.352330***	0.28509***	0.287248***	0.27152***	.27980***
Gross domestic product	−0.00947	−0.003232	−0.02442*	−0.024607*	−0.02684**	−0.02259*
Host	--	−0.059469	--	−0.052616	--	0.01629
G20	--	0.04292	--	−0.006532	--	0.01336
Network meetings	--	−0.003655	--	−0.009358	--	−0.03167
N	390	390	395	395	395	395
Intercept	0.360580	0.345550	0.400020	0.415630	0.490680	0.499330
Adjusted R-Squared	0.1167	0.1146	0.0827	0.07698	0.09537	0.09179
P-value	1.37E-11	5.64E-10	1.66E-08	8.40E-07	1.09E-09	4.49E-08

Notes: Significant codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '^' 0.1 ' ' 1. All intercepts significant at *** 0.1% level. Model 1, only gross domestic product; model 2 insitutional controls.

Appendix G-1: Institutional Variable Probability Model, Key Statistics

	Model Institutional Variables Model
Host	0.055718*
G20	0.020184
Network meetings	−0.003432

	Estimate	Std. Error	t value	Pr(>|t|)	

Accountability mechanisms	0.045756
Gross domestic product	0.015388**
N	2,765
Intercept	0.571214
Adusted R-squared	0.004391
P-value	0.004247

Notes: Significant codes 0 '***' 0.001 '**' 0.01 '*' 0.05 '^' 0.1 ' ' 1. All intercepts significant at *** .1% level.

Appendix G-2: Interactive Linear Probability Models, Key Statistics

AM and Ministerial Meetings: Interactive Model	
Marginal interactive impact	0.021255
Network meetings	−0.013718^
Accountability mechanisms	0.007475
Accountability mechanisms with ministerial meetings	0.034973**
Host	0.055731
G20	0.021038
Gross domestic product	0.014825**
N	2,764
Intercept	0.584215
Adjusted R-squared	0.006508
P value	0.000521
Interactive Model: Only in the Sustainable Development Field	
Marginal interactive impact	0.2057991
Network meetings	−0.0420982*
Accountability mechanisms	0.0609214
Accountability mechanisms with ministerial meetings	0.2478972^
Host	0.0427335
G20	−0.0054758
Gross domestic product	−0.0002575
N	1,547
Intercept	0.6397311***
Adjusted R-squared	0.00236
P value	0.1407

Notes: Significant codes 0 '***' 0.001 '**' 0.01 '*' 0.05 '^' 0.1 ' ' 1. All intercepts significant at *** .1% level.

Appendix G-3: Interactive Linear Probability, Model Economic and Finance Commitments Only

(Intercept)	0.365378	0.049611	7.365	1.32E-12	***
Network meetings	−0.003297	0.010379	−0.318	0.751	
Accountability mechanisms	0.039199	0.104241	0.376	0.707	
Accountability mechanisms with ministerial meetings	0.017502	0.019972	0.876	0.381	
G20	0.212767	0.053316	3.991	8.05E-05	***
Host	0.056021	0.073549	0.762	0.447	
Gross domestic product	0.070666	0.015047	4.696	3.83E-06	***

Notes: Significant codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Residual standard error: 0.4716 on 344 degrees of freedom
Multiple R-squared: 0.09902, Adjusted R-squared: 0.08331
F-statistic: 6.301 on 6 and 344 DF, p-value: 2.664e-06