
Creating Compliance with G20 and G7 Climate Change Commitments through Global, Regional and Local Actors

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Abstract

The greatest global change, where the process of globalization is now complete, is climate change and the existential threats it brings. How do the central global governance institutions of the Group of Seven (G7) major democratic powers from the rich North and the Group of 20 (G20) systemically significant states, including countries of the emerging South, create and comply with commitments to control climate change, by working with key actors at the multilateral, regional, sub-national, local and civil society levels? Using data and previous findings from the Global Governance Program, this paper analyzes how the compliance of G7 and G20 members with their leaders' summit climate change commitments is affected by invoking the International Monetary Fund and World Bank Group, by invoking the Organisation for Economic Co-operation and Development, European Union, the United States–Mexico–Canada Agreement and the Asia-Pacific Economic Co-operation forum, and by invoking local actors such as sub-national states and provinces, cities, and business, as well as Indigenous Peoples. It identifies ways in which the involvement of such “local” actors can improve compliance, through their inclusion in the substance of G7/G20 commitments and through the civil society engagement groups that seek to shape those commitments. It recommends that, to improve compliance, G7 leaders make more climate change commitments, make more highly binding ones, focus them on the United Nations Framework Convention on Climate Change's Glasgow Summit and link them to sustainable development. It also recommends that G20 leaders produce fewer but more ambitious climate change commitments, and be guided more by the recommendations of the ecologically focused Urban 20 engagement group and by the relevant recommendations of the Think 20 engagement group. At both summits, at which the health crisis of COVID-19, climate change and jobs will take centre stage, leaders should stop treating climate change as a separate silo and start crafting more commitments that recognize and build on synergies in the context of the Sustainable Development Goals, and that involve states and provinces, cities, and Indigenous Peoples to advance climate action.

Introduction

Climate change is the central, compelling, urgent, existential, global crisis of our time. The relentless rise in the global average temperature and greenhouse gas concentrations is rapidly approaching the threshold of 1.5°C above preindustrial levels that all world leaders agreed to keep it under in the United Nations' Paris Agreement on climate change in December 2015. With little time left to take the ambitious action needed to hit this target and control the crisis, much depends on the work this year of the major plurilateral summit institutions (PSIs) of the Group of Seven (G7) major market democracies and the Group of 20 (G20) systemically significant states. They have long made commitments on climate change and have made it a

priority this year to spur success at the delayed UN climate summit now scheduled for Glasgow in November 2021.

Much is now known about how much G7 and G20 summits have made commitments on climate change and how its members have complied with them (Kirton and Kokotsis 2015). Some things are known about the causes of this compliance and how leaders' use of familiar, low cost "accountability measures" improve that compliance (Kirton and Larionova 2018; Warren 2019, 2020a, b, c; Rapson 2020a, b). But less is known about the involvement and compliance impact of the major multilateral organizations of the post-World War II order — the International Monetary Fund (IMF) and the World Bank Group, which are increasingly acting to control climate change. And little is known about the involvement and impact of the leading regional organizations of the Organisation for Economic Co-operation and Development (OECD), European Union, United States–Mexico–Canada Agreement (USMCA) and Asia-Pacific Economic Cooperation forum (APEC), the local actors of sub-national states and provinces, cities, the private sector and civil society groups, which are increasingly involved in climate action, and Indigenous Peoples who have always been (Kahler 2017).

This paper fills that gap. Using the 92 G7 climate commitments assessed for compliance since 1985 and the 37 G20 climate commitments since 2009, it first summarizes how much the compliance of these PSI members has been affected by the use of accountability measures shown by previous research to make a difference. It then adds the compliance impact of making highly binding commitments and making commitments that synergistically link to other subjects. In that context, it examines how the invocation and involvement of the key multilateral, regional and local actors affect compliance, both overall and for key members, led by the leading global emitters of China and the United States. On this basis it recommends how leaders can improve the compliance and thus results of the climate commitments they will make at their forthcoming G7 Cornwall Summit on June 11–13 and their G20 Rome Summit on October 30–31. Both summits are designed to spur success at the UN's climate summit in Glasgow on November 1–12.

This analysis finds that in the older, compact, fully democratic, rich G7, compliance with climate change commitments averaged 73%. Compliance rose when G7 summits made more climate commitments, when they referenced the core international organization and international law of UN Climate, the Conference of the Parties (COP) and the UN Framework Convention on Climate Change (UNFCCC) and when a UN climate summit was held the same year (Warren 2019). Highly binding climate commitments had slightly higher compliance. Climate commitments referring to economic growth and market-based solutions had higher compliance, and those referring to nature, society, health and food had less. G7 climate commitments never invoked the IMF, OECD, EU, USCMA or APEC, and did little to invoke the World Bank. However, higher G7 climate compliance came from EU members, but not from the USMCA's United States and Canada, and APEC, with Japan added to the United States and Canada. Compliance was also higher with summits that referenced cities or Indigenous Peoples.

In the newer, bigger, broader, more politically and economically diverse G20, compliance with climate commitments averaged 69%. Compliance rose when summits made fewer and more ambitious climate commitments and had meetings of environment ministers during the year, and rose for commitments that referred to the UNFCCC, had short-term deadlines of six months or less, were low binding, or synergistically referred to sustainable development and economic growth (Warren 2020c). Compliance rose for EU members to 85%, for G7 members to 81%, for OECD members to 76%, for USMCA parties to 74% and for APEC members to 70%. However, for the big emerging countries of Brazil, Russia, India, China and South Africa in the BRICS — the newer, smallest PSI — compliance was only 61%. Commitments with references to "local" governments (that is, at the sub-national or municipal level), while more frequent than in the G7, had compliance of only 65%, compared to 73% for commitments without such references. Commitments referring to the private sector had compliance of 67%.

To raise the compliance and results with their climate commitments at their Cornwall Summit, where G7 leaders will be joined by OECD and APEC members Australia and Korea and BRICS members India and South Africa, they should take full advantage of German chancellor Angela Merkel's presence, and the climate commitments made at the G7's Virtual Summit on February 19, the Quadrilateral Summit of the United States, Japan, India and Australia on March 12, and the Leaders Summit on Climate of 40 leaders hosted by Joe Biden on April 22–23. On this favourable foundation, they should make more climate change commitments, more highly binding ones, focus them on the UNFCCC's Glasgow Summit and link them to sustainable development, giving pride of place to the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda on Sustainable Development, which include goals on health and jobs.

G20 leaders, meeting in Rome the day before the UN's Glasgow Summit starts and after Angela Merkel is gone, should produce fewer climate change commitments, and be guided more than ever before by the recommendations of the ecologically focused Urban 20 (U20) engagement group and the climate, environment and clean energy recommendations of the Think 20 (T20) engagement group.

To elaborate on these findings, this paper first examines the G7's climate change conclusions, commitments and compliance. Second, it analyzes the causes of compliance and assesses the impacts of the traditional accountability measures, of the binding level and synergistic links of the commitments, and of the major actors specified above. Third, it examines the G20's climate conclusions, commitments and compliance. Fourth, it assesses the compliance impacts of the same old and new accountability measures. Fifth, it considers how compliance with climate commitments at the G7 Cornwall Summit and the G20 Rome Summit might be spurred by the special summits in early 2021 — the G7's on February 19, the Quadrilateral's on March 12, and the Leaders Summit on Climate on April 22–23. Sixth, it summarizes these findings, the recommendations they support for raising compliance with G7 and G20 compliance in 2021 and makes suggestions for further research.

G7 Climate Change Performance and Compliance Causes

G7 Performance

Conclusions

From 1975 to 2019 G7 leaders dedicated 33,598 words, or 5%, of their public summit communiqués to climate change (see Appendix A). In the first phase, the creation of climate change governance from 1979 to 1989, just three summits referenced climate change and each devoted under 100 words, which never took more than 5% of the communiqué. The second phase, from 1990 to 2004, saw a rise to a high of 491 words for 6% in 1990 from a low of 53 words for 0.2% in 2002. The third phase, from 2005 to 2014, started with a high 2,667 words for 9% at the 2005 Gleneagles Summit, rose to peak at 5,559 words for 33% in 2009 and dropped to a low of 525 for 4% in 2013. The fourth phase, from 2015 to 2020, had highs of 2,379 words for 19% at Elmau in 2015, 3,802 for 18% at Ise-Shima in 2016 and 1,696 for 15% at Charlevoix in 2018. Its lows were 201 words for 2% at Taormina in 2017, when U.S. president Donald Trump first arrived, 892 for 12% at Biarritz in 2019, while he was still there, and nothing when he chaired the G7 in 2020. In 2020, with their attention crowded out by the COVID-19 pandemic, G7 leaders ignored climate change at their emergency meeting on March 16, and did not hold a regular summit that year.

Commitments

These G7 communiqués contained 369 climate change commitments from 1985 to 2020. In the first phase, the first commitment came in 1985, then none for three years, then a few more at each summit from 1989 to 1992, and none in 1993. In the second phase, from 1994 to 2004, there were no more than seven commitments per summit. The third phase started at Gleneagles in 2005 with 21 climate commitments, followed by a steady rise, to 22 at St. Petersburg in 2006, 35 at Heiligendamm in 2007 with Angela Merkel as chair, 55 at Toyako-Hokkaido in 2008 and 42 at L'Aquila in 2009. In the fourth phase, starting in 2010, most

summits made about 10 commitments, save for the 2015 Elmau Summit chaired by Merkel with 23. The fifth phase had none in 2019 and 2020.

Compliance

Compliance with the 92 assessed commitments averaged 73%. This was slightly below the G7's average of 76% with all 594 commitments assessed for compliance across all subjects. Climate compliance steadily rose, as did G7 compliance overall. Phase one in the 1980s averaged climate compliance of only 54%. Phase 2 in the 1990s and early 2000s averaged 73%. Phase 3 from 2005 to 2014 averaged 75%. Phase 4 from 2015, when the Paris Agreement was signed, until 2018 averaged 80%.

G7 Compliance Causes

Previous research has shown that G7 climate compliance rose when leaders made more climate commitments at their summit, referred in their climate commitments to the core international organization or international law (UNFCCC) and when there was a surrounding UN summit on climate change (Warren 2019).¹ New analysis finds that the 54 highly binding commitments had slightly higher compliance, averaging 75%, than those with low binding language, which averaged 72% (see Appendix B).

Commitments that were only on the single subject, or “silo,” of climate change had average compliance of 74%. Those with a synergistic link to at least one other subject averaged 72%. The highest compliance came for the synergistic commitments that referenced poverty at 91%, followed by those that referenced the economy, markets and growth at 85% and those that referenced natural disasters at 80%. Commitments linked to transportation averaged 78%, followed by energy at 75% and technology at 74%. The overall climate average of 73% included commitments linked to education at 72%, environmental pollution at 68%, health at 59%, food security and sustainable development at 56% each, and forests with 55%. The G7 has failed on forests, the nature-based solution it has committed to the most.

Within this context, how much impact does the invocation of the major multilateral and regional economic organizations, local actors and non-governmental actors have? G7 climate commitments never referred to the IMF and made only four with references to the World Bank despite these bodies' increasing work on climate change and G7 members' continuing control of their executive boards and the European and U.S. provision of their executive heads. Nor have those commitments referred to the major regional organizations, despite the European Union and all its members being G7 members too. However, one G7 climate commitment did refer to regional climate-risk insurance facilities in 2018, and it secured just 50% compliance. These facilities are focused on such regions as the Caribbean, which does not have regular regional representation in the G7.

The major regional organizations could produce solidarity among their members that influences their compliance in the G7. But only the EU did (see Appendix C). The three highest climate compliers in the G7 are European Union itself at 91%, the United Kingdom with 83% and Germany with 82%. With France at 72% and Italy at a very low 55%, the European Union and its four country members averaged 76%, above the 73% average of all G7 members.

For the two G7 members that belong to the North American United States–Mexico–Canada Trade Agreement, where trilateral summits began in 2005, Canada had 76% and the U.S. 70%, for a combined USMCA average of 73%. For APEC, with Japan's 74% added to the U.S. and Canadian score, gave it 73% as well.²

¹ The core climate international organization of the UNFCCC and international law under it appeared in six assessed commitments, whose compliance averaged 77%.

² The overall average of 73% climate compliance comes from adding to the five EU members 76% and the three APEC members 73%, the lower scores of Russia, which was a member of the renamed G8 from 1998 to 2013.

This pattern points to other possible causes of G7 climate compliance — the age, legal supranational authority and bureaucratic capacity of the regional group. Here the EU vastly exceeds the USMCA, its predecessors of the North American Free Trade Agreement in 1994 and the trilateral North American summitry starting in 2005, and APEC from 1989 with its leaders' meetings starting in 1993 (Larionova 2012; Kirton and Panova 2012).

On sub-national and local actors led by cities, the G7 has dedicated 1,746 words, or only 0.01% of its communiqués across all subjects from 2008 to 2019 (see Appendix D). All but two of the summits in this period referenced cities or local authorities in their communiqué conclusions. Those that did had slightly higher compliance with their climate change commitments, at 76%, compared to the two with no references at 72%. No G7 climate commitment referenced cities or a cognate term. Thus the climate compliance impact of cities was contextual rather than directly causal.

Among these actors, the G7's highest compliance was with those climate commitments that referenced the private sector. There were five such commitments, with average compliance of 73%. These started in 2006 with a commitment to work with the private sector to reduce the environmental impacts of hydrocarbon production, and averaged 61%. A 2010 commitment to identify long-term public and private financing for REDD+ (a UNFCCC framework to reduce emissions from deforestation and forest degradation, as well as guide the sustainable management of forests and the conservation and enhancement of forest carbon stocks in developing countries) had only 44%. A 2013 commitment to encourage private sector involvement in the Climate and Clean Air Coalition had 78%. A 2015 commitment to mobilize climate finance from the private sector had 88%. A 2018 commitment to create partnerships with the private sector had 93%.

The only other local-actor commitment with a high compliance score was from one from 2008 on working together with “other relevant stakeholders” to develop science-based benchmarks for biofuels. It averaged 95%. In one 2001 commitment, the G7 pledged to make the 2002 World Summit on Sustainable Development in Johannesburg a success by working with “civil society.” It had compliance of only 50%.

Lastly, four G7 summits (2000 Okinawa, 2009 L'Aquila, 2018 Charlevoix and 2019 Biarritz) referenced Indigenous Peoples. Three commitments came from these summits, one from 2009 and two from 2018. One from 2018 had a link to climate change and one to clean oceans. None has been assessed for compliance. The average climate compliance of the four summits that had a reference to Indigenous Peoples was 85% compared to 72% for those with no such reference.

G20 Climate Change Performance and Compliance Causes

G20 Climate Performance

Conclusions

Since their first summit in Washington in November 2008 through to their Riyadh Summit in November 2020, G20 leaders devoted 19,625 words of their communiqués to climate change, for an average of 1,308 or 8.9% of the total at each summit (see Appendix A). They dedicated just 2% of the communiqués at Washington and 1% at their next summit in April 2009 in London. At Pittsburgh in September 2009 the portion rose to 10%, fell to 7% at Toronto in June 2010, and then rose to 13% at Seoul in November 2010. The portion stayed below 10% until after the UN's Paris Agreement was signed in December 2015. At the next G20 summit, in Hangzhou in 2016, the portion rose to 11% and again at Hamburg in 2017 to 15%. At Buenos Aires in 2018 it dipped to 6%, peaked at Osaka in 2019 to 24%, and fell to 4% at Riyadh in November 2020.

Commitments

From 2008 to 2020, G20 leaders made 91 climate commitments, with a slight but insignificant rise over time. Their climate commitments averaged 3% of the total at each summit. They started at London and Pittsburgh with three commitments for 2% of the total in each case, rising to 5% in 2010, and staying below 5% from 2011 to 2018, with a low of 1% from two commitments at Hangzhou in 2016, with Xi Jinping in the chair. The number of commitments peaked at 22 at Hamburg in 2017 with Merkel in the chair and Trump arriving there. It dropped to three at Buenos Aires in 2018, rose to 13 for 9% at Osaka in 2019, then dropped back to three at Riyadh in November 2020.

Compliance

Compliance with the 37 assessed climate commitments averaged 69%, just below the G20's all-subject compliance average of 71%. Compliance rose a little in an irregular way, with London at 45%, Pittsburgh 93%, Toronto 71%, Seoul 53%, Cannes 69%, Los Cabos 80%, St. Petersburg 42%, Brisbane 76% and Antalya 85%. After the UN's Paris Agreement, Hangzhou had 79%, Hamburg 68%, Buenos Aires 78%, and Osaka 85%, for a pure post-Paris average of 78%. Trump was there for the last three, but withdrew the United States from many of the climate commitments made there.

G20 Compliance Causes

Compliance with these G20 climate commitments, which averaged 69%, rose with fewer and more ambitious climate commitments and meetings of environment ministers during the year, and commitments that referred to the UNFCCC, and had short-term deadlines of six months or less (Warren 2020a, c; Rapson and Kirton 2020). G20 climate compliance rose when the commitment referred to the core global climate international organization of the UNFCCC, as they averaged 85% or 10% higher than those without (see Appendix B). However, when adding the legal agreements (such as the Paris Agreement), meetings (such as the Cancun COP), and initiatives (such as the National Adaptation Plan Global Network or Green Climate Fund) that fell under or were created by the UNFCCC, compliance dropped to 68%.

Compliance also rose with climate commitments that were highly binding and synergistically referred to sustainable development and economic growth (Warren 2020c). From 2015 to 2020, the G20 made 13 highly binding climate commitments and 34 low binding ones. Of the 21 commitments assessed for compliance, seven were highly binding and 14 low binding ones. The highly binding ones averaged compliance of 77%, or 10% above the low binding ones.

The highest compliance came with commitments that made a synergistic link to sustainable development at 87%, to economic growth at 74%, and to digital or smart cities at 70%. Climate commitments linked to forests at 65%, finance 60%, the ozone layer 48%, clean energy with 46% and employment 57% were all below the G20's overall climate average of 69%. None linked to health or gender. Commitments with at least one synergistic link to another subject averaged 69%, and siloed commitments to climate change alone averaged 70%.

The climate commitments assessed for compliance contained no reference to the IMF, World Bank or any regional organization. However, G20 members in all the regional organizations increased their compliance with climate commitments above the 69% average (see Appendix C). Members of the European Union had 85%, the G7 81%, the OECD 76%, USMCA 74% and APEC 70%. However, the BRICS members averaged only 61%.

Specifically, the EU members Germany with 93%, United Kingdom with 91% and France with 87%, and the European Union itself with 86% had the highest climate compliance among the G7 members. Italy was second lowest with 70%. The EU average was thus a strong 85%, much above the 69% average of all G20 members.

Members of the plurilateral, ministerial-level OECD, comprising all G7 members and the EU plus Australia, Mexico, Korea and Turkey averaged 76%. The three North American members averaged 74%, led by Canada at 83%, with Mexico at 73% and the United States at only 62%. The APEC members of Australia, Canada, Korea, Mexico, Japan, China, Indonesia, the United States and Russia averaged 70%, with Australia at 84% and Japan and China both at 75%. The five BRICS members averaged 61%, with India at 64% and Russia at 42%. Thus the geographically concentrated EU remained in the lead, both on its own and regionally, and as a dominant group in the broader OECD. It was followed by the geographically continuous, land-connected trilateral North American group, then the geographically dispersed, trans-oceanic APEC, and the most dispersed BRICS spanning Latin America, Africa and Northern Asia/Eastern Europe.

This suggests that geographic proximity might matter, especially as China and adjacent Japan had identical scores of 75% (Kirton and Wang 2021). However, the globally dispersed G7, whose members span Europe, North America and Asia, averaged 81%, which suggests that their common democratic character mattered more than geographic concentration does. The high scores of the all-democratic EU, OECD and North America support this view, as do the lower scores of APEC and the BRICS where non-democratic members loom large. This is consistent with the research that shows that democracy fosters climate change control (Fiorino 2019).

G20 communiqués made more references to sub-national actors than the G7 did, dedicating 2,251 words, or 1% of its communiqués across all subjects from 2008 to 2019 (see Appendix E). Yet the G20 made no references at eight of its summits. G20 compliance with climate change commitments from summits with such sub-national references was lower at 65%, compared to those without at 73%. Only one G20 climate commitment referenced “smart cities” specifically; it was made at the 2019 Osaka Summit and averaged 70% compliance, marginally better than the G20’s overall climate average of 69%.

Commitments referring to the private sector had compliance of 67%. There were no references to other non-state actors, such as non-governmental organizations in the assessed commitments (Warren and Kirton 2020). The G20 made one reference and one commitment in 2019 to “look into ... traditional and Indigenous knowledge.” It preceded a sentence in which the G20 recognized that “climate actions at all levels with broad participation, including by non-state actors, will be key to realizing such a paradigm shift.” This commitment has not been assessed for compliance. However, compliance from the 2019 Osaka Summit, where there was a reference to Indigenous Peoples, was slightly higher than the overall average of 73% across all years. Compliance with all other years excluding Osaka is 68%.

The G20 now has seven formal engagement groups that make recommendations to G20 leaders on what commitments their summits should make. Most recommendations have dealt with climate change, increasingly so in recent years. The most active engagement groups have been the T20 and the U20, with the U20 focusing almost exclusively on climate change and the environment in 2020. Yet the engagement groups’ success in making climate recommendations that G20 leaders adopt in commitments, and then comply with, remains quite small (Chodor 2020; Tops, Hou and Koch in press).

The Supporting Summits of 2021

The relevance of trans-regional PSIs such as the G7, OECD and APEC in increasing G20 compliance leads to a brief examination of the actual and prospective climate performance of three special summits that arose in the first four months of 2021 to respond to the crises of the time.

G7 Virtual Summit

The first was the G7 Virtual Summit, called and chaired by British prime minister Boris Johnson on February 19, 2021 (Kirton 2021a, d; Warren 2021). Among its 27 commitments were three on climate change. Two were synergistic ones.

As G7 climate compliance has been increased by a pre-summit ministerial meeting and surrounding summit support, these three commitments will benefit from the G7 environment ministers meeting the UK has announced it will hold during its 2021 presidency and the UN Glasgow climate summit in November, co-hosted by Boris Johnson. They should also benefit from the two new summits initiated by Joe Biden, the all-democratic Quadrilateral in March and the Leaders Summit on Climate in April.

Quadrilateral Summit

The second special summit in the spring of 2021 was held on March 12, with the leaders of the United States, Japan, India and Australia — all members of the G20 (Kirton 2021b). At this first summit of the Quadrilateral, leaders made three commitments on climate change, for 9% of their 34 overall (see Appendix F). The climate commitments were as follows: “we pledge to combat climate change”; “we are united in recognizing that climate change is a global priority and will work to strengthen the climate actions of all nations, including to keep a Paris-aligned temperature limit within reach”; and “we will establish a climate working group to strengthen climate actions globally on mitigation, adaptation, resilience, technology, capacity-building, and climate finance.”

The evidence from both the G7 and G20 summits suggests that compliance with these commitments will be solid. The two G7 members of the United States and Japan averaged 72% climate compliance in the G7. The four Quadrilateral members’ climate compliance in the G20 averaged 71%. However, the most powerful U.S. had only 62% and India 64%, while Japan had 75% and the least powerful member, Australia, had 84%. The addition of the other genuinely Asia-Pacific G7 member, Canada to the next Quadrilateral summit, would help, as its climate compliance in the G7 was 76% and in the G20 83%.

Moreover, the 9% of the Quadrilateral’s commitments on climate change was a higher portion than made at almost all G7 summits. All three Quadrilateral climate commitments were highly binding ones. One referred to the Paris Agreement and, indirectly, to meeting its target in the short-term deadline of the next six months. And while they did not mandate an environment ministers meeting, the leaders created a climate working group to follow up. They further promised that their foreign ministers would meet and that another, now in-person, summit would be held in 2021.

Leaders Summit on Climate

The third special springtime summit was fully dedicated to climate change (Kirton 2021c). On March 26 Joe Biden announced he would hold a “Leaders Summit on Climate” on April 22-23. He invited 40 leaders, including all G20 ones. It was designed to get a fast start in spurring the UN’s Glasgow Summit in November to success. At its core were the 17 members of the Major Economies Forum, which held two summits as part of the G8 ones in 2008 and 2009. They produced 30 climate change commitments when Republican George W. Bush was U.S. president, and nine in 2009 when Democrat Barack Obama was, with Joe Biden as his vice-president. This could suggest that Biden’s “Earth Day” summit could make climate commitments that count.

Conclusion

Key Findings

This study finds that compliance with the climate commitments made at G7 and G20 summits rose when leaders used several low-cost accountability measures that they control.

In the G7, climate compliance, which averaged 73%, was higher when more climate commitments were made at the summit, when they referenced the core international organization and international law of UN Climate, the COP and the UNFCCC, and when a UN climate summit was held that year. Compliance was higher with highly binding climate commitments and ones with synergistic links to economic growth and market-based solutions. It was also higher for EU members, which all belong to the G7, but not for the North American or

APEC ones, whose members all do not. It was higher for summits where there was a reference to sub-national cities or to Indigenous Peoples.

In the G20, climate compliance, which averaged 69%, was higher when the summit made fewer and more ambitious climate commitments, when G20 environment ministers met during the year, and when commitments were highly binding, referred to the UNFCCC, had short-term deadlines of six months or less, or synergistically referred to sustainable development and economic growth. Compliance rose for members of the EU to 85%, G7 ones to 81%, OECD ones to 76%, North American ones to 74% and APEC ones to 70%. However, BRICS members had only 61% compliance. Commitments with references to sub-national or local governments, while more frequent than in the G7, had compliance of only 65%, compared to 73% for those without. Commitments referring to the private sector had 67%.

Resulting Recommendations

To raise compliance with their climate commitments at their Cornwall Summit, where G7 leaders will be joined by OECD and APEC members Australia and Korea and BRICS members India and South Africa, G7 leaders should take full advantage of Merkel's presence, and the climate commitments made at their February Virtual Summit, the March Quadrilateral Summit of the U.S., Japan, India and Australia and the April Leaders Summit on Climate. They should make more climate change commitments, make more highly binding ones, focus them on the UNFCCC's Glasgow Summit and link them to sustainable development, giving the UN's SDGs pride of place.

G20 leaders, meeting in Rome on the eve of the UN's Glasgow Summit starts, and without Merkel, should produce fewer but highly ambitious climate change commitments, and be guided more by the EU, G7 and OECD, and the recommendations of the ecologically focused U20 and the relevant recommendations of the T20.

At both summits, at which the health crisis of COVID-19, climate change and jobs will take centre stage, leaders should stop treating these subjects as separate siloes and start crafting commitments that recognize and build on their synergies in the context of the SDGs, and involve states and provinces, cities and Indigenous Peoples to advance climate action.

Suggestions for Further Research

This analysis points to other possible causes of G7 climate compliance that follow directly from this study (see Appendix G). The first is a systematic assessment of how the compliance of all G7 members varies with their quota share at the IMF and World Bank, and the citizenship of those bodies' executive heads, as they have changed from 1985 to 2018. The second is how compliance varies across regional members according to the age, legal supranational authority, bureaucratic capacity and balance of governance at the summit and ministerial levels of the regional group, and, over time, how they respond to climate, economic and other shocks (Haftel, Wajner and Eran 2020). The third is to ask similar questions regarding the G20. The fourth is to assess the impact on G7 and G20 members' compliance of their involvement in the other climate-relevant multilateral organizations, starting with UN Climate, UN Biodiversity and UN Environment (Well et al. 2020). The fifth is to see if climate compliance in the G7 and G20 rises with the creation in the summit year of a relevant, subject-specific, official level group, the way it does if a same-subject ministerial meeting is held (Kirton 2021a). The fifth is the compliance impact of the host country and leaders, given Merkel's record in hosting the most successful summits on climate change, at the two G7 and one G7 one she chaired, both without and with Trump.

More broadly, improving compliance with G7 and G20 leaders' commitments matters only if they make commitments that are sufficiently timely, well tailored and ambitious to control the climate crisis the world currently confronts. This requires analyzing if the inherited set of climate commitments is adequate to the task and threat they now face. If those commitments ever were, they clearly no longer are, or the world would not now be so far behind in meeting the Paris promises and goals. The first task is thus to compare the most

cost-effective climate control measures, starting with those ranked by the authoritative Project Drawdown, with the climate and related commitments the G7 and G20 have made (Hawken 2017). The second task is to explore why G7 and G20 leaders, apart from Merkel, have been so slow to recognize and respond to the clear scientific consensus. The third is to identify ways to make them do so now, before it is too late.

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Appendix A: G7 and G20 Climate Change Performance

Summit	Conclusions	Commitments	Compliance
G7	33,598 (5%)	369	73%
G20	19,625 (9%)	91	69%

Appendix B: G7 and G20 Causes and Compliance on Climate Change

Summit	High binding	Low binding	Climate silo	Climate synergy	Subnational reference	No subnational reference	Indigenous Peoples reference	No Indigenous Peoples reference	Private sector	Civil society	United Nations Framework Convention on Climate Change/law
G7	75%	72%	74%	72%	76%	72%	85%	72%	73%	50%	77%
G20	77%	67%	70%	69%	65%	73%	73%	68%	67%	n/a	85%

Appendix C: G7 and G20 Regional Membership and Climate Change Compliance

Plurilateral summit institution	Germany	United Kingdom	European Union	France	Australia	Canada	Korea	Mexico	Japan	China	Italy	Indonesia	United States	India	Brazil	Argentina	South Africa	Saudi Arabia	Russia	Turkey
G7	1975	1975	Yes	1975		1976			1975		1975		1975						1998	
G20	2008	2008	Yes	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
BRICS										2009				2009	2009		2011		2009	
EU	Yes	Yes	1993	Yes							Yes									
USMCA						Yes		Yes					Yes							
APEC					1993	1993	1993	1993	1993	1991		1993	1993							1998
OECD	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes		Yes							Yes
Total	4	4	4	4	3	5	2	4	4	3	4	2	5	3	3	1	2	1	4	2
Members' G20 climate compliance	+0.85	+0.82	+0.69	+0.73	+0.67	+0.67	+0.56	+0.52	+0.48	+0.45	+0.34	+0.24	+0.22	+0.24	+0.21	+0.13	+0.09	-0.41	-0.18	-0.34
	92%	91%	87%	86%	83%	83%	82%	78%	74%	73%	69%	65%	64%	63%	63%	58%	54%	47%	44%	35%
Members' G7 compliance	+0.63	+0.66	+0.81	+0.43		+0.52			+0.48		+0.09		+0.39						+0.16	
	82%	83%	91%	72%		76%			74%		55%		70%						58%	

Notes:

G7 = Group of Seven; G20 = Group of 20; BRICS = Brazil, Russia, India, China and South Africa; EU = European Union; USMCA = U.S.–Canada–Mexico Agreement; APEC = Asia-Pacific Economic Cooperation; OECD = Organisation for Economic Co-operation and Development.

Blank cells = G20 country is not a member of the organization.

Averages by G7 membership in plurilateral summit institution: EU5 = +0.52 (76%); Canada and the U.S. (USMCA) = +0.46 (73%); Canada, the U.S. and Japan (APEC) = +0.46 (73%).

Averages by G7 membership in plurilateral summit institution: EU5 = average compliance is +0.69 (85%); U.S., Canada and Mexico (USMCA) = +0.47 (74%); APEC (9 members) = +0.40 (70%); OECD (11 members) = +0.51 (76%); BRICS = +0.22 (61%).

Appendix D: G7 Conclusions and Compliance with Sub-National Actors

G7 summit	# words	% words	Compliance with reference	Compliance without reference
2008 Hokkaido-Toyako	123	0.8%	+0.53	
2009 L'Aquila	590	1.9%	+0.64	
2010 Muskoka	87	1.0%	+0.33	
2011 Deauville	64	0.3%	+0.67	
2012 Camp David	60	0.5%	+0.11	
2013 Lough Erne				+0.22
2014 Brussels				+0.63
2015 Elmau	138	1.1%	+0.60	
2016 Ise-Shima	295	1.3%	+0.46	
2017 Taormina	58	0.7%	+0.71	
2018 Charlevoix	331	2.9%	+0.64	
2019 Biarritz	1,836	1.2%	not available	
Total	1,746	-		
Average	153	0.01%	+0.42	+0.44

Appendix E: G20 Conclusions and Compliance with Sub-National Actors

G20 summit	# words	% words	Compliance with references	Compliance without references
2008 Washington				
2009 London				-0.10
2009 Pittsburgh				+0.73
2010 Toronto				+0.42
2010 Seoul	214	1.4%	+0.05	
2011 Cannes				+0.38
2012 Los Cabos	131	1%	+0.59	
2013 St. Petersburg	335	1.2%	-0.17	
2014 Brisbane				+0.51
2015 Antalya				+0.70
2016 Hangzhou				+0.58
2017 Hamburg	905	2.6%	+0.36	
2018 Buenos Aires	121	3.3%	+0.56	
2019 Osaka	545	8.2%	+0.45	
Total	2251	8%	-	-
Average	161	1%	+0.31	+0.45

Appendix F: G7 and Quadrilateral Summit Commitments and Compliance

Subject	G7 February 19 commitments	G7 portion	Quadrilateral March 12 commitments	Quadrilateral portion	Difference portion G7-Quadrilateral	G7 past compliance	United States compliance	Japan compliance	United Kingdom compliance
Health	8	30%	4	12%	18%	76%	86%	72%	85%
Economy	5	19%	0	0%	19%	86%	86%	83%	86%
Development	4	15%	0	0%	15%	75%	79%	72%	87%
Climate	3	11%	3	9%	02%	73%	70%	74%	83%
International cooperation	2	7%	9	26%	-19%	-	-	-	-
Labour/Employment	1	4%	0	0%	04%	82%	100%	65%	100%
Digitalization	1	4%	4	12%	-08%	72%	88%	96%	100%
Trade	1	4%	0	0%	04%	65%	60%	72%	74%
Taxation	1	4%	0	0%	04%	-	-	-	-
Gender	1	4%	0	0%	04%	69%	65%	71%	77%
Regional security	0	0%	8	24%	-24%	82%	92%	86%	83%
Human rights	0	0%	3	9%	-09%	78%	100%	50%	90%
Proliferation	0	0%	1	3%	-03%	82%	77%	83%	88%
Terrorism	0	0%	1	3%	-03%	78%	88%	52%	79%
Infrastructure	0	0%	1	3%	-03%	-	-	-	-
Total	27	100%	34	100%	-	77%	83%	73%	86%

Compiled by John Kirton, March 12, 2021

G7 Past Compliance average, and by country, is equally weighted by subject, not by commitment

Appendix G: Additional Quantitative Analysis

The additional quantitative analysis, conducted by Jessica Rapson and reported below, has confirmed and in some cases adjusted the findings reported in this paper, as follows:

International Organization Causes of G20 Climate Compliance

There is a significant effect of membership in the European Union and in the Asia-Pacific Economic Cooperation forum (APEC) on G20 climate change compliance.

- EU members are 6.1 times more likely to have a higher level of G20 climate change compliance than non-EU members.
- APEC members are 2.4 times more likely to have a higher level of G20 climate change compliance than non-APEC members.

These effects were significant when controlling for membership in the BRICS, Organisation for Economic Co-operation and Development, and G7 and the parties to the United States–Mexico–Canada Agreement (USMCA) (each of which was not significant) and when controlling for yearly trends. This does not mean that a G20 member belonging to the EU or APEC independently causes higher G20 climate change compliance, as there could be a common cause of both having EU or APEC membership and having higher G20 climate change compliance. It is unclear what this common cause or causes might be

G20 Causes of G7 Climate Conclusions, Commitments and Compliance

There appear to be none. The broad pattern seems to be a yearly trend of increasing G7 climate change mentions in conclusions and number of climate change commitments, but there is no temporal relationship to G20 average climate change compliance.

G7 Climate Conclusions

There is no effect of G20 average climate change compliance or lagged G20 average climate change compliance on G7 climate change mentions in conclusions when controlling for year trends.

G7 Climate Commitments

There is no effect of G20 average climate change compliance or lagged G20 average climate change compliance on G7 climate change number of commitments when controlling for year trends.

G7 Climate Compliance

There is a significant effect of G20 average climate change compliance on G7 climate change compliance. G7 climate change commitments were 9% more likely to have a higher level of compliance for each 10% increase in G20 average climate change compliance in that same year. However, this effect became insignificant when controlling for yearly trends. There was also no effect of previous year G20 average climate change compliance on G7 compliance.

G7 Official Bodies as Causes of G7 Climate, Conclusions, Commitments and Compliance

There is no effect of official climate change bodies created or lagged official climate change bodies created on G7 climate change conclusions when controlling for yearly trends.

There is no effect of official climate change bodies created or lagged official climate change bodies created on G7 climate change number of commitments when controlling for yearly trends.

The broad pattern seems to be a yearly trend of increasing climate change conclusions and the number of climate change commitments, but there is no temporal relationship to the formation of official climate change bodies.

There is, however, a significant effect of official climate change bodies created on G7 climate change compliance. G7 climate change commitments were 33% more likely to have a higher level of compliance if made in the same year such a body was formed, even when controlling for yearly trends. G7 climate change commitments were 20% more likely to have higher level of compliance if made in the year after an official climate change body was formed.

This does not mean forming an official climate change body independently causes higher G7 climate change compliance. There could be a common cause for both having the official climate change body created and having higher G7 climate change compliance.