

Improving G20 Compliance to Control Climate Change

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Introduction

On June 2, 2017, U.S. president Donald Trump announced America’s withdrawal from the United Nations 2015 Paris Agreement on climate change. His move came just after the Group of Seven’s Taormina Summit on May 26-27. There, all G7 members with the European Union reaffirmed their commitment to the “swift implementation” of the Paris Agreement, while the United States explicitly did not. This unprecedented division meant that no G7-wide climate change commitments were made, a sharp contrast to the 12 produced at the G7’s Ise-Shima Summit in 2016.

Trump will bring his strong skepticism about climate change to the next global summit, the Group of 20 (G20) in Hamburg, Germany, on July 7-8. Will the leaders of the broader, more diverse group, led by a highly committed and experienced Chancellor Angela Merkel as host, produce more commitments at the summit and compliance with them when the leaders return home?

The answer is critical to the effectiveness and legitimacy of the G20 as a whole. Strong commitments and compliance are essential to meet the Paris pledge to keep global temperatures from reaching catastrophic heights. As G20 members produce most of the world’s greenhouse gas emissions, it must take the global lead. Compliance with the G20’s oft-repeated 2009 Pittsburgh Summit promise to phase out inefficient fossil fuel subsidies in the medium term, a deadline already passed, could cut emissions 10% to 20%, according to the International Monetary Fund (Coady et al. 2015). It could also prevent millions of premature deaths related to air pollution each year (World Health Organization 2016). Yet the G20 still provides \$444 billion per year for the exploration and production of fossil fuels for energy, four times more than renewable energy development receives (Bast et al. 2015). For the G20 to be an effective global governor, the precise, future-oriented, politically binding commitments proclaimed on paper by the most powerful leaders of the world’s most powerful countries from the sunny summit peak must actually be delivered by their governments back home.

The legitimacy of the G20 is equally at stake. The United States was the co-creator of the G20 in 1999 and led its leap into ambitious climate change control when it hosted the third summit at Pittsburgh in 2009. More generally, legitimacy — meaning right rule in both a substantive and procedural sense — requires that the G20’s politicians keep the promises they themselves make to their colleagues, their citizens and the global community as a whole. Their personal and political credibility demands no less.

It is thus important to know how well G20 leaders have complied with their climate change, energy and other commitments since the summit’s start in 2008, and how their compliance can be improved. This paper offers four answers.

First, overall G20 compliance with its assessed priority commitments is a substantial 70%. On its climate change commitments, compliance has been low and flat. On energy it has declined since

2008. Germany has the highest compliance on climate change, and substantial compliance on energy, and France and the United Kingdom also lead in both. Turkey and Saudi Arabia rank last.

Second, overall compliance with the priority commitments from the 2016 Hangzhou Summit was also a substantial 72% at the halfway mark. Canada and Australia led with 89%, followed by China's 82%. Yet on climate change and energy commitments, compliance was poor. Compliance with the commitment to phase out inefficient fossil fuel subsidies ranked last, that on energy efficiency 14th and that on climate change only slightly higher, ranking 10th.

Third, G20 leaders can raise overall compliance by using proven, low-cost accountability measures they directly control (Kirton and Larionova, forthcoming). Identifying a core international organization within their commitment increases compliance, while specifying a multiyear timetable decreases it (Bracht and Nguyen, forthcoming).

Fourth, accountability measures can boost climate change and energy compliance too. Invoking international law, notably the UN Framework Convention on Climate Change (UNFCCC), raises climate compliance, as does a preparatory G20 finance ministers' meeting that references climate change (Kirton, Kokotsis and Hudson, forthcoming).

G20 Summit Compliance, 2008–2015

Overall compliance with the 198 assessed priority commitments from 2008 to 2015, was 70%, or +0.40 on a three-point scale where -1 indicates non-compliance and +1 indicates complete or near-complete compliance (see Appendix A).

By year, compliance in the first half of the G20's life fluctuated widely, from a high of 75% from its 2008 Washington Summit to a low of 59% from its 2009 London Summit. However, since the 2011 Cannes Summit, compliance generally rose again and never fell below 68%.

By member, compliance was led by the UK at 86%, Germany at 84%, the European Union and Australia at 82% each, and Canada and France at 81% each (see Appendix B). Next came the United States at 77%, and South Korea and Japan at 75% and 72%, respectively. In the middle stand the largest emerging economies of India at 69% and China close behind at 68%. Italy, host of the 2017 G7 Taormina Summit, tied with China at 68%. Brazil followed at 67%, then Mexico at 65%, Russia at 64% and South Africa at 62%. Finally, near the bottom were Turkey and Indonesia at 57% each, followed by the 2018 G20 summit host of Argentina at 53%. Saudi Arabia came last at just 51%.

By issue area, where at least five assessed commitments exist for each, compliance is led by macroeconomic policy at 80% and financial regulation at 75% (see Appendices C and D). These two issue areas fall under host Germany's first pillar for Hamburg of "building resilience," where it has complied well. With consistent compliance on these two subjects, the G20 has fulfilled its first distinctive foundational mission of providing global financial stability (Kirton 2013).

The G20, however, has struggled to fulfill its second distinctive foundational mission of making globalization work for all. Here overall compliance is lower and not improving with development commitments at 66%, trade at 63%, and crime and corruption at 57% (see Appendices C1-C3). Indeed, since the 2012 Los Cabos Summit, compliance on reducing unemployment, including for youth and women, has steadily decreased from 100% in 2012 to an all-time low of 45% in 2016 (see Appendices C-2 and D).

Also steadily declining is compliance on energy. For the 2010 Seoul Summit it was 82% but reached an all-time low of just 10% in 2016. This was primarily due to the G20 members' failure to phase out their fossil fuel subsidies over the medium term while supporting the poor.

G20 Compliance since Hangzhou 2016

Most recently, overall interim compliance with the 19 assessed priority commitments from the 2016 Hangzhou Summit remained substantial at 72% (see Appendix D).

Over time, this was lower than the 2015 Antalya Summit's final compliance of 77%, but on par with the 2014 Brisbane average of 71% and the 2013 St. Petersburg average of 72%. The G20 therefore still solidly keeps the promises it makes.

By member, compliance was led by Canada and Australia at 89% each and host China at 82%. In the middle came the EU at 79%, the U.S., Russia and UK at 76% each. Argentina, now with a new government and a member of the G20's governing troika had 71%, as did Mexico. At the bottom came Korea, Indonesia and Japan at 68% each, India at 66%, Saudi Arabia at 63% and Turkey at 61%. G7 host, Italy, came last at 58%.

By issue, commitments most closely linked to the 2016 Hangzhou Summit's first theme of innovation had the highest compliance. The commitment to promote knowledge and technology transfer, in the issue area of information and communications technology, secured 100%. Implementation of the "G20 Guiding Principles for Global Investment Policymaking" had 98%, due to Argentina's partial compliance. Building tax capacity in developing countries, supporting implementation of the "G20/OECD Principles of Corporate Governance" and working toward innovation-driven growth had 95%, 93% and 90%, respectively. Commitments to tackle terrorist financing and to lead in lowering the costs of trade had 85% compliance each. Macroeconomic policy — using monetary, fiscal and structural tools to achieve strong, sustainable and balanced growth — had 83%.

In the middle came advancing cooperation on base erosion and profit shifting at 75%, addressing forced migration at 73% and addressing climate change at 68%. Advancing implementation of the "G20 Anti-Corruption Action Plan," finalizing the agreed financial sector reform agenda and continuing the G20's commitments to standstill and rollback protectionist measures until the end of 2018 all had 65%.

Near the bottom was promoting e-commerce with 63%, implementing intended national actions under the 2030 Agenda's Sustainable Development Goals (SDGs) and improving energy efficiency at 60% each, and further developing employment plans for youth and female employment at 45%.

Dead last, at only 10% was the commitment to "phase out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term, recognizing the need to support the poor."

Improving Compliance Overall

The G20 club has about 85% of the world's gross domestic product (GDP) and most of its members rank very high or high on the UN's Human Development Index (UN 2016). The commitments its leaders make and how well they comply with them thus matters greatly for the well-being of the world. G20 leaders should be aware of and use the tools available to them to craft meaningful commitments they can effectively implement. They can do so by employing proven, low-cost accountability measures that they directly control. Standing out are the compliance catalysts — specific words or phrases embedded within the text of a politically binding, collective commitment

that predict compliance. An analysis of 151 commitments, using three different regression models, found that naming a core international organization, such as the Food and Agriculture Organization on food or the World Health Organization on health, significantly boosted average compliance with that commitment. Conversely, incorporation of a multiyear timetable acted as an inhibitor with a significant negative effect. Elsewhere, holding a pre-summit ministerial meeting raised compliance with summit commitments on the same subject.

Improving Compliance to Control Climate Change

Climate

To control the compelling threat of climate change, G20 compliance must be, and can be, improved too.

Overall compliance with the 22 climate change commitments assessed for compliance from 2008 to 2015 is only 66%, well below the all issue average of 70% (see Appendix E). Climate change ranks 14 among all 18 issue areas (see Appendix F).

There is no trend in summit-to-summit compliance on climate change. Compliance with the one commitment assessed from London 2009 was 45% (see Appendix G). The one from Pittsburgh 2009 was higher at 93%. The three from Toronto 2010 had 71%. The four from Seoul 2010 had 53%. Compliance rose again with the three from Cannes at 71% and continued to rise at Los Cabos at 80%, also with three assessed. Compliance with the three from St. Petersburg 2013, however, saw the lowest compliance ever at 42%, before bouncing back to 73% at Brisbane in 2014.

By member, climate compliance is led by Germany at 89%, the UK at 87%, Australia at 84%, France at 82% and the EU at 81%. In the middle are Korea at 79%, Canada 75%, the U.S. 73%, and Japan and Mexico each at 71%, China at 64%, Indonesia at 62%, and Italy at 60%. At the bottom sit India at 57%, Brazil at 55%, South Africa at 48%, Argentina at 45%, Russia at 41%, Turkey at 36% and, finally, Saudi Arabia at 22%.

By issue, compliance with the 11 commitments on the UNFCCC or international law is 70% (see Appendix E). On green growth, compliance averages 73%. On climate finance, however, compliance is just 50%.

This is consistent with the finding that the catalyst of international law — UNFCCC and its legal instruments — induced higher climate compliance, even if in overall G20 commitments a reference to international law decreased compliance (Bracht with Nguyen, forthcoming). This may be because the UNFCCC connotes its secretariat, which serves as the core international organization in the field of climate change. Building the UNFCCC Secretariat as a full-strength international organization, rather than promoting the Paris Agreement as a piece of international law, could thus be what the Hamburg Summit do. Authorizing a G20 environment ministers meeting would be useful too.

Energy

Energy compliance tells a similar tale. Overall compliance with the 16 energy commitments assessed for compliance from 2008 to 2015 averaged 73%, for a ninth place rank (see Appendices F and H).

By member, energy compliance was led by France at 91%, Korea at 88%, the UK and Mexico at 85% each, and the U.S., India and Brazil at 82% each (see Appendix H). Next came China at 78%, followed by Germany and Italy at 74% each, and Japan at 69%. At the bottom sit the EU at 67%, Russia, South Africa and Indonesia at 66%, Canada and Argentina at 63%, Turkey at 50%, and

Saudi Arabia at 47%. It is noteworthy that U.S. energy compliance at 82% substantially exceeds its climate compliance at 73%.

By issue, compliance was highest with the seven clean or renewable energy commitments at 88% (see Appendix I). Compliance with the one energy security commitment was 73%. With the seven commitments to phase out inefficient fossil fuel subsidies in the medium term, while providing support to the poorest, compliance was only 58%, with a declining trend. The Hamburg Summit should thus concentrate on making commitments on the first two subjects and do so in ways that in practice control climate change.

Yet given the importance of ending fossil fuel subsidies as an instrument to control climate change, improvement rather than abandonment is required here. This quest starts with the three factors that help explain the low compliance. First, the catalyst of a multiyear timetable is present, as “medium term” refers to a three- to five-year timeline. Overall, commitments that include a multiyear timetable tend to have lower compliance. Second, even when a country took some steps to phase out some fossil fuel subsidies, they failed to provide targeted support for the poorest in the process, preventing a higher score. Third, the political language of “inefficient” allows some members to claim its particular subsidies are not inefficient.

The Hamburg Summit should thus set a series of one-year timetables for incremental improvement, rather than a single multiyear one that allows countries to delay action in the immediate or short term. It should, as part of its development, broader SDGs or Africa agenda, create a fund for supporting the poorest as they transition from once subsidized fossil fuels to initially subsidized renewable ones, in ways that create jobs in all contributing G20 members as well as the recipient countries. It should then remove the word “inefficient” from its fossil fuel subsidy commitment. It should also authorize G20 energy ministerial meetings, and develop its 2014 high level energy principles into a world sustainable energy organization that could serve as the core international organization to be invoked in this field (Kirton 2016).

Conclusion

From this analysis, four conclusions stand out.

First, overall G20 compliance with its summit commitments is a substantial 70%. It is lower on climate change and energy, despite the leading performance of Germany, France and the UK. At the Hamburg Summit, Angela Merkel as host and France’s new president Emmanuel Macron as her closest partner must lead the climate change cause as never before.

Second, overall compliance with last year’s commitments is also substantial, but also not on climate change or energy, and especially not on ending inefficient fossil fuel subsidies and enhancing energy efficiency. Merkel, Macron and their G20 colleagues must find a better way to get this done.

Third, this they can do by using proven, low-cost accountability measures they directly control. Above all, by invoking a core international organization and avoiding multiyear timetables that allow delay.

Fourth, to boost climate change and energy compliance, the Hamburg leaders should:

- Invoke and institutionalize core international organizations. They should use the UNFCCC Secretariat and the UN Environment Programme as the foundation for a world environmental organization, and invoke their high level energy principles in ways that build a world sustainable energy organization to help implement the 2030 Agenda SDGs.

- Set single-year deadlines. The Hamburg Summit should set a series of one-year timetables for incremental improvement, rather than a single multiyear one that allows countries to delay action in the immediate or short term.
- Mobilize money. To advance its development, SDG or Africa agenda, the Hamburg Summit should create a fund to support the working poor move from once subsidized fossil fuel industries to initially subsidized renewable ones, thereby creating jobs and ones that are not held captive to an efficiency test.
- Mobilize G20 ministerials. The G20 should authorize ministerials for climate change and for energy to prepare Argentina's 2018 summit and ensure that the ministerials for finance and for agriculture address climate change.

Beyond lies an additional list of initiatives that will substantially control climate change, but where more work is needed to identify how G20 summits can commit to them in ways that induce compliance and that produce the required results on time (see Appendix J).

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Appendix A: G20 Compliance by Issue Area and Summit

Issue area	Overall		2008 Washington		2009 London		2009 Pittsburgh		2010 Toronto		2010 Seoul		2011 Cannes		2012 Los Cabos		2013 St. Petersburg		2014 Brisbane		2015 Antalya	
	Score	#	Score	#	Score	#	Score	#	Score	#	Score	#	Score	#	Score	#	Score	#	Score	#	Score	#
Microeconomics	+1.00 100%	1/10 10%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+1.00	1/2 50%	-	0/6	n/a	n/a
Infrastructure	+0.95 98%	1/36 2.8%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+0.95	1/28 3.6%	n/a	n/a
Terrorism	+0.73 87%	2/16 12.5%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-	0/1	n/a	n/a	+0.73	2/12 16.7%
Migration	+0.60 80%	1/7 14.3%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+0.60	1/4 25%
Macroeconomics	+0.60 80%	23/403 5.7%	+0.75	1/6 16.7%	+0.35	1/15 6.7%	+0.70	1/28 3.8%	+0.74	3/14 21.4%	+0.66	3/29 10.3%	+0.46	3/91 3.4%	+0.68	4/71 5.6%	+0.60	3/66 4.5%	+0.40	3/34 8.8%	+0.70	2/21 9.5%
Labour and employment	+0.55 78%	16/100 16%	n/a	n/a	-0.05	1/4 25%	-	0/3	n/a	n/a	-	0/4	+0.48	2/8 25%	+1.00	1/18 5.6%	+0.72	6/29 20.7%	+0.63	2/16 12.5%	+0.33	4/10 40%
International taxation*	+0.56 78%	2/	-	0/	-	0/	-	0/	-	0/	-	0/	-	0/	-	0/	+0.35	1/	-	0/	+0.79	1/
Health	+0.50 75%	5/38 13.2%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+0.53	4/33 12.1%	+0.40	1/2 50%
Development taxation**	+0.51 76%	4/	-	0/	-	0/	-	0/	-	0/	+0.40	2/	-	0/	-	0/	+0.50	1/	+0.40	1/	+0.85	1/
Financial regulation	+0.50 75%	20/271 7.4%	+0.54	3/59 5.1%	-0.05	1/45 2.2%	+0.45	2/23 8.7%	+0.10	1/12 8.3%	+0.61	4/24 16.7%	+0.71	3/38 7.9%	+0.36	3/18 16.7%	+0.35	1/20 5.0%	+0.70	1/7 14.3%	+0.79	1/8 12.5%
Energy	+0.45 73%	16/105 15.2%	n/a	n/a	n/a	n/a	+0.43	4/16 25%	+0.45	1/1 100%	+0.64	3/14 21.4%	+0.61	3/18 16.7%	+0.58	1/10 10%	+0.55	1/19 5.3%	+0.23	2/16 12.5%	-0.35	1/3 33.3%
Food and agriculture	+0.39 70%	6/64 9.4%	n/a	n/a	n/a	n/a	-	0/3	+0.20	1/2 50%	-	0/2	+0.55	2/36 5.6%	+0.35	1/4 25%	+0.80	1/11 9.1%	n/a	n/a	-0.10	1/3 33.3%
Development	+0.31 66%	47/193 24.4%	+0.80	1/4 25%	+0.15	2/15 13.3%	+0.10	3/9 33.3%	+0.35	3/8 38%	+0.31	23/23 100%	+0.33	2/17 11.8%	+0.78	3/10 30%	+0.04	4/50 8.0%	+0.28	3/20 15%	+0.28	3/20 15%
Climate change	+0.31 66%	23/53 43.4%	n/a	n/a	-0.10	1/3 33.3%	+0.86	1/3 33.3%	+0.42	3/3 100%	+0.05	4/8 50%	+0.38	3/8 38.0%	+0.59	3/5 60%	-0.17	3/11 27.2%	+0.51	5/7 71.4%	-	0/3
IFI reform	+0.30 65%	7/120 5.8%	n/a	0/14	n/a	0/29	+0.05	1/11 9.1%	+0.90	1/4 25%	-0.10	1/16 6.3%	+0.30	2/22 9.1%	n/a	0	+0.20	1/5 20%	n/a	0/4	+0.85	1/2 50%
Trade	+0.26 63%	14/133 10.5%	+0.27	3/5 60%	+0.50	1/14 7.1%	+0.05	1/6 16.7%	+0.15	1/9 11.1%	-0.05	1/17 5.9%	+0.25	1/15 6.7%	+0.25	1/10 10%	-0.35	1/12 8.3%	+0.25	1/9 11.1%	+0.60	3/14 21.4%
Gender	+0.21 61%	6/6 100%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+0.46	2/2 100%	n/a	n/a	+0.14	4/4 100%	n/a	n/a
International cooperation	+0.15 58%	2/		0/		0/		0/		0/	+0.05	1/	+0.25	1/		0/		0/		0/		0/

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Crime and corruption	+0.14 57%	7/78 9.0%	-	0/3	n/a	n/a	+0.25	2/3 66.7%	-0.20	1/3 33.3%	+0.45	1/9 11.1%	-	0/5	-0.10	1/7 14.3%	+0.15	1/33 3.0%	-	0/4	+0.15	1/4 25%
ICT	+0.10 55%	1/49 2.0%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	+0.10	1/2 50%
Africa***	-0.08 46%	8/34 17.6%	n/a	n/a	+0.30	2/2 100%	0	2/3 66.7%	-0.05	1/1 100%	-	/2	-0.45	1/5 20%	-	/5	-0.25	1/3 33.3%	-	/4	0	1/5 20%
Overall	+0.40 70%	198/1835 10.8%	+0.50	8/95 8.4%	+0.17	6/129 4.7%	+0.31	16/128 12.5%	+0.36	15/61 25%	+0.34	41/153 26.8%	+0.47	22/282 7.8%	+0.54	19/180 10.6%	+0.37	23/281 8.2%	+0.43	26/205 12.7%	+0.42	22/113 19.5%

Notes:

N=198

Score = average compliance

= number of commitments assessed of the total number made on that issue at that summit, with percentage

n/a = not applicable, no commitment was made

dash = no commitment was assessed

blank = data not available

*International taxation: taxation was added as a new G20 core issue area in 2016. At Hangzhou nine international taxation commitments were made. Prior to 2016, commitments on international taxation were primarily categorized under financial regulation. Total commitments referencing international taxation is not available. Compliance on international taxation is not double counted under financial regulation.

**Development taxation: four of the 45 assessed commitments on development referenced taxation. Total commitments made on development taxation is not available. Compliance with these four commitments is included in the Development issue area data.

***Africa: six assessed commitments referenced Africa. Five were categorized under development and are included in Development's data. One was categorized under international financial institutional (IFI) reform as it included ensuring the African Development Fund was well financed. It is included in the IFI Reform data. Source for the number of commitments made on Africa (for N=193, not updated for N=198) = The G20's Governance of Africa-Related Issues, 2008-2016

Overall: No data is double counted in the overall average or the overall summit score

Appendix B: G20 Compliance by Member, 2008-2015

Member	Average compliance	
United Kingdom	+0.71	86%
Germany	+0.67	84%
European Union	+0.63	82%
Australia	+0.63	82%
Canada	+0.61	81%
France	+0.62	81%
United States	+0.53	77%
Korea	+0.50	75%
Japan	+0.44	72%
India	+0.37	69%
China	+0.36	68%
Italy	+0.36	68%
Brazil	+0.34	67%
Mexico	+0.30	65%
Russia	+0.27	64%
South Africa	+0.23	62%
Turkey	+0.14	57%
Indonesia	+0.13	57%
Argentina	+0.05	53%
Saudi Arabia	+0.02	51%
Overall average	+0.40	70%

Appendix C-1: G20 Compliance with Hamburg Priorities

Hamburg Theme	Hamburg Priority	Issue area	G20 compliance		Germany's compliance	
Building resilience	Strengthening economic resilience	Macroeconomic policy	+0.60	80%	+0.90	95%
	Strengthening the international financial architecture	IFI reform	+0.36	68%	+0.86	43%
	Further developing financial markets	Financial regulation	+0.50	75%	+0.80	90%
	Making taxation fair and reliable internationally	International taxation	+0.56	78%	+1.00	100%
		Development taxation	+0.51	76%	+1.00	100%
	Deepening cooperation on trade and investment	Trade	+0.26	63%	+0.64	82%
Enhancing and improving employment	Labour and employment	+0.55	78%	+0.81	91%	
Improving sustainability	Protecting the climate	Climate change	+0.31	66%	+0.78	89%
	Advancing sustainable energy supply	Energy	+0.45	73%	+0.47	74%
	Making progress on implementing Agenda 2030	Development	+0.31*	66%	+0.68	84%
	Seizing the opportunities of digital technology	ICT	+0.10	55%	0	50%
	Promoting health	Health	+0.53	77%	+1.00	100%
	Empowering women	Gender	+0.21	61%	+0.33	67%
Assuming responsibility	Addressing displacement and migration	Migration/refugees	+0.60	80%	+1.00	100%
	Intensifying the partnership with Africa	Africa	+0.10*	55%	+1.00	100%
	Combating terrorist financing and money laundering	Terrorism	+0.73	87%	+1.00	100%
	Fighting corruption	Crime and corruption	+0.14	57%	-0.29	36%
	Improving food security	Food and agriculture	+0.39	70%	+0.17	59%
Average	n/a	n/a	+0.41	71%	+0.63	82%

Source: g20.utoronto.ca Priorities of the 2017 G20 Summit, G20 Germany 2017 Hamburg

Note: n/a = not applicable

Dash = issue area is already accounted for

*=Includes duplicate data. Three development commitments referenced Africa and are accounted for in both issue areas, one IFI reform commitment referenced Africa and is accounted for in both issue areas

Average does not include any duplicate data

Appendix C-2: G20 and German Compliance with Trend

Issue area	Germany's compliance		Germany's trend	G20 compliance		G20 trend
	Value	Percentage		Value	Percentage	
Africa	+1.00	100%	0	+0.10*	55%	0
Migration/refugees	+1.00	100%	0	+0.60	80%	0
Health	+1.00	100%	0	+0.53	77%	0
Terrorism	+1.00	100%	0	+0.73	87%	0
International taxation	+1.00	100%	0	+0.56	78%	0
Development taxation	+1.00	100%	0	+0.51	76%	0
Macroeconomic policy	+0.90	95%	0	+0.60	80%	0
IFI reform	+0.86	93%	0	+0.36	68%	0
Financial regulation	+0.80	90%	0	+0.50	75%	0
Labour and employment	+0.81	91%	0	+0.55	78%	-1
Climate change	+0.78	89%	0	+0.31	66%	0
Development	+0.68	84%	0	+0.31*	66%	0
Trade	+0.64	82%	0	+0.26	63%	0
Energy	+0.47	74%	0	+0.45	73%	-1
Gender	+0.33	67%	0	+0.21	61%	0
Food and agriculture	+0.17	59%	0	+0.39	70%	0
ICT	0	50%	0	+0.10	55%	0
Crime and corruption	-0.29	36%	0	+0.14	57%	0
Average	+0.67	84%	0	+0.40	70%	0

Notes:

+1 = upward compliance over time

-1 = downward compliance over time

0 = no trend

*= Includes duplicate data. Three development commitments referenced Africa and are accounted for in both issue areas,

one IFI reform commitment referenced Africa and is accounted for in both issue areas

Average does not include any duplicate data

Appendix C-3: G20 Compliance with Trend

Issue area	G20 Compliance		G20 trend
	Value	Percentage	
Terrorism	+0.73	87%	0
Migration/refugees	+0.60	80%	0
Macroeconomic policy	+0.60	80%	0
International taxation	+0.56	78%	0
Labour and employment	+0.55	78%	-1
Health	+0.53	77%	0
Development taxation	+0.51	76%	0
Financial regulation	+0.50	75%	0
Energy	+0.45	73%	-1
Food and agriculture	+0.39	70%	0
IFI reform	+0.36	68%	0
Climate change	+0.31	66%	0
Development	+0.31*	66%	0
Trade	+0.26	63%	0
Gender	+0.21	61%	0
Crime and corruption	+0.14	57%	0
Africa	+0.10*	55%	0
ICT	+0.10	55%	0
Average	+0.40	70%	0

Appendix D: 2016 Hangzhou Summit Interim Compliance Scores

		Argentina	Australia	Brazil	Canada	China	France	Germany	India	Indonesia	Italy	Japan	Korea	Mexico	Russia	Saudi Arabia	South Africa	Turkey	United Kingdom	United States	European Union	Average	
1	Macroeconomics: Growth	0	+1	+1	+1	+1	0	+1	+1	0	+1	+1	+1	+1	+1	+1	+1	0	+1	-1	0	+0.65	83%
2	Innovation	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	+1	0	0	+1	+1	0	+1	+1	+1	+1	+0.80	90%
3	Development: Tax administration	+1	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	+1	+1	+1	0	+1	+1	+1	+1	+1	+0.90	95%
4	Corruption	+1	+1	+1	+1	+1	0	0	0	+1	0	0	+1	-1	0	0	-1	-1	+1	+1	0	+0.30	65%
5	Energy: Fossil fuel subsidies	0	-1	-1	-1	0	-1	-1	-1	-1	-1	-1	-1	0	0	-1	-1	-1	-1	-1	-1	-0.80	10%
6	Climate change	+1	+1	0	+1	+1	+1	0	0	+1	-1	0	0	+1	-1	0	-1	0	+1	+1	+1	+0.35	68%
7	Trade: Antiprotectionism	0	+1	0	+1	+1	0	0	0	0	0	0	+1	+1	+1	-1	0	0	0	0	+1	+0.30	65%
8	Trade: E-commerce	0	+1	-1	+1	+1	+1	0	+1	+1	0	-1	0	0	+1	-1	+1	0	0	0	0	+0.25	63%
9	Sustainable development	+1	+1	+1	+1	+1	+1	0	-1	+1	-1	0	-1	0	+1	0	0	0	-1	+1	-1	+0.20	60%
10	Labour and employment: Gender	-1	0	-1	+1	-1	0	0	0	-1	0	0	0	-1	0	0	0	0	+1	0	+1	-0.10	45%
11	Migration and refugees	+1	0	+1	+1	0	0	+1	0	0	+1	+1	0	0	0	0	0	+1	0	+1	+1	+0.45	73%
12	Financial regulation: Terrorism	+1	+1	-1	+1	+1	+1	+1	0	+1	+1	0	+1	0	+1	+1	0	+1	+1	+1	+1	+0.70	85%
13	Technologies and innovation	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1.00	100%
14	Financial regulation	0	+1	0	0	0	0	+1	+1	0	0	0	0	0	0	+1	0	0	+1	0	+1	+0.30	65%
15	Taxes: Base erosion and profit shifting	0	+1	0	0	0	+1	+1	0	0	0	+1	+1	+1	+1	0	0	0	+1	+1	+1	+0.50	75%
16	Energy: Energy efficiency	0	+1	0	+1	0	+1	+1	-1	0	-1	+1	+1	+1	0	0	0	-1	0	0	0	+0.20	60%
17	Trade: Trade costs	0	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	0	+1	0	+1	+1	0	0	+1	+1	+0.70	85%
18	Investment	0	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	+0.95	98%
19	Corporate governance	+1	+1	+1	+1	+1	+1	+1	+1	0	+1	0	0	+1	+1	+1	+1	+1	+1	+1	+1	+0.85	93%
	Average	+0.42	+0.79	+0.32	+0.79	+0.63	+0.58	+0.58	+0.32	+0.37	+0.16	+0.37	+0.37	+0.42	+0.53	+0.26	+0.21	+0.21	+0.53	+0.53	+0.58	+0.45	72%
		71%	89%	66%	89%	82%	79%	79%	66%	68%	58%	68%	68%	71%	76%	63%	61%	61%	76%	76%	79%	+0.72	

Appendix E: Climate Change Compliance by Component Subject

Member	Average compliance	United Nations Framework Convention on Climate Change	Green growth	Climate finance	Green Climate Fund
Germany	+0.77	+0.82	+0.80	+0.67	+0.75
United Kingdom	+0.73	+0.73	+0.60	+0.83	+1.00
Australia	+0.68	+0.82	+0.60	+0.50	+0.50
France	+0.64	+0.64	+0.40	+0.83	1.00
European Union	+0.62	+0.80	+0.60	+0.33	0
Korea	+0.57	+0.40	+0.60	+1.00	+1.00
Canada	+0.50	+0.64	+0.60	+0.17	0
United States	+0.45	+0.64	+0.40	+0.17	0
Japan	+0.41	+0.45	+0.40	+0.33	+0.50
Mexico	+0.41	+0.64	+0.40	0	+0.25
China	+0.27	+0.45	+0.60	-0.33	-0.75
Italy	+0.23	+0.10	+0.80	-0.17	0
India	+0.19	+0.45	+0.60	-0.83	-1.00
Indonesia	+0.14	0	+0.40	+0.17	0
Brazil	+0.09	+0.27	+0.60	-0.67	-1.00
South Africa	-0.05	-0.10	+0.20	-0.17	-0.25
Argentina	-0.11	-0.13	+0.40	-0.50	-0.50
Russia	-0.18	+0.18	-0.20	-0.83	-1.00
Turkey	-0.28	0	+0.20	-1.00	-1.00
Saudi Arabia	-0.56	-0.71	0	-0.50	-0.50
Average	+0.29	+0.39	+0.45	0	-0.05

Appendix F: Commitments and Compliance by Issue Area, 2008-2016 by Rank

Issue area	Total commitments assessed of total made		Compliance	
			Score	Percentage
Microeconomics	1 of 10	10.0%	+1.00	100
Infrastructure	1 of 36	2.8%	+0.95	98
Terrorism	2 of 16	12.5%	+0.73	87
Macroeconomics	23 of 402	5.8%	+0.60	80
Migration and refugees	1 of 7	14.3%	+0.60	80
Labour and employment	16 of 100	16.0%	+0.55	78
Health	4 of 38	10.5%	+0.53	77
Financial regulation	20 of 271	7.4%	+0.50	75
Energy	16 of 106	15.1%	+0.45	73
Food and agriculture	6 of 64	9.4%	+0.39	70
Gender	5 of 6	83.3%	+0.41	71
Reform of international financial institutions	5 of 120	4.2%	+0.34	67
Development	45 of 193	23.3%	+0.32	66
Climate change	22 of 53	42.0%	+0.29	65
Trade	14 of 133	11.0%	+0.26	63
International cooperation	2 of 39	5.1%	+0.15	58
Crime and corruption	7 of 78	9.0%	+0.14	57
Information and communication technologies	1 of 49	2.0%	+0.10	55
Total/Average	191 of 1,836	10.4%	+0.41	71

Appendix G: Climate Change Compliance by Summit

	Average		2009 London	2009 Pittsburgh	2010 Toronto	2010 Seoul	2011 Cannes	2012 Los Cabos	2013 St. Petersburg	2014 Brisbane
Germany	+0.77	89%	0	+1.00	+0.33	+0.75	+1.00	+1.00	+1.00	+0.75
United Kingdom	+0.73	87%	0	+1.00	+0.67	+0.50	+1.00	+0.67	+1.00	+0.75
Australia	+0.68	84%	0	+1.00	+0.67	+0.50	+1.00	+1.00	0	+1.00
France	+0.64	82%	0	+1.00	+0.33	0	+1.00	+0.67	+1.00	+1.00
European Union	+0.62	81%	+1.00		+1.00	+0.50	+0.33	+0.67	0	+1.00
Korea	+0.57	79%	+1.00		+0.67	-0.25	+1.00	+1.00	0	+1.00
Canada	+0.50	75%	0	+1.00	+0.33	+0.50	+0.33	+0.67	0	+1.00
United States	+0.45	73%	0	+1.00	+0.33	+0.50	0	+0.67	+0.33	+0.75
Japan	+0.41	71%	0	+1.00	+0.33	0	+0.33	+0.33	+0.33	+1.00
Mexico	+0.41	71%	0	+1.00	0	+0.25	+0.67	+0.67	-0.33	+1.00
China	+0.27	64%	+1.00	+1.00	+0.67	0	+0.33	+1.00	-1.00	+0.25
Indonesia	+0.23	62%	0	0	0	0	+0.33	+0.33	0	+0.25
Italy	+0.19	60%	0		+0.67	-0.25	+0.33	0	+0.33	+0.25
India	+0.14	57%	-1.00	+1.00	+0.67	+0.25	0	+1.00	-0.67	-0.25
Brazil	+0.09	55%	-1.00	0	+0.67	+0.50	+0.33	+0.67	-1.00	-0.25
South Africa	-0.05	48%	0		0	-0.50	0	+0.67	-0.33	0
Argentina	-0.11	45%	-1.00		+1.00	-0.67	0	+0.33	-1.00	+0.25
Russia	-0.18	41%	-1.00	+1.00	0	-0.25	-0.33	+0.33	-1.00	0
Turkey	-0.28	36%	-1.00	1.00	0	-1.00	0	+0.50	-1.00	0
Saudi Arabia	-0.56	22%	0		-1.00	-1.00	+0.67	-0.33	-1.00	-0.50
Average	+0.29	65%	-0.10	+0.86	+0.42	+0.05	+0.42	+0.59	-0.17	+0.46

Appendix H: Energy Compliance by Summit

	Average		2009 Pittsburgh	2010 Toronto	2010 Seoul	2011 Cannes	2012 Los Cabos	2013 St. Petersburg	2014 Brisbane	2015 Antalya
France	+0.81	91%	+1.00	+1.00	+0.67	+0.67	+1.00	+1.00	+1.00	0
Korea	+0.75	88%	+0.75	+1.00	+1.00	+1.00	+1.00	0	+0.50	0
United Kingdom	+0.69	85%	+0.50	+1.00	+1.00	+1.00	+1.00	+1.00	+0.50	-1.00
Mexico	+0.69	85%	+0.75	+1.00	+0.67	+1.00	+1.00	+1.00	+0.50	-1.00
United States	+0.63	82%	+1.00	0	+0.67	0	0	+1.00	+1.00	+1.00
India	+0.63	82%	+0.50	-1.00	+0.67	+1.00	+1.00	+1.00	+0.50	+1.00
Brazil	+0.63	82%	+0.25	+1.00	+1.00	+1.00	+1.00	+1.00	+0.50	-1.00
China	+0.56	78%	+0.75	0	+0.33	+1.00	+1.00	+1.00	0	0
Germany	+0.47	74%	+0.67	+1.00	+0.33	+0.67	0	+1.00	0	0
Italy	+0.47	74%	+0.33	+1.00	+1.00	+0.67	0	0	0	0
Australia	+0.44	72%	+0.25	+1.00	+1.00	+1.00	+1.00	-1.00	0	-1.00
Japan	+0.38	69%	+1.00	+1.00	+0.67	0	0	0	0	-1.00
European Union	+0.33	67%	0	-1.00	+1.00	+0.67	+1.00	+1.00	+0.50	-1.00
Russia	+0.31	66%	-0.25	0	+1.00	+0.67	+1.00	+1.00	0	-1.00
South Africa	+0.31	66%	+0.25	+1.00	+1.00	+0.67	+1.00	0	-1.00	-1.00
Indonesia	+0.31	66%	+0.50	0	0	+0.67	0	+1.00	+0.50	-1.00
Canada	+0.25	63%	+0.25	0	+1.00	0	0	0	0	0
Argentina	+0.25	63%	+0.25	0	+0.33	+0.33	0	0	0	+1.00
Turkey	0	50%	+0.33	0	-0.33	0	0	+1.00	0	-1.00
Saudi Arabia	-0.07	47%	-0.50	+1.00	+1.00	0		0	0	0
Average	+0.45	73%	+0.43	+0.45	+0.64	+0.61	+0.58	+0.55	+0.23	-0.35

Appendix I: Energy Compliance by Component Subject

	Fossil fuel subsidies	Energy security	Clean/renewable energy
France	+0.71	+1.00	+1.00
Korea	+0.71	+1.00	+0.71
United Kingdom	+0.29	+1.00	+1.00
Mexico	+0.43	+1.00	+0.86
United States	+0.43	+1.00	+1.00
India	+0.29	0	+1.00
Brazil	+0.43	0	+0.86
China	+0.14	0	+1.00
Germany	-0.14	+1.00	+1.00
Italy	+0.14	+1.00	+0.83
Australia	+0.14	0	+0.71
Japan	0	+1.00	+0.86
European Union	-0.17	0	+0.86
Russia	0	0	+0.71
South Africa	+0.43	0	+0.29
Indonesia	0	+1.00	+0.43
Canada	-0.14	0	+0.86
Argentina	0	0	+0.57
Turkey	-0.50	0	+0.43
Saudi Arabia	-0.20	0	+0.14
Average	+0.16	+0.45	+0.75

Appendix J: Initiatives for G20 Climate Change Control

Initiative

Energy:

Enhance energy efficiency

End fossil fuel subsidies

Reinforce renewables

Shift subsidies

Cut methane

Kill coal (for electricity)

Climate Change

Price carbon

Food and Agriculture:

Finish food waste

Promote plant food

Diminish desertification

Grow trees

Process

Generate gender equality

Empower indigenous people