

G20 Energy Commitments and Compliance

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Abstract

On July 7–8, 2017, Germany will host its first Group of 20 (G20) summit. High on the agenda will be energy and its central components of energy security, clean and renewable energy, and fossil fuel subsidies. The world is wondering what timely, well-tailored and ambitious commitments the Hamburg Summit will make in these areas, and whether G20 members will follow through with them in the following year.

To provide a preliminary answer, this study systemically analyzes the G20 Research Group's database on G20 energy commitments and compliance. It finds that of the 105 energy commitments the G20 made since 2009 compliance with the 16 assessed ones was in the mid range at an overall average of 73%. Energy ranked ninth across all 18 G20 issue areas and was slightly higher than the G20's overall compliance average of 71% with all 191 assessed commitments.

Over time, the number of energy commitments peaked at 19 at the St. Petersburg Summit in 2013, and energy compliance peaked at the 2010 Seoul Summit at 82%.

By member, energy compliance was led by France at 91%, followed by Korea at 88%, the United Kingdom and Mexico at 85% each, and the United States, India and Brazil with 82% each. Next came China at 78%, followed by Germany and Italy at 74%, and Japan at 69%. The members with the lowest compliance were the European Union at 67%, Russia, South Africa and Indonesia at 66%, Canada and Argentina at 63%, Turkey at 50%, and Saudi Arabia at 47%.

Across the component subjects, the G20's compliance was the highest on clean and renewable energy at 88%. It was 73% on energy security, and was the lowest on eliminating inefficient fossil fuel subsidies at 58%.

Compliance was generally higher at summits where there were more companion commitments to energy, although there were at least two exceptions. The 10 host members had higher compliance overall than the 10 non-host members, but the range of compliance within those two groups indicates that the summit as a whole did not always mirror the hosts' own compliance. Iteration at the same or at subsequent summits may not encourage compliance, as evidenced by the G20's low compliance with its commitments to reduce fossil fuel subsidies. On clean and renewable energy commitments, there was a high degree of equality among members' compliance regardless of their economic status.

This equality provides an opportunity for the upcoming German host to build momentum on research, development and deployment of clean energy alternatives. Yet, to build on this momentum, Germany must use its status as a climate leader to expand the G20's siloed view of energy, security and climate change by connecting the three strongly together.

Introduction

On December 1, 2016, Germany formally assumed the chair of the Group of 20 (G20) to prepare for and produce its annual summit, scheduled to be held in Hamburg on July 7-8, 2017. High on the agenda will be energy and its central components of energy security, clean and renewable energy, and fossil fuel subsidies. The world is wondering what timely, well-tailored and ambitious commitments the Hamburg Summit will make in these areas, and whether G20 members will follow through on implementing them the following year.

To provide a preliminary answer, this research report systemically analyzes the G20 Research Group's database on G20 energy commitments and compliance since the first G20 summit in 2008 through to its 11th in 2016 (Kirton et al. 2016). During this time the G20 made 105 politically binding, collective, future-oriented energy commitments in the collective documents it issued at each summit in the leaders' name. Of these, 16 (or 15%) were selected as priority commitments by the G20 Research Group for assessment of G20 members' compliance with them until the subsequent summit was held.

G20 members' compliance with these energy commitments was 73%. This was in the mid range compared to all other issue areas. Energy ranks ninth out of the 18 G20 issue areas assessed for compliance (see Appendix A). It ranks higher than the closely related issue area of climate change and slightly higher than the G20's overall average of 71% across all 191 commitments assessed for compliance.

Trends by Summit over Time

Commitments

The G20 did not make any energy commitments at its first summit in Washington DC in November 2008 or at its second summit in London in November 2009, but it made such commitments at every summit since (see Appendix B). It made 16 energy commitments at Pittsburgh in 2009, but just one at Toronto in June 2010. This rose to 14 again at Seoul in November 2010 and then to 18 at Cannes in 2011. It dropped to 10 at Los Cabos in 2012 before rising to an all-time high of 19 at St. Petersburg in 2013. The Antalya Summit in 2015 dropped to three. At Hangzhou in 2016, eight commitments were made. Amid much over-time variability, the peak came in the period between 2011 and 2013.

Compliance

Of the 105 energy commitments, 16 priority ones have been assessed for compliance. The four assessed at Pittsburgh had an average compliance rate of 72% (see Appendix C). The one at Toronto averaged 73%. Compliance was highest with the three assessed commitments from Seoul with 82% and with the three commitments assessed from Cannes with 81%. Since then, compliance steadily declined. With the one commitment assessed from the Los Cabos Summit, average compliance was 79%. The one commitment assessed from St. Petersburg was 78%. Two commitments assessed from the Brisbane Summit had 62%. The one assessed from the Antalya Summit had the lowest compliance at 33%. No commitments have yet been assessed from the Hangzhou Summit as this compliance cycle is still underway.

Trends by Member

By Individual Member

By individual member, compliance was led by France with 91%. It was followed in turn by Korea with 88%, the United Kingdom and Mexico with 85% each, the United States, India and Brazil with 82% each, and China with 78%. In the middle came Germany and Italy with 74% each, Australia with 72%, Japan with 69%, and Russia, South Africa and Indonesia with 66% each. At the bottom were Canada and Argentina with 63% each, Turkey with 50%, and Saudi Arabia with 47%.

By Component Club

All the members of the G20 are also members of other intergovernmental groupings. These “component clubs” include the Organisation for Economic Co-operation and Development (OECD), the Group of Seven (G7), the BRICS members of Brazil, Russia, India, China and South Africa, the Organization of American States (OAS) and Summit of the Americas (SOA), the MIKTA group of Mexico, Indonesia, Korea, Turkey and Australia, and the Organization of Petroleum-Exporting Countries (OPEC) (see Appendix D).

OECD members, as a group, has the highest average compliance at 76%. From highest to lowest, the members are as follows: France, Korea, the UK and Mexico, the U.S., Italy and Germany, Australia, Japan, Canada, and Turkey.

The second component club, the G7, averages 75%. From highest to lowest compliance, G7 members were as follows: France, UK, U.S., Germany, Italy, Japan, EU and Canada.

The third component club, the BRICS, has the same overall average as the G7 at 75%. India and Brazil rank the highest, followed by China, South Africa and Russia.

The fourth-ranked component club is OAS/SO at 74%. The members, in order of compliance, are Mexico, the U.S., Argentina and Canada.

The fifth component club includes MIKTA members, whose average compliance is 72%. The MIKTA members, in order of compliance, are Korea, Mexico, Australia, Indonesia and Turkey.

The sixth component club, OPEC, contains only Saudi Arabia, which is not a member of any of the aforementioned organizations. Saudi Arabia’s average compliance is the lowest at 47%.

By Host

As summit host, the G20 member has an opportunity to have the summit as a whole mirror its own compliance performance. However, the evidence suggests that this opportunity is not regularly taken (see Appendix E). In the eight summits, the host had higher energy compliance than the average in five and less in three.

The United States hosted the first G20 summit that seriously addressed energy, making 16 politically binding commitments. The U.S. fully complied with the four assessed ones, while all members averaged 72%. Overall years the U.S. ranked fourth, and tied with India and Brazil.

Canada hosted the next G20 summit making energy commitments in June 2010. Canada partially complied with its one assessed energy commitment, and all members averaged 73%. Across all years, Canada ranked 11th with an average of 63%.

Korea hosted the next summit at Seoul in November 2010. Korea fully complied with its three assessed energy commitments, and all members averaged 82%. Korea fully complied at most summits, helping it rank second with an overall average of 88%.

France, as host at Cannes in 2011, had energy compliance of 84% where all members averaged 81%. Yet it fully complied at most summits, ranking first overall with 91%.

Mexico as host at Los Cabos in 2012. Mexico fully complied, while all members averaged 79%. Overall Mexico ranks second, tying with the UK.

Russia, as host in 2013, fully complied, while all members averaged 78%. This did not reflect Russia's multiyear compliance, as it ranks 10th with 66%, tying with South Africa and Indonesia.

Australia, as host in 2014, complied at 50%. All members averaged 82%. Australia ranks seventh across all years with an average of 72%.

Average compliance with the 2015 Antalya Summit was an all-time low of 33%. As host, Turkey did not comply at all. This is consistent with Turkey's poor compliance overall, as it ranks second last with 50%.

China, which hosted the summit in September 2016, ranks overall with 78%.

Germany, host of the 2017 summit, ranks sixth with 74%.

Trend by Component Subject

Commitments

Three component subjects can be identified within the G20's energy commitments: those on fossil fuel subsidies, those on clean or renewable energy and those on energy security. Seven of the assessed energy commitments reiterate the G20's promise to phase out inefficient fossil fuel subsidies while providing support for the poorest. Seven of the assessed commitments reference clean or renewable energy. One of the assessed commitments is on energy security (see Appendix F). One commitment cannot be categorized because its text is unknown.

Compliance

The G20's average compliance on its seven assessed fossil fuel subsidy commitments is the lowest at 58%. On the one assessed energy security commitment, compliance averages 73%. On the seven clean or renewable commitments, compliance averages the highest at 78%.

Trend by Member and by Component Subject

Commitments

Of the seven assessed fossil fuel subsidy commitments, one each was made at Pittsburgh in 2009, Toronto and Seoul in 2010, Cannes in 2011, Los Cabos in 2012, Brisbane in 2014, and Antalya in 2015. No fossil fuel subsidy commitment was assessed from St. Petersburg in 2013. Of the seven assessed commitments on clean or renewable energy, two were made at Pittsburgh, two were made at Seoul, and one each was made at Cannes, Los Cabos and Brisbane. The one assessed energy security commitment was made at Pittsburgh in 2009.

Compliance

On compliance with the fossil fuel commitments the U.S. with an overall average of 72%, ranks second tied, with Brazil, Mexico and South Africa (see Appendices G to J). The U.S. fully complied at Pittsburgh, partially complied at the following four summits, and then fully complied again at Brisbane and Antalya. On clean and renewable energy, at 100% the U.S. ranks first, tying with five other countries and fully complying in every year. The U.S. also fully complied with the one assessed energy security commitment at 100%. Because only one commitment has been assessed, it is not possible to adequately assess overall U.S. performance over time on energy security.

Canada, with 43%, ranks much lower than the U.S. on compliance with the G20's fossil fuel subsidy commitments, coming in sixth place (out of nine due to tied scores). It complies partially, fully or not at all in no predictable pattern. On clean energy and renewables commitments, Canada, with 93%, ranks second (of eight). Canada has fully complied in every year apart from 2013 when it partially complied with the St. Petersburg commitment. On the one assessed commitment on energy security, Canada partially complied.

Korea, with 86%, ranks first on compliance with the G20's fossil fuel subsidy commitments, tying with France. Korea fully complied with every summit, apart from Brisbane in 2014 and Antalya in 2015 where it partially complied. On clean energy and renewable commitments Korea, with the same average of 86%, ranks lower but still does well, in third place. Here, Korea also fully complied in all years apart from two summits (Pittsburgh in 2009 and St. Petersburg in 2013). On energy security, Korea fully complied.

France, with 86%, ranks first on fossil fuel subsidies fully complying with all summits apart from Seoul in 2010 and Antalya in 2015 with which it partially complied. On clean energy and renewables commitments, France, with 100%, also ranks first, tying with five other countries and fully complying in all years. France fully complied with the energy security commitment.

Mexico, with 72%, ranks second, along with Brazil and South Africa, on fossil fuel subsidy commitments. It complied fully with all summits apart from Seoul in 2010 and Brisbane in 2014. On clean and renewable energy Mexico, with 93%, again ranks second, fully complying with every summit except for Pittsburgh in 2009. On energy security, Mexico fully complied.

Russia, with 50%, ranks fifth on compliance with fossil fuel subsidy commitments. It did not comply with Pittsburgh. Then its compliance rose. It partially complied with Toronto, then fully complied with the following three summits. Its compliance dropped with the next two summits, however; it did not comply at all with Brisbane or Antalya. On clean and renewable energy commitments Russia, with 86%, ranked third, partially complied with Pittsburgh and then complied fully every summit since. On energy security, Russia partially complied.

Turkey, with 25%, had the lowest compliance on fossil fuel subsidy commitments. Turkey was not assessed for Pittsburgh in 2009. Turkey partially complied with the following summit in Toronto in 2010. It did not comply with Seoul, then partially complied with Cannes and Los Cabos. It did not comply with Brisbane or Antalya. On clean and renewable energy, Turkey ranks near the bottom in fifth place, somewhat complying in the first three years and then fully complying in the last two years. On energy security, Turkey partially complied.

China, at 57%, ranks fourth on compliance with fossil fuel subsidies. China sometimes complied fully, partially or not at all for any given summit. On clean and renewable energy China, with 100%, ranks first, fully complying with every summit. China partially complied with the one assessed energy security commitment.

Finally, Germany, with 43%, in sixth place, ranks low on compliance with fossil fuel subsidy commitments. It also complied partially, fully or not at all with any given year. It does much better, however, on the G20's clean and renewable energy commitments, tying for first with 100% with full compliance with every summit. On energy security, Germany fully complied.

Conclusion

From this analysis flow the following observations on G20 energy commitments and compliance.

Companion Commitments

First, compliance is generally higher at the summits where more companion commitments on energy were made, but with at least two exceptions. With St. Petersburg, where the highest number of commitments were made, average compliance was 78%. With Cannes, where the second highest number of commitments were made, compliance was 81%. With Pittsburgh and Brisbane, where 16 commitments were made at each summit, compliance was 72% and 62%, respectively. And with Seoul, where 14 commitments were made, average compliance was 82%. Conversely, with Antalya, where only three energy commitments were made, compliance was low at 33%. Toronto is an exception. Here only one energy commitment was made, with average compliance at 73%.

Iteration

Another exception is found when looking at the number of commitments made by component subject, as a partial test of the accountability measure of iteration. A total of 15 fossil fuel subsidy commitments were made, with the seven assessed averaging 58%. Twenty commitments were made on clean and renewable energy, also with seven assessed, with much higher overall average at 88%. Finally, 61 energy security commitments were made, suggesting that compliance on energy security should be higher than in the other two component areas, yet compliance here is in the mid range at 73%. However, as only one energy security commitment has been assessed for compliance. More research needs to be done to come to a more definitive conclusion.

Yet iteration of a commitment at the same or subsequent summit also may not be a reliable predictor for compliance, as the fossil fuel subsidy commitments imply. These commitments all reiterate the G20's goal to phase out inefficient fossil fuel subsidies while providing support for the poorest. This commitment was first made at the Pittsburgh Summit in 2009 and has been made at every summit since. Overall compliance with fossil fuel subsidy commitments is the lowest at 58%, consistent with studies showing [high annual fossil fuel subsidies](#) provided by G20 governments. Moreover, iteration of this commitment at the same summit occurred at Pittsburgh, Seoul, Cannes, Brisbane and Antalya. Three of these five summits produced the lowest compliance overall (Pittsburgh with 53%, Brisbane with 28% and Antalya with 33%). The average at Seoul was also relatively low at 63%, but was the highest at Cannes with 82%. The two summits that did not reiterate the same commitment at the summit, produced the highest overall compliance, with the exception, as mentioned, of Cannes. These summits are Toronto with 73% and Los Cabos with 79%. One fossil fuel subsidy commitment was made at St. Petersburg but was not assessed.

Hosting

Third, hosting seems to increase compliance. The compliance average of the 10 members that have hosted a summit of 76% is higher than the 69% average of the 10 members. However, this is only a 7% difference and compliance among the host countries ranges from 50% to 90%. Among non-host countries the range is 47% to 82%.

Surrounding Summit Support from Shared Membership

Fourth, the G20's highest compliance is on clean and renewable energy commitments at 88%. Here, both developed and emerging economies complied more or less equally. G7 and BRICS members both complied at an average of 75%. SOA/OAS members have an overall average of 74%, and MIKTA members have an average of 72%. Moreover, six countries from both the BRICS and G7 (China, U.S., UK, Germany, France and India) have complied in every year, each with an average of 100%. The next four countries (Brazil, Mexico, Canada and Japan) plus the EU each have an average of 93%. Korea, Australia and Russia each have 86%, and Argentina has 79%. The countries with the lowest averages on clean energy and renewable energy commitments all still positively comply, although less robustly: Indonesia and Turkey both with 72%, South Africa with 65%, and Saudi Arabia with 57%. High compliance among nearly all members, regardless of economic status, on clean and renewable energy commitments suggests that there is consensus on which momentum can be built.

At Hamburg

Thus at Hamburg, Germany can use its status as host to build momentum on the common ground between all members to encourage research, development and deployment of clean and renewable energy. In order to help build this momentum, it should also do more than reiterate the G20's commitment to phase out inefficient fossil fuel subsidies, as it is clear that reiteration alone is not sufficient to inspire sustained action. One way it can potentially do this is by making a stronger link between energy and climate, which is already one of [Germany's priorities](#) for the Hamburg Summit. Here, it can also specifically link energy security and climate to military security, as the expansion and production of dirty energy has a direct impact on [water security](#) leading to civil unrest, including in [developed](#) countries. This is in addition to being one of the main contributors to climate change, which itself is linked to [national and global instability](#). Indeed, the U.S. Department of Defense has labelled climate change a "[threat multiplier](#)."

Thus making a stronger connection between energy security and climate change could help motivate the G20 members to improve compliance with their commitments on fossil fuel subsidies, clean and renewable energy, and climate change. Additionally, complying with their fossil fuel subsidy commitments would help G20 members improve compliance with commitments related to the [Sustainable Development Goals](#), including ensuring sustainable energy and health for all, and eliminating poverty and inequality within countries.

At Hamburg the G20 should work to expand its siloed view of energy, security and climate change by strongly connecting the three together. In this way Germany would also strengthen the [three pillars](#) on which its presidency stands of ensuring stability, improving viability for the future and of accepting responsibility.

Appendix A: Commitments and Compliance by Issue Area, 2008–2016

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 105	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 B: Energy Commitments by Summit

Summit	Total energy commitments		Fossil fuel subsidies		Energy security		Clean/renewable energy		Other	
	Made	Assessed	Made	Assessed	Made	Assessed	Made	Assessed	Made	Assessed
2008 Washington										
2009 London										
2009 Pittsburgh	16	4	2	1	8	1	3	2	3	
2010 Toronto	1	1	1	1						
2010 Seoul	14	3	3	1	2		6	2	3	
2011 Cannes	18	3	3	1	9		5	1	1	
2012 Los Cabos	10	1	1	1	9					
2013 St. Petersburg	19	1	1		16		2	1		
2014 Brisbane	16	2	2	1	9		4	1	1	
2015 Antalya	3	1	2	1	1					
2016 Hangzhou	8		1		6				1	
Total	105	16	15	7	61	1	20	7	9	

Note:

Inclusions for energy security commitments: transparency, data collection, energy market stability, energy supply and demand, prices (including, fossil fuel prices), producer-consumer, international cooperation, energy access, energy efficiency.

Inclusions for other: accountability request of ministers, experts groups or international organizations.

Inclusions for clean/renewable energy: research and development, technology.

Inclusions/exclusions for fossil fuel subsidies: only commitments that refer to subsidies are included; commitments that refer to fossil fuel prices are excluded. Fossil fuel prices are included in energy security. Blank cells indicate no commitment was made/assessed.

Assessed "other:" one assessed commitment is unaccounted for (2011C-252) in this table because its commitment text is not known and so cannot be categorized.

Appendix C: 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

Note: Blank cells indicate the country was not assessed for compliance with any commitment in that year.

Appendix D: Energy Compliance by Component Club

G20 Member	Average	
	Score	Percentage
BRICS	+0.49	75%
India	+0.63	82%
Brazil	+0.63	82%
China	+0.56	78%
South Africa	+0.31	66%
Russia	+0.31	66%
G7	+0.50	75%
France	+0.81	91%
United Kingdom	+0.69	85%
United States	+0.63	82%
Germany	+0.47	74%
Italy	+0.47	74%
Japan	+0.38	69%
European Union	+0.33	67%
Canada	+0.25	63%
MIKTA	+0.44	72%
Korea	+0.75	88%
Mexico	+0.69	85%
Australia	+0.44	72%
Indonesia	+0.31	66%
Turkey	0	50%
OTHER		
Argentina	+0.25	63%
Saudi Arabia	-0.07	47%

Notes: Organisation for Economic Co-operation and Development members in order of compliance, highest to lowest: France, Korea, United Kingdom and Mexico, United States, Italy and Germany, Australia, Japan, Canada, and Turkey with a collective average of +0.51 or 76%.

Organization of American States and Summit of the Americas members: Mexico, United States, Argentina and Canada, with a collective average of +0.47 or 74%.

Organization of Petroleum-Exporting Countries: Saudi Arabia with -0.07 or 47%.

Appendix E: Energy Compliance by Host

Overall compliance by member		Year(s) Hosted			
		City	Date	Compliance by host at summit	Overall compliance at summit
France	+0.81	Cannes	November 3–4, 2011	+0.67	+0.61
Korea	+0.75	Seoul	November 11–12, 2010	+1.00	+0.64
United Kingdom	+0.69	London	April 1–2, 2009		
Mexico	+0.69	Los Cabos	June 18–19, 2012	+1.00	+0.58
United States	+0.63	Pittsburgh	September 24–25, 2009	+1.00	+0.43
India	+0.63				
Brazil	+0.63				
China	+0.56	Hangzhou	September 4–5, 2016		
Germany	+0.47	Hamburg	July 6–9, 2017		
Italy	+0.47				
Australia	+0.44	Brisbane	November 15–16, 2014	0	+0.23
Japan	+0.38				
European Union	+0.33				
Russia	+0.31	St. Petersburg	September 5–6, 2013	+1.00	+0.55
South Africa	+0.31				
Indonesia	+0.31				
Canada	+0.25	Toronto	June 26–27, 2010	0	+0.45
Argentina	+0.25				
Turkey	0	Antalya	November 15–16, 2015	-1.00	-0.35
Saudi Arabia	-0.07				
Average	+0.45				

Notes:

The United States also hosted the first G20 summit at Washington on November 14–15, 2008, but no energy commitments were made.

Blank cells indicate the G20 member has not hosted a summit, or has hosted a summit but no energy commitments have been assessed for that year.

Host countries' overall compliance is +0.51 or 76%.

Non-host countries' overall compliance is +0.37 or 69%.

Appendix F: Energy Commitments by Component Subject

Commitment	Score
Fossil fuel subsidies (7)	
2009-18 Pittsburgh: ... to phase out and rationalize over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest	+0.05
2010-60 Toronto: [We note with appreciation the report on energy subsidies from the IEA, OPEC, OECD and World Bank. We welcome the work of the Finance and Energy Ministers in delivering implementation strategies and timeframes, based on national circumstances, for the rationalization and phase out over the medium term of inefficient fossil fuel subsidies that encourage wasteful consumption, taking into vulnerable groups and their development needs.' We also encourage continued and full implementation of country specific strategies and will continue to review progress towards this commitment at upcoming summits	+0.45
2010-127 Seoul: We reaffirm our commitment to rationalize and phase-out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption, with timing based on national circumstances, while providing targeted support for the poorest	+0.26
2011-236 Cannes: We reaffirm our commitment to rationalize and phase-out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption, while providing targeted support for the poorest	+0.63
2012-96 Los Cabos: We reaffirm our commitment to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term while providing targeted support for the poorest	+0.58
2014-73 Brisbane: We reaffirm our commitment to rationalize and phase-out inefficient fossil fuel subsidies that encourage wasteful consumption, recognizing the need to support the poor	-0.45
2015-84 Antalya: We reaffirm our commitment to rationalize and phase-out inefficient fossil fuel subsidies that encourage wasteful consumption, over the medium-term, recognizing the need to support the poor	-0.35
Average	+0.16
Energy Security (1)	
2009-72 Pittsburgh:increase energy market transparency and market stability by publishing complete, accurate, and timely data on oil production, consumption, refining and stock levels, as appropriate, on a regular basis, ideally monthly, beginning by January 2010	+0.45
Average	+0.45
Clean/renewable energy (7)	
2009-83 Pittsburgh: We commit to stimulate investment in clean energy, renewables, and energy efficiency and provide financial and technical support for such projects in developing countries	+0.44
2009-84 Pittsburgh: [We commit to] take steps to facilitate the diffusion or transfer of clean energy technology including by conducting joint research and building capacity	+0.75
2010-129 Seoul: [We also commit to stimulate investment in] green transportation	+0.90
2010-135 Seoul: We will take steps to create, as appropriate, the enabling environments that are conducive to the development and deployment of energy efficiency and clean energy technologies, including policies and practices in our countries and beyond, including technical transfer and capacity building	+0.75
2011-242 Cannes: We commit to encouraging effective policies that overcome barriers to efficiency, or otherwise spur innovation and deployment of clean and efficient energy technologies	+0.95
2013-12 St. Petersburg: [We commit] to take steps to support the development of cleaner and more efficient energy technologies to enhance the efficiency of markets and shift towards a more sustainable energy future	+0.55

Brittaney Warren: G20 Energy Commitments and Compliance

2014-203 Brisbane: G20 countries agree to work together to...encourage and facilitate the design, development, demonstration...of innovative energy technologies, including clean energy technologies	+0.90
Average	+0.75
Other	
2011-252 Cannes: [commitment text not available]	+0.25
Average	+0.25
Overall Average	+0.45

Appendix G: 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 H: Compliance with Fossil Fuel Subsidy Commitments

	Overall Average		2009 Pittsburgh	2010 Toronto	2010 Seoul	2011 Cannes	2012 Los Cabos	2014 Brisbane	2015 Antalya
France	+0.71	86%	+1.00	+1.00	0	+1.00	+1.00	+1.00	0
Korea	+0.71	86%	+1.00	+1.00	+1.00	+1.00	+1.00	0	0
United States	+0.43	72%	+1.00	0	0	0	0	+1.00	+1.00
Brazil	+0.43	72%	0	+1.00	+1.00	+1.00	+1.00	0	-1.00
Mexico	+0.43	72%	+1.00	+1.00	0	+1.00	+1.00	0	-1.00
South Africa	+0.43	72%	+1.00	+1.00	+1.00	+1.00	+1.00	-1.00	-1.00
United Kingdom	+0.29	65%	-1.00	+1.00	+1.00	+1.00	+1.00	0	-1.00
India	+0.29	65%	0	-1.00	0	+1.00	+1.00	0	+1.00
China	+0.14	57%	+1.00	0	-1.00	+1.00	+1.00	-1.00	0
Italy	+0.14	57%	-1.00	+1.00	+1.00	+1.00	0	-1.00	0
Australia	+0.14	57%	0	0	0	0	0	-1.00	+1.00
Japan	0	50%	+1.00	+1.00	0	0	0	-1.00	-1.00
Russia	0	50%	-1.00	0	+1.00	+1.00	+1.00	-1.00	-1.00
Argentina	0	50%	0	0	0	0	0	-1.00	+1.00
Indonesia	0	50%	+1.00	0	0	0	0	0	-1.00
Germany	-0.14	43%	0	+1.00	-1.00	0	0	-1.00	0
Canada	-0.14	43%	-1.00	0	+1.00	0	0	-1.00	0
European Union	-0.17	42%	-1.00	-1.00		+1.00	+1.00	0	-1.00
Saudi Arabia	-0.20	40%	-1.00	+1.00	0			-1.00	0
Turkey	-0.50	25%		0	-1.00	0	0	-1.00	-1.00
Average	+0.16	58%	+0.05	+0.45	+0.26	+0.63	+0.58	-0.45	-0.35

Notes:

No fossil fuel subsidy commitment has been assessed from the 2013 St. Petersburg Summit.

Blank cells indicate the member was not assessed for compliance in that year.

Appendix I: Compliance with Energy Security Commitments

	Overall Average: St. Petersburg 2009	
United States	+1.00	100%
France	+1.00	100%
Germany	+1.00	100%
Italy	+1.00	100%
Japan	+1.00	100%
Korea	+1.00	100%
Mexico	+1.00	100%
United Kingdom	+1.00	100%
Indonesia	+1.00	100%
China	0	50%
European Union	0	50%
Canada	0	50%
India	0	50%
Brazil	0	50%
Australia	0	50%
Argentina	0	50%
Russia	0	50%
Saudi Arabia	0	50%
South Africa	0	50%
Turkey	0	50%
Average	+0.45	73%

Note: Only one energy security commitment was assessed, from the 2009 St. Petersburg Summit.

Appendix J: Compliance with Clean Energy and Renewables Commitments

	Average		2009 Pittsburgh	2010 Seoul	2011 Cannes	2013 St. Petersburg	2014 Brisbane
China	+1.00	100%	+1.00	+1.00	+1.00	+1.00	+1.00
United States	+1.00	100%	+1.00	+1.00	+1.00	+1.00	+1.00
United Kingdom	+1.00	100%	+1.00	+1.00	+1.00	+1.00	+1.00
Germany	+1.00	100%	+1.00	+1.00	+1.00	+1.00	+1.00
France	+1.00	100%	+1.00	+1.00	+1.00	+1.00	+1.00
India	+1.00	100%	+1.00	+1.00	+1.00	+1.00	+1.00
Brazil	+0.86	93%	+0.50	+1.00	+1.00	+1.00	+1.00
Mexico	+0.86	93%	+0.50	+1.00	+1.00	+1.00	+1.00
Canada	+0.86	93%	+1.00	+1.00	+1.00	0	+1.00
Japan	+0.86	93%	+1.00	+1.00	+1.00	0	+1.00
European Union	+0.86	93%	+0.50	+1.00	+1.00	+1.00	+1.00
Italy	+0.83	93%	+1.00	+1.00	+1.00	0	+1.00
Korea	+0.71	86%	+0.50	+1.00	+1.00	0	+1.00
Australia	+0.71	86%	+1.00	+1.00	+1.00	-1.00	+1.00
Russia	+0.71	86%	0	+1.00	+1.00	+1.00	+1.00
Argentina	+0.57	79%	+0.50	+0.50	+1.00	0	+1.00
Indonesia	+0.43	72%	0	0	+1.00	+1.00	+1.00
Turkey	+0.43	72%	+0.50	0	0	+1.00	+1.00
South Africa	+0.29	65%	0	+1.00	+1.00	0	-1.00
Saudi Arabia	+0.14	57%	-0.50	0	+1.00	0	+1.00
Average	+0.75	88%	+0.61	+0.83	+0.95	+0.55	+0.90

Note: No clean energy/renewables commitments were assessed from Toronto 2010, Los Cabos 2012, and Antalya 2015.