

G20 2021 Rome Climate Change Performance

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Introduction

On October 30–31, 2021, G20 leaders met in Rome for their first in-person summit since the COVID-19 global pandemic shocked the world into a new normal of digital diplomacy. Several G20 leaders did not attend in person, as the aftershock of COVID-19 was still being felt. A hybrid in-person/digital summit was held instead. Against the backdrop of climate-induced heatwaves, hurricanes and health threats, this meeting mattered much for the world. The G20 countries are responsible for nearly 80% of the emissions causing this wide range of disasters and their unfairly heavy consequences on the countries and communities with the lowest environmental footprint. The G20 countries possess most of the world's wealth, and thus the financial capacity to make a swift transition to zero emission economies. They also house many of the world's key carbon sinks. Should the G20 members act in line with the science, they could make a meaningful impact on meeting the goals of the Paris Agreement on climate change, to which they all agreed in December 2015.

At Rome, the G20 did make some advances, such as moving forward on phasing out coal. But it did not succeed in raising its ambition enough to align with the science and the goals set at the Paris climate conference six years before. Various G20 leaders did announce some new climate targets for the United Nations' 26th Conference of the Parties (COP26) climate summit in Glasgow, but even if fully implemented, those targets would still put the world on a dangerous trajectory. Although the G20 performed strongly across the six dimensions of summit performance at Rome compared to past summits, in the context of the twin climate and biodiversity crises, it failed to deliver. The G20's potential and performance should not be overstated.

Schools of Thought

Most observers agreed that the G20 Rome Summit did not do enough to stop the climate crisis from worsening.

Javier Blas (2021) saw weak results on climate change, due to its inclusion of language favoured by fossil fuel producers. UN secretary-general António Guterres (2021) tweeted that his hopes for a successful Rome summit ahead of COP26 were left “unfulfilled.” Luca Bergamaschi (2021) highlighted some of the agreements made, but emphasized that “wide delivery gaps remained.” Caitlyn Byrne (2021) saw a missed opportunity for leadership on climate action.

Paola Subacchi (2021), countering these views, emphasized that the G20 made some tangible advances on climate action.

Argument

This study confirms the general consensus that the G20 Rome Summit did not do enough. It argues that some advances were made, but, due to the G20's incoherent and self-contradictory climate governance, these were still too slow and too small to keep pace with the climate and environmental changes already locked in, currently underway and looming. It highlights the advances the G20 made, and its performance across the six key dimensions of summit performance, based on a systematic analysis of the G20 summit communiqué. It

broadly compares this Rome record to the G20's past summit performance across the same dimensions and indicators, and qualitatively considers the substantive achievements made and the gaps left, in an effort to apply a crisis lens. It ultimately argues that the G20 members failed to act as a cohesive unit to make the collective, systemic changes needed to balance emissions in the atmosphere, despite its stronger quantitative performance across the six key dimensions reviewed below.

G20 Leaders' Performance

On the six standard dimensions of summit performance (Kirton and Kokotsis 2015; Kirton 2013) combined with a qualitative assessment, the G20 failed to deliver strong climate action (see Appendix A). All members attended either in person or virtually, gave more attention than ever to climate change, and made a relatively high number of commitments. However, no core international climate, environment or clean energy organization was invited to the summit; G20 leaders failed to name the sources of climate change other than coal; delivery of G20 commitments is set to be mixed; and no new climate financing was raised. Most importantly, if the G20 members fully implement their national climate targets, even taking account of increased ambition, their G20 commitments will not be enough to reduce emissions to the level needed.

Domestic Political Management

The first measure of summit performance, domestic political management, shows how valuable world leaders view the G20 forum through their physical or, in the age of COVID-19, virtual presence. Fifteen leaders attended the meeting in person and five beamed in virtually, thus creating the first ever digital-physical hybrid G20 summit. The five leaders that participated online were Chinese president Xi Jinping, Russian president Vladimir Putin, Japanese prime minister Fumio Kishida, Mexican president Andrés Manuel López Obrador and South African president Cyril Ramaphosa. According to a press briefing given by Chrystia Freeland, Deputy Prime Minister of Canada, on October 30, all virtual participants sent an in-person representative. The pandemic thus ushered in a new fixture in digital work not only for the average citizen but for heads of state and government too.

All six invited guests attended in person. These were Italy's fellow European colleagues Mark Rutte, Prime Minister of the Netherlands, and Pedro Sánchez, Prime Minister of Spain, which is permanent guest at the G20. Representing Asia were Lee Hsien Loong, prime minister of Singapore, and Hassanal Bolkiah, the sultan of Brunei and current chair of the Association of Southeast Asian Nations (ASEAN). Representing Africa were Félix Tshisekedi, the president of the Democratic Republic of Congo and 2021 chair of the African Union, and Paul Kagame, president of Rwanda and 2021 chair of the New Partnership for Africa's Development (NEPAD). There were no representatives from Latin America or from Indigenous nations.

No heads of the major multilateral climate and environment organizations were invited, including the UN Framework Convention on Climate Change (UNFCCC), the UN Convention on Biological Diversity (UNCBD) and the UN Environment Programme (UNEP).

The second measure of domestic political management is the number of compliments to individual G20 members in the summit documents for their work on advancing climate and environmental action. In all, there were three acknowledgments to continue supporting and implementing initiatives launched under Saudi Arabia's 2020 presidency — the G20 Global Initiative on Reducing Land Degradation and Enhancing Conservation of Terrestrial Habitats, the G20 Dialogue on Water and the G20 Water Platform, and the Global Coral Reef R&D Accelerator Platform.

Deliberation

The second dimension of summit performance, deliberation, shows how much attention the leaders' publicly gave to climate change, measured by the number of words and the portion of their communiqué dedicated to the subject. Rome continued the rising trend of the previous four years. It produced the second highest number of words and the highest portion of words, by far, on climate change, since G20 leaders started

meeting in 2008. Rome dedicated 3,092 words to climate change, behind only 2017 Hamburg's 3,600. Rome gave a very significant 31% of its communiqué to climate change, well above 2020 Riyadh's 12%. For the first time ever, the G20's attention to climate change surpassed, indeed doubled, that to its *raison d'être* of macroeconomic growth, which took 1,405 words for 15% of the communiqué.

In keeping with its expanding agenda, the G20 added six new items with the potential to reduce emissions growth if scaled up fast enough and ambitiously enough. They were:

- centring the more ambitious 1.5°C target, with some leeway from the BRICS bloc of Brazil, Russia, India, China and South Africa, plus Turkey, on an approximate mid-century climate target;
- allocating their Special Drawing Rights (SDRs) back to the International Monetary Fund (IMF), which could use its new Resilience and Sustainability Trust to unlock financing for reducing climate and other risks for Africa, small-island developing states, and low- and middle-income countries;
- acknowledging that carbon pricing should be used to move toward low-emitting economies;
- advancing a shift in financing away from coal;
- scaling up nature-based solutions/ecosystem-based approaches in and around cities; and
- planting 1 trillion trees by 2030.

Tempering this potential, with no tangible advances, were the G20's commitment, reiterated since 2009, to phase out inefficient fossil fuel subsidies, with no naming of oil and gas as the largest culprit and no plan to end financial support for this sector, and the commitment reiterated, since 2010, to mobilize \$100 billion per year by 2025 in climate financing. Still missing were acknowledgements of the world's next two largest sources of emissions after the fossil fuel sector — large-scale agribusiness and the wealthy elite. There was also no specific target to achieve a just transition.

Direction Setting

Rome made 11 references to direction setting, or links between climate change and the G20's distinctive foundational missions of ensuring global financial stability and making globalization work for everyone. Five were to financial stability and six were to globalization for all. This was the highest number of references in a climate context. The average per summit, from 2008 to 2020, was only 0.2. There were also seven references in total to the G7's two distinctive foundational missions of open democracy and human rights. Five were to democracy, all on climate finance transparency, including climate and nature financial risk disclosure. Two were to human rights, both referencing a just transition.

Decisions

From these deliberations came 21 collective commitments on climate change. This was the second highest number ever made (only one commitment behind the 2017 Hamburg Summit), and well above the average of six per summit. Climate change commitments took 9% of the 225 commitments Rome made across all subjects, tying for the fourth highest subject alongside the environment. Moreover, all eight energy commitments, for 4% of the total, were on clean energy access and the transition to clean energy, energy efficiency or fossil fuel phase-out, including subsidies and international financing for new unabated coal plants by the end of 2021. Thus combining its inextricably linked climate, environment and energy commitments, Rome put the planet in first place, with almost a quarter, 22%, of the leaders' Rome commitments.

Further, the vast majority of Rome's 21 climate commitments had strong or highly binding language, for a 15:6 high-to-low binding ratio. These high-binding commitments use stronger action- and future-oriented language and, rather than merely reiterate a past commitment, they commit the G20 to do more than it has before by scaling up actions or by doing something new. On the environment (n = 21), the ratio was 7:14 high to low. On energy (n = 8), the ratio was equal, with 50% high and 50% low. Further analysis should assess the ambition of the commitment too.

Key high-binding climate and energy commitments include ending international financing for new unabated coal power plants by the end of 2021; accelerating action with the 1.5°C target and mid-century deadline to reduce emissions in mind; accelerating efforts to achieve cost parity of zero and low emissions energy; and scaling up nature-based solutions, defined as ecosystem-based approaches in cities, with the input of local communities and Indigenous peoples, and to provide multiple benefits at once across economic, social, climate and environmental indicators.

Key low binding commitments include supporting local actions for climate mitigation and adaptation. meeting climate financing commitments and balancing mitigation and adaptation finance. It also includes the aspirational goal of planting 1 trillion trees by 2030.

Delivery

This high performance on commitments matters most if they are fully implemented. Whether members' compliance will be high or low depends on the commitment in question (see Appendix B).

Compliance tends to be higher with G20 climate commitments that use highly binding language, that have a short-term timetable and that reference the UNFCCC or climate law. Most of the Rome climate commitments had highly binding language. Six of the 21 had a UNFCCC or climate law reference. The key energy commitment, to phase out new international unabated coal financing, had a short-term target of less than one year.

Compliance tends to be lower with climate commitments that have a multiyear timetable and that were made at summits with a relatively lower number of climate commitments and climate deliberations. Three of the 21 climate commitments at Rome included a multiyear timetable, including the high binding one to reach 1.5°C by mid-century. The Rome Summit had a high number of commitments and high deliberation on climate change, suggesting lower compliance overall. However, this data is skewed, due to the anomaly of the 2017 Hamburg Summit, which produced a far higher than average number of climate commitments and deliberations, with modest compliance. This strongly suggests this measurement is an unstable predictor of compliance.

In all, compliance with the G20's climate commitments will depend on the commitment itself and how much political will underpins it. Other compliance and overall performance causes are discussed in the section below on "Causes of G20 Performance."

Development of Global Governance

The final dimension of summit performance, the institutional development of global governance, measures references made in the summit's conclusions on climate change to specific international organizations outside and inside the G20 and whether the G20 is leading, following or simply acknowledging the relevant organization.

At Rome there were six references to outside institutions. Four referred to the core climate organization of the UNFCCC umbrella, comprising two to the Paris Agreement, one to the Intergovernmental Panel on Climate Change (IPCC) and one to COP26. The G20 followed the UN three out of four times, and led once. It also led with its one reference to the IMF. It was neutral in its one acknowledgement of the Organisation for Economic Co-operation and Development's Climate Finance Delivery Plan.

There were three references to inside institutions. Two were to the G20's Financial Stability Board and its work on climate-related financial risk disclosures. One was to the G20 finance ministers and central bank governors. All three were neutral references.

G20 Causes of Performance

The G20's stronger performance at Rome compared to past summits can be explained by the rising and highly visible climate-related shocks that emerged around the world, along with fear of multilateral organizational failure at COP26 in response. However, the G20's ability to take highly ambitious action to meet the goals of the Paris Agreement was limited by a lack of domestic political cohesion creating incohesive climate policies, positions and beliefs among G20 countries. The lack of political representation at the G20 from the core international climate and environmental institutions, or from Indigenous and other smaller sovereign nations on the front lines of the climate crisis, was also relevant. Less important were countries' relative capabilities measured by gross domestic product (GDP), and their diverging common democratic characteristics and converging rising authoritarianism. The hybrid digital/in-person approach had a negligible impact on the outcomes achieved at Rome.

Shock-Activated Vulnerability

The COVID-19 shock, which emerged at the end of 2019 and exploded throughout 2020, remained a constant source of concern throughout 2021 and in the lead-up to the fall Rome Summit. As of November 30, 2021, over five million people had died of COVID-19. By this date, the global vaccination campaign had produced eight billion doses, allowing borders to reopen and a sense of normalcy to begin to return. However, new variants continued to emerge, prompting some G20 countries by late November to ban travel from its G20 developing country peer South Africa, where the newest variant, Omicron, was detected. This raised continued concerns over vaccine equity and reminded the world that COVID-19 and its variants were here to stay. However, at Rome the pandemic was sufficiently under control that it did not divert the G20 leaders' attention from climate change, as it had at the Riyadh Summit in November 2020.

Climate shocks rose, most visibly in the form of heat. In the summer of 2021, in Canada a heat dome covered the western-most province of British Columbia, setting a record nearing 50°C and sparking a fire that burned down an entire village, killed two people there, and led to a province-wide state of emergency days later. Several other communities were evacuated and many homes destroyed. The extreme heatwave killed 569 people. Scientists attributed it to climate change. By September, Russia broke records too, recording its worst forest fire season and its highest emissions from wildfires in modern history. Australia had started off the year with intense wildfires that burned over 22,000 acres of farmland. The country's devastating 2019–2020 wildfires were later linked to climate change as a root cause of their ferocity. In the United States, the town of Greenville in California burned to the ground and in Lake Tahoe tens of thousands of people were evacuated. What was once-a-four-month fire season was now a six-to-eight-month fire season in the Southern United States. In Italy, in August temperatures reached almost 49°C and 500 fires affected the country, killing two people. In July and August, Turkey saw its worst wildfires in over a decade. They killed eight people and burned 235,000 acres.

Many other extreme weather events occurred in 2021. In January, unusual snowstorms in Spain killed four people and Storm Christoph inundated the United Kingdom with the heaviest precipitation there in decades. In February, an unprecedented deep freeze and record snowfall hit Texas in the United States, causing widespread electricity outages. In March, China experienced its worst sandstorm in over a decade, creating unbreathable air. In April, in Indonesia, Cyclone Seroja killed over 150 people in flash floods and landslides that made thousands homeless. In July, in Germany and Belgium, massive floods appeared for the first time in six decades, killing 170 people. In August, Hurricane Ida, one of the strongest hurricanes to hit the United States, killed 45 people and cut power to over one million homes, including the entire city of New Orleans.

None of these specific shocks was, however, recognized in the communiqué at Rome. G20 leaders recognized climate change only in more general terms, as a “threat” and a “risk,” rather than a crisis or emergency.

In the media, climate change attention grew in the days ahead of the Rome Summit compared to COVID-19 and other health news, but was still not high enough. On the front page of the *Financial Times*, from October 20 to 22 there was no climate coverage, but health took 67%. On October 26 coverage reversed: 25% went to climate change and none went to health. On October 27 and 28, 50% went to climate change and none to health. On October 28, this went back down to 25% to climate, but still none to health. On October 29, it was 50% to climate and 25% to health. And on October 30, it was 50% to climate and none to health.

Multilateral Organizational Failure

The second cause of Rome's strong climate change performance was the fear of multilateral organizational failure. The UNFCCC's COP26 was scheduled to start on the last day of the G20 meeting. Pressure was building to produce a successful COP26, to advance the 2015 Paris Agreement, symbolizing an important milestone in global climate governance, but which even its architects agreed would not be enough to keep the average global temperature to a liveable level. The Rome Summit would signal what the world's biggest emitters would be willing to do to strengthen the Paris Agreement and make COP26 a success. Much depended on meeting the calls to raise country-level climate target ambition and climate finance and to resolve outstanding issues, namely on carbon markets and loss and damage. In the lead-up to Rome and at the summit itself, some G20 countries did announce enhanced climate targets. The Rome communiqué did recognize carbon pricing for the first time and produce a new commitment to end financing for coal. But, critically, this was only for new and unabated coal plants abroad. And the G20 leaders failed to raise any new climate finance and did not advance a united position on rules for a global carbon market or climate reparations.

The desire to prevent a COP26 failure partly explains the G20's performance at Rome. But there were limits, as the most contentious issues were avoided at the G20 level and left for the UN summit in Glasgow afterwards. Moreover, the G20's failure to invite the head of any multilateral environmental organization to the summit suggests the leaders did not trust them or want them to help fill the gap.

Predominant Equalizing Capabilities

The third cause of the Rome Summit's climate performance was the globally predominant, internally equalizing capabilities among G20 members. In 2021 the global economy was predicted to recover from the COVID-19-caused slump the previous year. The IMF (2021) projected growth in the overall economy at 5.9%. Regional disparities, however, reflected uneven vaccine distribution and access. Sub-Saharan Africa was projected to grow at 3.7% and the Middle East and Central Asia at 4.1%.

Within the G20, internal equality grew. U.S. growth was projected at 6% and the EU's at 5%. China and India had the strongest growth in the G20 of a projected 8% and 9.5%, respectively. Emerging and developing Asia would see the strongest growth of 7.2%.

Overall, advanced economies and emerging and developing economies converged in 2021, with emerging and developing economies outpacing the advanced economies by 1.2%, as both blocs experienced overall growth in real GDP. In 2020, the gap was 6.6%, with both blocs in recession.

Full recoveries remained elusive. But this does not explain why G20 countries' multibillion dollar COVID-19 recovery packages funded business-as-usual rather than a green recovery, nor how G20 countries managed to give \$345 billion in subsidies to the fossil fuel sector in 2020 while in recession (OECD 2021). Nor did G20 members achieve a decoupling of economic and emissions growth. In 2020, emissions declined along with GDP and in late 2020 and in 2021 emissions rose with GDP.

Common Characteristics

The fourth cause of Rome's climate performance, which largely had a limiting effect, was converging characteristics and policies among G20 members.

Democracy and climate action have been linked and positively correlated (Fiorino 2018). In 2020, the latest year with detailed data available, democratic characteristics globally declined for the 15th year in a row (Freedom House 2021). The world witnessed the highest proportion of “not free” countries and the lowest number of improved countries in 15 years. Many countries took advantage of the opportunity COVID-19 presented to restrict freedom of movement, by expanding recommended medical restrictions to other freedoms and to targeted groups, such as Muslims in India. In 2020, democracy declined in India, China and the United States.

On January 6, 2021, a mob inspired and encouraged by outgoing Republican president Donald Trump, attacked the Capitol Hill to prevent a peaceful transition of power. On January 20, the new U.S. president, Joe Biden of the Democratic Party, was sworn into office, changing America’s democratic outlook. But the threat of democratic decline remained a concern. In response, in August 2021 Biden announced the U.S. would hold a two-part Summit for Democracy, with the first part scheduled to be held virtually on December 9 and 10, 2021, with the goals to fight authoritarianism, fight corruption and promote respect for human rights. The U.S. election of Biden was a move away from the authoritarian Trump and a return to the U.S. as an active and supportive member in international climate negotiations and action. It helped with the move forward on a coal agreement at the Rome Summit, something not likely to have happened with Trump in office. However, this democratic advance might not last, as a Republican government could be elected in three years’ time.

Further, China’s rising authoritarianism coincided with its position as the world’s leading investor in renewable energy, a core specialized policy for climate action. This shows that climate action can be taken amid declining democracy and declining respect for human rights, suggesting the correlation between democracy and emissions is less salient. And apart from two mentions of a just transition, with no commitment to back it, the Rome communiqué did not support climate justice or make any human rights–climate change link despite its high attention to climate change. Divergent democratic characteristics thus explain only a little the limits on the G20’s climate performance. That divergence helps more to underscore the weak human rights–climate link preventing the G20 from realizing its secondary stated mission to make globalization and, from this, global climate action work for everyone (including as agreed in the Sustainable Development Goal on climate change).

Political Cohesion

The fifth cause of Rome’s climate performance, which largely had a limiting effect, was the particular configuration of domestic political cohesion among G20 members.

China, India and Russia continued to exert stronger political control in a non-democratic way, while Saudi Arabia maintained its total authoritarian control. In the lead-up to Rome, some made only weak new climate announcements. Saudi Arabia set a target to reach net zero by 2060. China submitted an updated target, to peak its emissions by 2030, but kept its long-term net-zero deadline of 2060. Turkey set, for the first time, a climate target of net zero by 2060 and ratified the Paris Agreement. Australia, with Scott Morrison’s majority government, announced it would not increase its ambition and would not submit an updated 2030 target. India also announced it would not submit an updated climate target.

U.S. president Joe Biden was new in office and at his first G20 summit. His Democratic Party had won a majority of seats in the House of Representatives but had a 50–55 balance in the Senate. Biden came with much experience, having served as vice-president for eight years under the Obama administration. By Biden’s third day in office, the United States had rejoined the Paris Agreement and cancelled the Keystone XL pipeline. Biden’s presence at Rome ensured that all G20 members would support the Paris Agreement and leave behind the 19+1 split the previous Trump administration had created. Turkish president Recep Tayyip Erdogan solidified this, as Turkey became the last G20 member to finally ratify the Agreement.

German chancellor Angela Merkel, who had been at the creation of the G20 summit in 2008, was attending her last summit, now in a caretaker capacity. Across the six dimensions of summit performance, Merkel had hosted the most successful G20 and G7 summits for climate change. Her G20 Hamburg Summit in 2017 produced the highest number of climate commitments at a G20 summit, despite the efforts of climate-denying Trump to derail such an outcome. Germany's climate target was necessarily aligned with the EU's target. In June 2021, the EU had set into law the ambitious target, in line with the science, to reduce emissions by 55% by 2030 compared to 1990 levels and reaching net-zero by 2050. Merkel's successor would likely be a proponent of strong climate policies, since the Green Party of Germany held enough power in the country to influence climate action. Indeed, on December 8, 2021, the new coalition government took office, led by Olaf Scholz, with the Green Party's Robert Habeck leading a now combined economy and climate ministry and Annalena Baerbock leading the foreign minister, with a promise to accelerate the transition to climate-friendly domestic and foreign policies.

Other countries, such as Canada, with its minority government, and Japan, announced more ambitious climate targets ahead of Rome. But these still fell far short of being compatible with the Paris Agreement.

The G20 members had varied targets, all of which do not put the world on a Paris Agreement-aligned path. Such incohesive targets at the individual country level explain the inability of the G20 to agree to a specific collective hard target of reaching net zero by 2050. Leaders instead committed at Rome to reach net zero "by or around mid-century." While this is a step in the right direction, the climate does not recognize such slow movement, but responds only to actual emissions in the atmosphere.

Club at the Hub

The fifth cause of Rome's climate performance, which largely had a weakening effect due to lack of representation, was the G20 as a club that failed to invite heads of global climate organizations or Indigenous nations to its global summit network. The hybrid approach of global governance did not affect the G20's climate performance.

All G20 leaders attended the Rome Summit. But only 15 did so in-person. And not all of them participated virtually for health reasons. Xi and Putin did not attend due to COVID-19, combined with a desire to keep a stronghold on political power at home. Kishida and Ramaphosa skipped due to an overlap with domestic elections. López Obrador rarely left home for foreign visits. These leaders missed out on the opportunity to engage spontaneously face to face or with scheduled bilaterals in real life. Yet even if these leaders, and in particular Xi, made a physical appearance, it is not likely that their policy stances on coal financing would have been stronger than what was pre-decided at home. The hybrid approach did not affect the leaders' performance across the six key dimensions of summit performance. On the one hand, compliments to G20 members for their climate action remained low for the eighth straight year in a row. On the other, attention to climate change was the highest it had ever been and commitments were in a close second place.

Additionally, the hybrid approach did not sever the networks added by the host and invited guests. Italy, as host, connected the G20 to the summits of the G7, the North Atlantic Treaty Organization, the Asia-Europe Meeting and the ministerial meetings of the Food and Agriculture Organization, the World Food Programme and the International Fund for Agricultural Development. Also connected were the African Union, NEPAD and ASEAN.

Conversely, the hybrid approach did not affect the traditionally missing elements of fully in-person summits. There was still no representative from Latin America and the Caribbean or from small island developing states, from the core environmental and climate organizations, including the UNFCCC, UNEP or the UNCCD; or from Indigenous nations.

In all, a hybrid approach may have supported a stronger outcome by reinvigorating the flexibility the G20 was originally designed to embody — that is, until one accounts for the emissions footprint of the digital world and its negligible impact on increasing inclusiveness.

Conclusion

According to the certain scientific consensus, backed by the lived experiences of those on the frontlines of the climate crisis, there is only a sliver of a window of opportunity left to implement the right policies and channel the necessary money toward zero emission economies. The G20 at Rome took some small steps in this direction, spurred in large part by the highly visible climate-related shocks being experienced around the world and by growing public concern over climate change and its impacts.

Yet international cooperation at the G20 was still not enough to prevent the worst impacts of such shocks in the near or long term. The G20 did not act as a cohesive unit, failing to agree to a hard collective long-term target. Its leaders' divergent beliefs on the urgency of the climate crisis and their respective roles and responsibilities in addressing it underpinned their inability to take stronger collective action. It was also underpinned by the G20's convergence and collective supportive action for the fossil fuel sector.

The G20's first mission is to promote economic growth, based on growth of GDP. This economic system was designed to ignore the impact of human activity on the environment. This is reflected in the parallel fall and rise of the G20's GDP and emissions throughout 2020 and 2021. To meet global climate goals, the G20 must re-evaluate its values and shift from ones that prioritize any growth at all over planetary stability. On climate change it is no longer rational to argue that small progress is better than none, if that small progress is undermined by the drive to raise GDP via continued investments in oil, gas, coal, factory farms, urban sprawl and the other very well-known causes of the climate crisis, which itself is a major threat to global economic growth and financial stability.

There are many hopeful signs that the world will move in the right direction — from successful divestment campaigns to more widespread public awareness. Yet to maintain its legitimacy, the G20 itself has a long way to go to prove its leadership and shift its climate-causing investments to prevent the worst ecological and humanitarian outcomes in human history.

Suggestions for Further Research

What can G20 members now do to boost compliance with their Rome climate change commitments? Several possibilities may be revealed by further research into whether those commitments coincided with improved climate compliance in the past, including examining the relationship between commitments made or reinforced by other intergovernmental summits such as the G7 or UN summits. There may also be a relationship between G20 compliance and working groups, along with external factors such as climate shocks from extreme weather events and diversionary shocks from health. The effectiveness of these compliance enhancers or inhibitors should be measured against actual emission reductions.

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Appendix A: G20 Performance on Climate Change

Summit	Domestic political management		Deliberation		Direction setting					Decision making	Delivery		Development of global governance					
	Compliments		Words		Financial stability	Globalization for all	Priority placement	Democracy	Human rights	# commitments	Score (%)	% assessed (#)	Inside				Outside	
	#	%	#	%									# created		# references	# bodies	# references	# bodies
													Ministerial	Official level				
2008	0	0%	47	1.3%	0	0	0	0	1	0	-	-	0	0	0	0	0	0
2009 ^a	0	0%	45	1%	0	0	1	0	0	3	-0.10 (45%)	33% (1)	0	0	0	0	1	1
2009 ^b	1	5%	762	8.2%	0	0	4	0	0	3	+0.86 (93%)	33% (1)	4	0	2	2	10	5
2010 ^c	1	5%	376	3.4%	0	0	0	1	0	3	+0.42 (71%)	100% (3)	0	0	0	0	3	3
2010 ^d	2	10%	351	2.2%	0	0	2	1	0	8	+0.05 (53%)	50% (4)	5	3	10	7	20	11
2011	2	10%	654	4.6%	0	0	0	1	0	8	+0.38 (69%)	37% (3)	2	0	4	2	11	7
2012	0	0%	410	3.2%	0	0	0	1	0	6	+0.59 (80%)	50% (3)	1	5	8	3	6	5
2013	1	5%	888	3.1%	0	0	1	0	0	11	-0.17 (42%)	27% (3)	0	3	6	5	10	7
2014	0	0%	232	2.5%	0	0	0	0	0	7	+0.51 (76%)	71% (5)	0	0	0	0	4	2
2015	0	0	597	4.3%	0	0	0	0	0	3	+0.70 (85%)	85% (1)	1	1	2	2	4	3
2016	0	0	787	2.5%	0	1	0	1	0	2	+0.58 (79%)	100% (2)	1	3	4	3	5	4
2017	0	0	3,600	10.4%	0	0	1	1	1	22	+0.28 (64%)	40% (9)	0	11	11	5	26	9
2018	0	0	398	4.7%	0	0	0	0	0	3	+0.57 (79%)	100% (3)	0	0	0	0	3	3
2019	0	0	655	9.9%	1	1	0	0	0	13	+0.44 (72%)	38% (5)	1	1	3	3	10	9
2020	0	0	681	12%	2	1	0	0	0	3	+0.75 (88%)	66% (2)	0	0	2	2	4	2
2021	3	5%	3,092	31%	5	6	1	5	2	21	N/A	N/A			2	2	6	5
Total	10	-	22,717	-	8	9	10	11	4	116	-	44	15	27	54	36	124	76
Average	0.6	0.0	1,419.8	8.4%	0.5	0.6	0.6	0.7	0.3	7.3	0.38 (69%)	2.2	1.0	1.8	3.4	2.3	7.8	4.8

Notes:

N/A = not applicable.

Domestic political management includes all explicit references in summit documents by name to the full G20 members that express the G20's gratitude in the specific context of climate change to that member. The % complimented indicates how many of the 20 members received compliments, depending on how many leaders there were that year.

Deliberation refers to number of references to climate change in the documents for the summit. The unit of analysis is the paragraph. % refers to the percentage of the overall number of words in each document that relate to the climate change.

Direction setting: Priority placement refers to the number of references to climate change in the chapeau or chair's summary for the summit; the unit of analysis is the sentence. For financial stability, globalization for all, democracy and human rights, the number refers to mentions of the issue in relation to climate change; the unit of analysis is the paragraph.

Decision making refers to the number of climate change commitments in the summit documents; % assessed represents the percentage of commitments measured.

Delivery: score refers to the compliance score for climate change commitments measured for that year, converted to a percentage in parentheses; % assessed refers to the percentage of commitments assessed for compliance with the number assessments indicated in parentheses.

Development of global governance: inside refers to the number of references to G20 institutions made in relation to climate change. Ministerial refers to ministerial groups.

Official level refers to official level groups. Outside refers to the number of references to multilateral organizations related to climate change. The unit of analysis is the sentence.

^a London Summit.

^b Pittsburgh Summit.

^c Toronto Summit.

^d Seoul Summit.

Appendix B: Rome Climate Change Commitments with Compliance Potential

Rank	Commitment	Total catalysts			Enhancers				Inhibitors				Unknown	
		Enhancer	Inhibitor	Difference	Core organization	International law	High binding	Private sector	Multiyear timetable	Low binding	Money mobilized	Target	Civil society	
1	103	[Responding to the call of the scientific community, noting with concern the recent reports of the IPCC [Intergovernmental Panel on Climate Change] and mindful of our leadership role, we commit to]...work collectively to achieve a successful UNFCCC [United Nations Framework Convention on Climate Change] COP26 [26th Conference of the Parties] in Glasgow.	2	0	+2	1		1						
1	106	In this endeavour, informed by the IPCC assessments, we will accelerate our actions across mitigation, adaptation and finance, acknowledging the key relevance of achieving global net zero greenhouse gas emissions or carbon neutrality by or around mid-century and the need to strengthen global efforts required to reach the goals of the Paris Agreement.	2	0	+2		1	1						
2	104	To this end, we reaffirm our commitment to the full and effective implementation of the UNFCCC and of the Paris Agreement, taking action across mitigation, adaptation and finance during this critical decade, on the basis of the best available scientific knowledge, reflecting the principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances.	2	1	+1	1	1			1				
2	80	[We underline the many synergies in financial flows for climate, biodiversity and ecosystems, and] we will strengthen those synergies to maximize co-benefits.	1	0	+1			1						
2	102	Responding to the call of the scientific community, noting with concern the recent reports of the IPCC and mindful of our leadership role, we commit to tackle the critical and urgent threat of climate change	1	0	+1			1						
2	109	We will deliver national recovery and resilience plans that allocate, according to national circumstances, an ambitious share of the financial resources to mitigating and adapting to climate change and avoid harm to the climate and environment.	1	0	+1			1						
	110	In order to deploy the full potential of zero, low-emission, innovative, modern and clean solutions, we will collaborate to accelerate the development and deployment of the most efficient and effective solutions and help them rapidly achieve cost parity and commercial viability, including to ensure access to clean energy for all, especially in developing countries.	1	0	+1			1						
2	111	We commit to scale up public Research, Development and Deployment.	1	0	+1			1						

Warren: G20 2021 Rome Climate Change Performance

Rank	Commitment		Total catalysts			Enhancers				Inhibitors				Unknown
			Enhancer	Inhibitor	Difference	Core organization	International law	High binding	Private sector	Multyear timetable	Low binding	Money mobilized	Target	Civil society
2	112	We will increase our cooperation on enhanced country-driven capacity building and technology development and transfer on mutually agreed terms, including through key global initiatives and joint or bilateral projects on the most efficient solutions in all sectors of economy.	1	0	+1			1						
2	116	We commit to significantly reduce our collective greenhouse gas emissions, taking into account national circumstances and respecting our NDCs [nationally determined contributions].	1	0	+1			1						
2	117	We will further promote cooperation, to improve data collection, verification, and measurement in support of GHG [greenhouse gases] inventories and to provide high quality scientific data.	1	0	+1			1						
3	93	[With the involvement of businesses, citizens, academia and civil society organizations, we will]...support local actions for climate mitigation and adaptation.	2	2	0			1	1		1			1
3	105	We remain committed to the Paris Agreement goal to hold the global average temperature increase well below 2°C and to pursue efforts to limit it to 1.5°C above pre-industrial levels, also as a means to enable the achievement of the 2030 Agenda.	1	1	0		1				1			
3	107	Accordingly, recognizing that G20 members can significantly contribute to the reduction of global greenhouse gas emissions, we commit, in line with the latest scientific developments and with national circumstances, to take further action this decade and to formulate, implement, update and enhance, where necessary, our 2030 NDCs	1	1	0			1		1				
3	114	We also commit to scale up adaptation finance, with a view to achieving a balance with the provision of finance for mitigation to address the needs of developing countries including by facilitating mechanisms, conditions and procedures to access available funds, taking national strategies, priorities and needs into account.	1	1	0			1				1		
3	108	[Accordingly, recognizing that G20 members can significantly contribute to the reduction of global greenhouse gas emissions, we commit, in line with the latest scientific developments and with national circumstances, to]...formulate Long-Term Strategies that set out clear and predictable pathways consistent with the achievement of a balance between anthropogenic emissions and removal by sinks by or around mid-century, taking into account different approaches, including the Circular Carbon Economy, socio-economic, economic, technological, and market developments, and promoting the most efficient solutions.	1	1	0			1		1				

Warren: G20 2021 Rome Climate Change Performance

Rank	Commitment		Total catalysts			Enhancers				Inhibitors				Unknown
			Enhancer	Inhibitor	Difference	Core organization	International law	High binding	Private sector	Multyear timetable	Low binding	Money mobilized	Target	Civil society
4	123	As we are recovering from the crisis, we are committed to maintain energy security, while addressing climate change	0	1	-1						1			
4	127	We ask the different G20 work streams to act in synergy, within their respective mandates and while avoiding duplication, to inform our discussions on the most appropriate policy mix to move towards low-greenhouse gas emission economies, taking into account national circumstances.	0	1	-1						1			
5	115	We recall and reaffirm the commitment made by developed countries, to the goal of mobilizing jointly USD 100 billion per year by 2020 and annually through 2025 to address the needs of developing countries, in the context of meaningful mitigation actions and transparency on implementation and stress the importance of meeting that goal fully as soon as possible.	0	4	-4					1	1	1	1	
Total			20	13	+7	2	3	13	1	3	6	2	1	1