T20
SAUDI ARABIA 2020
THINK

POLICY BRIEF
REINFORCING GLOBAL CLIMATE GOVERNANCE TO DELIVER HIGHER AMBITION

Task Force 5
THE FUTURE OF MULTILATERALISM AND GLOBAL GOVERNANCE

Authors
MARI LUOMI, JENNIFER ALLAN, RISHIKESH BHANDARY

موجز السياسة
تعزيز حوكمة المناخ العالمي لرفع سقف الطموح

فريق العمل الخامس
مستقبل التعددية والحوكمة العالمية

المؤلفون
ماري لومي، جينيفر آلان، ريشيكيش بهانداري

ABSTRACT

This policy brief outlines how the unique characteristics of the Group of 20 (G20), namely its limited membership, informality, and economic orientation, can be leveraged to promote climate action. We identify four ways in which the G20 can support multilateral climate activities and specify gaps the G20 can uniquely fill to reinforce global climate governance while addressing the socioeconomic consequences of COVID-19. We also propose that the G20 strengthen engagement with two new groups: major G20 cities and regions and vulnerable countries, which are key stakeholders in climate governance and can enrich the discussions and decisions of the G20.

يعـرض موجـز السياسـة هـذا كيفية الاسـتفادة مـن الخصائـص الفريـدة لمجموعـة العشـرين، وتحديـدًا عضويتها المحـدودة وطابعهـا غيـر الرسـمي وتوجههـا الاقتصـادي، لتعزيـز الأعمـال المتعلقـة بالمنـاخ. تـم تحديـد أربعـة طـرق يمكـن مـن خلالهـا أن تدعـم مجموعـة العشـرين أنشـطة المنـاخ متعـددة الأطـراف، وتحديد الفجـوات التي يمكنهـا سـدها بشـكل فريـد لتعزيـز حوكمـة المنـاخ العالمـي، مـع التصـدي للعواقـب الاجتماعيـة والاقتصاديـة جـراء جائحـة فيـروس كورونـا المسـتجد. كمـا نقتـرح علـى مجموعـة العشـرين تعزيـز تعاونهـا مـع مجموعتيـن جديدتيـن: مـدن ومناطـق مجموعـة العشـرين الرئيسـية، والـدول المعرضـة للخطـر التي تُعـد أصحـاب مصلحـة رئيسـية فـي حوكمـة المنـاخ، ويمكنهـا إثـراء مناقشـات مجموعـة العشـرين وقراراتهـا.

CHALLENGE

The United Nations (UN) estimates that to stay well below 2°C of global warming, countries' collective ambition, as articulated in their nationally determined contributions (NDCs) under the Paris Agreement, needs to increase threefold. To stay below 1.5°C of warming, this increase should be at least fivefold (UNEP 2019). While 2020 was expected to be a critical year for raising ambition, culminating in the UN Glasgow Climate Change Conference (COP 26), the COVID-19 pandemic has both prompted a one-year delay to this political moment and shifted many governments' focus to the short-term health response. While the economic shock is expected to lead to an 8% fall in annual energy-related carbon dioxide emissions (IEA 2020), there are fears that many major governments may not propose enhanced climate commitments in 2020 (CAT 2020).[1]

It is paramount to identify ways to rally the full ability of the global governance forums urgently to help deliver higher ambition in emissions reductions, adaptation, and support in low income countries.

The UN Framework Convention on Climate Change (UNFCCC) remains the central institution in the global climate change governance architecture. It produced the much-celebrated Paris Agreement, which is based on a universal "bottom-up approach," whereby countries submit their NDCs with little international oversight. In a time of rising populism, isolationism, and geopolitical competition worldwide, the UNFCCC regime appears unable to coax countries toward higher ambition on climate action. The UNFCCC system is also encountering challenges in shifting from an "architecture building mode" to an "implementation support mode."[2] The UNFCCC is in dire need of support from major economies to spur meaningful implementation.

---

1. As of June 2020, five G20 countries were not expected to submit an NDC with a strengthened target by the end of the year.
2. This was particularly visible at the 2019 UN Climate Change Conference in Madrid, which signaled low ambition and saw little discussion of issues key to developing countries. The broader ambition problem, however, goes beyond the UNFCCC: the UN Secretary-General's 2019 Climate Action Summit, for example, delivered equally modest results.

The G20 represents most of the world's largest economies, and consequently, also the world's largest emitters of greenhouse gases. The leadership potential is immense and untapped. Only seven G20 members have so far submitted long-term low greenhouse gas emissions development strategies, which are part of the Paris Agreement's requirements. None have yet submitted an enhanced NDC—something requested of all Paris Agreement parties in 2020. According to the United Nations Environment Programme (UNEP), G20 countries are collectively not on track to meet their 2015 Paris pledges and are instead increasing investment in fossil fuel production (SEI et al. 2019).

G20 countries can play a fundamental role in delivering higher multilateral ambition on climate action, as they collectively generate 75% of global greenhouse gas emissions (World Resources Institute n.d.).[3] Reinforcing global climate governance must include efforts to catalyze ambition among G20 states and channel the potential of the G20 forum into supporting a more ambitious climate regime. It is also fundamental to leverage synergies between the UNFCCC and G20 to raise climate ambition. Furthermore, it is important to engage other constituent parts and key stakeholders of the global climate change regime in ways that maximize ambition while ensuring that no one is left behind. Finally, in the short term, actions should be focused on aligning the economic recovery from COVID-19 with raising climate change ambition.

---

3. Greenhouse gas emissions data for 2014.

PROPOSAL

With an eye on bridging the gaps described above, this brief begins by detailing the unique added value of the G20 in tackling the climate crisis. It then presents concrete proposals in two areas, with a specific focus on how the COVID-19 pandemic affects each. First, it identifies ways in which the G20 can support the UNFCCC in re-establishing itself as the central mechanism for facilitating global ambition on climate action. It specifies areas where the G20 can help bridge gaps in the UNFCCC and the global climate change regime, particularly on issues where the UNFCCC may not be fit for delivering on ambition. Second, the brief proposes new engagement modalities that integrate subnational actors more closely into the G20's work on climate change. These strengthen collaboration with other relevant intergovernmental fora, such as the vulnerable countries' V20. Figure 1 provides a visualization of the six proposals we put forward in these two areas.

The G20's added value

The rationale for additional action and new modalities: To date, the G20 has addressed climate change in multiple ways. Climate change and energy were first added to the agenda in 2009, and the Energy Sustainability Working Group and Climate Sustainability Working Group have been operational since 2013 and 2018, respectively.[4] Climate change is also discussed in other working groups and high-level tracks. The Financial Stability Board has been examining climate disclosures and the financial stability implications of climate change for the G20 since 2015 (G20 2020). However, some suggest that the G20 working groups "can be best described as political dialogue forums" rather than focusing on ratcheting up ambition on climate action (Mourier 2020).

Climate change has also featured prominently on recent G20 presidencies' agendas. At the highest level, experts have counted "53 precise, future-oriented, politically binding commitments on climate change" issued by G20 leaders from 2008 to 2016, with a compliance rate of 65% by 2018 (Kirton and Warren 2018).[5] However, in recent years, G20 countries have encountered difficulties with common references to climate change in the final leaders' summit communiqués. G20 members have found ways to avoid falling to the "lowest common denominator" in their joint statements. However, recent years' differences regarding UN-centered global climate action have demonstrated the need for new tools and approaches.

---

4. An Energy Transitions Working Group also met in 2019 and a Climate Stewardship Working Group is convening in 2020. See the Japanese Ministry of Foreign Affairs (https://www.mofa.go.jp/ic/ch/page25e_000301.html), IEF (https://www.ief.org/events/1st-g20-energy-transitions-working-group-meeting), and G20 Saudi Presidency (https://g20.org/en/g20/Pages/events.aspx) websites.
5. The study found that compliance with commitments relating to the UNFCCC or international law was 70%, relating to green growth was 73%, and relating to climate finance was 50%.

There are three main characteristics of the G20 that its members need to take into account, and that they can build on, as they seek ways to strengthen global climate change governance and action (see Figure 2):

• Limited membership and representation;

• Low institutionalization and formality; and

• Economic framing and orientation toward action.

A. Measures to support the UNFCCC
The G20 must not duplicate the roles or efforts already undertaken by the UNFCCC or other important institutional actors in the global climate regime. However, the G20 can build on its strengths and support the UNFCCC in four ways, starting in 2020:

1. Establish opt-in climate clubs with strong members-only benefits.
  After the failure of the 2009 Copenhagen UN climate summit, scholars have pro-posed "minilateral climate clubs" for reasons that include higher negotiating effi-ciency and a reduction in free-riding by the formation of "coalitions of the willing." It has been suggested that by taking concerted action on climate change, the G20, as a major emitters' climate club, could support the fledgling legitimacy of the UNFC-CC by "recognizing the main emitters' demand for great power prerogatives while establishing their special responsibilities for climate mitigation" (Falkner 2015).

  The most feasible climate clubs for the G20 would be those formed by a sub-group of member countries that wish to pursue deeper cooperation in specific areas. Such clubs would be akin to the differentiated integration seen in the European Union with its Banking Union and the Euro (European Parliament 2016). Issue-spe-cific climate clubs could be formed around common target-setting at the national level (e.g., emission reductions in line with a 2°C world) or among major sectors and industries (e.g., auto industries setting electrification targets; see measure 2 below) or harmonization of emissions trading schemes and the eventual linking of such schemes. The clubs would allow for countries to opt-in when they are ready and can increase their appeal by having strong members-only benefits, such as trade- or investment-related advantages (Mourier 2020).

2. Launch cooperative work for trade-exposed sectors.

Under the UNFCCC, the focus has been on national, economy-wide approaches to target setting. One policy lever that countries can use to unlock greater ambition is to address the most trade-exposed sectors, as such sectors create the strongest competitiveness concerns. Examples include the automotive, cement, and soybean industries. As the forum for the largest economies in the world, the G20 is uniquely positioned to bring together businesses from these trade-exposed sectors.

COVID-19-related lockdowns and worldwide falling demand have brought hardship to many of these sectors, and many will need government support to survive. However, unlike in 2009, the world can no longer afford another "brown recovery" (see, e.g., Agrawala, Dussaux, and Monti 2020). Worryingly, by April 2020, only 4% of the USD 7.3 trillion already earmarked for fiscal rescue measures could be categorized as "green" (Hepburn et al. 2020). When coordinating COVID-19 recovery measures in 2020–2021, it is paramount for the G20 to agree that any rescue packages for carbon-intensive industries, such as airlines and automotive manufacturers, must come with stringent climate change-related conditionalities. These conditionalities should promote aligning economic growth with lower emission trajectories and should put in place mechanisms for just workforce transitions.

In the longer term, three areas of cooperation are possible. First, the setting of joint standards amongst these actors may be easier in the context of the G20 rather than other forums such as the UNFCCC. The Convention has its own internal dynamics that could undermine collaboration between a smaller set of actors. Second, targeted cooperation on technology improvements could help reveal the potential available for further emissions reductions. Third, regulatory harmonization amongst these actors would reduce uncertainties that businesses face and make compliance with standards in multiple jurisdictions easier for multinational companies. While sectoral approaches have been a "taboo" topic in the UNFCCC, owing to sensitivities over responsibility and burden sharing, such approaches are a natural fit for the G20. The G20 economies can protect trade-exposed sectors from competitiveness concerns while launching cooperative efforts to reduce emissions.

3. Develop a mechanism for informal signaling on NDCs.

The G20 can serve as a vital forum for informal communication, where major economies can signal to one another their intentions regarding climate change policies and finance. The Paris Agreement relocates responsibility for climate action to the national level through NDCs that should be submitted or updated every five years. Currently, ambition is low owing to uncertainty about what other countries intend to put in their plans. Trust is required to boost ambition. There is a need for informal communications regarding what countries intend to put in their NDCs. If the G20 can fulfill this role, there will be two main benefits. First, communication can assuage competitiveness concerns among major economies, helping to create a "race to the top" dynamic for greater climate ambition. Second, G20 countries included in Annex I of the UNFCCC can signal their intentions for climate finance in an informal, less binding manner through G20 discussions. Several NDCs by non-Annex I parties, some of which are also G20 members, are contingent on finance. Early signals could help these countries submit more ambitious pledges. Although such an exchange would promote frank conversations and open sharing of early intentions and ideas, there would be no formal outcome.

Such discussions would be part of the Sherpa and Environment Ministers' meetings, allowing ministers and senior officials to engage in their NDC plans. These conversations need not be in the formal, final leaders' communiqué. Rather, the intent is to allow countries to share preliminary thinking. This discussion would be on the agenda every five years—the year before countries are due to submit or update their NDCs.

With the postponement of COP 26, the need for creating a space for signaling ambition in 2020 has become even greater. The G20 could consider hosting a "climate ambition-raising event" in December 2020. At the event, countries could communicate their enhanced NDCs, low greenhouse gas emissions development strategies, and other forms of support for the Paris Agreement and global ambition on climate change. They could also offer the possibility for participation by non-G20 states and G20 non-state actors.

4. Mainstream climate change into all G20 communiqués.

The G20 engages ministers that govern a wide range of issues, from agriculture to finance. Climate change is relevant to all these issues, whether it drives increased migration, impacts crop yields, and commodity prices, or creates volatility in financial markets as oil assets become stranded. Thinking long term about governance requires thinking about climate change.

Making climate change a standing issue on the agendas of all ministerial discussions can prompt international and domestic thinking and action. The G20 can send strong signals about the priority of mainstreaming climate change in domestic policymaking and the importance of fostering COVID-19 recoveries that are green, resilient, and just. Having these discussions under the G20 can also help educate ministers who are not responsible for environmental issues on how climate change impacts their portfolios. Global discussions on the linkages between issues can also reveal areas where further research or other activities are necessary to further our understanding of the linkages.

B. Measures to engage with key actors

The G20's power to convene can help bring together new stakeholders for climate action. In this regard, we make two concrete proposals: the creation of a strengthened, permanent engagement group for major G20 cities and regions, and a forum for engagement with the Vulnerable Twenty Group of Ministers of Finance (V20).

5. Create a strengthened engagement group for major G20 cities and regions.

Both the G20 and UNFCCC seek global solutions and coordination in the face of threats such as populism, protectionism, and pandemics. Here, the G20 can learn from the UNFCCC, which has consistently sought to integrate non-state actors into the regime in multiple ways. Some of these lessons include formal, dedicated spaces for non-state actors to pledge their climate actions, which includes some monitoring of their results. Engagement with subnational actors, in particular, has enabled the UNFCCC to serve as a venue for raising ambition on climate change, at a time when the potential for ambition-raising at the intergovernmental and national levels seems severely limited. In effect, a new forum for cities and regions could serve to bypass recalcitrant states, allowing substate actors to signal future activities in a country.

Cities house a growing share of the world's population (United Nations 2018),[6] and the economic size of some subnational regions in the G20 outstrips that of many countries. For example, California is a significant global economy (Winkler 2019),[7] and its actions on standards for vehicle emissions triggered a global, sector-wide shift toward more stringent standards (Perkins and Neumayer 2012). The experiences and future policies of global megacities and regions are increasingly relevant to global governance. Since 2018, the G20 has convened mayors under the Urban 20 (U20) engagement group. An expanded G20 Subnational Leaders' engagement group would incorporate regions into the U20, thereby recognizing a broader group of significant actors in global governance. This would enable them to signal their intentions regarding issues relevant to the G20 agenda. The "Sub20" group would build and expand on the work already initiated by the U20. A city representative and a regional leader from the respective G20 presidency could be selected to act as co-chairs to ensure active engagement throughout the year.

The benefits of the engagement group are threefold. First, involving subnational leaders could help improve transparency. Cities can raise awareness if national leaders fail to meet global goals or uphold G20 promises. Second, cities and regions can provide practical, hands-on perspectives as key actors implementing decisions made globally. Furthermore, local decisions about transportation, food, housing, and other issues have global impacts, making cities potentially transformative actors in areas of climate change governance and beyond (Romero-Lankao et al. 2018). The views of mayors and other subnational leaders can contribute to G20 discussions, grounding G20 ministers in practicalities. Examples could include sharing experiences to build resilience to climate change or developing infrastructure that would increase export capacity. Third, the working group or forum would also serve as a learning opportunity for subnational leaders, building their capacity to engage and implement global solutions. Cities and regions would be better positioned to capitalize on global decisions and trends that might affect them in an increasingly interdependent, interconnected world.

6. Urban population as a share of the world's total population will grow from today's more than half to two-thirds by mid-century.
7. According to some estimates, in 2018 California was the world's fifth largest economy.

6. Establish a permanent dialogue forum with the V20.

The V20 is a high-level policy dialogue of nearly 50 countries that are highly vulnerable to climate change.[8] The group is part of the Climate Vulnerable Forum (CVF), established in 2015, which seeks to strengthen economic and financial responses to climate change. Given how climate change generally impacts those least responsible for it the most, the G20 needs to consider ways to ensure the interests of the most vulnerable are kept in view. We make one concrete proposal, which can be replicated by other major global institutions, groups, and fora working on climate action.

Direct collaboration and coordination between the G20 and the V20 would be useful for three reasons. First, despite some engagements in the past, the two groups have yet to establish a permanent forum for dialogue.[9] Such regular engagement with the V20 would create opportunities for the V20 members to test ideas, gauge support, and build a constituency of champions within the G20. The primary focus of the V20 is on accessing and mobilizing financial resources. Therefore, rallying the G20 behind the V20's specific goals would help to create momentum behind those countries that are well-represented in international financial institutions. Building a partnership with the V20 would also allow the G20 to address ongoing concerns about the legitimacy and accountability of G20 members regarding cooperation on climate change. As mentioned above, the small group setting of the G20 allows for a more efficient deal-making process; however, the lack of inclusion of those most severely impacted by climate change raises legitimacy concerns. Directly working with the V20 would help address such concerns. Similarly, the V20 members have long been the most vocal advocates of climate action in the world. They have helped avoid "race to the bottom" situations in environmental standards.

Specifically, in 2020, the G20-V20 dialogue could focus on ensuring that climate-vulnerable countries are not left behind, as they seek to recover from COVID-19 and address climate change simultaneously. Countries most vulnerable to climate change are also generally the most vulnerable to COVID-19 economic impacts. In

---

8. V20 website (https://www.v-20.org/about).
9. V20-G20 high-level dialogues were held in 2017 and 2018, and the two have collaborated in the context of the InsuResilience Global Partnership for Climate and Disaster Risk Finance and Insurance Solutions.

April 2020, the G20 agreed on a moratorium till the end of 2020 on bilateral government debt repayments for the poorest countries. A total of 76 countries will benefit from the G20 debt repayment moratorium, which incorporates conditionalities, namely a commitment to social, health, or economic crisis response spending. When considering further financial assistance, the G20 should ideally coordinate any related conditionalities with the V20 to ensure they promote recovery and development that are both socially just and climate-resilient.
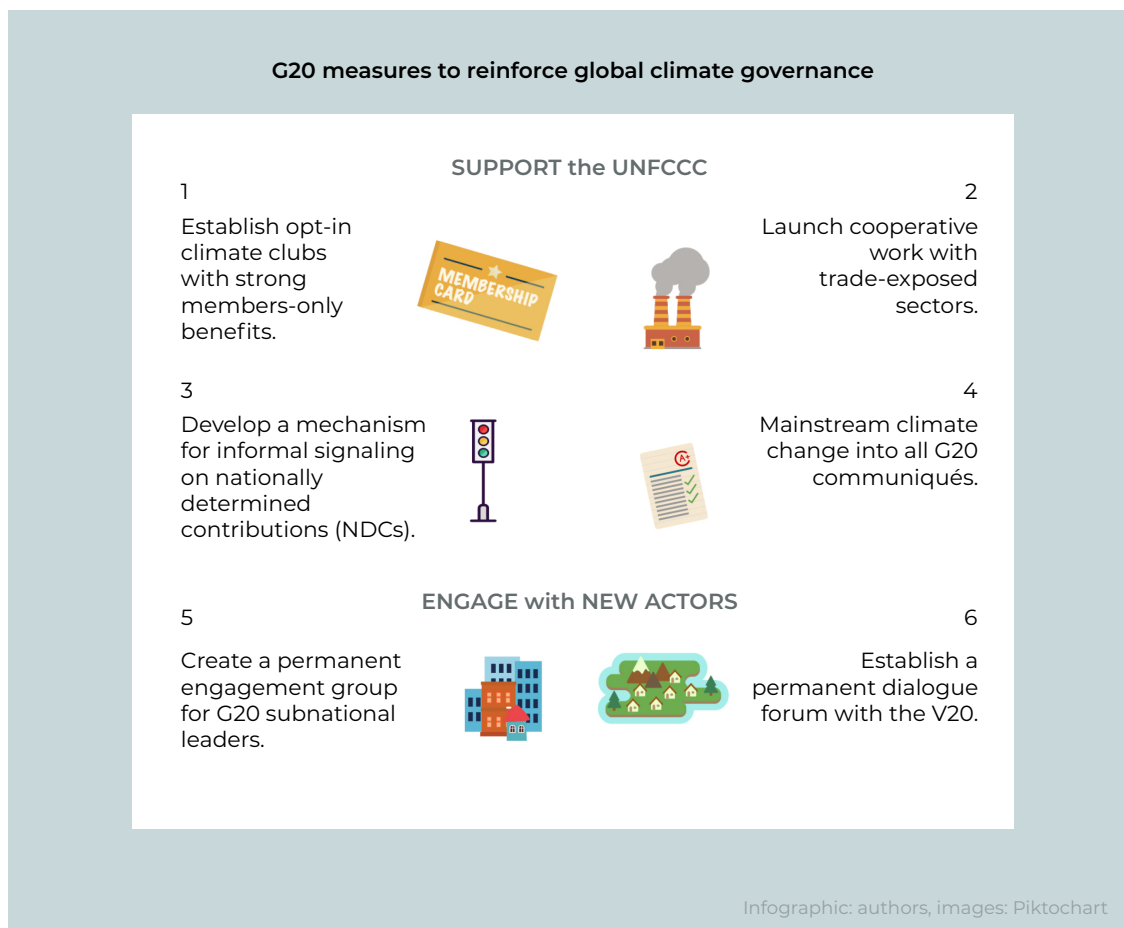

G20 measures to reinforce global climate governance

SUPPORT the UNFCCC

1

Establish opt-in climate clubs with strong members-only benefits.

2

Launch cooperative work with trade-exposed sectors.

3

Develop a mechanism for informal signaling on nationally determined contributions (NDCs).

4

Mainstream climate change into all G20 communiqués.

ENGAGE with NEW ACTORS

5

Create a permanent engagement group for G20 subnational leaders.

6

Establish a permanent dialogue forum with the V20.

Infographic: authors, images: Piktochart

Figure 1: **Measures for the G20 to reinforce global climate governance to deliver higher ambition**

Comparison of G20 and UNFCCC characteristics

G20 STRENGTHS and WEAKNESSES

	Limited membership and representation	Low institutionalization and formality	Economic framing and action orientation
+	Potential for higher ambition and effectiveness	Potential for adaptability and faster decision-making, fewer principles and processes	Strong focus on energy and economy, often operates via an action-oriented approach
—	Danger of ignoring the interests of small and vulnerable countries and groups	Lack of a secretariat or other mechanisms for institutional memory, permanent budget	All-embracing agenda, not exclusive to climate change

Limited membership and representation

The G20 lacks the universal/democratic representation of the UNFCCC, which means its decisions are likely to ignore the interests of all small and most poor countries, many of which are the least responsible for, and most vulnerable to, climate change. Its decisions should therefore always seek to take into account the needs of these groups. At the same time, many feel its membership is 'sufficiently small in number to make collective leadership possible, while sufficiently influential',[i] including in terms of the global economy, population and emissions. The G20's meetings also convene significantly more select and higher-level groups of people than those of the UNFCCC (which attracts on average 20,000 people in its annual conferences, COPs), including heads of state and ministers, focusing in most cases on a sector-specific set of issues, which increases the G20 meetings' potential for higher ambition and effectiveness.

Low institutionalization and formality

The UNFCCC operates under the UN and is bound by dense framework of formal and informal operating modalities, most prominently de facto consensus-based decision making. The UNFCCC also operates under a set of principles and provisions relating to countries' roles and responsibilities around which many of the regime's long-standing tensions evolve. In short, the UNFCCC, given its role as the leading institution of the global climate regime, generally tends to prioritize universality and legitimacy over speed. The G20, in turn, is nimble on both counts: it has recently shown adaptability in decision making in situations where an overwhelming majority of its members support a goal.[ii] Also, thorny North-South debates have been a less defining feature of G20 debates. Freedom from contentious UNFCCC principles regarding burden sharing could enable more free discussions and action. Furthermore, its network set-up makes the G20 'strong enough in terms of professional expertise in order to choose its goal[s] freely[iii] and hence able to adapt its agenda much faster than the UNFCCC despite not having a permanent secretariat. As a result, the G20 can also be described as more action oriented than the UNFCCC.

Economic framing, action orientation

Also, the fact that the G20 has a strong focus on economic issues, unlike the UNFCCC which is set up as an environmental agreement, has facilitated deliberations on issues the UNFCCC has been unable to tackle despite its exclusive focus on climate change: while the 2015 Paris Agreement is void of substantive references to energy–the source of two-thirds of human-made GHG emissions–the G20 has addressed numerous related issues such as fossil fuel subsidy reform, energy transitions, sustainable energy, and financial stability implications of climate change, among others, often via an action-oriented approach.[iv]

Sources:
i&iii) Shower 2018, 6.

ii) In the G20 leaders' declarations in 2018 (paras 20-21) and 2009 (paras 35-36), instead of requiring full consensus, G20 found a rather pragmatic solution to this by issuing separate positions from the US and other countries (latter referred to as "Signatories to the Paris Agreement') on the sour of climate change.

iv) See e.g. Kirton 2020; Mead 2019; IEF, '1st G20 Energy Transitions Working Group Meeting', 2019 https://www.ief.org/evens/1st-g20-energy-transitions-working-group-meeting.

Figure 2: **G20 weaknesses and strengths vis-à-vis supporting the global climate governance regime**

Disclaimer

This policy brief was developed and written by the authors and has undergone a peer review process. The views and opinions expressed in this policy brief are those of the authors and do not necessarily reflect the official policy or position of the authors' organizations or the T20 Secretariat.

REFERENCES

Agrawala, Shardul, Damien Dussaux, and Norbert Monti. 2020. "What Policies for Greening the Crisis Response and Economic Recovery? Lessons Learned from Past Green Stimulus Measures and Implications for the COVID-19 Crisis." OECD Environment Working Papers, No. 164, OECD Publishing, Paris. https://doi.org/10.1787/c50f186f-en

Climate Action Tracker. 2020. "CAT Climate Target Update Tracker." Last modified May 20, 2020. https://climateactiontracker.org/climate-target-update-tracker

European Parliament. 2016. "Differentiated Integration in the European Union." At a Glance Infographic. Accessed March 7, 2020. https://www.europarl.europa.eu/RegData/etudes/ATAG/2016/573961/EPRS_ATA(2016)573961_EN.pdf

Falkner, Robert. 2015. "A Minilateral Solution for Global Climate Change? On Bargaining Efficiency, Club Benefits, and International Legitimacy." Centre for Climate Change Economics and Policy, Working Paper No. 222; Grantham Research Institute on Climate Change and the Environment, Working Paper No. 197.

G20. 2020. Communiqué. Finance Ministers and Central Bank Governors Meeting. Accessed March 3, 2020. https://g20.org/en/g20/Documents/Communique%CC%81%20Final%2022-23%20February%202020.pdf

Hepburn, Cameron, Brian O' Callaghan, Nicholas Stern, Joseph Stiglitz, and Dimitri Zenghelis. "Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?" Oxford Smith School of Enterprise and the Environment, 36.

IEA (International Energy Agency). 2020. "Global Energy Review, 2020." Accessed June 9, 2020. https://www.iea.org/reports/global-energy-review-2020/global-energy-and-co2-emissions-in-2020

Kirton, John. 2020. "Integrating the Environment into the G20 Finance Meeting." G20 Information Centre, G20 Research Group; University of Toronto, February 24, 2020. http://www.g20.utoronto.ca/analysis/200224-kirton.html

Kirton, John, and Brittaney Warren. 2018. "G20 Climate Change Governance: Performance, Prospects, Proposals." Pre-G20 summit conference - Prospects and Possibilities for Japan's 2019 G20 Osaka Summit. Soka University, Tokyo, Japan, December 10, 2018.

Mead, Leila. 2019. "G20 Meetings Urge Energy Transitions for Sustainable Growth." IISD SDG Knowledge Hub, July 4, 2019. https://sdg.iisd.org/news/g20-meetings-urge-energy-transitions-for-sustainable-growth

Mourier, Louis. 2020. "The Second Generation of Climate Minilateralism. Building a New Mitigation Alliance." International Reports Online. No. 19; Konrad Adenauer Stiftung, March 16, 2020. https://www.kas.de/en/web/auslandsinformationen/artikel/detail/-/content/the-second-generation-of-climate-minilateralism

Perkins, Richard, and Eric Neumayer. 2012. "Does the 'California effect' Operate Across Borders? Trading-and Investing-Up in Automobile Emission Standards." Journal of European public policy, 19 (2): 217–37.

Romero-Lankao, Patricia, Harriet Bulkeley, Mark Pelling, Sarah Burch, David J. Gordon, Joyeeta Gupta, Craig Johnson, et al. 2018. "Urban Transformative Potential in A Changing Climate." Nature Climate Change, 8 (9): 754–56.

SEI (Stockholm Environment Institute), IISD (International Institute for Sustainable Development), ODI (Overseas Development Institute), Climate Analytics, CICERO (Centre for International Climate and Environmental Research), and UNEP (UN Environment Programme). 2019. "The Production Gap: The Discrepancy Between Countries' Planned Fossil Fuel Production and Global Production Levels Consistent with Limiting Warming to 1.5°C or 2°C." Accessed March 13, 2020. http://production-gap.org/wp-content/uploads/2019/11/Production-Gap-Report-2019-Executive-Summary.pdf

Snower, J. Dennis. 2018. "The G20 at a Crossroads: The Future of Global Governance." Social Cohesion, Global Governance and the Future of Politics; T20 Argentina 2018. Last Modified October 9, 2019. https://www.g20-insights.org/policy_briefs/the-g20-at-a-crossroads-the-future-of-global-governance

UNEP (UN Environment Programme). 2019. "The Emissions Gap Report 2019: A UN Environment Synthesis Report." Last Modified, November 26, 2019. https://wedocs. unep.org/bitstream/handle/20.500.11822/30797/EGR2019.pdf

United Nations. 2018. "68% of the World Population Projected to Live in Urban Areas by 2050, says UN." UN Department of Economic and Social Affairs, May 16, 2018, https:// www.un.org/development/desa/en/news/population/2018-revision-of-world-urban-ization-prospects.html

Winkler A. Matthew. 2019. "The California Economy Isn't Just a U.S. Powerhouse," Bloomberg, April 24, 2019. https://www.bloomberg.com/opinion/articles/2019-04-24/ california-economy-soars-above-u-k-france-and-italy

World Resources Institute, n.d. "CAIT Climate Data Explorer." Accessed May 18, 2020. http://cait.wri.org/historical

AUTHORS

Mari Luomi
Independent Expert

Jennifer Allan
Cardiff University

Rishikesh Bhandary
Center for International Environment and Resource Policy Tufts University