WEATHERING RISK

Seven questions for the G7

Superforecasting climate-fragility risks for the coming decade

GOOD JUDGMENT

adelphi

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About Good Judgment

Good Judgment Inc is the world's most accurate geopolitical and global risk forecasting entity. The winner of a four-year, $20 million forecasting research project run by the US Office of the Director of National Intelligence, Good Judgment uses its science-backed, wisdom-of-the-crowd methodologies to deliver accurate forecasts to clients in government, finance and business and the non-profit sector. Good Judgment's Superforecaster teams are small sets of forecasters from around the world with an unsurpassed track record for sustained accuracy across hundreds of questions over the past decade.

About adelphi

adelphi is the leading independent think-and-do tank in Europe for climate, environment and development. With some 280 strategists, thought leaders and practitioners working at the local and global levels, adelphi strives to find solutions to the most urgent political, economic and social challenges of our time, including climate risk, fragility and the need for a just transition toward carbon neutrality and sustainable, liveable societies. Through transdisciplinary research, evidence-based consulting and stakeholder dialogues, adelphi shapes policy agendas, facilitates political communication, informs policy processes and supports decision-makers.

About Weathering Risk

Weathering Risk, led by adelphi and the Potsdam Institute for Climate Impact Research (PIK), unites state-of-the-art climate impact data and expert conflict analysis to promote peace and resilience in a changing climate. This multilateral initiative is developing analysis, tools and trainings grounded in geographically and thematically focused climate security risk assessments. With these, Weathering Risk facilitates risk-informed planning, enhances capacity for action and improves operational responses that promote climate resilience and peace.

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Executive Summary

The climate crisis is increasingly recognised as an impediment to peace and stability, particularly in fragile contexts. Research has highlighted how the impacts of climate change can compound existing fragility, thereby increasing the likelihood of population displacement, food insecurity, international conflicts over water, instability in countries dependent on fossil fuel exports and fragility in megacities, among other risks. At the same time, effective multilateral action to reduce emissions and manage the cascading effects of climate change impacts can help mitigate the consequences of the climate crisis for peace, stability and human security worldwide. We have a choice—or, rather, many choices.

This report, ***Seven questions for the G7. Superforecasting climate-fragility risks for the coming decade,*** addresses these dimensions of climate-linked fragility to spotlight key areas requiring consistent attention from policymakers over the coming decade. It is the first report of its kind that applies a Superforecasting methodology to climate-related risks to peace and stability. It was commissioned by the multilaterally-backed climate security initiative Weathering Risk. Forecasts were produced by Good Judgment, the world's most accurate geopolitical and global risk forecasting entity. Recommended policy actions were proposed by adelphi, the leading independent think-and-do tank in Europe for climate, environment and development.

Using specific forecast metrics, Superforecasters were asked to answer seven questions about climate-related risks over the coming decade until 2031:

1) How effective will multilateralism be in the next decade, in particular around the global climate regime?
2) To what extent will climate change strengthen international solidarity?
3) How and where will climate change fuel instability across fragile settings around the world?
4) How much and where will food prices fuel instability across fragile settings around the world?
5) As climate change impacts intensify, where and to what extent will megacities in low- and lower-middle-income countries become more fragile?
6) Where will stresses on water governance increase security risks?
7) Will oil-producing countries remain stable in a decarbonising world economy?

Taken together, the forecasts from the Superforecasters paint an alarming picture of the world in 2031: our planet will (still) be on track for disastrous global warming by the end of this century, with insufficient finance available for effective adaptation or mitigation. Climate change will increasingly contribute to population displacement, increased fragility in megacities and spikes in food prices. It will also accelerate factors that could contribute to instability in countries relying on fossil fuel exports, and conflicts between countries sharing river systems.

However, such outcomes are far from inevitable. Policymakers' action on these risk areas can avert the worst consequences. If they leverage their power, lead by example and constructively engage partners, G7 nations have it in their power to alter two key variables that have informed the Superforecasters' analysis. First, the fragility risks associated with climate change need to receive more attention from policymakers and peace and development programmers, in order to reduce the negative cascading effects on the stability of economies and societies that the climate change we cannot avoid any more implies. Second, climate action needs to become commensurate with our collective interest in avoiding and preventing climate change as much as we can. Changing these two factors can change the future. Conversely, continuing insufficient action on the climate crisis will lead to an even more pessimistic scenario for the future.

In response to the seven questions set out above, the Superforecasters arrived at these key findings:

In November 2021, the Climate Action Tracker (CAT) projected a global 2.7°C warming above pre-industrial levels by 2100. Superforecasters see an 84% probability that in 2031 the CAT's predictions on this same metric will be more than 2.2°C for the year 2100. In other words, Superforecasters expect insufficient climate action until at least 2030 or even 2040.

Even though increased climate funding can be expected over the next ten years, it will likely remain insufficient to address growing needs.

Whatever the exact level of warming at the end of the century, Superforecasters expect that climate change will contribute significantly to global instability in the next decade, particularly in already fragile settings.

While Superforecasters do not expect global food prices to have risen dramatically by 2031 due to adaptation and technological developments, many of them foresee at least one major food price spike in the next decade due to the increasing frequency of extreme weather events and the possibility of trade restrictions when harvests fail.

Superforecasters predict that it is more likely than not that a majority of megacities in low- and lower-middle-income countries will be more fragile in 2031 than they were in 2015, because they suffer from pre-existing fragility, have gaps in infrastructure and are vulnerable to the adverse effects of climate change.

A majority of Superforecasters expects that there will not be a deadly interstate conflict explicitly related to water in the countries under investigation before 2032. This forecast does not necessarily imply that incidents of violence in and among these countries will not take place in this period, but that Superforecasters assess that countries are unlikely to use water as a direct justification for conflict.

Superforecasters estimate that the world will not wean itself off oil fast enough for decarbonisation to destabilise major oil exporting countries over the next ten years. Instead, they expect that the growing global middle class will increase our collective reliance on fossil fuels.

RECOMMENDATIONS

The Superforecasters' forecasts and commentary in this report spotlight key indicators that decision-makers should monitor over the next decade. They also imply specific actions that need to be taken now to reduce future risks. Working with partner governments, businesses, researchers and civil society, G7 countries should:

- develop accountability mechanisms on multilateral climate action;
- make good on climate finance pledges to support fragile and poorer countries in dealing with the effects of climate change, as well as increase the scale of the $100 billion commitment;
- integrate climate-security work more systematically into development, humanitarian and peacebuilding sectors and advocate for incorporating the security effects of climate change into multilateral fora and institutions, strategies, policies and programmes;
- help ensure sustainable, inclusive and resilient food supply chains, invest in climate-smart agriculture and advocate for actions to transform agri-food systems towards green and climate resilient practices;
- advocate for and invest in climate-smart programmes for urban centres to help cities build climate resilience and realise climate adaptation ambitions;
- enhance efforts to build and strengthen trans-boundary institutions that can promote joint assessment, planning and risk management of shared waters, especially with a view to adapting to, and building resilience against climate change impacts and related uncertainty;
- seek to engage partners in countries dependent on fossil fuel exports with a view to delineating evolutionary pathways that limit the destabilising effects of the energy transition, not least by facilitating new forms of energy-related cooperation around renewables and (green) hydrogen.

A full set of recommendations proposed by experts at adelphi is included at the end of this report.

Introduction and methodology

adelphi engaged Good Judgment to analyse seven critical questions that policymakers need to focus on to accurately assess climate risks in the coming decade: state and city fragility, food and water insecurity, the future of decarbonisation and the chances of successful multilateralism in the face of enormous challenges presented by climate change. These questions have profound implications for the next decade and beyond. They are examined first through a narrower set of objectively falsifiable forecast metrics, followed by a wider discussion of the overarching questions. Each of the seven forecasting questions thus has a specific forecast metric and selected case studies that serve as proxies to answer the broader forecast topic. While each of the Superforecasters provides a specific estimation on the forecast metric, the drivers of the consensus forecast derive from qualitative analysis of the interactive and iterative process of Superforecasting.

Thirty of the top Superforecasters were assigned to work on this project:

- 25 to forecast directly on the questions posed, and
- 5 others to work as a "Red Team"—to question the data and challenge the arguments used by the forecasting team.

An additional half dozen Superforecasters also joined in on the forecasting and deliberations during the course of this project, such that more than 30 Superforecasters worked on each of the seven questions, entering a total of 1,036 distinct forecasts.

After finalising the question text and resolution criteria with adelphi, Good Judgment launched each question to the Superforecasters in a 96-hour "question preview" period. During this time, the Superforecasters could begin research on the question topics and start to formulate their forecasts, but no aggregate forecast of the team was available. This preview period is intended to help the Superforecasters avoid "group think" by removing the possible anchor of a consensus forecast. Rather, each individual works to find their own data, formulate their own arguments and make their own forecast. After 96 hours had elapsed, Good Judgment began to aggregate the discrete forecasts of the team using a "logit" aggregation algorithm, which slightly upweights forecasts based on the historical accuracy of the forecaster. Aggregation of probability estimates of many individuals to form a consensus probability estimate was shown to result in more accurate forecasts (wisdom-of-the-crowd effect), and this effect is even stronger for groups of Superforecasters.

Each team of Superforecasters for this study included a smaller review team—the "Red Team"—of Superforecasters who did not themselves forecast, but rather who critiqued the teams' thinking and suggested alternative arguments for consideration. They highlighted new details or new arguments that, in their view, forecasters had not fully considered. This results in forecasts that are better informed by multiple data sets and paradigms. After a month of the Superforecasters' work, Good Judgment staff began the process of organising and presenting these forecasts and findings to adelphi. Superforecasters are not required to agree with each other on their forecasts or their reasoning. This report, therefore, is an effort to describe the main lines of thinking of a disparate and diverse group. Representative commentary from the Superforecasters is provided in this report in quotation marks.

ABOUT THE SUPERFORECASTERS

To generate the most accurate forecasts available, Good Judgment works with some 180 Superforecasters from around the world whose forecasting accuracy placed them in the top 1–2% of the more than 100,000 forecasters who took part in the US Government research project or who were identified through the public forecasting platform Good Judgment Open. These Superforecasters are a diverse group, with professions ranging from finance to intelligence, management to medicine and psychology to archaeology. Most have one or more graduate degrees and a third have doctorates. A third of Superforecasters live outside of the US and most speak two or more languages. In 2013–14, many of these Superforecasters were compared directly to 4,300 members of the US Intelligence Community on the same set of 139 geopolitical forecasting questions. Superforecaster-generated forecasts were 34,7% more accurate.

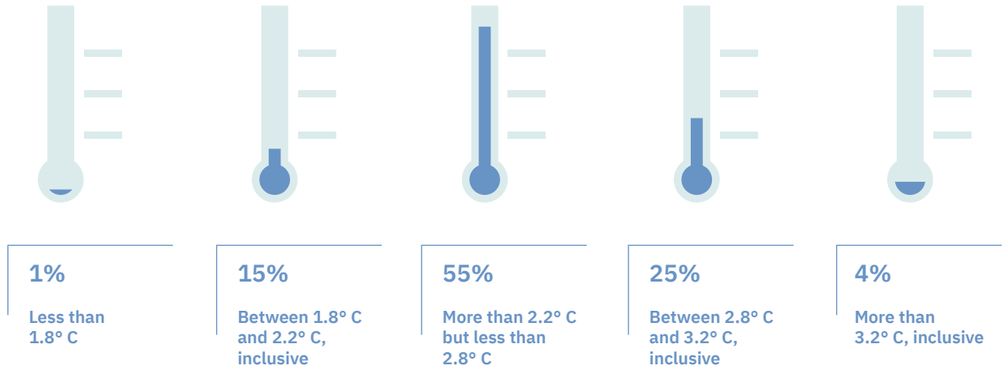
Question 1: How effective will multilateralism be in the next decade, in particular around the global climate regime?

BACKGROUND:
One critical dimension of international regime effectiveness is whether the global climate policy process manages to nudge those states responsible for the largest share of past, present and near-future emissions toward a "race to the bottom" in terms of net emissions. The forecast metric of the modelled effect of the policies and action in force by the end of 2031 on temperatures in 2100 is only a proxy, not only due to the uncertainties inherent in the modelling vis-à-vis real-world effects, but also due to the assumption that ambitious policies, if adopted over the coming decade, would reflect global cooperation rather than sharpened systemic competition focused on the green transition for strategic, industrial economic, propaganda or other reasons.

FORECAST METRIC

In 2031, what will be the Climate Action Tracker's projected global temperature increase for the year 2100?

Figure 1: Probability that Superforecasters assign to each answer option.



Summary: Chances of effective multilateralism in the coming decade

This question focuses on the probability of effective multilateralism in the climate arena in the coming decade. A shared understanding of the climate crisis will be crucial for the green transition to reduce future net emissions. Some signs have been promising: The EU passed relevant laws that have both mandatory parameters and funding. In the US, the 2021 Infrastructure Bill is promoting a switch to electric vehicles. Companies and countries have declared various carbon-neutral targets. A wider discourse on the climate crisis now spans international borders.

On the other hand, in its final document, COP26 mentioned no funding mechanism to help poorer countries in the transition. With factors such as short-term national self-interest at play and a current lack of an enforcement mechanism, **Superforecasters see an 84% probability that the Climate Action Tracker will project a temperature increase of more than 2.2°C in 2031 for the year 2100.**

Popular opinion, at least in part influenced by a shared experience of catastrophic events, could help sway policymakers to take bolder measures to lower the emissions. But heightened levels of political polarisation, a focus on short-term economic growth and/or low trust in institutions at home would undermine the feasibility and effectiveness of multilateral cooperation. **Superforecasters expect little climate action until at least 2030 or even 2040. Voluntary measures in the next decade will likely result in countries missing their climate targets.** This, in turn, will lead to higher global temperature increases.

Drivers of the consensus forecast

Superforecasters expect **national self-interest to continue to drive climate policies.** While some governments, particularly in democracies, may begin to respond to popular demand to decarbonise or work together to combat climate change, others will do so only if it minimises costs and maximises benefits. A switch to renewable energy is more likely to happen for economic—not global environmental—reasons in most countries. As such, climate action is a "co-benefit." To increase international cooperation in the area of climate risk mitigation, some researchers have proposed the idea of "carbon clubs," a complementary measure to the voluntary commitments of the Paris Agreement. Carbon clubs are essentially coalitions of willing nations that commit to mitigation targets, coordinate climate policies and share exclusive membership perks, such as preferential trade rules. Membership is contingent on implementation of specific policies. The EU is essentially one such club and showcases how this works. Movement toward such policies in the coming decade could help keep the projected global mean temperature increase range below 2.8°C. On the other hand, **short-term self-interest may preclude successful multilateralism** and/or ambitious climate policies if the benefits of those are not clear to the population and policymakers. Superforecasters will be looking for the type of messaging climate policies get in the coming decade.

> Climate policy will continue to be shaped by national self-interest (carrots and sticks), rather than sacrificial action in the name of the greater good. A general finding of recent research is that a significantly cleaner electricity system than the one we have today will cost less or about the same as a dirtier system. This is in no small part driven by technological innovations in energy storage, which provides a cost-effective way of balancing renewable intermittency. More generally, economists have for some time pointed out that climate action comes with significant co-benefits, which justify decarbonisation on purely economic grounds.

Popular opinion is expected to play an increasing role in climate action at home and abroad in the next decade. As more young people enter the electorate every year, the issue of climate change will become increasingly central, especially in democracies—but even autocrats are likely to follow the will of the people to the extent that they see it as a benefit. Another vector of influence is the effect of consumer behaviour on global corporations. While at least some of the corporate reaction to public and consumer opinion undoubtedly falls under the category of "greenwashing," corporate actions may foster a "virtuous positive feedback loop," driving more innovation and decreasing costs in clean technologies and encouraging more corporations—and lawmakers they support—toward green shifts.

A **shared experience of catastrophic events,** due to the increasing rate of extreme weather events and the brunt of climate change effects borne by the poor and the middle class of a growing number of countries, **is expected to cement this trend.**

> I think there will be more and more pressure on the governments and the international community to do something about climate change, and there will be the expectation to see progress. I do expect the projected mean temperature to go down steadily from the current value.

> I am seeing a zeitgeist shift on the ground these days. As consumers become motivated to change behaviour, companies respond by changing corporate behaviour, and put their lobbying money behind politicians who will reward them for becoming more carbon neutral.

Technological advances paired with changing attitudes toward climate risk will lead to increasing pressure within individual countries to address climate change. Cost-effective energy sources, innovations in energy storage as a solution for the intermittency of renewable energy, and potential savings from electrifying transport are among the promising developments that may result in a wider adoption of clean energy in the coming decade and beyond. Most solutions for agriculture, cement production and steel recycling are, however, at least another decade away due to slow buy-in. Furthermore, **the effects of** other **new technologies,** such as renewable energy, **may not yet be felt sufficiently in the coming decade** and there has been backsliding on reducing carbon emissions. Further backsliding would make Superforecasters revisit their probabilities for a more than 3.2°C increase.

> What hope I have is based on the possibility of scientific advances in green energy, to make it eventually cheaper than fossil fuels, and easier to implement. If we have that, then we have a chance.

The backsliding on reducing emissions shows that **domestic politics could be both a driver of and a hurdle to climate action.** Countries with heightened levels of polarisation, a focus on short-term economic growth or low trust in domestic and international institutions are less likely to support climate action and multilateral cooperation. Superforecasters will change their forecast toward a more pessimistic projection if they see further signs of these trends taking hold in even more countries around the globe.

> If people do not trust their institutions, they will likely not support any multilateral cooperation.

Finally, **lack of an enforcement mechanism** means climate action will remain voluntary in the next ten years. According to Superforecasters, voluntary measures are necessary but insufficient, in the absence of enforceable conditions, to address the immense risks presented by net emissions and rising global temperatures. Unless there is a functional global framework with measurement, penalties and enforcement, global cooperation on this issue is unlikely to succeed. Given the current international environment, the situation is unlikely to change in the coming decade, as it would require countries, including those with antagonistic relations such as the US and China, to agree to a meaningful framework with real penalties.

> Climate action is akin to 200 countries playing a large-scale prisoners' dilemma game. As the Paris Accords and the UN Climate Change Conferences do not have any enforcement mechanism or penalties for defecting, there is a large incentive for countries individually not to live up to the promises of the accords. To fix this, we would need independent monitoring plus real penalties and costs for exceeding limits. It would need to be like a global, enforced carbon market. The current accords and agreements are a start, but they are nowhere sufficient to effect any change.

Question 2: To what extent will climate change strengthen international solidarity?

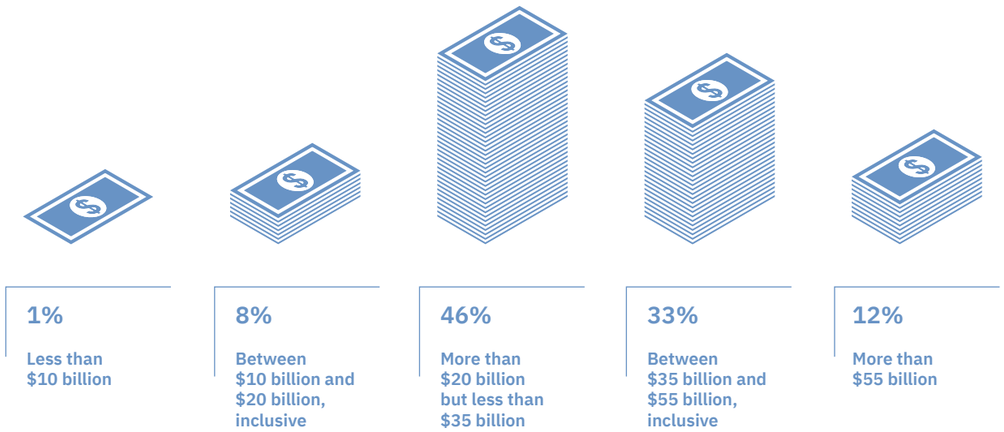
BACKGROUND

Given the global nature of many current challenges and climate change in particular, the quality of global cooperation will have a significant impact on the effectiveness of governance. Climate change is often cited as an example where multilateral cooperation has been fairly successful, despite significant tensions between great (and lesser) powers. It is also considered an area that many governments would like to shield from systemic competition—or, at least, the worst effects of it. At the same time, it is one of the most salient policy fields for discussing global justice and inequity. Given the shared challenge, how much international solidarity and cooperation will governments exhibit in addressing climate challenges and what factors will drive this solidarity?

FORECAST METRIC

What will be the total financing committed to the Green Climate Fund as of 31 December 2031?

Figure 2: Probability that Superforecasters assign to each answer option.



Summary: Climate financing and solidarity

The forecast metric focuses on the Green Climate Fund (GCF) as one critical vehicle for helping to leverage a global green transformation. The broader question examines how much international solidarity and cooperation can be expected from governments by 2031 in addressing climate challenges.

While Superforecasters *do not* expect the total financing committed to the GCF per se to exceed $55 billion in the next ten years (88% probability), they do expect more climate funding overall. However, this is likely to be done in ways and directed to areas that give most leverage to the donor states. Furthermore, **even increased funding is expected to remain insufficient to address the growing need.**

More frequent extreme weather events and climate change-related disasters closer to home, domestic support for climate action and perceived efficacy of collective action are the main drivers of international solidarity as measured by climate financing. Key risks to increased climate financing include domestic opposition to multilateral climate action, incorrect assessment of the cost of inaction and *realpolitik* considerations by state actors.

Drivers of the consensus forecast

Competition with other vehicles of climate financing. The GCF has $10 billion committed so far, and up to another $10 billion pledged. Superforecasters expect the total financing committed to the GCF by the end of 2031 to be $20–55 billion. Other funds, as well as bilateral agreements, carbon credit purchases or foreign direct investment, which could also serve as vehicles of climate financing, are in competition with the GCF, making it less likely for the GCF to exceed $55 billion by the end of 2031. While a trend toward environmental investing promises more funding overall, some Superforecasters suggest that it points to lower funding for the GCF, as it underscores the competition that the GCF will have with the hundreds of other funds seeking investment for their own causes. Furthermore, the fund's reputation will play a role in its ability to secure funding. The GCF has received some negative publicity in the media. A demonstration of competency through completed projects would go a long way to rehabilitating its reputation, but more negative news could jeopardise its ability to attract further funding. If the GCF's reputation improves, it could absorb the roles of most of the other funds as it is already running and deals with mitigation and adaptation at scale. This could add more financing to the fund.

> The question is not whether or not action needs to be taken, it's whether or not donors feel comfortable the GCF is an effective vehicle to make that happen, and makes the donors look good.

> It would take just a scandal or two to end the fund completely.

***Realpolitik* considerations** by state actors, on the other hand, may undermine effective cooperation. Wealthy countries may decide, for instance, that they can enhance alliances by giving aid directly to like-minded states instead of contributing to an international climate fund. A *realpolitik* framework would predict that richer countries make contributions to poorer ones only in ways that benefit them and to the extent that benefits them. This suggests first, that GCF contributions are the bare minimum necessary to elicit desired action from poorer nations and second, richer nations make CBDR (Common but Differentiated Responsibilities)-type contributions that are not necessarily through the GCF but through channels that suit them better (e.g., bilateral channels, carbon credit purchases). Bilateral deals give donors exclusive benefits and ability to exert influence on the process, which the GCF arguably does not. Finally, multilateral cooperation in which the benefits are uncertain or the time horizon is long, has been and will continue to be difficult.

> Climate change is one of the few areas in which globally there is a general agreement on the importance of the issue. Cooperation will not necessarily be in terms of joint funding but rather on other 'softer' issues, which are critical in moving the ball forward in coming years.

Extreme weather events. Superforecasters assess that the increasing rate of extreme weather events and climate change-related disasters closer to home—ranging from sea-level rise to more frequent, more powerful hurricanes and cyclones—are likely to drive climate action both at home and abroad. The current level of cooperation, although it has been growing in the last three decades, is considered too slow relative to the need. A trigger event would focus the leadership's attention on the problem. An increasing likelihood of such events makes it more likely that climate financing will increase significantly by 2031.

> There will be much more money provided to funds like the GCF by 2031 as environmental disasters become more obvious. Compared to the scope of the problem, $55 billion is a small sum for the world, and it's politically easier to spend than to cut domestic industries and employment.

> If the old saying is true that all politics is local, then so is weather. Disasters or events that are relatable to multiple countries are more likely to get a multilateral approach. Ultimately, all climate action is going to be voluntary because there are simply no strong enough enforcement measures to use against the biggest polluters.

Domestic support for climate action. Political survival of governments, in democratic countries particularly, depends on their being responsive to the public's wishes. Civil society organisations have been able to run successful campaigns that led to changed law. With public support for climate action, climate change agendas will be getting attention in the coming decade, leading to greater financing. At the same time, governments could see this as a cost-effective way to appease the green parties in government and the growing environmental movements within their countries. However, domestic opposition or incorrect assessment of the cost of inaction could result in lack of political will to cooperate. This may result in a lower-than-expected level of climate financing to the GCF. There is also the risk of governments' inactivity due to technological determinism.

Technological solutions may fall short or, in some cases, inhibit cooperation and the understanding of urgency. On the other hand, a lack of political will to cooperate due to either **domestic opposition or incorrect assessment of the cost of inaction may result in a lower-than-expected level of climate financing** to the GCF. For example, in the US specifically, as one of the biggest donors to climate initiatives such as the GCF, domestic opposition to international climate action may play a crucial role.

> International solidarity and cooperation are on a long-term uptrend and climate change is a driver for maintaining this trend. There will be periods where this trend regresses, but, overall, the trend is up. Climate change will have a bigger impact on this trend to cooperation when people currently under the age of 30 reach more powerful positions in society.

Perceived efficacy of collective action. Aggregation of climate-related investments, analysis of the need and coordination of actions and activities between states may be easier to manage through a single organisation, such as the GCF. The effectiveness of this vehicle vis-à-vis other financing mechanisms such as bilateral agreements would contribute to increased funding by donors. At the same time, this is a way to show the commitment of the international community to address climate change. Here, measures such as carbon clubs (coalitions of willing nations that commit to mitigation targets and receive membership perks such as preferential trade rules) are a promising way forward (Tagliapietra and Wolf 2021). Finally, if climate change is recognised as a national security consideration, wealthy donor states will be more likely to endorse collective action as a key safeguard against future instability.

Technological determinism. Governments' inactivity due to the expectation that some new technology will emerge to address climate change is yet another risk. Technological solutions may fall short or, in some cases, inhibit cooperation and the understanding of urgency (Barrett 2020).

Question 3: How and where will climate change fuel instability across fragile settings around the world?

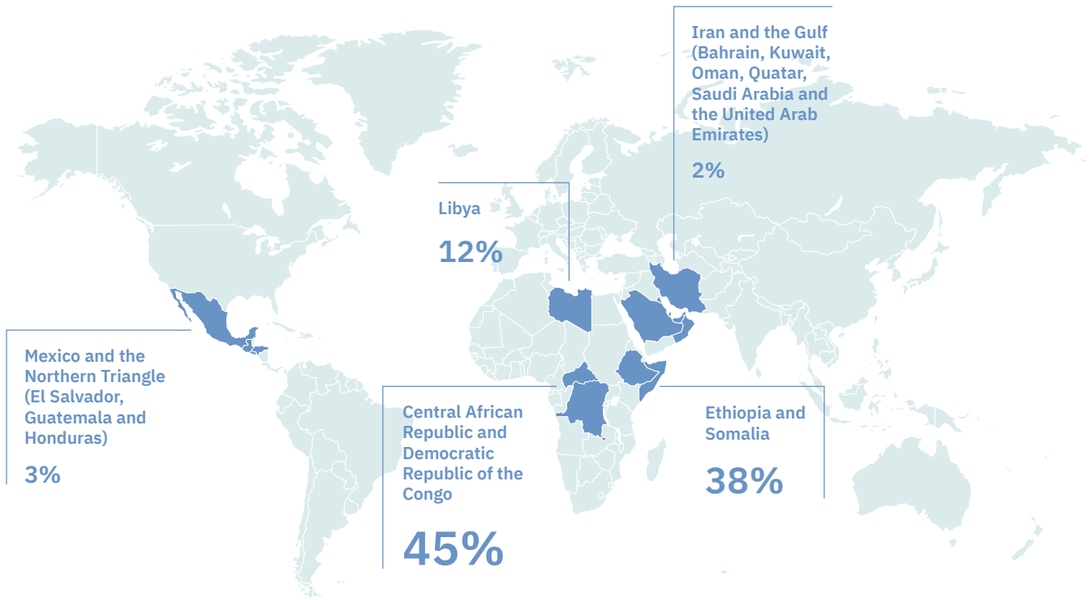
BACKGROUND

Many experts and policymakers warn about the destabilising effects that growing climate impacts might have. At the same time, the extent and relative importance of various causal mechanisms linking these impacts to instability and armed conflict remain contested in academic literature. As instability and fragility are multidimensional and hard to measure in precisely quantifiable variables, the forecast metric considers displacement as a proxy for fragility. Some of the key drivers of displacement include armed conflict and violence, as well as climate-related events and the vulnerability of affected populations. Of course, these drivers are not mutually exclusive. In fact, with climate change, they more often reinforce each other. The forecast metric zooms into five regions derived from the 2021 "10 Conflicts to Watch" list of the International Crisis Group (Crisis Group 2021). This list is based on an assessment of conflict risks and conflict resolution potential (without regard to climate-related impacts) but comprises many countries thought to be particularly affected by these impacts.

FORECAST METRIC

Which of the following countries/regions will World Bank data show to have the highest percentage of displacement between 2022 and 2031?

Figure 3: Probability that Superforecasters assign to each answer option.



Summary: Displacement and fragility in the coming decade

This question focuses on the climate–security nexus: areas where climate change effects are most likely to increase fragility, and drivers and events that are likely to exacerbate the existing environmental and governance strains.

The forecast metric uses displacement—the percentage of internally displaced persons in and refugees from a given country—as a proxy for fragility. **Superforecasters see two groups of countries most at risk—the Central African Republic (CAR) and the Democratic Republic of the Congo (DRC)—as most likely (45%) to see the highest level of displacement, followed by Ethiopia and Somalia as next most likely (38%).** These are followed by Libya (12% probability), Mexico and the Northern Triangle (3% probability), and Iran and the Gulf (2% probability).

This report identifies history of armed conflict, environmental pressures and weak governance as the *primary* causes of displacement. As such, countries with ongoing or recent conflicts, climate risks and weak governance are particularly vulnerable. **But in all cases, climate change is seen as an *accelerant* of existing problems.**

Drivers of the consensus forecast

Weak governance. Decades of empirical research on the drivers of conflict suggest that a lack of good governance can result in the escalation of a crisis. Empirical evidence shows that state-sponsored violence and abuse, as well as corruption and exclusion of ethnic and religious populations, are significant drivers of conflict and instability. These factors also dictate the scope and severity of displacement. A timely response to a crisis can reduce the need and length of displacement. However, corruption undermines a state's ability to address issues. While usually not a direct driver of displacement, it can have second-order effects. For instance, corruption can jeopardise the availability and effectiveness of foreign aid used to mitigate the consequences of violent conflict and environmental strains.

> "Empirical evidence shows that state-sponsored violence and abuse, as well as corruption and exclusion of ethnic and religious populations, are significant drivers of conflict and instability.

Conflict trap. Countries that have recently experienced war are likely to relapse into violence in the next few years ("conflict trap"). This makes countries such as Libya, Somalia, DRC and CAR the most likely to experience large-scale population displacement in the coming decade, as each of these countries saw at least five years of war in the last 25 years. Trends in fatalities from political violence and conflict in the past ten years suggest an upward trajectory for the Ethiopia/Somalia grouping. Mexico and the Northern Triangle, and Iran and the Gulf are more stable by comparison. The chance of a major war is low for these regions.

> "Countries that have recently experienced war are likely to fall into a 'conflict trap', i.e. a relapse into violence in the next few years.

Environmental pressures. Countries most likely to experience large-scale displacement in this decade, including due to climate change impacts, are those where more frequent and increasingly severe dry seasons will lead to a dramatic decline in crop yields and an increase in food scarcity. Countries with high poverty rates and rapidly growing populations are likely to experience the most severe climatic shocks within this time frame and will be the least able to adapt to such impacts. Similarly, **a major pollution disaster** (e.g., as a result of a nuclear accident) would lead to massive, and currently unforeseen, displacement.

Another driver of displacement is **haphazard urban development.** In Mexico and the Northern Triangle, urbanisation is expected to double by 2050 (World Bank, 2017). Libya is already at 80.7% urbanisation. By contrast, the level of urbanisation in CAR is 42.2% and in DRC 45.6%. On average, a million people move to the cities in DRC every year (World Bank, 2018). Somalia has one of the highest urbanisation rates in the region, with an additional four million expected by 2025.

Climate change is impeding peace and stability. Its effects are likely to be stronger in geographies with pre-existing threats or predispositions. Droughts, flooding, hurricanes, other extreme weather conditions and increasing temperatures will have an effect on food and water

availability, soil and shoreline erosion, spread of disease-bearing pests and illness, availability of energy sources and transportation, crime and violence. Superforecasters assess that regions with high climate-related displacement will remain those that already experience high rates of displacement. Some of the key climate-related risks identified include food scarcity, water scarcity, heat and sea level rise. Heat is noteworthy because the human body can survive only a limited amount of heat stress. Sea level rise is also notable because its impact on migration was recently argued to be greater (Kulp and Strauss 2019) than previously thought. Climate change has the potential to impact regions that are competing for limited natural resources, specifically water. Changes in temperatures and precipitation patterns increase the risk of conflict. The ND-GAIN vulnerability index (University of Notre Dame 2019) suggests that Ethiopia and Somalia, CAR and DRC, and Mexico and the Northern Triangle are most at risk to climate-related impacts.

> Heavy-handed approaches to stabilising current and near-term access to natural resources will benefit one population and necessarily destabilise another. This zero-sum approach will undoubtedly be the cause of much conflict.

Climate change alone may not drive displacement, but it can deepen already existing **vulnerabilities and inequalities.** Countries that suffer from violence and food insecurity may not have the resources to adapt or be more resilient to ongoing climate change. This will potentially lead to more migration. Finally, the drivers of fragility are interconnected, resulting in the risk of a **domino or a ripple effect,** which could speed up the rate of displacement.

Question 4: How much and where will food prices fuel instability across fragile settings around the world?

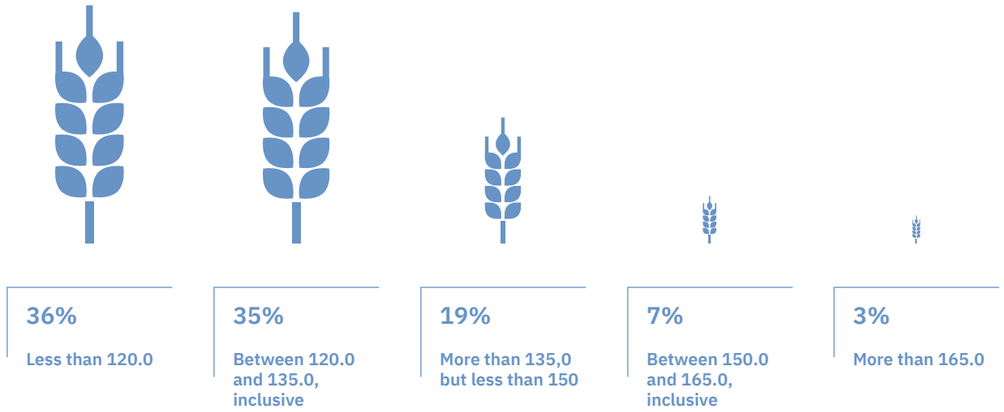
BACKGROUND

One of the key vectors linking climate change impacts to instability and conflict is food insecurity. Of particular interest is price volatility in response to, for instance, a simultaneous drought event across major crop-growing areas in conjunction with political interference in market functioning, such as export controls for domestic price control, as happened in the runup to the Arab Spring.

FORECAST METRIC

What will be the FAO Cereals Price Index in real terms for December 2031?

Figure 4: Probability that Superforecasters assign to each answer option.



Summary: Food insecurity and instability

Climate change increases the uncertainty of weather patterns and agricultural production, driving concerns about both the levels of future food prices and price volatility. This question zeroes in on the issue of food insecurity in the form of a potential rise in food prices in the next ten years. The broader discussion focuses on the amount of volatility in global food markets between 2022 and 2031.

While Superforecasters see only a 10% probability that the FAO Cereals Price Index (used as a proxy for food prices) **will exceed 150.0 in real terms in 2031, many of them foresee at least one major spike in the next decade** due to the increasing frequency of extreme weather events and possibility of trade restrictions when harvests fail. Food prices are prone to multiple exogenous shocks: environmental risks, fluctuations in the energy markets, political instability affecting production, trade restrictions and a growing global middle class driving an increased demand for resource-intensive foods such as meat.

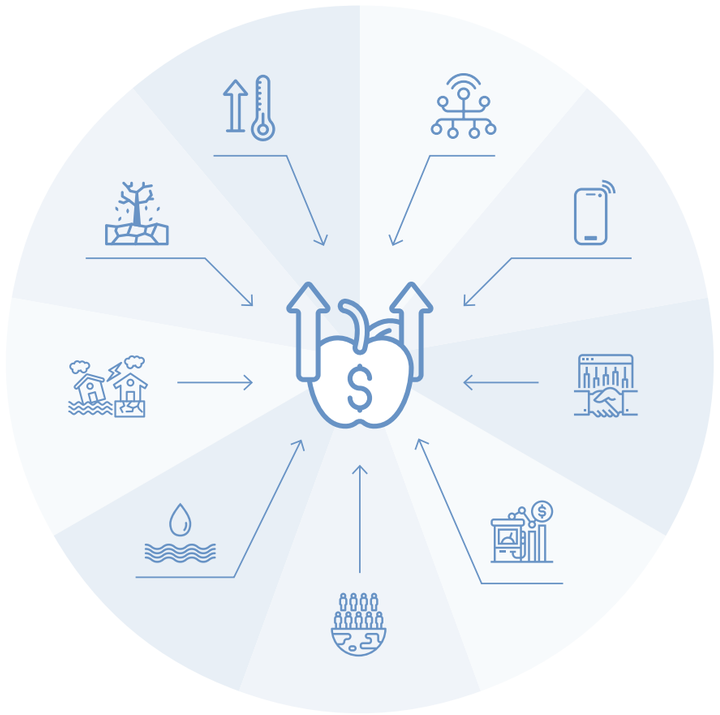
Price volatility is less likely to affect stability in richer countries, and indeed some countries are potentially poised to benefit from becoming the world's new breadbaskets. **But poorer countries with fewer resources, especially those closer to the equator, will be hit hardest,** and those countries where populations are able to mobilise are expected to experience significant political unrest should food prices see a sudden spike.

Ongoing **technological development and the cyclical nature of agribusiness,** however, **are expected to mitigate some—but not all—of the negative effects** on the overall food index.

Drivers of the consensus forecast

A historical trend of food prices since 1850 shows episodes of short-term volatility in corn and wheat prices and a gradual uptrend over time. An examination of the annual percentage changes in the FAO Cereals Price Index in November-December 2021 revealed that volatility was at a historical low, with a spike in 2020 representing a break from that trend. Two other recent periods of volatility were 1996–1997 and 2007–2008, with the former caused by a drought. As the frequency and intensity of droughts continue to be exacerbated by climate change, volatility is likely to rise in the coming decade. However, the overall price index in real terms is expected to remain below 150.0, as the world is nowhere near the limit to the amount of food that can be produced, at least in the next ten years. What is more, a 2021 OECD/FAO report suggests prices for wheat, maize, other coarse grains and rice are expected to decline over the ten-year horizon (OECD/FAO 2021).

Figure 5: Examples of influencing factors for food prices (adelphi)



Population growth, and the growth of global middle class. The OECD expects the global middle class to grow from 1.8 billion people in 2009 to 4.9 billion by 2030, which will inevitably put pressure on food supply. This represents a risk if it also drives the demand for resource-intensive foods such as meat. Those in poor rural communities have less access to support programmes and less opportunity or means to register displeasure, or to mobilise. As the standard of living increases, however, expectations—and the potential for unrest—will rise. Evidence of a slowing rate of population growth mitigates, but does not eliminate, these pressures (Chaya 2021).

Accelerated climate change effects. Superforecasters are aware that changes in current patterns of warming temperatures and erratic rainfall patterns would make crop production increasingly volatile, with less predictable growing seasons. A high-emissions scenario by 2030 would lead to a 24% decline in corn/maize production, starting in the tropics and then affecting the Global North as well (Cohen 2021). Temperature increases would raise the chances of simultaneous droughts in the Big Five (Argentina, Brazil, China, Ukraine and US) from 0% in any given year to 7%. While grain production would increase (or become feasible) in certain areas due to climate change (e.g., the location of farms could be moved over time to more favourable climates of the future), it would take time to exploit the shifting weather patterns to benefit food production.

> The effects of climate change on agriculture are going to be far more dramatic this decade than they were in the period 2003–2020. We're entering uncharted territory.

Technological development. With investment in agribusiness and innovation, production yields and land productivity have increased dramatically since the 1960s and are expected to continue to do so. A global study that assessed yields and efficiency in 32 rice cropping systems found that there is still substantial room to increase rice production while reducing the negative environmental impacts (University of Nebraska-Lincoln 2021). Superforecasters also expect more resilient seed and grain varieties and better agricultural practices to enable increased food supply, although some advances may take longer than the next ten years. If the uptake of technological innovations fails to keep up with the projected changes in agricultural productivity and food demand, however, it will result in a production gap, leading to higher food prices, unsustainable production practices and increased food insecurity. There may also be resistance to technological advances and efficiency plans from ideological movements (e.g., non-GMO movement), leading to slower uptake. Superforecasters would adjust their forecast at signs of such movements gaining traction in the coming decade.

> Although climate change will cause large changes in agriculture and destroy productivity in some areas that are currently fertile farmland, the sector will adapt, shifting locations, techniques and crops. The overall costs of food in 2031 will remain similar to what they were previously.

> Higher food prices are here to stay—and will likely cause instability in less developed countries with a lower adjusted per capita GDP and whose domestic population relies heavily on agricultural or food exports.

Dissemination of information. The spread of the internet and mobile phones has enabled faster dissemination of information on crop and livestock production, including drought-resistant yields and enhanced farming techniques. This increased knowledge and "precision farming" techniques are expected to counteract some of the climate change-related trends that would point toward higher food insecurity, but Superforecasters note that it will be the richer countries in the North that will benefit the most from the new technologies.

> Some of the increased trade and information-sharing capabilities have made the global market for many commodities more resilient overall, as farmers have the ability to adapt to changes in demand much more quickly than they would have historically.

Energy prices. The FAO Cereals Price Index appears to be sensitive to several factors outside of yield and weather. The 2008 price spike coincided with the financial crisis and a sharp increase in oil prices. Once the food price crisis was over, the index stabilised at a higher level than it had been pre-crisis. The higher numbers for 2011–2013 also correspond to a spike in crude oil prices. As agriculture is energy-intensive, higher energy prices may push food prices up. Superforecasters would adjust their forecast if the coming decade saw another major spike in energy prices.

Trade restrictions and lack of international solidarity. International trade has the potential to soften food price shocks. However, in 2007–2008, restrictive trade and border closures turned a relatively small drop in crop yields into a world food price crisis. Among its "lessons learned," FAO's report on that crisis states that openness to trade is a more effective strategy than the closure of borders (FAO 2011). However, whether governments will take action that mitigates—or, conversely, exacerbates—future food price shocks in this decade remains an area of uncertainty. Superforecasters are therefore watching trade policy and politics closely. Furthermore, as the climate changes and the production shifts to new breadbaskets, some areas will no longer be able to grow crops. Without international supply effort, there will be famine or near famine in those areas. Finally, if food prices are used as geopolitical leverage, Superforecasters expect the index to become extremely volatile.

> Food and crop price volatility and shortages will be disastrous for low-income countries where up to 75% of their total income may be spent on basic foodstuffs. Those in poor rural communities have less access to support programmes and less opportunity or means to register displeasure or to mobilise. As the standard of living increases, however, expectations—and the potential for unrest—will rise.

Question 5: As climate change impacts intensify, where and to what extent will megacities in low- and lower-middle-income countries become more fragile?

BACKGROUND

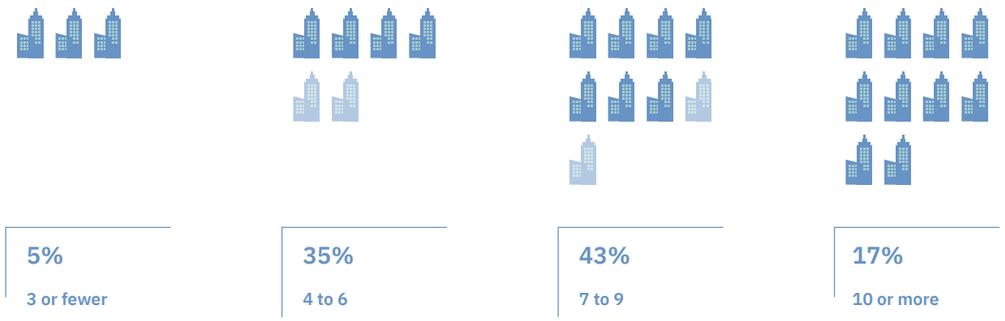
Most climate security literature focuses on climate-related security impacts in rural settings. However, fast-paced urbanisation (which climate change itself is fuelling) may raise the risk of megacities in low- and lower-middle-income countries that are being overwhelmed by a combination of, and interaction between, social and climate-related impacts. These include direct impacts such as sea-level rise and storm floods for many coastal and delta cities and changes in access to water for others. They also comprise indirect impacts, especially governance challenges related to the task of making sufficient livelihood opportunities and government services available, in a sufficiently equitable manner, to avoid grievances leading to fragility. Government effectiveness and legitimacy may also be tested through climate-related extreme weather events and/or consequences such as high and volatile food prices. At the same time, urbanisation has historically also been linked with economic growth, democratisation and social progress, entailing opportunities for better governance. While many of these effects—and their interactions—are difficult to quantify, the forecast metric zooms into megacities (population >10 million as per the UNDESA definition) in low- and lower-middle-income countries (following the World Bank income classification) and looks at what forecasters see as critical drivers of fragility there.

FORECAST METRIC

How many of the following megacities will have a higher fragility index score in 2031 as compared to 2015?

The megacities in question are: Bangalore, India; Cairo, Egypt; Calcutta, India; Delhi, India; Dhaka, Bangladesh; Jakarta, Indonesia; Karachi, Pakistan; Kinshasa, DRC; Lagos, Nigeria; Manila, Philippines and Mumbai, India.

Figure 6: Probability that Superforecasters assign to each answer option.



Summary: Cities at risk

Urban fragility results from many factors, including municipal authorities' inability or unwillingness to deliver basic services to citizens. The level of fragility is related to the accumulation of risks such as the speed of urbanisation and the levels of inequality, violence and disaster exposure. Fragility is not restricted to poorer nations, nor those enduring armed conflict, nor the largest of urban settings. **Due to the fact that the 11 megacities in question suffer from pre-existing fragility and gaps in infrastructure and are vulnerable to adverse effects of climate change, Superforecasters see a 60% probability that at least seven of them will be ranked as more fragile in 2031 than they were in 2015.**

Drivers of the consensus forecast

State or institutional capacity. The level of fragility in cities worldwide depends on whether the supply of necessities lags far behind the demand. Cities with higher institutional capacity will have better infrastructure (particularly related to housing), access to safe potable water, access to health care and better security. Low homicide rates, for instance, are a sign that there is at least some state control over parts of the city and may equate to higher trust in government. The capacity of municipal, local and national governance will also determine the city's ability to deal with the challenges that continue to arise from climate change, such as the increasing pressure on life-supporting sectors (food, water, health and infrastructure) and urban growth. Corruption, however, can undermine mitigation efforts.

The worst dangers of climate-related risks stem from **interactions between different risks and interactions between risks and human responses.** For example, the "access to services" component of city fragility risk may not be compromised by a single extreme weather event like a heat wave but can be threatened by a heat wave in combination with drought in combination with wildfires. The European heatwave of 2018 showcases how dangerous such an aggregation (and cascading) of risks can be. Second, interactions between risks and responses need to be accounted for. During the South African water crisis of 2018, social responses created additional risks as elites invested in private, off-grid water supplies. The possibility of adverse interactions between risks and human actions is particularly significant for the cities listed here due to their limited capabilities, with corruption exacerbating the effects of natural disasters.

> To prepare for the future, a megacity needs a competent government and institutions that coordinate with each other.

> In essence, this question is about corruption in the local and national governments. A non-corrupt local government, with transparent government procurement, has a good chance to mitigate the effects of climate change through infrastructure improvements, especially as many of these cities are showing strong GDP growth.

Population growth. Most of the megacities under consideration are expected to undergo major population growth within the coming decade, with Delhi potentially overtaking Tokyo as the most populous city in the world before 2031. Growing cities experience an increased demand for public services. The fastest growing cities (those growing at an annual pace of 4% or more) are especially vulnerable. Considering the increasing number of natural disasters (335 in 2005–2014, a 14% increase compared to 1995–2004), with floods and storms accounting for 90% of the climate-related disasters, most of these megacities are at risk (Gu 2019). These risks are prominent in sub-Saharan Africa, the Middle East and South and East Asia, which will account for the vast majority of future city population growth. Dramatic population increases in already fragile megacities will make it difficult for those megacities to get ahead of the challenges they are facing, including the gaps in infrastructure, air pollution, high crime, electricity inequity and climate change leading to increased heat, cyclones and flooding.

> Rapid urbanisation and population growth largely drive the impact of natural disasters: the more people settle in at-risk areas, the more chance of casualties and economic losses as a result of such events.

> Those in urban areas will most likely (if not definitely) be worse off than those in suburban and rural areas, as it pertains to being able to access water, food and other supplies. Any urban areas cutting back on civil services may also see adverse impacts during times of crisis, climate related or not.

Improving standards of living. Living standards and incomes have been on the rise in many of these cities, and more technologies and services such as electricity and internet are now available to a growing number of people. Some Superforecasters argue the digital economy could help mitigate fragility in megacities and future-proof them by facilitating access to products and services, including government services, to compensate for their limited infrastructure (Oxford Business Group 2020). In terms of mobile subscriptions per 100 inhabitants, for instance, Indonesia and the Philippines rank the highest, with Indian megacities as well as Manila, Jakarta and Lagos also doing well in terms of digital infrastructure (ITU 2021).

> Population growth is likely to continue in all of these cities over the next decade, even if the rate slows down. Access to electricity is, however, improving in all of these countries, and access to other services could be expected to improve over time too.

Pre-existing fragility. Pre-existing fragility directly affects the city's ability to absorb unforeseen shocks. Given that only one of the 11 megacities in this question has trended toward lower fragility since 2000, Superforecasters expect a similar pattern in the next ten years. However, megacities do not necessarily mirror political instability and conflict occurring in the rest of the country. The ebb and flow of communal violence or far-flung insurgencies often have little impact on these places. That being said, megacities are places of consequence and agency, where populations mobilise and national fractures are felt acutely. Often, they are places where such divisions are litigated, politically or on the streets. Broad national trajectories of democracy, repression and exclusion will ultimately be reflected on the ground in these megacities.

> The trend toward greater fragility is unmistakable, and there is little reason to believe this course will reverse itself given increasing urbanisation and an inverse relationship between population density and liveability. Climate change impacts will exacerbate the situation even further.

The effect of natural disasters in light of infrastructure gaps. Infrastructure gaps affecting communications services, basic infrastructure maintenance, and transportation put megacities at risk. Some of the adverse outcomes can include contaminated water, air pollution and failure of sewage systems. Building and climate-proofing infrastructure takes time and considerable resources, and corruption or lack of institutional capacity, discussed above, could further complicate the situation. Superforecasters point out that in the absence of climate-proof measures, however, any major natural disaster (e.g., a Hurricane Katrina-like event in South Asia) would be crippling for many of these cities.

Lack of a systematic way to measure megacity fragility. According to Superforecasters, megacity dynamics are often distinct from country dynamics. Yet, most studies and indices fail to account for this distinction. Those few indices that do look at megacities specifically often contain variables of limited predictive value. For instance, the Gini coefficient, which measures inequality, can be low for states with very weak growth. Other parameters—institutional capacity, the pace of urbanisation, access to key services and exposure to climate threats—are of a higher predictive value. Accurate measurement of past fragility is important not only for Superforecasters but also for policymakers. To invest in resiliency and design better early warning systems, policymakers must be able to assess the risk correctly, and for that, they need systematic data.

> When a city is particularly fragile, it's a pretty good bet that the data for said city is going to be limited, which in turn makes it extraordinarily difficult to measure just how more or less fragile it is becoming.

> Current risk assessments fail to adequately account for interactions between risks. Making sure blind spots are addressed appears an urgent priority.

Question 6: Where will stresses on water governance increase security risks?

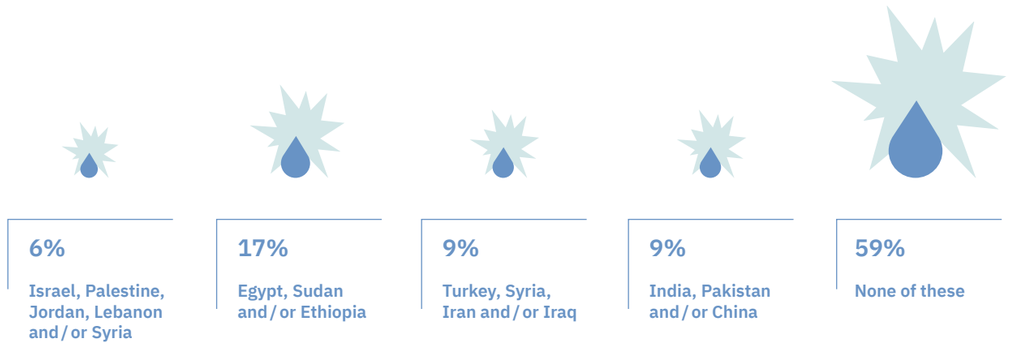
BACKGROUND

Both climate change (e.g., shifts in seasonal flows, regional water scarcity, greater demands for irrigation due to evaporation) and various social changes (e.g., demographic growth, dietary changes due to economic growth, more big dams) mean that pressures on water governance are rising in many basins. This is particularly challenging in transboundary basins where one or several riparian states are very dependent on water resource use and/or where governance mechanisms for allocating resources and resolving conflicting demands on water use are weak. With more than 300 transboundary basins, the list here focuses on those basins that tend to be most often cited as potential flashpoints, but other basins may also be at risk.

FORECAST METRIC

Where will changes in water availability and access next cause a deadly conflict before 2031?

Figure 7: Probability that Superforecasters assign to each answer option.



Summary: Potential flashpoints

The forecast metric focuses on the incidence of deadly conflict rhetorically linked to water access or availability. **Superforecasters see a 59% probability that a deadly interstate conflict explicitly related to water will *not* occur in the countries under investigation before 2031.** The key term here is "explicitly related." This forecast does not mean that incidents of violence in and among these countries will not take place in this period. Indeed, Superforecasters overwhelmingly expect conflict in one or more of the listed groups in the next ten years and believe such a conflict could be at least partially or indirectly related to water. With the growing impacts of climate change, basins may witness increasing political conflict and local—intrastate—violence. However, Superforecasters assess that countries are unlikely to use water, per se, as a direct justification for conflict. **If such a conflict were to occur in the coming decade, they assess it would most likely be in the Egypt-Ethiopia-Sudan triad (17% probability).**

Water insecurity generally stems from diminished water supply, increased water demand and/or extreme flood events. **Regions with weak governance, inadequate infrastructure and fragile institutions are more likely to experience water-related conflict, as well as migration and food insecurity related to water shocks.** Low rainfall or droughts, rapid population growth or urbanisation and a history of armed violence could also increase the risk of a conflict over water. **Although conflicts are rarely explicitly declared as being solely over water, tensions over water availability are likely to become more pressing in the coming decade and could contribute to the likelihood of deadly conflict.**

Drivers of the consensus forecast

Base rate. Interstate conflicts over water have been rare in modern history. Water scarcity is more likely to spark violence at the local, rather than state level. That said, tensions between and among states on the Nile and Mekong are rising as upstream states build dams that limit supply downstream (Saleh 2020). Furthermore, Superforecasters suggest that historical base rates may have less predictive value in the coming decade owing to the unprecedented scale of climate change and increasing water stress. One source of such stress could be the weaponization of water control. Superforecasters would adjust their forecast if examples of states using water as a weapon or intentionally damaging infrastructure become more common in the coming decade. Weaponizing water control (or any necessary resource control) is not new, but states have been reluctant to make use of this form of siege warfare in the twentieth century. Some Superforecasters see this as "warfare of the future."

> Water scarcity will be a driver of instability, but not the primary one. That said, with climate change over the next decade, the risk has definitely increased.

Water stress occurs when demand in a given area exceeds the supply. There may be a shortage of water because of local ecological conditions or due to a lack of proper infrastructure or mismanagement. Even high-income countries experience water stress. This is likely to be exacerbated by the effects of climate change in the coming decade and beyond. So far, **international cooperation has been a mitigating factor.** In the post-World War II period, nation states have made concerted efforts to restrain water weaponization. Most transboundary water disputes have been successfully managed cooperatively (Felter and Robinson 2021). Some 300 international water agreements have been signed since 1948. For example, India and Pakistan are signatories to the Indus Water Treaty of 1960 (UNECE 2021). Finland and Russia have long cooperated on water-management challenges, such as floods, fisheries and pollution (UNDESA 2013). Pressure from the international community could also serve to prevent further escalation; support by the African Union and the UN Security Council for mediation between Ethiopia and Egypt is a case in point (UNSC 2021). Finally, Article 14 of the Geneva Convention envisions the protection of objects indispensable to the survival of the civilian population, including drinking water installations and supplies and irrigation works (Geneva Water Hub 2019). The recent water-for-energy agreement between Jordan and Israel is another example of mutually beneficial cooperation. However, with global warming potentially leading to more issues around water availability, this "water taboo" may weaken. **Global democratic backsliding and increasing instability** could also spur a growth in secessionist movements (both violent and non-violent) around the world, which could have a major impact on water instability in the coming decade. Superforecasters would change their forecast if there were signs the existing treaties and institutions were beginning to fray.

> Water scarcity to date has been more a localised issue or just one of several issues in a conflict. Historically most transboundary water issues have been successfully managed cooperatively.

> Perhaps water is more likely to become a common reason for conflict in the future, but it will take more than the next ten years.

In water conflicts between upper riparian and lower riparian states, the **military balance of power** is crucial. If the up-river state also has greater military power, the down-river state has little recourses. The Grand Ethiopian Renaissance Dam (GERD) issue represents the most likely flashpoint of the four options, given the following: the power imbalance between Ethiopia and Egypt, which favours the lower riparian actor; Ethiopia's civil war, making them weaker still; and the repeated failure of Ethiopia and Egypt to come to an agreement despite international pressure to do so. That said, the base rate for lethal conflict is low and the Ethiopians have been building the dam for years. Conflict elsewhere is possible given the time frame and the climate change-related drought issues, but with desalination alternatives, power imbalances favouring upper riparian actors and greater likelihood of internal strife, this remains unlikely.

Superforecasters assign a combined probability of 41% that a conflict over water will occur in one or more of the groups of countries in question, in part because **population growth** could cause demand for fresh water to exceed availability. Stresses on water governance have the highest probability of increasing security risks in densely populated regions where the movement of people is restricted or not economically viable and where increasing demand will outstrip the supply. For instance, Egypt's population is growing by about 1.5 million per year. This puts a continuous upward demand for water at a time when supply is threatened by Ethiopia's GERD. Globally also, annual freshwater availability is showing worrying signs. MIT estimates that river water flow accessible to humans amounts to 13,200 cubic kilometres, whereas sustaining a population of 7.5 billion requires 12,750 cubic kilometres of water (Reilly et al. 2018). As the global population is estimated to surpass 8 billion by 2025, demand for fresh water could exceed supply.

> As the world's population grows and billions seek improved standards of living, demands on all resources are rising, leading to the risks surrounding stresses on water governance. On a macro scale, the greatest stresses will be in those places where demand is already on pace to outstrip supply.

Sudden shift in water resources. Major projects, such as development of desalination plants, are expensive and take time. For example, Egypt's plan to develop desalination may not be fast enough to assuage tensions over the GERD.

> The timeframe of this question is a decade. Some events happen overnight; others are like a slow-moving train wreck. You can see it coming but feel helpless to do anything about it. Some areas have been experiencing a slowly increasing drought for decades. People abandon their fields and seek shelter and employment in the city. At what point does this become an unsustainable crisis? Other areas may experience a sudden shift in water resources, e.g., the GERD. The sudden loss of water resources may be the most likely source of conflict in the short term.

Weak governance. Conflict is likely to be driven by a combination of factors, including local scarcity or misallocation of water resources resulting from bad governance. Nations that are able to pursue desalinisation, drip irrigation, wastewater reclamation and conservation projects tend to be wealthier, more stable nation states to begin with. But for those nations that do not or cannot pursue such strategies, water scarcity will be an additional driver of domestic instability. Stresses resulting from climate change and population pressures will only confound governance failures, potentially making regions vulnerable to shortfalls in water quality and access. Increased local instability in areas not under control of central governments, where militia, terrorist groups or ethnic violence are already present, could in turn escalate to a deadly conflict between states.

Technological breakthroughs in drought-resistant crops, better recycling systems for water or better ability to capture and store rainfall would take years to scale. Wastewater treatment and desalination plants have been in the works for decades. The use of such technologies in countries that have them (e.g., Israel, Jordan, Egypt, Turkey and Iraq all have large desalination projects either completed or being developed) reduces the probability of conflict, at least in the near term. But even desalination is not a silver bullet—it is expensive, energy-intensive and damaging to the environment.

Question 7: Will oil-producing countries remain stable in a decarbonising world economy?

BACKGROUND

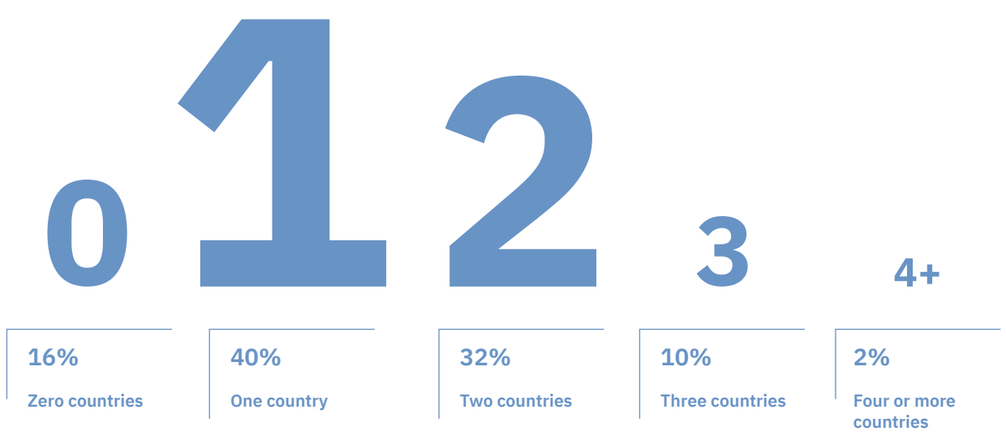
As decarbonisation progresses, fossil fuel assets are likely to lose value because supplies will eventually be greater than demand. This can have negative effects on major exporting countries, especially those where fossil fuel exports make up a large share of overall GDP, exports and government revenues. In many of these countries, the social contract involves government spending for social policy that may not be affordable in a decarbonising world. Cartelisation may blunt the impact of lower demand, but it could also break down if individual exporters feel short-changed. The resulting immiseration would increase pressure for government change, although the latter is certainly not guaranteed (e.g., Venezuela).

FORECAST METRIC

How many of the following major oil-producing countries will have a change of government by extraconstitutional means before 2032?

The relevant countries for the purposes of this question are Algeria, Iran, Iraq, Libya, Nigeria, Russia, Saudi Arabia and Venezuela.

Figure 8: Probability that Superforecasters assign to each answer option.



Summary: Inherent vulnerabilities

The forecast metric asks how many of eight selected major exporters of oil (Algeria, Iran, Iraq, Libya, Nigeria, Russia, Saudi Arabia and Venezuela) may see a change of government by extraconstitutional means over the next decade. Traditional mechanisms for extraconstitutional government change include: coups; mass uprisings or popular revolutions; rebellion, insurgency, or civil war leading to either the overthrow of a government or the breakup of the country; peaceful secession and/or foreign invasion leading to the overthrow of the government. **Superforecasters see an 84% probability that at least one of these eight countries will undergo an extraconstitutional** change of government **in the coming decade.** Of these, Libya and Iraq are considered most at risk, followed by Algeria and Nigeria.

According to the Superforecasters, the *primary* driver of extraconstitutional change of government **will *not* be rapid decarbonisation and its effects.** Oil usage will not decrease fast enough in this period or to such an extent as to result in government overthrow. Instead, the main drivers are forecast to be pre-existing instability, corruption and weak governance, exacerbated by democratic backsliding globally and the youth bulge. **The increasing adverse effects of climate change are accelerants to all those drivers.**

Drivers of the consensus forecast

Base rate. The most obvious forms of extraconstitutional change of government are coups, overthrow by rebel groups and overthrow by external actors. Examining the Uppsala Conflict Data Programme's (UCDP) conflict termination dataset (1946–2020) and including additional data for Afghanistan in 2021, Superforecasters found 49 instances of government overthrow in the past 75 years, 78% of which were rebel overthrow and 22% overthrow by external actors. **That gives a base rate of extraconstitutional** change of government **of about 6.5 per decade,** although this varies considerably by decade (the 1980s and 1990s saw the greatest number of such instances). **Given global conflict trends, many Superforecasters expect this decade to be above average in the number of qualifying events.** An important caveat, however, is that most coups fail (Center for Systemic Peace 2022b).

> Those most likely to face political instability are Algeria, Libya, Iraq and Nigeria. Russia, Iran, Saudi Arabia and Venezuela have displayed resilience to domestic opposition.

> If fossil fuels are abandoned, those least able to diversify their economy will be ripe for instability and extraconstitutional change of government.

Incremental shift toward decarbonisation. Superforecasters assess that, driven by economic development in the emerging markets, demand for oil is unlikely to fall dramatically in the coming decade. According to the US Energy and Information Administration (EIA), despite the estimated increase of 50% in the use of renewables by 2030, the use of petroleum will also increase not only into the 2030s but all the way into the 2050s (Amadeo 2022). Likewise, OPEC sees global demand for oil increasing into 2030 and beyond (OPEC 2022). Therefore, ten years into the future is too short a time frame for oil demand to drop. For this reason, coupled with the fact that the listed countries have significant foreign currency reserves, instability in the next decade is likely to be driven more by existing problems rather than a shift to renewable energy. Superforecasters predict that demand for oil will still be robust in 2032, particularly (and increasingly) in low-income countries and this, paired with potential supply cutbacks in more advanced economies, will likely provide decent price support. According to the Superforecasters, developing economies, especially in low-income countries, will remain highly dependent on energy from fossil fuels well beyond 2032. The effects of decarbonisation are thus more likely to play out sometime mid-century.

> Declining hydrocarbon prices due to rapid decarbonisation will not be the primary factor driving instability in any of these countries over the course of the decade.

> For some of these countries that border desert regions, the political economy of desertification is likely to be a much more salient impact of climate change on political stability than decreasing hydrocarbon prices.

OPEC's ability to influence the price. OPEC has been relatively successful at constraining supply in the face of falling prices. Individual OPEC members may have the incentive to hold back their oil reserves to sell later at a potentially higher price. On the other hand, one study found that oil price windfalls increase both the number and strength of active rebel groups in onshore-rich countries but strengthen the government in offshore-rich ones (Andersen et al. 2021). Most of the countries under investigation in this question mostly have onshore oil production.

Institutional capacity. Some Superforecasters argue that countries with vast natural resources, in this case oil, have a defence mechanism against extraconstitutional events, namely the ability to allocate enough wealth either to placate ambitious rivals or fortify the state's defences. However, given the fact that hydrocarbon-producing governments often use subsidised fuel as a political instrument, sudden changes to prices can lead to reduction in subsidies, fuel riots and instability. Examples include Venezuela (BBC News 2018) and Kazakhstan (Strohecker 2022). Strong, authoritarian institutions are another related factor. Russia, Saudi Arabia and Iran may be less vulnerable to extraconstitutional change of government because they have a nearly complete grip on all the levers of power. In contrast, emerging democracies, newly installed governments and countries where new oil is discovered are the most vulnerable to military coup or rebel overthrow. For instance, the empirical literature on determinants of coups has little evidence that falling oil prices increase the risk of a coup in oil-producing countries. Instead, findings tend to suggest that in countries with weak institutional capacity, wealth injected into these corrupt, fragmented, violence- and grievance-ridden societies could provide more means and opportunity for those risk-acceptant actors who look to overthrow the incumbent government (Nowkolo 2021; Langø and Bell 2020; Center for Systemic Peace 2022a).

> Political stability will depend on the incumbent government's ability to manage social change and cleavages, placate key power brokers and, for the authoritarian states, willingness to engage in repression.

Younger population. A significant proportion of the population in Nigeria, Iraq, Libya and Algeria is under the age of 15. The "youth bulge" (a high proportion of younger people), which often precedes rampant unemployment and large pools of disaffected youths, in combination with weak political institutions, can lead to violence and social unrest. Research suggests that a young population may be associated with coup risk, especially when paired with instability and climate risk (Albert and Duffy 2012).

> The youth bulge is a powerful amplifier of a troubled citizenry, not only because it precedes a lack of jobs and income as those youth grow to adulthood, but also because research suggests older individuals are more risk adverse than younger adults. This puts Iraq and Nigeria, as well as Libya and Venezuela, at greater risk of extraconstitutional change of government.

Seven questions for the G7

Cross-cutting risks and global stability in the next decade

Several risk factors affect more than one area examined in this report. These risk factors are summarised in this section. Specifically, Superforecasters expect that climate change will contribute significantly to global instability in the next decade. Although it may not be the primary driver of risk in 2022–2031, its effects will exacerbate existing pressures in all seven areas under investigation in this report. Any acceleration of climate change effects would lead Superforecasters to adjust their forecasts toward more pessimistic scenarios. Pre-existing threats to stability, such as weak institutions, recent history of violence and rising authoritarianism, represent another factor driving global fragility, with climate change acting as an amplifier of these threats.

Climate change is impeding peace and stability. This factor plays a crucial role in all seven of the questions in this report. Accelerated heat stress and rising sea levels would aggravate the risks in already vulnerable countries and could push countries that are currently relatively stable toward the top of conflict and environmental degradation lists. Displacement of the populations would follow. Water stress, which can affect high-income countries and lower-income ones alike, would be exacerbated. Erratic rainfall patterns would make crop production increasingly volatile, with less predictable growing seasons. With widespread droughts and failing crops, coups would become more likely if and where causal factors for extraconstitutional events already exist. For megacities worldwide, accelerated climate change would increase pressures on already vulnerable life-supporting sectors: food, water, health and infrastructure. Any currently unexpected acceleration in the effects of climate change would make Superforecasters increase the probability that instability and fragility will become more prevalent by 2031.

> Environmental impacts will be felt, but the worst will probably not be until 2050 or after, though scientists are surprised by how fast we have already reached the tipping point.

Extreme weather events. While the increasing rate of extreme weather events and climate change-related disasters closer to home—from sea-level rise to more frequent, more powerful hurricanes and cyclones—is likely to lead to greater fragility, it can also result in more effective climate action at home and abroad. The current level of cooperation, although it has been growing in the last three decades, is considered too slow relative to the need. However, a trigger event, such as the collapse of the Thwaites Glacier in Antarctica or natural disasters at home, could focus global leadership's attention on the problem.

Where strains are already present, climate change is likely to act as an accelerant to existing risks. One such risk is the **"conflict trap,"** a phenomenon whereby countries that have recently experienced unrest or war tend to be more likely to relapse into violence. Existing trends in democratic backsliding, state repression and political exclusion, as well high youth unemployment, in combination with adverse effects of climate change, are predictive of greater fragility.

> Climate change, although not apocalyptic yet, is causing hardships (loss of food, loss of homes), particularly on the poor. These additional stresses are likely to break fragile governments at perhaps a higher rate than we have seen in the past.

A similar phenomenon to the "conflict trap" is the **"coup trap."** Countries that have recently experienced a coup are more likely to experience another within the next ten years. Although the base rate for extraconstitutional government change is about 6.5 per decade, this varies considerably by decade. Furthermore, a coup in one country could start a chain reaction in the region, as occurred during the Arab Spring. Most Superforecasters see a low chance of this wave taking place before 2032 but would change their forecasts at signs of such contagion. As one Superforecaster pointed out in December 2021 when this report was being compiled, "The five events in 2021 [rebel overthrow in Afghanistan and coups in Mali, Guinea, Sudan and Myanmar] seem to be a starting point for a very volatile future."

> Another factor to consider is whether a wave of revolutions is likely in the coming decade. The contagion effect between countries could mean, for example, that a coup in Iran would affect the odds of a coup in Iraq.

Finally, as the drivers of fragility and instability are interconnected, an increased risk of one factor can lead to a **domino effect** or, if the effects of climate change are not addressed in a timely manner, **a ripple effect,** whereby each new adverse consequence leads to increasingly larger impacts on the system.

Implications for policymakers

The Group of Seven (G7) wields significant influence in shaping international debates and driving solutions to some of the most pressing issues across the globe, including on climate, peace and security. As a high-level political forum, the G7 has the ability to spearhead major initiatives to combat climate change and to support countries vulnerable to climate change and/or at risk of instability. It has also underlined its will to engage, both in the past with commissioning *A New Climate for Peace* and subsequent efforts to implement its recommendations through a dedicated working group as well as during the ongoing German presidency that is focusing on tackling the climate crisis as a key pillar of its motto of "Progress towards an equitable world".

The following section zooms in on each of the seven questions forecast by Good Judgment, with adelphi's proposed policy actions on ways for the G7 (in terms of the group as well as member states individually) to help address the challenges that the assessments and discussions of the Superforecasters reveal.

Q1: HOW EFFECTIVE WILL MULTILATERALISM BE IN THE NEXT DECADE, IN PARTICULAR AROUND THE GLOBAL CLIMATE REGIME?

This question focuses on the probability of effective multilateralism in the climate arena in the coming decade. Superforecasters expect national self-interest to continue driving climate policies, with popular opinion and technological advances playing an increasingly prominent role in the effectiveness of climate action. Domestic politics could be both a driver of and a hurdle to climate action.

Superforecasters expect little mandatory climate action until at least 2030 or even 2040, with voluntary measures in the next decade likely resulting in countries missing their climate targets. This, in turn, will lead to higher global temperature increases.

To strengthen multilateralism around climate action in the next decade, the G7 should:

- double down on advancing their respective domestic climate policies and collectively creating economic clout for making low-emission solutions the default option, to help further shift incentives for national interest-driven action towards climate-compatible economies;
- collaborate on strengthening the global climate regime, including by committing to addressing the thorniest issues such as loss and damage;
- develop an accountability mechanism on multilateral climate action.

Q2: TO WHAT EXTENT WILL CLIMATE CHANGE STRENGTHEN INTERNATIONAL SOLIDARITY?

This question looks at climate finance as exemplified by the Green Climate Fund (GCF) to examine how much international solidarity and cooperation can be expected from governments by 2031 in addressing climate challenges. Given the global nature of many current challenges and climate change in particular, the quality of global cooperation around climate financing will have a significant impact on the effectiveness of governance. According to the Superforecasters, frequent extreme weather events and climate change-related disasters closer to home, domestic support for climate action and the perceived efficacy of collective action are the main drivers of international solidarity as measured by climate financing. Key risks to increased climate financing include domestic opposition to multilateral climate action, incorrect assessments of the cost of inaction and *realpolitik* considerations by state actors.

To make sure that climate change impacts engender stronger international solidarity in the future, the G7 should:

- make good on climate finance pledges to support fragile and poorer countries in dealing with the effects of climate change, as well as increase the scale of the $100 billion commitment;

- establish an internationally agreed-upon definition of what climate finance is and how its delivery channels should function;
- strengthen monitoring and evaluation of the impact of climate finance, including assessing the strengths and weaknesses of climate finance delivery channels and matching them to countries' needs;
- advocate for enhanced incorporation of climate financing into programming through bilateral agreements and development banks;
- effectively mobilise the private sector to fill climate finance gaps.

Q3: HOW AND WHERE WILL CLIMATE CHANGE FUEL INSTABILITY ACROSS FRAGILE SETTINGS AROUND THE WORLD?

Superforecasters identify history of armed conflict, environmental pressures and weak governance as the primary causes of displacement and instability. Hence, countries with ongoing or recent conflicts, climate risks and weak governance are particularly vulnerable. In all cases, climate change is seen as an accelerant of existing problems.

To prevent and mitigate risks that climate change fuels instability across fragile settings, the G7 should establish ways to more systematically integrate climate-security work to the development, humanitarian and peacebuilding sectors. This would include:

- systematically investigating and collaborating on how best to address climate, peace and security interlinkages;
- developing conflict sensitive, integrated and multi-scalar strategies and programmes to address climate-induced security risks and advocating for incorporating these into multilateral fora and institutions, strategies, policies and programmes;
- investing in conflict-sensitive climate adaptation and mitigation measures as well as the many governance-related entry points that can attenuate the societal consequences of climate impacts, in particular in "no regret" strategies that bolster social cohesion;
- fostering multilateral and bilateral partnerships, as well as facilitating the integration of the private sector;
- ensuring climate finance is accessible to fragile states.

Q4: HOW MUCH AND WHERE WILL FOOD PRICES FUEL INSTABILITY ACROSS FRAGILE SETTINGS AROUND THE WORLD?

One of the key vectors linking climate change impacts to instability and conflict is food price volatility and food insecurity. Climate change increases the uncertainty of weather patterns and agricultural production, driving concerns about both the levels of future food prices and price volatility. Superforecasters believe that price volatility is less likely to affect stability in the richer countries, but that poorer countries with fewer resources, especially those closer to the equator, will be hit hardest. Those countries where people are able to mobilise are expected to experience significant political unrest should food prices see a sudden spike.

To prevent and mitigate risks that food prices will fuel instability across fragile settings, the G7 should:

- invest in climate-smart agriculture and advocate for actions to transform agri-food systems towards peace-positive and climate resilient practices, including investments in analysis of how to integrate climate-smart and peace-positive agriculture;
- promote agribusiness and agricultural innovation and technology, as well as sustainable, inclusive and resilient food supply chains;
- design and strengthen safeguards against price spikes, including by devising regional and global governance mechanisms that define (principles for) responses ahead of crisis situations and allow for early action on food price shocks;
- foster partnerships between bilateral, multilateral and private sector actors and stakeholders.

Q5: AS CLIMATE CHANGE IMPACTS INTENSIFY, WHERE AND TO WHAT EXTENT WILL MEGACITIES IN LOW- AND LOWER-MIDDLE-INCOME COUNTRIES BECOME MORE FRAGILE?

Urban fragility results from many factors, including municipal authorities' inability or unwillingness to deliver basic services to citizens. The level of fragility is related to the accumulation of risks such as the speed of urbanisation and the levels of inequality, violence and disaster exposure. Fragility is not restricted to poorer nations, nor those enduring armed conflict, nor the largest of urban settings.

Due to pre-existing fragility and gaps in infrastructure, and high vulnerability to adverse effects of climate change, Superforecasters see a high probability that megacities (population >10 million) in low- and lower-middle-income countries will be more fragile in 2031 than they were in 2015.

To prevent and mitigate risks that megacities in low- and lower-middle-income countries will become more fragile as climate change impacts intensify, the G7 should:

- invest in climate-smart projects in urban centres to help cities build climate resilience and realise climate adaptation ambitions;
- support conflict-sensitive disaster risk management projects and assist fragile countries in identifying ways to reduce vulnerability to natural hazards and climate change;
- identify best practices and lessons learned on building inclusive climate resilient cities, strengthening social cohesion by ensuring equitable access to public services.

Q6: WHERE WILL STRESSES ON WATER GOVERNANCE INCREASE SECURITY RISKS?

With the growing impacts of climate change, water resources may witness increasing political conflict and local, intrastate violence. However, Superforecasters assess countries are unlikely to use water, per se, as a direct justification for conflict. Regions with weak governance, inadequate infrastructure and fragile institutions are more likely to experience water-related conflict as well as migration and food insecurity related to water shocks. Low rainfall or droughts, rapid population growth or urbanisation and a history of armed violence could also increase the risk of a conflict over water.

Although violence is rarely explicitly linked to water, Superforecasters believe that tensions over water availability are likely to become more pressing in the coming decade and could contribute to the likelihood of deadly conflict.

To prevent and mitigate risks that pressure on water uses increases insecurity in the future, the G7 should:

- identify, promote and support institutions and best practices for adaptive water governance;
- enhance efforts to foster cooperative mechanisms in transboundary basins, supporting their transformation from sharing water towards sharing benefits related to water;
- seek to build and/or strengthen transboundary institutions that can promote joint assessment, planning and risk management, especially with a view to adapting to and building resilience against climate change impacts and related uncertainty;
- identify, promote and support the use of biodiversity and ecosystems to assist human adaptation to climate change.

Q7: WILL OIL-PRODUCING COUNTRIES REMAIN STABLE IN A DECARBONISING WORLD ECONOMY?

According to Superforecasters, rapid decarbonisation and its effects will not be the primary driver of instability in oil-producing countries. Oil usage is not expected to decrease fast enough by 2031 or to such an extent as to result in government overthrow. Instead, the main drivers of instability in oil-producing countries are forecast to be pre-existing instability, corruption and weak governance, exacerbated by democratic backsliding globally and the youth bulge. The increasing adverse effects of climate change are accelerants to all those drivers.

To prevent and mitigate the potential negative effects of decarbonisation on the stability of oil-producing countries, and to assure a peaceful and sustainable decarbonisation more generally, the G7 should:

- collaborate in assessing the risks and policy options for attenuating these risks;
- seek to engage partners in these countries with a view to delineating pathways of an early, purposeful, well-planned and well-governed low-emissions transition that limit its destabilising effects, not least by facilitating new forms of energy-related cooperation around renewables and (green) hydrogen;
- ensure clear communication on the benefits of an early and well-governed transition as the only way to reduce risk so as to facilitate as smooth as possible a transition, reducing risks of stranded assets and sudden discontinuities that overwhelm the capacities of the affected governments and societies.

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