HSBC Global Research

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Fragile Planet 2021

National climate risks meet investment implications

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- Almost three months on from the launch of our latest national climate vulnerability model…
- …we explore the nexus of climate risks and investment implications via sector newsflow, policy changes and our model
- We see unprecedented momentum for change and opportunity sets, but think supply chains face notable climate related risk

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In March, we published the fifth edition of our series of Fragile Planet reports, where we seek to answer a single, overarching question: *Which countries are most resilient in the face of rising climate risks?* (*Fragile Planet 2021*, 30 March 2021). This note looks at Chapters 2 and 3 of our four-part model.

Using countries for equity developments: In this Fragile Planet update, we seek to demonstrate how our thinking about national climate vulnerability measures creates a valuable framework for investment decisions, across two of our four key areas. These are *2) Physical impacts of climate change; 3) Ability to respond to climate change: policy, governance, financial strength and more.* There are numerous examples that could have been used. So, to keep it simple, in the full note we have used case study examples for six different sectors, identifying both the associated risks, and opportunities.

Downside risks: In Chapter 2 of our model, we explain how the physical risks of climate have the potential to pose dramatic downside risks to investments. In Chapter 3, we explain how climate governance must be efficiently applied in order to reap these gains. This is about having the wealth, institutional and regulatory quality to unlock the potential and face climate risks.

A constantly evolving story: Even since March, the climate and ESG space has developed. Our Fragile Planet model still holds strong, but recent newsflow suggests a change of pace in climate ambition. Net zero commitments are coming in thick and fast across national, equity and credit markets, from the US to the Philippines, to oil and gas, chemicals and telecoms. In our view, this backdrop creates a plethora of opportunities. This includes developments across energy transition, and growing demand for minerals vital for the clean-tech transition. These opportunity sets apply to Chapters 1 and 4 of our Fragile Planet model.

This is an abridged version of a report by the same title published on 24-Jun-21.

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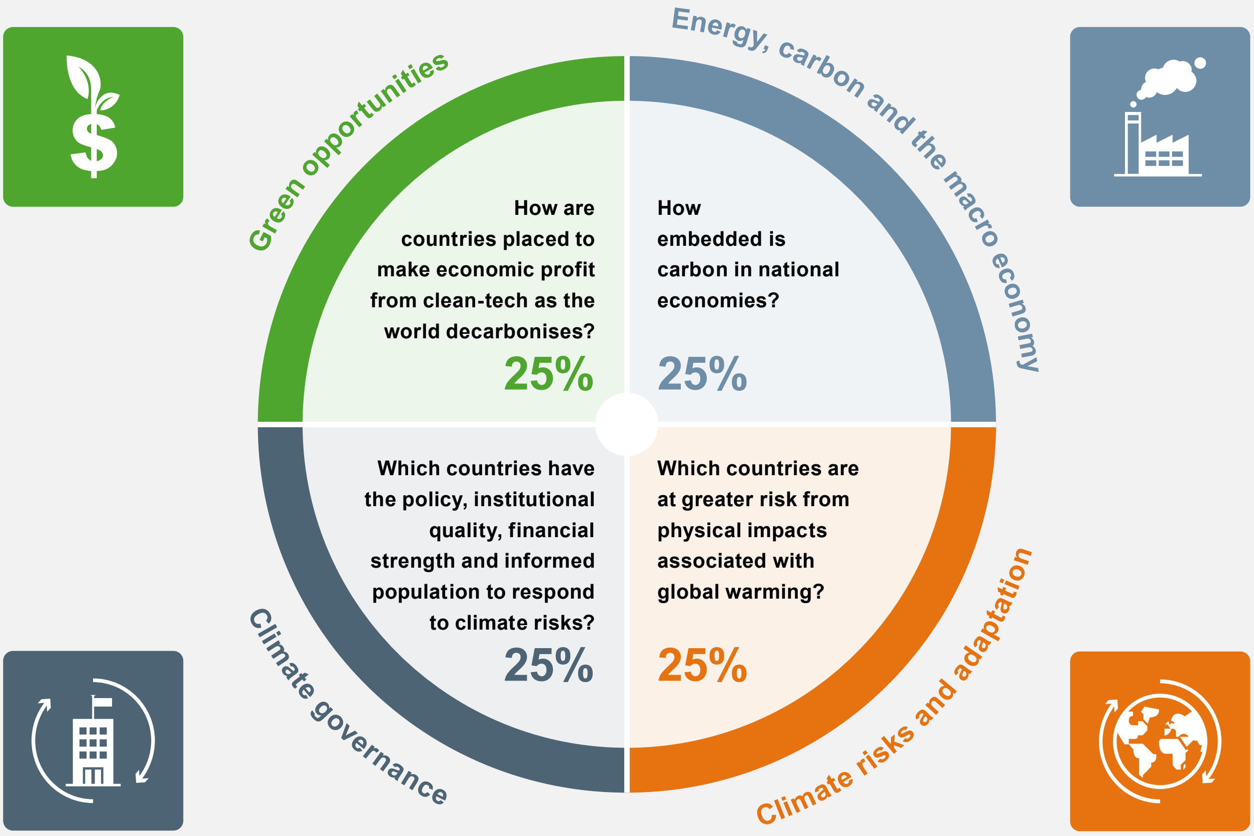
Figure 1. In this report, we explore Climate Risks and Adaptation, and Climate Governance via sector case studies

Scoring climate risks

Which countries are most resilient in the face of rising climate risks – our methodology

Green opportunities	Weight
Climate revenues	7%
Industrial potential to produce cleantech	7%
Key minerals	7%
Corporate climate policies	2%
Technological innovation	2%

Energy, carbon and the macro economy	Weight
Economic carbon intensity	12.5%
Economic diversification and fossil fuel dependence	12.5%



Climate governance	Weight
Climate finance	5%
Institutional quality	5%
Enabled population	5%
Decarbonisation policy	5%
Health risk preparedness	5%

Climate risks and adaptation	Weight
Temperature	3.57%
Water scarcity	3.57%
Air pollution	3.57%
Food systems	3.57%
Ecosystem services	3.57%
Sea level risks	3.57%
Extreme weather events	3.57%

Source: HSBC

Climate risks and adaptation

- Climate change manifests in many ways, all of which pose threats
- Agriculture, textiles and personal care sectors include some of the vulnerable sectors
- We use our model to map climate risk "hotspots" in supply chains

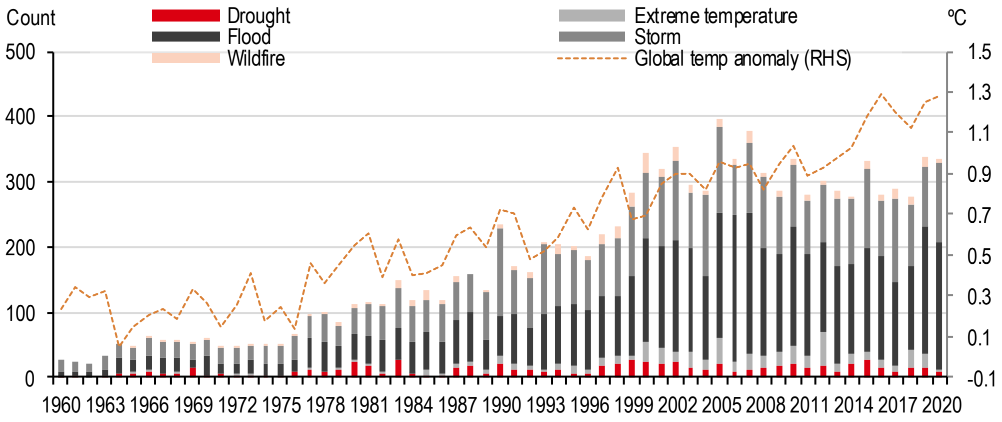
From more frequent and severe flooding, to desertification to rising sea levels, climate change manifests in many different ways, and increasingly so. We summarise this as the "physical impacts" of climate change and, in this part of our Fragile Planet analysis, we have previously explored how resilient different countries are to these risks via a range of indicators (depicted in Figure 1. In the full report, we use case studies to demonstrate how understanding these risks can be a powerful tool for understanding where and how climate may present upside or downside risks to investments, particularly via supply chain exposures.

Physical risks of climate threaten natural resource quality and quantity

To be completely clear, there are numerous sectors that could be impacted by the physical risks of climate change; almost all products – and some services – rely on the world's natural resources at some point along their supply chain. Whether that is the agro-commodities that form the basis of diets around the world, to the availability of water that is used for data centre cooling, or production of fibres for the clothes we wear. It can also simply be the square kilometres of flat, suitable land in a temperate environment of a productive economy, where companies choose to base their headquarters or operational facilities, and employ staff.

As the physical impacts of climate change become ever more prevalent – seen via the increase in frequency and severity of climate related weather events (Figure 2), rising sea levels and biodiversity loss; the quality and quantity of these natural resources on which our products and services rely come into question. We think the market will increasingly be forced to consider the exposure to these risks.

Figure 2. Extreme events increasing as the global temperature anomaly does



Source: EMDAT, UK Met

Sectors

In our view, numerous sectors risk disruption via the physical risks of climate change. It would be a challenge to highlight all of the possible channels via which sectors could be affected. However, one of the more obvious ways in which we notice climate change, is via water availability. Below we have highlighted a non-exhaustive list of sectors that could be affected by climate events, with a particular focus on water for many of them. We think these are *some* of the sectors that already, and will increasingly, have to grapple with the physical risks of climate change; investors will need to be suitably prepared.

- **Agriculture**
- **Retail (food and non-food)**
- **Textiles**
- **Personal care and cosmetics**

(And many other sectors indirectly, including via risks of damaged infrastructure from extreme weather events, rising sea level risks and more)

The full note contains sector case studies for the four sectors highlighted above as well as miscellaneous examples such as the impact of arctic blasts on companies and how hurricanes affect pharma manufacturing production.

The macro economy

Of course, many of the physical impacts of climate change will challenge entire economies, too. We think this is a consideration that the market will increasingly be alive to, as GDP and growth suffers. This could happen via a variety of different channels. We explore a non-exhaustive list below.

Government expenditure

Damage costs

In the short term, government expenditure (and debt) could skyrocket for the provision of assistance and infrastructure investments following extreme weather events.

In the longer term, we expect climate change could have dramatic impacts on government spending on health risks. We have previously estimated a fivefold increase in medical expenditure across G20 EM cities alone, in the face of climate related health risks.

Inflation and commodities

Commodity price disruption and inflation

We expect to see ongoing inflation risks as a result of climate change impacts. Climate change is affecting the production of some commodities, particularly agricultural commodities.

Sustained inflationary impacts and commodity price disruption in this way could, in the long term, lead to food scarcity and affect the quality of living and prosperity of entire economies.

Trade

There are potential effects on the balance of payments as climate events disrupt trade, and we expect this to be the case particularly as food shortages become more common.

As the physical risks of climate change become more stark, these macro datapoints are an even more pressing concern for the businesses on the ground in these countries, in our view. In the next chapter, we explore the extent to which a country is resilient in the face of these risks.

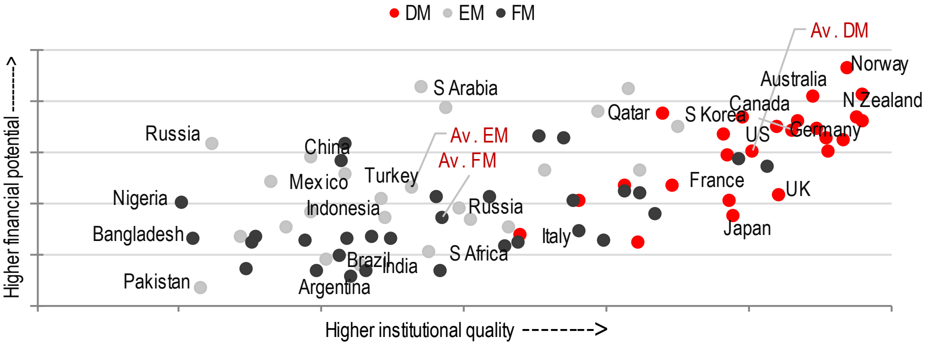
Climate governance

- Climate governance now a common aspect of the climate response
- countries that have wealth, institutional quality, an enabled population, decarbonisation policy and health risk preparedness…
- …are likely to be better placed in a world of climate threats

It is long understood that the institutional quality of a country, amongst other things, affects the ease of doing business in that country. However, as discussed in the previous chapter, the ease of doing business will increasingly be challenged by the growing threat of the physical risks of climate change. And so, countries that have wealth, institutional quality, an enabled population, decarbonisation policy and health risk preparedness are likely to be better placed in a world of climate threats.

Much of this chapter of our analysis is focussed on macro related datapoints; financial capital, institutional quality and how enabled a population is (list of indicators show in Figure 1). Much of this relates to financial and institutional quality indicators, which typically tally with the economic development of an economy (Figure 3). But we have also seen other aspects of "climate governance" such as decarbonisation policy ambition, that does not necessarily relate to the economic development of a country. For example, there is broad ambition across a range of different markets for net zero emissions.

Figure 3. Where financial potential corresponds with higher institutional quality



Source: World Bank, IMF, SWF, NYU, HSBC; simple average calculated for DM, EM, FM

Forward looking climate governance in the form of policy ambition

Within these emissions reduction pledges, there are signs of "climate governance" related policies. President Biden's recent announcement of USD1bn of funding for climate resilience projects is a good example. The funding is specifically targeted at pre disaster mitigation resources for vulnerable communities, and more funding for climate data systems that will track climate impacts on communities to allow for more informed decision making in future.

The full note contains sector case studies for telecoms and pharma and how they can help mitigate the effects of climate change, from early warning systems and emergency communications to how healthcare will help those are risk of suffering from physical risks of climate change

Disclosure appendix

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