

The Policy Challenge for the Inevitable Response to the Climate Transition

1 November 2021

By Mark Fulton, Project Director - Inevitable Policy Response (IPR) & Founder - Energy Transition Advisers

The Inevitable Policy Response (IPR) is a climate forecasting consortium that helps the financial sector and investors by modelling how the interaction of policy and technology can drive the climate transition. IPR [climate scenarios](#) integrate both the land and energy systems across all key geographies.

The thesis is simple: the science shows the impacts that necessitate an acceleration of policy response - that acceleration is 'inevitable.' Exactly what, when, where the policies form and their structural impacts on markets and investors is another matter.

IPR has developed two scenarios based on the assumption that policy will form to mitigate what the science describes. This ongoing analysis has been led by Vivid Economics.

1. A **Forecast Policy Scenario (FPS)** 2021 is IPR's current assessment of *what is anticipated to happen*, in terms of future policy developments, the subsequent impact on emissions reduction and temperature outcomes, and leads to a 1.8°C outcome¹.
2. A **1.5°C Required Policy Scenario (RPS)** which targets a rapid pathway to 1.5°C² with minimal Carbon Capture and Storage (CCS) and Negative Emission Technologies (NETs). This RPS Scenario is IPR's current assessment of *future policy developments needed* to accelerate emissions reduction and hold global temperature increase to a 1.5°C outcome.

The IPR FPS demonstrates that getting below 2°C is possible. Although still a significant challenge for policy makers, we believe they can achieve this. Meanwhile, the 1.5°C RPS exemplifies that the stretch to a 1.5°C Net Zero 2050 outcome is another level of challenge, requiring even greater ambition, even sooner.

OECD and Non-OECD Emissions to 2050

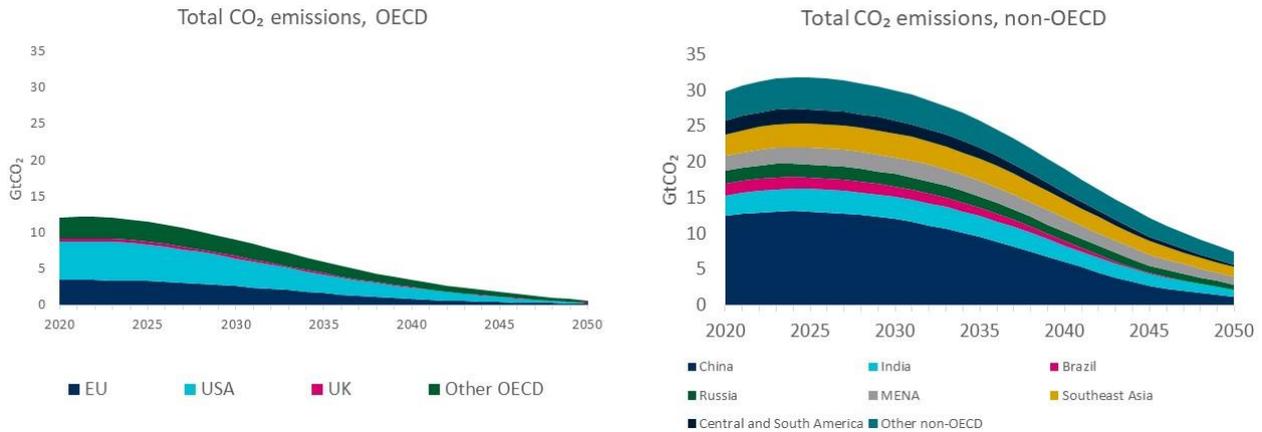
When looking at the geographic outcomes of both IPR scenarios, it is no surprise that OECD nations will have fewer emissions to reduce than emerging and developing countries.

This reality has been evident from the start of the UNFCCC process and is illustrated in the IPR FPS 2021 forecast emissions pathways for OECD and Non-OECD displayed below.

¹ 50% probability

² 50% probability

Figure 1 IPR FPS 2021: Total CO₂ emissions (on a production basis) reach near zero in OECD countries, though remain substantial in non-OECD countries



- In OECD countries, emissions reductions are rapid due to 2050 net zero targets.
- Total (energy and land) CO₂ emissions countries fall from around 12 Gt in 2020 to 9 in 2030 and near zero in 2050, with virtually no international offsets required

- In non-OECD countries, emissions reductions are slower due to rapid growth in energy demand, later net zero targets in China, India and Brazil, and lack of net zero targets elsewhere
- Total CO₂ emissions rise in the 2020s and fall back to 2020 levels of 30 Gt by 2030, before declining substantially and falling to 8 Gt in 2050

Source: Vivid Economics

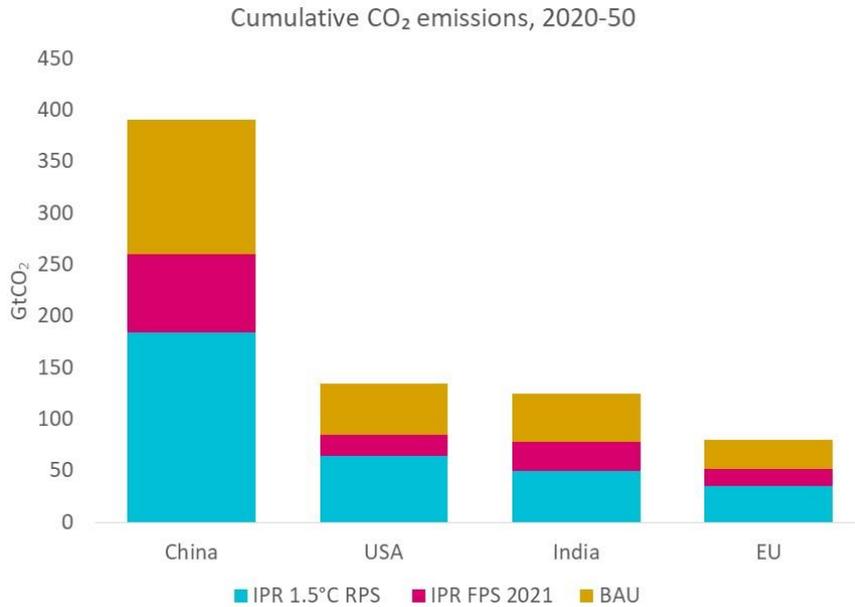
Emissions and the 1.5°C Challenge

Looking at key countries and regions in Figure 2 below, we measure cumulative emissions reductions from a Business-as-Usual baseline³ relative first to the FPS 2021 (yellow bar) and then from the FPS to the 1.5°C RPS red bar. Blue is what is permitted under 1.5°C RPS.

In the progression towards Net Zero, reductions in the US are the most significant in the OECD while the EU has already made substantial reductions. The importance of China and India stand out amongst non-OECD nations. Indeed, Figure 2 shows the IPR forecast itself is ambitious.

³ Based on IEA STEPS

Figure 2 Embedded in the IPR FPS 2021 are substantial emissions reductions, additional reductions to achieve the IPR 1.5°C RPS will be challenging



- The IPR FPS 2021 represents a substantial reduction in emissions relative to a business-as-usual (BAU) scenario
- China’s emissions are around 35% lower than under a BAU pathway
- The United States and India’s emissions are around 40% lower
- The EU’s emissions are around 35% lower
- Smaller additional reductions are needed to achieve the IPR 1.5°C RPS, though these will be more costly and challenging than those delivered under the IPR FPS 2021

Note: BAU based on emissions growth rates from IEA STEPS scenario
Source: Vivid Economics

Taking this further, in Figure 3 below we have looked at the difference between the FPS 2021 and 1.5°C RPS in more detail by specific key policies in regions.

Again, in terms of impact, China and the emerging market countries stand out in energy related policy. The criticality of China’s phase outs of coal, ICE vehicles and industry transition is visible. The importance of the land sector is also evident. Failure to end deforestation, commence mass afforestation and adopt Nature Based Solutions (NBS) is not an option.

Figure 3 Policies with the greatest 2020-2050 Gt reduction between IPR 1.5°C RPS and IPR FPS 2021

Rank	Policy	Country	IPR 1.5°C RPS vs IPR FPS 2021 Gt reduction
1	Coal phase out	China	40.0
2	End deforestation and NBS	Sub-Saharan Africa, South East Asia and Latin America	19.0
3	100% clean industry	China	19.0
4	Coal phase out	India	14.1
5	100% clean industry	India	8.3
6	100% clean industry	MENA	7.2
7	100% clean power	MENA	6.7
8	Fossil vehicle phase out	China	6.3
9	Coal phase out	Indonesia	5.4
10	100% clean industry	South East Asia	5.2

Reduction is also substantial for OECD countries e.g. for the United States accelerated 1.5°C RPS policies deliver:

- 20 GtCO₂ reduction beyond FPS across all policies
- 4.9 GtCO₂ reduction beyond FPS for 100% clean industry policy

Reduction is also substantial for methane and nitrous oxide emissions that result from accelerated 1.5°C RPS policies related to animal protein demand:

- 24 GtCO₂eq reduction beyond FPS across all countries
- 4.3 GtCO₂eq reduction beyond FPS in India alone

Note: Emissions reduction are approximate and include come additional sector-specific CO₂ reduction such as energy efficiency.

Source: Vivid Economics

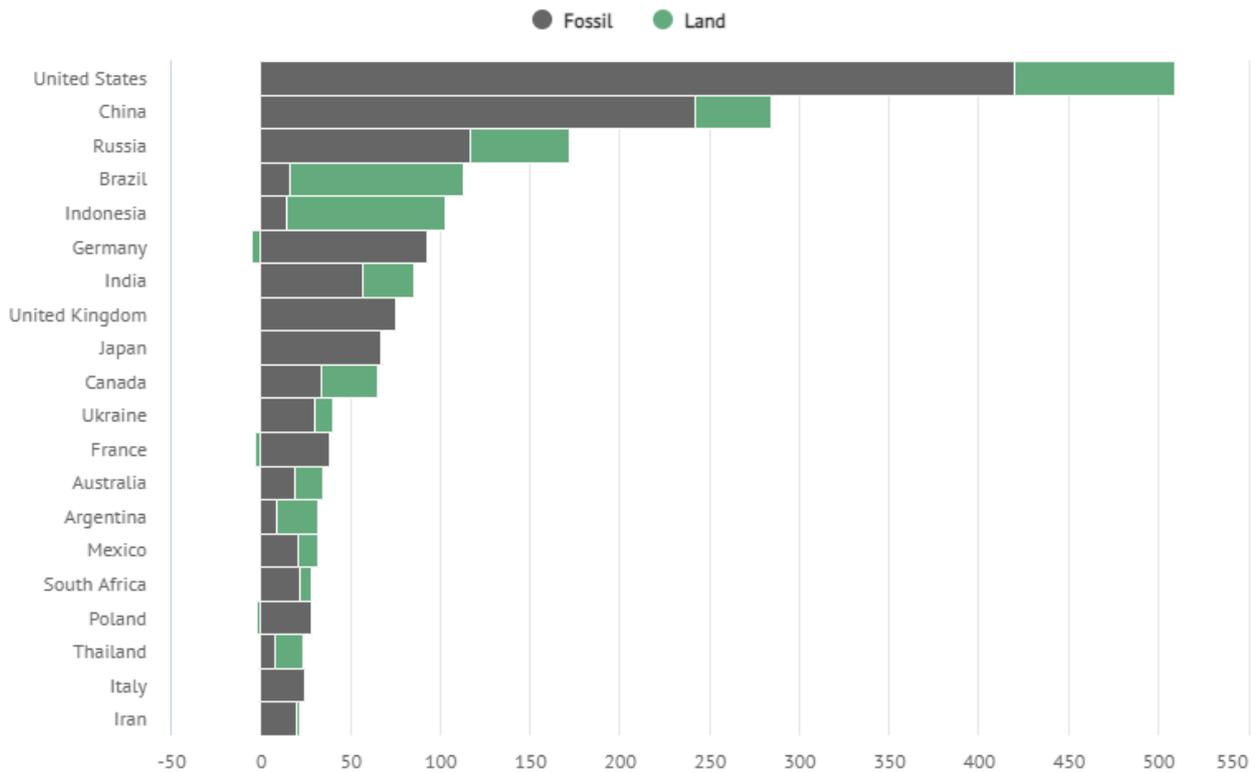
Economic Growth and Equity – A Just Transition

The countries where policy action creates the greatest emissions reduction impact are clear. But is this fair that they carry the greatest load?

This question has dogged COPs since Copenhagen. In IPR analysis we have included consideration of the imperative for a Just Transition and assume that its principles underpin many of our policy options. This immediately suggests ‘green finance’ and the challenge of shifting trillions in investable capital based in OECD countries to fund low carbon and sustainable growth paths in developing nations.

It is certainly worth remembering the history of the carbon budget in this context (see Figure 4 below).

Figure 4 The countries with the largest cumulative emissions 1850-2021



Note: Billions of tonnes of CO₂ from fossil fuels, cement, land use and forestry
Source: Carbon Brief

The US is the clear leader in terms of historic source of emissions. However, it is most notable BRICs and Indonesia from the developing world are in the top 10. The challenge remains to get everyone working together to move beyond the past in order to tackle the future emissions challenge in an equitable way.

Certainly, the cost of doing so in terms of economic transformation in the emerging and developing world has fallen so far that some commentators think it is turning to a net benefit.

Previous IPR analysis has shown the long-term GDP growth impacts are small compared to other drivers⁴, and lower than the long run impacts of climate change itself⁵. This should be seen as a key factor for optimism.

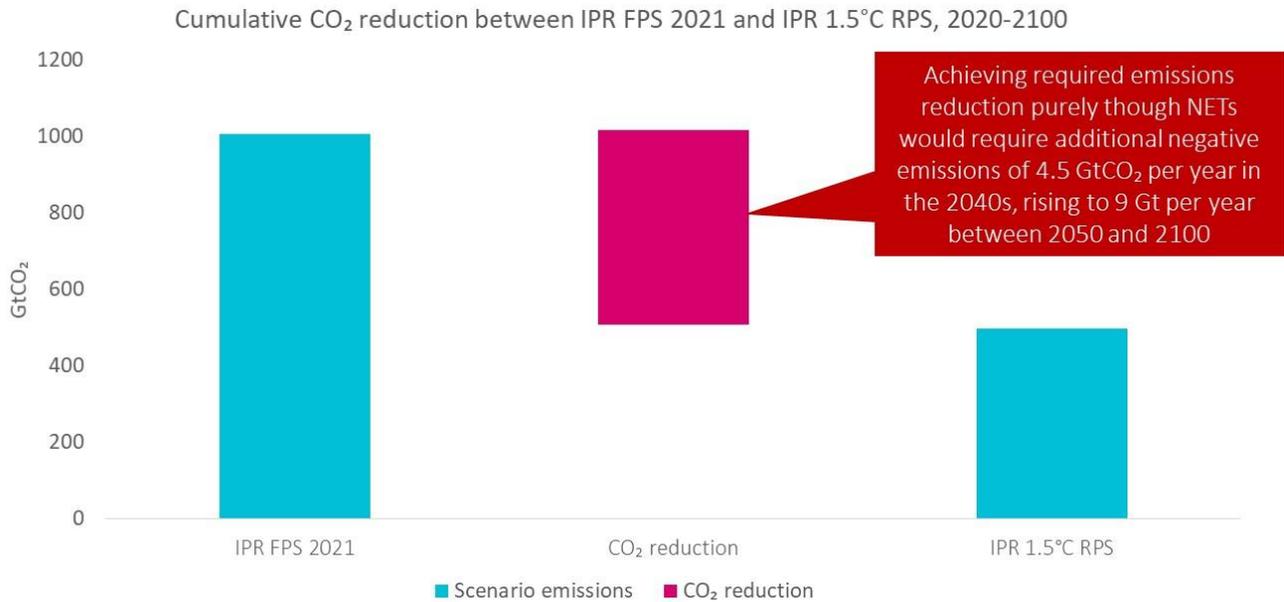
Negative Emission Technologies (NETS) - the final Backstop?

As a final note, the ultimate ‘backstop’ has to be more significant utilisation of Negative Emissions Technologies in both planning and execution. Global inability to implement the type of policies laid out in 1.5°C RPS leaves one other approach. The extreme position of closing the gap between the FPS 2021 and the 1.5°C RPS utilising NETs is set out in Figure 4.

⁴See Inevitable Policy Response, “Impacts of the Inevitable Policy Response across asset classes,”(2019) <https://www.unpri.org/download?ac=11652>

⁵See Network for Greening the Financial System (NGFS), “NGFS climate scenarios for banks and supervisors,”(2021) https://www.ngfs.net/sites/default/files/media/2021/08/27/ngfs_climate_scenarios_phase2_june2021.pdf

Figure 5 Achieving 1.5°C with less aggressive specific policy action on fossil CO₂ emissions as laid out in the 1.5°C RPS would require substantially more negative emissions technologies (NETs) which themselves need developing



Source: Vivid Economics

Conclusion

At its most basic, IPR anticipates a climate policy acceleration, driven in part by investor, corporate and civil society pressure around Net Zero, climate impacts and low-carbon technology cost developments.

But without even higher ambition and intensification by policy makers, temperature increases will not be held to Paris goals. Simultaneously, the principles embedded in Just Transition provide a bridge to address the different emissions paths evident between the OECD and non-OECD nations.

Ambition must continually ratchet upwards towards the 2025 ratchet, and investment then flow for emissions curves in the developed and developing world to bend towards Net Zero by 2050.