KEEPING GLOBAL TEMPERATURE TO 1.5°C

The Challenges for developing countries

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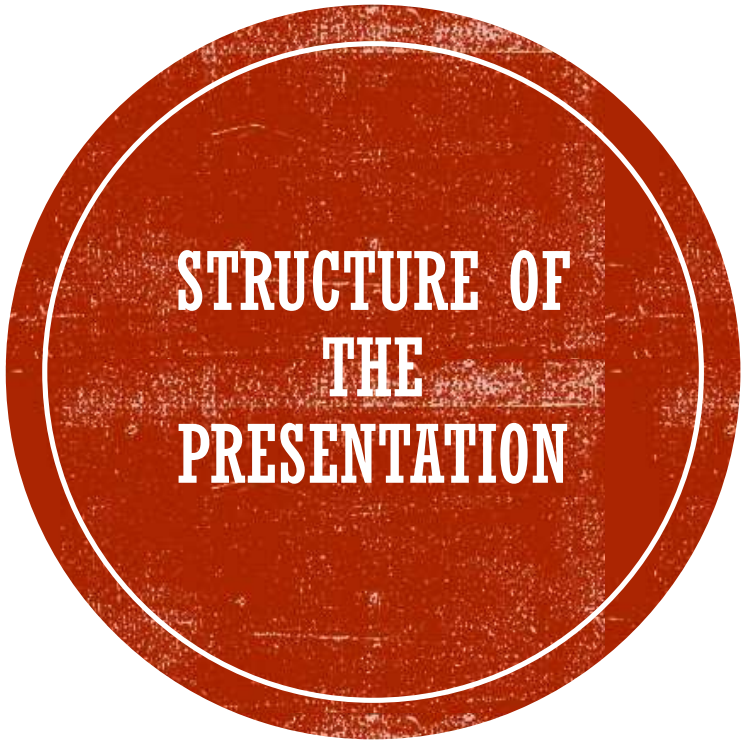


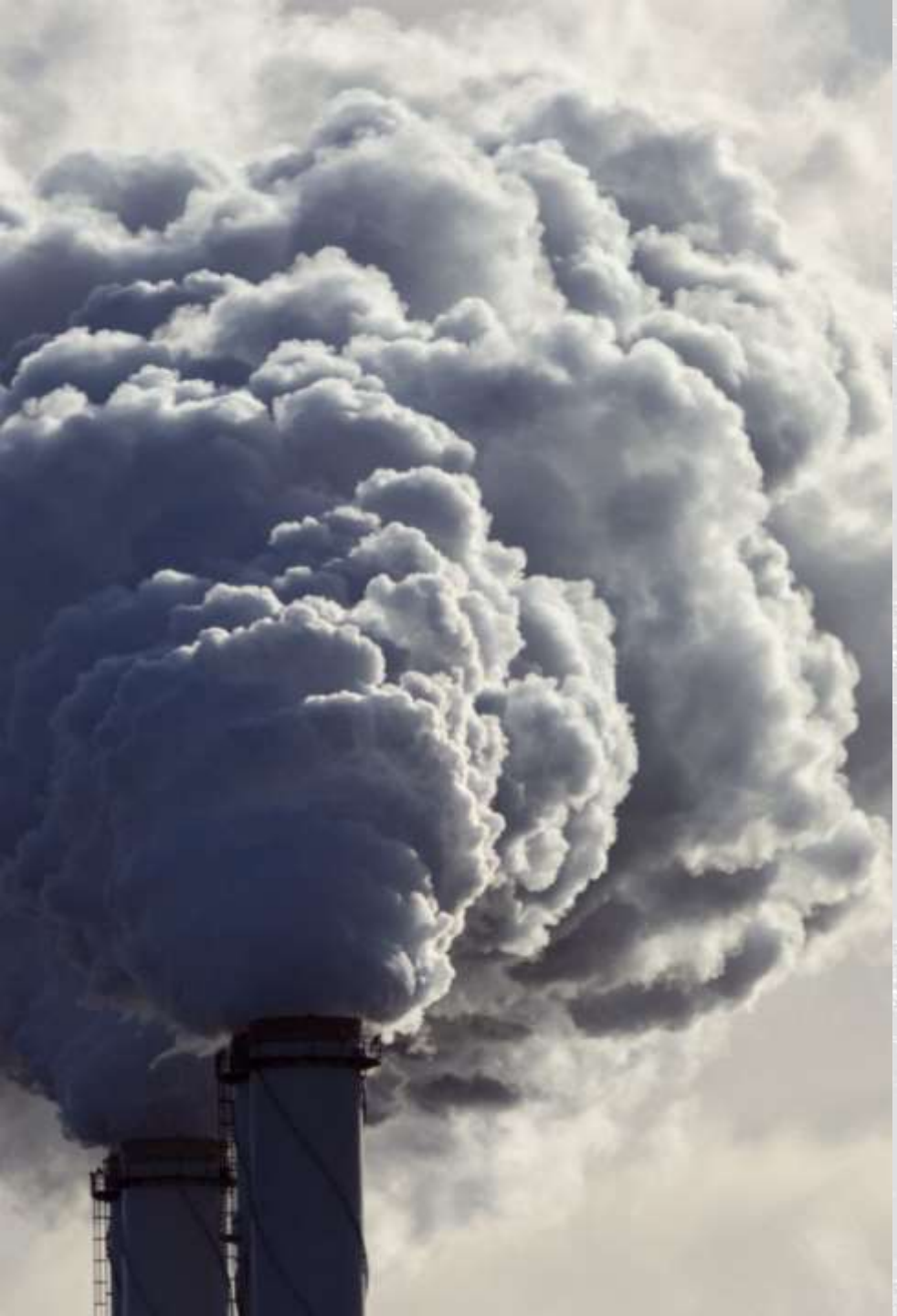
- IPCC scenarios, what is missing?
- What does the 43 per cent target by 2030 entail?
- A note on global targets
- Transitions: who/when?
- The big challege

IPCC SCENARIOS: WHAT IS MISSING?

- The ‘storylines’ approach used in AR 6 of the IPCC is based on a range of Shared Socio-Economic Pathways (SSPs), **that do not include considerations of equity**.
- Integrated Assessment Models (IAMs) project global energy and emissions trajectories based on multi-region optimization. The geographical classification of countries… **does not capture differentiation in terms of energy use, historical and current emissions**, or other variables that characterize the level of social and economic development.
- These IAM scenarios, therefore, project a range of **inequitable outcomes** for potential mitigation in variables such as fossil fuel use, green technology deployment, and carbon dioxide removal (CDR), across an established set of baselines, which themselves constrain energy and income growth.
- The scenarios are built on the **assumption of permanent inequality between developed and developing countries, in per capita income, energy consumption, and several other variables.**

1.5°C AND IPCC SCENARIOS

- Study: **A new scenario framework for equitable and climate-compatible futures**: Scenarios built to demonstrate the degree of effort that would be required across developed and developing countries to limit warming to 1.5°C or 2°C, while ensuring energy equity in the process, instead of 'least-cost' mitigation.
- Limiting warming to 1.5°C requires higher effort across all regions, with the global effort remaining similar across scenarios. However, the distribution of the global effort across development categories varies significantly, **depending on whether energy and climate equity are considered.**
- The **mitigation burden** for the **highest development category** is almost **six times higher** if climate equity is considered. In contrast, the effort required by the **least developed category is doubled** if climate equity is compromised.



THE (IN)FAMOUS 43 PER CENT TARGET

- The figure of emission reduction target of 43% reduction in greenhouse gas emissions below 2019 levels by 2030 is the median across scenarios; the full range is 34-60%. The global median of 43% reduction does **not tell us how the emissions reduction may be distributed**.
- In this median scenario, which has a 45% reduction of carbon dioxide (CO2) emissions below 2019 levels by 2030, the **emissions reduction is set to be very high in** developing countries – especially in **Sub-Saharan Africa and Latin America** – in the decade of 2020-2030.
- In general, in the median scenario cited by the IPCC, emissions reductions are higher for non-Annex-I regions by 2030, thus violating the principles of equity and CBDR&RC.

THE (IN)FAMOUS 43 PER CENT TARGET

- In these scenarios, in order to justify the relatively low emission reduction by the developed countries and justify their continued dependence on oil and gas, and yet appear to meet the temperature target, some prominently **contestable assumptions**:

a. **High level of decoupling** between final energy use and economic growth that may or may not be feasible (Semieniuk et al., 2021).

b. **High levels of negative emissions in developing countries** primarily through carbon dioxide removal by land-based mitigation. For the scenarios associated with the 43% emissions reduction, this could range from ~100 GtCO2 to ~530 GtCO2 (Kanitkar et al., 2022).

c. **Further negative emissions from net zero to 2100**. (The bulk of this carbon dioxide removal by land-based mitigation is to come from developing countries.)

- Thus, **the figure of 43% emissions reduction by 2030 is based on shaky assumptions and/or assumptions of a highly unequal world in the future**, together with the low-ambition NDCs of the developed countries.

Source: Global climate targets: Peaking, emissions reduction and renewable energy

A NOTE ON GLOBAL TARGETS

- Electricity demand varies significantly across countries at different stages of development; it is growing much more rapidly in developing countries. Therefore, **where this additional global RE capacity will be installed becomes the key question**.
- Between 2010 and 2019, annual electricity consumption in China and India grew at rates of 6.6% and 6.3%, respectively, in contrast to a 0.3% decline in the EU and a minimal 0.12% growth in the US.
- Therefore, in the US and EU, **new power generation capacity will be necessary primarily for replacing older fossil fuel-based capacity, rather than to cater to "additional" demand growth**.
- In a scenario where the **US retains its existing fossil fuel capacity, it would only require about 26 GW of new RE capacity to meet additional demand**, resulting in a **mere 0.4% contribution** towards the target of tripling RE capacity.
- In contrast, if both the US and EU phase out all fossil fuel-based electricity production, **they would need to add about 1,565 GW and 538 GW of additional RE capacity**, respectively (at current growth rates in electricity demand and a capacity factor of 25% for RE). In this scenario, the US and EU would contribute more than a third of the new capacity, aligning more closely with their equitable share of the burden.

FOSSIL FUEL PHASE OUT: WHO/WHEN?

- Developed countries are **responsible for 68% of the historical cumulative carbon dioxide emissions** (non LULUCF) **from 1850-2019** and represented only 19% of the world's population in 2019. Developing countries' historical cumulative carbon dioxide emissions total at 32% for the same period and they represented 81% of the global population in 2019 .
- According to a fair shares assessment by climate equity monitor, for limiting temperature rise to 1.5°C (50% probability), the **fair share of the carbon budget for Annex I countries is 87 Gt CO2 equivalent**. However, **an analysis** of Annex I countries' NDCs **shows that cumulatively, by 2030, they will emit 140 Gt** carbon dioxide equivalent, exceeding their fair share by 53 Gt carbon dioxide equivalent. Developed countries current climate mitigation efforts are both insufficient for limiting the temperature rise to 1.5 °C, and overconsume the remaining carbon budget.
- It appears that the developed countries will merely try to use targets to **impose decarbonisation at the earliest on developing countries**. For a majority of developing countries, it will mean halting their growth even before several significant developmental targets are achieved and without perhaps even poverty eradication goals being attained. That is why **just, orderly and equitable are crucial**.
- **US, Canada, Australia, Norway and the UK** account for a majority (51%) of planned expansion of new oil and gas fields through 2050. These five countries are also responsible for more than two-thirds (67%) of all new oil and gas licenses awarded since 2020.

FOSSIL FUEL PHASE OUT: WHO/WHEN?

- **The US took 100 years to reduce the number of people employed in its coal sector** from 1 million in 1920 to around 42,000 in 2020. Yet around 26 counties in the US spread across ten states continue to remain dependent on the coal sector for their economies. In 2024, the country has 505 operational coal mines and 408 coal fired power plants.

- Germany began implementing its shift away from coal in the 1960s**. It took the country close to 60 years** to reduce the number of people employed in its coal sector to 3000 in 2018. Despite making these achievements, the country had to restart its coal and lignite power stations when it faced an energy crisis due to the conflict in Ukraine.

- Australia, the world's second largest exporter of coal is another developed country which continues to rely heavily on coal for both revenues and more than 50% of its domestic power generation. In 2024, the country has 103 operational coal mines and 53 coal fired power plants. In 2017, the country initiated the closure of its oldest coal power plant, the Hazelwood plant near Melbourne. **The decommissioning plan involved an investment of A$700 million and a 30 year time frame for the rehabilitation of the site**.

- UK set up a Coalfield Regeneration Trust, for monitoring the implementation of UK's process of decommissioning its coal plants**. This Trust received GBP 300 million over 20 years.**

FOSSIL FUEL PHASE OUT: WHO/WHEN?

- In China, around 81% of its primary energy consumption needs are met through fossil fuels, while 16.16% comes from renewable energy sources
- Currently India has 150.27 GW of RE installed capacity, with the share of solar and wind being 87.21GW and 47.07GW respectively. India has set itself a target of installing 500 GW of RE capacity by 2030 and meeting 50% of its energy requirements from RE. According to a study conducted in 2020, India would need to scale up its solar capacity to about 1000 GW for transitioning about half a million people directly employed in coal mines. India would thus need substantial amounts of alternative energy sources for transitioning away from fossil fuels.
- A **huge amount of land will be required** to set up solar parks to meet India's ambitious targets of solar energy development. Agriculture happens to be a crucial sector for the country employing more than 45% of the total workforce and supporting livelihoods of 42.3% of the population. There are concerns about the sector being impacted.
- **Energy transition has many other dimensions. These include social, economic, cultural and political/institutional issues, each of which vary from country to country.**

THE BIG CHALLENGE

- Many developing countries are in a position of **structural and institutional weakness** for pursuing their right to development and mobilizing domestic resources.
- Such weakness arises from their relatively disadvantaged positions in globalized economic and financial systems, the economic and social impacts of **past crises** (including the 2008 global financial crisis and the COVID-19 pandemic), **on-going global economic fragility and weakness**, the **losses and damages** arising from the adverse effects of climate change and from global environmental degradation, and the **emergent fracturing of the multilateral system of cooperation in various areas** (trade, climate change, finance, investment, security).
- Developing countries have to meet the supreme challenge of **achieving inclusive and sustainable economic development, contributing to climate change mitigation**, and **adapting** to rising global temperatures, changing precipitation patterns, and more extreme weather events, while at the same time being among those that are particularly vulnerable and often the least prepared to adapt to climate change.