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ENERGY, ENVIRONMENT, AND CLIMATE CHANGE PROGRAMME

NIAS/NSE/EEC/U/PB/15/2022

**NIAS Policy Brief**

# Foregrounding Equity in Climate Action

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## The Question

The world has already warmed by about 1.07 deg. C (0.8–1.3 deg. C) as compared to the pre-industrial period (IPCC,2021[1]). Signatories to the Paris Agreement have agreed to make efforts to limit the temperature rise to "well below 2 deg. C" and in fact attempt to restrict it to 1.5 deg. C. That rise in global surface temperature is directly and linearly related to global cumulative emissions is now firmly established in the scientific literature. This relationship implies that to limit temperature rise to below 2 or 1.5 deg. C with a certain probability, cumulative emissions must be limited to within a corresponding global carbon budget.

Developed countries[2], with about 18% of the global population, are responsible for over 60% of global historical emissions (~2516 $GtCO_{2eq}$[3]) between 1850 and 2019. The use of fossil fuels has enabled these countries to achieve high levels of industrial development and infrastructure, and consequently provide their populations with better amenities and higher levels of well-being. On the other hand, India alone is home to about a similar proportion of the global population but is responsible for only 4.5% of the global cumulative emissions between 1850 and 2019. This is because India's per capita energy consumption of 24.8 Gigajoules (GJ) in 2019 was only one-third of the world average of 75.4 GJ (BP, 2021[4]). Low levels of energy consumption are in turn related to low income and development.

India's developmental challenges are significant and in the era of climate change need to be overcome even more

1 IPCC, 2021: *Climate Change 2021: The Physical Science Basis.* Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press. In Press

2 Countries listed in the Annex-I of the United Nations Framework Convention on Climate Change (UNFCCC).

3 Excluding emissions from the Land Use, Land-Use Change and Forestry (LULUCF) sector (Gütschow et al 2021)

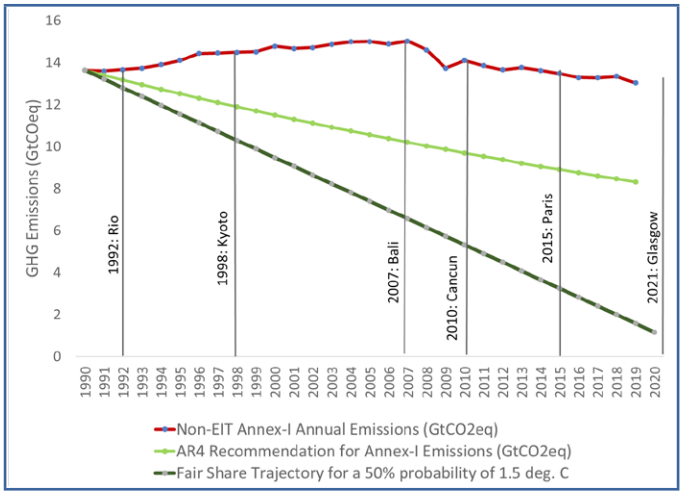
4 *BP, Statistical Review of World Energy,* https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/downloads.html

urgently. Being a nation with natural and human habitats that are highly vulnerable to climate change, a focus on achieving developmental goals will be India's first defense against climate change. It is in this context, that climate justice and equity in climate action become critical elements in India's approach to global climate policy. What should India's strategy be, to ensure climate justice and equity in global climate action?

## The Issue

The principle of Common But Differentiated Responsibilities and Respective Capabilities (CBDR&RC) explicated in Article 3.1 of the United Nations Framework Convention on Climate Change (UNFCCC) requires developed countries to take the lead in mitigating climate change. Articles 4.5 to 4.8 of the UNFCCC also recognizes the need for developed countries to transfer technology and finances to help developing countries transition to non-fossil fuel sources without impeding their development. Despite these clear guiding principles on climate action in the UNFCCC, developed countries have constantly sought to undermine the principles of equity and transfer the burden of climate change mitigation to developing countries such as India, without commensurate financial or technological support.

**Figure 1. Actual, Recommended, and Fair Emissions Trajectories from 1990 to 2020 for non-EIT Annex-I parties**




*Note: Figure constructed by author. Historical emissions data from Gütschow et.al[6].*

Of the total global carbon budget of 2916 GtCO2 for a 67% probability of limiting temperature rise to 1.5 deg. C, over 86% is already consumed. Similarly, for a 67% probability of 2 deg. C, the total carbon budget is 3666 GtCO2, of which over 68% is already consumed. It is necessary therefore that India ensures access to its fair share of the global carbon budget to support its developmental needs while still contributing to global mitigation efforts.

## The Findings

The Intergovernmental Panel on Climate Change's (IPCC) fourth assessment report had recommended that developed countries must reduce their emissions by 25-40% as compared to 1990 levels by 2020. We compare this recommendation to the actual emissions for a subset of developed countries called non-EIT Annex-I countries here[5] (See Figure 1). Additionally, we also compare these two trajectories to a "fair share trajectory" constructed based on the estimates of the global carbon budget given in the report of the Working Group-I to the 6th Assessment cycle of the IPCC. As shown in Figure 1, actual emissions (without LULUCF) of the richest Annex-I parties, have been more than those recommended by the AR4 and far more than what would constitute an equitable emissions trajectory. In contrast, India has used far less than its fair share till 2019. Table 1 shows the fair share vs. actual emissions for some

**Table 1. Carbon Debt and Credit for Some Major Economies (1850-2019)**

| | Fair Share of the Global Carbon Budget (1850-Net-Zero) for a 67% probability of 1.5 deg. C | Fair Share of the Global Carbon Budget (1850-Net-Zero) for a 67% probability of 2 deg. C | Actual Cumulative Emissions (1850-2019) | Carbon Debt/Credit = Fair Share of Total Carbon Budget - Actual Emissions (1850-2019)* |
|---|---|---|---|---|
| Australia | 10 | 12 | 31 | -22 to -19 |
| USA | 125 | 157 | 553 | -428 to -396 |
| EU (27)+UK | 187 | 235 | 528 | -341 to -293 |
| China | 533 | 670 | 338 | 196 to 333 |
| India | 521 | 655 | 112 | 409 to 543 |

*Note: Negative values denote a carbon debt and positive values denote a carbon credit. The lower values are for a total carbon budget corresponding to a 67% probability of limiting temperature rise to 1.5 deg. C and the higher values are for a total carbon budget corresponding to a 67% probability of limiting temperature rise to 2 deg. C*

5 43 developed countries listed in the Annex-I of the United Nations Framework Convention on Climate Change (UNFCCC). Of these 14 countries belong the group of "Economies in Transition". These are countries that were part of the former USSR. These 14 countries are excluded in the group of non-EIT Annex-I parties discussed in this analysis.

6 Gütschow, J.; Günther, A.; Pflüger, M. (2021): *The PRIMAP-hist national historical emissions time series v2.3.1* (1850-2019). zenodo. doi:10.5281/zenodo.5494497.

**Table 2. Per capita Coal, Oil, and Natural Gas Consumption, and Installed Fossil fuel based Power Generation Capacity in some Major Economies in 2019**

| | Per Capita Coal Consumption (GJ/person) | Per Capita Oil Consumption (GJ/person) | Per Capita Natural Gas Consumption (GJ/person) | Installed Capacity of Coal Power Plants (GW) | Installed Capacity of Natural Gas Based Power Plants (GW) |
|---|---|---|---|---|---|
| Australia | 70 | 84 | 60 | 25 | 12 |
| Germany | 27 | 56 | 38 | 41 | 23 |
| USA | 34 | 113 | 93 | 232 | 509 |
| EU (27) | 16 | 52 | 32 | 117 | 155 |
| China | 57 | 19 | 8 | 1046 | 99 |
| India | 14 | 7 | 2 | 233 | 23 |

*Data Source: https://www.climateequitymonitor.in, Accessed on 4 January 2022*

developed and developing countries for the period 1850 to 2019.

India has a carbon credit of over 400 $GtCO_2$. Overuse of the carbon budget by developed countries in the past implies that most developing countries will not be able to access their full fair share of the carbon budget. Despite this past inaction and overwhelming evidence that limiting warming to 1.5 deg. C or even to 2 deg. C requires immediate reductions in emissions, at COP26, developed countries have declared that they will not stop emitting $CO_2$ for at least another 30 years or so. Even if we ignore past emissions and just consider the remaining carbon budget, the **United States must in fact reach net-zero emissions by 2025**. However, they have declared an intention to reach net-zero emissions only by 2050. Similarly, the European Union has declared a target year of 2050 when **a minimally fair contribution to mitigation requires the EU to reach net-zero emissions by 2034 at the latest**.

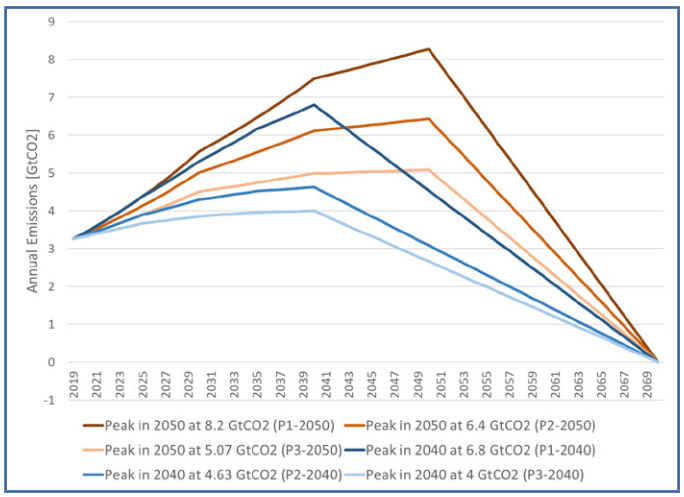
It is in this backdrop that one must view the pressure on India to phase out coal. As shown in Table 2, India's per capita consumption of fossil fuels is much lesser than that of developed countries and is even lower than most other emerging economies. Even in absolute terms, despite its much larger population, India's installed capacity of fossil fuels is much lower than that of the US and EU. The declaration of the Prime Minister at COP26 that India will reach net-zero emissions by 2070 is also in keeping with India's fair share of the carbon budget.

Six illustrative emissions pathways are constructed for India (See Figure 2). In three of the six pathways, emissions peak in 2040, after which they reduce to zero by 2070 linearly. In the remaining three pathways emissions peak in 2050 with much sharper reductions thereafter to reach zero emissions by 2070. These pathways are only meant as an illustration of a range of potential trajectories along which emissions may change between 2020 and 2070. Many more trajectories are possible (Kanitkar,2021[7]).

All of the illustrative pathways shown here result in cumulative emissions that are within India's fair share of the total global carbon budget. As shown in Table 2, India's carbon credit varies between 409 and 543 $GtCO_2$ (from 2020 till the country achieves net-zero emissions) if we consider global carbon budgets corresponding to a 67% probability of limiting global warming to 1.5 and 2 deg. C. The illustrative pathways shown in Figure 2 have cumulative emissions ranging from 137 $GtCO_2$ to 272 $GtCO_2$.

Therefore, unlike declarations of developed countries and even of some other emerging economies, India's declarations

**Figure 2. Illustrative Emissions Trajectories for India for the period 2020 to 2070. Emissions peak in 2040 or 2050 across the trajectories at different levels**




*(Illustrative Pathways constructed by author first published in Kanitkar,2021)*

7 Kanitkar, T., (2021) *Equity in Global Climate Policy and Implications for India's Energy Future,* Economic and Political Weekly, Vol. 56, Issue No. 52, Dec, 2021

for climate change mitigation are in line with the results of climate science as well as the principles of equity. Both these elements are the basic guiding principles of the UNFCCC. However, meeting these ambitious targets is not going to be easy for India, given its developmental challenge and resource endowments. The need for international equity in climate action therefore becomes crucial for India as the remaining carbon space is getting rapidly depleted.

## The Interventions

The following recommendations are suggested for consideration:

1) India must strongly lobby for cumulative emissions and the total global carbon budget to be the basis for determining the adequacy and ambition of climate action as this will be in accordance with both science and equity as required by Article 14 of the Paris Agreement.

2) Irrespective of whether carbon space is used as a measure to determine climate ambition, India must unilaterally claim it's fair share of the carbon budget. This can potentially change the terms of the debate. Unlike calls for declaring years to reach net-zero emissions, the use of the carbon budget, which encompasses the concept of net-zero emissions, is a scientifically more robust measure of climate action.

3) With historical responsibility taken into consideration, India's fair share amounts to about 400 $GtCO_2$. This eclipses the total globally available carbon budget for the 1.5 deg. C target However, without the availability of low-cost finance and technology transfer from developed countries, claiming this fair share becomes essential given the uncertainty of energy technologies in the future.

4) The actual use of this carbon space is contingent on how the energy landscape develops in the future and the extent to which other countries act to mitigate climate change as the latter will determine India's adaptation needs as well. It is critical therefore to secure the country's fair share of carbon space to prevent developed countries and other fast-growing economies from disproportionately grabbing even the remaining carbon budget. Claiming a fair share of the carbon space is also well in line with the principles of equity and climate justice enshrined in the UNFCCC and is also in keeping with the results of climate science.

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