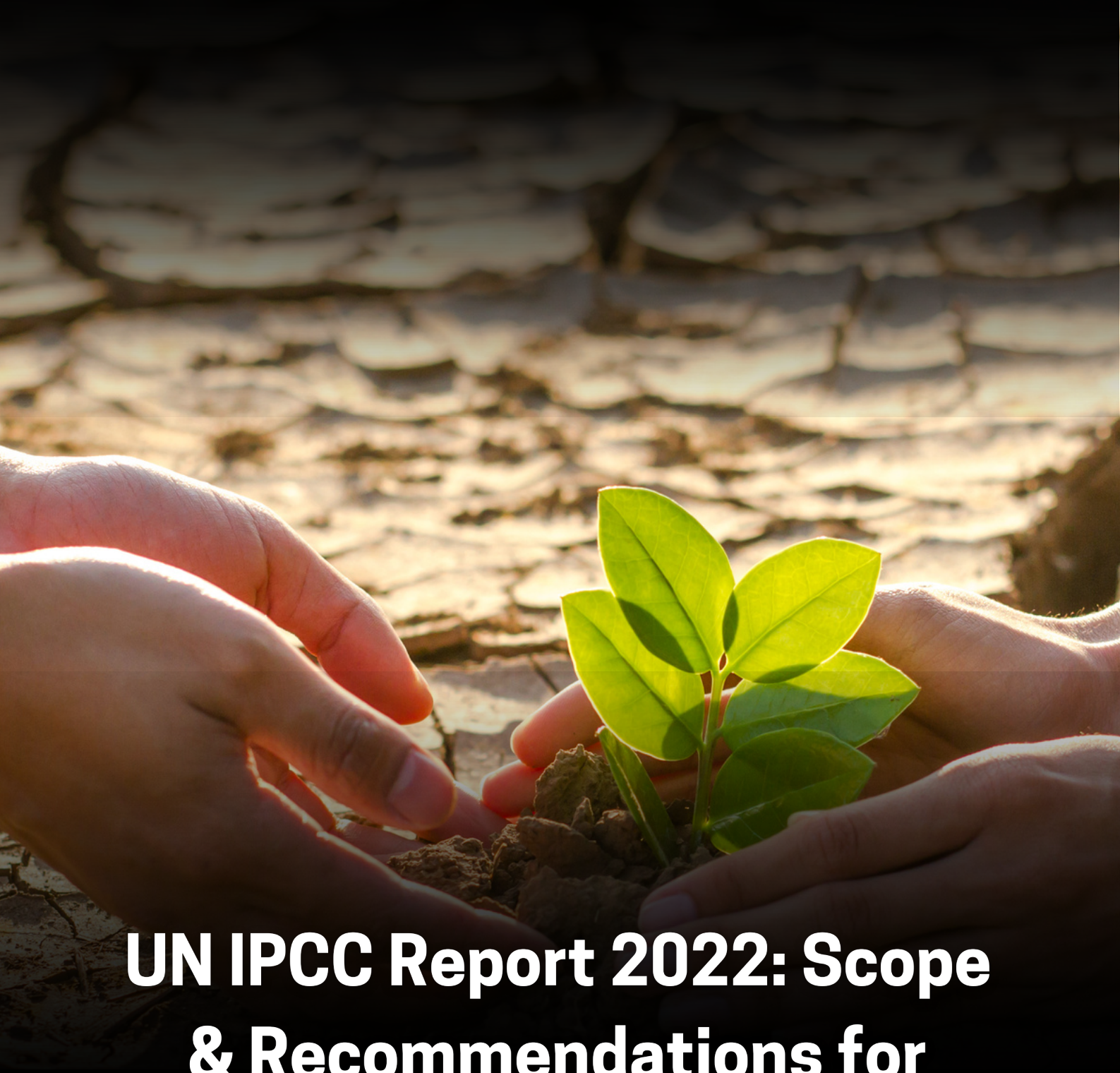

UN IPCC Report 2022: Scope & Recommendations for India

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INTRODUCTION

The brutal heatwave stretching across much of South Asia continues to persist into its third month. After suffering through the hottest March across India in 122 years, the northwest and central regions of the country saw the same record fall again in April. Then on 1 May, Nawabshah, Pakistan set the highest recorded temperature in the northern hemisphere this year at 49.5°C. In some of India's more humid southern and eastern regions, the "wet bulb" temperature, which accounts for both heat and humidity, threatened to approach a deadly threshold. Humans can only survive a few hours, even in shade and with unlimited drinking water, at a wet bulb temperature of 35°C and even 31°C can be exceedingly harmful; West Bengal reached a wet bulb temperature of 29°C on 27 April.Such extreme temperatures, especially as they persist for months on end and through some of the warmest nights on record, have put the health of more than a billion people at risk, as well as livestock, crops, and infrastructure. The heatwave has jeopardized power supplies, increased demand for coal, and dust and fires that further deteriorate the air quality. In Pakistan, temperatures 5-8°C above normal threaten lives and villages not just with heat-related health conditions, but with the possibility of glacial bursting like that seen in Chamoli last year.

The current situation throws the UN Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report, the final installment of which was released in early April, into stark relief. Last year's report warned that heatwaves would become increasingly frequent and more extreme as baseline average temperatures continue to rise.

This installment's most widely reported finding was that "without immediate and deep emissions reductions across all sectors, limiting global warming to 1.5°C is beyond reach." While current national pledges, many of which are not being met, are insufficient, the Panel did lay out ambitious recommendations that could still prevent worst-case scenarios from coming to pass. With that in mind, this paper will examine what the report's findings could mean for India going forward, and how those recommendations track with the country's own climate pledges and sustainability goals.

KEY FINDINGS & RECOMMENDATIONS

The IPCC releases a comprehensive assessment report on the state of global climate change roughly every six to eight years; this iteration was the first since 2014. The first two installments of the latest report, released in August 2021 and February 2022, foced on the current science and factors that are driving global heating, the impacts and vulnerabilities created by the changing climate, and how to adapt. The final installment from April 2022 focused on mitigation, primarily regarding the reduction of greenhouse gas (GHG) emissions to limit further temperature increases.

As mentioned, the key takeaway from the final installment was that the pledges set by countries around the world that signed on to the Paris Agreement will be insufficient for keeping global warming below the targeted goal of 1.5°C over preindustrial averages; the current trajectory of emissions and warming puts the secondary target of 2°C at risk as well. As such, the report states that climate change is at a critical inflection point; the actions taken over the next few years by governments, corporations, and individuals around the world will be crucial. 2025 is essentially a deadline for the future of a livable planet: both the primary and secondary targets (1.5 and 2°C) require global GHG emissions to peak over the next three years. If emissions start to decline in 2025, the next milestone for 1.5°C will be a 43% reduction accompanied by a 33% reduction in methane by 2030.

The ultimate goal, which has become a popular catchphrase over the last few years, is net zero emissions. For 1.5°C, this must happen by the early 2050s; for 2°C, the deadline is in the first half of the 2070s. That we are less than three years from such a critical turning point in the history of humankind is, on its face, shocking and alarming. When considering that the global average temperature has already increased by 1.1°C since the 19th century, however, essentially leaving us with 0.4 degrees of leeway over the rest of the century, the looming threat can hardly be seen as a surprise. Fortunately, the report makes it clear that it is possible, however challenging, to have emissions peak by 2025.

There are two main sides to the equation of GHG emissions, referred to in the report as the "demand" side of climate change and the "supply" side. The demand-side contributions to climate change are those factors that drive the use of fossil fuels and thus increase greenhouse gas (GHG) emissions. The supply side describes the specific sectors and other factors that produce GHG emissions directly (use of fuel) or indirectly (production of GHG-emitting products and services). Mitigation techniques will need to be employed that can reduce both sides of this equation if targets are to be met.

Sectoral Approaches to Mitigation

The power and energy sector is the largest driver of emissions worldwide and thus needs to be the primary target for mitigation and reduction of emissions. According to the report, "this will involve a substantial reduction in fossil fuel use, widespread electrification, improved energy efficiency, and use of alternative fuels (such as hydrogen)." Making these changes a reality will require a concerted effort combining policy measures, new infrastructure development, and investments in cutting-edge technologies that facilitate behavior change in corporations and individuals and move national power grids towards renewable energy sources like wind, solar, and hydropower.

Revamping the **construction industry** and prioritization of **smarter, greener cities** will also go a long way towards meeting key targets. Focusing on walkable cities with efficient mass transit systems powered by sustainable energy sources should reduce emissions from personal vehicles. Incorporating more trees and green spaces into urban development can also mitigate carbon dioxide in the air. Construction accounts for roughly 25% of global emissions, but the IPCC argues this could be changed by using materials more efficiently, recycling and reducing waste, and investing in low-emission or net-zero technologies to produce steel, concrete, and other materials. Many of these technologies are in the pilot stage now and should be nearing commercial production. Zero-energy and zero-carbon green buildings are becoming more common in countries around the world and will continue to be key going forward.

Lastly, improvements in the **agriculture, forestry, and mining sectors** "can provide large-scale emissions reductions and store carbon dioxide at scale." The one-third reduction in methane emissions by 2030 will necessarily come from these sectors. As an example, the methane emissions from natural gas drilling could be reduced by 50-80% through the use of technologies for detecting and containing leakages that are already commercially available, viable, and cost-effective.

Policymaking and Financing Mitigation

Aggressive, forward-thinking policies must be put in place by national governments around the world to catalyze the development and implementation of new technologies and other mitigation efforts. Governments must enact policies to phase out reliance on fossil fuel infrastructure; even keeping current and planned fossil fuel infrastructure running will send temperatures well beyond 1.5°C by the end of the century. Coal must be of particular emphasis. It should be made almost completely obsolete by mid-century and, according to the IPCC, could become a stranded asset as early as the end of this decade.

On the other hand, the cost of wind and solar energy, as well as lithium-ion batteries, has fallen by 55-85% since 2010. As a result, it may now be more costly to maintain reliance on the fossil fuel sector, let alone to continue investing in new coal mines and infrastructure. This alone should incentivize governments to transition to renewable energy sources as quickly and effectively as possible to secure future economic growth, even at the risk of more immediate financial disruptions, and protect the health and well-being of their citizens. Overall, ensuring an effective combination of these approaches could "result in a 40-70% reduction in greenhouse gas emissions by 2050" and eliminating government subsidies of fossil fuels could reduce emissions by 10% by 2030.

Though the future – of the climate and of global and national economies – will depend on investments in renewable energy, the movement away from fossil fuels will inevitably lead to some economic pain points in the near term. As with coal, other fossil fuel resources will be left untapped in the ground and the mines and processing facilities governments invested in will become more costly than they're worth. Globally, the near-term economic impact could be several trillion dollars, but by 2050, "global Gross Domestic Product (GDP) would be just a few percentage points lower...compared to maintaining current policies." When considering the long-term economic and societal benefits that mitigation efforts would provide (fewer extreme weather events or other natural disasters compared to current trajectories; lower adaptation costs required for less temperature rise), the balance sheet clearly shifts towards ending fossil fuels.

Overall, financial investments in mitigation efforts will need to increase by three to six times the current levels by 2030 to keep warming below 1.5 or 2°C. Poorer countries are at the greatest risk from climate change and will need the greatest amount of investment to transition away from fossil fuels, build renewable energy infrastructure, and revitalize smart, sustainable urban areas; trillions of dollars per year will be required over the rest of the decade.

Fortunately, the IPCC reports that there is "sufficient global capital and liquidity to close investment gaps" as long as there is sufficient commitment from national and international actors to ensure public sector finance and government policies are aligned in pursuit of these goals

Implications for India Going Forward

The question of where investments should come from and which countries should be responsible for making the most drastic changes to their overall emissions and fossil fuel infrastructure may be the most contentious aspect of the problem, however. The IPCC's estimates state that the richest 10% of households globally cause up to 45% of all emissions; the poorest 50% of households are responsible for only 15% of emissions. Rich countries in the global north have built their economies on fossil fuels for centuries. Emerging economies like India will likely continue facing criticism for pursuing that same kind of growth now even as they bear the worst effects of two hundred years of industrialized global heating.

India is one of the most at-risk countries when it comes to the effects of climate change, including sea level rise, extreme weather events, and agricultural disruption according to the second installment of the IPCC report. These and related issues could lead to further economic damage on top of the near-term disruptions that may come as part of the transition away from fossil fuels. While India itself has been making many laudable near-term promises to work towards mitigation – 2030 targets include 50% of electricity from renewable sources (up from around 25% now) and total emissions reductions from 2.6 billion to 1 billion tonnes – it is also continuing to contend with a difficult coal habit.

The world's second-largest producer, importer, and consumer of coal, India has roughly 211 gigawatts (GW) of coal-power plants currently in operation, which accounts for 10% of the total global capacity. There are another 55 GW of coal plants in various phases of construction and planning.

And none of these yet have the carbon capture and storage technology that the IPCC says should be required for any coal plants still running in 2050. Now, record-high demand for electricity caused by ongoing heatwave is jeopardizing the country's power system (70% of which relies on coal) and at least nine states have been facing prolonged outages.

To combat this, the government plans to reopen more than 100 coal mines, potentially increasing production by 100 million tonnes by 2025 – the same year in which global emissions must start falling in order to avoid a climate disaster. Furthermore, just over a month after the chairman of Coal India stated that its operations would go to net zero between 2025 and 2027, the mining company increased production by 12% and increased distribution to power companies by 15% from April 2021, providing critical energy security to millions of people and taking some of the pressure off global energy prices.

Unfortunately, this cycle – working towards a renewable future while being forced to double down on fossil fuel usage because of extreme weather caused by climate change – may be one that India and many other countries will see repeated more frequently. Although the World Meteorological Organization has cautioned that it is too early to determine whether the recent extreme weather is attributable solely to climate change, it noted that the increasing frequency and intensity of such heatwaves, along with the onset earlier in the year than normal, is in line with expectations for a changing climate. At the same time, in a recent study on how much of our extreme weather can be blamed on climate change, experts argued that this is "fast becoming an obsolete question." Echoing the IPCC report, Friederike Otto, climate scientist and one of the authors of this study, concluded that "

In light of this, four broad steps that the Government of India should continue taking to build off the IPCC's recommendations include:

- Pressing the world's richest countries and largest historical emitters for accountability, equity, and climate justice,
- Ensuring that national mitigation targets do not become empty promises,
- Planning for a just transition that prioritizes alternative employment opportunities for individuals and alternative revenue sources for states, and
- Incentivizing international and private sector investment in India's renewable energy sector.

At the COP26 conference last year, officials from India made the case that richer countries should take responsibility for creating an adaptation fund that would alleviate the cost-burden being placed on the most vulnerable countries, arguing that "developed countries must accept historical responsibility." They are right to demand greater action and more accountability from Western countries, both in their emissions reductions and in financial contributions to mitigation efforts elsewhere. Given the size of its population and its economy, India has more leverage than most other countries in the same climate risk category. This presents an opportunity for its leaders to act and be seen as champions for equity and climate justice for South Asia and developing nations around the world. Doing so would also require that the central government's climate pledges do not end up as empty promises, however, because India itself is in a complicated position. It has one of the lowest per capita emissions rates in the world, yet it is also the third-largest total emitter of GHG.

In a series of documents leaked prior to COP26, scientists from the Central Institute of Mining and Fuel Research admitted that "in spite of substantial growth in the renewable energy sector in India, coal is likely to remain the mainstay of energy production in the next few decades for sustainable economic growth of the country." (It should be noted that this was not just India, and officials from many other countries were also quoted lobbying against the IPCC reports that would recommend an end to fossil fuels.)

This is neither a shocking nor damning revelation, however. India is also right to demand the option of a more gradual runway to its renewable future compared to the world's historical emitters. At the same time, it is important to keep that from becoming a slippery slope that leads to an overly drawn-out process that pushes necessary but potentially economically disruptive renewable initiatives to 2040 or later, given India's net-zero target of 2070.

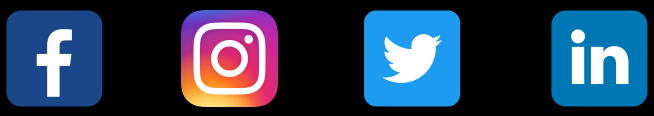
Part of this economic risk and a significant aspect of what India's relationship with coal so tricky to navigate comes from the sheer number of people who depend on the industry for their livelihoods. As noted in Swaniti's earlier report on the transition away from coal, the industry directly employs 355,000 workers (excluding those working in related logistics such as transportation); another 1.2 million people are indirectly dependent on it. Completely phasing coal out of use would lead to long-term unemployment and a reduction in earnings of up to 30%. Furthermore, the revenue from mining operations is a hugely important part of the economies of coal-rich states. District Mineral Fund Trust (DMFT) programs, which depend on mandatory funding from coal mining companies, provide much-needed social development capital to areas affected by the industry and CSR initiatives implemented by coal companies provide critical infrastructure and economic stimulation.

As such, viable and up-front alternatives are key. Coal-rich states like Jharkhand, Chhattisgarh, Odisha, and Madhya Pradesh will need an alternative to the revenue generated by the coal industry and workers will need skill-development programs preparing them for a renewable energy economy that are accompanied by sufficient employment opportunities. For a just transition, the latter must include provisions for the many people informally employed by the industry as well. All of this must be put in place before any effective and equitable movement can be made away from coal-dependence and towards lower emissions.

Lastly, by incentivizing private sector investment in the renewable energy and green technology space from domestic and international companies, the central government can ensure quicker and more substantial progress towards meeting its renewable energy and emissions targets, boost employment through the creation of green jobs, and position its economy to weather near-term disruptions during the energy transition process. Most of the solar panel technology needed to meet the targets will have to be manufactured abroad and imported, for example, so continuing to facilitate public-private partnerships will be critical for the journey to net-zero.

In the end, there are important and difficult decisions to be made at all levels. But deciding not to act quickly or aggressively enough should not be an option because, again according to Otto, the extreme weather attribution scientist, at an average temperature increase of 2°C, this recent heatwave will be closer to an everyday reality.

Swaniti is a decade-old organization working in the space of policy-making and public service delivery. Our projects have been focused on supporting the government administration in strategizing schemes implementation, providing research support to Hon'ble Members of Parliament, and developing data-technology tools. With flagship initiatives like Supporting Parliamentarians in Analysis and Research in Constituencies (SPARC) and Leadership and Engagement Associate in District (LEAD), Swaniti has supported Constituency Development and District Development Planning in various parts of the country.



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