



CLIMATE ACTION AND ENERGY TRANSITION - ECONOMIC SURVEY

Climate Action as a Key Metric

- **Policy Integration:**

The Economic Survey highlights that climate action is no longer a standalone issue but a central metric for policymaking across all socioeconomic sectors. This means that every policy decision, whether in agriculture, industry, or infrastructure, must consider its environmental impact. For the second year in a row, this approach underscores the government's commitment to integrating climate goals into the broader development agenda.
- **India's Mitigation Efforts:**

India is commended for its proactive efforts in climate mitigation, such as increasing renewable energy capacity and implementing energy efficiency programs. The Survey points out that India's performance in reducing emissions is better than many developed nations, which have historically contributed more to global emissions. However, it cautions against relying on China for achieving India's energy transition goals, as this could create geopolitical and economic vulnerabilities.

Balancing Fossil Fuels and Energy Security

- **Continued Dependence on Fossil Fuels:**

The Survey acknowledges that fossil fuels, particularly coal, remain essential for India's energy security. Coal currently accounts for a significant portion of India's energy mix, and abruptly reducing its use could lead to energy shortages and economic disruptions. The government's position is that a gradual transition is necessary, ensuring energy availability while working toward cleaner alternatives.
- **No Rationale for Shutting Coal Plants:**

The Survey argues that shutting down coal plants prematurely would result in underutilized investments and stranded assets. Without reliable and scalable alternatives, such as renewable energy with storage solutions, phasing out coal could destabilize the energy grid. This is particularly important for a growing economy like India, where energy demand is rising rapidly.
- **Caution from Developed Economies:**

The Survey references the experiences of developed countries, such as those in Europe, where rapid shutdowns of thermal power plants led to energy crises. For instance, Germany's decision to phase out nuclear and coal power without adequate renewable energy backups caused energy shortages and price spikes. India aims to avoid such pitfalls by ensuring a stable energy supply during its transition.

Investment in Advanced Technologies



- **Ultra Supercritical Power Plants:**
Ultra-supercritical power plants are more efficient than traditional coal plants, emitting less carbon dioxide per unit of electricity generated. The Survey recommends investing in these advanced technologies to reduce emissions while continuing to use coal as a primary energy source.
- **Battery Storage:**
Renewable energy sources like solar and wind are intermittent, meaning they do not generate power consistently. Battery storage systems can store excess energy during peak production times and release it when needed, ensuring a stable and reliable energy supply. The Survey emphasizes the importance of scaling up battery storage infrastructure to support India's renewable energy goals.
- **Carbon Capture and Storage (CCUS):**
CCUS technology captures carbon dioxide emissions from industrial processes and stores them underground or uses them in other applications. The Survey suggests adopting a mission-mode approach to develop and deploy CCUS, as it can significantly reduce emissions from hard-to-abate sectors like steel and cement.

India's Emissions Profile

- **Global Standing:**
India is the third-largest emitter of carbon dioxide globally, after China and the US. However, this ranking is often misinterpreted, as India's per capita emissions are much lower than those of developed nations. The Survey highlights this disparity to emphasize that India's contribution to global emissions is relatively small given its population size.
- **Per Capita Emissions:**
India's per capita emissions are significantly lower than those of China and the US. For example, China accounts for 28% of global emissions, while the US contributes 15%. In contrast, India's emissions are minimal in comparison, despite being the third-largest emitter in absolute terms. This underscores India's argument that developed nations should take greater responsibility for climate action.

Risks of Dependence on China

- **Raw Material Dependence:**
India's renewable energy sector relies heavily on China for critical raw materials like polysilicon (used in solar panels) and finished products like solar cells and modules. This dependence creates vulnerabilities, as any disruption in supply chains could hinder India's energy transition plans.
- **Geopolitical Vulnerabilities:**
The Survey warns that relying on China for essential materials could expose India to geopolitical risks, such as trade restrictions or supply chain disruptions. For instance, China's



dominance in the solar panel market means that any political tensions could impact India's ability to procure these materials.

- **China's Dominance in Green Tech:**

China controls over 80% of the global solar panel supply chain, from raw materials to finished products. While this has driven down costs globally, it has also created a highly concentrated supply chain. The Survey notes that this concentration increases the risk of supply disruptions, which could derail India's renewable energy ambitions.

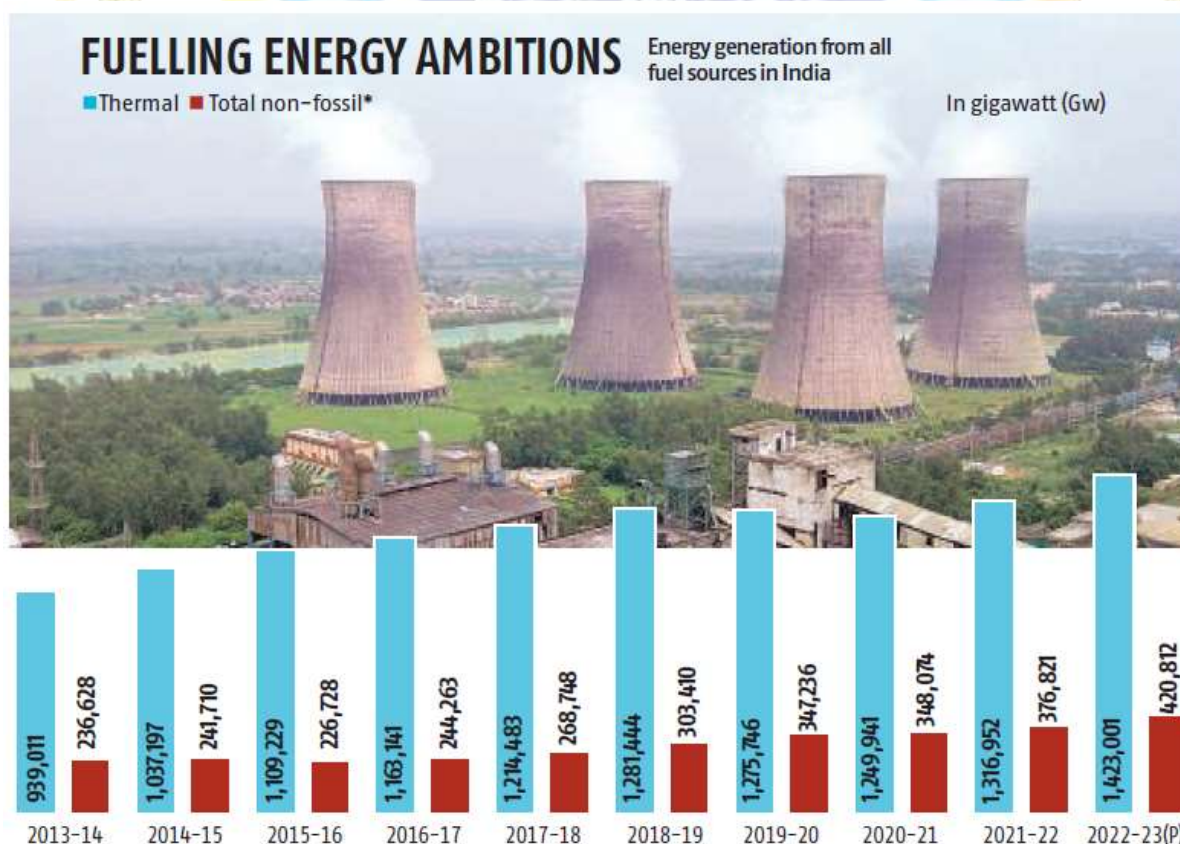
Strategic Recommendations for Energy Transition

- **Leveraging Domestic Resources:**

The Survey emphasizes the need for India to utilize its own resources, such as abundant sunlight for solar energy and skilled labor for manufacturing. By developing domestic capabilities, India can reduce its reliance on imports and create a self-sufficient renewable energy ecosystem.

- **Developed Nation by 2047:**

India aims to become a developed nation by 2047, the 100th year of its independence. The Survey stresses that this goal must be achieved through a low-carbon pathway, ensuring that economic growth does not come at the expense of environmental sustainability.



RES: Solar + wind + biofuel + waste to energy; P: Provisional; * includes RES, hydro, and nuclear

Source: Economic Survey



Climate Commitments and Financial Challenges

- **Panchamrit Goals:**

At COP26, India announced its Panchamrit (five-fold strategy) for climate action, which includes reaching 500 GW of non-fossil energy capacity by 2030, achieving 50% of energy requirements from renewables, and reducing carbon emissions by 1 billion tons. The Survey reiterates these commitments, highlighting India's proactive stance on climate change.

- **Global Financial Commitments:**

Developed nations have pledged financial support to help developing countries transition to cleaner energy and adapt to climate change. However, the Survey notes that these commitments have been declining, leaving countries like India to shoulder a larger burden. To address this, India must prioritize building resilience to protect its economic growth from climate-related disruptions.

Key Takeaways

- **Balanced Approach:** India must strike a balance between using fossil fuels for energy security and investing in low-emission technologies to ensure a sustainable transition.
- **Reduce Dependence on China:** Diversifying supply chains and developing domestic manufacturing capabilities are critical to reducing reliance on China for renewable energy materials.
- **Focus on Resilience:** Building climate resilience is essential to safeguard India's economic growth from the impacts of climate change, such as extreme weather events and resource shortages.
- **Technological Advancements:** Accelerating the development and deployment of advanced technologies like battery storage and CCUS will be vital for achieving India's climate and energy goals.

Source: https://www.business-standard.com/budget/news/climate-adaptation-key-india-must-continue-using-coal-for-energy-security-125013101454_1.html

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