

India's Green Shift

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Context

- **Decarbonisation Urgency:** There is an **urgent global need** for countries to reduce carbon emissions. However, for **India**, this transition must balance with **economic growth and development**.
- **COP29 and India's Path:** As **COP29 negotiations** proceed amidst complex global challenges, **India's decarbonisation journey** demands a focus on **equity, economic growth**, and placing **people** at the forefront.

The Increasing Energy Demand and Need for Flexibility

1. India's Growing Energy Demand:

- **India's rapid economic growth**, industrialisation, urbanisation, and rising **living standards** are leading to a surge in **energy demand**.
- By **2032**, India's **peak power demand** is projected to reach approximately **370 gigawatts (GW)**, nearly **doubling current capacity**.
- This growth necessitates a **scalable energy capacity** and an **adaptive system** capable of **integrating renewable sources** and managing **emissions**.

2. Need for Flexible Energy Infrastructure:

- **Renewable energy**, though **environmentally friendly**, faces challenges with **reliability** due to its dependence on **weather conditions**.
- **Solar and wind energy** are **intermittent**, unlike **coal or natural gas**, which provide steady power.
- To ensure **energy security and sustainability**, **India** needs a **flexible infrastructure** that can balance **supply fluctuations with demand**, making **renewables** a viable **mainstay** for its economy.

Strategic Roadmap for Building a Robust Green Energy System

1. Transition to Decentralised Energy Systems:

- **Decentralised energy systems** are essential for **large-scale adoption of renewable energy**.
- **Distributed Renewable Energy (DRE)** solutions, like **rooftop solar**, are **key to this transition**.

- Although **India** aims to **solarise 10 million households**, making **rooftop solar affordable** for **low-income households** remains a **challenge**.
- **Community-based solar initiatives** and other **market-driven approaches** can make **clean energy** accessible to more people, encouraging **widespread adoption**.

2. Shift from Capital Expenditure (Capex) to Operational Expenditure (Opex) Models:

- **Traditional energy investments** focus on **high upfront capital costs**.
- An **Opex model** allows consumers to **pay based on usage** rather than **initial costs**, reducing **financial barriers**.
- For instance, **community solar installations** set up by **utility companies** could allow households to pay for **consumption without owning individual solar panels**.
- This model can be extended to **energy-efficient systems**, **district cooling**, and **clean mobility**, promoting **efficient energy use**.

3. Climate-Resilient Investments over Short-Term Gains:

- **Long-term stability** requires **climate-resilient infrastructure**, especially as **climate risks** rise.
- With over **80% of India's districts** deemed **climate-vulnerable**, **resilience-focused investments** can reduce future **economic and infrastructural risks**.
- Encouraging **climate risk assessments** among **businesses** and **investors** aligns **economic growth** with **sustainability**.

Additional Shifts for a Clean Energy-Driven Economy

1. Global Supply Chain Integration:

- To ensure **energy security**, **India** should integrate with **global supply chains**, especially in sectors like **solar photovoltaic (PV)** and **green hydrogen**.
- **Collaboration with other countries** enhances **India's position** in the **clean energy sector**, fostering **cooperation** over **protectionist policies**.

2. Merging Decarbonisation with Digitalisation:

- **India's dual focus** on **decarbonisation** and **digitalisation** provides opportunities for **synergy**.
- **Digital solutions**, such as **AI systems** and **smart appliances**, enable **real-time energy management**, enhancing **resilience** and **efficiency**.
- This **digital shift** supports the **integration of renewables into existing infrastructure**, improving **adaptability** and **customer-focused energy management**.

3. Adopting a Circular Economy:

- A **circular economy approach** maximises **resource efficiency**, especially for **critical minerals** used in **energy production**.
- With **India's growing solar capacity**, effective **waste management** and **mineral recovery** are crucial for **sustainability**.
- Emphasising **circular practices** strengthens **resource security** and supports other sectors, contributing to a **holistic sustainability framework**.

4. People-Centric Energy Transition:

- A successful **energy transition** must focus on **end-users** and **small-scale consumers**.
- **Financial support** for **electric vehicles**, **rooftop solar**, and **energy-efficient buildings** can drive **consumer demand** for **clean energy**.
- **Small-scale investments** empower **individuals and communities**, fostering **ownership** and **participation** in the **green economy**.

Conclusion

India's **green transition** involves more than just **switching to renewable energy**; it requires an **integrated approach** where **energy, economic growth, and environmental preservation** coexist. By implementing **strategic shifts**, India can establish a **resilient, clean, and inclusive energy economy**. Placing **people at the center** of this transition ensures that India's future **energy landscape** is **sustainable and equitable**, allowing **citizens to actively engage** in and **benefit** from this transformation.



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