



## India's Green-Energy Transition

This editorial is based on [“A green-energy boost”](#) which was published in Financial Express on 26/11/2022. It talks about the impact of climate change and the need for a green energy transition.

**For Prelims:** Green energy, PM- KUSUM, Green Energy Corridor (GEC), National Smart Grid Mission (NSGM) and Smart Meter National Programme, Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME), International Solar Alliance (ISA), Energy poverty, World Energy Outlook report, COP27, Biofuels.

**For Mains:** Challenges Related to India's Energy Sector, Initiatives Shaping India's Energy Transition, Interlinking Women Empowerment with Green Energy.

[Climate change](#) is an existential threat that has the potential to change the course of human history for the worse. **Fossil fuels are the traditional energy sources that constitute the largest contributors to climate change.** They account for over **75% of global [greenhouse gas emissions](#)** and approximately **90% of all carbon dioxide emissions.**

For a better future, **green energy is the key solution** through which [India's net zero emission target by 2070](#) can also be accomplished.

Therefore, India should pioneer a new model of **economic development that could avoid the carbon-intensive approaches** that many countries have pursued in the past and **provide a blueprint for other developing economies for [clean energy](#) transition.**

### What is Green Energy?

- [Green energy](#) is a term for **energy that comes from renewable sources.** Green energy is often referred to as **clean, sustainable, or renewable energy.**
  - The **production of green energy does not release toxic greenhouse gases** into the atmosphere, meaning it causes **little or no environmental impact.**
- Some important green energy sources include power produced by **solar, wind, geothermal, biogas, low-impact hydroelectricity, and certain eligible biomass sources.**

### How is India Facilitating the Green Energy Transition?

- India is the **world's third-largest energy consuming country.** Energy use has doubled since 2000, with **80% of demand still being met by coal, oil and solid [biomass.](#)**
  - On a per capita basis, **India's energy use and emissions are less than half the world average.**
- **Efforts Towards Green Energy Transition:**

- In **2019** India announced that it would take up its installed capacity of **renewable energy to 450 GW by 2030**.
- The **[Production Linked Incentive Scheme \(PLI\) scheme](#)** is another initiative of the Government of India with respect to enhancing the **manufacturing sector for the production of raw materials for renewable energy**.
- The **[PM- KUSUM \(Pradhan Mantri-Kisan Urja Suraksha evam Utthaan Mahabhiyan\)](#)** aims to provide financial and water security to farmers through harnessing **solar energy capacities of 25,750 MW by 2022**.
  - **Solarisation of water pumps** is a step in distributed power provided at the doorstep of the consumer.
- The **Ministry of New and Renewable Energy** on its website also hosts **Akshay Urja Portal** and **India Renewable Idea Exchange (IRIX) Portal**.
  - IRIX is a platform that **promotes the exchange of ideas among energy conscious Indians** and the Global community.

## What are the Other Initiatives Shaping India's Energy Transition?

- **[Pradhan Mantri Sahaj Bijli Har Ghar Yojana \(SAUBHAGYA\)](#)**
- **[Green Energy Corridor \(GEC\)](#)**
- **[National Smart Grid Mission \(NSGM\) and Smart Meter National Programme](#)**
- **[Faster Adoption and Manufacturing of \(Hybrid &\) Electric Vehicles \(FAME\)](#)**
- **[International Solar Alliance \(ISA\)](#)**

## What are the Challenges Related to India's Energy Sector?

- **Energy Poverty and Inequality: Access to energy** is a tremendous problem in India and major inequalities of access plague the country. **Around 77 million households in India still use kerosene for lighting**.
  - The problem is even more acute in rural India where up to **44% of households lack access to electricity**.
  - While India has undertaken various programs and initiatives to address **energy poverty**, they have been faced with **logistical problems and inadequate implementation locally**.
- **Import Dependence and Weaponization of Supply Chain:** India's crude oil import bill **surged 76% to USD 90.3 billion** in the first half of **2022-23** and total import quantity increased by 15%.
  - With its growing dependency on **imported oil, India's energy security is under severe strain**, and the current **disrupted global supply chain due to [disturbed geopolitics](#)** is compounding the problem.
  - In terms of renewable energy, India is also largely dependent on foreign countries like China for **solar modules**.
    - **Backward integration in the solar value chain** is absent as India has currently **no capacity for manufacturing solar wafers** and polysilicon, which is hindering clean energy transition.
- **Climate Change Induced Energy Crisis:** Climate change directly affects **fuel supply, energy requirement** as well as the **physical resilience of current and future energy infrastructure**.
  - **Heatwaves** and **disturbed monsoon** due to climate change are **already putting existing energy generation under stress**, making it even more **important to reduce fossil fuel emissions**.
- **Women's Health at Risk:** Women tend to take an active part in household activities and are at risk when long-term household energy is derived from non-clean resources such as **firewood, coal, and cow dung**.
  - The **use of non-clean energy sources increases women's risk of respiratory, cardiovascular, and psychological diseases and also increases maternal and [infant mortality](#)**.
- **Widening Gap Between Demand and Supply of Coal:** Data from the **Ministry of Coal** in

- 2021**, reveal that the **gap between demand and domestic supply of coal is widening**.
- Despite the availability of adequate reserves, coal extraction has been declining in the larger coal producing States.
  - **Owing to the rising prices and** unresolved pending contractual issues with power plants is worsening the issue.
- **Increasing Demand, Increasing Energy Cost:** With an **increasing rate of urbanisation and industrialisation**, the **International Energy Agency** said in its [World Energy Outlook report](#) that the need for energy in India alone would rise by more than 3% annually.
    - At the same time, **there is a sharp increase in costs of petroleum globally**.

## What Should be the Way Forward?

- **Interlinking Women Empowerment with Green Energy: Women's empowerment and leadership in the energy sector** could help **accelerate the transition to a low-carbon economy by promoting clean energy**.
  - The **"just transition"** should also include a **gender perspective**, to **guarantee equal opportunities in green jobs for both men and women** in the workforce.
  - Particularly in the household as responsible **mothers, wives and daughters**, women can also play an important role in the green energy transition in **entrepreneurship and policy making**.
- **Diversifying Green Supply Chain:** Supply chains for clean energy need to be diversified to a much larger number of countries rather than just confined to developed countries.
  - In this regard, [COP27's agenda of climate finance](#) can be used as a carrier. As traditional energy sources get replaced, **revenues and employment will shift from certain geographies to others** and this will **need to be carefully managed**.
- **Incentivising in Least-Cost Energy Solutions:** India can encourage **university-level innovations that help India pursue an economically viable clean energy transition**. Thus, **India's demographic dividend can also be utilised** and students will be pushed more toward research and innovation than traditional education.
  - For example, the [Unnat Jyoti by Affordable LEDs for All \(UJALA\)](#) program decreased the unit cost of LED bulbs by over 75%.
  - The **Ministry of Environment, Forestry and Climate Change**, along with the **United Nations Development Programme (UNDP)**, jointly launched 'In Our LiFEtime', a campaign that both urges and encourages young people between the **ages of 18 to 23 years to adapt and promote sustainable lifestyles is also a good step in this direction**.
- **Focusing on Green Transport:** There is a need to **rethink and restore confidence in public transport**, including the procurement of more buses, the **adoption of e-buses**, bus corridors and **bus rapid transit systems with digitization of public transport**.
  - **Emission norms should be tightened as well as biofuels** should replace fossil fuels.
  - The development of **several electric freight corridors to promote electrification is also crucial** to reaping the benefits of electric vehicles.
- **Multisectoral Approach to Energy Transition:** In India, **future growth will demand resilience on multiple fronts**, such as energy system design, urban development, industrial growth and internal supply-chain management, and the livelihoods of the underprivileged.
  - India can gradually **reduce its exposure to commodity imports and foreign supply chains** through **distributed energy systems and the promotion of domestic manufacturing**.
  - **India's manufacturing prowess and technology leadership** present an opportunity to leverage [Make in India](#) to turn India into a **more self-sufficient green economy and globally competitive green energy export hub over time**.
    - [Circular economy](#) solutions linked with green energy should become a core feature of India's future economy.

### ***Drishti Mains Question***

Examine the current state of India's energy sector and suggest innovative ways to move the country towards green energy.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### **Prelims**

**Q. With reference to the Indian Renewable Energy Development Agency Limited (IREDA), which of the following statements is/are correct? (2015)**

1. It is a Public Limited Government Company.
2. It is a Non-Banking Financial Company.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (c)**

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### **Mains**

**Q. "Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)". Comment on the progress made in India in this regard. (2018)**