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)

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)**