Towards Green Energy Transition

This editorial is based on** "Distributed RE is the Future of Green Energy Transition" **which was published in Hindustan Times on 31/05/2022. It talks about the challenges pertaining to renewable energy transition and suggests measures to overcome the same.

For Prelims: Renewable energy, Paris agreement, Net zero emissions, CoP26, PLI Scheme, PM-KUSUM Scheme, Climate financing, Methane emissions, World Wildlife Fund for Nature (WWF)

For Mains: India's achievements in renewable energy sector, India's renewables energy targets, challenges and initiatives taken to achieve it.

As seen in the climate negotiations in recent times, an appreciation of the need of the hour - the governments and non-governmental entities are making commitments to help countries implement their net-zero pledges. However, despite these commitments, the **global average temperature in 2100 is expected to rise to around 2.1°C** above pre-industrial levels.

This **falls short of the goals stipulated in the** Paris Agreement, which calls for limiting the global temperature to 1.5°C above pre-industrial-era levels by the end of the century.

Therefore, a pivotal move to bend the global emissions curve becomes imperative. Immediate climate action is especially critical for a post-pandemic future. In this context, renewable energy (RE) transition is **vital to building a resilient and secure future energy system.**

India and Renewable Energy

Why Renewable Energy Adoption Needs to be Encouraged?

- A **historic rise was seen in CO_2 emissions** in 2021 due to a sudden spike in oil and coal consumption.
    - With **just 2% of pandemic recovery finance spent on clean energy**, emissions are expected to reach an all-time high in 2023.
- Although an energy economy founded on clean pathways is emerging, energy transformation has a long way to go.

What Initiatives has India Taken to Facilitate RE Transition?

- In 2019 India announced that it would take up its installed capacity of renewable energy to 450 GW by 2030.
    - At CoP26. India committed 50% of its total power generation from Renewable Energy.
- 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.**
- India's decision to achieve 'net zero' by 2070 has been hailed globally as a game changer. The country has made reasonable progress by reaching nearly **110 GW of RE by the end of March 2022.**
    - It has also **committed $35 billion of the $122 billion in energy-related funding to renewables**, almost twice the amount allotted to fossil fuels.

How will RE be Economically Significant?

- Renewables form a **vital component of green recovery,** especially in a fast-developing country like India.
    - The renewable sector is not just competitive economically, but also holds **immense potential for job creation** since clean energy **technologies such as solar are far more labour intensive** than conventional energy sources.
- It has been estimated that in reaching its goal of 500 GW of non-fossil fuel energy sources by 2030, **India could create as many as 3.4 million new clean energy jobs** providing employment to over a million people.
    - This is expected to **come largely from Distributed RE**, which will create opportunities for local employment.
- Such efforts might also **encourage the start of new ventures**, and help **scale up domestic businesses.**
- India also has the **potential to become a manufacturing hub** for upcoming technologies like green hydrogen and energy storage.
- From the economy point of view, renewable sources **provide the market and revenue assurance** which no other resources can provide.

What are the Challenges Pertaining to Renewable Energy?

- **Impact on Environment:** While RE generation is zero-carbon (barring some biofuels), there are **emissions at other points of its lifecycle,** such as during **raw material extraction and equipment manufacturing**. There are also RE's detrimental impacts on biodiversity and ecology.
- **Shortage of Skilled Personnel:** India's power sector has always faced shortage of skilled personnel, **not only in the private sector but also within DISCOMs**, grid management companies, regulators and policymakers and this problem is being compounded further in the current scenario.
    - **Capacity building within India** through skill development is of utmost priority. **Well-developed training programmes** are the need of the hour in India.
- **Installation Cost Issue:** The **high initial cost of installation** is one of the major hurdles in the development of renewable energy. Although the development of a coal plant requires high investment, it is known that **wind and solar power plants also require huge investment.**
    - In addition to this, **storage systems of the generated energy are expensive** and represent a real challenge in terms of megawatt production.
- **Resource Locator:** Most renewable energy plants that share their energy with the grid require large areas of space. In most cases, renewable energy sources are dictated by **location which can be off-putting to users.**
    - Firstly, some **renewable energy sources are simply not available in different regions**.
        - Secondly, the **distance between the renewable energy source and the grid** is a major aspect in terms of cost and efficiency.

    - In addition to this, renewable energy sources **depend on weather, climate and geographical location**, therefore meaning that one type of energy generation is not appropriate for the region.

What Should be the Way Forward?

- **Global Partnerships:** Global partnerships can open new channels of **support through technology or financial resources being shared**.
    - For science and technology to inform climate action policies, developing countries need ambitious, concrete research and development (R&D) funding and supportive funding infrastructure.
    - Developing countries can also **integrate cost-effective indigenous technologies** into energy planning.
- **Distributed Renewable Energy (DRE):** Distributed RE - in which power from renewable sources is generated near points of use instead of centralised plants - can **help achieve the Global South's ambitious renewable energy targets** as well as increase access to reliable and modern energy, if a favourable regulatory and policy environment is created.
    - DRE's applications such as **rooftop solar** can **decarbonise the developing world's manufacturing supply chain; solar agri-pumps** could **provide solar-based irrigation solutions,** and the faster implementation of electric vehicles into the urban freight.
    - **Increasing the scale of DRE** would offer an opportunity to meet renewable energy targets and provide returns to investors.
- **Heeding WWF's Suggestions:** There is a need to develop a **robust strategic framework to boost the renewable power sector** by learning from other countries who have successfully devised green recovery packages.
    - The World Wildlife Fund for Nature (WWF)'s report on **Green Recovery Through Renewables** mentions that as part of the green recovery package, the priorities should be fourfold –
        - focusing on **job creation**
        - **injecting liquidity** for financial relief
        - enhancing **economic competence** for improved trade prospects
        - ensuring a **green energy transition**
    - A holistic view which examines a range of solutions that complement each other and identifies key elements, including technology development, manufacturing, storage, power generation and distribution will be very effective.
- **RE as a Responsible Energy:** RE shouldn't stand merely for renewable energy but also for responsible energy.
    - To avoid negative impacts, the RE industry must act on four principles:
        - Actively **promoting universal labour, land, and human rights**;
        - Protecting restoring and nurturing **resilient, thriving ecological systems**;
        - Committing to **participatory governance principles**;
        - Recognising that **resilient communities and an inclusive workforce** are critical to their success.
    - The leading RE sector players must build a shared understanding of how to **avoid the extractive mindset** that drove much of the fossil fuel-based energy production.
        - They must also study **environmental and social impact assessments** to prevent and mitigate negative impacts and **enhance their RE procurement processes**, and include designing for circularity and traceability in the supply chain.
- **Climate Financing:** Calling for climate finance of $1 trillion, the Prime Minister of India highlighted in his COP26 address that **developing nations cannot achieve ambitious targets** of net-zero with **older, unfulfilled climate finance targets.**
    - **Energy-poor countries need funding** to accelerate their carbon-cutting goals and invest in new technologies to decouple their growth trajectories from fossil fuels.
    - These investments from climate financing can be used as-
        - First, a concerted push for **clean electrification** through scaling up the deployment of renewable energy technologies.
        - Second, a focus on energy efficiency and measures to lower energy demand

through **technology deployment and behavioural change.**
- Third, **cutting methane emissions** from fossil fuel operations.
- Fourth, investing in **clean energy innovation.**

Drishti Mains Question

"With the global average temperature in 2100 expected to rise to around 2.1°C above pre-industrial levels, a pivotal move to bend the global emissions curve becomes imperative. In this context, renewable energy (RE) transition is vital to building a resilient and secure future energy system". Discuss.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

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