Perspective: India’s Green Energy Transition

For Prelims: Pradhan Mantri Suryodaya Yojana, UN Climate Change Conference (COP21), Paris Agreement, Sustainable Development Goals, Net-Zero Emissions, Nationally Determined Contribution, Rooftop Solar Programme, Photovoltaic Panels, Council on Energy, Environment and Water, EV30@30, PM-KUSUM, UNFCCC COP26, Green Hydrogen, Global Biofuel Alliance (GBA) G20.

For Mains: Contribution of India’s Green Energy Transition in achieving the mandates of Paris Agreement.

Why in News?

Recently the Union Finance Minister presented the interim budget. It will accelerate India's transition to a **low carbon climate resilient economy.**

- India aims to meet its r**enewable energy targets** and **carbon emissions reduction goals** in line with **nationally determined contributions** under the **Paris agreement.**
- The Prime minister of India announced the plan to install solar panels on houses through **Pradhan Mantri Suryodaya Yojana.**

What is a Low Carbon Climate Resilient Economy?

- A **low carbon climate resilient economy** is an economy that aims to reduce **greenhouse gas emissions**, **limit** global warming and consumption of **coal, oil**, and gas. It is also known as a **green, circular,** or **sustainable economy**. Some of the characteristics of a low carbon climate resilient economy are:
  - It uses **renewable energy sources,** such as solar, wind, hydro, and biofuels, instead of **fossil fuels**, such as It promotes **energy efficiency, conservation,** and **demand management,** to reduce energy consumption and waste.
  - Supports **low-carbon** and **climate-smart agriculture, forestry,** and land use, to enhance carbon sinks and reduce emissions from deforestation and degradation.
  - Encourages **green finance, investment,** and trade, to **mobilize resources** and incentives for low-carbon and **climate-resilient activities** and products.
  - Enhances social and **environmental justice, equity,** and inclusion, to ensure that the benefits and costs of the transition are shared fairly and that the most vulnerable groups are protected and empowered.

What is the Paris Agreement?

- **About**
  - To tackle climate change and its negative impacts, world leaders at the **UN Climate Change Conference (COP21)** in **Paris** reached a breakthrough on **12 December 2015:** the historic **Paris Agreement.**
  - The Agreement is a **legally binding international treaty.** It entered into force on **4 November 2016.**

    - **195** Parties (194 States plus the European Union) have joined the **Paris Agreement.**
    - It marks the beginning of a shift towards a **net-zero emissions** world.
    - Implementation of the Agreement is also essential for the achievement of the Sustainable Development Goals.
- **Goals:**
    - Substantially **reduce global GHG emissions** to hold **global temperature** increase to well below **2°C** above pre-industrial levels and pursue efforts to limit it to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.
    - Periodically assess the collective progress towards achieving the purpose of this agreement and its long-term goals.
    - Provide financing to developing countries to mitigate **climate change, strengthen resilience** and **enhance abilities** to adapt to climate impacts.
- **Function:**
    - The **Paris Agreement** works on a five- year cycle of increasingly ambitious climate action carried out by countries.
    - Every five years, each country is expected to submit an updated national climate action plan known as **Nationally Determined Contributions (NDCs).**

What is India’s Nationally Determined Contribution?

- As a party to the **UNFCCC** and its **Paris Agreement,** India submitted its **first Nationally Determined Contribution (NDC)** in the year 2015 comprising following two quantifiable targets:
    - To reduce the emissions intensity of its **GDP** by 33 to 35% by 2030 from 2005 level.
    - To achieve about **40% cumulative electric power installed capacity** from **non-fossil fuel-based energy resources by 2030.**
- In **August 2022**, India updated its **NDC** according to which the target:
    - To reduce emissions intensity of its **GDP** has been enhanced to **45% by 2030** from **2005 level.**
    - The target on **cumulative electric power** installed capacity from **non-fossil fuel-based energy resources** has been enhanced to **50% by 2030.**
    - India has set itself a target of achieving **500 gWatt** of **renewable energy capacity** by **2030** as part of its commitment under the **Paris Accord** so how can the upcoming budget act as a catalyst in charting India's green energy.

What is Pradhan Mantri Suryodaya Yojana?

- **About:**
    - The **'Pradhan Mantri Suryodaya Yojana’** is a pioneering government initiative aimed at installing **rooftop solar power systems** in **one crore households** across the nation.
    - Rooftop solar panels are **photovoltaic panels** installed on the roof of a building that is connected to the main power supply unit.
- **Benefit:**
    - It reduces the **consumption of grid-connected electricity** and saves electricity costs for the consumer.
    - Surplus solar power units generated from the rooftop solar plant can be exported to the grid as per the metering provisions.
    - The consumer can receive monetary benefits for the surplus exported power as per the prevailing regulations.
- **Rooftop Solar Programme:**
    - In 2014, the government launched the **Rooftop Solar Programme** that aimed to achieve a cumulative installed capacity of **40,000 megawatts (MW)** or **40 gigawatts (GW) by 2022.**
        - However, this target could not be achieved. As a result, the government extended the deadline from 2022 to 2026.
    - According to some reports, the Pradhan Mantri Suryodaya Yojana seems to be an attempt to help reach the target of 40 GW rooftop solar capacity.

What is the Current Solar Capacity in India?

- **Total Installed Capacity:** According to the **Ministry of New and Renewable Energy** solar power installed capacity in India has reached around 73.31 GW as of December 2023. In terms of total solar capacity, **Rajasthan is at the top with 18.7 GW**. Gujarat is at the second position with 10.5 GW.
- **Rooftop Solar Capacity**: Total rooftop solar installed **capacity is around 11.08 GW** as of December 2023. **Gujarat tops the list with 2.8 GW,** followed by Maharashtra by 1.7 GW.
    - According to a recent report by **Council on Energy, Environment and Water (CEEW)**, only **20%** of rooftop solar capacity installations are in the residential sector, with the majority in commercial and industrial sectors.
        - The report suggests that **India's 25 crore households could deploy 637 GW of solar energy on rooftops**, and just one-third of this could meet the entire residential electricity demand in the country.

What are India’s Other Initiatives towards Climate Change?

- **India's Support to EVs:**
    - India is among a handful of countries that support the **global** EV30@30 **campaign,** which aims for at least 30% new vehicle sales to be electric by 2030.
    - India’s advocacy of five elements for climate change “Panchamrit”, at the UNFCCC COP26 **in Glasgow** is a commitment to the same.
- **Role of Industries in Low-Carbon Transition:**
    - The **public and private sectors** in India are already playing a key role in meeting the **climate challenge**, helped by growing customer and investor awareness, as well as increasing regulatory and disclosure requirements.
- **National Green Hydrogen Mission**
    - It is a program to incentivise the commercial production of **green hydrogen** and make India a net exporter of the fuel.
    - The Mission will facilitate demand creation, production, utilization and export of Green Hydrogen.
- **Global Biofuel Alliance:**
    - **Global Biofuel Alliance (GBA)** was recently launched by world leaders to expedite the global uptake of biofuels, under India’s G20 **presidency**. The alliance brings together major biofuel producers and consumers, such as the US, Brazil, and India.
    - **Nineteen countries** and **12 international organizations** have already agreed to join or support the GBA to strengthen **global biofuels trade** for a greener sustainable future.
- **PM KUSUM:**
    - The **PM-KUSUM** was launched by the **Ministry of New and Renewable Energy** in 2019, in order to endow installation of **off-grid solar pumps in rural areas** and reduce dependence on grid, in grid-connected areas.
    - It aims to enable farmers to set up **solar power generation capacity** on their arid lands and to sell it to the grid.
    - It also seeks to increase the **income of farmers** by allowing them to sell **surplus solar power** to the grid.

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)**