



General Studies-3; Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

India's Energy Security

Introduction

- **Energy security is integral to India's economic policy.**
- Clean energy appears to be the future for the power needs of humanity across the globe as reliance of fossil fuels continues to diminish.
- The government must rely on calculated measure to balance energy security and net-zero commitments.

Background

- At the **26th Conference of Parties (CoP26)**, India declared a **five-fold strategy** — termed as the **panchamrita** — to achieve the feat of clean energy and net-zero emissions by 2070.
- These five points include:
 - India will get its **non-fossil energy capacity to 500 gigawatts (GW) by 2030.**
 - India will **meet 50 per cent of its energy requirements from renewable energy by 2030.**
 - India will **reduce the total projected carbon emissions by one billion tonnes from now onwards till 2030.**
 - By **2030**, India will **reduce the carbon intensity of its economy by less than 45 per cent.**
 - **By the year 2070**, India will **achieve the target of Net Zero.**

Obstacles to an energy secure India

- The **country's demand for energy is set to double by 2040**, and its **electricity demand may triple.**
- Indian oil consumption is expected to grow faster than that of any other major economy (including China).
- This makes further improving energy security a key priority for India's economy.

- India's **oil demand** is expected to reach **6 million barrels per day (bpd) by 2024**, but its domestic production is expected to rise only marginally, making the country more reliant on crude imports and more **vulnerable to supply disruption in the Middle East**.

India on path to achieve carbon neutrality

- **Exceeding the Nationally Determined Contributions (NDC) commitment:**
 - India is on track to meet and exceed the NDC commitment to achieve 40% electric power installed capacity from non-fossil fuel-based sources by 2030.
- **Reduction in emission intensity of GDP:**
 - Against the voluntary declaration for reducing the emission **intensity of GDP by 20%-25% by 2020**, India has reduced it by 24% between 2005-2016.
- **Renewable energy expansion:**
 - India is implementing one of the most extensive renewable energy expansion programmes to achieve 450 GW of renewable energy capacity by 2030.
- Investment in green measures such as **biogas and cleaner fuels**, producing efficient solar photovoltaic (PV), advanced chemistry cell battery and **afforestation programme**.

Way Forward

- **Focus on Energy Efficiency:**
 - Need for **energy efficient buildings, lighting, appliances and industrial practices** to meet the net-zero goal.
- **Increase the usage of Biofuels:**
 - This can help reduce emissions from light commercial vehicles and tractors in agriculture.
 - In aviation, the only practical solution for reducing emissions is greater use of biofuels, until hydrogen technology gains scale.
- **Transition towards Electric vehicles:**
 - This will further help curb the carbon emissions and move towards cleaner fuel.
- **Carbon Sequestration:**
 - **India will have to rely on natural and man-made carbon sinks to soak up the emissions.**
 - Trees can capture 0.9 billion tons; the country will need carbon capture technologies to sequester the rest.
- **Carbon Pricing:**
 - India, which already taxes coal and petroleum fuels, should consider putting a tax on emissions to drive change.
- **Deploying lower-carbon Energy:**
 - Deploying lower carbon energy would help address both domestic and international climate challenges while simultaneously improving the economic well-being of India's citizens.
- **Mainstreaming Renewable energy:**
 - India's energy mix is dominated by coal powered electric generation stations as of now.
 - The need of the hour is increasing the share of renewable energy in this energy mix.