Indian Railway to be Net Zero Emitter by 2030

Why in News

Recently, **Indian Railways (IR)** has announced that it is **likely to become world's first 'net-zero' carbon emitter by 2030**.

- IR is taking a multi-pronged approach to go green and decarbonise - from increasing its sourcing of **Renewable Energy (RE)** to electrifying its **traction network** and reducing its energy consumption.

Key Points

- **About:**
    - **Indian Railways**: IR is the **world's fourth largest** railway network in terms of size. It is **one of the largest electricity consumers** in the country.
        - **Passenger Services:** Transports 24 million passengers every day across the subcontinent on 13,000 trains covering approximately 67,956 km.
        - **Freight Services**: 3.3 million tonnes of freight per day, and thus the **fuel requirements are massive.**
    - **Contribution in Total Emissions**: India's **transport sector contributes to 12% of the country's greenhouse gas emissions** with the **railways accounting for about 4%** of these emissions.
    - **Potential of Emissions Reduction**: The Indian Railways can raise the official target of 50% freight share by 2030, up from its current share of 33%.
        - By shifting freight to rail and optimising truck use, India can **reduce logistics costs from 14-10% of Gross Domestic Product** and **carbon dioxide emissions by 70% by 2050** compared to a business-as-usual scenario.
- **Initiatives taken by Indian Railways:**
    - **Increased the Amount of Freight**: Indian Railways to increase the amount of freight moved by it from about 35% in 2015 to 45% by 2030 to reduce overall emissions from transportation.
    - **Complete Electrification**: Complete electrification of Indian Railways is targeted by financial year 2024. It will be the world's largest 100% electrified rail transportation system by then.
    - **Use of Solar Power:** Plans to install **20 GigaWatts (GW) of solar** for both traction loads and non-traction loads.
        - Built a 1.7-MW solar power plant in **Bina, Madhya Pradesh,** in July 2020. It is the **first solar energy plant in the world to directly power railway overhead lines**, from which locomotives draw traction power.
        - A 2.5-MW solar project in **Diwana, Haryana**.
        - Work on a third pilot with a capacity of 50 MW has begun in **Bhilai (Chhattisgarh).**

        - A 16-kW solar power plant has been installed as platform shelter at the **Sahibabad Railway Station.**
        - The railways ministry has **installed solar panels at over 960 stations** and is using solar power to meet railway station energy needs.
    - **Participation of Private Sector:** The ministry has included provisions for a Letter of Credit (LC) in the event of railway payment default, as well as a penalty for late payment in the model bidding document for solar power developers.
        - This is to encourage the private sector to participate in the project.
- **Challenges:**
    - **No-objection certificate for open access:** The No objection Certificate (NoC) for open access to electricity flow for railways in West Bengal, Tamil Nadu, Chhattisgarh, Odisha, Andhra Pradesh, Kerala and Telangana has **not been operationalised due to regulatory challenges** that the railways are vigorously pursuing.
        - If approval for procuring power through open access is granted in these states, solar deployment may increase.
    - **Wheeling and banking provision:** Full deployment of solar potential will become more feasible if states provide wheeling and banking arrangements.
    - **Merger of solar purchase obligation and non-solar purchase obligation:** The consolidation of solar and non-solar obligations will allow the railways to meet their **Renewable Purchase Obligations.**
    - **Unrestricted net metering regulation**s: Unrestricted net metering for rooftop solar projects would hasten the deployment of railway solar plants.

Net-Zero Emissions

- It refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.
    - First, human-caused emissions (like those from fossil-fueled vehicles and factories) **should be reduced as close to zero as possible.**
    - Second, any remaining GHGs should be **balanced with an equivalent amount of carbon removal, for example by restoring forests.**
- **Global Scenario:**
    - As of June 2020, twenty countries and regions have adopted net-zero targets.
    - The **Kingdom of Bhutan is already carbon-negative**, i.e. absorbs more CO_2 than it emits.
- **Indian Scenario:**
    - India's per capita CO_2 emissions – at 1.8 tonnes per person in 2015 – are around a ninth of those in the USA and around a third of the global average of 4.8 tonnes per person.
    - However, overall, **India is now the planet's third-largest emitter of CO_2**, behind China and the USA.
    - **Sectors that are the largest emitters:** Energy>Industry>Forestry>Transport>Agriculture>Building

Source: DTE