



# 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 regulations:** 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<sub>2</sub> than it emits.
- **Indian Scenario:**
  - India's per capita CO<sub>2</sub> 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<sub>2</sub>**, behind China and the USA.
  - **Sectors that are the largest emitters:**  
Energy>Industry>Forestry>Transport>Agriculture>Building

**Source: DTE**

