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1. PM Modi flags off Secunderabad-Visakhapatnam Vande Bharat Express train (Jan. 15, 2023)

Visakhapatnam Vande Bharat Express train
Prime Minister **Narendra Modi**, on the occasion of Pongal on 15 January, virtually flagged off the **Vande Bharata Express train** connecting **Secunderabad with Vishakhapatnam.**

An overview of the news

- This is the **8th Vande Bharata Express** which will cover a distance of about eight hours between Secunderabad in Telangana and Visakhapatnam in Andhra Pradesh.
- The intermediate stops envisaged for the train include **Warangal, Khammam, Vijayawada and Rajahmundry.**
- This will lead to ease of living, boost tourism and benefit the economy.
- In the last few years, seven Vande Bharat trains have covered a distance of **23 lakh kms**, carrying 40 lakh passengers to their destinations.
- The state-of-the-art Vande Bharat Express can accelerate to **100 kmph in just 52 seconds.**

Name of all 8 Vande Bharat Express train

1. Varanasi-New Delhi,
2. Katra-New Delhi,
3. Mumbai Central-Gandhinagar,
4. Amb Andaura - New Delhi
5. Chennai - Mysuru
6. Nagpur - Bilaspur (Chhattisgarh)
7. Howraha-New Jalpaiguri
8. Secunderabad-Visakhapatnam

About Vande Bharat Express Train

- The first Vande Bharat Express was launched by Prime Minister Narendra Modi on **15 February 2019.**
- These trains have a self-propelled engine which can save diesel and reduce electricity usage by up to **30%.**
- The first Vande Bharat Express was manufactured by **Integral Coach Factory (ICF), Chennai.**

- It was manufactured under the '**Make in India'** programme, at a cost of about Rs 100 crore.
- These trains can achieve a maximum speed of **160 kmph.**
- In the Union Budget for 2022-2023 the government has proposed the development and manufacture of **400 new Vande Bharat trains** in the next three years.

2. All 37 CSIR Labs in India to turn into Global Centers of Research & Innovation (Jan. 7, 2023)

All 37 CSIR Labs in India to turn into Global Centers of Research & Innovation

Union Minister of State (Independent Charge) Science & Technology **Dr. Jitendra Singh** said all **37 CSIR Labs in India** will be turned into **Global Centers of Research and Innovation in their fields of specialisation.**

An overview of the news

- He was speaking at the launch of **"One Week One Lab**" campaign in New Delhi.
- On this occasion, Dr. Jitendra Singh also released the **logo of CSIR's One Week One Lab campaign.**
- The Council of Scientific and Industrial Research (CSIR) has **37 laboratories** spread across the country dedicated to various specialised areas of work.
- Each of the 37 CSIR laboratories is unique in itself and specialises in diverse areas such as genomes to geology, food to fuels, minerals to materials etc.
- Dr Jitendra Singh inaugurates workshop and exhibition on "**Innovation and Sustainable Construction Materials and Technologies"** organised by CSIR-Central Building Research Institute (CSIR-CBRI), Roorkee with the aim of moving towards Net Zero Emission and Zero Waste.

About CSIR

- CSIR was established on **26 September 1942** and was registered as the CSIR Society under the **Societies Registration Act, 1860.**
- The first meeting of the Governing Body was held on 09 March 1942 in which the bye-laws for the Council were framed.
- It is the largest public funded **R&D organisation** in India.
- Started with 5 laboratories in 1942, CSIR in its journey of eight decades has grown into an organisation consisting of 3521 scientists with 37 laboratories supported by 4162 technical staff.

3. Union Government approves the National Green Hydrogen Mission (Jan. 4, 2023)

Union Government approves the National Green Hydrogen Mission

The Union Cabinet headed by the Prime Minister **Narendra Modi** on 4 January 2023 approved the National Green Hydrogen Policy which aims to make India a Global Hub for the production, utilisation and export of Green Hydrogen and its derivatives.

Green Hydrogen refers to the breaking down of the water molecule into hydrogen and oxygen using renewable sources of energy.

Outlay for the Scheme

The initial outlay for the Mission is **Rs.19, 744 crore**, including an outlay of Rs.17, 490 crore for the **Strategic Interventions for Green Hydrogen Transition Programme (SIGHT),** Rs.1, 466 crore for pilot projects, Rs.400 crore for Research and Development, and Rs. 388 crore towards other Mission components.

Main Objective of the National Green Hydrogen Mission

- The aim of the National Hydrogen Mission is to enable India to meet its climate change target of **net zero carbon emission by 2070** and make India a production and export hub of hydrogen fuel.
- Achieve the capacity to produce **5 million tonnes** of green hydrogen per year by 2030 ,
- Capacity addition of **125 GW of renewable energy by 2030**.
- Reduction in carbon dioxide emission of nearly 50 Million Metric Tonne per annum by 2030.
- Reduction in fossil fuel imports worth Rs 1 lakh crore by 2030.
- To attract investment over Rs.8 lakh crore in the sector.
- Target of creation of over 6 lakh jobs in the sector by 2030.

4. G-7 agrees $15.5B energy deal with Vietnam to cut emissions (Dec. 15, 2022)

G-7 agrees $15.5B energy deal with Vietnam to cut emissions

The **Group of Seven (G-7)** rich industrialised nations has approved an agreement to provide **$15.5 billion** to **Vietnam.**

Important facts

- This will help the **Southeast Asian nation** rapidly move from coal-fired power to **renewable energy**, thereby reducing its climate-damaging pollution.

- The Group of Seven major economies, along with **Norway and Denmark**, said that the aim is to help Vietnam reduce its emissions to **“net zero” by 2050**, a goal which experts say needs to be met globally to cap global warming at **1.5 degrees Celsius** (2.7 degrees Fahrenheit).

- The Just **Energy Transition Partnership** with Vietnam is among a series of agreements that developing and rich nations are negotiating.
- The first such deal was signed with **South Africa** last year, and a similar agreement was reached with Indonesia last month.
- The **$15.5 billion** of funding will come from public and private sources over the coming three to five years.

About G7

- The G7 or the **Group of Seven** is a group of the seven most advanced economies.
- The seven countries are **Canada, the USA, UK, France, Germany, Japan and Italy.**
- It was formed in **1975.**
- G7 countries meet annually to discuss issues of common interest like global economic governance, international security and energy policy.
- All the G7 countries and India are a **part of G20.**
- The G7 does not have a fixed headquarters.
- The **UK currently chairs** the G7 and has invited India along with Australia, the Republic of Korea and South Africa as guest countries for the G7 summit.

5. Jindal Shadeed Group to set up a $3 billion green steel plant in Oman (Dec. 5, 2022)

Jindal Shadeed Group to set up a $3 billion green steel plant in Oman

The **Jindal Shadeed Group** has announced that it will invest more than **$3 billion** to set up a green steel plant in a special economic zone in the southern port city of Duqm, **Oman.** The hydrogen-ready steel project will have a capacity to produce 5 million tonnes of steel a year. The proposed new green steel plant will use **natural gas** for the production of steel.

Jindal Shadeed Group is a wholly owned subsidiary of Naveen Jindal's Jindal Steel and Power Limited (JSPL) Company. It also has a 2 million tonnes steel per annum steel plant at Sohar in Oman.

What is Green Steel?

Green steel is the manufacturing of steel without the **use carbon intensive fossil fuels**. The steel is produced by using low-carbon energy sources such as hydrogen, natural gas, coal gasification, or electricity instead of the traditional carbon-intensive manufacturing route of coal-fired plants.

Why the need for Green steel?

Steel is one of the most used metals in the modern Industrial sectors. It is used to make household items, cars, defence equipment etc. The Steel Industry is one of the major contributors to global warming. Around 75 per cent of steel globally is made in coal-fired blast furnaces, which releases large amounts of carbon dioxide into the atmosphere contributing to global warming.

To reduce the carbon emission the government is encouraging the steel companies to use hydrogen or low carbon energy sources for production of steel.

Green Steel and India

The iron ore and steel industry globally accounts for around **8 percent of total CO2** emissions on an annual basis, whereas in India, it contributes **12 percent to the total CO2 emissions.**

India has committed itself to achieve net zero carbon emission by 2070 and if India has to achieve that target then the Indian steel industry needs to reduce its emissions to net-zero by 2070.

Anil Agarwal-owned **Vedanta company** has signed an agreement with **IIT-Bombay** to develop technology for producing green steel using hydrogen.

J**indal Steel & Power Ltd (JSPL)** plans to develop its Odisha plant into the largest and greenest facility in the world. The company claims to be the first steelmaker in the world to build coal gasification to produce steel using clean coal technologies.

6. NITI Aayog releases study report on ‘Carbon Capture to achieve net zero emission target by 2070 (Nov. 29, 2022)

NITI Aayog releases study report on ‘Carbon Capture"

National Institution for Transforming India (NITI) Aayog has released a report titled ‘**Carbon Capture, Utilisation, and Storage Policy Framework and its Deployment Mechanism in India**’ on 29 November 2022.

The report explores the importance of Carbon Capture, Utilisation, and Storage as an emission reduction strategy to meet the Net Zero target of India by 2070. The report outlines broad level policy interventions needed across various sectors for its application.

India’s has **committed** through its updated nationally determined contributions (NDC) to achieve **50% of its total installed** capacity from non-fossil-based energy sources, **45% reduction in emission intensity by 2030** and taking steps towards achieving **Net Zero by 2070,**

It means India has to reduce the consumption of fossil fuels like coal, oil and gas. However the recent study suggests that India’s reliance on fossil fuel especially coal for power generation is likely to increase rather than reduce.

According to the Niti Aayog Vice Chairman **Suman Bery**, the Carbon Capture, Utilisation, and Storage (CCUS) can enable the production of clean products while still utilizing our rich endowments of coal.

Possible benefits of the CCUS

The report indicates that CCUS can provide a wide variety of opportunities to convert the captured CO2 to different value-added products like green urea, food and beverage form application, building materials (concrete and aggregates), chemicals (methanol and ethanol), polymers (including bio-plastics).

CCUS projects will also lead to a significant employment generation. It estimates that about 750 Million tonnes per annum of carbon capture by 2050 can create employment opportunities of about **8-10 million** on full time equivalent (FTE) basis in a phased manner

Carbon Capture and Storage and Utilisation

Carbon Capture and Storage is the process of capturing the carbon dioxide which is released due to industrial activities/power generation using fossil fuels, before it is released in the atmosphere.

- The captured carbon- dioxide can be used to make commercially marketable products. This is called Capture Storage and Utilisation (CCSU). Normally it is used in enhanced oil extraction where carbon dioxide is injected in oil fields to increase their extraction efficiency.
- The first large-scale CCSU project began operating at Sleipnerin Norway in 1996.

Other Initiatives of the government in the field of CCSU

The Government of India is setting up two National Centres of Excellence in Carbon Capture and Utilisation for long-term research, design development, collaborative and capacity-building hubs for state-of-the-art research and application-oriented initiatives in the field of Carbon capture.

The two centres are:

- National Centre of Excellence in Carbon Capture and Utilisation (NCoE-CCU) at Indian Institute of Technology (IIT) Bombay,
- ational Centre in Carbon Capture and Utilisation (NCCCU) at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru .

7. India hosts LeadIT Summit with Sweden at COP27, Sharm El Sheikh, Egypt (Nov. 15, 2022)

India hosts LeadIT Summit

India and **Sweden** hosted the **LeadIT (Leadership for Industry Transition) Summit**, on 15 November 2022 on the side-lines of Conference of Parties (COP) 27 being held in **Sharm El Sheikh**, Egypt from 6-18 November 2022. The initiative focuses on low carbon transition of the industrial sector which is a major source of carbon emission in the world.

Union Minister for Environment, Forest and Climate Change, Bhupender Yadav co-hosted the summit with the Swedish Minister for Climate and the Environment **Ms. Romina Pourmokhtari.**

Leadership Group for Industry Transition (LeadIT)

The Leadership Group for Industry Transition (LeadIT) was launched by the governments of Sweden and India at the UN Climate Action Summit in September 2019 at New York City, United States of America.

It brings together countries and companies that are committed to action to achieve the 2016 Paris Agreement on reduction of carbon emission.

The LeadIT members are committed to achieving a net zero carbon emission.

8. Uttar Pradesh government to make Vrindavan -Mathura pilgrimage center carbon neutral by 2041 (Nov. 9, 2022)

Vrindavan -Mathura pilgrimage center carbon neutral by 2041

The Uttar Pradesh government has made an ambitious plan to make the **Vrindavan - Mathura** tourist pilgrimage center carbon neutral by **2041**. This will be the **first tourist center** in India to plan for a carbon neutral status.

The government expects the tourist arrival in the Mathura Vrindavan region to increase from the present 2.3 crore per year to around 6 crore in 2041. To deal with the expected increase in footfall and increase in carbon footprint, the government has made a plan to make the region carbon neutral by 2041,

Plan of the government

- The entire pilgrimage region will be divided into four clusters each containing two of the eight key cites.
- The plan proposes to form small circuits called ‘Parikrama Paths’ which the pilgrim can undertake either on foot or using electric vehicles.
- To reduce the carbon emission the government intends to ban the use of private tourist vehicles in the entire Braj region
- Only electric public transport will run in the identified region
- All the 252 water bodies and 24 forests in the area will be revived so that they can act as a **carbon sink.**

Mathura -Vrindavan region and its significance

- The city of Mathura and Vrindavan is associated with Lord Krishna’s birth and childhood.
- Both the cities are situated along the river **Yamuna.**
- Mathura is mentioned in Ramayana and was one of the capitals of the **Kushan King Kanishka (**130AD).
- Some of the famous temples of the region are: Govind Dev Temple, Rangaji Temple, Dwarikadhish Temple, Bankey Bihari Temple and the ISKCON Temple.
- Gokul, Barsana and Govardhan are the other townships associated with the legend of Lord Krishna.

What is Carbon Neutral and Net Zero?

Carbon neutral refers to the removal of the same amount of **carbon dioxide** from the atmosphere by various means as the amount of carbon dioxide which is released in the atmosphere leaving a Zero balance or zero carbon.

Net Zero means the removal of the same amount of **Greenhouse gasses** (eg CO2, methane, CFC etc.) from the atmosphere by various means as the amount of Greenhouse gasses which is released in the atmosphere leaving a Zero balance or net Zero.

Important to Know

India has set a target to become zero net emission country **by 2070**.

Palli panchayat in Samba district of Jammu is the **first carbon neutral panchayat in India.**

9. 3rd edition of Confederation of Indian Industry's renewable energy conference starts in New Delhi (Oct. 17, 2022)

The Confederation of Indian Industry (CII) in partnership with the Ministry of New & Renewable Energy (MNRE), Government of India is organising the **3rd edition of the International Conference & Exhibition on 'Pathways for Global Partnership in Green Energy: Powering Atma Nirbhar Bharat & the World'** in **New Delh**i from 17-19 October 2022 .

This initiative aims at furthering global partnership and take concerted steps to develop green economy and unified to power a clean and green world.

The Union Minister for Commerce and Industry **Piyush Goel** addressed the conference and said that "India has the potential to grow into a global supplier of renewable energy equipment". He reiterated India's commitment to achieve **500 GW renewable energy generation by 2030.**

PM Modi has announced India's commitment to **carbon net-zero by 2070**. Also, India has set a target to achieve **50% renewables in the overall energy mix by 2030.**

While Aatmanirbhar Bharat or self-reliant India focuses on elevating domestic manufacturing capabilities and reinforcing net-zero targets, it also has immense potential to be the global epicentre for renewable energy and green hydrogen ecosystem.

Confederation of Indian Industries (CII)

It is a business lobby group of top business houses in India.

It was set up in 1895.

It works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

Headquarters: **New Delhi**

President: Sanjiv Bajaj

10. Indian Railways plans to replace fossil fuel fleet with electric fleet by 2025 (Oct. 12, 2022)

In a big boost to the Centre's ambitious plan to make India a 100% electric vehicle nation by **2030,** the Indian Railways has proposed to replace its entire fleet of vehicles that run on diesel, biofuels or even natural gas with electric vehicles by **December 2025**.

To achieve the ambitious target of 2030 the country needs to set up 46,000 EV charging stations by 2030 to match the global benchmark.

Phase wise target of Railways

According to the timeline proposed by the railways, it aims to achieve the target of installing EV-charging stations and phasing out **20%** of its fleet by December 2023, **60%** by 2024 and **100%** by 2025.

The replacement of inspection vehicles in divisional offices and attached units would not be mandatory in the initial phase of three years since the vehicles would be required by officials for frequent visits to far-flung areas where adequate charging infrastructure may not be available.

The railways will also create an affordable and accessible charging infrastructure for users, including passengers, visitors and the general public, on its premises.