

AIR SPOTLIGHT: INDIA'S STRIDES FOR CLEAN AND GREEN ENERGY

Context: Recently, India at the Conference of the Parties (COP) 26 climate summit in Glasgow announced that it **will** reach carbon neutrality by 2070 as part of a five-point action plan that included reducing emissions to 50% by 2030.

PM MAKES FIVE PLEDGES

- 1 India will increase its non-fossil energy capacity to 500GW by 2030
- 2 India will meet 50% of its energy requirements from renewable energy by 2030
- 3 India will reduce the total projected carbon emissions by one billion tonnes from now to 2030
- 4 By 2030, India will reduce the carbon intensity of its economy by 45% (from a previous target of 35%)
- 5 By 2070, India will achieve the target of net zero

WHAT IS NET ZERO?

Net zero refers to a balance where emissions of greenhouse gases are offset by the absorption of an equivalent amount from the atmosphere. Experts see net zero targets as a critical measure to successfully tackle climate change and its devastating consequences

PLEDGES BY TOP THREE EMITTERS

-  **CHINA:** Beijing announced no new pledges on Monday. It previously pledged net zero by 2060.
-  **UNITED STATES:** The US touted domestic legislation to spend \$555bn to boost renewable power and electric vehicles. It has pledged net zero by 2050.
-  **INDIA:** The country's economy will become carbon neutral by the year 2070

Recent strides:

Announcements:

- In 2018 the GoI announced an increased **ambition of 227 GW renewable capacity by 2022 and 275 GW by 2027.**
- **Electricity:** The government has a target to achieve **175 GW of grid-connected renewable electricity by March 2022: 100 GW solar, 60 GW wind, 10 GW biomass and 5 GW of small hydropower.** In addition, the MNRE is targeting **1 GW of geothermal capacity by 2022.**
- At the United Nations' Climate Summit 2019, the PM announced a **new target of 450 GW of renewable electricity capacity, without specifying a date.**

Achievements:

- Global Energy Transition Index 2021:
 - measures 115 countries' readiness to shift to stable, efficient, accessible, and inclusive energy systems through three dimensions: economic development and growth, sustainability, and energy protection and access indicators.
 - In the recently published report, India ranked 87th out of 115 countries and has made significant progress over the past decade, owing to the increasingly diverse energy sources, the share of renewables.

- At COP 21, as part of its NDCs, India had committed to achieving 40% of its installed electricity capacity from non-fossil energy sources by 2030. The country has achieved this target in November 2021 itself.
- The country's installed Renewable Energy (RE) capacity stands at 150.54 GW (solar: 48.55 GW, wind: 40.03 GW, Small hydro Power: 4.83, Bio-power: 10.62, Large Hydro: 46.51 GW) as on 30.11.2021 while its nuclear energy based installed electricity capacity stands at 6.78 GW.
- This brings the total non-fossil based installed energy capacity to 157.32 GW which is 40.1% of the total installed electricity capacity of 392.01 GW
- During the last 7.5 years, India has witnessed the fastest rate of growth in renewable energy capacity addition among all large economies, with renewable energy capacity (including large hydro) growing 1.97 times and solar energy expanding over 18 times.
- As per REN21 Renewables 2020 Global status Report , during the period 2014 -2019 renewable energy programmes and projects in India attracted an investment of US\$ 64.4 billion.
- The budgetary allocation for RE sector has been increasing every year with ₹5,753 crore allocated in Budget 2021-22.
- FDI inflows into non-conventional energy between 2000 and 2020 was \$9.83 billion.
- In 2017 the total supply of renewable energy was around 200 Mtoe, representing 23% of Total primary energy supply (TPES).

Future scenario:

- India's primary energy consumption will grow 156 per cent by 2040 (BP Energy Outlook, 2019).
- India will also account for 25 per cent of the rise in global energy use by 2040.
- Though India's per capita primary energy consumption is still only a third of the global average, it is going through its most energy intensive phase, which is expected to continue for next couple of decades.
- Also, by 2040, 42 per cent of India's new demand is to be met by coal leading to more CO2 emissions.

Major Programmes and Schemes:

- The government has been promoting renewables since Electricity Act 2003. Subsequently National Electricity Policy, 2005; National Clean Energy Fund, 2010; revised tariff policy 2016, were formulated to incentivise and create a market for renewable energy sector.
- Further, the launch of Jawaharlal Nehru National Solar Mission (JNNSM) in 2008 gave thrust to solar energy by giving capital subsidy. So far, about 40 GW of solar electric generation capacity has been installed.
- The government also tried to create the market for renewable energy suppliers with policies like Renewable Purchase Obligation (RPO), which directs Discoms to purchase power from renewable energy sources and Renewable Energy Certification (REC) compliance of RPO.
- Some of the policies under National Action Plan of Climate Change such as the Energy Conservation Building Code (ECBC) to save energy and Unnat Jyoti by Affordable LEDs (UJALA) to save energy and reduce emission are welcome.
- Further, the National Bio-fuels Policy 2018 targets 20 per cent blending of ethanol in petrol and 5 per cent blending of biodiesel in diesel by 2030.
- **Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM):** To provide energy and water security, de-dieselise the farm sector and also generate additional income for farmers by producing solar power, scheme aims to add 30.8 GW of solar capacity with central financial support of over Rs. 34,000 Crore.
- **Production Linked Incentive (PLI) Scheme:** "National Programme on High Efficiency Solar PV Modules" with an outlay of Rs. 4500 crores to support and promote manufacturing of high efficiency solar PV modules.

- **Solar Parks Scheme:** To facilitate large scale grid connected solar power projects, a scheme for “Development of Solar Parks and Ultra Mega Solar Power Projects” is under implementation with a target capacity of 40 GW capacity by March 2022.
- **Roof Top Solar programme Phase-II:** with a target of 40 GW installed capacity by the year 2021-22, is also under implementation.
- **Central Public Sector Undertaking (CPSU) Scheme:** A scheme for setting up 12 GW Grid- Connected Solar PV Power Projects by Central Public Sector Undertakings with domestic cells and modules is under implementation.
- **Wind Power:**
 - has grown 1.9 times during past 7.5 years to about 40 GW. India has the 4th largest wind power capacity in the world.
 - Government of India has notified the offshore Wind Energy Policy to harness the potential of offshore wind energy along India’s coastline.
 - The Ministry has notified the wind solar hybrid policy, providing a framework for promotion of large grid connected wind-solar PV hybrid projects.
- **Off-Grid Solar PV Applications Programme Phase III:** for Solar Street Lights, Solar Study Lamps and Solar Power Packs
- **Atal Jyoti Yojana (AJAY) Phase-II:** for installation of solar street lights
- **Green Energy Corridor:** In order to facilitate renewable power evacuation and reshaping the grid for future requirements, the Green Energy Corridor (GEC) projects have been initiated.
- The following **Bio-energy schemes** were under implementation by the Ministry:
 - Programme on Energy from Urban, Industrial and Agricultural Wastes/ Residues
 - Scheme to support Promotion of Biomass based cogeneration in sugar mills and other industries
 - Biogas Power (Off-Grid) Generation and Thermal application Programme (BPGTP)
 - New National Biogas and Organic Manure Programme (NNBOMP)
- **Waiver of Inter State Transmission System (ISTS) charges** for inter-state sale of solar and wind power for projects
- **Hydropower Purchase Obligation (HPO) within Non-Solar Renewable Purchase Obligation (RPO).**
- **Competitive Bidding** guidelines for procurement of solar and wind power.
- **Hydrogen Mission:** to make India a global hub for Green Hydrogen production and export.
- **One Sun - One World - One Grid (OSOWOG):** A tripartite Memorandum of Understanding (MoU) was signed between the Ministry of New and Renewable Energy, the International Solar Alliance (ISA) and the World Bank
- **International Solar Alliance**

Issues/Challenges ahead:

- **Mobilization of the necessary finance and investment on competitive terms:**
 - Gearing up the banking sector for arranging finances for larger deployment goals,
 - exploring low-interest rate,
 - long-term international funding, and
 - developing a suitable mechanism for risk mitigation or sharing by addressing both technical and financial bottlenecks are major challenges.
- **Land acquisition:** Land acquisition is one of the major challenges in renewable power development. Identification of land with RE potential, its conversion (if needed), clearance from land ceiling Act, decision on land lease rent, clearance from revenue department, and other such clearances take time.
- **Balancing growth and environment:** For a country like India, committing to net zero transition could potentially have implications on growth, on the economy and on energy availability for industrialisation and urbanisation.
- **Creating an innovation and manufacturing eco-system in the country**
- **Integrating larger share of renewables with the grid**

- **Enabling supply of firm and dispatchable power from renewables**
- **Enabling penetration of renewables in the so called hard to decarbonize sectors.**
- The energy transition itself will change resource flows and reset sectors of the energy system in ways that, if not planned for, could lead to unintended consequences and leave entire communities adrift.
- Despite the recent strides in renewable energy, India still largely depends upon coal (around 55%) and oil (30%) for energy sources.
- No country will contribute more to the rise in global carbon emissions than India. India consumes coal more than the United States and Japan combined – will “remain ingrained under the fingernails of the nation” because of “politics, economics, and the complications of generating electricity.”
- The share of hydroelectricity in India’s energy mix has been slowing.

Way forward:

- **Inclusive approach to evaluate energy policy and investment decisions:** Policy-makers should prioritize measures to support the economy, workforces and society at large as countries shift to a low-carbon energy system.
- **Accelerate Electrification and Go Beyond:** Electrification and the scaling up of renewables are critical pillars of the energy transition and need to be ramped up quickly.
- **Increased Research & Development funding and cross-sector collaboration** are needed to fully decarbonize energy systems, from green hydrogen and negative emission technologies to digitally-enabled demand optimization.
- **Double- Down on Public-Private Sector Collaboration:** Collaboration between public and private sectors, including risk-sharing as low-carbon solutions mature, will attract the diversified, resilient sources of capital needed for multi-year and multi-decade investments into energy systems.
- Ensuring **adequate support from developed to developing countries in the form of finance, technology and in capacity building.**
- **The Government of India should:**
 - **Develop a holistic strategy on renewable energy**, encompassing both supply and use, for electricity, heating and cooling as well as transport to fully harness India’s large untapped potential.
 - **Adapt the design of competitive auctions by SECI** to ensure India can meet the 2022 renewable electricity targets.
 - **Adopt a medium- to long-term target for renewable electricity** for the period beyond 2022 to give investors certainty.
 - **Support further growth of distributed renewable energy** – notably the solar PV rooftop market – by strengthening and clarifying incentives to implement business models that offer customers standardised solar PV rooftop systems, based on international and national best practice experience.
 - Ensure **compliance with RPOs** imposed by state regulators.
 - **Strengthen the financial viability of DISCOMs.**
 - Maximise India’s significant potential for **sustainable bioenergy**, comprising implementation of the policy on transport biofuels to scale up conventional and advanced biofuel production while ensuring sustainability criteria are met, realising the potential to scale up bioenergy in the sugar and cement industries, and scaling up EfW, using best practice throughout the supply chain.

<https://www.thehindubusinessline.com/opinion/renewables-key-to-achieving-climate-goals/article37403781.ece>

<https://www.renewablesindia.in/about>

<https://www.hindustantimes.com/editorials/climate-goals-india-s-strides-and-challenges-101626876880535.html>

<https://www.iea.org/reports/india-2020>

<https://www.cbsnews.com/news/india-coal-shortage-green-energy-renewables-transition/>

<https://foreignpolicy.com/2020/10/22/green-india-energy-climate/>

NEWS IN BRIEF: PRELIMS SPECIAL

Padhe Bharat

- A 100-day reading campaign has been launched by the Union Education Minister with an objective to promote the practice of reading among children.
- Five books suggested in order to inculcate the joyful culture of reading:
 1. Atomic Habits by James Clear
 2. A Little Book of Happiness by Ruskin Bond
 3. Reflections by Swami Vivekananda
 4. Chilika by Kabibara Radhanath Ray
 5. Prayashchita by Fakir Mohan Senapati
- This will develop creativity, critical thinking, vocabulary and the ability to express both verbally and in writing.
- The campaign also forms conformity with the vision and goals of the foundational Literacy and Numeracy mission.

<https://newsonair.com/2022/01/01/union-education-minister-dharmendra-pradhan-to-launch-100-day-reading-campaign-padhe-bharat-today/>

INS Vikrant

- It is likely to be commissioned in 2022. At present, India has only one aircraft carrier, the Russian-origin INS Vikramaditya.
- The vessel, to be named Vikrant after the decommissioned maiden carrier of the Navy.
- It will have an air component of 30 aircraft, comprising MiG-29K fighter jets, Kamov-31 airborne early warning helicopters and the soon-to-be-inducted MH-60R multi-role helicopter, besides the indigenous Advanced Light Helicopters.
- It is expected to have a top speed of 30 knots and is propelled by four gas turbines.
- Its endurance is 7,500 nautical miles at 18 knots (32 kmph) speed.

<https://newsonair.com/2022/01/03/indias-largest-warship-ins-vikrant-in-advanced-stage-of-construction-to-enter-into-service-this-year/>

National Air Sports Policy

- The Ministry of Civil Aviation releases a draft of 'National Air Sports Policy', with a vision to make India one of the top sports nations by 2030 and with the mission to provide safe, affordable, accessible, enjoyable and sustainable air sports ecosystem in India.
- The draft covers sports like aerobatics, aeromodelling, amateur-built and experimental aircraft, ballooning, drones, gliding, hang gliding and paragliding; microlighting and paramotoring; skydiving and vintage aircraft.
- An Air Sports Federation of India (ASFI) will be established as the apex governing body.
- The air sports associations shall be accountable to ASFI.
- ASFI shall represent India at Fédération Aéronautique Internationale (FAI) and other global platforms related to air sports.

- **Domestic design, development and manufacturing of air sports equipment will be promoted in line with the Atmanirbhar Bharat Abhiyan.**
- **NASP 2022 places a strong focus on ensuring international best practices in safety.**
- **All persons and entities providing air sports services shall be required to register as members of the respective air sports associations.**
- **The Government will consider allowing the import of air sports equipment without any import duty.**
- **Schools, colleges and universities will be encouraged to have air sports included in their curriculum.**
- **Long-term funding** for the development of air sports in India shall come from corporate investors, sponsors, membership fees, events and media rights.
- **To make air sports affordable to the common public, the Government will request the GST Council to consider rationalising the GST rate on-air sports equipment to 5% or less.**

<https://newsonair.com/2022/01/02/civil-aviation-ministry-releases-draft-national-air-sports-policy-for-public-feedback/>

Rani Velu Nachiyar

- Rani Velu Nachiyar is **remembered as the first queen from India to fight against the British East India Company.**
- She was a **princess of Ramanathapuram.**
- She was trained in martial arts and was also a scholar with proficiency in many languages.
- She was drawn into battle when her husband, the king of Sivaganga was killed by Company soldiers.
- She **sought an alliance with Hyder Ali of Mysore in order to launch a campaign against the East India Company.**
- **She is remembered as 'veeramangai'.**

<https://newsonair.gov.in/News?title=PM-Modi-remembers-Rani-Velu-Nachiyar-on-her-birth-anniversary&id=432627>

NEAT 3.0

- Union Education Minister launches NEAT 3.0.
- NEAT 3.0 is a **single platform to provide the best-developed ed-tech solutions and courses to students of the country.**
- National Educational Alliance for Technology (NEAT) is an initiative to provide the use of best-developed technological solutions in the education sector to enhance the employability of the youth on a single platform for learners' convenience.
- These solutions use Artificial Intelligence for a personalized and customized learning experience for better learning outcomes and skill development in the niche areas.
- **AICTE is the facilitator in the process.**
- **More than 12 lakh socially and economically disadvantaged students have received free ed-tech course coupons worth over ₹253 crores under NEAT 3.0.**

<https://newsonair.com/2022/01/04/neat-3-0-game-changer-to-bridge-the-educational-digital-divide-in-india/>