LOW CARBON PROGRAMMES FROM INDIA

International Conference on Technologies for the Sustainable Use of Natural Resources

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Global Response to Environmental Problems

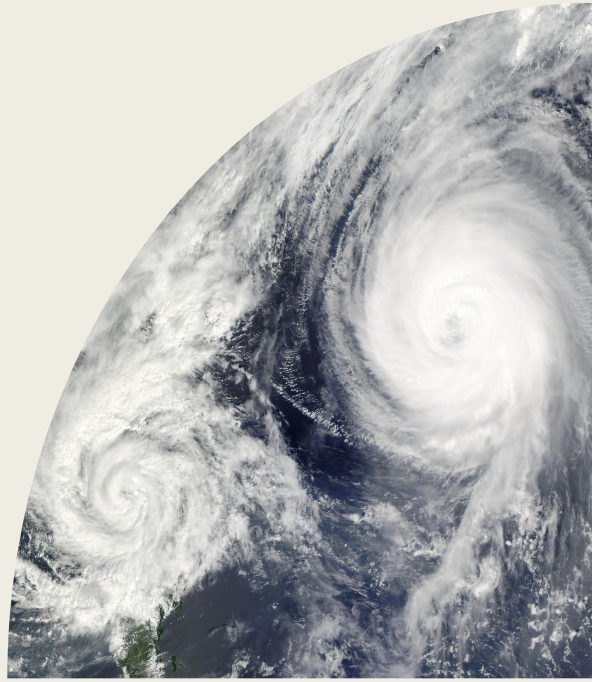
Global Problems

- Acid Rain
- Ozone Depletion
- Global Warming

Global Response

Process of international negotiation and cooperation aimed at addressing the global environmental challenges

- Scientific Understanding (IPCC Reports)
- Acknowledgement of Problem
- Discussion and Deliberations
- Series of Treaties
  - Framework Convention – UNFCCC
  - Conference of Parties- COP
  - Protocols- Montreal Protocol / Kyoto Protocol



India's National Action Plan on Climate Change (NAPCC)

About NAPCC:

- India's climate actions framework is National Action Plan on Climate Change (NAPCC).
- Identifies measures across sectors such as water, agriculture, forest, energy, sustainability mobility and housing, waste management, health, etc.
- Represents multi-pronged, long-term, and integrated strategies for achieving key goals of climate change.
- Government of India through its various programs / schemes outlined several steps to simultaneously advance India's development and climate change related objectives of adaptation and mitigation.

https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf
Published by PIB dated Dec 01, 2021

Key missions of NAPCC designed to address climate change and promote sustainable development in India:

- National Solar Mission: Promotes solar energy for power generation.
- National Mission for Enhanced Energy Efficiency: Focuses on energy efficiency in various sectors.
- National Mission on Sustainable Habitat: Aims to improve urban planning and energy efficiency.
- National Water Mission: Ensures integrated water resource management.
- National Mission for Sustaining the Himalayan Ecosystem: Protects biodiversity and conservation of glaciers.
- National Mission for a Green India: Enhances carbon sinks through afforestation.
- National Mission for Sustainable Agriculture: Develops climate-resilient farming practices.
- National Mission on Strategic Knowledge for Climate Change: Creates a knowledge system for climate change understanding.

https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf

Published by PIB dated Dec 01, 2021

Common but Differentiated Responsibilities?

The Paris Agreement in Article 4, paragraph 19, states,

“All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.”

The two themes of

“climate justice” and

“sustainable lifestyles”,

alongside the principles of Equity and Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC), in the light of national circumstances, that India had emphasized at Paris, are at the heart of a low-carbon, low-emissions future.

https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf

Published by PIB dated Nov 14, 2022

Nationally Determined Contributions (NDCs)

What are Nationally Determined Contributions (NDCs)?

- It means the contributions that need to be made by each country to achieve the overall global goal.
- The contributions need to be reported every 5 years to UNFCCC.
- The contributions are not legally binding.
- The goal is to make sure that all countries have access to technical expertise and financial capability to meet the climate challenges.

India's Updated Nationally Determined Contributions- 2022

India communicated an update to its first NDC submitted earlier on October 2, 2015, for the period up to 2030, as under:

1. To put forward and further propagate a **healthy and sustainable way of living** based on **traditions and values of conservation and moderation**, including through **a mass movement for 'LIFE'– 'Lifestyle for Environment'** as a key to combating climate change [**UPDATED**].

2. To adopt a **climate friendly and a cleaner path** than the one followed hitherto by others at corresponding level of economic development.

3. To reduce **Emissions Intensity of its GDP by 45 percent by 2030**, from **2005 level [UPDATED]**.

4. To achieve about **50 percent cumulative electric power installed capacity** from **non-fossil fuel-based energy resources** by **2030**, with the help of transfer of technology and low-cost international finance including from Green Climate Fund (GCF) [**UPDATED**].

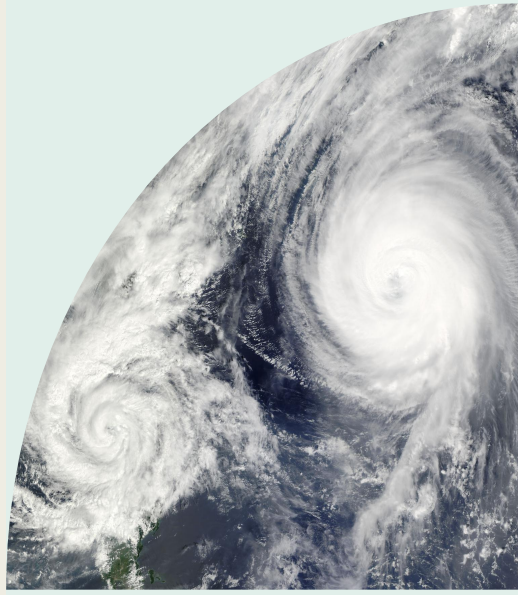
5. To create an additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through additional forest and tree cover by 2030.

6. To **better adapt** to climate change by enhancing investments in development programmes in sectors vulnerable to climate change, particularly agriculture, water resources, Himalayan region, coastal regions, health and disaster management.

7. To mobilize **domestic and new & additional funds** from developed countries to implement the above mitigation and adaptation actions in view of the resource required and the resource gap.

8. To **build capacities**, create domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and for joint collaborative R&D for such future technologies

PIB, Dec 18, 2023



India's PANCHAMRIT to deal with Climate Change

Our Prime Minister of India, presented five nectar elements i.e. **'Panchamrit',** to deal with this challenge during 26th session of COP26 to the UNFCCC held in Glasgow, United Kingdom

First- India will take its non-fossil energy capacity to 500 GW by 2030.

Second- India will meet 50 percent of its energy requirements from renewable energy by 2030.

Third- India will reduce the total projected carbon emissions by one billion tonnes from now till 2030.

Fourth- By 2030, India will reduce the carbon intensity of its economy by more than 45 percent.

And fifth- by the year 2070, India will achieve the target of Net Zero.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1795071

"India is the land of Mahatma Gandhi, whose vision for sustainable development inspires us greatly. We have shown what it is to realise key principles like Green Future and Net Zero."

~ Prime Minister Shri Narendra Modi

Long Term - Low Greenhouse Gas Emission Development Strategies (LT-LEDS)

India's approach is based on the following four key considerations that underpin its long-term low-carbon development strategy:

1. India has contributed little to global warming: India's historical contribution to cumulative global GHG emissions is 4% despite having a share of ~17% of the world's population.

2. India has significant energy needs for its development:
India's annual primary energy consumption per capita in 2019 was 28.7 gigajoules (GJ), considerably lower than both developed and developing country peers.

3. India is committed to pursuing low-carbon strategies for development and is actively pursuing them, as per national circumstances: India seeks to identify and explore opportunities to shift to low-carbon development pathways, while ensuring adequate access to household energy, energy security, and energy for the development of all sectors of the economy.

4. India needs to build climate resilience: Adaptation measures and building resilience to potential climate impacts are necessary to maintain India's development gains and human development outcomes and sustain its growth and development.

Long Term - Low Greenhouse Gas Emission Development Strategies (LT-LEDS)

Seven key strategic transitions

1. Low carbon development of electricity systems consistent with development;
2. Developing an integrated, efficient, inclusive low-carbon transport system;
3. Promoting adaptation in urban design, energy and material-efficiency in buildings, and sustainable urbanization;
4. Promoting economy-wide decoupling of growth from emissions and development of an efficient, innovative low-emission industrial system;
5. Carbon Dioxide removal and related engineering solutions;
6. Enhancing Forest and vegetation cover consistent with socio-economic and ecological considerations; and
7. Economic and financial aspects of low-carbon development and Long-Term Transition to Net-Zero by 2070.

India's Progress Towards Climate Resilience

- India's 4th Biennial Update Report (BUR-4) highlighted a 7.93% reduction in GHG emissions in 2020 compared to 2019.
- Excluding Land Use, Land-Use Change, and Forestry (LULUCF), India's emissions were 2,959 million tonnes of CO_2, including LULUCF, net emissions were 2,437 million tonnes of CO_2.
- The energy sector was the largest contributor accounting for 75.66% of emissions, along with other land use, sequestered approximately 522 million tonnes of CO_2 equivalent to reducing 22% of the country's total emissions.

PIB, January 12, 2025

Climate Action Initiatives for Carbon Neutrality

Some of the significant measures:

1. Forest Land Diversion & Mitigation Measures

Forest Fragmentation Consideration: Forest fragmentation is addressed during forest land diversion approvals for non-forestry purposes under the Van Adhiniyam, 1980.

Compensatory Afforestation: Mandatory afforestation for non-forestry land diversion, including soil and moisture conservation, and eco-restoration.

“Ek Ped Maa Ke Naam” tree plantation Campaign: Nationwide tree plantation campaign launched on World Environment Day 2024.

Green Credit Program: Launched in 2023, the program focuses on tree plantation on identified degraded forest land parcels to generate green credits.

National Afforestation Programme (NAP): Pan-India afforestation in identified degradedforest areas with people’s participation and decentralized forest governance.

Climate Action Initiatives for Carbon Neutrality

2. Urban Climate Adaptation & Low-Carbon Development

Mainstreaming Adaptation in Urban Planning: India's LT-LEDS emphasizes integrating adaptation measures and enhancing energy and resource efficiency within urban planning policies and guidelines as key components of a low-carbon development pathway.

Sustainable Urban Planning Policies: The relevant policies and initiatives include Urban and Regional Development Plans Formulation and Implementation (URDPFI) guidelines, Town and Country Planning Act, Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Pradhan Mantri Awaas Yojana (PMAY) and Swachh Bharat Mission (SBM).

3. Air Pollution Control & Clean Air Initiatives:

National Clean Air Programme (NCAP): Aimed at improving air quality with city-specification plans for 131 cities.

Funding & Implementation: Mobilized through various schemes such as SBM (Urban),AMRUT, Sustainable Alternative towards Affordable Transportation (SATAT), Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-II)and Nagar Van Yojna.

Air Pollution Abatement Measures: Initiatives include cleaner fuels (CNG/LPG), ethanol blending, BS VI fuel norms, and air quality management.

Climate Action Initiatives for Carbon Neutrality

4. Coastal Ecosystem Conservation & Resilience

Mangrove & Coral Reef Conservation: Financial assistance provided to coastal states/Uts for enhancing climate resilience, including mangrove conservation.

Integrated Coastal Zone Management Plans (ICZMP) Plans for Coastal States: Prepared for Gujarat, Odisha, and West Bengal for coastal ecosystem protection.

Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) Program: Mangrove restoration/ reforestation program launched in 2023, covering approximately 540km² across 9 coastal states and 4 UTs.₹ 12.55 crores has been released to the states of Gujarat, West Bengal, Kerala and UT of Puducherry for the restoration of 3,046 ha. of mangroves in FY2024-25.

5. Regulatory Measures for Climate Resilience:

The Coastal Regulation Zone (CRZ) Notifications (2011 & 2019), issued under the Environment Protection Act, 1986, Wildlife Protection Act, 1972, Indian Forest Act, 1927, and Biological Diversity Act, 2002 for enhancing the climate resilience. The 2019 CRZ notification specifically targets the management of mangroves, coral reefs, and other critical ecosystems.

Sector-specific strategies

Sector-specific strategies to strengthen climate goals are:

Energy Sector: Investments in renewable energy sources like solar, wind, and biomass, alongside the implementation of smart grids and energy storage.

Transportation: Promotion of electric vehicles (EVs) and enhancement of public transportation systems.

Agriculture: Focus on climate-resilient crops, improved irrigation, and sustainable farming practices.
Urban Development: Encouragement of sustainable urban planning, green building practices, and waste management initiatives.

Water Resources: Promotion of water conservation, rainwater harvesting, and enhanced river basin management.

Disaster Management: Strengthening resilience against climate-induced disasters through improved early warning systems and community preparedness.

Best Practices in the use of the Government Support mechanism for Low-Carbon Development and Climate-Resilient Adaptation.

1. Anchor Strategy in a Robust, Multi-Sectoral Policy Framework:

The cornerstone of effective climate action is a comprehensive, mission-oriented national plan. India's **National Action Plan on Climate Change (NAPCC)**, with its eight distinct missions covering solar energy, water, the Himalayas, and sustainable habitats, provides a quintessential model. This framework ensures a coordinated, whole-of-government approach, moving beyond siloed efforts to mainstream climate action across all key sectors of the economy, from energy and transport to agriculture and urban development.

2. Set Science-Based, Measurable Targets and Track Progress Transparently:

Credibility is built by committing to clear, quantifiable goals and publicly reporting on progress. India's targets—such as reducing emissions intensity by **33-35%** and achieving **500 GW of non-fossil capacity by 2030**—are aligned with global climate objectives. The government's practice of submitting **Biennial Update Reports (BURs)** to the UNFCCC, which document achievements like the **7.93% year-on-year drop in GHG emissions**, demonstrates a commitment to accountability and data-driven policy.

Best Practices in the use of the Government Support mechanism for Low-Carbon Development and Climate-Resilient Adaptation.

3. Prioritize Adaptation and Mainstream Resilience into Development:

Recognizing that the climate crisis is a present-day threat to development, a best practice is to treat adaptation as a non-negotiable investment. This is evidenced by India increasing its **adaptation expenditure from 3.7% to 5.6% of GDP**. This commitment is operationalized by integrating climate resilience into core schemes—from rural employment programs that build farm resilience to urban missions that promote sustainable habitats and disaster-resilient infrastructure.

4. Foster Collaboration and Innovation Across Society:

Tackling climate change requires a collective effort. A key best practice is actively fostering partnerships between **government, industry, academia, and civil society** to drive innovation in green technologies. This is complemented by mobilizing citizen action through initiatives like **Mission LiFE (Lifestyle for Environment)**, which empowers individuals to contribute through sustainable daily choices, creating a people's movement for climate action.

Best Practices in the use of the Government Support mechanism for Low-Carbon Development and Climate-Resilient Adaptation.

5. Leverage a Diverse Toolkit of Regulatory, Fiscal, and Ecosystem-Based Solutions:

Governments must deploy a wide array of instruments. India's approach showcases this by combining:

Regulatory Power: Using laws like the **Coastal Regulation Zone (CRZ) notifications** for ecosystem protection.

Fiscal and Programmatic Levers: Launching targeted schemes like the **National Solar Mission**, **Green India Mission**, and **MISHTI** for mangrove conservation.

Ecosystem-Centric Approaches: Prioritizing **forest conservation, afforestation**, and the **Green Credit Programme** to enhance carbon sinks, which already sequester **22% of the country's total emissions**.

Energy Security in India

As of January 2025, India's **total non-fossil fuel-based energy capacity** has reached **217.62 GW**.

The government has launched various schemes aimed at promoting **renewable energy, enhancing grid stability,** and **reducing carbon emissions**. Key initiatives are:

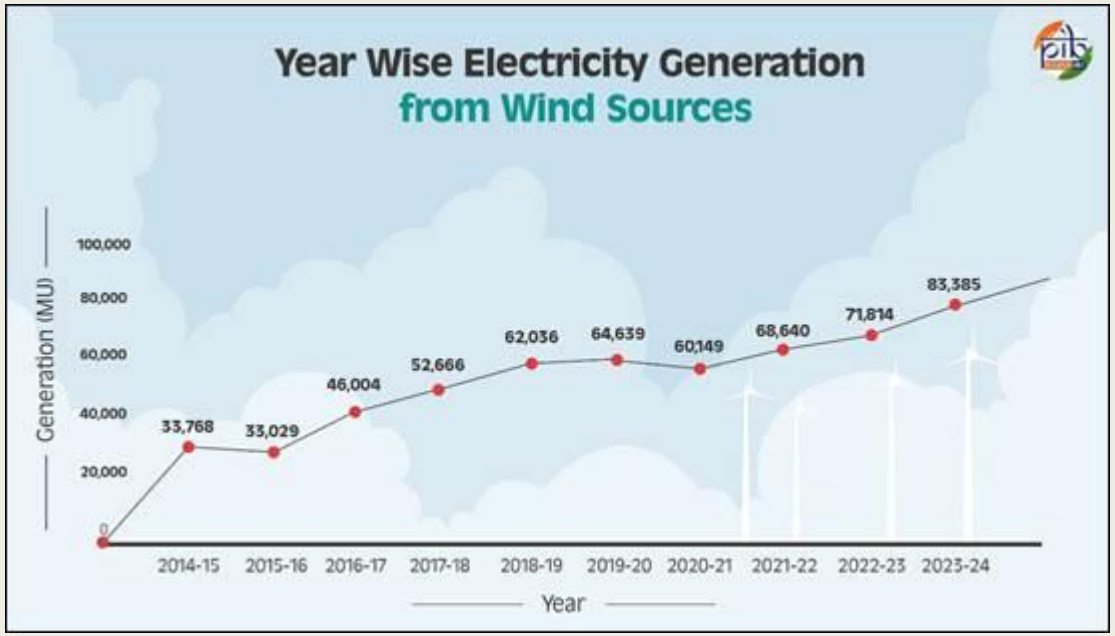
- **National Bio Energy Mission,**
- **National Green Hydrogen Mission:** *Launched in 2023, is positioning India as a global leader in hydrogen energy with investments exceeding ₹8 lakh crore.*
- **PM-KUSUM, and**
- **PM Surya Ghar Muft Bijli Yojana**,

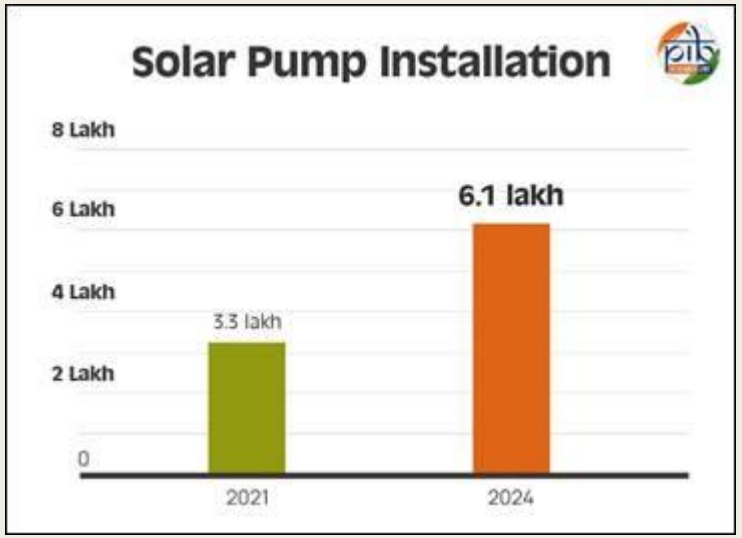
CCDC Wind Initiative has significantly enhanced wind energy development, leading to 48.16 GW of installed capacity.

The **National Solar Mission** has propelled solar energy growth, with installed capacity rising from 9.01 GW in 2016 to 97.86 GW in 2025.

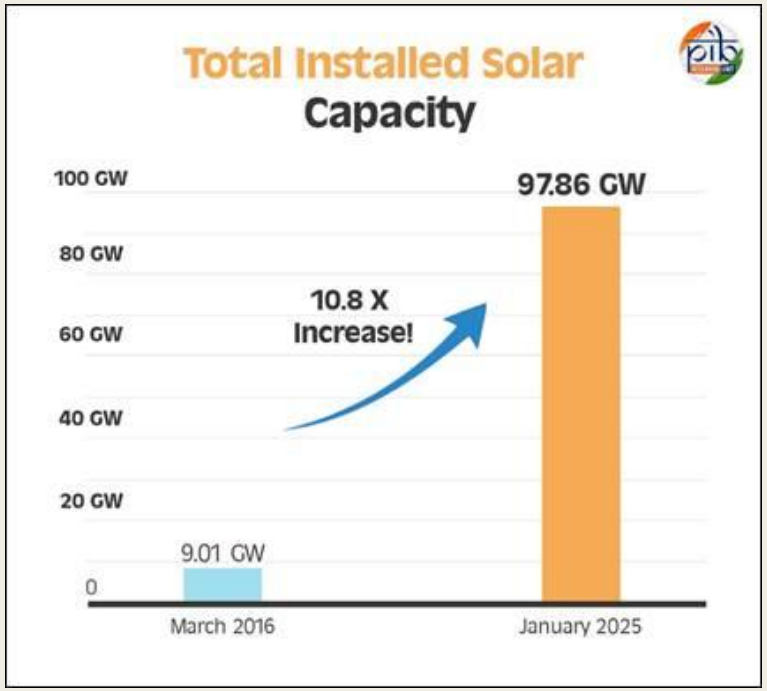
PM-KUSUM and PM Surya Ghar Muft Bijli Yojana are accelerating solar adoption among farmers and households.

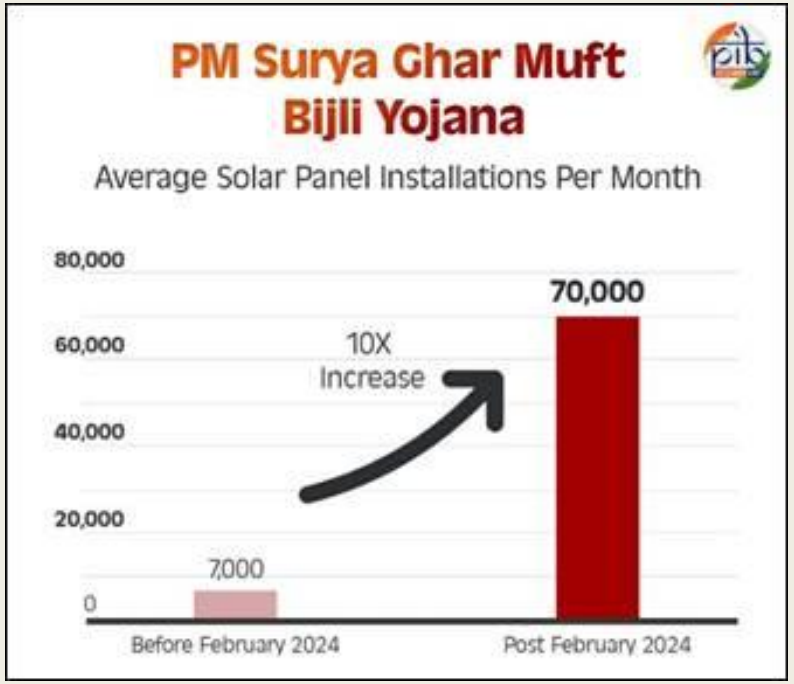
With the substantial government funding and policy measures, Government is achieving energy security while reducing carbon emissions. By leveraging technological advancements and strategic investments, India is on a path toward a cleaner, more resilient energy future.



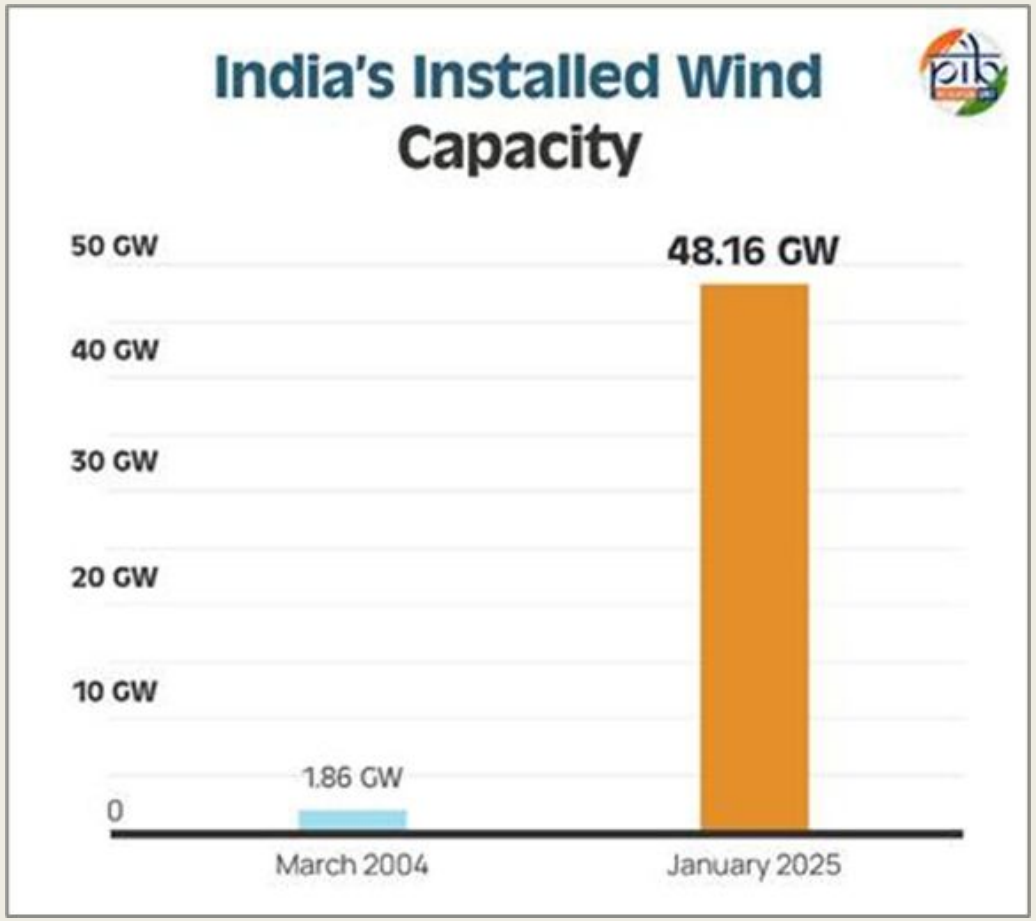


1 lakh = 0.1 million

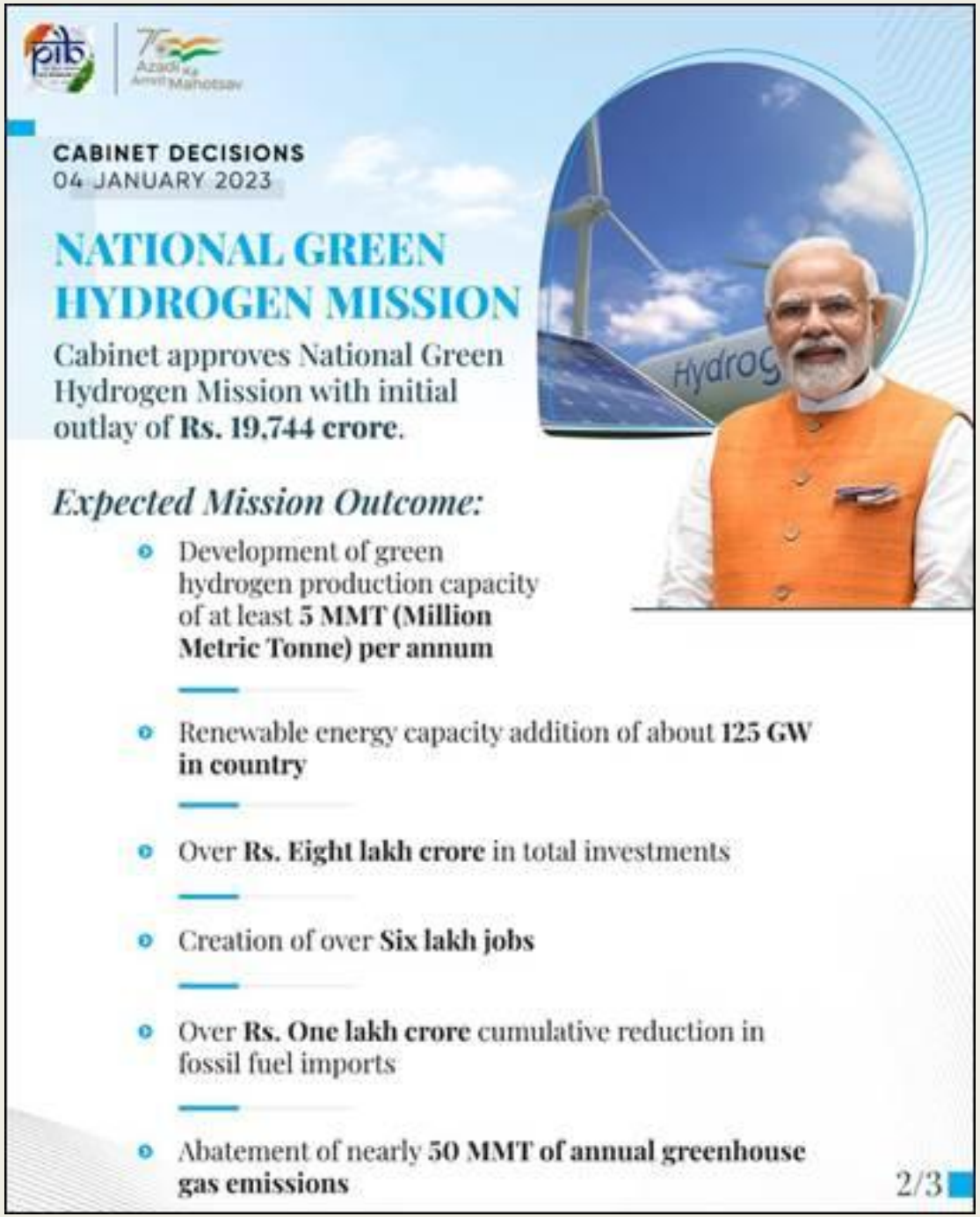




PIB, February 1, 2025



1 crore = 10 million
100 crore = 1 billion



Growth in Renewable Energy Sector

Increase in Total Electricity Generation– Renewable Energy

Table 4.1 Year-wise Energy Generation under RES since 2014-15

(in BU)

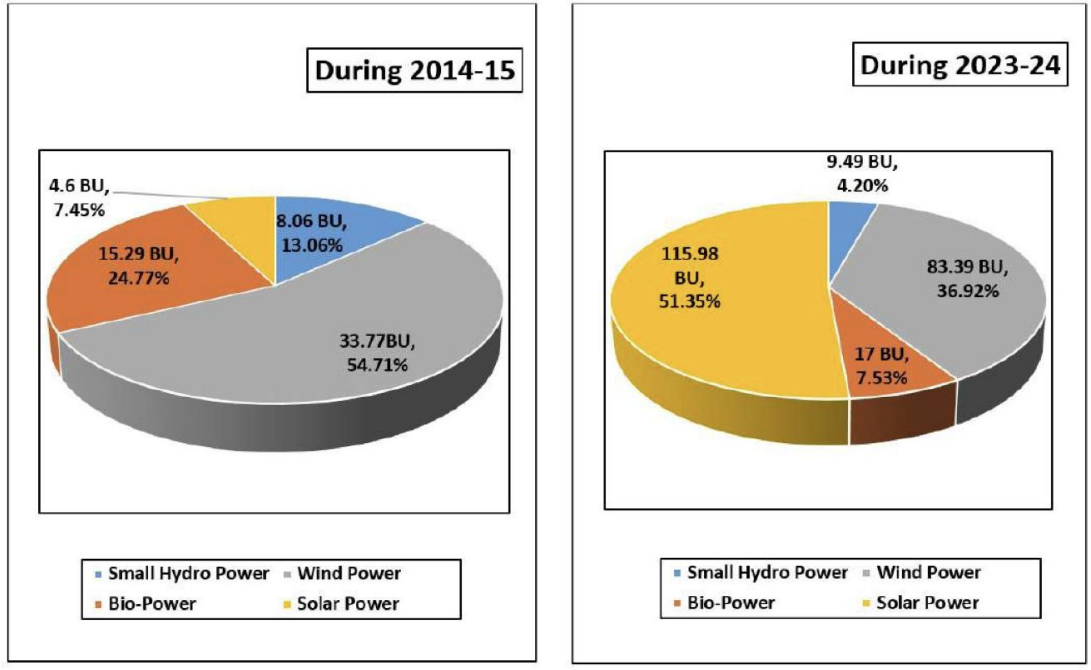
Year	Wind	Solar	Bio-Power				Small Hydro	Grand Total	Growth (%)
			Biomass	Bagasse	Waste to Energy	Total			
2014-15	33.77	4.60	3.16	11.78	0.35	15.29	8.06	61.72	…
2015-16	33.03	7.45	3.73	12.95	0.27	16.95	8.35	65.78	6.58
2016-17	46.00	13.50	4.20	9.96	0.21	14.37	7.67	81.55	23.97
2017-18	52.70	25.80	3.41	11.87	0.36	15.64	7.70	101.84	24.88
2018-19	62.04	39.27	2.76	13.56	0.43	16.75	8.70	126.76	24.47
2019-20	64.65	50.13	2.94	10.80	0.37	14.11	9.45	138.34	9.14
2020-21	60.15	60.40	3.51	11.30	1.62	16.43	10.26	147.25	6.44
2021-22	68.64	73.48	3.48	12.57	2.27	18.32	10.46	170.91	16.07
2022-23	71.81	102.01	3.16	12.86	2.53	18.55	11.17	203.55	19.10
2023-24	83.39	115.98	3.42	10.83	2.75	17.00	9.49	225.83	10.95
Gr % (2014-15 to 2023-24)	146.94%	2421.30%	8.23%	-8.06%	685.71%	11.18%	17.74%	265.89%	
CAGR (2014-15 to 2023-24)	10.57%	43.13%	0.88%	-0.93%	25.74%	1.18	1.83%	15.50%	

Source : CEA, MoP

Gr=Growth (%)

CAGR=Compound Annual Growth Rate

Fig 4.1 Share of various RE sources in energy Generation



Source : MoRE

Growth in Renewable Energy Sector

Increase in Total Installed Capacity – Renewable Energy

Table 2.1: Cumulative Installed Capacity under RES since 2014-15

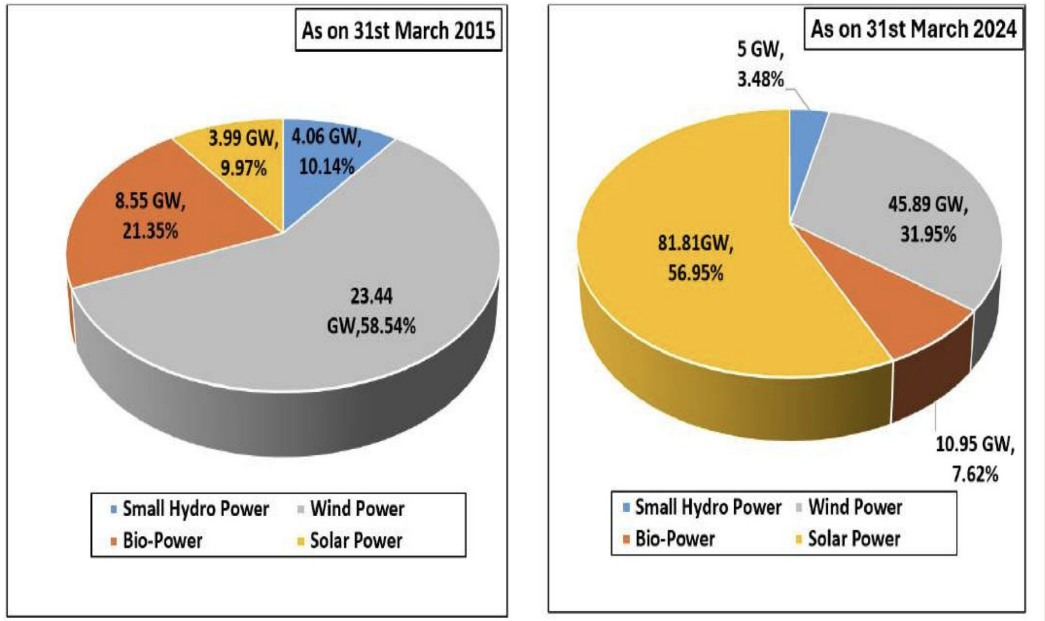
(in GW)

Year	Small Hydro Power	Wind Power	Bio-Power		Solar Power	Total RES Capacity
			BM Power/ Cogeneration	Waste to Energy		
2014-15	4.06	23.44	8.31	0.24	3.99	40.04
2015-16	4.27	26.78	8.67	0.25	7.12	47.09
2016-17	4.38	32.28	8.84	0.28	12.78	58.56
2017-18	4.49	34.15	9.36	0.31	22.35	70.65
2018-19	4.59	35.63	9.78	0.32	29.10	79.41
2019-20	4.68	37.74	9.88	0.35	35.60	88.26
2020-21	4.79	39.25	10.15	0.39	41.24	95.80
2021-22	4.85	40.36	10.21	0.48	54.00	109.89
2022-23	4.94	42.63	10.25	0.55	66.78	125.16
2023-24	5.00	45.89	10.36	0.59	81.81	143.64
Gr (2014-15 to 2023-24)	23.15%	95.78%	24.67%	145.83%	1950.38%	258.74%
CAGR (2014-15 to 2023-24)	2.34%	7.75%	2.48%	10.51%	39.88%	15.25%

Gr=Growth (%)

CAGR=Compound Annual Growth Rate

Fig 2.1 Share of various sources in RES Cumulative Installed capacity



Source : MoRE

Ministry of New and Renewable Energy Schemes

I. Renewable Energy Research and Technology Development (RE-RTD) Programme by Ministry of New and Renewable Energy (Total Budget: Rs.228.00 Crores from 2021-22 to 2025-26): Aims to scaling up R&D effort on the following areas:

- Solar Photovoltaic
- Solar Thermal Applications
- Waste to Energy
- Wind Energy
- Hydrogen and Fuel Cells
- Energy Storage
- Small Hydro
- Bio-Gas

1 crore = 10 million
100 crore = 1 billion

II. **MNRE Schemes** are as follows:

1. Scheme for **Development of Solar Parks and Ultra-mega Solar Power Projects** with a target of setting up 40,000 MW capacity.
2. PM-**Surya Ghar**: Muft Bijli Yojana for installing rooftop solar for One Crore households by 2026-27.
3. Production Linked Incentive (PLI) scheme **'National Programme on High Efficiency Solar PV Modules'** for achieving manufacturing capacity of Giga Watt (GW) scale in High Efficiency Solar PV modules.

4. **PM-KUSUM Scheme** for setting up decentralized solar or other renewable energy power plants, installation of stand-alone solar agriculture pumps, and solarization of existing grid connected agriculture pumps, including feeder-level solarization.

5. **Setting up 12,000 MW grid-connected Solar Photovoltaic (PV) Power Projects** by Government Producers, using domestically manufactured solar PV cells and modules, with Viability Gap Funding (VGF) support, for self-use or use by Government

6. **National Green Hydrogen Mission** launched with aim to make India a Global Hub for production, utilization and export of Green Hydrogen and its derivatives.

7. **Green Energy Corridors (GEC):** To create intra-state transmission system for renewable energy projects.

8. **Viability Gap Funding (VGF) Scheme** for Offshore Wind Energy Projects for installation and commissioning of 1 GW of Offshore Wind Energy Projects also for upgradation of two ports to meet logistics requirements for offshore wind energy projects.

9. **Bio-Energy Programme:**

    - **Waste to Energy Programme :** Programme on Energy from Urban, industrial and Agricultural Wastes/Residues
    - **Biomass Programme:** Scheme to Support Manufacturing of Briquettes & Pellets and Promotion of Biomass (non-bagasse) based cogeneration in Industries.
    - **Biogas Programme :** for promotion of family type Biogas plants

10. **Renewable Energy Research and Technology Development (RE-RTD) Programme.**

11. **New Solar Power Scheme** (for Tribal and PVTG Habitations/Villages) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) and Dharti Aabha Janjatiya Gram Utkarsh Abhiyan (DA JGUA)

Department of Science & Technology Schemes on Climate Change

1. Renewable Energy System (RES) including Solar Energy Research Initiative (SERI):

- Aims to develop national research competence to drive down the cost of solar energy.
- Nurtured Science & Technology led breakthroughs to feed in National Mission on solar energy
- Development of a knowledge platform networked amongst researchers as well as with other stakeholders in the area of Solar Energy
- DST setup Solar Energy Harnessing Centre at Indian Institute of Technology- Madras (IITM)
- Solar PV hub at Indian Institute of Engineering Science & Technology (IIEST)

2. Technology Mission Programme on Water

- Support research to generate advanced knowledge of potential application, catalyze technology development and pilot demonstration at credible scale enrolling community and stakeholders
- Create research competence in Clean Energy and water through human and institutional capacity development
- Accelerate India centric innovations developed around user needs

Department of Science & Technology Schemes on Climate Change

Carbon Capture, Utilisation and Storage (CCUS) and Industrial Decarbonisation:

DST aims to nurture the area of Carbon Capture, Utilization, and Storage through emphasis on research and development and capacity building of both human resource as well as infrastructure, to evolve technologies and methodologies that address issues related to high capital costs, safety, logistics and high auxiliary power consumption.

Accelerating CCS Technologies (ACT) aims to facilitate R&D and innovation that can lead to development of safe and cost effective CO_2 capture, utilisation and storage (CCUS) technologies. The intension is to facilitate the emergence of CCUS by accelerating and maturing CCUS technologies through targeted financing of innovative and research activities. The scope also envisages to address the challenges related to CCUS in technological, environmental, social and economic context of the country.

National Hydrogen Mission
Decarbonizing India, Achieving Net-Zero Vision

On the 75th Independence Day, Prime Minister Narendra Modi announced the National Hydrogen Mission with an aim of making India a hub for the production and export of green hydrogen.

The initial outlay for the Mission will be Rs.19,744 crore, including an outlay of Rs.17,490 crore for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, Rs.1,466 crore for Pilot Projects, Rs.400 crore for Research & Development, and Rs.388 crore towards other Mission components.

The Mission will result in the following likely outcomes by 2030:

- Development of green hydrogen production capacity of at least 5 MMT (Million Metric Tonnes) per annum with an associated renewable energy capacity addition of about 125 GW in the country
- Over Rs. Eight lakh crore in total investments
- Creation of over Six lakh jobs
- Cumulative reduction in fossil fuel imports over Rs. One lakh crore Abatement of nearly 50 MMT of annual greenhouse gas emissions

1 crore = 10 million
100 crore = 1 billion

Industrial Research and Development

- **Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM)** – Support to individual innovators, start-ups and MSMEs;

- **Patent Acquisition and Collaborative Research & Technology Development (PACE)** – Facilitate development and demonstration of innovative technologies;

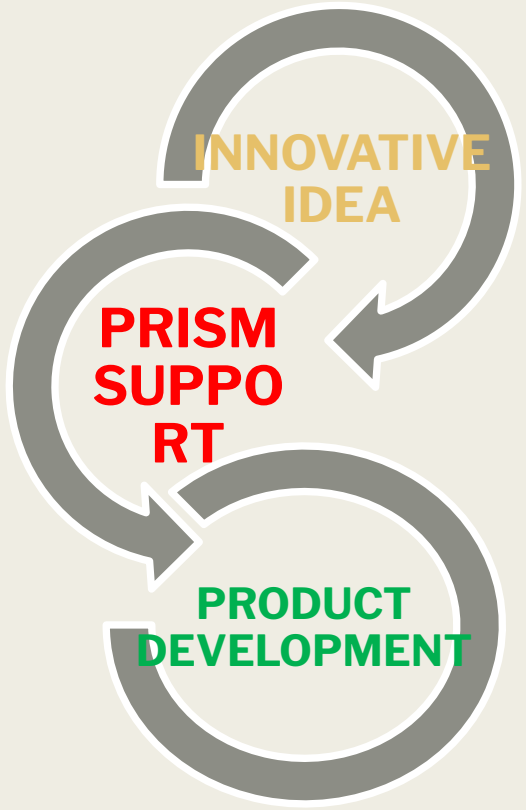
.

- **Access to Knowledge for Technology Development and Dissemination (A2K+)** – Women's Programme (TDUPW), Studies, Events;

- **Building Industrial Research & Development and Common Research Facilities (BIRD-CRTDH)** – Focus on creation of common research and technology development hubs for micro and small enterprises.

ABOUT PRISM SCHEME

Extend financial support to individual innovators for demonstration/conversion of innovative ideas into working models/ prototypes/ processes



- ✔ ONE OF ITS KIND – Unique Scheme
- ✔ DIRECT BENEFIT to Individual Innovator
- ✔ NO Educational Barrier
- ✔ NO Organizational Barrier

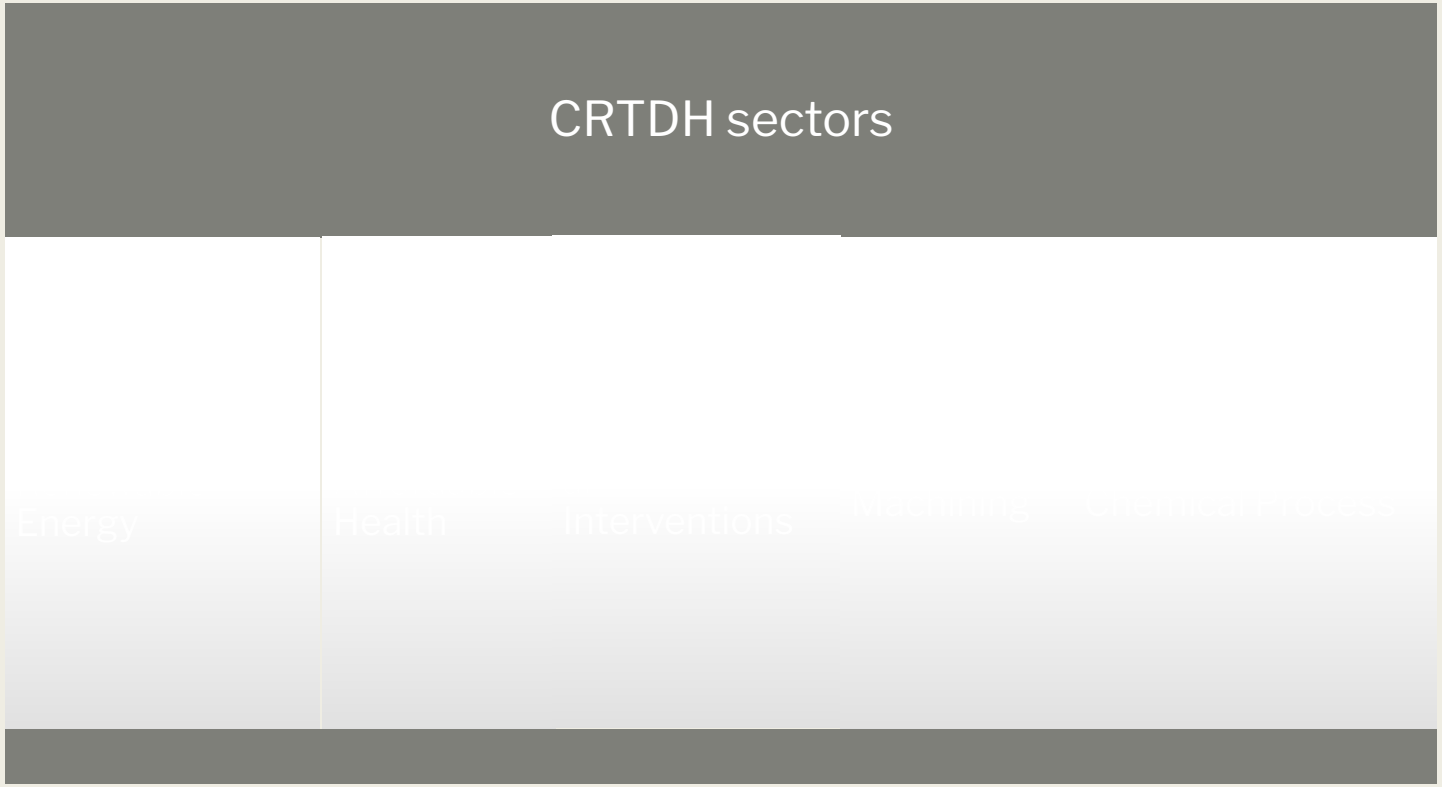
Key Achievements of PRISM Projects

Area	Project	Remarks/Key Features
Green Technology	• **Sustainable Space Cooling Solution**	The cooling system developed is capable of achieving up to 50% in annual power consumption compared to existing air conditioning solutions
Affordable Healthcare	• **Biodegradable stent for cervix reconstruction for women with Cervical Atresia**	This stent is designed to address the challenges faced by cervical atresia patients, including obstructed menstrual flow, cyclic abdominal pain, and infertility. The innovator has filed an Indian patent for this innovation. TRL level of this cervical stent innovation to be at TRL 3-4.
Clean Energy	• **Sustainable Photovoltaic Thermal (PVT) Rickshaw for Rural Transportation**	The commercial version of sustainable PVT rickshaw is ready and being used in rural transportation in U.P with mileage benefit of 16-17 km.

Sustainable Photovoltaic Thermal (PVT) Rickshaw for Rural Transportation

DSIR-Common Research and Technology Development Hubs (CRTDHs)

- DSIR has established the CRTDH programme aimed at advancing research and technology development Hubs to support MSMEs in the five major sectors.
- To enhance productivity, increase the innovative skills of the MSMEs and help them become globally competitive, and generate more employment.
- Impact of this programme enables economic growth as well as low-carbon development and climate change adaptation.

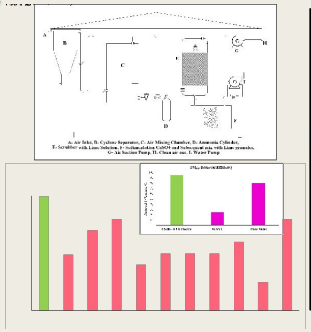


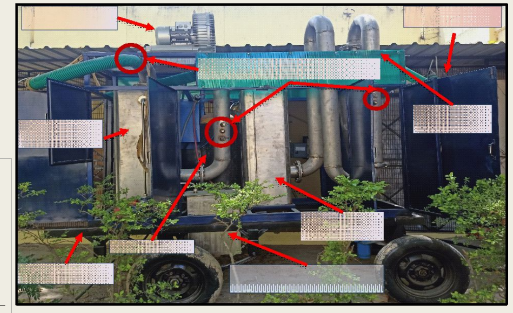
Environmental Monitoring and Intervention Hub (EMIH)

CSIR-Indian Institute of Toxicology Research Lucknow

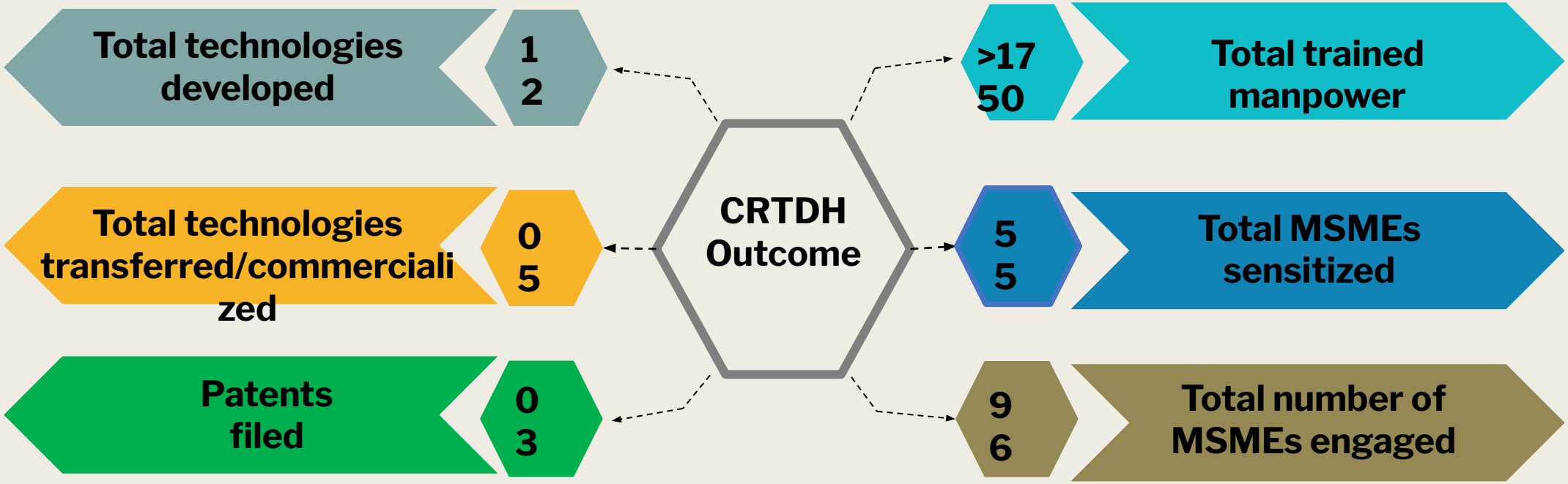
Supported by DSIR-Common Research and Technology Development Hubs (CRTDHs)

Pollution monitoring & removal from wastewater/effluent





Pollution monitoring & removal from the air



Patent Acquisition & Collaborative Research and Technology Development (PACE)

OBJECTIVE

1. Supports scaling up, prototyping and pilot demonstration of technologies to **bridge the "valley of death"** upto market readiness / pre-commercialization stage.

2. Support technology solutions that address **societal challenges** and serves national interest.

3. Support projects addressing national mission like Atmanirbhar Bharat, Make in India, Green Hydrogen, Start-up India etc.

PRIORITY AREAS

MSME and Start-up Focused Solutions: Low cost frugal innovation, Technologies reducing import dependence.

Advanced Manufacturing & Materials: Additive manufacturing, composites, Lightweight alloys.

Clean Energy & Green Technologies: Energy storage, carbon capture, Green hydrogen etc.

Healthcare & Life Sciences: Diagnostics, medical devices, biotech based innovations.

Agriculture & Food Processing: Farm mechanization, Post harvest technologies etc.

Water & Environmental Sustainability: Waste to wealth technologies, water purifications, waste management, Membrane technologies.

Strategic & National Security Technologies: Defense components, Dual use technologies, Space materials etc.

Conclusion

- India's model demonstrates that the most effective government support is **strategic, inclusive, and integrated**.
- It is strategic through its clear, science-based targets; inclusive by engaging all stakeholders from industry to citizens; and integrated by weaving climate adaptation and mitigation directly into the fabric of national development planning.
- This ensures that the journey to a net-zero future is also a journey toward greater energy security, economic resilience, and sustainable growth.

"वसुधैव कुटुम्बकम् i.e. Vasudhaiva Kutumbakam" translates to "The world is one family"
-the Maha Upanishad, an old Sanskrit scripture

All life—human, animal, plant and microorganism—as well as their interdependence on Earth and across the universe are important

Thank you