GOVERNMENT OF INDIA
MINISTRY OF NEW
AND RENEWABLE ENERGY

Azadi Ka Amrit Mahotsav

India's Leadership in Energy Transition



GOVERNMENT OF INDIA
MINISTRY OF NEW
AND RENEWABLE ENERGY

Azadi Ka Amrit Mahotsav

India's Energy Compacts

for the United Nations High-Level Dialogue on Energy

In January 2021, India was selected as a Global Champion for Energy Transition for the United Nations High-Level Dialogue on Energy (HLDE), the first such global dialogue on energy after 1981.

As part of the HLDE, the Government of India, several Smart Cities, and public and private sector corporates have submitted voluntary Energy Compacts (ECs) on energy access, transition and efficiency. These outline specific actions and timelines to drive progress towards achieving Sustainable Development Goal (SDG) 7 and net-zero targets.

UN Member States and non-state actors such as regional/local governments, companies and NGOs can submit ECs. Actions defined in ECs can contribute to Nationally Determined Contributions under the Paris Agreement and the 2030 Agenda and the SDGs.

As of October 2021, the UN had received over 150 ECs from across the world. **India's EC commitments worth USD ~34 billion are nearly half of the total UN Member States' commitments of USD ~73.4 billion**, including the USA (USD ~25 billion) and the UK (USD ~11 billion).

The Ministry of New and Renewable Energy, as India's nodal Ministry for the HLDE, is leading the collaboration of several Union Ministries and Departments. The Council on Energy, Environment and Water (CEEW) is the MNRE's Knowledge Partner for the HLDE.

Visit **energytransition.in** to know more | mnre.gov.in | @MNREIndia

Knowledge Partner

CEEW
THE COUNCIL

ceew.in | @CEEWIndia

Copyright © 2022 Ministry of New and Renewable Energy, Government of India, February 2022



India's National Energy Compact



Image: iStock

Government of India
via the Ministry of New and Renewable Energy

ENERGY ACCESS

Ensure sustained universal energy access to clean cooking fuel:
Provide additional 10 million deposit-free LPG connections to low-income families by 2022.

2022

The launch of *Pradhan Mantri Ujjwala Yojana* (PMUY) 1.0 in May 2016 with a target of 50 million deposit-free LPG connections for below-poverty-line households (revised to 80 million in March 2018).

ENERGY TRANSITION

Increase renewable energy installed capacity to 450 GW by 2030.

2030

India's installed renewable energy capacity (excluding large hydro above 25 MW):
2014: 35.5 GW | 2021: 100.7 GW, 31 August 2021.

Develop and implement a *National Hydrogen Energy Mission* to scale up green hydrogen production and utilisation across multiple sectors, with a target of ~1 MT annual green hydrogen production by 2030.

2030

Launch of the *National Hydrogen Energy Mission* in 2021.

Deploy a *Production Linked Incentive* (PLI) scheme for high-efficiency solar modules to create an additional 10,000 MW of integrated solar PV manufacturing capacity by 2025.

2025

5.7 GW solar module manufacturing capacity in 2015.

Create production capacity for 15 MMT of compressed biogas (CBG) by 2024.

2024

Launch of the national *Sustainable Alternative Towards Affordable Transportation* (SATAT) initiative, in October 2018 to promote CBG.

Achieve 20 per cent ethanol blending in petrol by Ethanol Supply Year (ESY) 2025-26.

ESY 2025-26

2 – 2.5 per cent ethanol blending in petrol in ESY 2014-15.

ENERGY EFFICIENCY

Enhance energy efficiency in agriculture, buildings, industry and transport sectors, and promote energy-efficient appliances/equipment to reduce India's emissions intensity of GDP by 33-35 per cent over 2005 levels by 2030.

2030

In line with the *National Mission for Enhanced Energy Efficiency*, 2015.



Image: iStock

Target Timeframe Baseline

Indian Railways

ENERGY TRANSITION

Achieve:

- **Mission Net Zero Carbon Emission by 2030**
- **Mission Railway Electrification by December 2023**

2030

In line with India's renewable energy targets and Nationally Determined Contributions commitments.

Increase the share of renewable energy in various forms.

2030

Target set in line with India's target to achieve 450 GW of renewable energy by 2030. Indian Railways is the world's 4th largest rail network and plays a key role in India's energy ambitions.

ENERGY EFFICIENCY

Achieve energy reduction targets

- **Electric traction:** 1.90 per cent in passenger and 5.37 per cent in goods
- **Diesel traction:** 3.38 per cent in passenger and 1.36 per cent in goods
- **Manufacturing units:** 7.88 per cent for railway loco manufacturers, 7.47 per cent for coach manufacturers, and 7.10 per cent for railway wheel manufacturers

2024

In line with the *National Mission for Enhanced Energy Efficiency*, 2015.

INTERNATIONAL COOPERATION

Partner with two international organisations/alliances to promote investment, technology and knowledge transfer.

2030

To achieve net-zero carbon emissions by 2030, Indian Railways is adopting new and enabling technologies to transition its energy infrastructure; international partnerships will help upgrade technology.

NTPC Limited

ENERGY TRANSITION

Achieve 50+ GW of cumulative renewable energy capacity.

2030

2021

ENERGY EFFICIENCY

Reduce group net energy intensity by 8.5 per cent versus 2012 levels.

2030

2012

INTERNATIONAL COOPERATION

Join at least two international alliances and groups to facilitate clean energy research and promote sustainability in the energy value chain.

2025

2021



Rajasthan Renewable Energy Corporation Limited

ENERGY ACCESS

Achieve:

- Renewable energy generation capacity of 37.5 GW in Rajasthan
- Optimal energy mix to ensure energy security and effective grid management

2024-25

2021

ENERGY TRANSITION

Achieve:

- 21.18 per cent share of renewable energy in the total energy mix in Rajasthan
- Develop grid-scale renewable energy projects to export power to the national grid
- Become a major contributing state to achieve the national renewable energy target

2021-22

2021

OTHER COMMITMENT

Achieve 30 GW evacuation infrastructure for renewables-based power.

2024-25

2021





Ayodhya Development Authority

ENERGY TRANSITION

Supply 130 MW of solar energy to Solar City Ayodhya by installing solar plants and another 27 MW from rooftop solar on private and public buildings to reduce dependency on fossil fuels.

2021-2022

Uttar Pradesh is facing an acute power shortage with a peak demand deficit of ~15 per cent and energy shortage of ~8 per cent.

Procure 193 air-conditioned electric buses with fast charging capability and future-proof expandable battery packs to enhance higher terrestrial coverage by 2031.

2021-2031

Zero air-conditioned electric buses in 2021.

100 per cent hydrogen fuel-cell usage for illumination of entire Shri Ram Mandir temple premises.

2021-2022

No hydrogen fuel-cell-based power for the temple premises.

OTHER COMMITMENT

Planning for identified Greenfield Township in Ayodhya.

2021-2028

Planning for the project is in progress.

Indore Smart City Development Limited

ENERGY ACCESS

Achieve 100 per cent affordable and reliable energy services provision to all inhabitants and establish advanced metering infrastructure (AMI) as an integrated system of smart meters.

2022-2023

ENERGY TRANSITION

Achieve 7 per cent of total energy consumption from renewable energy sources from plants installed in the Indore region and renewable energy supplied to the city grid by Madhya Pradesh state discom.

2022-2023

ENERGY EFFICIENCY

Enhance energy efficiency by 100 per cent in entire Indore city.

2022-2023

MOBILITY

Procure 400 electric buses and 10,000 e-rickshaws; set up 200 charging stations; transition all government staff vehicles into electric.

2022-2030

New Town Kolkata Green Smart City Corporation Limited

ENERGY ACCESS

Continued 100 per cent electric power provision to all inhabitants in the expanding city.

2030

Continuous since base year in 2008.

ENERGY TRANSITION

Achieve 2 per cent of total electrical energy consumption from renewable sources from plants installed in New Town over and above the renewable energy supplied to the city grid by West Bengal State Electricity Distribution Corporation Limited.

2030

2014-2015

Pursue technology exploration and demonstration of hydrogen-fuelled heavy vehicles.

2030

2020-2021

Explore geothermal energy prospects in New Town.

2030

2021

ENERGY EFFICIENCY

Enhance energy efficiency by 5 per cent.

2030

2015-16

MOBILITY

Achieve 50 per cent non-motorised transport in intra city travel.

2030

2021



Image: iStock

Pimpri Chinchwad Municipal Corporation

ENERGY ACCESS

Install a bio-methanation plant to convert hotel waste to biogas of 50 TPD capacity.

2023

The tender to onboard agencies and contractor for the first-bio methanation plant is in process, with a target to allot the work order by November 2021, commence construction by February 2022, and operationalise the plant by 2023.

Install a 12 MW capacity waste-to-energy plant.

2023

Construction work for the plant was started in 2018, and it will be operationalised by 2023.

ENERGY TRANSITION

Install 10 MW rooftop solar plants on all government buildings.

2028

Approximately 892 KW capacity solar plant already installed on various government buildings as of 2021.

MOBILITY

Install electric vehicle charging stations across Pimpri Chinchwad.

2028

Project proposals are being reviewed and installation work will commence in 2022.

CIRCULAR ECONOMY

Achieve 100 per cent collection and segregation of waste at source at Pimpri Chinchwad.

2023

The project was initiated in 4 wards in August 2021, with a target to start collection and segregation of waste in all wards by October 2021 and make the city bin-free by 2023.

Rourkela Smart City Limited

ENERGY TRANSITION

Cover 30 per cent energy through clean energy by 2030.

2030

2022

Deploy traditional and innovative technological solutions for renewable energy sources by 2030.

2025

2021

ENERGY EFFICIENCY

Reduce energy intensity by 30 per cent in 2030 compared to 2005 levels.

2030

2005

Install appropriate enabling infrastructure by 2025 to promote low-carbon technologies.

2025

INTERNATIONAL COOPERATION

Collaborate with international universities, research institutes and city councils.

2025



Image: iStock

Surat Municipal Corporation

ENERGY TRANSITION

Procure 25 per cent of the total requirement of Surat City (including Smart City + pan-City) from renewable energy.

2030

Up from 3 MW biogas and 3 MW wind in 2011.

Achieve 50 per cent of total energy requirement of Surat Municipal Corporation from renewables.

2030

Up from 3 MW biogas and 3 MW wind in 2011.

Install 11.5 MW capacity of Municipal Solid Waste-to-Energy generation plant.

2026

2022

Convert 741 existing Euro IV city buses into electric buses by 2025 and add 1000 electric buses in public transport by 2030.

2030

From zero electric buses in 2019.

ENERGY EFFICIENCY

Replace all existing conventional streetlights into energy efficient LED streetlights as part of the *Street Lighting National Programme*.

2023

The programme began in 2018.

MOBILITY

Ensure that 20 per cent of all new vehicle registrations by 2030 are electric vehicles and bring about a material improvement in Surat City's environment by lowering emissions from the transport sector.

2030

2011

CIRCULAR ECONOMY

Reduce greenhouse gas emissions by 50 per cent compared to present status of 692.76 KT/year (SO_2, NOx, CO, and NMVOC) through Integrated Solid Waste Management in Surat City.

2030

Continuous since 2016, up to 2030.

Adani Green Energy Limited

ENERGY TRANSITION

Develop and operate renewable energy generation capacity of 25 GW by 2025 and 45 GW by 2030 with average tariff below Average Power Purchase Cost (APPC) at the national level.

2030

On 31 March 2021, Adani Green Energy Limited had ~3.5 GW installed capacity with average power purchase agreement (PPA) rate of INR 3.26/kWh compared to APPC INR 3.85/kWh.

Invest USD 20 billion by 2030 in low- and middle-income countries to pursue just and inclusive energy transitions.

2030

Provide reliable energy through renewable energy hybrid projects and develop a 2 GW per year solar manufacturing capacity.

FY 2022-23



Adani Transmission Limited

ENERGY TRANSITION

Increase the share of renewable power procurement from the current 3 per cent to 30 per cent by FY2023 and 70 per cent by FY2030 in its only B2C business subsidiary, which today generates the majority of Adani Transmission's revenue from electricity generation, transmission and distribution, mainly in Mumbai area.

2030

As of 31 March 2021, Adani Electricity Mumbai Limited (AEML), a subsidiary of ATL, had 3 per cent renewable power procurement in its transmission energy mix.

ENERGY EFFICIENCY

AEML intends to achieve a 40 per cent reduction in GHG emissions intensity by end of FY2025, 50 per cent reduction by end of FY2027, and 70 per cent reduction by 2030.

2030

2021

Ather Energy Private Limited

ENERGY TRANSITION

Achieve 50 per cent contribution of renewable energy sources for electricity consumption at Ather and its vendors.

FY 2021 – FY 2026

Ather Energy's power consumption in 2021 is mostly from non-renewable sources.

ENERGY EFFICIENCY

Improve energy efficiency of personal urban commute using two-wheelers by 6x and reduce carbon footprint by 0.3 MMT by substituting 14 million ICE two-wheelers with Ather's electric two-wheelers.

2022-2030

Energy consumption of an ICE two-wheeler over its lifetime is 13,350 kWh. This can be reduced to 2400 kWh by an Ather electric two-wheeler.

ENERGY EFFICIENCY

Improve Lifetime Electricity Consumption of an Ather electric two-wheeler from 2400 kWh to 1800 kWh between 2020-2030 with the help of advancements in cell technology and powertrain efficiencies.

2022-2030

Ather's electric two-wheelers had a range of 25.68 km per kWh in 2017, which was improved to 39.38 km per kWh in 2020, which directly translates into less electricity consumption over a lifetime.

Bharti Airtel Limited

ENERGY TRANSITION

Increase the share of renewable energy to achieve Science-Based Targets to reduce emissions in:

- **Own operations by 50.2 per cent Scope 1 emission target (emissions from burning of fuel from Bharti Airtel owned/control sources such as diesel) and Scope 2 emission target (emissions from grid electricity)**
- **The value chain by 42 per cent Scope 3 emission target**

FY ending 31 March 2031

FY ending 31 March 2021

ENERGY EFFICIENCY

Adopt energy efficient infrastructure and processes to achieve Science-Based Targets to reduce emissions in:

- **Own operations by 50.2 per cent Scope 1 emission target (non-grid sources such as diesel) and Scope 2 emission target (grid electricity)**
- **In the value chain by 42 per cent Scope 3 emission target**

FY ending 31 March 2031

FY ending 31 March 2021

NET ZERO

Achieve net zero

FY ending 31 March 2051 (30 years)

FY ending 31 March 2021

Heidelberg Cement India Limited & Zuari Cement Limited

ENERGY ACCESS

Increase Alternate Fuel and Raw Material (AFR) usage 5 times from ~4 per cent to ~20 per cent by creating AFR feeding facilities at Narsingarh plant for Line-2 and 3 kilns; upgrading calciner/ step combustor and AFR feeding facilities at Sitapuram, and upgrading AFR feeding facilities at Yerraguntla plant.

2030

2019

ENERGY TRANSITION

Increase green power intake by ~180 per cent compared to 2019.

By 2030, in phases

2019

Increase the share of renewable energy (considering Waste Heat Recovery (WHR) as a source) and grid mix by installing 21 MW WHR at Yerraguntla plant.

By 2030, in phases

2019

Add 23 MW solar power sources.

By 2030, in phases

2019

Enter agreements to source 17 GWh/annum wind power under Scope 2.

By 2030, in phases

2020

ENERGY EFFICIENCY

Heidelberg Cement targets:

- **0.7 per cent reduction in specific heat consumption**
- **13 per cent reduction in specific power consumption**
- **11 per cent increase in blended cement production to attain 83 per cent share in 2030, up from 72 per cent in 2020**

2030

2020

INTERNATIONAL COOPERATION

Improve technical skills of Heidelberg's India workforce by imparting training and sensitisation with support from the global Heidelberg Cement AG Group.

- Participate in establishing standards for production of green cement
- Adopt the best practices available with the Heidelberg Group
- Benefit from the R&D outcomes of the Heidelberg Group

2030 and beyond, continuous process

Capture 1.8 MTCO2 annually by adopting the best available research and technology such as CCU and CCS, and improve the Water Positive score.

2030

2019

ITC Limited

ENERGY TRANSITION

Meet 100 per cent of purchased grid electricity requirements from renewable sources and achieve a 50 per cent share of renewable energy in total energy mix by 2030.

2030

The target for 100 per cent purchased grid electricity from RE sources was set in 2020.

ENERGY EFFICIENCY

Achieve 50 per cent reduction in specific GHG emissions (Scope 1, 2 GHG Emissions per Unit of Production) and a 30 per cent reduction in specific energy consumption (Energy Consumed per Unit of Production) by 2030 across businesses, from 2018-19 parameters.

2030

2018-19

OTHER COMMITMENT

Sustain and enhance carbon sequestration by expanding forestry projects on wastelands through ITC's Social and Farm Forestry programme and similar initiatives to over 630,000 acres.

2030

ITC's Social Forestry programme has been operational since 2001 and the target was set in 2016-17.

J. K. Cement Limited

ENERGY TRANSITION

Achieve 75 per cent green power which includes 37 per cent renewable energy-based power (wind, solar, etc.) and 38 per cent from Waste Heat Recovery System (WHRS).

2030

2021

Achieve the science-based targets initiative (SBTi) target for 2D scenario through increased use of renewable-based power generation and consumption at competitive price and the replacement of fossil fuel by clean fuel as per the SDG roadmap; and energy mix projected to be 25 per cent from fossil fuel and 75 per cent from green sources. Renewable-based power purchase/captive installation in the energy mix will be increased by approximately 5 per cent annually from 2022-23 to 2029-30 to meet the 75 per cent target by 2030.

2030

Near-term (2021-23) deployments include:

- 5 MWh solar capacity to be installed at Nimbahera, Rajasthan in FY 2021-22
- 13 MWh solar capacity to be installed at Mangrol, Rajasthan in FY 2021-22
- 16 MW WHRS installed at J. K. Cement Works, Muddapur, Karnataka in FY 2021-23
- 22 MW WHRS installed at the upcoming unit at Panna, Madhya Pradesh in FY 2022-23

ENERGY EFFICIENCY

Increase thermal substitution rate from existing 7.2 per cent to 35 per cent by replacing fossil fuel with clean fuels; reduce 10 per cent specific power consumption, 5 per cent thermal energy use, and clinker contents below 65 per cent in cement to meet the SBTi commitment by 2030.

2030

2021

Explore clean energy sources for reduction of GHG emission at competitive price.

2030

2021

Explore clean energy sources for reduction of GHG emission at competitive price.

2030

2021

JSW Cement Limited

ENERGY TRANSITION

Increase the share of renewable energy in JSW Cement's operations to 30 per cent by 2030.

2030

Up from 3.15 per cent in 2020-21.

ENERGY EFFICIENCY

Double the energy productivity of JSW Cement's operations by 2030.

2030

2013-14

Increase Thermal Substitution Rate (TSR) in JSW Cement's cement kilns to 20 per cent by 2030.

2030

Up from 4.23 per cent in 2020-21.

Install Waste Heat Recovery Systems (WHRS) of 65 MW by 2030.

2030

2021

JSW Energy Limited

ENERGY TRANSITION

Increase renewable energy share in generation mix to 80 per cent i.e., to 16.8 GW by 2030.

2030

Up from 30 per cent of mix in 2020-21. JSW Energy aims to become a 10 GW company by 2025 and 20 GW company by 2030, with all the incremental capacity additions coming from renewable energy.

Punjab Renewable Energy Systems Private Limited

ENERGY TRANSITION

Produce 1,734.5 MW renewable energy capacity between 2022-2030.

2030

PRESPL is producing power equivalent to 0.02 MWH in September 2021.

Provide 4 million MT of biomass briquettes and increase 50 per cent production each year for next 9 years i.e., upto 2030, to crematoriums, hospitality kitchens, utensil and furniture production industries, etc.

2021-2030

2021

Supply biomass to the following biofuel plants:

- Three CBG projects, doubling every year towards 2030 with 60,000 tonnes of biomass capacity per annum
- Independent Power Producers with 100,000 tonne capacity per annum
- 2G ethanol plants with 100,000 tonne capacity per annum, doubling supply capacity in 2025 and then maintaining supply capacity at 2.5 times for the next 5 years i.e., upto 2030.

2023-2030

2023

OTHER COMMITMENT

Increase manufacturing of corn silage by 50 per cent in next 4 years and 75 per cent in next 5 years.

2021-2030

FY 2022: PRESPL is currently manufacturing 20,000 tonnes/year of corn silage, a wholesome cattle feed made from biomass.

ReNew Power Private Limited

ENERGY ACCESS

Make Round-The-Clock power from renewable energy available at a tariff at least 20 per cent less than equivalent to fossil fuel-based assets by using a combination of solar, wind and storage technologies, coupled with low-cost financing and digital interventions.

2027

ENERGY TRANSITION

Be a leading international company in renewables with an operating portfolio of 18.

2025

September 2021 operating capacity: 6.1 GW.

Expand infrastructure and upgrade technology for manufacturing wind and solar assets, thereby supplying modern and sustainable energy services:

- Set up 2 GW solar cell and module manufacturing
- Set up 500 MW/year wind turbine manufacturing capacity

2023

ENERGY EFFICIENCY

Improve efficiency of energy assets by 1.5-2 per cent over current values by using digital analytics and AI.

2025

INTERNATIONAL COOPERATION

Increase efficiency of assets by 2-2.5 per cent over current values through collaborative industry-academia research.

2030

NET ZERO

Become a net-zero organisation by 2050.

2050

2021

Toyota Kirloskar Motor Private Limited

OTHER COMMITMENTS

Toyota India has advanced its SDG7 goals ahead to its global strategy, with in-house manufacturing process and supply chain at the core.

- **Organisational transformation**
  - » Evolve strong and unique strategies starts with focused and creative teams
  - » Bring in functional start-ups
  - » Create Corporate Sustainability & Environment Department to develop actionable roadmaps to realise SDGs
  - » Create of Zero-Carbon Department to drive Energy Management & renewable energy initiatives across the organisation
  - » Create a Supplier Kaizen Department (Supplier Development) for focused driving of SDG7 into suppliers' boardrooms
  - » Create 10 sub-committees to drive SDGs across relevant manufacturing processes
- **Capacity building**
  - » Key assets identified and dedicated to SDG Tasks including Human Assets; long-term deployment to global knowledge centres on SDGs & Sustainability
  - » Strong partnerships forged, such as with ReNew Power as channel partner, to assist the Company in driving several ambitious clean energy projects
- **Long-term action plans**
  - » Roadmap drawn up to 2050 focusing on all SDGs, divided into 6 Eco-Challenges as clear verticals, each Challenge to derive a series of intense 5-Year Action Plans: Early Plans of preparations and strategies to drive quick actions and global leadership and Action Plans on the expected role of each internal and external stakeholder
- **Innovative and bold strategy**
  - » Significantly expand production by 2022 but new volumes will bring down renewable energy footprint to a meagre ~30-35 per cent so an SDG approach has been adopted from the project conceptualisation stage to install up to 60 MW of solar/wind
- **Strategy for supply chain**
  - » Make the supply chain green through a first-in-class approach to be an aggregator and facilitate all small-medium energy consumers switch to sustainable energy (SDG7) keeping in mind commercial feasibility; potential of this project is ~400 MW
- **Urban afforestation**
  - » TKM has carried out Urban Afforestation (Green Wave Project) under the advisory of green-revolutionist Dr Akira Miyawaki; ~320,000 saplings of 600+ native species planted inside the corporate campus which are creating a safe habitat for local fauna; through these plantations, 4,700 tonnes of CO_2 could be sequestered

2015

2009 onwards, multiple initiatives

Ultratech Cement Ltd

ENERGY TRANSITION

Increase the share of renewable/green energy to 34 per cent by 2024.

2024

ENERGY EFFICIENCY

Double energy productivity from base year 2010 to target year 2035.

2035

2010





Image: Vikram Solar

Visit **energytransition.in** to know more | mnre.gov.in | @MNREIndia

