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IEF Wishes Its Members a Happy and Prosperous Diwali

India to become a Developed Nation by 2047 is Achievable: Exponential Growth of Power Supply Holds the Key (Part - 1)

R.V. Shahi



The Prime Minister of India, while delivering the Independence Day Speech on 15th August 2023, gave an outline of aspirational India and stated that India would become a developed nation by the year 2047, when it completes 100 years of its independence. The aspiration and the target are indeed laudable. The several

initiatives, taken during last few years, do indicate the positive direction and thrust and, hence, the confidence level of the country has definitely enhanced and so have the aspirations of the people at large. There are several factors which determine the status of a country to be developed which, inter-alia, include technological developments, infrastructural developments, including health and education and, most importantly, the level of GDP of the country expressed in terms of per capita income. It may be relevant to provide a better understanding about the criteria which normally apply for determining the extent of development of various countries. Just after the address of the Prime Minister of India, mentioned above, the Business Standard published a piece, which throws some light on this. An extract, taken from Google search, is given below:

PER CAPITA INCOME:

The main benchmark that is used to determine the level of development of an economy is per capita income. It is generally derived by dividing a country's gross domestic product (GDP) by its total population. It roughly shows how much a citizen of that country is likely to earn in a year.

Some economists consider \$12,000 to \$15,000 per capita income to be sufficient for developed status. Others, however, consider a country to be developed if its per capita income is above \$25,000 or \$30,000.

According to the World Bank, India's per capita income is around \$2,400. At the same time, USA's and China's per capita incomes are \$76,400 and \$12,700, respectively.

Standard of living and other measures

For countries that are difficult to categorise according to per capita income, economists turn to the standard of living for measurement. Most developed countries have less than ten infant deaths per year per 1,000 live births. Moreover, they have a life expectancy of over 75 years.

One such example is Qatar. It has one of the highest per capita incomes in the world at \$88,000. However, it is not considered developed due to vast income inequality and a lack of educational opportunities for citizens.

Human Development Index

The United Nations' HDI ranks countries on three parameters: literacy rate, education access and healthcare. The countries are scored between 0 and 1 based on these three parameters.

A country with an HDI index over 0.8 is generally considered developed. According to the latest data, India's score is 0.633, and it stands at 132nd place out of 192 countries ranked.

Which Asian countries are developed?

According to the International Monetary Fund, Australia, Hong Kong, Japan, Korea, New Zealand, Singapore, and Taiwan can be categorised as developed countries."

It is a matter of satisfaction that India's GDP has seen a higher rate of growth recently and the country is poised to be the third in the overall GDP rank after USA and China, in coming few years, leaving behind Japan and Germany. However, this is in relation to the overall income of the country. In terms of per capita income, India's position is still 129th among 200 countries, and hence, it would have to cover considerable ground to reach the per capita income level needed to be considered a developed nation. The extract from the Business Standard piece, mentioned above, gives a reasonably good idea about the per capita income level gaps. It is established beyond doubt that there is a high degree of positive co-relation, for any country, between per

capita electricity consumption and per capita income. And, it is quite obviously so because electricity consumption is common to almost every sphere of economic and social activities resulting in overall growth and development of the country. India's 129th position in the per capita income is justifiably explained by its overall rank in the per capita power consumption as well.

In a recently organised Conference to celebrate the Golden Jubilee of the Central Electricity Authority, the apex technical organization with the Ministry of Power, the author had an opportunity to outline a framework on how India should charter its power sector growth to achieve the aspirational agenda of the country by 2047 and be ranked as a developed nation. In this context the following background and framework were briefly outlined:

- In the present global scenario, with highly challenging geo-political and diplomatic situations the world is faced with, it is indeed a major challenge to address the contradictions of environmental sustainability, energy access, and energy security. These three factors characterize what the developed countries, developing countries, and under developed countries are all faced with. What India is faced with is an additional challenge of enhancing considerably the energy and electricity consumptions for raising per capita income to become a developed nation.
- Till late 80's India continued to be reconciled with relatively lower economic growth rate in the range of 5% or even lower, when it recognised that the country would need to undertake massive restructuring and reform of its economic policies to move forward and work for higher GDP growth rate and per capita income growth. The country launched a major economic reforms agenda in 1991, which aimed at opening up of a number of economic sectors and delicensing of several economic and industrial activities. These did yield positive results but not to the extent that could have made a major difference.
- As explained earlier in this paper, power is the prime mover to propel economic and industrial activities. In the economic reform agenda of 1991

policy initiatives, however, in the field of power sector, only some nominal changes were made, which were not at all sufficient to bring about the desired momentum to provide adequate support to the various economic activities, which had been opened up. The entire decade of 90's therefore was a decade of lost opportunities for the power sector and, hence, also for many of the other sectors which needed larger growth of power supply in a reliable manner. The initiative of having private participation in power sector did not take off even to provide a critical mass of outcome.

- It is only toward the end of the last century that the NDA Government, led by the Prime Minister late Shri Atal Bihari Vajpayee, made a definite decision to create entirely a new legislative framework for the power sector providing for delicensing of power generation that would enable rapid and required expansion of power generation capacity. This decision was followed by series of definite exercises and wide spread national consultations, which finally led to the enactment of Electricity Act 2003. This was, in the subsequent couple of years, followed by several statutory policies to implement the far-reaching provisions of the Act. These led to wider participation of public and private sector, opening up of the Transmission Sector and the restructuring of erstwhile Electricity Boards.
- These changes were widely welcome by industry at large, Banks and Investors. The growth momentum on addition of new power generation capacity did lead to a significant change in the rate of capacity addition, which can be seen in the following table, highlighting capacity additions.

	Total Capacity (MW)	Addition (MW)
March 1992	69,065	
March 2002	1,05,046	35,981
March 2012	1,99,877	9,4831
March 2022	3,99,497	1,99,620

- Prior to the new legislation along with the accompanying policies, capacity addition every ten-year used to be in the range of about 35 GW. Post Electricity Act and subsequent

initiatives that followed, capacity addition during 2002 – 2012 was of the order of 95 GW, and during the ten-year period 2012 – 2022 the capacity addition was as high as 200 GW. This showed that the sector could plan and implement these scales of expansion, and even better, based on the experience gained. It is relevant to mention that a typical coal power plant, from planning to commissioning, has a five-year cycle time. The growth momentum thus gained could have led to a sustained high rate of annual growth of 7 to 8 percent.

- Unfortunately, however, in view of the Supreme Court judgment relating to cancellation of more than 200 Coal Blocks mainly meant for new power capacity addition the rate of growth significantly declined which can be seen from the following Table:

	Capacity (MW)	Addition (MW)
March 2012	1,99,877	
March 2017	3,26,833	1,26,956
March 2022	3,99,497	72,664

While the capacity addition during the five-year period 2012 – 2017 was 127 GW, it dropped to 73 GW in the subsequent five-year period 2017 – 2022. A number of projects, which had already started, got stuck up. The enthusiastic response of Banks and investors turned negative since these adversely affected their own operations. The Sector got back to the more or less similar situation as in the year 2001 - 02, when Banks had almost abandoned the Power sector.

- Coal Sector Reform was planned as early as in 2001 when the Bill was introduced in the Parliament, it did not progress for almost 12 years. It is only by the new Government led by Shri Modi that Opening up of the coal sector through a new Legislation was affected. This historic legislation has tremendous potential to support power sector expansion. Revival of power plants affected by the Supreme Court judgement is also restoring the sentiments of Banks and developers.
- The much-needed directional policy change, which has emerged as a major landmark, is the extra ordinary thrust on expanding Renewables.

Announcement by the Prime Minister in 2015 for Renewables capacity expansion to 500 GW indeed brought the desired momentum on clean energy developments. Bankers and Investors are highly positive about the country's agenda on Solar, Wind, Nuclear, Bio Mass, Bio Gas and Hydrogen.

- Experience of last few years indicates that management of Transmission System will require reliable backup when Solar Power is not available. Several alternatives are being explored. All are relevant and many of them will inevitably need required gestation periods to establish as reliable backup with affordable costs. It appears quite clear that coal will need to continue for a few decades. Its slow down first on account of coal block cancellations and subsequently due to global sentimental impact caused by Proclaimed accelerated growth of renewables, and possible phase-out (which later was toned down to phase-down) of coal power, has also indeed affected India's power sector growth.
- In an earlier paragraph, decline in capacity addition rate has been explained. We also need to recognise, and factor in the discussion, the obvious fact that every MW or GW of capacity addition does not have similar outcome in terms of quantum of power, though we do add up all while indicating the total installed capacity. Recent decline in coal power capacity addition programme post Supreme Court judgement, has had a lasting impact on our ambition to enhance substantially per capita power, a major enabler to be a developed nation.
- While charting the power sector path to 2050, (or 2047 when India completes 100 years of Independence) the country needs to set targets in a manner that the per capita power consumption then will be of the order of 7000 Kwhr. which may enable the country to be in the Developed Nations group. Obviously, this means a fivefold increase in Billion Units of power availability. The task is, no doubt, highly challenging.

How do we go about it?
(To be continued)

From the Desk of Hon Secretary General

Dear Colleagues



I am pleased to share with you the October Issue of our monthly e-magazine TOTAL ENERGY. It covers the energy sectoral news and views and activities of the India Energy Forum.

Access to reliable, quality, and affordable electricity is essential for ease of living, economic development and achieving sustainability goals (SDGs). India's target to achieve net-zero emissions by 2070 aligns with both the UNFCCC Paris Agreement and India's aspiration of becoming a developed nation by 2047 through the 'Viksit Bharat @2047' vision. This vision reflects efforts at the government, private, and individual levels, signalling an advanced and resilient future for the power sector. Achieving this vision necessitates a significant transition in the power sector. However, transitioning to net-zero involves complex challenges requiring coordinated efforts across all sectors. Given that the power sector considerably contributes to India's emission, this sector is of paramount importance to move towards the net-zero target.

Keeping this in mind, India Energy Forum organized its prestigious annual event, 23rd India Power Forum on October 21, 2024. The Conference dwelled upon the theme Towards Net Zero Compliant Power Sector for Developed India; Hydro Power with special emphasis on Pump Storage Plants; and Role of Nuclear, Renewables and Hydrogen fuels.

The Conference was supported by the Ministry of Power. Knowledge Partner was BDO India LLP, which brought out the theme Paper which was released at the Inaugural Session. The Conference had three technical sessions and one Inaugural Session.

The Conference was inaugurated by Shri Ghanshyam Prasad, Chairperson, CEA. While Shri R V Shahi, President, IEF and Former Secretary, MoP delivered the special address online, the Presidential address was given by Shri Anil Razdan,

Past President, IEF and Former Secretary, MoP. Dr H L Bajaj, Chairman, Power Group, IEF, Ex Chairperson, CEA gave the Welcome Address, Shri Rakesh Jha, Partner, BDO gave the theme presentation. Vote of thanks was given by Shri Satish C Sharma, Convenor, Power Group, IEF and Former Director, THDC India and I gave the Introductory Remarks.

Session I was "CEOs Roundtable on "Towards Net Zero Compliant Power Sector for Developed India" which was chaired and moderated by Shri Anil Razdan. The other Distinguished Panelists who share their views during the Session were: Dr Neeraj Sinha, Adviser / Joint Secretary, Office of the Principal Scientific Adviser to the GoI; Shri Vibhav Agarwal, CEO Power, Vedanta; Shri R K Chaudhary, CMD, NHPC; Shri S N Goel, CMD, IEX; Shri Praveen Gupta, Member (Thermal), CEA; Dr V K Garg, Former CMD, PFC and Shri R K Porwal, Director, GRID INDIA.

The Session II was on "Hydro Power and Energy Storage with special emphasis on "Pump Storage Plants" which was chaired Shri M G Gokhale, Member (Hydro), CEA. The prominent speakers who shared their views were: Shri Pradas Das, CMD, IREDA; Shri P M Nanda, Executive Vice President (Engg & Projects) Director, Greenko Energy Ltd; Shri Neeraj Verma, CGM (I/C), THDCIL; Prof Arun Kumar, IIT Roorkee; Shri Sandeep Batra, ED, NHPC and Shri Deepak Pandey, Founder Chairman & MD, GPES.

The Session III was devoted on "Role of Nuclear, Renewables, Hydrogen fuels and AUSC Technology towards Net Zero Compliant Power Sector for Developed India" which was chaired by Dr Ravi B Grover, Member, AEC. The other Distinguished Speakers were Shri Ajay Shankar, Distinguished Fellow, TERI; Shri A V Krishnan, Dr Raja Ramanna Chair Professor, NIAS; Dr Mohammad Rihan, DG, NISE; Shri Sanjay Bansal, GM, BHEL; and Shri PK Mishra, Addl VP, BRPL.

Full proceedings and recommendations of the Conference will be shared in the supplementary issue of the TOTAL ENERGY next week.

With best wishes and Happy Diwali!

K S Popli

Power generation via renewable energy up 86 pc in India since 2014: Pralhad Joshi



India saw an impressive 86 per cent increase in power generation via renewable energy since 2014, from 193.5 billion units (BU) to 360 BU, Union Minister of New and Renewable Energy, Pralhad Joshi, said

Delivering the keynote address at the 'Hamburg Sustainability Conference' in Germany, the minister said India stands as a global voice of reason in its commitment to the pursuit of a sustainable energy future that aligns with our growth ambitions and environmental responsibilities.

"Under the leadership of Prime Minister Narendra Modi, India has witnessed a transformative increase in its renewable energy capacity since 2014, with a 175 per cent rise from 75 GW to over 208 GW today," he told the gathering. Minister Joshi also emphasised that the International Solar Alliance, supported by over 100 countries, demonstrates India's leadership in global efforts to combat climate change through solar energy.

"India is making significant strides in the green shipping sector, and aims to be among the top 10 shipbuilding nations by 2030 and the top five by 2047," he said. Joshi embarked on a three-day tour to Germany from October 6, and is set to hold a series of bilateral meetings to boost cooperation in sustainable development, Green Hydrogen, low-cost finance and renewable energy value chain components.

Addressing the conference, the Union Minister highlighted India's energy transition and noted that the country has achieved significant milestones in its shift to renewable energy. "India is the only G20 country to have met its climate targets ahead of schedule, despite having the lowest per capita emissions among G20 nations," the minister said, emphasising that energy security and access remain paramount for India, but this has never hindered the

nation's commitment to energy transition on both national and global scales.

Addressing the theme of Green Shipping, Minister Joshi emphasised the crucial role of the maritime sector in global trade and its impact on greenhouse gas emissions. "As we progress towards achieving net-zero emissions, the necessity for sustainable maritime transport has become very important.

India is making significant strides in the green shipping sector, driven by government initiatives, technological advancements, and international collaborations," said the minister. The National Green Hydrogen Mission (NGHM), launched with an outlay of \$2.4 billion, aims to produce 5 million metric tonnes (MMT) of green hydrogen annually by 2030, attracting over \$100 billion in investments and creating more than 6 lakh jobs. Pilot projects under the NGHM, with an investment of \$14 million, are already exploring the use of green hydrogen in the shipping sector.

"We are focusing on converting existing vessels to operate on green hydrogen or its derivatives. The Shipping Corporation of India is currently converting two vessels to run on green methanol," the Minister added.

RE sector set to dominate Indian power industry in the coming years: MNRE Secretary Shri Prashant Kumar Singh



The renewable energy sector is set to dominate the Indian power industry in the coming years, stated Shri Prashant Kumar Singh, Secretary of the Ministry of New and Renewable Energy. He was speaking at the Brainstorming Conclave organized by the Central Electricity Authority on the Indian Power Sector

Scenario by 2047 in New Delhi. He mentioned that RE capacity, which was 76 GW in 2014, is now almost 210 GW, and achieving 500 GW by 2030 is within reach.

Shri Prashant Kumar Singh highlighted that a major part of this growth in RE will come from the solar sector. Solar capacity has surged from a mere 2.6 GW in 2014 to an impressive 91 GW today, with projections indicating it could reach close to 300 GW by 2030. Initiatives such as PM Surya Ghar and PM KUSUM are driving this demand, complemented by rapid advancements in manufacturing capabilities. Solar power module manufacturing, which stood at 2 GW in 2014, has surged to 60 GW and is expected to surpass 100 GW by 2030.

He also highlighted the excellent growth of the solar cell manufacturing sector from 1 GW in 2014 to an estimated 8-10 GW today. By the end of March 2025, it is projected to reach 20 GW, with a target of over 70 GW by 2030. Between 2014 and 2023, investments in the RE sector have totalled ₹8.5 lakh crore. At the recent ReInvest event of MNRE, financial institutions, including public sector banks, pledged ₹25 lakh crore in support of RE projects through 2030.

Secretary Shri P.K. Singh also emphasized the importance of initiatives such as the Production-Linked Incentive (PLI) scheme and the Green Hydrogen Mission in the RE sector. He urged the industry to collaborate on advancing the Green Hydrogen sector in the country. India has set a target of 7.7 metric tonnes of green hydrogen by 2030, alongside establishing 15 GW of electrolyser capacity. Shri Singh also noted advancements in research and development, highlighting the National Physical Laboratory's development of a reference solar cell—a significant milestone for the sector.

The Brainstorming Conclave by the Central Electricity Authority on the Indian Power Sector Scenario by 2047 was inaugurated today by Union Minister of Power Shri Manohar Lal Khattar in New Delhi. Union Minister of State for Power & New and Renewable Energy Shri Shripad Y. Naik also addressed the event. The conclave involves policymakers, government leaders, ministers, senior officials from Central and State Governments, industry experts, distinguished guests, and other stakeholders. The event aims to provide a unique platform for knowledge exchange, networking, and collaboration towards a sustainable and resilient power sector.

India's clean energy capacity to reach 107 GW in solar by 2030, faces challenges in hydrogen and wind sectors

India's clean energy capacity is projected to grow substantially by 2030, with the country expected to achieve self-sufficiency in solar and wind energy, according to the Clean Energy Technology research team at S&P Global Commodity Insights. India's solar PV module capacity is projected to reach 107 GW, wind nacelles at 20 GW, battery cells at 69 GWh, and 8 gigawatts equivalent (GWe) in electrolyzers by the end of the decade.

“India will achieve full self-sufficiency in solar PV and wind and over 90% in battery cells,” said Indra Mukherjee of S&P Global Commodity Insights. The country's rise in clean energy is being driven by policies such as the Production-Linked Incentive (PLI) scheme, as well as tariffs on imports like basic customs duties (BCD) and the goods and services tax (GST). These measures are aimed at boosting domestic manufacturing.

“The Indian government has rolled out various initiatives, including the PLI scheme, to attract investments in solar modules and battery production,” said Jessica Jin of S&P Global Commodity Insights. These policies are designed to meet growing domestic demand and position India as a key player in the global clean energy supply chain.

India's export capabilities are also benefiting from global trade restrictions on Chinese products. In 2023, India shipped 5 GW of solar modules to the US, a 7.4-fold increase compared to 2022, as the country gained market share from Chinese manufacturers.

However, challenges remain. In the wind sector, much of India's manufacturing capacity remains underutilized, with domestic companies overtaking Western turbine manufacturers. India's offshore wind sector and hydrogen ambitions also face hurdles. “India's electrolyzer capacity is projected to grow significantly by 2030, but the hydrogen sector remains underdeveloped,” said Katherine Leydon of S&P Global Commodity Insights.

In the battery sector, local manufacturers are still limited to assembling battery packs, with technological hurdles and high capital expenditure slowing down progress. “The lack of a battery supply chain ecosystem is a significant challenge,” noted Rida Rambli of S&P Global Commodity Insights.

While India’s clean energy sector is on a transformative path, overcoming these obstacles will be crucial to fully realizing its potential as a global leader by 2030.

India added 11.3 GW of solar modules, 2-GW of cell mfg capacity in 1H2024: Report

In the first half (1H) 2024, 11.3 gigawatt (GW) of solar modules and 2-GW of solar cell capacity were added in India, according to the recently released Mercom India research report titled ‘State of Solar PV Manufacturing in India 1H 2024’.

According to the report, manufacturing capacity additions in 1H 2024 were primarily driven by strong demand, with solar project pipelines totaling 132.7 GW between 2024 and 2026 and the reimposition of the Approved List of Models and Manufacturers (ALMM) order from April 2024.

It said that India’s cumulative solar module manufacturing capacity reached 77.2 GW, and solar cell manufacturing capacity totaled 7.6 GW as of June 2024. Around 51 GW of module capacity across various technologies and wattages had received ALMM certification at the end of June 2024. The top 10 manufacturers accounted for almost 58 per cent of the module and 100 per cent of cell production capacity as of June 2024.

India’s solar module manufacturing capacity is projected to reach 172 GW, and cell capacity is projected to reach almost 80 GW by 2026 : Report

“Despite substantial capacity additions, the supply of domestically made modules remains tight, largely because cell production capacity has not kept pace.

Without a significant and rapid increase in cell capacity, many projects will face delays due to domestic content supply shortages,” said Raj Prabhu, CEO of Mercom Capital Group.

He added that average module prices were expected to remain high until the supply-demand balance improves, especially given the limited availability of imports. With trade restrictions continuing to tighten as countries develop their own local manufacturing supply chains, relying on exports as a long-term growth strategy for manufacturers remains very risky.

Gujarat was the preferred state for solar photovoltaic (PV) component manufacturers. About 45 per cent of the country’s solar modules and 52 per cent of solar cell capacity were located in Gujarat as of June 2024. The report added that in 1H 2024, 13.2 GW of modules were imported, up more than 338 per cent YoY compared to 1H 2023.

It said that over 84 per cent of these solar modules were imported in the first quarter of the year in anticipation of the ALMM order reimposition. India’s solar cell imports totaled 15.5 GW in 1H 2024, up nearly 152 per cent YoY, with over 46 per cent imported in Q1.

Domestic manufacturers exported over 3 GW of solar modules in 1H 2024, with exports increasing by over 16 per cent YoY. India’s solar cell exports reached 148.6 MW in 1H 2024, up by more than 195 per cent YoY from 50.4 MW in 1H 2023.

India Needs to Triple Wind Energy Power by 2027: EMBER Report

India must triple its installed wind power capacity by 2027 to meet the projections made by the National Electricity Plan (NEP14). Though implementation of policies with state-specific targets will be crucial, the trends of wind and solar together will work in its favour – a reliable and diversified energy mix that helps India meet its renewable energy goal.

“According to NEP14, India needs to build 75 GW of new wind by 2032. Achieving this target will require ramping up y-o-y installations by 22%. For this, improving the pace of auctions and timely

commissioning the project would be crucial. Announcement of 50 GW annual bidding trajectory in 2023 was an encouraging step, however ensuring that at least 10 GW of wind is auctioned annually is the essential next step," the EMBER report said.

The report also said that the government should also ensure that the auction process includes guaranteed and timely grid connectivity and land availability to prevent project delays. "Given that states own the land while central agencies manage auctions, coordination between the central government and states is essential. Digitising land records could help streamline the acquisition process and reduce setbacks," the EMBER report said.

Increasing wind capacity deployment is strategically important for India's power system planners to avoid locking-in resources into building more thermal capacity considering that meeting non-solar hour demand could become a key bottleneck in the country's energy transition by the end of 2020s, the report said.

"Revitalising the wind sector will require a comprehensive approach. In addition to increasing new onshore capacity addition, repowering of old wind projects should be prioritised to maximise output from resource-rich sites. From a longterm perspective, continuous efforts to enable the deployment of offshore wind capacities are essential to diversity the energy mix," the EMBER report said.

India's EV market rises 23% in September with 1.59 lakh unit sales

In a boost for the electric vehicle (EV) adoption in the country, the total EV registrations reached 1.59 lakh units in September - up from 1.29 lakh units in the same month last year. According to the government's VAHAN data, EV registrations saw a significant 23% increase (year-on year). In the first half of the current fiscal, EV volumes increased 20% compared with the same period last year.

Electric two-wheeler sales were 0.90 lakh units, a rise from 0.64 lakh units in the same month last year. The electric three-wheeler segment saw 0.63 lakh unit sales, compared with 0.58 lakh units in September 2023, as per the data.

Ola Electric saw a dip in sales to 24,665 units in September from 27,587 units in August. Bajaj Auto showed growth with registrations rising to 19,103 units in September (16,789 units). TVS Motor registered 18,084 units, up from 17,649 units in August.

EV firm Ather Energy saw a boost in sales, with volumes climbing to 12,676 units in September (from 10,980 units in August). Hero MotoCorp saw a decline in sales to 4,304 units (from 4,755 units).

In the electric three-wheeler segment, Mahindra Last Mile Mobility maintained its leadership with 6,087 units, followed by Bajaj Auto with 5,004 units.

For the first half of the current fiscal (FY25), total EV registrations across all segments rose to 8.93 lakh units compared with 7.45 lakh units in the same period last year.

Meanwhile, the government recently launched the PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) scheme that has a financial outlay of Rs 10,900 crore over a period of two years.

The PM-Drive scheme was approved by the Union Cabinet, chaired by Prime Minister Narendra Modi, on September 11 to promote electric mobility in the country. The PM E-DRIVE scheme will play a pivotal role in accelerating EV adoption and building critical charging infrastructure nationwide, contributing to a cleaner and more sustainable future.

Gujarat Set to Add Two New 700 MW Solar Projects at Khavda

SJVN Green Energy Limited (SGEL), a subsidiary of SJVN, has invited bids to build two new ground-mounted solar projects with a cumulative capacity of 700 MW at Khavda, Gujarat. SGEL is accepting bids until 19th November 2024.

The SGEL project is divided into two parts. The first project falls under GUVNL Phase XXI and has a 500 MW capacity (100 MW x 5 plots) at the GIPCL Renewable Energy Park, Khavda. The second project has a 200 MW capacity (100 MW x 2 plots)

located at the GSECL Renewable Energy Park, Khavda. The bidder will be expected to develop the project (over a period of three years) for a cumulative 700 MW (100 MW x 7 plots). Under the previously signed PPA between SGEL and GUVNL, the energy from this Khavda solar project will be supplied to GUVNL. This project is expected to be completed within three years.

To develop this project, bidders are expected to have experience in designing, supplying, and commissioning Solar Photovoltaic (SPV) grid-connected power plants with a cumulative installed capacity of 30 MWp or higher, out of which at least one plant must have a capacity of 10 MWp or higher. Additionally, the bidder is expected to have operationalized a 10 MWp or higher capacity plant for at least three months prior to the last day of the month preceding the one in which the NIT is issued.

Additionally, the developer of Solar Photovoltaic (SPV) grid-connected power plants is expected to have a cumulative installed capacity of 30 MWp or higher, out of which at least one plant must have a capacity of 10 MWp or higher. The bidder is expected to have prior experience in executing at least one electrical substation of 33 kV or above voltage level in India, consisting of equipment such as 33 kV or higher voltage level circuit breakers and power transformers. The bidder should have an Annual Average Turnover of ₹160.40 crore per 100 MW for the last three (03) financial years, ending on 31st March of the last financial year.

Khavda is Adani's pet project. The Gujarat-based company has developed multiple projects in the region; its latest project was a joint venture (JV) with Singapore-based energy company TotalEnergies. The company has planned to add 700 MW of new wind energy capacity in the current financial year. This comes after the Indian renewable energy company commissioned 250 MW of wind energy capacity at its Khavda renewable park recently. With this, the company is likely to add a total of 1 GW of new wind energy capacity in 2024-25 alone. The top management of the company, in its latest investor call, discussed the projected plans of the green firm.

India's Renewable Energy Capacity Hits 200 GW Milestone

Introduction

India has reached a significant milestone in its renewable energy journey, with the country's total renewable energy capacity crossing the 200 GW (gigawatt) mark as of October 10, 2024. According to the Central Electricity Authority, the total renewable energy-based electricity generation capacity now stands at 201.45 GW. This achievement underscores India's growing commitment to clean energy and its progress in building a greener future.

This milestone reflects the result of years of dedicated efforts to harness India's natural resources. From sprawling solar parks to wind farms and hydroelectric projects, the country has steadily built a diverse renewable energy base. These initiatives have not only reduced reliance on fossil fuels but also strengthened the nation's energy security. When factoring in the 8,180 MW (megawatt) of nuclear capacity, the total non-fossil fuel-based power now accounts for almost half of the country's installed electricity generation capacity, signalling a strong move toward clean energy leadership on the global stage.

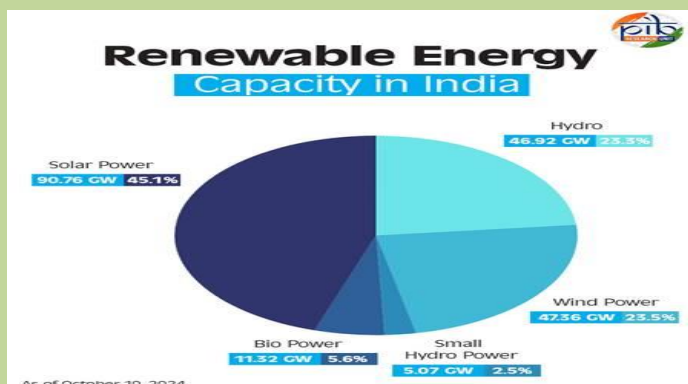
Overview of India's Renewable Energy Landscape

India's total electricity generation capacity has reached 452.69 GW, with renewable energy contributing a significant portion of the overall power mix. As of October 2024, renewable energy-based electricity generation capacity stands at 201.45 GW, accounting for 46.3 percent of the country's total installed capacity. This marks a major shift in India's energy landscape, reflecting the country's growing reliance on cleaner, non-fossil fuel-based energy sources.

A variety of renewable energy resources contribute to this impressive figure. Solar power leads the way with 90.76 GW, playing a crucial role in India's efforts to harness its abundant sunlight. Wind power follows closely with 47.36 GW, driven by the vast potential of the coastal and inland wind corridors across the country. Hydroelectric power is another key contributor, with large hydro projects generating

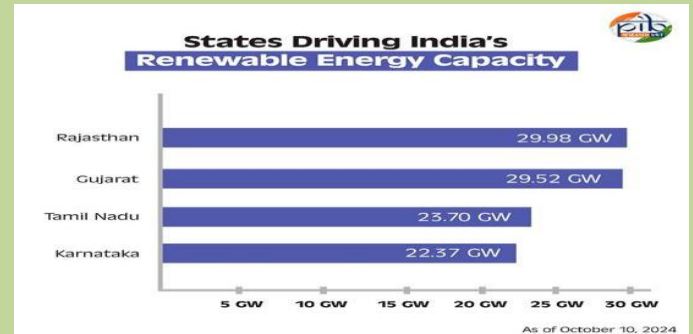
46.92 GW and small hydro power adding 5.07 GW, offering a reliable and sustainable source of energy from India's rivers and water systems.

Biopower, including biomass and biogas energy, adds another 11.32 GW to the renewable energy mix. These bioenergy projects are vital for utilizing agricultural waste and other organic materials to generate power, further diversifying India's clean energy sources. Together, these renewable resources are helping the country reduce its dependence on traditional fossil fuels, while driving progress toward a more sustainable and resilient energy future.



Source: <https://npp.gov.in/dashBoard/cp-map-dashboard>

Leading States in Renewable Energy Capacity
Several states in India have emerged as leaders in renewable energy capacity, contributing significantly to the nation's progress. Rajasthan tops the list with an impressive 29.98 GW of installed renewable energy capacity, benefiting from its vast land and abundant sunlight. Following closely is Gujarat, which boasts a capacity of 29.52 GW, driven by its strong focus on solar and wind energy projects. Tamil Nadu ranks third with 23.70 GW, leveraging its favourable wind patterns to generate substantial energy. Karnataka rounds out the top four with a capacity of 22.37 GW, supported by a mix of solar and wind initiatives. Together, these states play a crucial role in advancing India's renewable energy goals and establishing a more sustainable energy future.



Source: <https://npp.gov.in/dashBoard/cp-map-dashboard>

Key Schemes and Programmes

The Government of India has implemented a range of measures and initiatives aimed at promoting and accelerating renewable energy capacity across the nation, with an ambitious target of achieving 500 GW of installed electric capacity from non-fossil sources by 2030. Key programs include the National Green Hydrogen Mission, PM-KUSUM, PM Surya Ghar, and PLI schemes for solar PV modules.



These efforts reflect the government's commitment to fostering a sustainable energy future while addressing the challenges posed by climate change and energy security. Here are some other ongoing key initiatives:

- Notification of a trajectory for renewable energy power bids of 50 GW per annum by Renewable Energy Implementation Agencies (REIAs) from FY 2023-24 to FY 2027-28.

- Foreign Direct Investment permitted up to 100 percent under the automatic route to attract investments.
- Waiver of Inter-State Transmission System charges for solar and wind power projects commissioned by June 30, 2025; green hydrogen projects until December 2030; and offshore wind projects until December 2032.
- Announced Renewable Purchase Obligation trajectory until 2029-30, including separate RPO for Decentralized Renewable Energy.
- A Project Development Cell has been established to attract and facilitate investments in the renewable sector.
- Standard Bidding Guidelines issued for tariff-based competitive bidding for procurement of power from grid-connected solar, wind, and wind-solar projects.
- Ultra Mega Renewable Energy Parks are being set up to provide land and transmission for large-scale renewable energy projects.
- Cabinet approval for a Viability Gap Funding scheme for offshore wind energy projects, facilitating the installation and commissioning of 1 GW of offshore wind energy capacity along the coasts of Gujarat and Tamil Nadu.
- Issued Electricity (Rights of Consumers) Rules, 2020, for net-metering up to 500 kilowatts or the electrical sanctioned load, whichever is lower.
- The “National Repowering and Life Extension Policy for Wind Power Projects, 2023” has been released.
- “Strategy for Establishment of Offshore Wind Energy Projects” outlines a bidding trajectory of 37 GW by 2030.
- Offshore Wind Energy Lease Rules, 2023, notified to regulate the grant of leases for offshore wind energy development.
- Procedure for Uniform Renewable Energy Tariff (URET) has been established.
- Standard & Labelling (S&L) programs for Solar Photovoltaic modules and grid-connected solar inverters have been launched.
- A transmission plan has been prepared to augment transmission infrastructure until 2030.
- The Electricity (Late Payment Surcharge and Related Matters) Rules have been notified.
- Green Energy Open Access Rules 2022 have been issued to promote renewable energy.
- Launched the Green Term Ahead Market (GTAM) to facilitate the sale of renewable energy power through exchanges.
- Orders issued to ensure that power is dispatched against Letters of Credit or advance payment for timely payments to renewable energy generators.

Conclusion

In conclusion, India’s renewable energy journey has reached a significant milestone, marked by the impressive achievement of over 200 GW of installed capacity. This accomplishment is a testament to the nation’s commitment to a sustainable energy future, driven by a diverse array of renewable sources, including solar, wind, hydro, and bioenergy. The proactive initiatives such as the National Green Hydrogen Mission, PM-KUSUM, PM Surya Ghar, and the PLI schemes for solar PV modules underscore the government’s strategic focus on enhancing energy generation capacity while reducing reliance on fossil fuels. With ambitious targets set for the future, including a goal of 500 GW from non-fossil sources by 2030, India is well-positioned to emerge as a global leader in renewable energy, contributing to environmental sustainability and energy security. These ongoing efforts reflect a holistic approach to building a greener economy, ensuring that India not only meets its energy needs but also addresses the pressing challenges of climate change and resource conservation.

Coal Minister Advocates for Enhanced Efficiency and Environmental Responsibility in the Coal Sector



The Half-Yearly Review Meeting on the coal sector was convened at Sushma Swaraj Bhawan in New Delhi, today. The meeting was chaired by Union Minister of Coal and Mines, Shri G. Kishan Reddy, with Union Minister of State for Coal and

Mines, Shri Satish Chandra Dubey, serving as co-chair. Shri Vikram Dev Dutt, Secretary of the Ministry of Coal; Smt. Rupinder Brar; Smt. Vismita Tej; Additional Secretaries, Ministry of Coal; and all senior officers from the Ministry of Coal, along with CMDs of Coal/Lignite PSUs, were also present. The meeting was to assess the progress of ongoing projects, discuss future strategies, and enhance the coal sector's growth trajectory.

In a significant step towards sustainability and resource efficiency, Shri G. Kishan Reddy launched the Report of the High-Powered Expert Committee (HPEC) on the Gainful Utilization of Overburden (OB) in the Coal Sector.

The report outlines a comprehensive framework for using OB as a valuable resource. Historically seen as waste, OB is now being positioned as an asset with the potential to contribute significantly to environmental sustainability, economic development and create employment opportunities for local communities.

During the Half-Yearly review, Final Mine Closure certificates were awarded to three WCL mines: Pathakhera-I UG Mine, Pathakhera-II UG Mine, and Satapura-II UG Mine. It is for the first time since independence that Coal Mines are officially closed and certificates have been issued. Union Minister Shri G. Kishan Reddy presented these certificates to Shri J.P. Dwivedi, CMD, WCL; Shri Deepak Rewatkar, GM (Safety), WCL; and Shri L.K.

Mohapatra, Area General Manager, Pathakhera Area.

India's coal production hits 68.94 million tonnes in September 2024, up 2.49%



India's coal production increased to 68.94 million tonnes (MT) in September 2024, marking a 2.49% growth from the 67.26

MT recorded during the same month last year. The ministry of coal also noted that the cumulative coal production for the fiscal year 2024-25 reached 453.01 MT, reflecting a 5.85% increase from 427.97 MT in the previous fiscal period.

Further enhancing the sector's robust performance, coal dispatches in September 2024 witnessed a rise, totaling 73.37 MT, a 4.35% increase from 70.31 MT in September 2023. The cumulative dispatches for the year up to September stood at 487.87 MT, showing a 5.54% growth compared to 462.27 MT during the same period last year.

The data also highlighted a substantial improvement in coal stock levels. As of September 29, 2024, the total coal stock at the country's Dispatch, Collection, and Billing centers amounted to 33.46 MT, a significant rise of 51.07% from 22.15 MT on the same date in 2023.

The ministry of coal expressed that these positive trends are part of ongoing efforts to enhance coal production and optimize dispatches to meet the increasing energy demands of the country. This progress is seen as crucial in bolstering India's energy security and achieving self-sufficiency in coal supply.

CIL exploring monetisation of 4 old washeries via bundling asset lease with coal supply pacts



State-owned Coal India Ltd is exploring options to monetise its four old washeries by leasing out those assets and plans to bundle lease contracts with long-term coal supply agreements. The move aims at optimising asset utilization.

"We are exploring the monetization of four old washeries," Coal India Ltd (CIL) said in a report.

The company which accounts for over 80 per cent of domestic coal output is diversifying its portfolio by setting up a non-coking coal washery at Ib Valley, Lakhanpur in Mahanadi Coalfields Ltd (MCL) -- one of the subsidiaries of CIL.

The public sector enterprise commissioned the operation of Madhuband Washery having 5 million tonnes of annual capacity during 2023-24 to further enhance coking coal beneficiation capacity. The company is also setting up three new washeries in Bharat Coking Coal Ltd (BCCL) -- another arm of CIL -- with a total throughput capacity of seven million tonnes per annum. Besides, five coking coal washeries with a total capacity of 14.5 million tonnes per annum are being set up in Central Coalfields Ltd (CCL). CCL is also an arm of CIL.

Currently, CIL operates 12 coal washeries with a combined operable washing capacity of 29.35 million tonnes per annum. Among these, 10 are dedicated to coking coal, while the remaining two handle noncoking coal, with operable capacities of 18.35 million tonnes per annum and 11 million tonnes per annum, respectively.

In 2023-24, the total washed coal production from the existing coking coal washers amounted to approximately 2.26 million tonnes (MT), marking a 4.8 per cent growth year on year. The company has an ambitious coal production target of one billion tonnes by 2025-26. CIL produced 773.6 MT of raw

coal during 2023-24 against 703.2 MT produced in FY23.

44 Bids Received under 10th Round of Commercial Coal Mine Auctions

The Ministry of Coal has received an overwhelming response for the coal mines offered under the 10th round of commercial coal mine auctions, with a total of 44 bids submitted in physical form. The substantial number of bids underscores the continued interest and participation from stakeholders in India's evolving coal sector.

The 10th round of auctions, launched by the Ministry of Coal on June 21, 2024, offered 67 coal mines for commercial mining. The auction process has drawn considerable participation from small and medium-sized players, indicating the inclusive nature of the auction process. This inclusivity highlights that the reforms in the coal sector have been well received across the industry, regardless of the size of the players. Such enthusiastic participation is a testament to the Ministry's efforts in creating a more open and competitive coal market in India.

The last date for bid submission was October 18, 2024, marking the closure of the bid submission phase. The online bids received during the auction process, along with the offline bids submitted to the office of the Nominated Authority, will be opened on October 21, 2024, in the presence of the bidders, ensuring transparency and fairness in the evaluation process.

The strong response to this round of auctions is a significant step towards making the country self-reliant in energy and aligns with the Government's vision of 'Atmanirbhar Bharat'. By engaging a diverse range of participants, the Ministry aims to further enhance coal production, ensuring a reliable supply of coal for various sectors, thereby supporting the nation's energy security and reducing dependence on coal imports. The Ministry of Coal remains committed

to fostering a dynamic and competitive environment for the coal sector, ensuring the availability of coal resources to meet the growing demands of the economy.

Coal Production and Dispatch from Captive/Commercial Coal Mines Grow Significantly in H1 FY 2025

The Ministry of Coal has seen a significant rise in coal production and dispatch from both captive and commercial coal blocks during the first half of FY 2024-25, from April 1, 2024, to September 30, 2024, compared to the same period last year.

Coal production has risen by 32% year-over-year, increasing from 60.52 MT in H1 of FY24 to 79.72 MT in H1 of FY25. Likewise, dispatch has grown by 34% year-over-year, from 65.37 MT in H1 of FY24 to 87.86 MT in H1 of FY25.

Further, the coal production in the month of September grew by 32%, increasing from 10.40 MT in FY 2024 to 13.74 MT in FY 2025. Likewise, dispatch in the month of September has grown by 47% year-over-year, from 9.68 MT in FY24 to 14.27 MT in FY25.

The Ministry of Coal applauds the unwavering efforts of all stakeholders, including coal companies and industry partners, for their invaluable support. The Ministry is dedicated to helping all coal block allottees navigate challenges and optimize their operations. Its primary objective is to significantly increase coal production, ensuring a steady and reliable supply to meet the country's growing energy demands. Through collaborative initiatives and focused assistance, the Ministry aims to enhance efficiency, sustainability, and output across the coal sector.

Coal Production in the Country Grows 5.85% in FY 2024-25 Compared to Same Period Last Year

Ministry of Coal has seen considerable increase in coal production during the month of September 2024, achieving 68.94 Million Ton (MT). This figure exceeds last year's production of 67.26 MT for the

same month, reflecting a notable growth of 2.49%. Additionally, cumulative coal production (up to September 2024) has reached 453.01MT (Provisional) in FY' 24-25 as compared to 427.97 MT during the same period in FY' 23-24, with a growth of 5.85%.



In addition, coal dispatch also saw notable growth in September 2024, reaching 73.37 MT, compared to 70.31 MT during the same period in FY' 23-24, with a growth of 4.35%. The Cumulative Coal dispatch (up to September 2024) stood at 487.87 MT (Provisional) in FY' 24-25, compared to 462.27 MT during the same period in FY' 23-24, with a growth of 5.54%.



Furthermore, the upturn in offtake has resulted in a comfortable coal stock position. The total coal stock at DCB as on 29th September 2024 has recorded remarkable growth reaching at 33.46 MT (provisional) as compared to 22.15 MT as on 29th September 2023, reflecting a growth of 51.07%. The Ministry of Coal is continuing to enhance coal production and optimizing dispatch to meet the country's increasing energy demands. The upward trajectory in both production and dispatch bolsters energy security and to achieve self-sufficiency in coal supply.

NTPC reported 3.9% growth in power generation in H1FY25



In the first half of the fiscal year 2025, NTPC Ltd, India's largest power generator, saw a 3.91 percent increase in power generation, reaching 219.94 billion units (BU) compared to the same period in the previous year.

NTPC's coal stations achieved a plant load factor (PLF) of 76.3 percent from April to September 2024, as stated by the company in a public announcement.

The company's mining arm, NTPC Mining, produced 19 million tonnes (MT) of coal during H1FY25, registering a growth of 20 percent year-on-year. It dispatched 19.7 MT of coal to NTPC's power stations with a growth of around 16 percent compared to the last financial year, the company said.

Till NTPC Mining has produced more than 123 MT and has dispatched more than 121 MT of coal from its five operational captive coal mines, namely Pakri Barwadih, Kerandari & Chatti Bariatu in Jharkhand, Dulanga in Odisha, and Talaipalli in Chhattisgarh, ensuring fuel security for NTPC's thermal power stations.

Valuation upgrades likely ahead for transmission major Power Grid

Power Minister Manohar Lal Khattar recently stated that the National Electricity Plan (NEP) 2023-32 for central and state transmission systems estimates a total transmission capital expenditure (capex) requirement of \$110 billion (Rs 9.15 trillion) towards grid expansion. This is to support rising renewable penetration, green hydrogen and pumped storage capacity addition along with surging peak demand.

Transmission major Power Grid (PGCIL) stands to capture the bulk of the transmission capex opportunity. Full details of the plan are not available yet, but Power Grid is strategically positioned to capitalise on the opportunity. The Ministry of Power has finalised

NLC India Enters into Joint Venture Agreement with Rajasthan for Formation of Two JVs for Power Capacity Addition



With the vision of Prime Minister Shri. Narendra Modi, for energy security with sustainable energy generation, under the guidance of Union Minister of Coal and Mines Shri. G Kishan Reddy and Minister of State for Coal and Mines Shri Satish Chandra Dubey, and in line with corporate plan for aggressive capacity addition, NLC India Ltd has entered into Joint Venture Agreements for formation of two significant Joint Ventures (JVs) with Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL). First JV is signed between NLC India Renewables Limited (NIRL) and RRVUNL to establish Renewable Energy projects in the state of Rajasthan and Second JV is between NLCIL and RRVUNL for the development of a Lignite-Based Thermal Power Station.

In the presence of Additional Chief Secretary (ACS), Energy, Govt. of Rajasthan Shri. Alok, IAS, and CMD, NLCIL, Shri. Prasanna Kumar Motupalli, the JV agreements were signed by Director (Finance), NLCIL Dr. Prasanna Kumar Acharya and CMD, RRVUNL, Shri Devendra Shringi. In both the Joint Ventures (JVs), NLCIL will hold a 74% equity stake, while RRVUNL will hold 26%.

These JVs mark a significant step towards advancing sustainable energy and power generation.

NTPC and Indian Army Join Hands for Round-the-Clock Power Supply using Green Hydrogen

NTPC has partnered with the Indian Army to establish a Solar Hydrogen-based Microgrid at Chushul, Ladakh. This significant step will provide a stable power supply using Green Hydrogen in off-grid Army locations. Today, Hon'ble Defence Minister Shri Rajnath Singh laid the foundation stone of this unique project through video conferencing in the presence of Chief of India defence services,

CMD, NTPC and other senior officials from Ministry of Defence, Indian Army and NTPC.

NTPC has designed this innovative Solar Hydrogen-based microgrid system to operate independently, using hydrogen as an energy storage medium to supply 200kW of power round-the-clock throughout the year. This system will replace existing diesel gensets at off-grid Army locations, providing a sustainable power supply despite harsh winter conditions, where temperatures drop to -30°C at an altitude of 4,400 meters. NTPC will maintain the project for 25 years, aiming to support Indian soldiers stationed in these strategically significant tough terrains and challenging climate.

The Solar-Hydrogen microgrid is set to replace existing diesel generators currently in use at off-grid Army locations. These systems offer numerous advantages, including the integration of renewable energy sources, a stable power supply under adverse conditions, reduced carbon emissions, and the promotion of a cleaner and sustainable energy ecosystem as they are highly scalable and suitable for various applications. Moreover, these systems combine the reliability of battery storage with the extended energy storage capability of hydrogen, ensuring a consistent power supply.

Given Ladakh's high solar irradiance and low temperatures, this project will facilitate the production and utilization of green energy, eliminating reliance on fuel logistics and enhancing self-sufficiency in remote areas affected by road connectivity disruptions. Once operational, it would usher in a new era of decarbonisation of the defence sector far off the Himalayas.

Additionally, NTPC started a trial run of a hydrogen bus in Leh recently towards achieving its renewable energy targets and carbon neutrality in Ladakh. The company is further setting up a hydrogen fuelling station and solar plant along with five fuel cell buses for operation on intracity routes in Leh.

NTPC is committed to achieving 60GW of renewable energy capacity by 2032 and becoming a major player in green hydrogen technology and energy storage domain. The company is pursuing several initiatives toward decarbonisation, including

hydrogen blending, carbon capture, electric buses, and smart NTPC townships.

Tripartite pact on power export to Bangladesh to be signed on Oct 3

Nepal, Bangladesh and India will ink a long-awaited tripartite agreement recently to export electricity to Bangladesh, an official said recently. The agreement will involve the Nepal Electricity Authority (NEA), NTPC Vidyt Vyapar Nigam Limited (NVVN) of India and the Bangladesh Power Development Board (BPDB), according to Chandan Kukmar Ghosh, spokesperson at the Nepal Electricity Authority.

Under the terms of the agreement, the NEA will get 6.40 US cents per unit of electricity. The Indian side is involved in the deal as Nepal and Bangladesh would use India's transmission line to distribute electricity through its territory. Earlier, the agreement was scheduled for July 28, which was postponed due to political turmoil and a change of government in Bangladesh.

According to sources at the Ministry of Energy, Water Resources and Irrigation, meetings at the energy secretary and joint-secretary levels were held in Kathmandu recently to prepare for the agreement.

The NEA plans to sell electricity to Bangladesh annually during the rainy season, from June 15 to November 15. In the beginning, Nepal will export 40 MW of electricity generated in the country to Bangladesh through India. The expected export is 144,000 megawatt-hours, and the NEA estimates earnings of USD 9.216 million over these five months, according to the media reports.

Electricity will be exported to Bangladesh via the Dhalkebar-Muzaffarpur 400 kV transmission line, with the metering point in Muzaffarpur.

On December 6, 2023, Bangladesh's Cabinet Economic Affairs Committee approved to import 40 megawatts of electricity from Nepal.

Petroleum Minister Hardeep Puri Highlights India's Petrochemical Potential at India Chem 2024



The market size of the Indian Chemicals and Petrochemicals sector is expected to grow to approximately USD 300 billion by 2025, up from its current market size of USD 220 billion, said Shri Hardeep Singh Puri while addressing the 'Roundtable on Petrochemical' during India Chem 2024 today. He said that the demand for chemicals is predicted to nearly triple and the petrochemicals industry in India may reach US\$1 trillion by 2040.

Addressing industry leaders, Shri Hardeep Singh Puri highlighted the vast potential of India's petrochemical sector. With annual consumption between 25 to 30 million tonnes, India stands as Asia's third-largest economy, exhibiting a per capita consumption significantly lower than developed nations. This gap presents ample opportunities for demand growth and investment.

As the sixth-largest chemicals producer globally and third in Asia, India exports chemicals to over 175 countries, accounting for 15% of its total exports. Shri Puri emphasized that chemicals and petrochemicals will drive global oil demand growth, with India's integrated petrochemical capacity linked closely to its expanding refining capabilities. Projections indicate an increase from 257 MMTPA to 310 MMTPA by 2028, enhancing cost competitiveness.

The government, alongside PSUs like ONGC and BPCCL and private players like Haldia Petrochemicals, is committed to significant investments, with nearly USD 45 billion in petrochemical projects underway. An additional USD 100 billion is projected to meet rising demand, aligning with India's transition to a lower-carbon future.

In the address, the Minister, spoke about a substantial rise in India's petrochemical capacity,

projected to increase from approximately 29.62 million tonnes to 46 million tonnes by 2030.

Highlighting the initiatives rolled out by government to accelerate growth within the industry, the Minister mentioned about key policies including the development of Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIRs), Plastic Parks, and Textile Parks, alongside facilitating 100% Foreign Direct Investment (FDI) through automatic routes.

The growing Indian population and rapidly expanding economy are major drivers of increasing demand for petrochemical products, said the Minister. As more citizens enter the middle class, the demand for a diverse range of products—many of which are derived from petrochemicals—is set to rise significantly. Additionally, he said the government's focus on clean energy is contributing to heightened demand for petrochemical solutions.

The Minister said that the petrochemical sector in India is projected to attract investments exceeding USD 87 billion in the next decade, representing over 10% of global petrochemical growth. Under the new PCPIR Policy 2020-35, a combined investment of ₹10 lakh crore (approximately USD 142 billion) is targeted by 2025, underscoring the government's long-term vision for the industry.

The chemical industry plays a crucial role in India's economy, contributing around 6% to the GDP and generating employment for over 5 million people. India is the second-largest exporter of chemical dyes and agrochemicals globally, accounting for about 3% of global chemical sales. However, the country is also a net importer of chemicals and petrochemicals, with a dependency on imports for around 45% of petrochemical intermediates. Bridging this gap between domestic demand and supply through local production remains a priority.

Minister emphasized the pivotal role of the chemical and petrochemical industries in serving as the backbone of numerous sectors, including agriculture, electronics, infrastructure, automobiles, and textiles. With a robust focus on sustainability, the government is committed to reducing reliance on imports and enhancing infrastructure.

The specialty chemicals sector, experiencing a 12% compound annual growth rate (CAGR), is also reshaping India's economic landscape. However, a low-carbon strategy is essential for sustainable growth in the petrochemical industry.

To further enhance growth, the Minister encouraged the Indian chemical industry to learn from global chemical hubs such as the Port of Antwerp, Port of Houston, and Jurong Island. By synergizing within clusters to share feedstock, achieve economies of scale, and create common facilities for innovation and skill development, the industry can accelerate its development.

With a strong starting point and supportive government policies, Shri Puri said India has the potential to become the next global chemicals manufacturing hub. He expressed confidence that with collaboration from domestic and international investors, the petrochemical sector will contribute to India's goal of becoming a \$5 trillion economy and achieving "Viksit Bharat" status by 2047.

India to pass new law on oil exploration in next parliament session, says union petroleum and natural gas minister

India will pass a new law in the next parliament session to facilitate investments in exploration of major offshore oil deposits located in previously blocked zones, Union petroleum and natural gas minister Hardeep Singh Puri said recently.

The new law was proposed after obtaining feedback from major oil exploration companies on how policies could be tweaked, Puri said.

"I went to the cabinet with a note, got the cabinet approval and I filed in the parliament. In the next session, which will hopefully be next month, it will be next month, I will get that bill passed and it will be enacted into law," the minister said at the Financial Times conclave in the national capital.

The proposed new law will replace the existing Oilfields (Regulation and Development) Act of 1948, which governs operations of oilfields in the country, Puri said.

As many as 38% of all bids in the ninth round of the Open Acreage Licensing Policy (OALP), which was open from January to September, were for exploration in a previously no-go zone within the country's offshore exploration regions, Puri said. The 10th round of the biannual policy will be passed after the next parliament session.

Puri was speaking about oil exploration zones that were categorised as no-go zones by the government. Companies have shown keen interest in exploring such regions for oil.

"(The government) has cleared 1 million square km, which were earlier no-go areas. By no-go area, I mean either the Navy had a problem there or the Coast Guard had a problem or the DRDO had a problem. Everybody said we can't - this is not allowed," Puri said, adding that the government decided to open up such areas after an internal discussion.

Pushing for oil exploration in India's offshore projects, especially in previously no-go zones, Puri cited the case of Guyana, which hit oil after multiple failures.

The minister said green hydrogen is the fuel of the future and a fall in the price of the clean fuel would lead to a considerable decrease in India's oil imports. The country currently imports about 80% of its crude oil requirements.

India clears 1 million sq km for oil exploration in 'no-go' area: Hardeep Singh Puri

India has cleared 1 million square kilometers of its 3.5 million square kilometers of sedimentary basin for oil and gas exploration, a significant portion that was previously classified as a "no-go" area, said Petroleum Minister Hardeep Singh Puri at the FT Live Energy Transition Summit. Of the bids received in the Open Acreage Licensing Policy (OALP) Round 9, 38% are in this newly cleared "no-go" zone. The 10th bidding round is also in the pipeline.

Puri stressed India's efforts to attract global investors, saying, "We are making it easier. You don't even need to invest initially. If you come to assist in seismic surveys, we'll compensate you." This marks

a significant shift toward a more flexible, investor-friendly approach.

Addressing oil prices, Puri reaffirmed India's call for stability amidst global tensions. "We have enough oil in the world, but global disruptions raise freight and insurance costs," he said, expressing optimism that both state and non-state actors would act responsibly to avoid escalations.

On 8th October, Brent crude futures dropped by \$1.31, or 1.6%, settling at \$79.62 per barrel after hitting a monthly high amid fears of increased Middle East tensions

India's energy demand continues to soar, with Puri noting that India's consumption is three times the global average and that it is projected to account for 25% of the increase in global energy demand over the next two decades. India is set to consume over 6 million barrels of crude oil daily in the foreseeable future, highlighting its critical role in the global energy landscape.

India's diesel consumption to rise 3%-4% this fiscal: Indian Oil chairman

India's annual diesel consumption is expected to rise by 3%-4% in the current fiscal year to March 31, said V. Satish Kumar, chairman of Indian Oil Corp (IOC).

India's annual diesel demand in April-September, half of this fiscal year, rose 1% to 44.4 million tons, according to government data, even though heavy rains curtailed the movement of trucks.

"There will be a pick-up in diesel consumption from October as rains have stopped and crop harvesting has begun," V. Satish Kumar told reporters on the sidelines of an event organised by the World Biogas Association.

India's oil demand may revive amid festivals and elections: S&P Global Commodity Insights

Demand for oil products in India through the October-December quarter is expected to get a boost from festivals, agricultural activities, recovering from a few

months of subdued consumption because of excessive rains, according to S&P Global Commodity Insights.

According to the commodities information services provider, India's oil demand decreased in September on a yearly basis, due to above normal rainfall, which affected road movement, construction, and mining activities.

"Looking ahead to Q4, we estimate India's oil demand to grow by 3.5-4 per cent year over year. We forecast an annual demand increase of 50,000-55,000 b/d for both gasoline and diesel in Q4, although the northeast monsoon rains may slightly impede demand," said Himi Srivastava, South Asia oil analyst at S&P Global Commodity Insights.

The monsoon season, typically running from June to September, was 8 per cent above the long-term average in 2024, according to state-run weather office India Meteorological Department. The southwest monsoon withdrew in mid-October, while the northeast monsoon began five days before date.

"This (heavy monsoon) particularly dampened diesel demand, which fell nearly 2 per cent compared to the previous year. However, gasoline demand remained resilient, growing by 3 per cent year over year, although it was down from the previous month," Srivastava said.

Elections in states like Maharashtra and Jharkhand are also expected to boost transportation fuel demand, it said.

Additionally, the marriage season from November to January typically results in increased automobile sales and goods movement, further pushing up fuel demand, added Srivastava.

India meets about 85 per cent of its crude oil demand through imports.

Lately, there has been a considerable volatility in global crude oil prices, primarily due to the ongoing geopolitical conflicts.

Hardeep Singh Puri, Minister for Petroleum and Natural Gas earlier this week said that there is no shortage of oil in the world and prices will come down

soon, answering the question of the recent upswing in crude oil prices.

Speaking to the media, the Union Minister cited global factors such as the war in the Middle East and voluntary cuts in oil production which are influencing the oil prices in the global market.

Gas price volatility raises questions on its suitability as a bridging fuel: IEEFA

Escalating tensions in the Middle East are once again set to increase global liquefied natural gas (LNG) prices, which raises questions on whether it is a good bridge fuel to the transition to clean energy, especially for importers like India, according to a new briefing note by the Institute for Energy Economics and Financial Analysis (IEEFA).

The note highlights that while various factors govern commodity prices, geopolitics has been the dominant driver of volatility in recent years. The note compares the volatility (Figure 1) in various commodity prices as well as stock market indices and finds that the sharpest moves have been for LNG prices.

“LNG price fluctuations have been extreme in months of minimum variability for other commodities, such as in October 2023 when LNG price jumped by 21%, only to drop by 29% in December 2023,” said the note’s author, Purva Jain, Energy Specialist, Gas & International Advocacy, IEEFA.

The note stated oil prices have shown signs of stress as geopolitical tensions increase, reaching \$90 per barrel (bbl) on April 4, 2024, before easing over the northern summer months due to the subsiding of geopolitical tensions. The price went as low as \$69/bbl on Sept. 10, 2024 before spiking to \$81/bbl on Oct. 8 amid rising Middle East tensions. LNG futures for 2025 are already at \$13 (INR 1,093) per million British thermal units (MMBtu), which raises major affordability concerns. If realised, \$13/MMBtu would be double the regulated domestic gas price and well above India’s general affordable threshold of \$10/MMBtu.

“India should re-evaluate its strategy of increasing reliance on LNG as a fuel amid persistent market volatility. Not only are LNG trade flows disrupted by

geopolitical disturbances, but prices appear sensitive to many other factors, as the large swings in monthly prices over the past year demonstrate,” said Jain.

“A wiser strategy for India would be to invest in diversifying fuel sources and increasing the share of renewable energy in the energy mix to insulate the economy from entrenched LNG price volatility,” she adds.

The note also highlights that India’s focus on new technologies and inclination to gain global leadership in producing and exporting greener fuels could help it move away from LNG dependence. Green hydrogen and green ammonia, along with the increasing awareness of natural fertilisers, could lower the dependence on gas in the fertiliser sector, which has few alternatives.

Lower APM gas allocation to raise city gas cost by Rs 2-3 per kg: CRISIL

The gas procurement cost of city gas distribution (CGD) companies is set to rise by Rs 2-3 per kilogram (kg) following a reduction in allocation of input natural gas under the administered price mechanism (APM), rating agency CRISIL said recently.

City gas operators get priority gas allocation at reduced prices under APM from legacy gas fields for the domestic compressed natural gas (CNG) and piped natural gas (PNG) - domestic segments.

As per recent public announcements by these companies, GAIL (India) Ltd, the nodal agency for domestic gas allocation in the country, has reduced the APM gas allocation for the CNG segment by 20 per cent of their CNG requirement, effective October 16, 2024.

“To note, APM allocation for CGD players will now be reduced to about 50 per cent of their CNG requirement, from the allocation level of around 70 per cent this fiscal year so far,” CRISIL said in a note.

So, to maintain adequate supply, the CGD players will need to procure gas from costlier sources such as domestic high pressure, high temperature (HPHT) gas fields or imported liquefied natural gas (LNG).

Says Ankit Hakhu, Director at CRISIL Ratings, "Against the current APM gas prices of USD 6.5 per metric million British thermal unit (MMBtu), HPHT gas prices are USD 9.5 per MMBtu and LNG prices are USD 11-12 per MMBtu. This means the cost of input gas for the CNG segment of CGD players is likely to increase by Rs 3.5-4.5 per kg. However, given that the share of CNG in overall CGD segment is around 60 per cent, the overall cost of gas procurement may rise by Rs 2-3 per kg for industry players."

To maintain profit margins, CNG selling price may also rise as players are likely to pass through the increased cost pressure to consumers, although in a gradual manner, in the coming months. Some players have already undertaken partial increase in CNG prices.

This trend has been demonstrated in past years as well, including fiscal 2023, when gas prices had shot up amid a geopolitical crisis in the wake of the Russia-Ukraine conflict. However, these hikes were partial and have also witnessed some lag effect.

Government's Support Fuels Transformation of Bioenergy Ecosystem in India: Petroleum Minister Hardeep Singh Puri

At the 12th Edition of the CII Bioenergy Summit today, Shri Hardeep Singh Puri, Minister of Petroleum and Natural Gas, underscored India's remarkable progress in bioenergy, aligning with the summit's theme, "Fuelling the Future - Securing India's Green Growth Goals." Shri Puri highlighted the success of India's ethanol blending initiative, which has seen the blending percentage rise from 1.53% in 2014 to a projected 15% by 2024. Encouraged by these results, the government has advanced its target for 20% blending to 2025, reinforcing its commitment to sustainable energy. He further revealed that discussions have already started to develop a roadmap for the future, post the attainment of the 20% blending target. This roadmap will guide the country's next steps in its pursuit of energy sustainability and self-reliance.

Shri Hardeep Singh Puri commended Prime Minister Shri Narendra Modi's leadership in transforming India's bioenergy ecosystem since 2014. He

emphasized the crucial role of market dynamics, technology advancements, and supportive government policies in driving this transformation and enhancing sustainability in the energy sector.

The Minister shared impressive outcomes of the ethanol program, revealing that from 2014 to August 2024, it has generated foreign exchange savings of ₹1,06,072 crore, reduced CO2 emissions by 544 lakh metric tons, and achieved crude oil substitution of 181 lakh metric tons. Payments to distillers by OMCs have reached ₹1,50,097 crore. Furthermore, he said, farmers have been paid ₹90,059 crore, empowering them from being Annadata to being Urjadata. Additionally, he mentioned about the government's ambitious targets for Sustainable Aviation Fuel (SAF), aiming for 1% blending in 2027 and 2% in 2028, positioning India as a leader in bio-mobility.

At the event, Shri Hardeep Singh Puri emphasized India's robust economic growth, predicting it will drive 25% of global energy demand over the next two decades. He noted that bioenergy will be crucial in meeting this demand while advancing climate goals and rural development. Currently valued at US\$44 billion (as per Wood Mckenzie), the Minister said that the bioenergy market is projected to grow to US\$125 billion by 2050. If global net-zero targets are achieved, this figure could surge to US\$500 billion.

Underscoring India's agricultural strength and its vast biomass potential as critical elements in the country's transition to clean energy, Shri Puri said that the country recognized as an agricultural powerhouse, is a leading producer of rice, wheat, cotton, sugar, and various horticultural and dairy products. He said that the country has more than 750 million metric tonnes of available biomass, with about two-thirds being used for domestic purposes such as cattle feed and compost fertilizer. According to a report by PWC, he noted, 32% of India's total primary energy consumption is derived from biomass, and over 70% of Indians rely on it for energy across the value chain.

India's position as a major biofuel producer and consumer has been strengthened through coordinated policies, political support, and abundant feedstocks, said Shri Hardeep Singh Puri. He noted that the International Energy Agency (IEA) forecasts a growth potential of 3.5 to 5 times for biofuels by

2050 due to Net Zero targets, presenting a substantial opportunity for India. The Global Biofuels Alliance (GBA) aims to facilitate knowledge sharing, technological advancement, and policy development, unlocking a \$500 billion opportunity in biofuels and accelerating global adoption through technology transfer. He said that the government initiatives, such as the Indian Solar Alliance (ISA) and GBA, aim to accelerate the transition to cleaner energy sources, reduce import dependency, save foreign exchange, promote a circular economy, and move toward a self-reliant energy future.

The Minister also referred to different incentives introduced by government to support ethanol production.

Shri Puri also highlighted India's collaboration with Brazil, emphasizing the importance of joint efforts in sustainable bioenergy and biofuels to enhance energy security and reduce carbon emissions, particularly in hard-to-decarbonize sectors like aviation and shipping.

In his concluding remarks, Shri Hardeep Singh Puri emphasized that the responsibility for fuelling India's green growth extends beyond the government to include industry leaders, researchers, innovators, and citizens. He urged all stakeholders to collaborate boldly to establish a sustainable bioenergy sector that meets energy needs and sets a global standard.

Achieving 15% ethanol blending in 2024, India targets 20% by 2025

Introduction

India is taking significant steps toward securing its energy future by embracing sustainable practices like ethanol blending. As the world's third-largest energy consumer, the country has traditionally depended on oil imports to meet its growing energy demands. This reliance not only poses challenges to energy security but also leads to a substantial outflow of foreign currency. However, with ethanol blending, India has a promising opportunity to reduce its dependence on imported oil while addressing environmental concerns. Ethanol, a byproduct of sugarcane processing, can be mixed with petrol, cutting down on fossil fuel consumption and reducing

harmful carbon emissions that contribute to climate change and public health issues.

The practice of blending ethanol with petrol began in 2001 as a pilot project. Yet, for many years, progress was slow, and ethanol production remained stagnant. Only recently, through a series of comprehensive reforms, has India been able to unlock the full potential of this initiative. These reforms are now driving substantial outcomes, not just by enhancing energy security, but also by revitalizing rural economies. Ethanol production offers a new source of income for farmers, supporting the agricultural sector and fostering economic growth in rural areas.



SOURCE: [HTTPS://PIB.GOV.IN/PRESSRELEASEPAGE.ASPX?PRID=2055957](https://pib.gov.in/pressreleasepage.aspx?PRID=2055957)

The government's proactive approach to ethanol blending is evident in its decision to advance the target of 20% ethanol blending from 2030 to 2025, demonstrating a strong commitment to sustainable energy practices. During the 7th G-STIC Delhi Conference, Shri Hardeep Singh Puri, Minister of Petroleum and Natural Gas, emphasized India's growing success in ethanol blending and its broader commitment to sustainable energy solutions. He highlighted that, in recognition of the progress made, the government has already begun planning for the future by exploring goals beyond the 20% ethanol blending target. This forward-looking approach indicates that India is not only focused on meeting its immediate energy needs but is also preparing for long-term sustainable energy solutions to address future demands.

Ethanol: A Versatile Biofuel

Ethanol is one of the primary biofuels, naturally produced through the fermentation of sugars by yeasts or through petrochemical processes like ethylene hydration. It is widely used not only as an alternative fuel source but also in various industries as a chemical solvent and in the synthesis of organic

compounds. Ethanol also has medical applications as an antiseptic and disinfectant, adding to its versatile uses.

In the context of India's rising energy demand, driven by factors such as a growing economy, an expanding population, increasing urbanization, and evolving lifestyles, ethanol plays a critical role. As of March 2024, around 98% of the fuel used in the road transportation sector comes from fossil fuels, while only 2% is met by biofuels like ethanol. This dependency on fossil fuels presents challenges related to energy security, foreign currency outflow, and environmental impact.

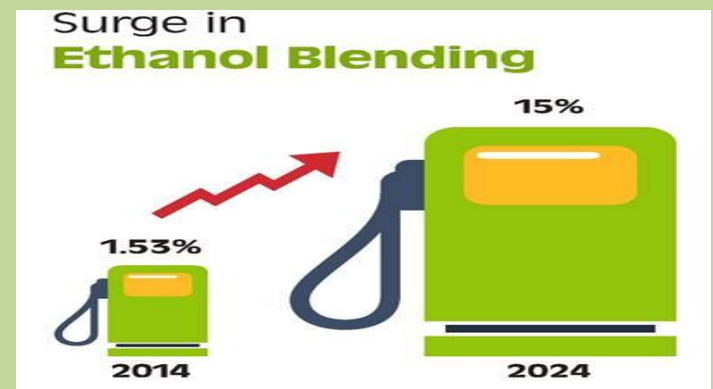
Ethanol, as a domestically produced biofuel, offers a strategic opportunity to reduce the country's dependence on imported fossil fuels. When used responsibly, biofuels like ethanol are more environmentally friendly and sustainable, contributing to a cleaner energy landscape. Additionally, ethanol production and usage align with national goals like generating employment, promoting the "Make in India" initiative, supporting the Swachh Bharat Mission, and contributing to the doubling of farmers' incomes. It also fosters the creation of wealth from waste, further enhancing its importance to India's economy and energy security.

Major Achievements of EBP

Under the leadership of Prime Minister Narendra Modi, the government has embarked on a series of comprehensive reforms aimed at enhancing energy security, combating climate change, and boosting the rural economy. An indicative target of 20% ethanol blending in petrol was initially set for 2030 under the EBP Programme. However, in 2020, the Cabinet Committee on Economic Affairs (CCEA) advanced this target to 2025, reflecting the government's commitment to accelerating ethanol usage.

The progress of India's Ethanol Blended Petrol (EBP) Programme has been noteworthy, with the ethanol production capacity more than doubling in the last four years to reach 1,623 crore litres as of September 18, 2024. This substantial increase highlights the government's commitment to enhancing the role of ethanol in the nation's energy landscape.

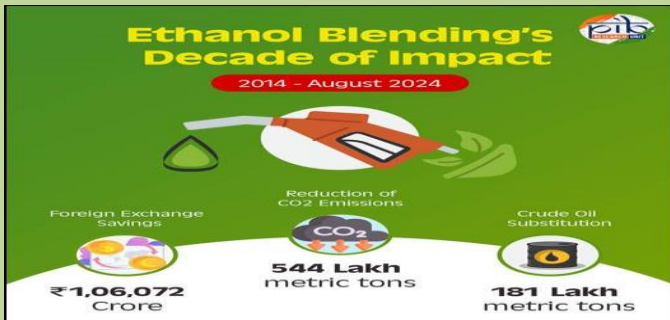
In the Ethanol Supply Year (ESY), which runs from November to October, the blending of ethanol with petrol stood at 38 crore litres with a blending percentage of 1.53% in ESY 2013-14. Over the following years, the government implemented various initiatives that led to remarkable growth in ethanol blending. By ESY 2020-21, the blending volume surged to 302.3 crore litres, increasing the blending percentage to 8.17%. During this same period, petrol consumption also rose by approximately 64%.



SOURCE: [HTTPS://PIB.GOV.IN/PRESSRELEASEIFRAMEPAGE.ASPX?PRID=2050907](https://pib.gov.in/pressreleaseiframepage.aspx?PRID=2050907)

The momentum continued, with blending further increasing to over 500 crore litres in ESY 2022-23, raising the blending percentage to 12.06%. In the current ESY 2023-24, the blending percentage surpassed 13% with approximately 545.05 crore litres of ethanol blended as of August 31, 2024. This remarkable progress underscores a significant increase in the overall ethanol blending percentage, rising from 1.53% in 2014 to an impressive 15% in 2024.

Encouraged by this progress, the government set an ambitious target of achieving 20% blending by 2025. Over the past decade, this initiative has delivered significant benefits, including savings of ₹1,06,072 crore in foreign exchange, a reduction of CO2 emissions by 544 lakh metric tons, and a substitution of 181 lakh metric tons of crude oil. Furthermore, the program has had a considerable economic impact, with OMCs disbursing ₹1,45,930 crore to distillers and ₹87,558 crore to farmers.



SOURCE:

[HTTPS://X.COM/PETROLEUMMIN/STATUS/1846195338715320506](https://x.com/petroleummin/status/1846195338715320506)

Key Measures to Achieve 20% Ethanol Blending by 2025-26

To achieve the target of 20% ethanol blending by 2025, approximately 1,016 crore litres of ethanol will be required. The total demand for ethanol, including other uses, is estimated to be around 1,350 crore litres. To meet this requirement, an ethanol production capacity of about 1,700 crore litres must be established by 2025, assuming the plants operate at 80% efficiency. The government has projected the demand for ethanol necessary for 20% blending by considering the growth of petrol-based vehicles, particularly in the two-wheeler and passenger vehicle segments, as well as the anticipated sales of Motor Spirit (MS).

Here are the key initiatives:

- In August 2024, The Union Cabinet, chaired by Prime Minister Shri Narendra Modi, approved the modified Pradhan Mantri JI-VAN Yojana to keep pace with the latest developments in biofuels and attract more investment. This modified scheme extends the timeline for implementation by five years, until 2028-29, and expands its scope to include advanced biofuels produced from lignocellulosic feedstocks, such as agricultural and forestry residues, industrial waste, synthesis (syn) gas, and algae.
- The government has developed a detailed roadmap for ethanol blending to guide effective implementation.
- Efforts are underway to expand the feedstock used for ethanol production, allowing for more efficient and sustainable sourcing.

- A favourable procurement price for ethanol has been established under the EBP Programme, ensuring fair compensation for producers.
- The Goods and Services Tax (GST) on ethanol for the EBP Programme has been reduced to 5%, making it more financially attractive for producers and consumers.
- Changes have been made to the industries (Development & Regulation) Act to facilitate the free movement of ethanol across states, promoting easier blending operations.
- An interest subvention scheme has been introduced to provide interest subsidies aimed at enhancing and augmenting ethanol production capacity in the country.
- Public Sector Oil Marketing Companies (OMCs) are actively floating Expressions of Interest for the procurement of ethanol, ensuring a steady demand and fostering market growth.

Conclusion

In conclusion, India's commitment to ethanol blending represents a transformative approach to energy security, environmental sustainability, and economic development. With a significant increase in ethanol production capacity and blending percentages, the government is making substantial strides towards its ambitious target of 20% blending by 2025. The strategic measures implemented, such as the modified Pradhan Mantri JI-VAN Yojana and a detailed roadmap for ethanol blending, are pivotal in overcoming past challenges and unlocking the full potential of this initiative. As India continues to advance in this domain, the dual benefits of reducing reliance on imported fossil fuels and revitalizing rural economies will not only contribute to a cleaner energy future but also foster economic resilience. The ongoing efforts underscore a proactive approach to sustainable energy solutions, positioning India as a leader in biofuel adoption and setting a precedent for others to follow.

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NPCIL to operate small nuclear plants for private players



In a first, the Nuclear Power Corporation of India (NPCIL) will operate 220 MW capacity small nuclear plants for private players who will provide both funding and land for the project, a senior government official has said. A development on this front is likely by this year-end or early 2025, the official told recently.

"The funding and land for the nuclear plant will be made available by the private player but the plant will be managed by NPCIL," the official said.

With the NPCIL, a public sector enterprise under the Department of Atomic Energy, managing and operating the plant, the need to amend the Atomic Energy Act will not arise. Under the Atomic Energy Act, the nuclear energy sector is open only for government PSUs, another official said.

These 220 MW reactors will be known as 'Bharat Small Reactors' for which research is already in progress at the Bhabha Atomic Research Centre (BARC), the official said.

The Pressurised Heavy Water Reactor (PHWR) technology, which India has mastered over a period of time, is likely to be used for building the small reactors, the official said. With small reactors, the exclusion zone can be brought down to 500 metres, the official said. Currently the exclusion zone varies from 1 to 1.5 kilometres.

The focus initially will be on energy intensive industries like steel. Many of the private players have their own captive plants and small reactors could in future replace them, the official said.

Presenting the Union Budget in July, Finance Minister Nirmala Sitharaman announced the government will partner with the private sector to set up Bharat Small Reactors and in the research and development of small modular reactors. She did not elaborate further.

Although foreign players have approached India for building smaller reactors, the estimated price quoted by them is really high, officials pointed out.

The cost per MW for building a small modular reactor in collaboration with foreign players could go to around Rs 100 crore per megawatt. However, with PWR technology, it can be done at Rs 16 crore per MW, another official said.

More importantly, there are very few small modular reactors that are currently operational in the world. According to the International Atomic Energy Agency (IAEA), there are more than 80 SMR (small modular reactors) designs and concepts globally. Most of them are in various developmental stages and some are claimed as being near-term deployable.

There are currently four SMRs in advanced stages of construction in Argentina, China and Russia, and several existing and newcomer nuclear energy countries are conducting SMR research and development.

The PHWR is a technology India mastered especially after sanctions post the 1974 nuclear tests. It started from 200 MW, ramping it to 220 MW, 540 MW and then to 700 MW.

In 2017, the government gave a nod to start 10 nuclear plants of 700 MW each. The NPCIL operates 24 nuclear power plants of which 18 are Pressurised Heavy Water Reactors. Of the 18 plants, 14 are of 220 MW capacity, two are 540 MW one is 200 MW capacity, as per the NPCIL. It operates two 700 MW plants at Kakrapar in Gujarat. The NPCIL also operates two Boiling Water Reactors with 160 MW each capacity and two 1000 MW Light Water Reactors.

Small Modular Reactors can be factory-built, unlike conventional nuclear reactors that are built on-site. They have a power capacity of up to 300 MW per unit. Being a mobile and agile technology, SMRs can be set up at locations unsuitable for larger plants. The SMRs are seen to be making a significant and meaningful contribution to the energy transition phase as part of efforts to deal with the effects of climate change.

The push for nuclear power, which is considered to be a cleaner fuel or non-fossil fuel, comes in the backdrop of India's ambitious net zero goals. India has installed nuclear power capacity of 7,480 MW, which is expected to increase to 22,480 MW by 2031.

23rd India Power Forum

21 October 2024, New Delhi

Theme: Towards Net Zero Compliant Power Sector for Developed India

India Energy Forum has organized its annual flagship event, 23rd India Power Forum on 21st October 2024 at Hotel Le Meridien, New Delhi on the theme "Towards Net Zero Compliant Power Sector for Developed India. The Knowledge Partner for the Conference was BDO India. **The Conference was Supported by Ministry of Power.**

Inaugural Session: The conference was inaugurated by **Shri Ghanshyam Prasad**, Chairperson, Central Electricity Authority. While **Shri R V Shahi**, President, India Energy Forum and Former Secretary, Ministry of Power delivered the special address online, the Presidential address was given by Shri Anil Razdan, Past President, IEF and Former Secretary, Ministry of Power. **Dr H L Bajaj**, Chairman, Power Group, IEF, Ex Chairperson, CEA gave the Welcome Address, Shri Rakesh Jha, Partner, BDO gave the theme presentation. Introductory Remarks was given by **Shri K S Popli**, Hon. Secretary General, IEF and Former CMD, IREDA. Vote of thanks at the Inaugural Session was given by **Shri Satish C Sharma**, Convenor, Power Group, IEF and Former Director, THDC India.



Theme Paper prepared by BDO India was released at the Inaugural Session.



Session I: CEOs Roundtable on “Towards Net Zero Compliant Power Sector for Developed India”

This Session was chaired and moderated by **Shri Anil Razdan**, Former Union Secretary, Ministry of Power, GoI. The other Distinguished Panellists who share their views during the Session were: **Dr Neeraj Sinha**, Adviser / Joint Secretary, Office of the Principal Scientific Adviser to the GoI, Cabinet Secretariat; **Shri Vibhav Agarwal**, CEO Power, Vedanta; **Shri R K Chaudhary**, CMD, NHPC; **Shri Satyanarayan Goel**, CMD, IEX; **Shri Praveen Gupta**, Member (Thermal), CEA; **Dr V K Garg**, Former Chairman, JERC for Goa & UTs and Former CMD, PFC and **Shri R K Porwal**, Director, GRID INDIA.



Session II: “Hydro Power and Energy Storage with special emphasis on “Pump Storage Plants”

This Session was chaired by **Shri M G Gokhale**, Member (Hydro), CEA. The prominent speakers who shared their views on the topic were: **Shri Pradas Das**, CMD, IREDA; **Shri P M Nanda**, Executive Vice President (Engg & Projects) Director, Greenko Energy Ltd; **Shri Neeraj Verma**, CGM (I/C), THDCIL; **Prof Arun Kumar**, IIT Roorkee; **Shri Sandeep Batra**, ED, NHPC and **Shri Deepak Pandey**, Founder Chairman & MD, GP Eco Solutions.



Session III: “Role of Nuclear, Renewables, Hydrogen fuels and AUSC Technology towards Net Zero Compliant Power Sector for Developed India”

This Session was chaired by **Dr Ravi B Grover**, Member, Atomic Energy Commission. The other **Distinguished Speakers** were **Shri Ajay Shankar**, Distinguished Fellow, TERI and Ex Union Secretary, GoI; **Shri A V Krishnan**, Dr Raja Ramanna Chair Professor, NIAS; **Dr Mohammad Rihan**, DG, National Institute of Solar Energy; **Shri Sanjay Bansal**, GM, BHEL; and **Shri Pramod Kumar Mishra**, Addl Vice President, BRPL. A video presentation sent by **Dr R R Sonde**, Sr Professor Emeritus, BITS Pilani, Goa Campus was also played during the session.



Summing Up of the Proceedings of the 23rd India Power Forum was given by **Shri Satish C Sharma**, Convenor, Power Group, IEF and Vote of thanks was given by **Shri K S Popli**, Hon Secretary General, IEF.

Full proceedings and recommendations of the Conference will be shared in the supplementary issue of the TOTAL ENERGY next week
