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ET THE ECONOMIC TIMES



RENEWABLE ENERGY

CONCLAVE - RAJASTHAN

THE RENEWABLE ENERGY CAPITAL OF THE WORLD

MARCH 3, 2023 | MARRIOTT HOTEL, JAIPUR

AN INITIATIVE BY

ET Government





Overview

India's renewable energy (RE) sector is among the world's most lucrative renewable energy markets. High on its mission, the National Solar Mission looks to capture 500 GW capacity from non-fossil fuels by 2030.

With 20% national potential in RE generation, Rajasthan enjoys the distinction of being the number one state in installed Renewable Energy (RE) capacity. The state government's investor-friendly RE policies and the presence of large land strips and abundant solar radiation are among the factors which are enabling Rajasthan to be the torchbearer of environmentally friendly sustainable energy in the country. Considering Rajasthan as a preferable and ideal destination, The Economic Times, in association with Rajasthan Renewable Energy Corporation Ltd and Rajasthan Rajya Vidyut Prasaran Nigam Ltd, organised the 'Renewable Energy Conclave Rajasthan' on March 3, 2023 at Jaipur, the capital city of the land of abundant sunshine.

The conclave was inaugurated by Ashok Gehlot, Chief Minister of Rajasthan. The dignitaries who participated in the inaugural session with the Chief Minister were: Shakuntala Rawat, Minister of Industries & Commerce, Rajasthan and Bhanwar Singh Bhati, Minister of Energy, Rajasthan; Usha Sharma, Chief Secretary, Rajasthan; B Kuldeep Ranka, PSCM & Chairman RIICO; Ashutosh A.T. Pednekar, Chairman, RRECL & CMD, RVPN; Anil Dhaka, Managing Director, Rajasthan Renewable Energy Corporation Ltd and Amit K Gupta, Business Head, The Economic Times Verticals.

The one-day conclave—consisting of conference, expo, round-table discussions and business-to-business meets—had a number of panel discussions, with high-profile politicians, officials, and representatives from private companies engaged in developing technologies for the RE sector.

The panel discussions were focused on the critical issues facing the renewable energy sector. Some of the topics were: Innovation and Investment to enable RE Integration in Energy Mix; Storage/ Pumped Storage Scenario in India eyeing a Net Zero Economy; Transition from Conventional to Renewable; India's Renewable Energy Transition towards a Clean Energy Economy; and New Business & Finance Models to Drive Next Phase of India's RE Sector.

Leaders of major PSUs, engaged in energy production, storage and distribution, were participating in the conclave: NTPC, IOCL, BPCL, Coal India, GAIL, ONGC, NHPC, SJVN, EIL, Nuclear Power Corporation of India Ltd, GRIDCO, and several others. The institutions that have been engaged in financing the renewable energy sector were being represented by their leading officials—the conclave witnessed the participation of SIDBI, Power Finance Corporation, PNB, SBI, IIFCL, AU Small Finance Bank, and other institutions.

The developers and technology providers at the conclave included some of the biggest names in the area of Renewable Energy, energy, and finance: Greenko, PNB, ACME, O2 Power, SIDBI, Torrent Power, Ayana Renewable Power, Avaada Energy, ReNew, IndianOil, SJVN and SBI. An expo, which highlighted the innovative technologies and systems that can take RE to the next level of growth, was the center of attraction for more than 700 high-profile delegates from the government, private sector and institutions.

ET Government, an initiative of The Economic Times, is delighted to bring out this white paper which has a concise presentation of the key ideas for developing renewable energy, proposed at the 'Renewable Energy Conclave Rajasthan,' by political leaders, senior government officials and stalwarts from private enterprises and think-tanks.

FOREWARD



Anoop Verma
Editor (Desk)
ETGovernment
The Economic Times

Accelerating the World's Transition to Renewable Energy

From the solar energy that falls on earth in an hour, it is possible to generate 100% energy requirements of all nations in the world for a year. There is enough energy in the winds blowing through the world, in the fast flowing rivers, geothermal sources and the tidal waves to take care of the daily energy needs of all nations. By capturing a small part of these renewable and everlasting resources of energy, we could take care of all of India's energy needs.

The more energy that we generate through renewables, the less we depend on fossil fuels which, being limited in supply, are not universally accessible, and have an adverse impact on the climate and ecosystems. The renewable sources of energy are the key for addressing the global issues of universal energy access, energy security, and climate change. The rise of renewables is good for the planet, good for the economy, good for humanity.

Globally, the share of renewables in overall energy production is around 30%. Speaking only of India—in the total installed capacity, the share of renewable energy is close to 27%. In the last 7.5 years, the solar energy capacity in the country has increased from 2.6 GW to 46 GW. The country is at the fourth position in renewable energy installed capacity. What is most heartening is that the price of solar power has come down drastically, by more than 75%—by 2030, solar power is expected to fall as low as Rs. 1.9.

Since renewable energy today is cheaper than energy from fossil fuels, nations should not face much difficulty in making the transition. Renewable energy also has serious potential for job creation. Millions of new jobs can be created in sectors such as environment friendly means of transportation, renewable energy production and other related sectors.

The nations have to work together to press on in our charge towards building a sustainable energy future for all and addressing the climate and ecology related concerns of the globe. It is with this spirit of cooperation among the states in India and among the nations in the world on the issue of giving prominence to renewable energy that the ET Government organised the Renewable Energy Conclave–Rajasthan on 3 March 2023.





Kartik Sharma
Sr. Associate Editor
ETGovernment
The Economic Times

Rajasthan is Making the Right Choices for Clean Energy

Renewables are the best solution to the problem of rising energy crisis. The traditional fossil fuels—coal, oil, and natural gas—are expensive and fraught with geopolitical risks. The acrimonious geopolitics of energy from fossil fuels has been blatantly exposed by the war between Russia and Ukraine that broke out in 2022 and continues to rage till this day.

To a world that is hungry for cheap, clean, sustainable and geopolitically neutral sources of energy, renewables are the only answer. To us in India, Rajasthan shows the way of phasing down fossil fuels, achieving energy independence and bettering the environmental and social outcomes quickly and cheaply through renewables.

Today, Rajasthan stands first in the field of solar energy among the states in India. The state also tops in other renewable energy sources: wind power and biopower. The ET Government decided to organise our 'Renewable Energy Conclave—Rajasthan on 3 March 2023' in Jaipur because the state of Rajasthan is the renewable energy capital of Asia and the world, not just India. The state occupies a pole position in not just ground based but also rooftop solar power.

In Rajasthan's overall solar power generation of more than 16,000 MW, a significant part comes from rooftop installations—this fact demonstrates the democratic character of the vibrant solar power sector in the state. In the state's budget for 2023-24, presented in February, CM Ashok Gehlot announced multiple incentives for the solar sector, and declared that the state was targeting the installation of 11,000 MW of new renewable energy capacity in the coming years.

Rajasthan is making the right choices on energy and showing the way to the rest of the country, and rest of the world, to achieve energy security while safeguarding the environment and maintaining energy independence. This state proves that the transition to renewables does not have to be a baneful experience; it will be a beneficial experience. The capital of Rajasthan was certainly the right place to host the ET Government's Renewable Energy Conclave.



Summit Highlights



Program Agenda

09:00 AM- 10:00 AM	REGISTRATION
10:00 AM - 11:00 AM	<p>Panel Discussion: Innovation and Investment to enable RE Integration in Energy Mix: Solar Plus Wind, Energy Storage, Green Hydrogen</p> <hr/> <p>Mohit Bhargava, CEO, NTPC Renewable Energy Ltd</p> <hr/> <p>Vineet Mittal, Chairman, Avaada Group</p> <hr/> <p>Parag Sharma, Founder & CEO, O2 Power</p> <hr/> <p>Sandeep Kashyap, Chief Operating Officer, ACME Group</p> <hr/> <p>K Sampath Kumar, Chief General Manager (SME & SCF), State Bank of India</p> <hr/> <p>R K Bajpai, Zonal Head, Punjab National Bank</p> <hr/> <p>Moderator: Mohd Ujaley, Sr Assistant Editor, The Economic Times</p>
11:00 AM - 11:15 AM	<p>Presentation: Greenko - How to Make Green Energy Sustainable by Rambabu Paravastu, Chief Sustainability Officer, Greenko Group</p>
11:15 AM - 12:00 PM	BREAK
12:00 PM - 1:00 PM	<p>Inaugural Session:</p> <hr/> <p>Welcome Address: Amit K Gupta, Business Head, The Economic Times Verticals</p> <hr/> <p>Opening Remarks: Ashutosh A.T. Pednekar, Chairman, RRECL & CMD, RVPN</p> <hr/> <p>Special Address: Kuldeep Ranka, PSCM & Chairman RIICO</p> <hr/> <p>Special Address: Usha Sharma, Chief Secretary, Govt. of Rajasthan</p> <hr/> <p>Special Address: Veenu Gupta, Additional Chief Secretary, Industries & Commerce, Govt. of Rajasthan</p> <hr/> <p>Guest of Honour: Smt Shakuntala Rawat, Hon'ble Minister of Industries & Commerce, Rajasthan</p> <hr/> <p>Guest of Honour: Shri Bhanwar Singh Bhati, Hon'ble Energy Minister, Rajasthan</p> <hr/> <ul style="list-style-type: none">• Launching of New Web Portal of RRECL• Launching of RE Manufacturing Zones in RIICO Industrial Areas• MoU Exchange Ceremony

Chief Guest: **Shri Ashok Gehlot**, Hon'ble Chief Minister, Rajasthan

Vote of Thanks: **Anil Dhaka**, Managing Director, RRECL

01:00 PM - 02:00 PM

LUNCH BREAK

02:00 PM - 02:50 PM

Panel Discussion: Storage/Pumped Storage Scenario in India eyeing a Net Zero Economy

Anil Dhaka, Managing Director, Rajasthan Renewable Energy Corporation Ltd, Govt. of Rajasthan

Himanshu Khurana, Secretary, Rajasthan Electricity Regulatory Commission, Govt. of Rajasthan

Pavan Kumar Upadhyay, Secretary, Environment Department, Govt. of Rajasthan

Mohit Bhargava, CEO, NTPC Renewable Energy Ltd

Rambabu Paravastu, Chief Sustainability Officer, Greenko Group

Moderator: Mohd Ujaley, Sr Assistant Editor, ETGovernment, The Economic Times

02:50 PM - 03:50 PM

Panel Discussion: Transition from Conventional to Renewable: Role of Developers, PSUs and Green Financial Institutions

Shelly Abraham, Head, Renewable Energy, Bharat Petroleum Corporation Ltd

RK Singh, Chief General Manager, SIDBI

Rajesh Shahi, Executive Director - Green Financing, Power Finance Corporation

E Parthiban, Chief Manager (Alternate Energy & Sustainable Development), Indian Oil Corporation Ltd

Surendra Bhushan Joshi, Project Director, Nuclear Power Corporation of India Ltd

Rajesh Jain, Senior Energy Consultant, International Solar Alliance

I R Venkatraman, Senior Vice President - Business Development, Ayana Renewable Power Pvt Ltd

Moderator: Arpit Gupta, Assistant Editor, The Economic Times

03:50 PM - 04:00 PM

Presentation: Harsh Nupur Joshi, Chief General Manager & Head Renewables (BD&JV), Oil and Natural Gas Corporation Ltd

04:00 PM - 04:45 PM

Panel Discussion: India's Renewable Energy Transition towards a Clean Energy Economy

Umakanta Sahoo, Director (T&BD), GRIDCO Limited, Govt. of Odisha

JK Jethani, Executive Director, Association of Renewable Energy Agencies of States, MNRE, Govt. of India

Rahul Kumar, CEO, HIMURJA, Govt. of Himachal Pradesh

Jitendra Pandey, Business Development Head - Renewable Energy, Bharat Petroleum Corporation Ltd

Rohit Bhakar, Associate Professor, MNIT Jaipur

Vidhi Khabya, Investment Specialist, Invest India

Moderator: Mohd Ujaley, Sr Assistant Editor, ETGovernment, The Economic Times

04:45 PM - 05:30 PM

Panel Discussion: New Business & Finance Models to Drive Next Phase of India's RE Sector

Keynote Address by **RK Vishnoi**, Chairman & Managing Director, NHPC Ltd & THDC Ltd

Akhileshwar Singh, Director (Finance), SJVN Ltd

VR Srivastava, Executive Director (Renewable), NHPC Ltd

Adesh Saxena, Head – Retail Sales, Energy Efficiency Services Ltd

SK Jana, GM (Solar), Coal India Ltd

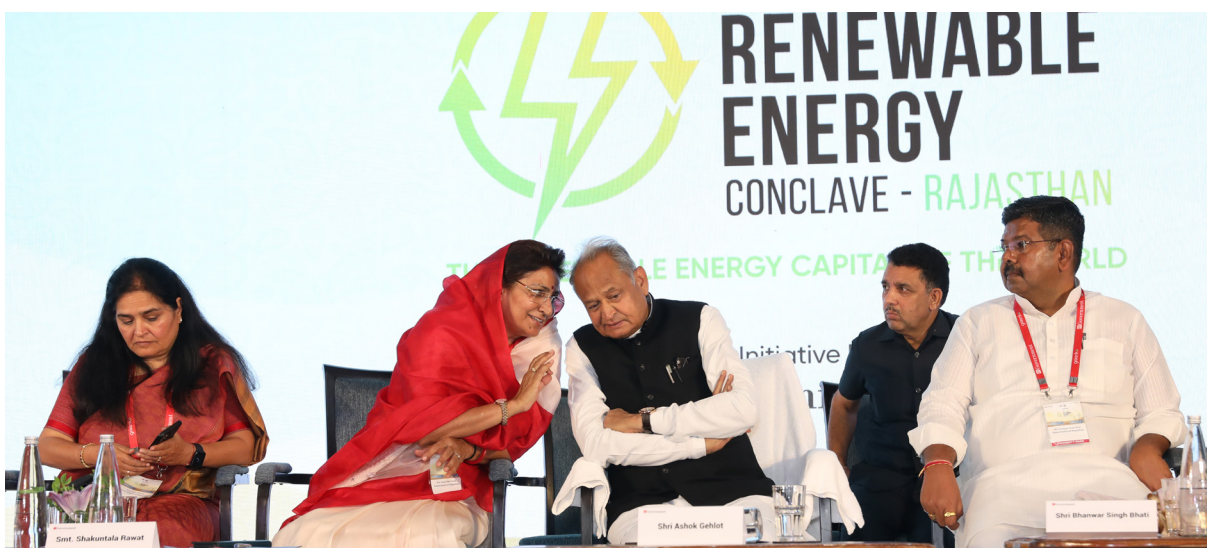
Sudhir Kumar, Deputy General Manager, IIFCL

Moderator: Anoop Verma, Editor, ETGovernment, The Economic Times

5.30 PM – 6.00 PM

Valedictory Session

Inaugural Session:







Welcome Address

Renewable energy is all about sustainable development. By using renewable sources of energy which are infinite and freely available, we can alleviate the impact of energy production and become less dependent on fossil fuels which cause damage to the environment and whose supply is finite. The reason for the central role of renewables is obvious: renewable sources of energy are infinite, affordable, and they cause minimal damage to the environment. The world needs more energy, but this needs to be done in an ever more efficient, environment friendly and sustainable way.

Amit Kumar Gupta

Business Head

The Economic Times - Business Vertical

Opening Remarks



In the vision to make Rajasthan the Renewable Capital of the world, the state government has initiated the Rajasthan Solar, Wind and Hybrid Energy Policy, 2019, to attract investments for renewable energy projects. As a result of these policies, Rajasthan is now the number one state in terms of generating renewable energy through the efforts of farmers, under the PM Kusum Yojana, and the state is in the second position in installing rooftop solar generation in the country. Today our focus is to prove to the country and the world that renewable energy can be cheap, reliable, and environmentally sustainable. There is a need to lay down a new roadmap that can push the renewable energy sector to the top of the energy ecosystem.

Ashutosh A.T. Pednekar

*Chairman, RRECL & CMD, RVPN,
Government of Rajasthan*



Special Address

Rajasthan is emerging as a global hub for renewable energy generation with a total of 21,000 MW of renewable energy capacity installed. Solar power takes the lead with 15,000 MW, followed by wind at 5,000 MW. Under the Rajasthan Solar Energy Policy 2019, the state is targeting to generate 30 GW of solar power by 2024-25. As of now, a total of 75,000 MW renewable energy capacity projects have been proposed in the state. We believe that with conducive policies and tax regime Rajasthan will become the renewable energy capital of the world. There is ample land in the state for new renewable energy projects and the state is blessed with abundant sunshine. The renewable energy sector has the potential to create millions of new jobs for the youth.

Kuldeep Ranka
*PSCM & Chairman
RIICO*

Special Address



Rajasthan's contribution will be crucial in the achievement of the country's goal to increase renewable energy capacity by up to 500 GW and generate 50 percent of its total energy requirement through renewables by 2030. To achieve this ambitious target, developers, manufacturers and policymakers should work hand in hand not only for the completion of renewable projects but also to formulate conducive policies and regulations for a greener economy. I am happy to inform you that Rajasthan's share in the country's total total developed solar power capacity stands at 18 percent. Renewable energy contributes 17 percent of the state's energy requirement. We have set a target of generating around 43 percent of our overall energy needs through renewables by 2030.

Usha Sharma
*Chief Secretary
Government of Rajasthan*



Guest of Honour

The renewable energy sector in Rajasthan has received a significant acceleration due to the policies of the state government. I am talking about policies like the Rajasthan Solar, Wind and Hybrid Energy Policy, 2019 and Rajasthan Investment Promotion Scheme 2022. These policies have helped the state in attracting investors and entrepreneurs in the renewable energy sector. Our Manufacturing policy has helped in the promotion of Renewable Energy projects in the state. At the policy level, there is complete transparency—the state government is open to new suggestions from the investors and industry. On behalf of the government of Rajasthan, I can assure you that we will sincerely look into each and every new suggestion by the industry.

Smt Shakuntala Rawat
*Hon'ble Minister of Industries &
Commer,
Government of Rajasthan*

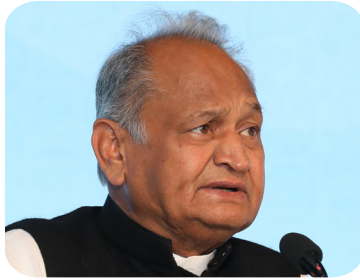
Guest of Honour



Under the Rajasthan Solar, Wind and Hybrid Energy Policy, 2019, the state government has set a target of 37,500 MW capacity by 2024-25. As of now, 21,600 MW capacity of renewable energy has already been established and another 21,000 MW of renewable projects are in progress. Through Rajasthan Investment Promotion Scheme (RIPS) 2022, the state government has signed MoUs with more than 100 companies to invest a worth of 10.70 lakh crores in the state. In the renewable energy sector, a lot of investments are coming up to establish solar manufacturing units, pump storage plants and green hydrogen projects in the state through RIPS 2022. The state government has started initiatives to decentralize renewable energy (DRE) systems, especially solar power, to benefit farmers and the common people in rural areas

Shri Bhanwar Singh Bhati
*Hon'ble Minister of Energy
Government of Rajasthan*

Chief Guest



Renewable Energy is the only way by which we can fight climate change and global warming. As a Union cabinet minister back in 1982, I tried to experiment with solar energy in Rajasthan. Today solar power is a major source of energy. In 1998, when I became Rajasthan's chief minister for the first time, we installed the first wind energy plant in the state. We have a target to stretch our renewable energy share to 90 GW by 2030. When top industry players come to Rajasthan with a proposal to install renewable energy plants, we request them to bring their manufacturing units. With a number of renewable energy plants and manufacturing units located in the state, Rajasthan is now the number one in installed renewable energy capacity in the country. Renewables are now the major source for fulfilling our energy requirements.

Shri Ashok Gehlot
*Hon'ble Chief Minister
Rajasthan*

Vote of Thanks



On behalf of RRECL and the Department of Energy, I heartily thank the Honorable Chief Minister of Rajasthan Shri Ashok Gehlot and other eminent dignitaries on the dais for attending this conclave today and encouraging the stakeholders of renewable energy present in the programme. I thank the top officials of central PSUs, RE Developers, Investors, and other stakeholders present in the conclave who will brainstorm throughout the day and share useful ideas for the development of renewable energy. I also thank the present media persons, organizers and other guests for their cooperation.

Anil Dhaka
*MD, Rajasthan Renewable
Energy Corporation Ltd
Government of Rajasthan*

Signing of MoUs with Investors

MoUs were signed between the state government and investors. The MoU signed between the state government and Torrent Power Limited will bring an investment of Rs 37 thousand crore in the state and 6150 jobs will be created. The MoU signed between Welspun New Energy Limited and the state government will bring an investment of Rs 50,000 crore in the state and provide employment to 2,250 people.



Launch of Energy Sectoral Portal

The Chief Minister launched the Energy Sectoral Portal. Through this portal, information related to energy will be available at one place. The data of 11 departments is available on the portal, which has been developed by the IT team of the Chief Minister's Office. The portal link is: <https://energy.rajasthan.gov.in/>





Panel Discussion:

Innovation and Investment to Enable RE Integration in Energy Mix: Solar Plus Wind, Energy Storage, Green Hydrogen

Innovation and investment are being brought throughout the energy value chain by adopting newer innovation to integrate renewable energy sources in the energy mix. While bringing innovation in the energy ecosystem, do we look at the usage of the newer technologies that can enable the mix of RE into energy generation, energy storage and green energy manufacturing? What are the new emerging energy technology innovations? What new investments are needed?



When we talk about the growth of renewable energy sources like solar, wind, and green hydrogen, in the energy mix, we have to keep an eye on how the energy generated from such sources is integrated with the mainstream sources of energy. The role of energy storage is of grave importance for integrating Renewable Energy. As of now about 40 percent of energy storage capacity is for fossil fuels and 10-12 percent is for renewable energy sources. We aim to create a net-zero, or fully decarbonized, energy system in our country. But to achieve this goal, we need to bring investments not only in renewable energy sources but also in energy storage systems and energy distribution infrastructure.

Mohit Bhargava
CEO
NTPC Renewable Energy Ltd



In the vision of 'One Nation, One Grid, One Price' concept, it is critical that power should be made available to every citizen by 24/7. In the present scenario, we do not have much uniformity on power pricing. But we are in a position where we could turn the energy crisis into an energy opportunity. By implementing smart policies which will lead to uniformity of pricing and taxes, we can make renewable energy-rich states like Rajasthan, Gujarat, Tamil Nadu, Andhra Pradesh, and Madhya Pradesh hubs of clean energy in the country. There is an immediate need to put in place policies which will enable us to achieve energy security.

Vineet Mittal
Chairman
Avaada Group



Renewable Energy is here to stay. In 2022, about 88 percent of incremental capacity globally came from renewable sources. Some reports suggest that globally by 2025 Renewable Energy will take over coal for power production and India will be the leader. At present, in India, we are at 12% in terms of Renewable Energy production and by 2030, we intend to scale up this production to 50%. At present, India is focusing on green hydrogen. To ramp up our capacity in renewable energy, we need to focus on both the green hydrogen and C&I sector. A lot needs to be done by formulating policies to attract investments in renewable energies—especially the C&I sector

Parag Sharma
Founder & CEO
O2 Power



An investment of USD 17.5 lakh crores will be required in the power sector to produce the addition of 350 GW of renewable energy to achieve the target of 500 GW by 2030 through renewable sources and 45 percent carbon reduction. Another USD 1.24 trillion investment opportunity will come to India for integrating the 500 GW energy generated from renewable resources into the country's overall energy mix. Long-term stability in terms of policy can play an important role in Renewable Energy production and adoption. In my opinion, a stable policy will be helpful in attracting investment in the renewable energy sector.

Sandeep Kashyap
Chief Operating Officer
ACME Group



As one of the largest financing institutions in the country, SBI has been financing several renewable energy projects—solar, wind, green hydrogen, etc. We have also financed emerging green energy projects which are based on ethanol-blended systems. We are striving to be part of the country's endeavor for creating a sustainable and affordable energy sector. Under SBI's environmental, social, and governance (ESG) financing framework, the bank intends to issue green, social, and sustainability bonds and loans. The bank is eager to finance or refinance, in whole or in part, existing or future renewable energy projects which will have a positive environmental and social impact in India.

K Sampath Kumar
Chief General Manager (SME & SCF),
State Bank of India



In the space of renewable energy and green energy projects financing, Punjab National Bank has initiated a lot of green financing schemes and green infrastructure development initiatives. Under the Solar Power System scheme, PNB is providing home loans to individuals and joint owners to install solar rooftops at subsidized rates. In the ambitious project called PM Kusum Yojana, PNB has provided aid to individual farmers for installing standalone solar pumps and for solarizing ordinary pumps. Under the affordable green financing scheme for the MSME sector, PNB encourages startups and entrepreneurs in the green energy sector to invest and work towards achieving the country's goal of being a carbon-neutral nation by 2070.

R K Bajpai
Zonal Head
Punjab National Bank



Presentation:

Greenko - How to Make Green Energy Sustainable by Rambabu Paravastu, Chief Sustainability Officer, Greenko Group

Greenko is one of the world's leading energy transition and decarbonization solution providers with a diversified portfolio of assets across 15 states in India—the operational capacity of Greenko's assets in India is 7.3 GW (in solar, hydro and wind projects). The company plans to increase its capacity to 10 GW by 2025. Greenko is developing intelligent renewable energy storage platforms which will provide energy storage capacity of 50 GWh by 2025 and 100 GWh by 2027. The company is offering cost-effective Zero Carbon molecules to power decarbonization of hard- to-abate industrial sectors. Our deep decarbonization solutions in sectors like metals, petrochemicals, and bulk transportation is a pathway towards achieving India's aim of achieving energy Independence.

Panel Discussion:

Storage/Pumped Storage Scenario in India eyeing a Net Zero Economy

In this decade India will add four times more renewable energy capacity than it added in the last decade. But this growth in RW energy can lead to good outcomes only if there is capacity for energy storage and pumped storage. Without energy storage, grid stability cannot be maintained. With efficient storage, there can be better utilization of energy from RW sources. Much of RW energy that India is generating is hydropower—so what is the pumped storage capacity in India? Is the pumped storage capacity capable of maintaining grid stability? What steps are the RW energy companies taking to develop energy storage technologies? What energy storage technologies are currently available? In the next ten years, what kind of energy storage can we expect in India? How can the market for storage and pumped storage be made viable?



When we talk about the addition of renewable energy to the energy mix, the main challenge is achieving the goal of RTC (Round-the-Clock) power. In RTC from RE projects, the critical role is played by the energy storage systems—whether it is battery power or pump storage. Grid smartness and flexibility for RE energy transmission is another important factor—in these systems, the role of the developers is paramount. We should have a system in which we do not have to depend upon thermal resources. Since most of the pump storage projects in Rajasthan are located near the reservoirs and fall under forest land, RRECL has conducted a study to prepare a report on the challenges of pump storage in Rajasthan. The RRECL report has recommended collaboration with the forest department for ensuring the development of RTC RE projects in an environmentally sustainable way.

Anil Dhaka

*MD, Rajasthan Renewable
Energy Corporation Ltd
Government of Rajasthan*



The Rajasthan Electricity Regulatory Commission has recently released a draft which specifies the Renewable Purchase Obligation (RPO) till 2029/30. In the draft on RPO, we place emphasis on the energy storage obligation (ESO) which can go up to 4 percent by 2030. The draft also dwells on the Hydro Power Purchase (HPO) obligation, which has a very conducive impact on the pump storage projects (PSP) and battery energy storage projects (ESO) in the state. Apart from this, in the last control period, we developed a regulation to provide a 75 percent transmission charges exemption to project the storage system in the state.

Himanshu Khurana
*Secretary, Rajasthan Electricity
Regulatory Commission
Government of Rajasthan*



While developing hydropower projects and pump storage projects near the reservoirs, we have to consider two things: the capital cost of the project and the project's impact on the environment. By environmental impact, I mean issues like loss of habitat, species and land. We have to move the projects to alternate land and take other measures to take care of the environmental concerns which are bound to be there in every power project. Development has to be in an environmentally sustainable manner. Development and environment should move hand in hand—both should complement each other instead of being against each other.

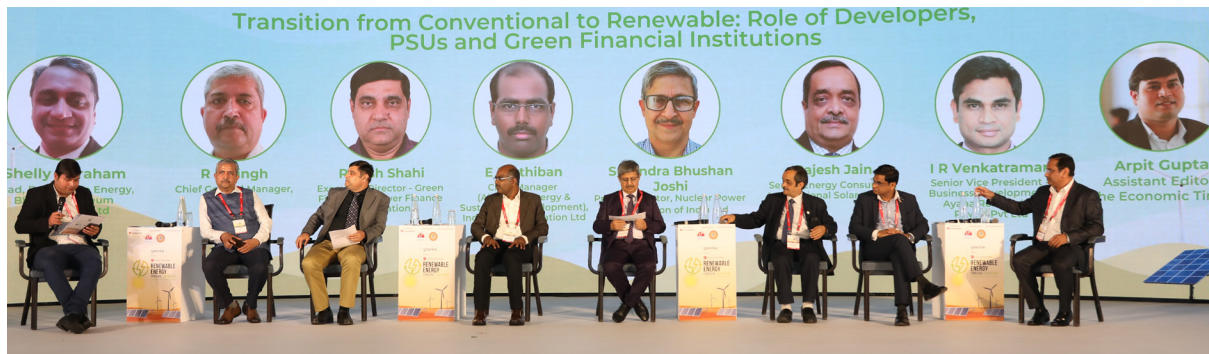
Pavan Kumar Upadhyay
*Secretary, Environment
Department
Government of Rajasthan*



While we look towards the energy security of the country, sustainability is a must for the achievement of a net-zero economy. As a green energy organization, we work for the achievement of the goal of decarbonized society. We aim to develop technologies for carbon-free electricity or electricity that is developed through zero-carbon fuels. Net-zero is a long-term goal that the globe and India must approach not just in a strategic way but also in an accelerated way. In India, we face the problem of the least flexible energy and electricity system as we have the capacity of approximately 400 GW and our peak is less than 200 GW. To address the 200 GW peak, we have established 400 GW of generation capacity which makes our electricity cost one of the highest among the globe. This has also led to making our manufacturing less competitive. One way of addressing these issues is that we should use both renewable and coal based power. We must also develop efficient energy storage systems.

Rambabu Paravastu
Chief Sustainability Officer,
Greenko Group





Panel Discussion:

Transition from Conventional to Renewable: Role of Developers, PSUs and Green Financial Institutions

To transition from conventional to renewable to net-zero, it will be necessary for the entire RE ecosystem —developers, PSUs & green financing institutions— to relook their strategies, bring innovation in their work flows and processes for utilizing the combination of solar, wind, and other sources of green energy. What are the challenges in the transition towards a renewable and sustainable energy ecosystem in India? What innovations will unlock the full potential of solar, wind and hydrogen in the energy mix? Given the tremendous progress India has made in powering rural areas, what insights can be shared on building resilient and sustainable power systems?



Driven by the growing demand for green mobility drives by countries like India, China, and Southeast Asia, it is estimated that by 2040, more than 90 percent of all two- and three-wheelers will be electric, around 80 percent of buses will be EV and around 60 percent of passenger vehicles will be in the electric mode. This kind of transformation is expected to happen all over the globe. The transition from conventional to non-conventional will be at a faster pace because of the huge investment happening in the area of energy transition. Last year, governments and end users around the world spent around USD 1.1 trillion on energy transition, over 30 percent more than 2021. It is a fact that for the first time money put into the energy transition matched the money spent on fossil fuel investments.

Shelly Abraham
Head, Renewable Energy,
Bharat Petroleum Corporation
Ltd



SIDBI, as a development financial institution, always picks the agenda which is aligned with the country's growth plan. Adopting carbon neutrality as a prioritized agenda of the country's ambitious plan, SIDBI has set up a green vertical that focuses purely on greening the enterprise ecosystem right from micro to medium enterprises. We play multifaceted roles for the MSME sector in their green startup journey. We have started 'Mission Swavalamban' to lend a helping hand to entrepreneurs. In Rajasthan, under the Mission Swavalamban, SIDBI is working with Barefoot College, Tilonia, to set up 50 solar panels to light up 7-10 villages with solar power.

RK Singh
Chief General Manager
SIDBI



Power Finance Corporation believes that to achieve a net zero carbon society by 2070, the collaboration between domestic, private, state-owned and foreign players is of paramount importance. Out of the total fund requirement for the transition from conventional to renewable in the energy sector, 70-80 percent will be required for the power sector. Power Finance Corporation is committed to promote renewable energy projects in view of the critical importance of clean energy in the development of the country's economy. The corporation is supporting several renewable energy projects.

Rajesh Shahi
Executive Director -
Green Financing
Power Finance Corporation



IOCL started its renewable energy journey in 2009 by setting up a new green business vertical called Alternative Energy. IOCL's installed capacity of renewable energy stood at 237.42 MW as of March 2022, which included 167.6 MW of wind capacity and 69.82 MW of solar photovoltaic (PV) capacity. In Rajasthan, IOCL installed a 5 MW solar plant in the district of Jodhpur. In 2016-17, IOCL installed 3 wind projects of around 47.3 MW capacity in Rajasthan.

E Parthiban

*Chief Manager (Alternate Energy & Sustainable Development),
Indian Oil Corporation Ltd*



NPCIL is responsible for generating electricity through nuclear technology. As nuclear energy is a source of carbon-free electricity, we call it green energy. As of now, we have a capacity of 6.8 GW of green energy generation. In the next 5 years, we are going to add another 7 GW of capacity. By 2032, we will add another 8.7 GW of generation capacity.

Surendra Bhushan Joshi

*Project Director
Nuclear Power Corporation of India Ltd*



PSUs were the main developers as well as users of solar power since its inception in India for years. I truly believe that going forward, PSUs will continue to play an important role to scale up the use of solar power that will take us towards energy sovereignty. After the globalization of our economy in the year 1991, the private players have been actively involved in not only developing renewable energy but also green technology development and renewable energy manufacturing.

Rajesh Jain

*Senior Energy Consultant
International Solar Alliance*



For sustainable energy transition from conventional to renewable for a developing country like India, there are three important factors that must be considered. The first factor is grid security – the market will move what grid security requires. In a way to achieve the non-conventional energy transition through renewable energy, the energy market requires an RTC (Round The Clock) supply model from the renewable energy sector. Second is the market drivers like supply and demand of energy from different states, and the factor of net-zero targets for various enterprises and their demand for green energy. The third is to create a robust, resilient transmission backbone to add renewable energy into the energy mix.

I R Venkatraman

*Senior Vice President -
Business Development
Ayana Renewable Power Pvt Ltd*



Presentation:

Harsh Nupur Joshi, Chief General Manager & Head Renewables (BD&JV), Oil and Natural Gas Corporation Ltd

ONGC is committed to de-carbonization for achieving sustainable development. We are working on the Prime Minister's mantra of panchamrit to take non-fossil energy capacity to 500 GW for meeting 50% of the country's energy requirements from renewables by 2030 and net-zero target by 2070. To achieve the ambitious targets, ONGC has set its energy strategy 2040 which includes building a minimum 10 GW renewable energy portfolio by 2040. We have, as of date, around 189 MW of installed renewable energy capacity and another 15 MW of renewable energy capacity is under commissioning. Focusing on India's goal of achieving energy efficiency, ONGC has been working on green energy solutions like gas as a transition fuel, offshore & onshore wind, solar, carbon capture and hydrogen, etc.

Panel Discussion:

India's Renewable Energy Transition towards a Clean Energy Economy

As the world shifts towards a more sustainable and secure energy future, renewable energy sources are increasingly being prioritized. India is particularly ambitious in this regard, with a goal of meeting 50% of its energy needs through renewables. To achieve this target, what opportunities exist for a diverse country like India? What strategies and plans are being put in place to make this a reality? What is the roadmap for reaching this ambitious goal?



It is a big goal to achieve 500 gigawatts of renewable production and reach net zero by 2070. The challenges regarding the availability of solar wafers and the low production capacity are barriers that need to be addressed. Collaboration with foreign industries to acquire the right type of solar cells and announcing solar module manufacturing is a step in the right direction. Strong collaboration between industries and academia can lead to the development of innovative homegrown technologies for renewable energy. Transitioning to clean energy is a global challenge and requires a collective effort from all stakeholders. It is essential to explore all possible avenues, including alternative energy sources, to achieve this goal. The transition may take time, but it is essential to ensure a sustainable future for generations to come.

Rakesh Chopra
Managing Director
Rajasthan Electronics &
Instruments Limited



Relying solely on solar and wind energy may not be enough to meet future energy demands. We need to explore hydro power and pump storage. Pump storage and hydro are proven technologies with the potential to complement wind and solar energy. The assessment of off-river basin potential of pump storage plants is crucial, especially in states like Odisha, where there are abandoned mines which can be used to develop renewable energy stations. The gaps left by wind and solar energy can be filled up by pump storage and hydro. We should not focus on only river pump storage but also consider the abandoned mines and other areas where pump storage can be developed. The demand for green energy is increasing, and it is essential to provide sustainable and stable renewable sources of power to support industrial growth.

Umakanta Sahoo
Director (T&B)
GRIDCO Limited
Government of Odisha



When we move towards decarbonization with the aim of reducing our carbon footprint we must look at natural gas as one of the sources of clean energy. Natural gas is among the most effective and efficient transition fuels in our journey towards decarbonization. GAIL India Limited has been working with natural gas for a long time. Last year we started the blending of hydrogen at one of our centres, located in Indore. There we did 2% hydrogen blending with the natural gas. The outcome of that exercise has been very good. We submitted our report to the Petroleum and Natural Gas Regulatory Board and also sent it to the ministry.

Atul Kumar Tripathi
Executive Director (PD, CSPA,
RM, TQM & SD)
GAIL India Ltd.



In the past eight years, solar capacity has exceeded wind capacity by more than 25 times, while renewable energy capacity has increased by around three times. The capacity additions during the past two years, including 14 gigawatts added during the last year and 15 gigawatts added this year, have brought us closer to our goal of achieving 500 gigawatts from non-fossil resources. The capacity from all non-fossil resources, including large hydro, small hydro, and nuclear, is now around 177 gigawatts. With planned projects and pipelines, the capacity is expected to reach 290 gigawatts. The remaining 210 gigawatts are being planned, and transmission lines are being developed to accommodate additional capacity. The concern is whether the demand exists, and if distribution companies are willing to pay for it. To manage the transition to non-fossil resources, pumped storage solutions need to be developed.

J K Jethani

*Executive Director, Association
of Renewable Energy Agencies
of States, MNRE
Government of India*



India's electricity generation has increased from around 800 billion units in 2009-10 to approximately 1500 billion units last year. It is expected to reach 1600 billion units this year. However, the thermal plant PLF (Plant Load Factor) has decreased from 78% to 65% since 2019. The installed capacity in India is 412 gigawatts, with 64 gigawatts from solar, 42 from wind, 10 from biomass, 4 from small hydro, and 47 from large hydro. Rajasthan has surpassed 16 gigawatts of solar power, which is more than the thermal capacity of 14.5 gigawatts in the state. Solar capacity is now exceeding 64 gigawatts and contributing around 12% of the generated energy. In Rajasthan, around 17% of the renewable energy comes from solar capacity. BPCL has set for itself the target of establishing one gigawatt portfolio by 2025-26 and 10 gigawatts by 2040. Talks are underway with state governments, including Rajasthan, Uttar Pradesh, and Madhya Pradesh, to increase capacity.

Jitendra Pandey

*Business Development Head -
Renewable Energy
Bharat Petroleum Corporation Ltd.*



In regards to academia and industry collaborations, one key point that has been overlooked is the challenge of industry's short-term mindset when it comes to investments. Research, on the other hand, often requires time and involves risks that may yield positive or negative results. As a result, industry tends to invest in proven technologies rather than taking risks with research. But there is significant value to be found in the research being done by institutions, particularly in areas such as blockchain and IoT. In terms of investment, we are missing out on the potential value that could be derived from these technologies, especially in the distribution side, where there is a gap in understanding and visualization of the impact of new regulations. Regulators need to catch up and support new technologies rather than rely solely on traditional utilities.

Rohit Bhakar
Associate Professor
MNIT Jaipur



Collaborations are taking place in India as the country undergoes transformation across three levels: industrialization, urbanization and energy transition. India is currently the second most attractive manufacturing hub, which is leading to strong urbanization and energy commitments. In the renewable energy sector, India has made great strides in solar and wind energy, resulting in a balance of supply and demand. The government has been proactive in creating a regulatory and policy ecosystem that supports investors and companies, leading to many pilot projects and innovative solutions. India has a dedicated platform called PM stack, which scales and commercializes innovative solutions for relevant stakeholders. Public sector undertakings- BPCL, ONGC, and IOCL-are working on pilot projects related to green hydrogen, biomass gasification, and electrolyzer technologies.

Vidhi Khabya
Investment Specialist
Invest India



Keynote Address

As far as THDC is concerned, we have been in the renewable energy sector in a big way in Rajasthan. We are now developing a 10,000-MW solar plant in Rajasthan with the partnership of Rajasthan Renewable Energy Corporation (RREC) in a phased manner. After completion of the plant, the project will not only shape the future of RE in the state but also add a greater pie to the country's vision of adding 500 GW of renewable energy to the energy mix by 2030. We are also working simultaneously on green hydrogen projects in Rajasthan which can be resulted to generate green hydrogen and can further generate green ammonia for domestic uses as well as exports. Align with the country's green hydrogen mission, THDC is actively participated in the implementation of green hydrogen pilot projects and explored possibilities to install green hydrogen plants on a commercial scale.

RK Vishnoi

*Chairman & Managing Director
NHPC Ltd & THDC Ltd*





Panel Discussion:

New Business & Finance Models to Drive Next Phase of India's RE Sector

India's RE sector has attracted substantial investments over the past few years following the implementation of regulatory reforms which has enabled heavy growth in the domestic manufacturing sector. What are some of the sustainable financial models that could have a significant impact on the domestic manufacturing sector? What are the burning problems which must be addressed to achieve the goal of making India the global hub for RE products and services? In order to continue attracting foreign investment in RE, what new business models must be explored?



Since its inception in 1988, SJVN has generated around 2,000 MW of installed electricity generation capacity. The company intends to generate 5,000 MW by 2024, 25,000 MW by 2030 and 50,000 MW by 2040. In order to achieve the target, SJVN has added multiple projects to its portfolio and an already established reputation of successfully operating and implementing Mega Hydro Projects in India and abroad. After hydro, the company has successfully added varied business verticals and forayed into thermal, solar, wind power generation, power transmission and power trading.

Akhileshwar Singh
Director (Finance)
SJVN Ltd



NHPC's total installed capacity is around 7,000 MW—this includes our hydropower stations, and solar and wind power projects. The hydro in NHPC's power output is about 15% of the country's total installed hydro capacity. Developing hydro projects in India has been a challenge. NHPC has overcome the challenges by adding one project every two years. The company is operating 24 operating power stations in India. We are in the process of completing projects of 10,000 MW capacity. Venturing into the renewable energy sector, we installed our first renewable energy project in Rajasthan by installing a wind energy plant in 2016. For us, Rajasthan is a major destination for building new renewable energy projects—be it solar or wind.

VR Srivastava

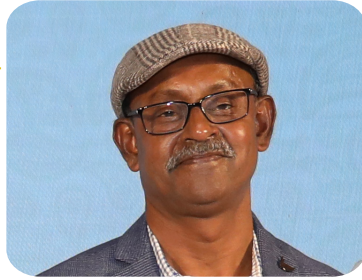
*Executive Director (Renewable),
NHPC Ltd*



There was a time when LED was contributing just 1% in the lighting industry. The cost of LEDs was so high that very few could afford it. The prices have now come down and there is a surge in LED adoption. Most homes in India now use LED lighting. About 36 crores of LEDs are in use in India—through these LEDs we have saved around 1,000 MW peak power which in monetary terms means Rs. 20,000 crores. EESL is working with 1,000 Urban Local Bodies (ULBs) and has implemented around 1.27 crore LED streetlights in India.

Adesh Saxena

*Head - Retail Sales
Energy Efficiency Services Ltd*



Coal India began its journey in renewables by setting up bases for gasification of coal, and for manufacturing fertilizer from coal, methanol from coal. Now we have ventured into solar. The company owns large parcels of land. We also have rooftop opportunities in around 1.2 lakhs of small medium and large buildings across the country. These spaces can be used to generate solar power. We have formed two subsidiaries: CIL Solar PV Ltd and CIL Navikarniya Urja Ltd. We have also formed joint ventures with companies like NTPC, SECI and EESL for renewable energy. In order to minimise the carbon footprints of mining and to progress towards the goal of net zero carbon emission, we are keen to promote renewable energy by installing rooftop solar and ground-mounted solar projects. We are also keen to develop solar parks in some of the reclaimed mining areas.

SK Jana
GM (Solar)
Coal India Ltd



Our funding for the renewable energy sector is now equal to our financial assistance for road projects in India. To fulfill the renewable energy targets of the country, and the net zero commitment of Government of India by 2070, we are issuing green bonds for India. We are fully committed to supporting the renewable energy industry.

Sudhir Kumar
Deputy General Manager
IIFCL



Closing Remarks

For the successful organization of the Renewable Energy Conclave held today in Jaipur, I would like to congratulate the entire team of the organizers of the event: the journalists at ETGovernment - The Economic Times, and all my colleagues in RRECL and RVPNL. I sincerely hope that such events, which initiate useful dialogue between the government, the industry and the thought leaders, continue to take place in Rajasthan.

Anil Dhaka
MD, Rajasthan Renewable
Energy Corporation Ltd
Government of Rajasthan



Expo

On the sidelines of the conference, there was an expo in which the Government of Rajasthan, major renewable energy-related companies, financial services providers, PSUs and other stakeholders showcased their products and services, best practices and innovations.





Government

RAJASTHAN: THE RENEWABLE ENERGY CAPITAL OF THE WORLD

THE ECONOMIC TIMES

RENEWABLE ENERGY CONCLAVE - RAJASTHAN

3RD MARCH 2023

ETGovernment, along with Rajasthan Renewable Energy Corporation Ltd and Rajasthan Rajya Vidut Prasaran Nigam Ltd, would like to thank the stakeholders for participating in The Economic Times Renewable Energy Conclave - Rajasthan and sharing their views and ideas on progressing the state as the renewable energy capital of the world by exploring the tremendous opportunities present in the state.

10+ SESSIONS & SPEAKERS **50+ SPEAKERS** **600+ DELEGATES**

Shri Ashok Gehlot
Hon'ble Chief Minister, Rajasthan

“Renewable Energy is the only way by which we can fight climate change and global warming with a number of renewable energy plants and manufacturing units located in the state. Rajasthan is now the number one in installed renewable energy capacity in the country.”

Smt Shakuntala Rawat
Hon'ble Minister of Industries & Commerce, Government of Rajasthan

“The renewable energy sector in Rajasthan has received a significant acceleration due to the policies of the state govt. like the Rajasthan Solar, Wind and Hybrid Energy Policy, 2019 and Rajasthan Investment Promotion Scheme 2022.”

Shri Bhawan Singh Bha
Hon'ble Minister of Energy, Government of Rajasthan

“In the Renewable Energy I a lot of investments are established solar plants, pump storage plants and hydrogen projects in the through RE 2022. The s has started initiatives to RE (RE) systems, espec power, to benefit from common people in our



Government

RAJASTHAN: THE RENEWABLE ENERGY CAPITAL OF THE WORLD

THE ECONOMIC TIMES

RENEWABLE ENERGY CONCLAVE - RAJASTHAN

3RD MARCH 2023 | MARRIOTT HOTEL, JAIPUR

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The one-day conclave will deliberate on the growth trajectory of Rajasthan in the RE landscape in shaping India's renewable energy sector.

CHIEF GUEST
Ashok Gehlot
Hon'ble Chief Minister, Rajasthan

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CHIEF GUEST
Ashok Gehlot
Hon'ble Chief Minister, Rajasthan

KEY SPEAKERS

Barabhai Parvathi
Chief Sustainability Officer, Greenko Group

Pang Sharma
Founder & CEO, O2 Power

Sandeep Kashyap
CEO, ACME Group

R K Bajpai
Zone Manager, Punjab National Bank

J R Venkateshram
Senior Vice President, Chairman, RECEL & CMD, BPVPL

Vineet Mittal
Chairman, Ananda Group

Dr. V K Singh
Chief General Manager, State Bank of India

Harish Kumar
Chief General Manager, SBI

Harish Kumar
Chief General Manager, SBI

Shailendra Singh
Executive Director, Uthmaniyah Energy & Sustainable Development, India

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