



ReNew

# INDIA'S GLOBAL LEADERSHIP ON CLIMATE CHANGE

LEADING TO A SUSTAINABLE FUTURE





VASUDHAIVA KUTUMBAKAM



EARTH  
FAMILY  
FUTURE





Fighting Climate Change calls for innovation, cooperation and willpower to make the changes that the world needs.

Shri Narendra Modi  
Hon'ble Prime Minister of India





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## Foreword

### Randhir Jaiswal, Consul General of India in New York



We live in a fast-changing world. There are many variables that impact our hyper-connected existence today. Of these, the two most significant ones to my mind are: how do we adapt to the digital age; and how committed we are to restoring the health of the planet. On both these counts, India's leadership has been exemplary. This Report, of course, serves to put forth India's achievement and its pathway ahead on the most pressing issue of the two - climate action. India has undertaken ambitious climate action targets at the Glasgow conference. And our words are being matched by committed action. We are the only G-20 country to have met its Paris climate action commitments, and that too, several years in advance. The G-20 Summit under India's presidency was a resounding success. And there too, in keeping with its belief in Vasudhaiva Kutumbakam - meaning the world is one family - it got the world leaders to renew their commitment to sustainable development, for a greener planet and for the prosperity of our future generations.

Under the visionary leadership of Hon'ble Prime Minister Shri Narendra Modi, India has shaped the global agenda on sustainability. The International Solar Alliance, the Coalition for Disaster Resilient Infrastructure (CDRI), Mission LiFE, and the most recent Global Biofuels Alliance set up on the occasion of the G-20 Summit in Delhi are fast galvanizing global commitment to green development. Climate action remains at the core of India-US bilateral ties. The two countries have adopted Climate and Clean Energy Agenda Partnership 2030 and Strategic Clean Energy Partnership to foster closer sustainability ties.

India has taken major strides in the clean energy transition. The renewable energy generation capacity of India today stands at over 170 gigawatts. The Prime Minister has committed to installing 500 gigawatts of non-fossil energy capacity by the year 2030. India is combining growth with environmental sustainability in a meaningful manner. It runs the world's largest energy-efficient LED lighting programme; it has undertaken massive reforestation and afforestation program; it has the world largest electric two

and three-wheeler market; it is among the largest suppliers of carbon credits in the world; it is testing innovative approaches to blending green hydrogen with natural gas; and it is adopting low carbon methods of cement and steel production. We are doubly conscious that we simply do not have the band-width to grow in an environmentally insensitive way.

Many challenges lie ahead. India is among the countries worst affected by climate change. We already face an ever-increasing number and intensity of cyclones in coastal areas and changes in rainfall and weather patterns. The wild-fires and flash floods across the world make it ever more urgent for us to tackle climate change. The answer lies in clean and green development but as much in our consumption choices. That is why our Prime Minister has initiated Mission LiFE that is Lifestyle for Environment. It calls upon the global community to make behavioral changes and embrace a living that is respectful of nature, of Mother Earth.

This Report is a tribute to India's global leadership on climate change action. It chronicles what we are doing within our borders and how we are building collective action at the global level. It also reminds us of how diverse climate action needs to be, spanning sectors, institutions, and geographies. Our private sector is playing a seminal role in our green agenda, and in this regard, I commend the work being done by companies such as ReNew to enhance our growth and prosperity. I am sure our enduring and purpose-driven partnership will make a material impact in saving our planet.



# The US – India De-carbonisation Partnership - A goldmine for the global good

**Harnessing the potential of the sun in the bountiful land of Telangana**

ReNew Solar Site  
Dichpally, Telangana

## Sumant Sinha Chairman and CEO, ReNew

India and the United States stand tall, not merely as participants but as torchbearers guiding global efforts on climate action. As our planet witnesses the tangible, often dire, repercussions of climate change, the unyielding alliance between India and the US offers a glimmer of hope, vividly illustrating what is possible through international collaboration.

India, under the leadership of Prime Minister Narendra Modi, has made remarkable strides in addressing the global climate challenge. The scale and speed of deployment of renewable energy, something I have personally been close to, is world leading. By spearheading initiatives like the International Solar Alliance, driving the world's largest energy efficiency initiative on lighting, and establishing globally recognized institutions like the Coalition for Disaster Resilient Infrastructure (CDRI), India has firmly placed itself as a beacon of transformative climate action on the global stage. The country has also set itself up for emerging areas of significant impact viz. green hydrogen and its derivatives, and carbon markets. None of this would be possible without critical enablers - policy, finance and skills.

Parallely, the United States remains unwavering in its dedication to confronting the climate crisis. Across various administrations, the USA has been at the forefront of clean energy advancements, consistently setting rigorous emission standards, and making substantial investments in green infrastructure. Its relentless pursuit of innovation-driven solutions, be it in pioneering renewable energy technologies or groundbreaking carbon capture research, underscores its deep-rooted commitment to the global climate cause.

This backdrop sets the stage for a vibrant synergy between the two nations. I set out four imperatives for doing more together on global climate action.

One, we have a shared urgency to ensure that global temperature increases remain within the 1.5-degree Celsius benchmark. The US and India are two of the three largest emitters in the world of greenhouse gases. The two countries also have the influence at global platforms. Prime Minister Narendra Modi's Lifestyle for Environment (LiFE) can be a global hook. Together, we can help the world move the needle.

Two, effective climate action will need all hands-on-deck to work together. Yet, the tide is turning against economic interdependence and

international trade. Foreign Direct Investment is already increasingly concentrated in geopolitically aligned countries. Trade restrictions are growing. Taken too far, this could lead to over-emphasis on alliances and fragmentation of the global co-operation whose benefits the world reaped over the last few decades. The WTO has estimated that of the 90% decline in price of solar power since 2010, 40% has happened due to scale economies and made possible by trade and cross-border value chains. We have a long way to go and fragmentation will only slow down effective action and make it more expensive for everyone.

Three, we need diversity and resilience of supply chains of products, services and inputs needed for the clean energy transition. On one hand, it provides certainty of supplies and cushion against price shocks, that all of us as investors, consumers and policy makers need. Covid-19 and the war in Europe have taught us the risks from international specialisation and concentration, that we need to guard against. On the other hand, more diversified supply chains presents opportunities for countries and communities that have got left behind so far - to get integrated into production value chains. These are certainly opportunities we must seize on, to ensure a fair and just transition, that all stakeholders buy into.

Four, we have tools and policy choices available that, with well co-ordinated action, can reap significant emission reductions in the harder to abate sectors. Green Hydrogen and its derivatives are one such tool. More co-ordinated demand for green products and circularity in production and consumption are other tools. Carbon markets have been there for a long time, but could be leveraged far more.

Our actions must continue to speak louder than our words. We already have co-operation in a range of areas between governments, businesses, think-tanks and academics. Going forward, we could think of a few more areas in the short term and continue to calibrate as we go forward. My suggestions include the following

Collaborative Supply Chain Initiatives: Recognizing the mutual reliance on global supply chains for renewable energy components, both nations, through programs like the Inflation Reduction Act (IRA) and Performance Linked Incentives (PLI), have exhibited ambitions to enhance domestic manufacturing. However, the road ahead is fraught



with challenges. We should look at approaches wherein the two countries could pool the respective incentives to bring the overall costs down substantially. We could alternatively look at creating demand in both countries for components that each of them is likely to have competitive advantage in e.g. for the solar supply chain, the US is likely to have competitive advantage in modules production while India's prowess is likely to lie in producing polysilicon, wafers, and cells.

**Green Hydrogen Partnership:** Green hydrogen has emerged as a beacon of hope for decarbonizing industries. As both nations grapple with cost barriers, joint initiatives can foster economies of scale. These can encompass purchase mandates akin to India's Renewables Purchase Obligation or adoption of mechanisms like the Carbon Contracts for Difference (CCfD) prevalent in Germany. A "US-India Green Hydrogen corridor" can further leverage the IRA and PLI incentives, ensuring efficient cost structures and boosting investments.

**Advancing Carbon Markets:** The USA's ambitious targets for emissions reduction find a natural ally in India, one of the largest suppliers of high-quality and cost-effective carbon credits. A bilateral arrangement could facilitate the USA purchasing emission reductions from India. This win-win scenario would generate a symbiotic economic and environmental impact.

**Financial Collaboration for Clean Energy:** The energy transition demands vast capital. Especially in India, where financing often dominates renewables project costs, collaborative financial strategies can prove transformative. Drawing lessons from successful recent collaborations between DFC and its investee companies, mechanisms can be tailored to channel competitive climate finance, reducing financial burdens and accelerating the clean energy shift. Depending on the sector, this could potentially include competitively priced guarantee programs to credit enhance Indian renewable energy projects for funding from long term investors such as insurance companies and pension funds, or long-term credit lines at competitive rates for hugely capital-intensive green hydrogen and ammonia projects.

A multi-faceted and deeper US-India partnership on climate has the potential to deliver resilience, innovation, and sustainable growth. The best, as they say, is yet to come.





# U.S.- India Climate Partnership and the Way Forward



## **Mukesh Aghi, President & CEO, US India Strategic Partnership Forum**

The world's eyes were on India as the G20 2023 Summit took center stage. Among the critical themes emerging from the global summit were climate action, energy security, climate finance, and the transition to a clean energy economy. As Prime Minister Narendra Modi previously echoed "India's G20 presidency comes at a time of crisis and chaos in the world", and that crisis continues to unfurl in the ongoing conflict between Russia and Ukraine exacerbating volatility in energy prices.

For India, as one of the largest net energy importers, energy security remains a key concern with its voluminous population now surpassing that of China's. The major concern is that of affordability, as trends point towards increased consumption of all energy sources.

However, there is a conscientious shift towards building a clean energy economy for posterity with a push towards electric vehicles (EVs), increased investments in the renewable energy sector, and the aim of carbon neutrality, in line with the country's vision of net zero by 2070 as announced by Prime Minister Modi at COP26.

India saw strong growth in renewable (RES) capacity installations in 2022, setting the stage for the country to assume climate leadership in the run-up to this year's G20 summit. Solar and wind dominated India's power generation capacity growth in 2022, accounting for 92% of total capacity additions. At a combined rate, both solar and wind have added 15.7 GW of new generation capacity in 2022, which is 17% more than additions in 2021.<sup>1</sup>

New Delhi has prioritized supply chain sustainability in emerging technologies like battery storage and electrolyzer production, and in order to fructify net zero by 2070, a concerted effort on biofuels and the hydrogen economy.

The United States and India have shared clean energy priorities on minilaterals such as the Indo-Pacific Quadrilateral Dialogue or Quad, and I2U2 and multilateral forums such as the G20. Furthermore, Washington and New Delhi have codified their joint commitment to a clean energy future in 2021 with the Strategic Clean Energy Partnership (SCEP), as Secretary Jennifer M. Granholm, the current U.S. Secretary of Energy visited New Delhi as recently as July, to meet with



her Indian counterpart, Minister Hardeep Singh Puri, Minister of Petroleum and Natural Gas to mark the third ministerial SCEP.<sup>2</sup>

The focus of the SCEP is moving the clean energy dialogue between government ministries and involving stakeholders from the private sector and other non-profits to help advance a clean energy economy vision, through investments and innovation that will support a broad decarbonization effort.

Through the SCEP, both the United States and India have built on the burgeoning energy trade, which helps reduce India's dependence on fossil fuels and simultaneously also serves Washington's interest, as increasing sources of clean energy, would mitigate the need to import Russian oil, as Moscow continues to remain an adversary of the West.

Joint collaborative efforts with the United States have made it easier for India's efforts toward an energy transition, with a priority on clean and affordable energy sources for its billion-plus population.

With an emphasis on the hydrogen economy and hydrogen as a critical energy source for global decarbonization, both Washington and New Delhi have made it a priority to support each other's national hydrogen missions. Through public-private sector collaboration and reverse trade missions, this commercial dialogue has helped to build ample employment opportunities in India's clean energy sector, as job skilling and the increased role of new technologies in green energy take precedence.

Net Zero in a country like India is a herculean task, and the year 2070, albeit five decades away, the work starts now from the ground level with an emphasis on building net zero villages and greenfield smart cities to support India's clean energy transition.

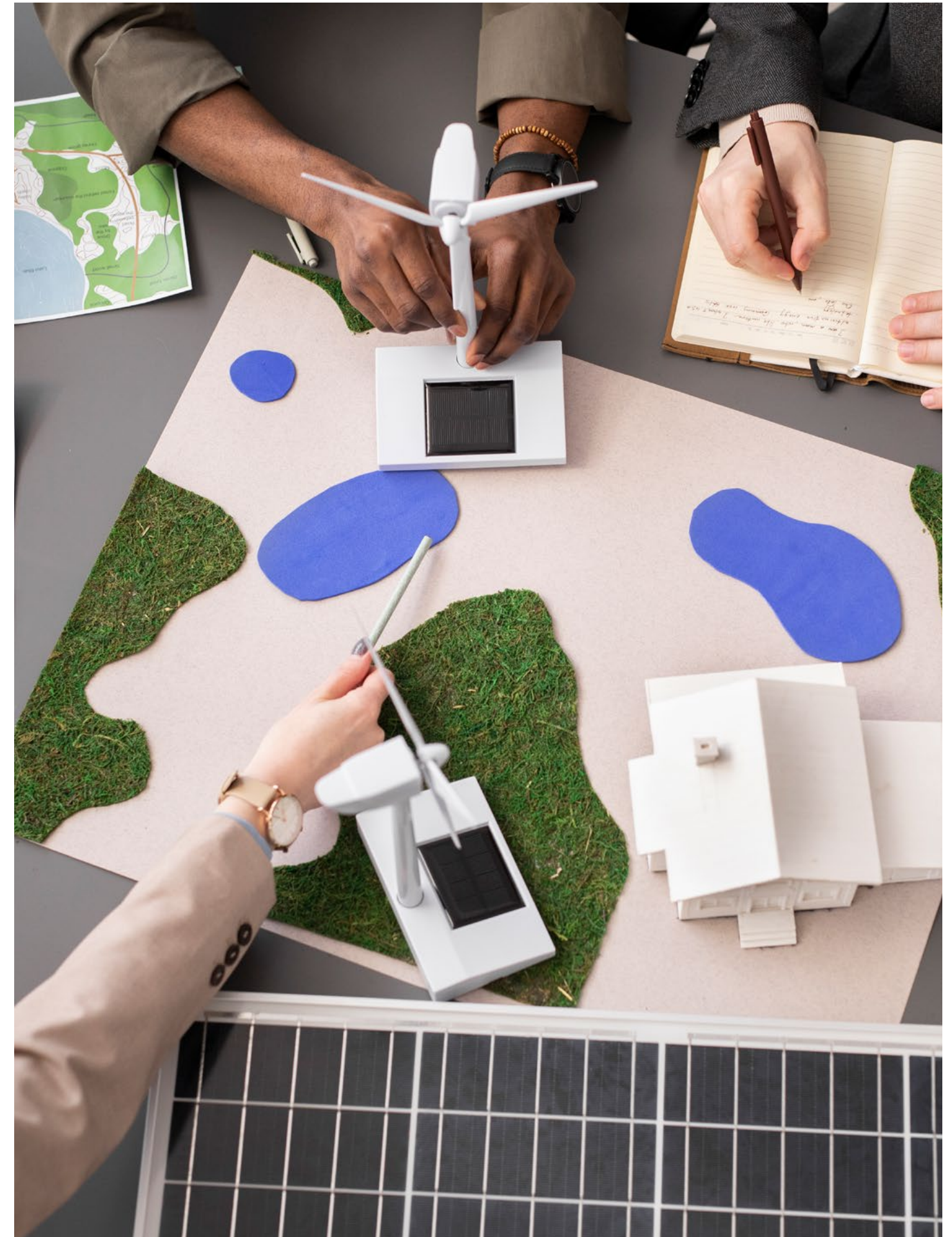
Recently expanding on the Strategic Clean Energy Partnership (SCEP), both the U.S. Department of Energy (DOE) and the Ministry of New and Renewable Energy (MNRE) have launched the new US-India Renewable Energy Technology Action Platform (RETAP).<sup>3</sup>

RETAP was a key highlight discussed between Prime Minister Modi and President Biden during the former's historic State Visit earlier this June. RETAP, as outlined by the respective governments seeks to expand the joint efforts and collaboration on the pervasive effects of new and emerging technologies, especially in the clean energy space.

Both governments have added how RETAP will help advance new and emerging renewable sources of

energy in wind, geothermal, and marine with ocean and tidal energy. RETAP will seek to execute and expand clean energy deployment programs that scale for a large country like India.

This G20 Summit 2023 outlined India's journey in energy transition and climate action. As two of the largest democracies and two of the five largest global economies, both the United States and India have underscored the importance of collaboration and joint efforts toward helping other emerging economies, particularly in the Indo-Pacific corridor, pivot towards clean energy and set the stage on navigating the contours of a global energy transition.







# CASE STUDIES

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## Nine

specific areas  
where India has  
showcased its  
**Leadership** on  
**Climate Action**





# INDIA - A GLOBAL LEADER ON RENEWABLE ENERGY DEPLOYMENT

By ReNew

India has been a global front-runner in deploying renewable energy over the last decade. It has been driven by visionary and dynamic leadership of Prime Minister Narendra Modi. The installed capacity of renewable energy in the country is nearly 170 Giga Watts. Solar power installed capacity has increased 25 times from a mere 2.6 GW to 66.8 GW since 2014. Wind power capacity has doubled. India stands fourth globally in renewable energy installed capacity, fourth in wind power capacity & fourth in solar power capacity.

What caused this transition? The Government of India has been a real enabler of India's progress on renewable energy. Through transparent auctions at scale and by de-risking through a payment guarantee facility, the Government of India successfully managed to bring down solar and wind power prices to the lowest ever. Solar parks, 'one nation, one grid', the new electricity policy which prioritized renewable energy, augmentation of the transmission network—these are just some of the steps taken to give the sector a renewed thrust. An enabling environment for world-class entrepreneurs was created that enabled large volumes of capital to be invested in the renewable energy sector.

The sector has been maturing rapidly. Innovative new tenders have been brought out in the last three years, mirroring the more complex electricity requirements of the bulk buyers. ReNew has responded to some of these with expertise and ingenuity, winning the bids and now developing first of their kind projects of 'Round the clock' RE power and 'Peak Power with India's largest battery installation.

With the performance linked incentives and other such incentives being provided by the Government of India, the manufacturing ecosystem is also improving. Several global private sector companies have announced major plans and we are likely to see India produce components in substantial quantities for solar power, batteries, electric vehicles, green hydrogen, among others. This, along with the global move to diversify supply chains is likely to create significant opportunities for India to export to the rest of the world, along with meeting her own requirements.

When it comes to building new generating capacity,

renewables have already surpassed coal. In 2022, renewables added twice the capacity of coal-fired plants. The tables have turned - businesses were wary of investments in clean energy earlier; now they believe they have the certainty, financial viability and expertise to plough ahead. One gauge of the boom is that some investors and firms are getting more nervous about long-run coal projects, as cheap renewable power starts to undercut coal-fired power on price.<sup>1</sup> Between 2010 and 2022, proposals for over 600 GW of coal-fired power in India (about three times its installed coal plant base) have been put on hold or scrapped, with another 15 GW worth of coal generation retired from service.<sup>2</sup>

India is transforming rapidly towards a green and sustainable future. To meet the final goal of net zero by 2070, India has already come up with several smaller targets, commitments, policies and initiatives. And it is making rapid progress on the ground.



The Government of India has been a real enabler of India's progress on renewable energy. Through transparent auctions at scale and by de-risking through a payment guarantee facility, the Government of India successfully managed to bring down solar and wind power prices to the lowest ever.



**Spreading solar panels across the all-encompassing dessert of Jaisalmer**

ReNew Solar Site  
Jaisalmer, Rajasthan



**Streamlining forces of winds in the meandering land of Andhra Pradesh**

ReNew Wind Site  
Ellutla, Andhra Pradesh



# THE COALITION FOR DISASTER RESILIENT INFRASTRUCTURE (CDRI)

By Amit Prothi, Director General, CDRI

Launched by the Hon'ble Prime Minister of India, Shri Narendra Modi, at the 2019 United Nations (UN) Climate Action Summit, New York, the Coalition for Disaster Resilient Infrastructure (CDRI) is a global partnership of 31 national governments, six international organizations including UN agencies and multilateral development banks, and two private sector institutions.

As India's leading global initiative to minimize the growing threats of disasters from climate change, CDRI seeks to advance the cause of climate and disaster resilient infrastructure (DRI) for achieving sustainable development. The Coalition's resilience programmes draw on the operational principles of collaboration, inclusion and focus on the most vulnerable, while considering the emerging priorities of its members in the context of climate extremes and the disaster risk. In support to its agenda, CDRI has received substantial financial and non-financial commitments from India as well as the United Kingdom, United States of America, Japan, Australia, The Netherlands, Italy, Germany, France, Canada, and The European Union.<sup>1</sup>

At the concept level, DRI emphasizes the adaptation of infrastructure development to changing climate scenarios including disasters and extreme events. Increased resilience of infrastructure can safeguard hard-earned gains in poverty alleviation, health, education, water, sanitation and progress made across the SDGs. CDRI through its members and partners intends to drive an ambitious, future-focused, global and local policy and implementation agenda for DRI, working towards a future wherein countries mainstream resilience in infrastructure development through appropriate governance and institutional arrangements.

CDRI's strategic programmes and initiatives include various policy advisory and project interventions focused on mainstreaming disaster resilience in infrastructure sectors such as health, telecommunications, transport and power.

In line with its commitment to support the most vulnerable nations, CDRI developed the Infrastructure for Resilient Island States (IRIS) initiative, which was launched at COP26 by the Prime Ministers from India, Australia, Fiji, Jamaica,

Mauritius, and the United Kingdom. IRIS will provide technical support to Small Island Developing States (SIDS) to promote resilient, sustainable and inclusive infrastructure assets. As part of the IRIS strategy to channel support to SIDS, project proposals on Risk Informed Policy and Planning, Implementation Readiness, Inclusion Mainstreaming, Access to Finance and others have been shortlisted for technical support.

Another flagship initiative of CDRI, the Biennial Report on Global Infrastructure Resilience, is being finalized for publication in October 2023. The Report will focus global attention on the critical and multifaceted challenges posed to disaster and climate resilient infrastructure with a thematic focus on Nature-based Solutions for Infrastructure. The Report elaborates on 'The Resilience Dividend', and includes the first-ever fully probabilistic risk assessment covering global infrastructure sectors. This will inform planning, decision-making and investment in resilient infrastructure through the provision of credible and fully comparable probabilistic risk metrics, covering every country and territory in the world.

India's G20 Presidency invited CDRI to participate as one of the guest International Organizations in the Sherpa, Finance and Central Bank Deputies meetings (FCBD) and Ministerial meetings. CDRI participated in four Working Groups on Infrastructure, Sustainable Finance, Disaster Risk Reduction, and Environment and Climate Sustainability and is the Knowledge Partner to the Disaster Risk Reduction Working Group, the new initiative under India's G20 Presidency.<sup>2</sup>

Through knowledge generation and curation, advocacy initiatives, innovative and pathbreaking research, and training and capacity building, CDRI aims to bolster the efforts of national governments and all stakeholders globally to drive effective DRI action for a resilient future.



Photo credit: CDRI



CDRI's strategic programmes and initiatives include various policy advisory and project interventions focused on mainstreaming disaster resilience in infrastructure sectors such as health, telecommunications, transport and power.





# THE INTERNATIONAL SOLAR ALLIANCE

## By the ISA Secretariat

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Solar provides energy to people who have never had electricity; it reduces energy import bills; it creates jobs where none existed; and in urban areas, it contributes to lowering local pollution. In many instances, it is already cost effective and is becoming more so, every day. In all instances, it bends the greenhouse gas emissions curve downwards and will be the most significant tool to meet the 2030 targets.

India, together with France, the host of the 21st Conference of the Parties to the UN Framework Convention on Climate Change held in Paris, launched the International Solar Alliance (ISA) in 2015 to build a global coalition for solar energy. Indian Prime Minister, Shri Narendra Modi, and the then French President, Mr. Francois Hollande, announced this global initiative which, at that time, was open for membership to countries between the Tropics of Cancer and Capricorn. The ISA was founded on March 9, 2018, when 40 countries acceded to the ISA Treaty. Subsequently, the eligibility criteria were modified to include all countries who are members of the UN; today, the member of countries who have signed the ISA Treaty stand at 116.

Since its beginning, ISA has worked on enabling the creation of a regulatory framework in its member countries which can draw-in investment into the solar sector. It continues to work on building human and institutional capacity in the member countries to enable the transition to solar energy. It also analyses key trends which either support solarisation, or point to the need for new initiatives.

In this work, ISA draws heavily on the Indian experience, in as much as India, has through a series of actions (demonstration projects, subsidiaries, and policy changes) been able to add 70'000 MW of solar capacity. In the year 2000, India was in a similar situation as several developing countries today, but has been able to create a thriving solar industry and supporting ecosystem since then.

ISA has focussed on first-of a-kind demonstration projects in its member countries, especially the Least Developed Countries and Pacific Islands. These projects enable here-and-now showcasing of the benefits of solar-based energy systems – of providing electricity to people who never had it, of reducing energy imports, of creating new jobs, and of enhancing the local air quality. These benefits

provide the stimulus for domestic regulatory action to enhance further solar projects, and to pull-in private-sector investment.

India has facilitated financing of many of these projects, by agreeing to be the anchor investor into a Payments Guarantee Facility (PGF) for the African member countries of ISA. This PGF, into which investors would buy, would provide partial coverage for late repayments by the electricity user as in interest-free loan. The investor repays the PGF once the repayment has been received.

ISA is also working on the 'One Sun, One World, One Grid' initiative, first highlighted by Prime Minister Modi, to interlink regional grids so that solar electricity can flow from regions where the sun is shining, to regions where it has set. This initiative seeks to minimize the storage investments that countries have to make in order to ensure round-the-clock electricity supply with solar electricity.

These actions seek to make solar as the energy source of choice in all its member countries; the ISA initiatives, largely funded by India, move the entire world-especially countries where solar actions are difficult – towards energy sufficiency, anchored on solar energy.



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# NATURE-BASED SOLUTIONS – A COMPREHENSIVE TOOL TO ADDRESS CLIMATE CONCERNS

By Dr. Vibha Dhawan, The Energy Resources Institute (TERI)

The world is facing a triple planetary crisis of climate change, loss of nature, and pollution. Progress on environmental goals and integrated solutions are crucial. As a result, Nature-based Solutions (NbS) are being increasingly promoted to synergistically address this crisis. Both the G7 and G20 have highlighted NbS as a viable solution.

NbS can help us meet a third of the climate mitigation targets to achieve the goals set under the Paris Agreement. Doubling investments could significantly contribute to reducing emissions (from 5 GtCO<sub>2</sub>/year by 2025 to 15 GtCO<sub>2</sub>/year by 2050), halt biodiversity loss, and restore close to 1 billion hectares of degraded land.<sup>1</sup>

With the tremendous potential of NbS for promoting environment sustainability and growth, India, with its official stand as Ecosystem-based Adaptation (EbA), has developed an effective plan to build resilience to climate change and to become carbon neutral by 2070. With an exemplary strategy to safeguard its environment and development, the country has also laid a path for other developing economies to follow.

In India, NbS have been implemented under different policies, programs, and schemes like the Green India Mission (GIM), MGNREGS, Compensatory Afforestation Fund Management and Planning Authority (CAMPA), National Afforestation Programme (NAP) and National Bamboo Mission, amongst others. Key states including Madhya Pradesh, Maharashtra, Tamil Nadu, Telangana and Uttar Pradesh have been regularly undertaking annual plantation drives to enhance the forest and tree cover. All these have resulted in the stabilisation of the country's forest cover at about 24.62% by 2021.<sup>2</sup>

As part of its NDC commitment, India is to achieve additional 2.5–3 billion tonnes of CO<sub>2</sub>e sequestration by 2030 from the forestry sector by creating additional forest and tree cover, leading to an enhanced carbon sink. As of 2019, India is overachieving this target by 1.25 btCO<sub>2</sub>e, considering 2005 as the baseline. India has also pledged to restore 26 mha of land under Bonn Challenge.<sup>3</sup>

With the potential of the Nature based solutions to reduce global greenhouse gas emissions (GHGs), NbS need to be created, monitored, and protected in sufficient volumes. Lack of funding for NbS is preventing natural habitats from achieving their ecological potential and diminish their ability to sequester carbon from the atmosphere.

For NbS to continue, expand and remain effective, it will need to leverage funds from both the public and private sectors. In addition, the support of new and innovative financing mechanisms, public-private partnerships, market-based offsetting mechanisms, biodiversity credits, green bonds, and other such tools and techniques will be required. On these lines, TERI is using an innovative mechanism that promotes collaborations and Public-Private Partnerships. Through this, private sector finance is made accessible for conserving the environment and uplifting the socio-economic status of the communities.

Channelling resources into the revitalisation and renewal of these habitats has the potential to yield a range of additional advantages. These encompass the generation of employment and economic prospects, the implementation of community-centred management practices, the fulfilment of India's biodiversity obligations, the upliftment of socio-economic conditions within communities, and the consistent provision of essential ecosystem services to society, all while advancing the Sustainable Development Goals. It's important to recognise that Nature-based Solutions (NbS) encompass more than just a climate-centric resolution; they offer a comprehensive strategy to address climate concerns without impeding developmental progress.







A comprehensive tool to address climate concerns, by Dr. Vibha Dhawan, Director General, TERI. With the tremendous potential of Nature-based solutions for promoting environment sustainability and growth, India, with its official stand as Ecosystem-based Adaptation (EbA), has developed an effective plan to build resilience to climate change and to become carbon neutral by 2070.





# LEVERAGING MARKET-BASED INSTRUMENTS TO CATALYSE CLIMATE ACTION

By ReNew

Over the last decade, more and more nations and companies have pledged to address climate change. Carbon offsets are being used as a tool, that has resulted in exponential growth of the carbon credits market. As per Refinitiv, the value of traded global markets for carbon dioxide (CO<sub>2</sub>) permits grew by 164% to a record 760 billion euros (\$851 billion) in 2022. It is set to increase rapidly through to 2030.<sup>1</sup>

**Indian Scenario:** India is one of the leading producers and exporters of carbon credits in the world and accounts for 35.94 million carbon credits issued globally.<sup>2</sup>

India was a world leader in the implementation of the Clean Development Mechanism, accounting for 31% of the total projects registered globally.<sup>3</sup> Two domestically focused policy measures were brought in to allow other markets-based instruments to catalyse clean energy deployment. The Renewable Energy Certificates mechanism was introduced in 2010, to support the deployment of solar and wind power. The Perform, Achieve and Trade Scheme, the world's first industrial energy efficiency trading scheme, was introduced in 2012 and has the mechanisms of Energy saving Certificates in-built in it to enhance the cost effectiveness through certification of excess energy saving which can be traded.

As India remains committed to combatting climate change in line with the Paris Agreement, the Government of India plans to support and facilitate the more formal carbon market through various regulations and policies. Earlier this year the Government announced the draft Green Credit Programme Implementation Rules, followed by the announcement of setting up of a Domestic Carbon Market (Carbon Credit Trading Scheme, 2023).

Indian cities and companies have been active in leveraging the voluntary carbon markets, to create incentives and funding for innovative projects. Various cities like Mumbai, Bangalore, and Chennai have developed Miyawaki forests which is an afforestation strategy that makes use of local species to establish thick and multi-layered forests.<sup>4</sup> The city of Indore is setting an example with its lake restoration initiative. By developing artificial floating islands, it is purifying water and serving as a habitat for birds and other biodiversity in the

region. Ambuja Cement along with Ambuja Cement Foundation has developed a quarry rehabilitation plan. The multifaceted strategy led to the region's freshwater being captured, degraded regions near the Gir forest being improved, development of significant habitats and ecosystems in closed quarries, and the development of mangrove forests. ReNew Cookstove Initiative aims to eliminate emissions and support livelihoods and communities through the distribution of clean cookstoves that are 40% more efficient. ReNew has distributed 60,000+ cookstoves in the states of Bihar and Maharashtra, contributing to an emission reduction of 1,83,888 tonnes.

**Key Learnings and Way Forward:** Article 6 of the Paris Agreement presents an opportunity for India and other countries in the world to further leverage market-based mechanisms, like the carbon market. These can enable new investments for projects on green hydrogen and other sectors like agriculture, that contribute towards welfare of people at the bottom of the pyramid. Robust monitoring and verification mechanisms for the successful implementation of projects, followed by a robust baseline for projects will be critical.



As India remains committed to combatting climate change in line with the Paris Agreement, the Government of India plans to support and facilitate the more formal carbon market through various regulations and policies. Earlier this year the Government announced the draft Green Credit Programme Implementation Rules, followed by the announcement of setting up of a Domestic Carbon Market (Carbon Credit Trading Scheme, 2023).

CO<sub>2</sub>



# CAPACITY BUILDING TO TRANSFORM INDIA'S ENERGY TRANSITION

By Ved Mani Tiwari, CEO, National Skills Development Corporation

As India shapes the global narrative on green growth, it displays the potential to unlock \$1 trillion in value by 2030 and \$15 trillion by 2070 (CDP India Disclosure Report 2021). Further, as one of the global leaders, the country has the ability to produce 35 million green jobs by 2047 ensuring meaningful livelihoods for a large population.

**India's clean energy workforce:** India now holds the fourth-best capacity for renewable energy worldwide. As the country aims to achieve net zero emissions by 2070 and 500 GW of renewable energy capacity by 2030, there is a huge opportunity for jobs and employment in the sector. According to a study by CEEW-NRDC-SCGJ, the renewable sector in India has the potential to create 3.4 million jobs (short and long term) by 2030, amounting to a workforce of -1 million people. Currently, the solar and wind energy sectors employ 164,000 workers with 99% of the new workforce (52,100 workers) employed in the solar energy sector and only 600 new workers in the wind sector.

As the energy transition supports new livelihoods, increases job possibilities, and disperses economic activity away from fossil fuels, we must ensure a just transition of the workforce. As per the International Forum for Environment, Sustainability, and Technology, India requires at least \$900 billion for a just transition with \$600 billion as investments in new industries and infrastructure and \$300 billion as grants/ subsidies to support the transition of coal industry, workers and communities.

**Initiatives:** To facilitate the skill-building of workers in the sector, the Government of India has introduced various initiatives and invested in the creation of platforms for certifying workers in cutting-edge skills. Some of these initiatives include the Pradhan Mantri Kaushal Vikas Yojana (PMKVY), which is a flagship program of the Ministry of Skill Development and Entrepreneurship. It is a skill certification program that aims to enroll Indian Youth in industry-relevant skill training, which would improve their chances of getting a better living. The PMKVY Scheme has been able to enroll 14.8 million candidates with 13.9 million trained/ oriented candidates as of August 2023.

Another important initiative is the Sector Skill Councils (SSC), autonomous and industry-led bodies set up by the National Skill Development Corporation (NSDC). Under this initiative priority sectors have been identified based on skill gap analysis. They construct competence frameworks, establish occupational standards and qualification bodies, and implement trainer training programs, along with assessment and certification of trainees on the curriculum aligned with National Occupational Standards. Currently, there are 37 sector skill councils that are operational with more than 600 corporate representatives in the governing councils.

Under the Sector Skill Councils (SSCs), the Skill Council for Green Jobs (SCGJ) was established in 2015 to meet the need for skilled labor in emerging climate-resilient technologies. Promoted by the Ministry of New and Renewable Energy and the Confederation of Indian Industry, the Skill Council for Green Jobs carries out various capacity-building and skilling activities. Moreover, it aims to develop a strong industry connection in the areas of renewable energy, environment, forest, climate change, and sustainable development.

**Outcome and way forward:** All these initiatives have been successful in imparting the necessary skill set along with rapid capacity deployment. The Skill Council for Green Jobs (SCGJ) provides training across 4 programs (Suryamitra Program, Vayumitra Program, Varunmitra Program, and Jal Urja Mitra) and is creating qualifications for emerging fields in the energy transition space such as green hydrogen, e-mobility, energy storage, and others. Further, SCGJ has developed 50 qualifications across various thematic areas and has imparted training to over 509,000 trainees to date including over 100,000 trainees in the renewable energy sector. Additionally, SCGJ has developed an e-learning management system and has provided virtual training to over 4000 candidates.

Moreover, the Skill Council aims to facilitate 1 million short-term trainings in clean energy, establish 20 centers of excellence across India, and have around 7500 certified trainers.

As these initiatives continue to scale up employment opportunities, it is important to focus on the following:

1. Implement gender-specific strategies for increasing women's participation in green jobs and the clean energy sector. Encourage women to choose Science Technology Engineering and Mathematics (STEM) careers and focus on online courses along with more women trainers to boost women's participation.
2. Reskilling and upskilling measures will play a crucial role in the new sectors in the energy space (like solar modules, hydrogen, battery manufacturing, etc.). There is a need to constantly update the skilling curriculum and introduce industry-specific courses at the higher education levels.
3. Increased efforts to scale up decentralised renewable energy as it has a huge employment potential (specifically in rural areas) and offers benefits and reliable livelihood opportunities for women in India.
4. The energy transition requires a sizable amount of funding for expanding employment opportunities and developing skilling and reskilling programs. To realise the potential presented, it is necessary to develop a clear financial framework.
5. Provide incubation support to entrepreneurs and MSMEs ranging from technological support, business continuity plans and access to credit.



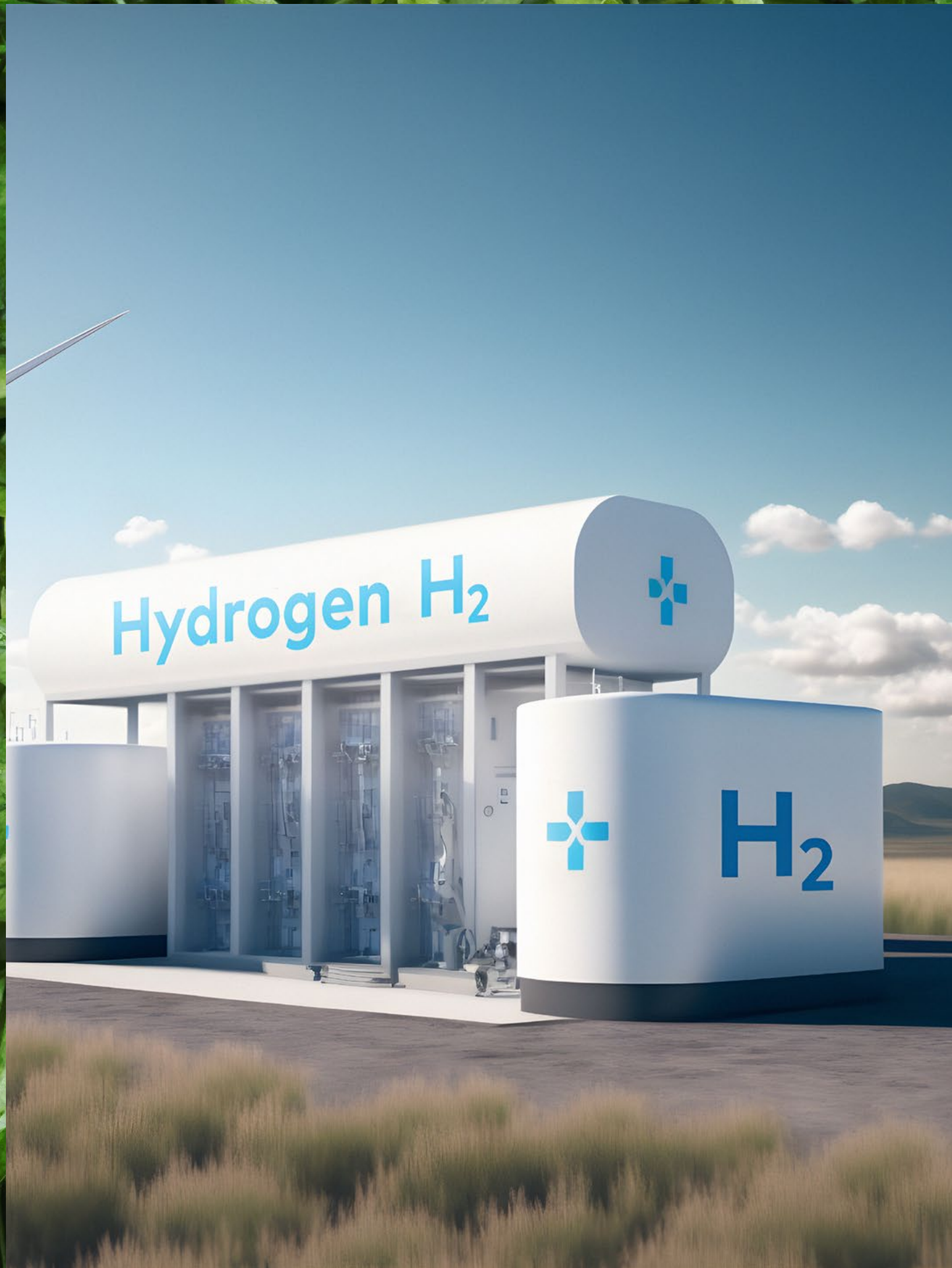
The Skill Council aims to facilitate 1 million short-term trainings in clean energy, establish 20 centers of excellence across India, and have around 7500 certified trainers.



**Renewing energy  
production in the seventh  
largest state of India**

ReNew Wind Site  
Ellutla, Andhra Pradesh





# INDIA'S LEADERSHIP ON GREEN HYDROGEN

By Anish De, Global Head for Energy, Natural Resources, and Chemicals (ENRC), KPMG

As global attention shifts towards sustainable energy solutions, India emerges as a pivotal player in the green hydrogen revolution. While it would have been convenient, and cheaper, to rely on fossil fuel for rising energy needs, the Government of India has aggressively promoted newer forms of renewable energy instead, such as green hydrogen. It is estimated that the cost of green hydrogen in India, currently around Rs. 320 – Rs. 420 per kg, is expected to come down to Rs. 160 – Rs. 170 per kg by 2030.<sup>1</sup> This case study delves into India's proactive approach in championing this clean energy transition.

**Setting the Stage for Change:** With an eye on energy independence by 2047 and net-zero emissions by 2070, India views green hydrogen, hydrogen generated through renewable energy-powered electrolysis, as a cornerstone in its energy strategy.

In January 2023, the Union Cabinet of the Government of India published the National Green Hydrogen Mission with a budget of INR 19,744 crore (\$2.47 billion) till FY 2029-30.<sup>2</sup> The mission will position India as a global epicenter for green hydrogen production, use, and export. By 2030, it aims to achieve a mandated green hydrogen production capacity of 5 MMT per annum. This is half of the 10 million tonnes of renewable hydrogen production target adopted for the entire European Union.<sup>3</sup>

**Addressing Key Challenges:** The high production cost of green hydrogen presents a challenge. Yet, India counters this by facilitating 100% automatic FDI, tax incentives, and schemes for sovereign wealth funds to attract investment and reduce costs.

Emphasizing technological readiness, the nation promotes innovation through renewable energy training institutes and skill councils, ensuring an adept workforce for green hydrogen production. Additionally, a comprehensive policy framework spanning clean energy technologies fosters an environment ripe for innovation and growth.

For sustained leadership in green hydrogen, India is amplifying its renewable energy capacity to 125 GW by 2030, dedicated to support Green Hydrogen. Efficient green hydrogen distribution

necessitates robust transmission and pipeline networks. Thus, India is exploring flexible energy distribution solutions and emphasizing technology advancements to enhance production efficiency.

**Government's Proactive Role:** India's government remains instrumental in this transition, adopting policies aligned with its commitment to reduce GHG emissions intensity of GDP by 35% by the year 2030 from 2005 level.

These policies, spanning various clean energy technologies, champion a comprehensive approach to decarbonization. Furthermore, innovations in India's power market, like a green transmission corridor and renewable energy certificate trading, facilitate the seamless integration of green hydrogen into mainstream energy. India is looking to adopt innovations such as mega renewable energy parks and competitive auctions to streamline costs.

The Government has already pushed large investments from NTPC and Indian Oil into green hydrogen<sup>4</sup>. For example:

- Two hydrogen refuelling stations have already been established one at Indian Oil R&D Centre, Faridabad and the National Institute of Solar Energy, Gurugram.
- The National Thermal Power Corporation (NTPC) has recently set up a tender to establish a first-of-its-kind hydrogen refuelling station to be powered entirely by renewables in Leh through a stand-alone 1.25 MW solar system.
- Various hydrogen powered vehicles have been developed and demonstrated under projects supported by Government of India. These include 50 hydrogen enriched CNG (H-CNG) buses in Delhi by Indian Oil Corporation Ltd. in collaboration with Govt. of NCT of Delhi and 2 hydrogen fuelled ICE buses by IIT Delhi.

India's green hydrogen strategy is a confluence of vision and actionable plans. This New York Climate Week, India's commitment symbolizes its resolute dedication to global climate change mitigation. This case study underscores India's exemplary path in green hydrogen, setting a benchmark for nations globally.



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# INDIA'S WATER MANAGEMENT TO MITIGATE CLIMATE CHANGE AND ACHIEVE HIGH ECONOMIC GROWTH

**By Bharat Lal, Secretary General, National Human Rights Commission (NHRC), Former Director General, National Centre for Good Governance (NCGG), and Founder Mission Director, National Jal Jeevan Mission, Ministry of Jal Shakti, Government of India**

In recent years, climate change has led to long dry spells causing loss of crops and forest fires, increased frequency of cyclones and high intensity erratic rainfalls, leading to devastating floods, loss of life and disruption to economy. With fresh water making up only 2.6% of all water available on Earth and in many parts of the world, paucity of water is becoming a limiting factor in the socio-economic development. Out of 17 Sustainable Development Goals to eliminate poverty, 11 goals are dependent on water. The UN Convention to Combat Desertification Report, 2022 indicates that annually 2.3 billion people face water stress.

In the United States, over the last 20 years, 90% of major disasters were caused by floods, droughts and other water-related events.<sup>1</sup> With as many as 96 out of 204 basins in trouble, water shortages would impact most parts of the US.<sup>2</sup> Southern European countries such as Spain, Greece, Cyprus, Italy and Turkey are projected to face increased water shortages over the next decade, impacting reduced hydropower resources in the region.<sup>3</sup>

Many parts of Africa are known for recurring droughts and acute water shortages. Severe diarrheal disease accounts for about 600,000 deaths each year in sub-Saharan Africa, with the majority being children and elderly.<sup>4</sup> 19 countries, home to half a billion people, are deemed to have levels of water security below the threshold. The whole Middle-East lies in the water scarce arid region.

India, the most populous country in the world with 1.43 billion people, has 17.5% of the world's population but less than 4 per cent of the world's freshwater resources. India also has world's largest livestock population. 47% population depends on agriculture, with animal husbandry contributing significantly to the rural economy. About 43% of its area is arid and semi-arid which receives erratic and scanty rainfall leading to perpetual paucity of water, impacting the lives and livelihood in these regions.

The world's most populous country and its youngest workforce with rising aspirations in an expanding and diversifying economy, has led to increasing demand of water in all sectors. At present, India is world's 5th largest economy and on the road to becoming the 3rd largest by 2028. While agriculture accounts for nearly four-fifth of water consumption, the industry's rising importance for the economy will take its share in total water consumption to 18 per cent by 2050 from the present 10 per cent. Assured availability of clean tap water at homes will free women and girls from the drudgery of fetching water, thus enabling them to join productive economic activities. To ensure that this developmental journey is not interrupted, adequate availability of water in every part of the country to meet the demand of every sector throughout the year is of paramount importance. In India, a drought-prone Gujarat with 70% area under arid and semi-arid zones has shown the way.

In the mid-1980s and late 1990s, Gujarat experienced the worst droughts of the century. The scarcity of water also affected the dairy industry and loss in industrial production. It caused and pushed women to walk miles to fetch water. Every year, a few thousand tankers would be deployed as a mitigation measure to meet drinking water needs. At times, transportation of water through railway rakes became a new normal.

In 1999-2000, the Gujarat economy grew by 1.02 per cent, which went down further to minus 4.89% in 2000-2001. During 1997-2002, growth in GDP of Gujarat was only 2.8 per cent.<sup>5</sup> In this backdrop, Narendra Modi became Chief Minister in October, 2001. He took up water scarcity as one of the biggest challenges and with a series of policies, programmes and actions made the state 'water secure'.

As a first step, focus was to complete stalled Sardar Sarovar dam and canal network to transfer water to drought prone regions. To ensure clean water







supply to every home, a state-wide water grid was created. The state also constructed a series of check dams, farm ponds, and reservoirs to store rainwater and recharge groundwater. Inter-basin transfer of water from South Gujarat to drought prone parts of the state led to recharge of aquifers and by 2008, the depletion of ground water table reversed.<sup>6</sup> River rejuvenation was taken up in a big way and Narmada water was released into 24 rivers. Sabarmati riverfront development in Ahmedabad brought a new perspective on river management. Efficient water use in agriculture was taken up by promoting micro-irrigation such as drip and sprinkler irrigation systems in a big way and more than 20% area came under micro-irrigation. These methods reduce water wastage and enhanced crop yields.<sup>6</sup>

Gujarat has embraced participatory water governance models, involving local communities in decision-making and management of water resources. To facilitate this, in early 2002, Water and Sanitation Management Organization (WASMO) was set up. In every village, Water and Sanitation Committee (Pani Samiti) was set up, which have been actively engaged in water-related activities. Modern technologies including space technology, SCADA systems were employed for mapping and monitoring water sources and water supply networks. Gujarat, which was known for recurring

water scarcity and water transportation by tankers and trains, became a model for water management. As a result, Gujarat achieved double-digit growth including in the agriculture sector in the last two decades. WASMO has been given a number of awards including United Nations Public Service Award in 2009.<sup>7</sup>

In 2014, after becoming Prime Minister of India, Narendra Modi accorded highest priority to water management so that its paucity does not become a limiting factor in the country's quest for socio-economic development and high economic growth. In India, rains are limited to only 15 - 25 days in a year. Only North India has the benefit of rivers originating in Himalayas and get water from glaciers. Thus, efficient water management i.e. collection and storage of rainwater and utilizing it judiciously to meet the demand of different sectors holds the key. In 2014, Prime Minister launched Swachh Bharat Mission and made sanitation a people's movement to make India open-defecation free so that rainwater collected, is stored cleanly. As a result, India became open-defecation free in 2019. In 2015, rejuvenation of River Ganges was taken up as this is the biggest river of the country and more than 600 million people live in the basin.

In 2019, by bringing all water related subjects together, a unified ministry for water management

was created. It has been named Ministry of Jal Shakti and is responsible for both demand and supply sides of management. To make water everyone's business, Jal Shakti Abhiyan was launched in 2019 initially in 256 water-stressed districts. Later on, this was expanded to the whole country as 'Catch the Rain' campaign. Watershed development activities including rainwater harvesting and aquifer recharge structures, afforestation, creation of ponds, etc. were taken up in a campaign mode. In 2022, in every district, work started to create 75 Amrit Sarovars (ponds) so that rainwater is collected and stored. So far, more than 60 thousand such ponds have been constructed.<sup>8</sup> Buoyed with the success of rejuvenation of River Ganga, in 2019, another 13 rivers and their tributaries have been taken up for their rejuvenation. Micro-irrigation and climate-resilient agriculture is being promoted by adopting drought-resistant crop varieties. In the country, with improved water availability, quality of forest is improving, green cover is expanding and wildlife population is on the rise.

To provide clean tap water to every household in 5 years, in 2019 Jal Jeevan Mission (JMM) was launched with an outlay of \$51 billion. At that time, out of 192.3 million rural households having 1 billion population, only 32.3 million (16.8%) households had tap water connections.<sup>9</sup> Use of data analytics, artificial intelligence, IoT have ensured efficient planning and execution with speed and scale. Under JMM, in every village, a 10-15 member Village Water & Sanitation Committee or Pani Samiti as a sub-committee of the local self-government, with more than 50% women and 25% members from marginalized sections of society is formed, which is responsible for planning, implementation, management, operation and maintenance of water resources, water supply, grey water management and operation and maintenance of the systems. During 2019 to 2025, local self-governments are being provided about \$21 Billion as tied grants for water and sanitation services.<sup>10</sup>

While there is a scarcity of freshwater resources, it is observed that a potential source of water which is wastewater, is largely under-utilized. A recent study indicates that when India is able to reuse 80 per cent of its untreated wastewater from 110 of its most populous cities, 75 per cent of projected industrial freshwater demand can be met by 2025 replacing fresh water use.<sup>11</sup> Many States have adopted wastewater reuse policy which provides a fillip for the setting up of treatment plants and safe reuse. Businesses are using innovative technologies and collaborating with stakeholders, trying to price water accurately, diversifying water sources, and reducing the carbon footprint of water-related

processes while advocating for sustainable water policies and practices within the industry.

India's overall work in water management provides a template not only for Global South but also for the developed world so that water availability is improved leading to eco-restoration of forests and lands, rejuvenation of water bodies, thus slowing down global warming and climate change as well as reversing desertification.



Efficient water use in agriculture was taken up by promoting micro-irrigation such as drip and sprinkler irrigation systems in a big way and more than 20% area came under micro-irrigation. These methods reduce water wastage and enhanced crop yields.







# CATALYSING A JUST & EQUITABLE TRANSITION

By Vaishali Nigam Sinha, Co-Founder & Chair Sustainability, ReNew

Just transition is not merely a buzzword; it represents a fundamental shift in the way we approach the monumental task of transitioning to a low-carbon, sustainable economy. Historically, coal-based technologies have dominated the 19th century and early years of the 20th century, with the 1960s seeing a rise in oil usage as gasoline vehicles took off. Fossil fuels continue to dominate the power mix and as of 2021 accounted for 82% of global energy mix.<sup>1</sup> While energy transitions have never included sustainability as a concept, the global clean energy movement – from the early 1990s – is aimed at reducing greenhouse gas emissions, preventing the catastrophic effects of climate change.

However, the concept of ‘energy transition’ in itself is inadequate. ‘Just transition’ takes the idea further, focusing on how this transformation must be equitable, inclusive, and sustainable. Just transition can have different connotations in different geographies. For the developed world, it is individual rights and environmental protection; for the developing world, access to employment, healthcare and nutrition take precedence. For a long time, the framing of just transition has been from the global north perspective.

**Challenges in India:** The Indian government’s ambitious goals of achieving 500 GW of renewable energy capacity and sourcing 50 per cent of energy requirements from renewable energy by 2030 pose challenges along with new opportunities.

One of the central challenges in India’s just transition is the heavy reliance on coal. Coal currently provides 55% of India’s total primary energy demand and employs over 1.2 million people directly, with millions more in the informal economy.<sup>2</sup> It’s no wonder that coal occupies a central place in discussions about a just energy transition in India.

Communities in coal-dominated regions have shown resistance to any transition away from coal because of their income dependence on coal for years. As the clean energy transition creates new jobs, people dependent on coal will find themselves without skills needed for alternative professions.

Moreover, the geographical distribution of this energy transition poses another challenge. States in India with high solar radiation and significant

solar power generation potential are primarily in the western and coastal regions. On the other hand, coal-rich states are predominantly located in the central and eastern parts of the country. This regional distribution requires thoughtful planning and intervention to manage the energy transition’s effects on various populations and areas.

The IEA estimates around 770 million people globally still lack access to electricity, and approximately 2.5 billion people rely on traditional biomass for cooking and heating.<sup>3</sup> Lack of access to energy has a disproportionate impact on marginalized groups, including women, children, and the poor. Women and girls, in particular, bear the brunt of energy poverty, as they are often responsible for collecting fuel for cooking and heating. This not only leads to poverty but also exposes them to health risks associated with indoor air pollution. Shockingly, women account for only about 11% of the workforce in the energy sector in India<sup>4</sup>.

**Drivers & Opportunities:** Despite these substantial barriers, India’s energy transition is propelled by numerous drivers and opportunities. India’s push for clean energy through its ambitious target along with states like Gujarat and Karnataka committing to phasing out thermal power plants, the pace of clean transition is well on course.

Besides, the installation costs of renewable energy have rapidly dropped making them competitive with the cheapest fossil fuels. A recent report by McKinsey suggests that leveled costs of solar energy have plummeted from INR 4.63 per kWh in 2016 to INR 2.50 per kWh in the latest auctions and may fall as low as INR 2 per kWh in the next three to five years<sup>5</sup>. This indicates a tremendous opportunity to make energy access affordable to the last mile.

Furthermore, the declining workforce in the coal sector, coupled with increasing job opportunities in renewables, is expected to generate 3.5 million new jobs in the clean energy sector in India by 2030. This growth offsets the anticipated loss of 2.7 million jobs in fossil fuel sectors, ultimately leading to increased overall employment.<sup>6</sup> Clean energy also presents an enormous opportunity to power livelihoods, with estimates suggesting a market size of approximately USD 50 billion for electrifying rural livelihoods in India.



**Project Surya:** ReNew is helping spearhead a unique, inclusive, on ground, and multi-faceted programme which tackles multiple development goals (including SDGs) in one shot: gender empowerment, poverty reduction, income generation, skill development, a just energy transition, and climate change mitigation.

This new initiative known as Project Surya is a collaborative effort between ReNew, the Self-Employed Women's Association (SEWA) and the United Nations Environment Programme (UNEP). It takes root in Gujarat and specifically targets the underprivileged and underpaid agariya women, toiling relentlessly in the physically demanding and traditional salt pan industry amidst the formidable Little Rann of Kutch marshes. Project Surya helps transition these women into the modern clean energy sector by providing intensive training in solar panel and solar pump technology, positioning them on the front lines of the fight against climate change.

The program was launched in June 2022 in Dhokavada, Patan, with about 60 women and will eventually see around 1,000 women trained in these new clean transition roles/supporting roles at renewable facilities in Gujarat, supported by the Government of India's National Skill Development Corporation. With the potential for scalability, Project Surya has the potential to transform the



lives of tens of thousands of women engaged in various lower-income traditional livelihoods across the country. This approach not only boosts income but also empowers women and contributes to India's clean energy evolution.

Salt farming in India is hard work. Women must brave the extreme temperature of the barren Thar desert, where they have to set up huts, dig wells, and pump-up brine, then they sift through a series of pans, eventually crystallizing salt. Apart from the pumping, all elements of the process are completed manually.

These women who usually live for six to seven months in makeshift shacks beside the salt pans, generally work without contracts. The pay is very poor and they are stuck in a cycle of debt and poverty. In fact, in 8-10 months they manage to save only around Rs 10,000 while, on average, a solar panel technician—for which some of these SEWA sisters are going to be trained—can earn an average of INR 12,000-18,000 a month.

Project Surya is one of many solutions which embodies the principle of just transition. It urges us to work collaboratively to ensure that every individual and community benefits from the transition to a sustainable and equitable future.

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The views expressed in this report are solely those of the individual authors and contributors.



An aerial photograph of a vast, dense forest with a rich green canopy. The trees are packed closely together, creating a textured, layered appearance. The lighting is soft, highlighting the various shades of green from deep forest greens to lighter, sunlit areas.

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LEADING TO A SUSTAINABLE FUTURE