

NEWSLETTER

January - February 2023

• Volume 13 & 14





FROM DIRECTOR

We opened the year by welcoming two new member countries to our fold: the Republic of Congo and New Zealand. At the same time, the Republic of Cyprus and the Federative Republic of Brazil have ratified the Framework Agreement of ISA. In addition, the Power Division, Ministry of Power, **Energy and Mineral Resources** (MPEMR) of the People's Republic of Bangladesh, among the earliest supporters of the ISA, signed a Country Partnership Agreement to accelerate the deployment of solar energy in Bangladesh.

As an international organisation partner of the 2023 G20 Presidency, we participated in the first global energy event, India Energy Week, hosted in Bengaluru from 6-8 February. Our Pavilion hosted focussed discussions in collaboration with our partners on building resilient solar supply chains, solar water pumping, green hydrogen, a roadmap for universal energy access with solar, and the SolarX Grand Challenge. How ISA is advocating to drive climate action through its initiatives in the G20 process are detailed in this edition.

Our leading initiative, the SolarX Grand Challenge, launched post the fifth ISA Assembly in October last year, hosted its first roadshow in Cairo, Egypt. Organised in collaboration with Invest India, General Authority for Investments and The American University in Cairo. Startups and small business entrepreneurs were exclusively invited to encourage their participation in this unique initiative and create awareness about the importance of local solutions.

I also had the opportunity to meet numerous distinguished leaders and delegations in person in Davos, where representatives from all walks of life met once again to synergise efforts for sustained climate action.

We at ISA look forward to your continued cooperation, collaboration, and alliance in taking our work onwards and upwards in the coming days.

With best wishes

Ajay Mathur

Director General, International Solar Alliance

SNAPSHOT

REFLECTIONS FROM DAVOS: INACTION IS NOT AN OPTION

As the world economies recovered from the pandemic, global energy demand rebounded and surged beyond pre-pandemic levels. At the same time, the Russian invasion of Ukraine has deeply impacted global energy markets. Many European countries have responded to this crisis by switching to fossil fuels. For instance, some countries increased coal consumption to safeguard against volatility in the supply and price of natural gas. Few countries have also re-examined their decarbonisation roadmaps given these concerns on energy security.

There has also been an increase in extreme weather events, such as heat waves, experienced in India in 2022. This led to a spike in space cooling and electricity demand. India had to burn more coal to meet the surge in electricity demand. Similarly, in neighbouring Pakistan, from mid-June 2022 until the end of August, recordbreaking monsoonal rainfall was experienced, flooding large parts of the country. The flood submerged over 30 per cent of the country's territory, affecting more than 33 million people.

These developments have led to rising concerns about current the world will be able to achieve the global climate goal of restricting warming to within 1.5 C. Or whether the urgency of attaining energy security will come with a heavy environmental penalty. The present rush towards fossil fuels is a temporary phenomenon to tide over the present precisely. This is understandable, given that, it takes time to ramp up renewable capacity to meet the deficit. However, this crisis also underlines the need for a structural shift to clean energy technologies in the long run, to avoid similar crises in the future. Many countries are exactly working on such policies. For instance, the Inflation Reduction Act of the US is an ambitious effort to move on clean technologies. Likewise, the EU announced Fit for 55. India has ambitious plans, including the recently launched Green Hydrogen Mission and a 500 GW renewable target by 2030. These policy announcements need to be supported with appropriate financial instruments so that the countries build RE capacity and achieve their targets. The rapidly falling costs of clean energy (solar, storage etc.) provide enormous momentum. We cannot afford to dilute the climate goals, as inaction is not an option.

Energy is inextricably linked to virtually all the SDGs. At the same time, progress towards achieving the other SDGs can also contribute to achieving SDG 7 – ensure access to affordable, reliable, sustainable, and modern energy for all. Transforming the world's energy systems will create new jobs, advance gender

equality, and empower people, communities, and societies. Presently, the energy sector is the source of nearly three-quarters of GHG emissions, which has been the primary source of climate change worldwide. Annual energy-related and industrial process CO₂ emissions are expected to rise from 34 Gt in 2020 to 36 Gt in 2030 and remain around this level until 2050. If continued in this fashion, this would lead to a temperature rise of around 2.7°C by 2100. Thus, in the fight against climate change, the world is presently witnessing a significant transition in its energy sector with dynamic modifications on both the supply and demand sides. However, the dynamics of this transition are taking place differently in different countries.

To reach climate targets, energyrelated carbon dioxide (CO₂) emissions would have to be reduced by 70% by 2050 compared to current levels. A large-scale move to renewable power may yield 60% of those savings, 75% if renewables for heating and transportation are included, and 90% with increased energy efficiency. As electricity becomes the primary energy carrier, renewable energy sources such as solar and wind may provide 86% of the power demand. The past decade has set a solid initial momentum to transform the energy systems for the decades ahead. "Energy transition for a net-zero economy" has been a hot topic of discussion among leaders across the globe. To date, more than 137 countries & self-governing sovereigns have pledged to achieve the net-zero emissions target,



covering more than 83% of global emissions, 91% of global GDP, and 80% of the worldwide population. The world witnessed an exponential rise on the investment front, with a 27% increase in energy transition investment across various technologies in 2020-21, with global investments reaching a record high of USD 755 billion. China led the charts with an investment of USD 266 billion.

The adoption of solar energy systems has become of prime importance in this scenario as solar power continues to be one of the lowest costs and most economical solutions for adding generation capacities to cater to both on-grid and off-grid demand. At the same time, synergies of solar technologies with other emerging technologies, such as energy storage, and

hydrogen, must be considered as we aim to achieve the net-zero target in our energy transition path. Despite the benefits and the pressing need for accelerated adoption of solar systems, there hasn't been a uniform deployment of solar technologies worldwide. Thus, this refutes the notion that countries with high technical potential for RE adoption shall benefit the most and lead in the race for renewable adoption.

ISA INTERVENTIONS

A VISUAL RECORD OF OUR AMBITIONS, ACTIVITIES, AND ACTIONS











S IRENA

- ISA hosted a media delegation from UAE, Bahrain, Oman, and Saudi Arabia as part of the familiarization programme organised by the Ministry of External Affairs, India to help the journalists gain insights into ISA's activities.
- DG-ISA delivered a keynote at Alliance for an Energy Efficient Economy's flagship event remarking, "The integration of energy efficiency with decarbonisation is the way ahead. Enabling cheaper financing will help India achieve decarbonisation goals."
- 3. COO-ISA, Joshua Wycliffe, participated in the International Water Management Institute's Regional Knowledge Forum: Energizing Agriculture & Enabling Just Energy Transitions in South Asia and shared learnings on agriculture and energy transition in South Asia.
 - 3b: ISA's P.C. Sharma presented the importance of capacity building & programmatic support for project development in member countries
- DG-ISA met Hon Nanaia Mahuta, Minister of Foreign Affairs New Zealand and had engaging discussions on increasing solar deployment in Pacific islands.
- DG-ISA met Kris Peeters, Vice-President, European Investment Bank & discussed ISA's new initiatives particularly Solar Facility and strengthening collaborations for scaling up investments and facility across Africa.
- DG-ISA met with HE Mateja Vodeb Ghosh, Ambassador of the Republic of Slovenia, & discussed wide-ranging issues concerning solar & how Slovenia - ISA can strengthen their work together.
- DG-ISA visited the Turkish Embassy, in New Delhi and offered his condolences to the people of Türkiye for the tragic loss of lives and injuries arising from the earthquakes.







SO IRENA

 DG-ISA met HE Jennifer Morgan, State Secretary & Special Envoy for International Climate Action. Germany to discuss areas of cooperation including solar mini-grids, green hydrogen, payment guarantee mechanisms and capacity building.

























- Investment professionals from the global firm, UBS, visited the ISA Secretariat & participated in discussions regarding solar technology, finance, manufacturing and propelling investments in solar across regions.
- 10. COO-ISA addressed youth as part of the 4th edition of the Youth Climate Conclave. An initiative to connect with youth & help them embark on a journey of learning about climate change and bringing a paradigm shift in their behaviour.
- 11. DG-ISA HE Soda Zhemu Zimbabwe's Minister of Energy & Power Development & HE Godfrey Majoni Chipare, the ambassador to India. They discussed enhancing rural energy access, floating solar, mini-grids as the major pillars of ISA's support to the country.
- DG ISA visited ADB headquarters and met ADB leaders in Manila. They discussed increasing solar deployment in SIDS & LDCs, ISA's blended finance facility for APAC and strengthening collaborations.
- 13. In the session on 'End-of-life management of Solar PV & Circular Economy' at the 13th IRENA Assembly, DG-ISA stressed collaboration between governments, development institutions & manufacturers to find a solution for recycling & reuse of waste.
- 14. DG-ISA addresses the inaugural of the Online Training on Rooftop Solar Projects & Solar Mini-Grids, for Women Professionals of Ethiopia & Sudan. The training programme aims to bridge the knowledge gap & impart technical skills to ISA Member countries' stakeholders.
- 15. As part of the Clean Energy Ministerial Secretariat transforming solar workstream, ISA, in collaboration with IRENA, USA, India, Australia, UAE & Germany, hosted a workshop on Building Resilient Global Supply Chains. The session highlighted the importance of incentives, research & collaboration.
- 16. ISA & Invest India, in collaboration with WAIPA, organised a specially curated capacity-building workshop for African IPAs. The session was centred on tapping the potential of the solar sector in Africa, with a focus on SolarX Grand Challenge.

OPINION

THE POTENTIAL OF THERMAL STORAGE

As many people now know, solar is the cheapest form of new electricity in most tropical countries and by 2030 is projected to be the cheapest form of new electricity in almost every country worldwide¹. To use solar all day, however, some form of storage is required and batteries are often perceived as being too expensive.

However, 10% of global electricity is currently used for cooling², and thermal storage to shift AC load from the evening can save substantial costs, reduce the burden on electricity grids during evening peaks, and reduce the amount of battery storage required.

Thermal storage is technically quite simple. Effectively you "precool" a tank when electricity is cheap/abundant and then use that pre-cooled fluid to cool when electricity is more expensive/unavailable. Companies like Inficold have a commercially available product on the market for off-grid applications. Solar runs the compressor (refrigerator) during the day, and "overcools" a tank of water. The chilled water is then circulated (a small conventional battery is required to store excess solar to run the pumps) to provide cooling during the non-solar hours. Even including the cost of pumps, fans, etc., this works out to \$20-40/kWh, about a tenth of the cost of battery storage.

Using ice rather than chilled water allows for colder temperatures and is more compact, though is slightly less efficient and more complex technically. For many applications, water/ice is sufficient, but to get even more compact solutions and a wider temperature range, various "phase change materials" (PCMs) can be used.

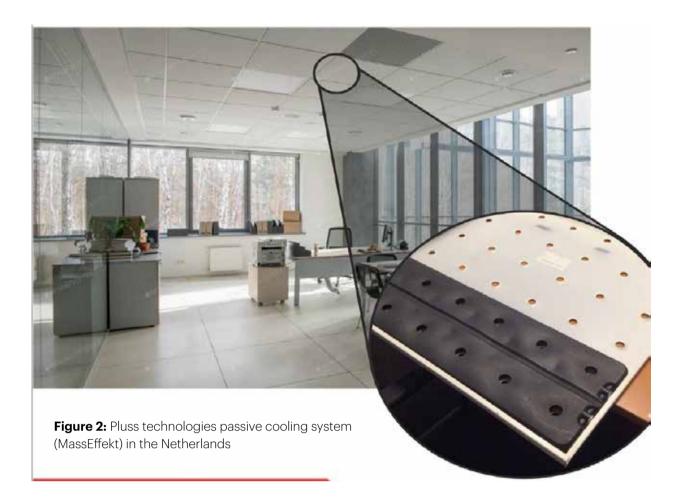
For example, Pluss technologies offer a passive cooling system which uses a 20 or 22-degree PCM to absorb heat during the day and release it at night, providing "free" cooling in countries such as the Netherlands which are cool during the night and warm at day. Even if free cooling is not possible, the AC load can be shifted to night when there is cheap electricity, or day when there is surplus solar.



Figure 1: Inficold Solar + storage solution in rural India

https://www.exeter.ac.uk/media/universityofexeter/globalsystemsinstitute/documents/ GSI_working_papers_solar_August.pdf

² https://www.iea.org/reports/the-future-of-cooling



These solutions can be scaled up even larger. At GIFT City near Ahmedabad, there is a 10,000 TRH (about 3 MWh) thermal storage unit associated with the district cooling system, which will be scaled up as the system expands. Again the cost is about \$30/kWh of storage, even including all the associated systems. District cooling in general is more efficient (though is even more efficient if it uses a water source, such as the district cooling system in Toronto), and can be entirely solar-powered if enough thermal storage is installed. By putting all HVAC through solar + thermal storage, peak demand can be reduced by 10-15% and cooling (or heating) can be 100% solarized.

Thermal storage can be used for standalone systems (eg. solar cold storage units above), 55 MW systems (district cooling) and everywhere in between, for residential, commercial or industrial installations. There is a slight additional space premium, but at least C&I buildings (or residential buildings with central AC) would be well-managed within existing rooftop space. Of course, this is ideally used in conjunction with more efficient ACs and better-insulated buildings. Though thermal storage is already cost effective today, companies continue to invest in improving the technology and designing new applications, such as IOCL's thermal storage cooler.

While this article focuses on cooling applications, thermal storage can also be used for solar heating, such as the Drake Landing community in Canada being heated entirely on solar thermal district heating. Furthermore, PCMs can be used for commercial and industrial applications as low as -75 and up to 500°C, with further research and testing up to 2400°C. Finally, thermal storage can also be used to store electricity, and serve to



Figure 3: Thermal storage tank (using chilled water) for the district cooling system at GIFT City

balance solar and wind both daily and seasonally.

Nearly half of the world's energy consumption is directly used for heating and cooling. Using thermal storage, this can almost entirely be solarized, drastically lowering costs, reducing the burden on electric grids and eliminating carbon emissions.

Author: Alexander Hogeveen Rutter, Private Sector Specialist, ISA

³ https://www.dlsc.ca/

⁴ https://www.mckinsey.com/capabilities/sustainability/our-insights/net-zero-heat-long-duration-energy-storage-to-accelerate-energy-system-decarbonization

ROUNDUP

INTERNATIONAL SOLAR ALLIANCE AND THE GOVERNMENT OF BANGLADESH INK A COUNTRY PARTNERSHIP AGREEMENT TO ACCELERATE THE DEPLOYMENT OF SOLAR ENERGY

The collaboration will facilitate Bangladesh's adoption of solar energy by developing suitable policies, regulatory frameworks, and other interventions.



ISA signed a Country Partnership Agreement with the Government of People's Republic of Bangladesh's Power Division, Ministry of Power, Energy and Mineral Resources (MPEMR), to facilitate enhanced solar energy deployment. The Country Partnership Agreement is a strategic document that outlined the areas for collaboration between the Power Division, Ministry of Power, Energy and Mineral Resources, Government of the

People's Republic of Bangladesh, and International Solar Alliance to achieve common solarisation goals. The projects and programmes identified for collaboration are based on the Government of People's Republic of Bangladesh priority areas and aligned





with the areas identified for collaboration with ISA strategic partners such as the Asian Development Bank, Global Energy Alliance for People and Planet (GEAPP), Bloomberg and others.

Further, the partnership agreement has been signed to lead Bangladesh in creating a bankable solar project pipeline and attract investments. By helping steer policies and regulatory frameworks, solar projects will have the potential to be replicated and scaled up. The Country Partnership Strategy, a part of the Country Partnership Agreement will be implemented by December 2026. The Government of Bangladesh and ISA will also work on preparing the country's Solar Road Map 2021-2041.

Bangladesh has been among the earliest supporters of the ISA, having joined as a Member Country in 2016. The signing of this Agreement will further strengthen the collaboration and help collectively make noteworthy strides in solar deployment by galvanising relationships with international partners. Solar is fast becoming the preferred energy of choice worldwide, and Bangladesh has significantly promoted solar energy applications, particularly on rooftops. With policy and regulatory support, investments in solar can be accelerated. Together we can build institutional capacities, mobilise investment and scale up solar adoption.

To help oversee implementation, a Steering Committee will be established under the aegis of which the following projects will be taken up:

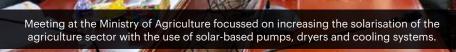
- Installation of 12 trolley-mounted portable solar irrigation systems ,12 portable solar paddy threshers of about 2KW capacity each and Installation of a portable solar drinking water plant of about 1.5KW capacity for Bangladesh Rice Research Institute (BRRI)
- Installation of solar cold storage for the preservation of agriculture produce

- Develop a rooftop project at Chittagong or any other railway station suitable for construction (railway station)
- Installation of a floating solar project in Gazaria, Munshigonj or any other suitable sites
- Automation of two manually operated sluice gates at Sujanagar, Pabna and Jobai Beel, Naogaon, using solar power.

Capacity building across the solar value chain will be another area of focus. In addition, a Solar Technology Application Resource Centre (STAR-C) will be established at Bangladesh Power Management Institute (BPMI), encouraging the exchange of information and best practices, promoting quality assurance of solar products, strengthening technological and financial capacities, and deploying innovative technologies.

The ISA delegation led by the Director General, Dr Ajay Mathur, visited Dhaka from 21 to 24 February and had bilateral meetings with the Hon'ble State Minister, Ministry of Power, Energy and Mineral Resources, Ministries of Agriculture, Health, Water Resources, Environment, Forest and Climate Change, Power, Energy and Mineral Resources and hosting of a National Stakeholder Consultation Workshop for Scaling Solar Energy in Bangladesh.





ISA INITIATIVES

PROMOTING SOLARX GRAND CHALLENGE AMONG EGYPTIAN ENTREPRENEURS



The International Solar Alliance and Invest India, in collaboration with General Authority for Investments (GAFI) and The American University in Cairo (AUC), organised a capacitybuilding and knowledge-sharing workshop for startups and small business entrepreneurs in Cairo, Egypt, from 20 - 22 February to encourage entrepreneurship in solar and create awareness about ISA's SolarX Grand Challenge programme. The session highlighted essential aspects of the solar energy ecosystem, key information on the criticality of entrepreneurship in solar and climate change, 'problem statements' necessary to find sustainable pathways, and valuable knowledge that local entrepreneurs may utilise while participating in this exclusive initiative.

The SolarX Grand Challenge aims to accelerate investments in solar by creating a pool of entrepreneurs and

start-ups in the solar energy sector of ISA Member Countries. The first edition is focused on the African region, aiming to promote innovation, discover local solutions, and enable entrepreneurs to build human and institutional capacity to sustain and grow solar businesses. The SolarX Grand Challenge will enable three-fold benefits in technology, finance, and innovation, thereby creating the start-up ecosystem of the solar energy sector.

A Stakeholder Roundtable held on 21 February, themed, 'Promoting Entrepreneurship and Innovation through SolarX Grand Challenge' organised by GAFI and AUC, with participation from key ecosystem enablers such as incubators, investors, banks, and academic institutions, helped participants establish great connections both for outreach and for the acceleration phase of the programme.

Interactions with prominent stakeholders during the visit, including incubators like Flat6Labs, NilePreneurs, and EiTESAL Business Nurturing Initiative, were held along with fruitful interactions with the Embassy of India, Egypt, and the Ministry of Electricity and Energy, IT Industry Development Authority, which further enhanced the proceedings and takeaways.

Over 25 companies and startups attended the capacity building workshop, and 20+ stakeholders participated in the Stakeholder Roundtable.



ISA ENABLERS FOR THE AFRICA REGION

Capacity Building Initiatives for ISA Member Countries from the West and South Africa Region

To provide clean energy access, ISA Member Countries are increasingly prioritising solar energy for sustainable economic growth and the well-being of their people. For this to happen, countries require schemes and programmes for accelerated uptake of solar energy for driving investments, innovations, and new industries.

ISA kicked off a training programme for government officials including

policymakers of ISA Member Countries from the West and South Africa Region on 'Integrating Solar Energy in the Existing and Developing New Development Schemes & Programmes'. ISA has designed the content of the training programme in such a way that it will help foster the design and development of schemes and programs that are capable to respond to the variety of challenges including energy access faced by rural areas. These trainings are being conducted as part of the STAR C: Solar Technology Application Resource Centre initiative for all the ISA Member Countries, region-wise, for better understanding and region-specific case studies.





COP27 REWIND

DECARBONISATION OF THE GLOBAL ENERGY USE AND POWER SECTOR WILL AID IN ACHIEVING THE PARIS CLIMATE AND UN SUSTAINABLE DEVELOPMENT GOALS

As the world grapples with escalating climate impacts, energy security, and supply chain issues—scaling solar energy is essential to decrease dependence on fossil fuels and ensure that all people have access to clean, affordable, and reliable energy. To meet net-zero emission goals, the International Energy Agency (IEA), BloombergNEF (BNEF), and others estimate that solar will need to grow to be the largest single global energy source by 2050. International Renewable Energy Agency (IRENA) analyses indicate that limiting global warming to 1.5 degrees Celsius will

require the installed capacity of solar PV to grow seven-fold by 2030 and twenty-fold by 2050 over 2020 levels.

To achieve this level of growth, the average annual investment in solar PV needs to more than double in this decade (IRENA, BNEF). Solar technologies have the potential to deliver new energy access to millions of people by 2030 and improve global energy security and resilience. Cost declines for solar energy and battery energy storage have made solar cost-competitive with fossil fuels and other renewable energy solutions. Many countries—particularly developing countries—have significant untapped solar energy potential. To fill this gap, there is an urgent need to ensure that finance and investment are more equitably distributed. Between 2016 and 2020, all emerging markets and developing economies, excluding China, accounted for only 20 per cent of global investment in solar energy. Developing the

abundant solar resources in sub-Saharan Africa, Southeast Asia, and the Latin America and Caribbean region is critical for improving energy access and security. For example, although Africa has 60 per cent of the world's solar resources, the continent accounts for less than 1 per cent of global solar installed capacity. With 75 per cent of the global population lacking access to electricity, Africa received only 4 per cent of global power supply investment in 2020.







WORKING PAPER

Our Solar Future Roadmap to Mobilize USD 1 Trillion by 2030

Jennifer Layke, Laura Van Wie McGrory, Xixi Chen, Jan Corfee-Morlot, and Kevin Kennedy

The Our Solar Future: Roadmap to Mobilize USD 1 Trillion by 2023

launched at the COP27 ISA Pavilion helps meet a critical need for a massive and more equitable scale-up of investment in solar energy. The Roadmap provides recommendations for mobilising \$1 trillion of investment in solar energy solutions by 2030 by tackling policy and market barriers in all solar market segments, reducing investment risk in developing and emerging economies, and spurring a new level of international collaboration to overcome global investment challenges at scale.

Based on inputs from over a hundred solar investment and development experts—and building on analyses from the Intergovernmental Panel on Climate Change (IPCC), International Energy Agency (IEA), International Renewable Energy Agency (IRENA), and BloombergNEF (BNEF) and others—the Roadmap identifies both near-term actions and broader collaborative efforts to overcome barriers to scaling solar.

The Roadmap identifies and prioritises means to overcome barriers to scaling solar investment, particularly in developing countries and emerging economies. It focuses on solutions with the most significant potential to

- catalyse private investment;
- improve energy access and energy security; and
- provide other socioeconomic benefits.

Recommended solutions include actions countries can pursue in four solar market segments: off-grid and decentralised solar, utility-scale and grid-connected solar, energy storage and grid flexibility infrastructure, and advanced solar and storage technologies. Addressing barriers that cannot be solved at the country level, this roadmap offers recommendations for new collaborative actions by international institutions, governments, and private sector actors.

To read the complete working paper, visit: https://isolaralliance.org/uploads/docs/e90583619e442a2b277b445050eeac.pdf

Clean energy transition scenarios by the International Energy Agency (IEA), International Renewable Energy Agency (IRENA), and Intergovernmental Panel on Climate Change (IPCC) suggest that this will require a dramatic increase in renewable—and particularly solar—energy deployment over the next few decades, especially in developing countries and emerging economies.

The Intergovernmental Panel on Climate Change (IPCC) points to solar energy as the mitigation option with the highest potential contribution to net greenhouse gas emission reduction.

Towards COP28 UAE

Continuing our COP27 trend, the ISA pavilion at COP28 is poised to be a hub for everything 'solar'! We invite you to join us in showcasing your actions, ambitions, and achievements. Reach out to us at **communications@isolaralliance.org** with your plans and priorities.

NEW DEVELOPMENTS

We welcome the Republic of Congo and New Zealand to the International Solar Alliance and thank the Republic of Cyprus and the Federative Republic of Brazil for ratifying the Framework Agreement of ISA.











SPOTLIGHT

A SPOTLIGHT ON ISA'S 2023 G20 INTERVENTIONS



As the first major event under India's G20 Presidency, India Energy Week 2023 was hosted at the Bangalore International Exhibition Centre, Bengaluru, from 6-8 February 2023. On occasion, ISA, an international organisation partner to the 2023 G20 Presidency of India, hosted a pavilion over three days showcasing its activities and achievements and conducted immersive discussions on important themes in a hybrid format to maximise participation and reach. Led by the Ministry of Petroleum & Natural Gas, Government of India, India Energy Week was an all-encompassing international energy event supported at the highest level of the Indian government, with participation from all the Public Sector Undertakings (PSUs) and officially endorsed by the Federation of Indian Petroleum Industry (FIPI).

ISA exclusively led two of the scheduled six sessions on SolarX Grand Challenge, a competitive initiative to encourage clean energy entrepreneurial ventures in Africa, and Roadmap of Solar Energy for Universal Energy Access, highlighting the role of solar mini-grids. The other sessions were hosted in collaboration with The Council on Energy, Environment and Water (CEEW), the World Bank, United Nations Development Programme (UNDP), and Asian Development Bank

on the themes of building resilient solar supply chains, Lighthouse Session on Scaling Solar, solar water pumping, and green hydrogen.

Dr Ajay Mathur, Director General, welcomed ISA's participation at this important first global congregation hosted under India's G20 presidency. He remarked, "ISA, through its workings, reflects the priorities of India's G20 philosophy of "healing our 'One Earth', creating harmony within our 'One Family' and giving hope for our 'One Future'." As a collaborative platform, ISA is working towards bringing energy access, ensuring energy security, and driving energy transition in its Member Countries."

As an important ally of the G20 processes of India's presidency, ISA advocates in favour of important themes that will aid the global energy transition.

Roadmap for promoting solar energy for universal energy access

Electric access is one of the vital primary indicators of sustainable global development. United Nations General Assembly, in 2015, set SDG7 (Affordable and Clean Energy) as one of the 17 Goals with the objective of "Ensuring access to affordable, reliable, sustainable and modern energy for all."





It is estimated that globally, 733 million people do not have access to electricity, of which 75% live in sub-Saharan Africa. Around 80 per cent of the world's people without electricity resided in rural areas in 2020, limiting their opportunities to access quality public services, rise out of poverty, and improve their livelihoods. With the current electrification rate, approximately 670 million people will be without power by 2030.

ISA has supported its Member
Countries to scale solar energy to
accelerate energy access. ISA analysis
shows that extending grid electricity to
rural areas could be more commercially
viable and thus remains the critical
challenge in achieving universal energy
access. Developing solar-powered
mini-grids would be the best solution to
accelerate energy access in rural areas.

In Africa, over 3,100 mini-grids serve around 7 million people. Most of these mini-grids have been built with the financial assistance of government and donor funding and depend on them for operational support, which could be more sustainable and scalable. However, there is an emerging sector in which private enterprises build solar mini-grids with battery storage and sell the power to recuperate their costs.

There are many solar mini-grids with sustainable business models successfully established & operating in countries like India, Nigeria, Kenya, and Tanzania. These are set up based on favourable policies and regulations created by the governments. ISA is working to promote such models for other countries in Africa.

As part of this initiative, the following are being undertaken - assessment of countries in Africa with low electricity access; showcasing mini-grids installed and operating in various countries through sustainable business models; supporting the nations for the creation of enabling policies and regulations to adopt sustainable business models; capacity building; design of solar finance facility with payment guarantee, insurance fund, project fund etc., to promote investor confidence; and promotion of entrepreneurship with a focus on women entrepreneurs.

ISA will work with G20 the accelerate initiatives to promote solar-powered mini-grids in Africa for clean energy access in rural areas.

With objectives of harmonising solar supply chain standards, agreeing to guidelines for quality, 'low carbon' and social standards and support for demand aggregation and financing supply chain capabilities in emerging markets. ISA interventions in this direction will include studying kinds of financing instruments which can be developed by individual countries or the G20 as a whole set up to support solar manufacturing identifying competitive advantages/potential niches for each G20 country (or a sub-set of G20 countries) and G20 invitees (Nigeria, Bangladesh, ASEAN, Egypt, and Oman) within the framework developed by ISA. This will investigate what gaps currently exist. For example, access to capital, technology, and skilled labour among the target countries. Which existing/ proposed standards are leading to or potentially leading to the fracturing of solar supply chains? ISA would also be hosting regional workshops on developing regional supply chains, and the first workshop was hosted for West Africa on 15 December 2022. ISA would also host one of the workshops as part of the Energy Transitions Working Group events of G20.

Support from G20, the form of concessional financing/guarantees to support solar manufacturing, in particular, module assembly and assembly of equipment for solar homes, solar businesses and mini-grid systems would help to harmonise guidelines and regulations with emerging global norms rather than creating country-specific standards.

ISA's dedicated programme, **Solar** for Green Hydrogen, supports its membership in GH2 deployment across various end-use sectors. It will also assess and support ecosystem readiness, including appropriate standards and certifications, to channel investments in the sector and build capacity to create and strengthen domestic and cross-border hydrogen value chains¹.

Strategies for accelerating the production and utilisation of Green Hydrogen in G20 include highlighting technological advancements, including those in the currently evolving electrolyser sector; benchmarking of regulations, codes, and standards (RCS) for green



hydrogen production and use, based on the state-of-theart certification and protocols; a market analysis by tracking country-level current status/potential for GH2 production, cost and demand of electrolysers, policies for mitigating investment risk, long-term offtake agreements, and cross-country trade; and strengthening the green hydrogen supply chain by integrating the technology providers and manufacturers of electrolysers and fuel cells, balancing supply with growing demands in the GH2 market, and ensuring critical materials availability for electrolysers.

A virtual Centre of Excellence (CoE) platform will be developed, which will operate across G20 member countries to provide leading-edge knowledge and competency to advance green hydrogen production and utilisation. The platform will facilitate the creation of a Task Force and Working Groups across Member Countries to assess and facilitate the GH2 readiness level. This includes compiling supporting policies and regulations and creating a suitable environment to identify investment opportunities in commercially viable projects; consolidating global analytics related to the sector, including best practices/case studies as knowledge exchange and capacity-building measures; Trade; establishing a 'G20 Alliance' of GH2 stakeholders encompassing, among other things, frontrunner member & non-member countries, public and private sector stakeholders including OEM manufacturers, to develop knowledge products on technology and innovations, common harmonised standards, identify and assess policy & regulatory gaps in the green hydrogen sector, and build political & business momentum in favour of green hydrogen as a mid-tolong term energy vector for net-zero emissions; support national priorities/ambitions of G20 member countries through readiness assessment and facilitate the development of national roadmaps for transitioning towards a green hydrogen economy.

¹ ISA Solar for Green Hydrogen, Programme Initiation Document (https://isolaralliance. org/uploads/Solar%20Hydrogen%20Report.pdf)

