

EASING SOLAR DEPLOYMENT GLOBALLY

FROM DIRECTOR GENERAL'S DESK



For easing and accelerating solar deployment, ISA is working to build capacity, mobilise finance, supporting scalable business models, and advocating for better policies. These endeavours actively play a role in combating climate change, propelling sustainable progress, and realising the key goals set to achieve net zero.

As an important ally of the 2023 G20 processes, ISA has advocated for important themes that will aid the global energy transition and benefit many countries and, most importantly, those in the African continent as they work towards their 'stocktake' ahead of COP28. The recently launched Roadmap of Solar

Energy for Universal Energy Access will help ISA's work to accelerate initiatives to promote solar-powered mini-grids in Africa for clean energy access in rural areas. During India's G20 Presidency where ISA has been an international organisation partner, it has established a Green Hydrogen Innovation Centre (GHIC). This platform will support the production, utilisation, and trade of green hydrogen, besides providing a platform for knowledge sharing, and building competency across the green hydrogen value chain. The GHIC will also provide opportunities to incubate Startups and host Expert Working groups to support the scale-up of the green hydrogen ecosystem in member countries. The Platform will serve as a dynamic one-stop gateway to access detailed information related to the sector.

ISA is also doing significant work to find solutions for the challenge posed by a heavy concentration of solar manufacturing in certain pockets of the globe. We released a report - Building Resilient Global Solar PV Supply Chains, at the CEM-14/MI-8 & G20 Energy Transition Working Group, Goa Meetings, and discussed it in detail with stakeholders. We continue to explore and exchange expertise leading to promoting the use of solar energy as a cost-effective and reliable source of electricity across newer avenues and applications. Our memorandum of cooperation with Airports Council International is a step forward in fostering sustainability and environmental stewardship in the aviation industry.

The newsletter spotlights the fifth Regional Committee convening of the Asia Pacific Region, which was graced by the Hon'ble Minister of Energy and Infrastructure of the United Arab Emirates, Suhail Mohamed Al Mazrouei. The meeting was hosted in Abu Dhabi – the venue for COP28 later this year. ISA's inaugural SolarX Startup Challenge - a flagship initiative promoting innovation and solar transformation reached fruition with the announcement of winners of its first leg focussing on the African region. Meet the innovators and their innovations in this issue. We hope to continue this endeavour by introducing it to other regions of ISA.

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As the countdown to the critical global congregation, COP28 sets in which witnesses participation from all stakeholders, and as we approach the global stocktake, it is critical that we learn and share the regulatory frameworks and business models that work. We must create guarantees that provide confidence to investors and help create the trained and certified people-power that can install and manage solar facilities. The energy landscape of the future will be shaped by the decisions we take today. Individuals and institutions must relook, reassess, and realign their strategies and practises to meet defined goals while catering to country-exclusive needs and demands.



Ajay Mathur

Director General, International Solar Alliance

HIGHLIGHTS

ISA'S ASIA-PACIFIC MEETING PAVES THE WAY FOR A SOLAR-POWERED FUTURE AHEAD OF COP28

The ISA's Fifth Meeting of the Asia Pacific Region marked a significant milestone in the journey towards a solar-powered future. The commitment to promoting sustainable energy and combating climate change remains steadfast as the world moves closer to COP28. With the collective efforts of the ISA and its Member Countries, the vision of a prosperous, equitable, and clean energy future draws nearer for generations to come.



The International Solar Alliance (ISA) recently concluded its Fifth Meeting of the ISA Regional Committee for Asia and the Pacific Region in Abu Dhabi, reaffirming its dedication to fostering solar energy adoption for a cleaner and more sustainable future. The three-day event, held from 24-26 July 2023 and in collaboration with the UAE government, addressed the pressing need for cutting-edge solar power solutions, upgrading infrastructure and grids, and achieving renewable energy targets by 2030. Amidst growing concerns over climate change, the discussions centered around transformative actions required to keep global warming within 1.5°C, setting the stage for the upcoming COP28.

The Meeting saw active participation from several small island developing states (SIDS) in the Asia-Pacific region, focusing on mobilising resources to accelerate a just energy transition. Key areas of emphasis included promoting climate mitigation technologies, enhancing socioeconomic opportunities, and

ensuring inclusivity in the journey towards a sustainable future.

The keynote address was delivered by the **Hon'ble Minister of Energy and Infrastructure of the United Arab Emirates, Suhail Mohamed Al Mazrouei**, who highlighted the pivotal role of solar power in shaping the future energy landscape and combating climate change. He emphasised that solar energy is not just part of the solution; it is the key to unlocking a low-carbon future. The United Arab Emirates, a founding member of ISA, reiterated its commitment to mobilising global support for transformative solar solutions as the host of COP28.



The UAE aims to triple renewable energy capacity and double hydrogen production by 2030, aligning with the global priorities to slash emissions by 43% by 2030, per the Paris Agreement objectives.

Dr Ajay Mathur, Director General of the International Solar Alliance, expressed delight in hosting the meeting in the UAE, a country that exemplifies affordable solar electricity at only 2.5 cents per kilowatt-hour. He stressed the significant progress made by solar energy over the last decade, particularly in providing energy access to hard-to-reach populations and enabling energy security for vulnerable developing economies. Dr Mathur urged collaborative efforts to address the challenges of ensuring universal access to clean energy and accelerating global energy transitions.

H.E. Ambassador Majid Al Suwaidi, Director-General and Special Representative of COP28, commended ISA for its visionary leadership in clean energy. He praised the ISA's 'Towards 1000' strategy, aiming to mobilise one trillion US dollars for solar energy and deploying 1000 gigawatts of clean energy by 2030, significantly reducing CO2 emissions. He stressed the critical role of climate finance in enabling clean energy solutions, making it accessible, affordable, and available.

With 26 Member Countries in the Asia-Pacific region, ISA aims to promote solar energy solutions in various sectors, including agriculture, health, transportation, storage, and green hydrogen. As the Vice President of ISA, Bangladesh expressed its commitment to achieving 40% of energy from renewable sources by 2041. The country has successfully implemented

the world's most extensive solar power dissemination programme, empowering millions with clean and reliable electricity.

The Meeting featured discussions on ISA initiatives, such as the Global Solar Finance Facility, which aims to bridge the investment gap for solar projects in developing countries. The SolarX Startup Challenge focuses on transforming solar innovation to accelerate the global energy transition. The STAR-C initiative exemplifies ISA's commitment to capacity-building and institutional strengthening in member countries.

The Meeting also highlighted two important themes through thematic sessions. The One Sun One World One Grid (OSOWOG) initiative envisions connecting regional grids to transfer renewable energy power and realise the potential of solar energy. The Private-Public Sector Panel on Solar + Storage addressed successful storage projects and upcoming plans for solar + storage in member countries, exploring various energy storage technologies.



SPOTLIGHT

BOOSTING SOLAR INNOVATION IN AFRICA, ISA ANNOUNCES WINNERS OF THE SOLARX STARTUP CHALLENGE

The SolarX Startup Challenge is a pioneering initiative by the International Solar Alliance, targeting the stimulation of entrepreneurship and driving solar energy deployment in African ISA Member Countries. The competition received a remarkable response, with 182 startups applying from 28 different countries. Among the ten problem statements put forth by ISA, the one focusing on accelerating the deployment of off-grid solar applications (mini-grids and SHS) received the highest number of entries, capping 109.

The International Solar Alliance (ISA) made a significant stride in promoting clean energy and entrepreneurship in Africa by announcing the winners of its inaugural SolarX Startup Challenge. The Challenge, which focuses on developing scalable and replicable business models to accelerate the global transition towards clean energy, sought to identify innovative solutions to persistent challenges in the solar sector. The first edition of this initiative is geared towards launching successful solar projects and solutions in Africa to replicate them in different regions and contexts.

On 20 July 2023, in Goa, India, during a side event of the G20 Energy Transitions Working Group Meeting, ISA unveiled the 20 winners of the SolarX Startup Challenge. These winning startups, hailing from 10 African countries, will be crucial in increasing solar deployment in the Africa Region. A noteworthy aspect of the competition is that seven winning companies are led by women entrepreneurs, underscoring the commitment to promoting gender diversity and equality in the renewable energy sector. Kenya takes the lead with four winning companies among the winning countries, while Nigeria, Rwanda, and Uganda each have three winning companies.

ISA and partner organisations like Invest India, WAIPA, and GOGLA have provided each winning startup with a cash grant of USD 15,000 and additional support. The winners will benefit from mentorship programmes, connections to potential investors, and access to new markets. This backing will empower the startups to implement their innovations on a larger scale, substantially impacting the African solar energy landscape.

Dr Ajay Mathur, Director-General of ISA, expressed his delight at the successful conclusion of the first leg of the SolarX Startup Challenge and highlighted the critical role that entrepreneurship and finance play in driving progress in the solar sector. He emphasised their significance in fostering technological advancements, cost reductions, market growth, job creation, energy independence, environmental sustainability, and scalability. By encouraging innovation and supporting entrepreneurial ventures, ISA is determined to unlock the full potential of solar energy and facilitate the transition to a sustainable and low-carbon future.

The Challenge invited applicants to submit innovative, cost-effective, and scalable solutions to tackle persistent challenges in the solar sector. The ISA's aim was not only to promote the solar energy industry but also to bridge the energy crisis gap and foster the growth of the solar startup ecosystem in Africa.

The journey of the SolarX Startup Challenge began on 10 November 2022 at COP27 in Sharm-el-Sheikh, Egypt, where it was officially launched. After a rigorous evaluation and shortlisting process conducted from April to June 2023, the winners have now been announced. With the support, mentorship, and funding provided by ISA and its partners, these innovative startups have the potential to transform the solar energy landscape in Africa and serve as beacons of clean energy solutions for the world. The success of the SolarX Startup Challenge marks a significant milestone in the global efforts to combat climate change and accelerate the transition towards sustainable, clean energy sources.



OPINION

OVERCOMING RESOURCE SCARCITY THROUGH TECHNICAL INNOVATION: A SUSTAINABLE PATH FOR SOLAR MODULES AND BATTERIES

Resource scarcity and critical minerals have emerged as significant concerns in our pursuit of sustainable energy solutions. However, we can overcome these limitations through technical innovation and pave the way for a future powered by renewable energy sources. This article will explore how higher prices drive companies and countries to identify new resources, how incremental innovation leads to greater resource efficiency, and how disruptive innovation fosters alternative technologies with less scarce resource inputs.

Higher Prices Drive the Discovery of New Resources

As demand for solar modules and batteries continues to rise, the scarcity of certain resources becomes more evident. However, higher prices act as a catalyst, incentivising companies and countries to invest in further exploration. This is an established phenomenon in oil markets where heavy oil, undersea, fracking and extraction from tar sands added previously uneconomic/unextractable oil to global reserves. While quartz (the main mineral in solar modules) is a relatively abundant mineral, “high-grade” quartz is rarer. However, improved extraction and processing techniques have permitted the use of more diverse, lower-grade quartz.

Similarly, the pursuit of affordable and efficient batteries has led to the exploration of new lithium resources. Higher lithium prices have spurred companies to invest in lithium extraction from unconventional sources such as brine deposits, geothermal fluids, and lithium-rich clay deposits. This diversification of resources mitigates the strain on traditional lithium reserves

and ensures a more sustainable supply chain for batteries. In fact, like with oil, Lithium reserves have actually been rising as new discoveries outweigh annual extraction, as shown in Figure 1. In fact, price increases in 2022 have spurred additional investments in new production, with production expected to grow 33% per annum, with Lithium Carbon prices already falling to half their peak (as of May 2023).

Incremental Innovation Leads to Greater Resource Efficiency

As renewable energy continues to scale, there is also a tremendous opportunity for increased resource efficiency. Take for example, silver, a crucial component in solar panels.



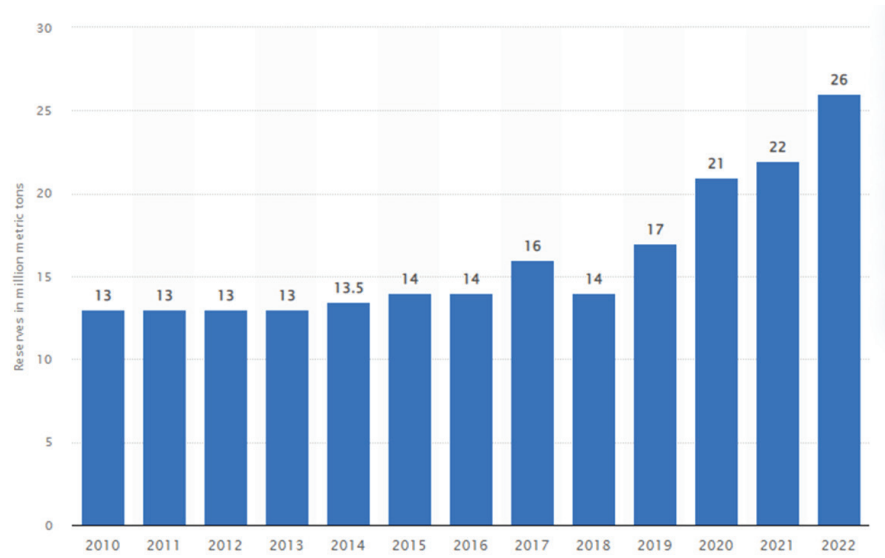
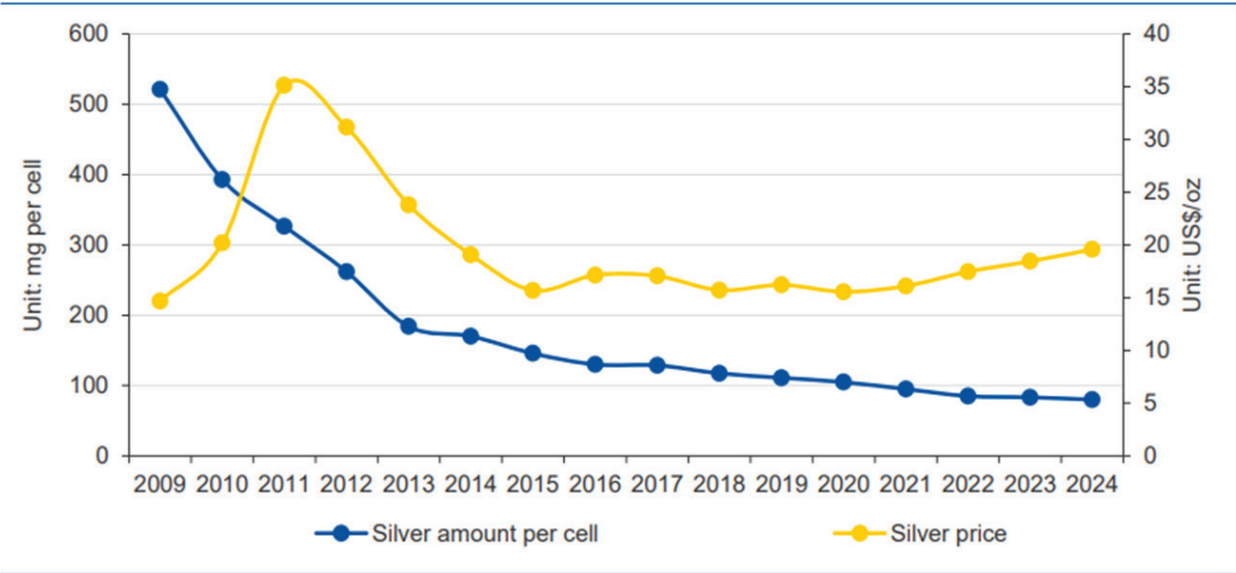


Figure 1: Global Lithium Reserves. Note that annual production in 2022 was 0.13 million tonnes, so reserves are sufficient for ~200 years of production but longer if new discoveries continue to outpace extraction

Take the example of silver, a crucial component in solar panels. Increasing silver prices have prompted researchers and manufacturers to develop solar cell designs that use less silver or substitute it with alternative materials like copper or aluminium.

The amount of silver required per cell has been dropping 8.1% per year and is projected to drop to less than half by 2030.

Figure 5 Silver usage per cell and nominal silver price, 2009-2024



Data: CRU

Figure 2: Projected silver consumption per cell. Source: CRU. Despite significant increases in solar deployment, global demand for silver is projected to drop from 100 million ounces/year (about 10% of global silver demand) to 80 million ounces/year

This innovation allows for reduced reliance on scarce resources without compromising performance. Furthermore, companies such as SunDrive have already developed solar cells that replace silver with copper, which also has the potential to reduce costs dramatically.

Similarly, incremental innovation in battery technology has led to improved resource efficiency. Manufacturers have been working on increasing the energy density of batteries, reducing the grams of lithium carbonate required per watt-hour

of storage capacity. This has been achieved through advancements in electrode materials, cell design, and manufacturing processes. In addition to drastically lowering costs, this has meant the energy density of Li-ion batteries has risen from ~50 Wh/kg in the 1990s to 250 Wh/kg today, as shown in Figure 3-a 5x increase in resource efficiency.

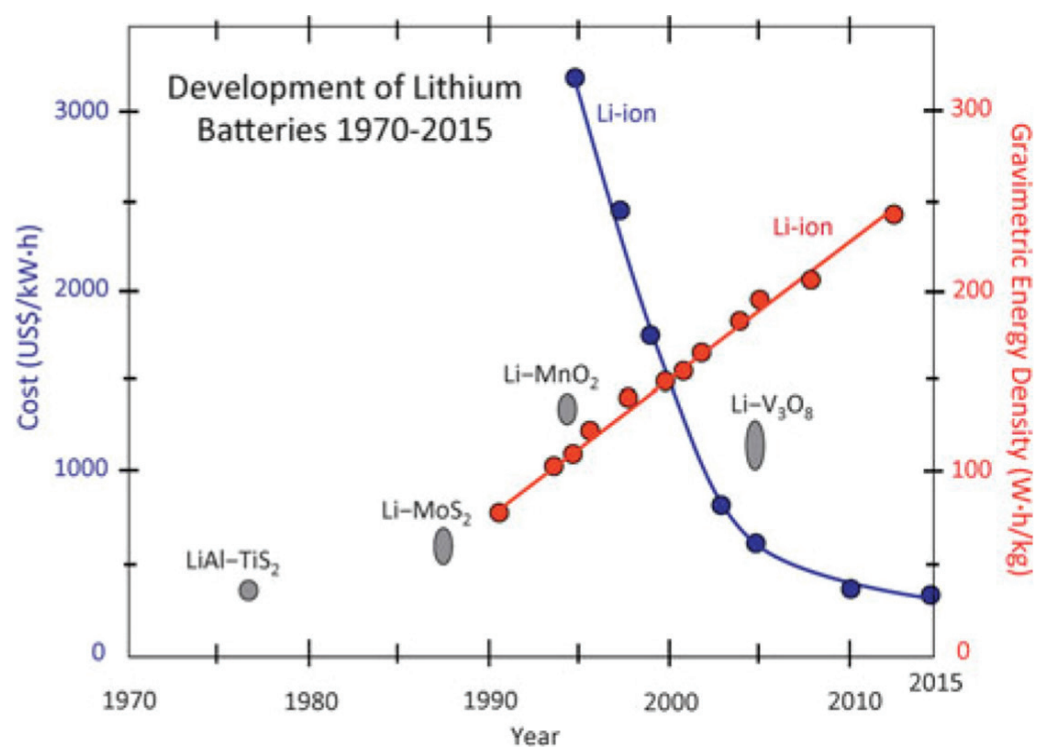


Figure 3: Source. Crabtree et al./MRS Bulletin

Disruptive Innovation Leads to Alternative Technologies

Over the past two hundred years, the world has seen numerous new energy technologies emerging, first coal replacing biomass and then oil, nuclear, natural gas and currently renewables. Even within renewables, new technologies are constantly emerging. In solar, for example, each generation of new technology has displaced the previous generation, usually through some combination of higher efficiencies and lower cost. This

displacement is projected to continue, as shown in Figure 4.

Lithium-ion batteries have gone under perhaps an even more drastic trajectory, with concerns around cobalt extraction leading to the development of new battery technologies, reducing the amount of cobalt required from 1:1:1 nickel:cobalt:manganese to 8:1:1 and even 9:0.5:0.5

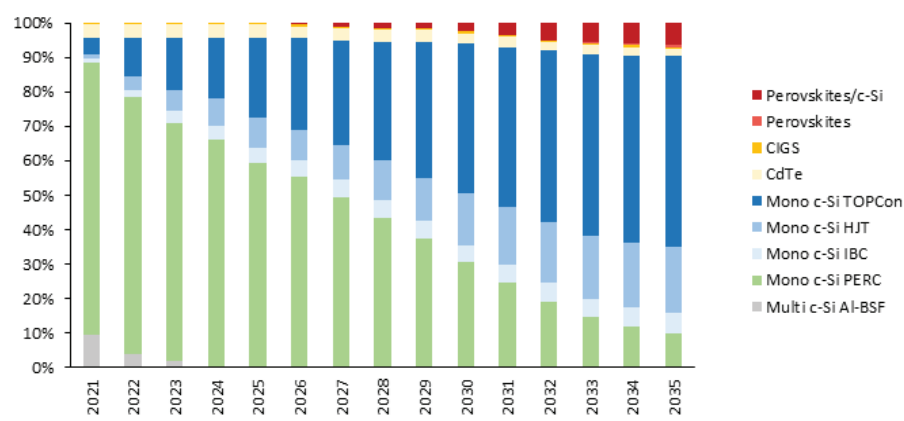


Figure 4: Evolution of market shares of different PV technologies (Source ITRPV, CPIA, Becquerel Analysis)

The market for stationary storage is even more interesting. Previously, stationary storage relied on the excess capacity of EV batteries, but the market is finally large enough for manufacturers investing in stationary storage-specific manufacturing. This has resulted in a greater focus on cobalt-free chemistries such as LFP, Lithium-Free chemistries such as Sodium-ion and Iron Air. These technologies have the potential

to drastically reduce costs as Sodium is much more abundant than Lithium. As demand for stationary storage continues to grow, this will help drive increased innovation and push new chemistries up the adoption curve, as shown below.

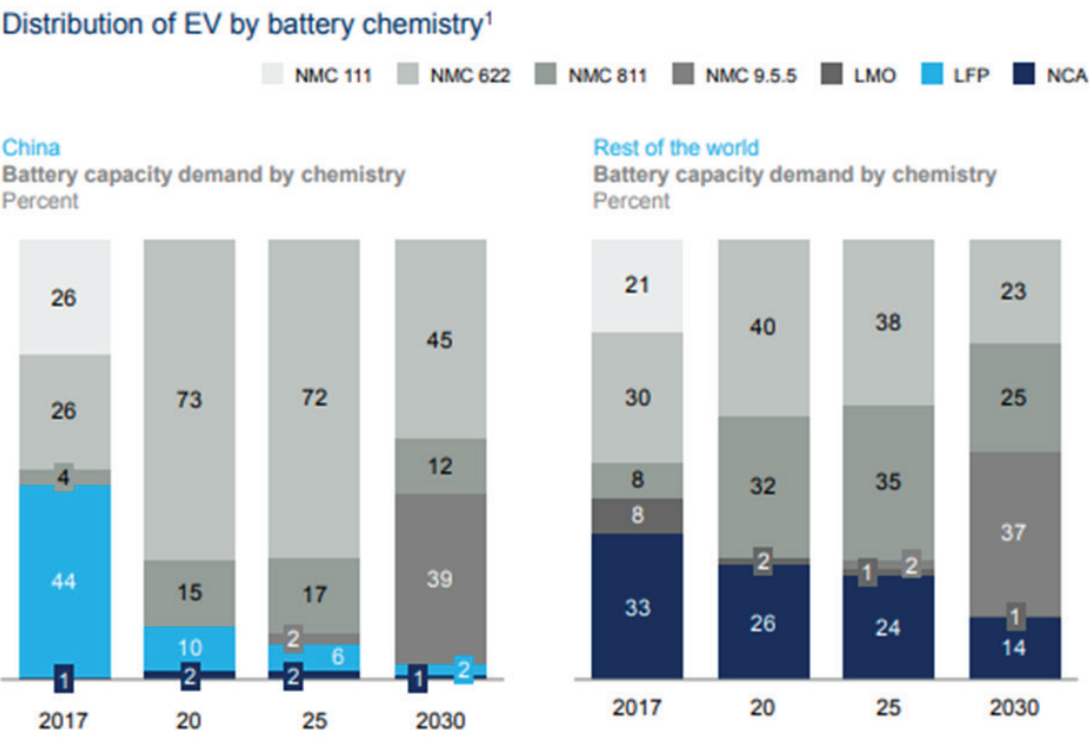
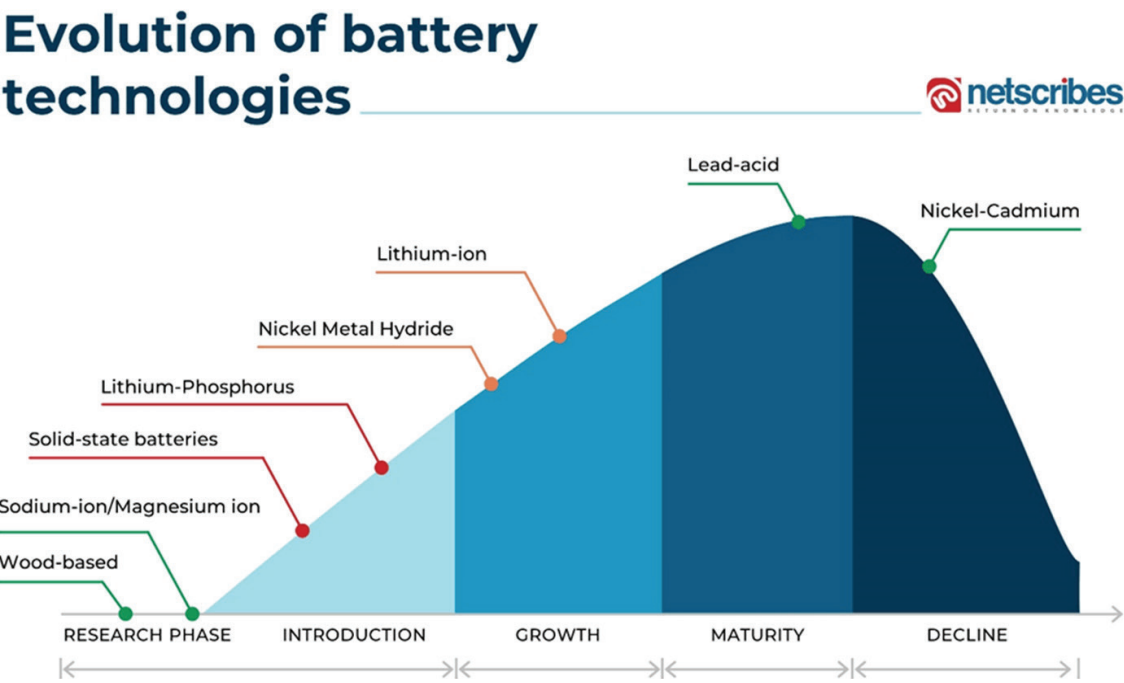


Figure 5: Lithium and Cobalt - a Tale of Two Commodities, McKinsey

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Conclusion and Recommendations

In the long run, there are more than enough global reserves for almost all the critical minerals required for the energy transition, with the possible exception of rare earth elements such as Dysprosium, neodymium (used in wind turbines) and Tellurium (used in CdTe thin film solar cells)¹.

New exploration, resource efficiency and the development of alternative technologies have all contributed to constantly increasing reserves, reducing inputs required per unit and increasing diversity of supply. That said, these processes do not

¹ <https://www.sciencedirect.com/science/article/pii/S2542435123000016?dgcid=author>



happen automatically. Governments must ensure a supportive regulatory environment and open markets to allow price signals to drive innovation.

In particular, governments may wish to adopt the following five strategies to ensure the supply of critical minerals.

- 1) Boost demand through large volumes of technology-neutral auctions.** One of the reasons China has been able to develop such a strong solar manufacturing ecosystem is assured demand leading to economies of scale. For example, in 2022, China installed over 87 GW of new solar capacity, more than the *entire* cumulative installed capacity of any other country except the United States.
- 2) Invest in exploration (and extraction techniques) with a broad mandate.** India's recent discovery of new lithium deposits and polysilicon-grade quartz are excellent examples. Such resources may exist in many countries, but there must be investment in exploration efforts and novel extraction techniques for non-traditional resources.
- 3) Encourage companies to invest in research and development** for example, Jinko Solar spent \$105 million on R&D (about 40% of after-tax profits) in 2022, allowing them to maintain a technological edge in both efficiency improvements and next-generation technologies.

4) Invest in early-stage research with university labs on next-generation technologies.

Furthermore, it fosters collaborations between academia and industry to support the commercialisation of emerging technologies such as perovskite solar cells, zinc-gel batteries, or metal-oxide electrolyzers.

- 5) Allow market forces to drive innovation.** Investment in new technologies can often be stifled by high and differential taxation rates, such as a 28% GST rate on novel battery chemistries in India (on top of a 22% import tariff). Ideally, alternative and emerging technologies are given parity with respect to taxation, regulation and tendering processes. Short-term incentives may be provided, but these should be designed to encourage established technologies and emerging alternatives.

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ROUNDUP

DG-ISA VISITS TOGO TO STRENGTHEN COLLABORATION AND SOLAR ENERGY-POWERED INITIATIVES



<https://www.togofirst.com/en/energy/0507-12197-renewable-energy-togo-wants-stronger-partnership-with-international-solar-alliance>

DG-ISA calls on H.E. Faure Gnassingbé, President of Togo

In July 2023, Dr Ajay Mathur, Director General of the International Solar Alliance (ISA), embarked on his first visit to the Republic of Togo, reaffirming the Alliance's commitment to strengthening collaboration and promoting solar energy-powered initiatives in Africa. With 44 African countries as members, including Togo, the ISA provides a platform for cooperation, knowledge sharing, and support in harnessing the potential of solar energy for sustainable development and addressing energy challenges on the continent.

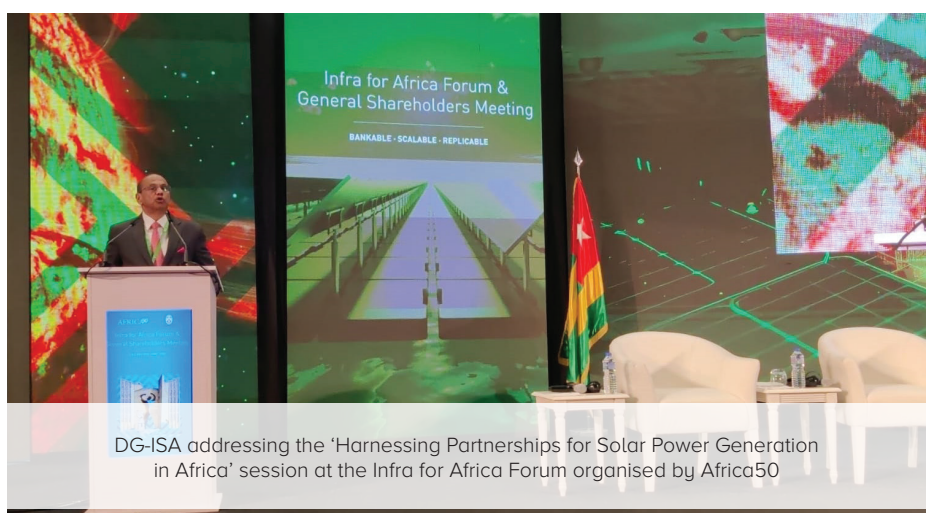
During his visit to the capital city of Lomé, Dr Ajay Mathur held a crucial meeting with H.E. Faure Gnassingbé, President of Togo. Their discussions focused on making Togo's Dapaong Solar PV Park project viable and ready for swift implementation. Additionally, the parties explored the potential of smaller-scale projects based on solar mini-grids, which can bring electricity to underserved areas, generate job opportunities, and ease the pressures of urbanisation by promoting local employment. By collaborating with Togo, the ISA aims to attract private sector investments and ensure widespread access to solar-powered

electricity for all country citizens.

One of the highlights of the visit was the signing of two significant memorandums of understanding (MoU) with Africa50 and the West African Development Bank (BOAD). The first MoU was inked during Africa50's Infra for Africa Forum and General Shareholders Meeting, where esteemed African leaders, including President Faure Gnassingbé, Dr Akinwumi Adesina (President of the African Development Bank Group), Dr Ngozi Okonjo-Iweala (Director-General of the World Trade Organization), and Tidjane Thiam (Executive Chairman, Freedom Acquisition 1 Corp), participated. Through this collaboration, the ISA and Africa50 aim to support solar projects



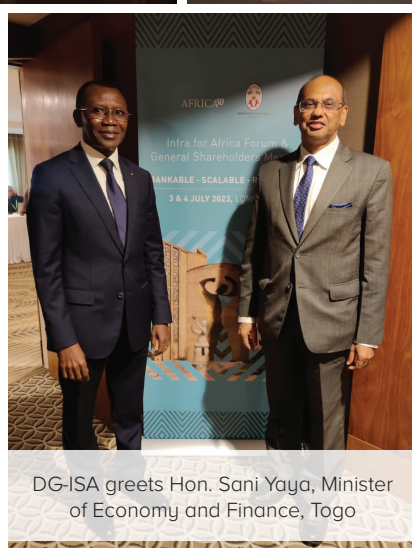
ISA and Africa50 signed an MOU to support solar projects in Africa, leveraging each other's networks to mobilise funding and raise awareness of African solar projects in European and Indian markets



DG-ISA addressing the 'Harnessing Partnerships for Solar Power Generation in Africa' session at the Infra for Africa Forum organised by Africa50



The West African Development Bank (BOAD) and ISA signed a cooperation agreement in Lomé in the presence of the Director General of the ISA, Dr Ajay Mathur, members of the ISA and the BOAD, Mr Serge EKUE, President of the West African Development Bank



DG-ISA greets Hon. Sani Yaya, Minister of Economy and Finance, Togo



With H.E. Dr Sidi Ould Tah, President of BADEA Arab Bank for Economic Development in Africa



In a meeting with Dr Akinwumi Ayodeji Adesina, President of the African Development Bank Group

in Africa, mobilising funds and raising awareness of African solar initiatives in European and Indian markets.

The second MoU was signed with Mr Serge EKUE, President of BOAD, reinforcing the commitment of both organisations to identify, facilitate, and effectively implement solar energy projects for the economic integration of the West African region. Dr Ajay Mathur expressed his enthusiasm for this collaboration, emphasising the mutual benefits it will bring and the importance of engaging with key stakeholders in global and regional renewable energy events and forums to foster collaboration and exchange of ideas.

During his visit, DG-ISA also met with other distinguished dignitaries, including the Hon'ble Minister of Economy and Finance of Togo, Mr Sani Yaya, and Hon. Mawunyo Mila Ami AZIABLE, Minister Delegate to the President of the Republic in charge of Energy and Mines. The presence of Indian Ambassador to Togo, H.E. Sanjiv Tandon, Dr Sidi Ould Tah from the Arab Bank for Economic Development in Africa (BADEA), Mr El Hadji Mamadou Diao, Director General of Caisse des Dépôts et Consignations (CDC), and Dr Akinwumi A. Adesina, President of the African Development Bank Group, highlighted the significance of this visit and the collaborations it fosters.

By actively participating in ISA initiatives and programmes, Togo can play a vital role in shaping the global agenda for solar energy and influencing regional and international efforts in advancing renewable energy solutions. The Togolese government has also chosen to install solar water pumps across its administrative regions under the ISA's initiative of developing solar demonstration projects in Small Island Developing States/Least Developed Countries Member Countries. The completed solar pumping project will improve access to reliable irrigation water, furthering Togo's journey towards sustainable development and energy independence.

SNAPSHOT

ISA AND ASIAN DEVELOPMENT BANK (ADB) LED A TECHNICAL MISSION TO NEPAL FOR CONSULTATIONS IN IDENTIFYING SOLAR INTERVENTIONS FOR THE HIMALAYAN NATION

To build on the progress made by Nepal in its clean energy transition, a Technical Mission led by ISA and ADB is underway from 9-12 July 2023 in Kathmandu. The chief goal of this Mission is to raise awareness about solar’s role in the energy mix and the importance of accelerating its deployment in the clean energy transition. Key executives from ISA, ADB and other international partners among various stakeholders are in Nepal to identify potential projects that align with the country’s priorities and climate goals.

Mr Dinesh Kumar Ghimire, Hon’ble Secretary, Ministry of Energy, Water Resources, and Irrigation (MOEWRI), chief guest at the National Stakeholder Consultation Workshop, noted, “The time has changed. It is necessary to take forward the solar power development also due to lower cost of production and higher feasibility. Highlighting the increasing challenges faced by hydroelectric power, such as floods, landslides, climate change, declining water flow, and glacier melting, Mr Ghimire emphasised the risk of depending solely on a single source of electricity generation. The government of Nepal has set a target of producing 15,000 MW of electricity in the next decade, with a strategy to contribute 10 per cent from renewable energy sources. However, Mr Ghimire stated, “We should not have to stick to this figure.” Acknowledging the evolving energy

landscape, he emphasised the need for flexibility and openness to exploring alternative energy sources beyond the initial target.”

Mr Remesh Kumar, Chief of Unit, Programmes & Project Implementation, ISA, shared his vision about the ongoing mission, noting, “Solar is the main source of electricity to billions of people across the world and the cheapest way of doing so. It is also the quickest way to reduce carbon emissions because the net carbon emissions of solar are zero. The main objective of this mission





is to engage with the stakeholders in Nepal to understand the needs, identify priority areas of mutual interest in solar energy and develop feasible project pipelines. Under ISA and ADB's Knowledge and Support Technical Assistance (KSTA), we look forward to finding solutions for Nepal and strengthening our engagement here."

Mr Jan Hansen of the Asian Development Bank noted that solar power plays a vital role in reducing carbon emissions; its development is inevitable to meet the goal of zero carbon emissions. "Solar power can significantly support Nepal's hydropower system and ensure sustainable and reliable power supply," Hansen said. "ADB can continue to provide technical assistance and exchange experience in potential solar projects in Nepal."

The stakeholders of the Mission are discussing key programmatic priorities, including initiatives such as rooftop solarisation of remote health facilities and commercial/industrial establishments, enhancing energy access through solar mini-grids, implementing solar irrigation pumps for agriculture, promoting solar cooling and heating solutions, facilitating large-scale grid-connected solar PV projects, and floating solar photovoltaic system as an attractive option for Nepal which has an existing hydropower baseload and high solar power potential.

Furthermore, the Mission will assess capacity gaps and explore potential collaboration under ISA's capacity-building initiatives, specifically establishing a Solar Testing and Research (STAR) Centre equipped with test bed facilities for solar PV components and balance of system components.

ISA will also discuss signing a Country Partnership Agreement (CPA) and developing a Country Partnership Strategy to enhance collaboration across various programmes further. Mr Remesh Kumar added, "We are also hoping to assess investment needs and barriers, particularly focusing on unlocking private capital and proposing options for risk mitigation."

During the Technical Mission, ISA also aims to hold consultations, under the leadership of the Hon'ble National Focal Point (NFP) of Nepal to ISA, Mr Madhu Prasad Bheutwal, Joint

Secretary, MOEWRI and officials from the Government of Nepal, autonomous institutions & government agencies, private sector stakeholders, and multilateral organisations to explore potential synergies addressing the needs and priorities of the Government of Nepal.

Earlier sharing his views at the workshop, Mr Bheutwal had stated, "Renewable energy sources account for about 6 per cent of the total installed capacity so far." He emphasised the need to expand the contribution of renewable energy and outlined the government's efforts in increasing the scope of solar power generation. This includes conducting a feasibility study of rooftop solar and exploring other potential areas. Mr Bhetuwal expressed optimism about increased coordination between the government and the private sector, expecting significant participation from private companies in the renewable energy sector.

ISA's engagement with Nepal has been covered under ADB's USD 2 million Knowledge and Support Technical Assistance (KSTA) under the ISA-ADB Partnership Framework, which supports the six South Asian countries, including Nepal. The KSTA focuses on identifying and developing solar energy projects pipeline, identifying innovative financing instruments for scaling solar deployment and capacity-building and knowledge support.

SNAPSHOT

ISA AND AIRPORTS COUNCIL INTERNATIONAL (ACI) STRENGTHEN COOPERATION TO SCALE UP THE SOLARISATION OF AIRPORTS ACROSS ISA MEMBER COUNTRIES

This exchange of expertise between signatories will promote the use of solar energy as a cost-effective and reliable source of electricity across airports.

The International Solar Alliance (ISA) and Airports Council International (ACI) have signed a memorandum of cooperation to increase the deployment of solar across airports globally. Through this cooperation, the ISA and ACI aim to make airports greener to help reduce airport emissions, improve air quality, and make them more sustainable.

ISA and ACI will work together to develop joint projects that promote solar at airports and make them more viable. With its international expertise, ISA will support policy choices that accelerate solar development. ACI will bring in best practices for adoption by airports across the globe.

Director General of ISA, Dr Ajay Mathur, sharing his thoughts on the collaboration, noted, "To strengthen the partnership, the signatories will explore collaborating with various partners, including the International Civil Aviation Organization (ICAO), on developing solar projects for airports. Our focus will be two-pronged: engage with ISA Member Countries to support establishing robust national and regional policies and frameworks. In addition, explore a joint publication of a guidance document of best practices for airport solarisation. We foresee this document as a comprehensive resource, sharing valuable insights and recommendations for the successful implementation of solar projects."

Director General of ACI World, Mr Luis Felipe de Oliveira, said: "The transition to net zero carbon emissions for aviation requires the rapid uptake of renewable energy through a mix of different pathways. The memorandum of cooperation with ISA will help ACI members improve and reduce their carbon footprint as well as dependency on fossil fuels. Airports are ideal locations for solar infrastructures due to their large, flat, and unobstructed surfaces, and this partnership will be key to supporting them in their energy transformation. Additional assistance will be provided to Small Island Developing States and other developing countries so that they are able to leverage the rights tools and solutions for setting up effective solar projects. This collaboration is one more step forward in achieving our long-term carbon goal by 2050."

The collaboration between the signatories encompasses a range of activities. Firstly, there is an emphasis on exchanging and sharing available and relevant information, including success stories, learnings, and outcomes from existing projects. This knowledge-sharing will serve as a valuable resource for all parties involved. Additionally, the signatories are committed to exchanging information on the aggregate demand for solar projects in identified airports, which enables a more informed approach to project planning.



Joint exploration and identification of pilot projects for solar installations are also key components of the collaboration. By working together, the signatories can assess the feasibility of setting up solar projects in identified airports and conducting joint preparations and assessments. This cooperative effort extends to supporting implementation by adopting appropriate business models based on best practices, relevant information, research, and experience.

Recognising the need for financial resources, the signatories aim to support the mobilisation of funding whenever possible. This financial support will be instrumental in successfully implementing solar projects in airports. Furthermore, the collaboration includes sharing knowledge and capacity building in the field of solar energy for airports across different regions.

The collaboration remains open to other mutually agreed-upon activities, ensuring flexibility and adaptability to emerging opportunities and challenges. Through this comprehensive approach, the signatories aim to drive the widespread adoption of solar energy in airports, fostering sustainability and environmental stewardship in the aviation industry.

#IDEASTHATHAVEWORKED: SOLAR IMPACT STORIES FROM AROUND THE GLOBE

The EU Cooperation with ISA aims to deepen further the links between the ISA, its Member Countries, and international academic, financial, and business communities, including the relevant European Union (EU) communities. The project aims to support and strengthen ISA's role as a solar energy platform, including supporting concrete communication activities. Over 250 case studies of solar uptake and road mapping across the globe have been put together as part of this project. The ISA newsletter showcases innovative solar interventions that have carved positive outcomes on the ground every month.

A BANGLADESHI STARTUP IS REVOLUTIONISING SOLAR PEER-TO-PEER ELECTRICITY SYSTEMS IN THE COUNTRY



The Bangladesh-based startup, SOLshare, is revolutionising the country's solar peer-to-peer electricity trading system through an ICT-enabled network. Their efforts have enabled over 25 million people across Bangladesh to avail electricity and lead better lives. In the early 2010s, a sizable proportion of Bangladesh's population had no access to the utility grid, and some of these communities had limited electricity supply from standalone home system installations or mini-grid networks. While many homes had individual solar house systems (SHS), they were of limited capacity and could not power large devices like televisions.

The need for large upfront capital expenditures limited the deployment of mini-grids. In 2014, SOLshare, a Bangladesh-based start-up company, entered a joint venture with German consulting company MicroEnergy International GmbH to address the issue. SOLshare introduced an Information and Communication Technology (ICT)-enabled peer-to-peer electricity trading network that connects houses with SHS to other houses in the vicinity that do not have electricity. The system spreads the costs of the SHS over larger use volumes, increases the capacity utilisation of SHSs by 30%, and reduces the annual energy access cost by at least 25% compared to a business-as-usual scenario while providing more people access to electricity ¹.

SOLshare implemented a pilot project at Shariatpur village in Bangladesh with the help of its implementation partner, the NGO UBOMUS, the financing partner IDCOL, and the research partner United International University-Centre for Energy Research. The company installed a bi-directional DC electricity meter called a "SOLbox" in every household in the village, which measures power inflows and outflows and enables peer-to-peer electricity trading with mobile money payments. The meters also help SOLshare with smart grid management, remote monitoring, and data analytics.

SOLbox has created a DC smart grid by connecting a solar home system or battery through the SOLbox with other SOLboxes in nearby homes or businesses. Users can even monitor their electricity trading portfolio through a mobile application called the SOLapp, enabling them to connect to hundreds of other households ².

With the success of their pilot project, SOLshare implemented the system in other villages across Bangladesh. As of 2022, the system has been implemented to serve six million households and has impacted as many as 25 million people. SOLshare is expected to operate more than 20,000 nano grids by the end of 2030, supplying electricity to more than 1,000,000 customers in Bangladesh and interconnecting them with the national utility grid network through a single point of common coupling.

In recognition of such efforts, SOLshare won several awards, including 'World's Best Energy Startup' by the Free Electrons energy accelerator programme in 2018, the 2020 Global Final at innoEnergy's 'The Business Booster', and 'MIT Solver' under SOLVE's 2020 Global Challenges for Good Jobs and Inclusive Entrepreneurship ³.

¹ UNFCCC (2017) "ME SOLshare: Peer-to-Peer Smart Village Grids | Bangladesh", <https://cop23.unfccc.int/climate-action/momentum-for-change/ict-solutions/solshare#>, last accessed 8 October 2022.

² SOLshare website, <https://solshare.com/solgrid/>, last accessed 8 October 2022.

³ Future Energy Ventures (2020) "Meet SOLshare, pioneers in peer-to-peer solar micro-grid technology", 27 November, <https://fev.vc/meet-solshare-pioneers-in-peer-to-peer-solar-micro-grid-technology/>, last accessed 8 October 2022.

#IDEASTHATHAVEWORKED: SOLAR IMPACT STORIES FROM AROUND THE GLOBE

BHUTAN'S FIRST GRID-CONNECTED SOLAR POWER PLANT



Growing concerns about Bhutan's rising energy demands while maintaining its carbon-negative status led the country to pursue further renewable energy alternatives. Their efforts led to deploying their first hybrid energy project, using wind and solar energy to generate power.

With more than 70% of the Kingdom's land area under forest cover, Bhutan has been a 'carbon negative' country for several decades of the last century. A majority of the country's electricity needs are met by hydro-power with relatively minor imports from neighbouring countries like India. However, events like Glacial Lake Over-Flows (GLOFs) and flash floods have increased the volatility of hydro-power generation and threatened the country's energy security. Moreover, projected economic growth threatened the carbon-negative status of the country.

The Kingdom, therefore, was looking at tapping other energy sources like solar PV and wind generation. Bhutan's Department of Renewable Energy (DRE), at the time under the Ministry of Economic Affairs, received a grant of USD 210,000 (~€ 210,000) from the government of Japan – through the support of UNDP – for implementing a pilot hybrid project designed to harness both solar and wind energy.

Initiation of the pilot project took place in August 2021. It

included a 600kW wind turbine plant and a 180kW solar plant at Ruebisa, Wangdue. Between 27 August and 31 August 2021, the hybrid project generated 2.76MWh of energy¹. It is the country's first grid-connected solar power plant. Before this, solar power was only used for solar lamps in remote, off-grid areas of the country.

The wind-PV hybrid project engaged ten engineers from the Bhutan Power Corporation (BPC), who carried out the design, construction, installation, and grid integration work. The solar plant consists of 464 solar modules and is expected to produce 263,000 units of energy per year, which is approximately equal to the electricity demand of 90 Bhutanese households. The pilot project design and the operating hybrid plant are expected to serve as 'learning material' for Bhutan's renewable energy students and pave the path for further work in the sector².



¹ Department of Renewable Energy, Ministry of Economic Affairs, Bhutan Facebook page https://m.facebook.com/permalink.php?story_fbid=365495328457757&id=111899110484048&locale2=ne_NP, last accessed 16 December 2022

² Lhamo Phurpa (2021) "First 180kW grid-tied solar plant in Ruebisa", Kuensel, 5th October, <https://kuenselonline.com/first-180kw-grid-tied-solar-plant-in-ruebisa/>, last accessed 30 November 2022

ISA @ CEM-14/MI-8 & G20 ENERGY TRANSITION WORKING GROUP, GOA

19 JULY 2023



Building Resilient Solar Supply Chains: Report Launch and Path Forward

ISA released its 'Building Resilient Solar Supply Chains' report at the CEM14/MI8 in Goa. With this release, ISA looks forward to engaging with countries in developing globally resilient solar manufacturing ecosystems. This report will also serve as a basis for dialogue to help policymakers, manufacturers, and developers create robust solar manufacturing ecosystems within their countries and worldwide.



Solar Supply Chains: Considerations for Policymakers; Roundtable on Policy Briefs and Panel on Traceability Schemes in the US and EU

The roundtable focussed on three new policy briefs produced by the Transforming Solar: Supply Chains Workstream, launched at CEM13 in September 2022. The initiative has convened numerous workshops on solar manufacturing worldwide, hosted several webinars and online conversations, and commissioned a report named Building Resilient Solar Supply Chain.

Powering the Future: Exploring Global Innovations in Hybrid Renewable Energy Business Models and Models for Grid Flexibility

20 JULY 2023

As countries worldwide transition to renewable energy, solar and storage, hybrid projects are emerging as a key trend. Integrating energy storage is essential to effectively utilise wind and solar power and enable their integration into the grid. This enhances energy system resilience and improves grid reliability, stability, and power quality, critical to promoting productive energy use. CEM14 Rapid Innovation and Deployment theme and sectors such as power, transport, enabling environments, and cross-cutting technologies align with the proposed session. Developers are driving rapid innovation by scaling renewables and BESS. This session focused on hybrid innovations globally.



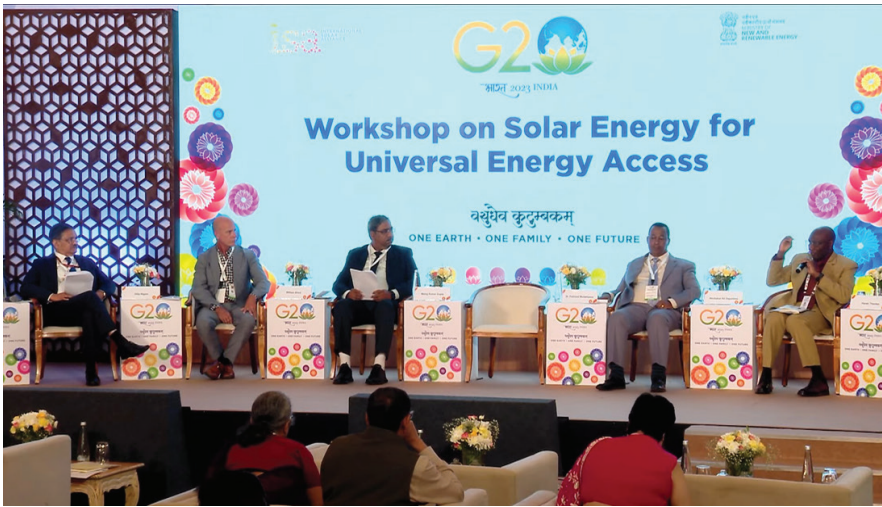
Green Hydrogen Standards and Certification

The International Solar Alliance (ISA), the Asian Development Bank (ADB) and the Green Hydrogen Organisation India (GH2 India) brought together government, industry, and civil society leaders to discuss how to accelerate the development of green hydrogen standards and certification. The discussion emphasised the importance of ensuring sustainable and environmentally responsible practices in green hydrogen production and highlighted the significance of considering the life cycle impacts of hydrogen projects.



Workshop on Solar Energy for Universal Energy Access - Side event at the G20 Energy Transition Working Group Meeting in Goa

In collaboration with MNRE, ISA hosted a side event on 'Solar Energy for Universal Energy Access' during the G20 Energy Transition Working Group Meeting in Goa. The discussions focused on various



aspects of solar to accelerate universal energy access, solarisation of the agriculture sector for a resilient food supply chain, clean cooking systems etc. ISA launched a report on the 'Roadmap of Solar Energy for Universal Energy Access' during the side event at the G20 Energy Transition Working Group Meeting in Goa to support Member Countries in achieving 100% electricity access through solar mini-grids.

Read the complete Report here: - <https://isolaralliance.org/uploads/docs/540dc1da191598c88320bf07b42e8d.pdf>



ISA announced the SolarX Startup Challenge winners during the Goa G20 Energy Transitions Working Group meeting. 20 companies from 10 African countries were declared winners, who will work to increase solar deployment in the Africa Region. Women entrepreneurs lead 7.



High-Level Dialogue:
One Sun, One World,
One Grid (OSOWOG)

At the CEM14/MI8, ISA organised a dialogue on One Sun, One World, One Grid to identify potential pathways for countries and regions around the world to build interconnected and resilient electricity grids. This high-level discussion focussed on collaboration and idea sharing among countries and other stakeholders - public and private sectors to work together on building an interconnected and resilient electricity grid under this initiative.



ISA released its 4th edition of the **Ease of Doing Solar** report. EoDS monitors progress in the solar ecosystem across ISA's member countries and is based on extensive research & analysis providing information on seven key drivers apart from multiple indicators in different countries. Insights from the report are aimed to assist governments in fast-tracking deployment of solar technologies by creating a conducive environment, pushing for strong project pipelines and enabling investor-friendly markets within their countries.



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Solar Lighthouse in Africa: Lessons Learned from India's Solar Programs

Rooftop solar models and solar parks offer unique benefits, including reduced transmission and distribution losses, avoidance of commercial investments associated with transmission systems, and consistent, reliable power for consumers. The World Bank-ISA Lighthouse Initiative aims to convene key stakeholders in the solar energy ecosystem. Through sharing success factors and learnings and discussing potential challenges and opportunities, the initiative seeks to identify key gaps, consolidate relevant learnings, and engage with entrepreneurs, investors, donors, civil society, and policymakers to promote solar sector growth in Africa.

ISA and Multilateral Investment Guarantee Agency (MIGA) signed a Memorandum of Understanding at CEM14/MI8 in Goa to engage and co-operate in the roll-out of ISA's Solar Facility in Member Countries. ISA's Solar Facility aims to provide liquidity, first-loss instruments, and reinsurance capacity. The ultimate goal of the Solar Facility is to make prospective transactions financially viable, reduce the cost of securing MIGA guarantees for project sponsors and lenders, and ensure the availability of necessary guarantee capacity.

ISA IN NEWS

July 2023

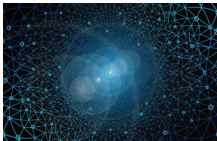
Jul 5



Africa50 signs MoU with International Solar Alliance in a Lome meeting

[North Africa Post](#)

Jun 5



Conquering change: Artificial Intelligence and how to be future ready

[PV Magazine](#)

Jun 5



Renewable Energy: Togo Wants Stronger Partnership with International Solar Alliance

[Togo First](#)

Jun 6



International Solar Alliance signs MoU with Africa50 to finance solar projects

[ET Energy World](#)

Jul 6



Special Address by Ajay Mathur, DG, International Solar Alliance at ETEnergyworld Leadership Summit

[ET Energy World](#)

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Africa explores vast clean hydrogen potential

[Reuters](#)

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New vigour in India's Africa partnership

[The Economic Times](#)

Jul 14



India, US to work for global hydrogen ecosystem: MNRE secretary

[The Financial Express](#)

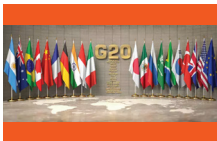
Jul 17



Major economies should set a global renewable energy target at the G20

[The Economic Times](#)

Jul 17



AFRICA: ISA and Africa50 join forces to finance solar energy

[Afrik 21](#)

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Investment in renewable energy concentrated in developing countries: Expert

[Business Standard](#)

Jul 20



ISA to launch Green Hydrogen Innovation Centre on 22 July

[ET Energy World](#)

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UAE to work with Cop28 participants to triple global renewable energy capacity by 2030

[The National](#)

Jul 26



The 5th Asia Pacific Region Meeting of the International Solar Alliance (ISA) Emphasizes the Need for Solar Power Solutions and Renewable Capacity

[Energy Portal](#)

Jul 26



Nasrul Hamid for coordinated efforts to transit to clean energy from fossil fuels

[Bangladesh Sangbad Sanstha](#)

Jul 26



সৌরবদ্যুৎ প্রকল্প বাস্তবায়নে সুনির্দিষ্ট চ্যালেঞ্জ রয়েছে

[Dhaka Post](#)

Jul 27



International Solar Alliance aims to raise \$100m for investment guarantee scheme

[The National](#)

Jul 27



The Abu Dhabi meeting of ISA's Asia-Pacific region charts course towards solar-powered future ahead of COP28

[PV Magazine](#)