INTERNATIONAL SOLAR ALLIANCE

NEWSLETTER

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EASING SOLAR DEPLOYMENT GLOBALLY

IN THIS ISSUE

FROM DIRECTOR GENERAL'S DESK

Through its endeavours, ISA has been establishing solar as the preferred energy of choice in the global energy transitions. This is ISA's chosen means of investing in the planet—the theme under which the 2023 Earth Day was celebrated. ISA sustains the spirit of Earth Day through its activities and actions. ISA strives towards global solar energy deployment and establishing solar energy as a shared solution for climate, energy, and economic priorities across geographies through multiple means.

The Demonstration Solar Projects is a stellar example of depicting locally relevant clean energy solutions that, if successfully scaled, could help Member Countries meet their climate goals steadily. Six such demonstration projects stand completed as of date in Togo, Guyana, Jamaica, Kiribati, Niger, and Mali. The Country Mission segment highlights the initiatives undertaken in the Republic of Niger. It underlines the importance of Country Partnership Agreements, which provisions structured collaboration prioritising individual Member Country's needs and aspirations.

The SolarX startup challenge is part of ISA's two-pronged strategy to ease solar deployment in Africa. The intervention will help attract investments in the solar energy sector, reduce the gap between energy demand and supply, and promote a robust start-up ecosystem in Africa. The Mauritius roadshow helped engage with the Mauritian entrepreneurial community.

ISA's on-ground interventions are fortified by focusing on various capacity-building initiatives. The ISA- Long Duration Energy Storage (LDES) Council webinar demonstrated how critical long-duration storage is, the tremendous potential of LDES for on and off-grid applications, and the diversity and economics of what is already available in the market. The deliberations focused on policies, procedures, financing, and support of communities required to incorporate LDES using solar for 24 X 7 energy supply.

ISA is actively pursuing with its Member Countries to establish STAR (Solar Technology Application Resource) Centres and aims to operationalise at least five STAR-Centres in 2023. This edition of our newsletter spotlights the high-level mission in Ethiopia and Somalia to determine the need of the countries concerning training and a detailed business plan for these centres to generate revenue for sustenance. ISA recognises that universal energy access and security are critical to our planet's shared prosperity and future.

ISA's premise is a quantum leap in climate action through improved energy access and security by promoting solar energy in a sustainable, affordable, and resilient way. Global acceleration of solar energy is the need of the hour and can only happen through cooperation.

With best wishes

Ajay Mathur
Director General, International Solar Alliance

SNAPSHOT

COUNTRY MISSION TO THE REPUBLIC OF NIGER

The Republic of Niger is one of the Founding Member Countries of ISA, actively participating in ISA's activities and programmes.

ISA has launched various technical programmes from time to time to facilitate the Member Countries to scale up solar applications in the Member Countries. The government of Niger had submitted an expression of interest to join Programme 6 (Solar Parks) for the development of a solar plant of capacity 50 MW for hybridisation of a pit-head coal-fired power plant of capacity 2*18.8 MW, which is under operation by SONICHAR, a coal mining company, at Tchirozerine in Agadez region of northern Niger. The government of Niger has appointed NTPC Ltd as Project Management Consultant (PMC) for implementing a 50 MW solar project at Tchirozerine.

- Host discussions on Country Partnership Framework which include talks on Programme 1 - Solar water pumping system, Programme 3 - Mini-grid Systems, Programme 4 - Solar Roof-top, Programme 6 - Solar Parks and STAR-C Centre
- Visit the district hospital in Gaweye, Niamey, where a 22 KW solar power plant had been installed as an ISA demonstration project

Picture of allocated site for 50 MW solar park and Representative of ISA with SONICHAR teamQ

In light of this, a Technical Mission to Niger was undertaken by ISA along with its partner organisation, NTPC Limited, from 13 - 20 March 2023 with the following objectives:

- Site visits for a grid-connected solar project in the Agadez region along with NTPC Ltd for the development of a Solar PV plant for hybridisation of a pit-head coal-fired power plant at Tchirozerine under ISA Program - 06 (Solar Parks)
- Visit the Maradi Region to ascertain the need for solar energy to reduce the cost of power in the hydro-agricultural development of DJIRATAOUA in the Maradi Region

Key decisions and outcomes emerging from the visit and emphasised by H.E. Mr Ibrahim Yacoubou, Hon'ble Minister of Oil, Energy and Renewable Energies of the Republic of Niger, include the development of a solar PV plant for hybridisation of a pit-head coal-fired power plant at Tchirozerine. Solar energy interventions to reduce the need to reduce the cost of energy

ISA Team with Djirataoua Community, Maradi, with Mr Zakari Abdou, National Focal Point of ISA, Ms Djahara Hasseye Regional Director, and Mr SAADOU SALIFOU, Regional Director of Rural Development, Maradi. The team met and interacted with Mr Salissou Elh-MATY, Head of the Community and other farmers.

› Meeting with H.E. Mr IBRAHIM YACOUBU, Hon'ble Minister of Oil, Energy and Renewable Energies, Republic of Niger

in the hydro-agricultural development of DJIRATAOUA in the Maradi Region. Solarisation of various government buildings in Niger, including conceptualising and rolling out a solar cooking programme. ISA to assist the Niger Government in hosting an Energy Conference to attract private sector investment.

ISA CARES, an important initiative taken by ISA in the wake of COVID-19, is dedicated to deploying solar energy in the healthcare sector. The initiative specifically caters to the healthcare and electrification needs of Member Countries, with a particular focus on LDCs and SIDS. These projects commonly involve enabling the electrification of public healthcare services, with many benefiting rural and other marginalised communities. Under this initiative, a grant agreement was signed between ISA and the Government of Niger for the solarisation of healthcare centres in Niger as a demonstration project. The solar capacity of this health care centre was 22 KWp, which met the critical demand of the operation theatre and t he maternity room. This project was completed in February 2023.

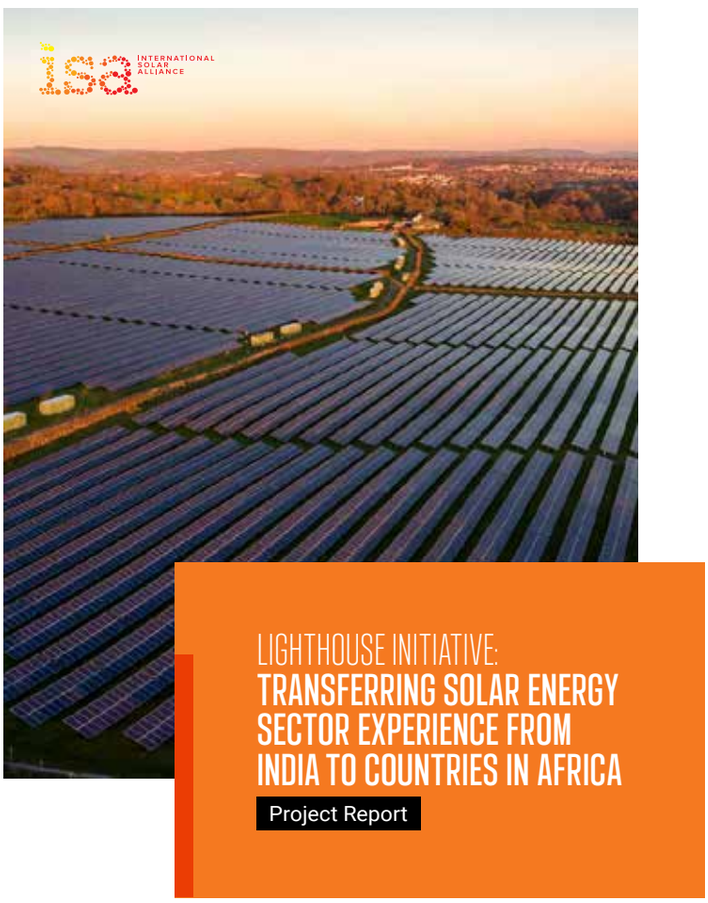
The ISA team also visited the district hospital in Gaweye, Niamey, where a 22 KW solar power plant has been installed as an **ISA Demonstration Project**. The team visited the site and interacted with Dr Erick, the hospital's director and his team of doctors, patients, and nursing staff. The positive feedback shared by doctors, patients, and staff highlighted the crucial role of uninterrupted power in the operation theatre and maternity room. The doctors and staff expressed satisfaction with the ISA intervention and requested that the entire hospital be powered by solar energy to meet its load requirements.

ISA also looks forward to signing a Country Partnership Agreement with Niger to implement various ISA initiatives under programmatic support and capacity building, including the STAR-C initiative.

› The ISA team at the district hospital in Gaweye, Niamey, where a 22 KW solar power plant has been installed

SPOTLIGHT

LIGHTHOUSE INITIATIVE: TRANSFERRING SOLAR ENERGY SECTOR EXPERIENCE FROM INDIA TO COUNTRIES IN AFRICA



India has recently surpassed the milestone of 50 GW of solar power installed capacity and is rapidly moving towards its target of 100 GW solar installations in the country. The country's solar sector has grown multi-fold over the past six years, from only 7 GW in 2016 to over 54 GW in 2022, featuring in the top five countries regarding solar installed capacity. Most of the growth has come in the utility-scale sector by deploying ultra-mega solar parks. Alongside, there has been a considerable rise in the solar rooftop segment as the commercial and industrial consumer segments continue to adopt solar rooftops as a viable option for clean and reliable power generation. For the decentralised segment, government-driven policy initiatives have been critical in creating a conducive market ecosystem that has led to the growth in the adoption of solar pumps and solar lighting systems, among other segments. Several learnings can be derived from India's solar success story.

The knowledge exchange and learnings taken from India's solar success can unlock significant advancements for adopting solar energy technologies in Africa – providing access to clean and reliable power to millions across the continent.

In Africa, 43% of the population has access to electricity (half of the global access rate of 87%) despite having countries with the world's most abundant solar resources. Solar energy presents a clean and affordable option to the 600 million underserved African population struggling with no proper access to electricity.

The challenges experienced in developing a sustainable and scalable solar ecosystem in Africa pertain to three broad areas:

1. Limited policy focus
2. Last-mile connectivity issues
3. Lack of scalable finance and business models

The Indian market has long struggled with a similar set of challenges. Still, it has evolved significantly over the past decade to develop a mature solar energy ecosystem that is self-sustaining and caters to the country's remotest areas.

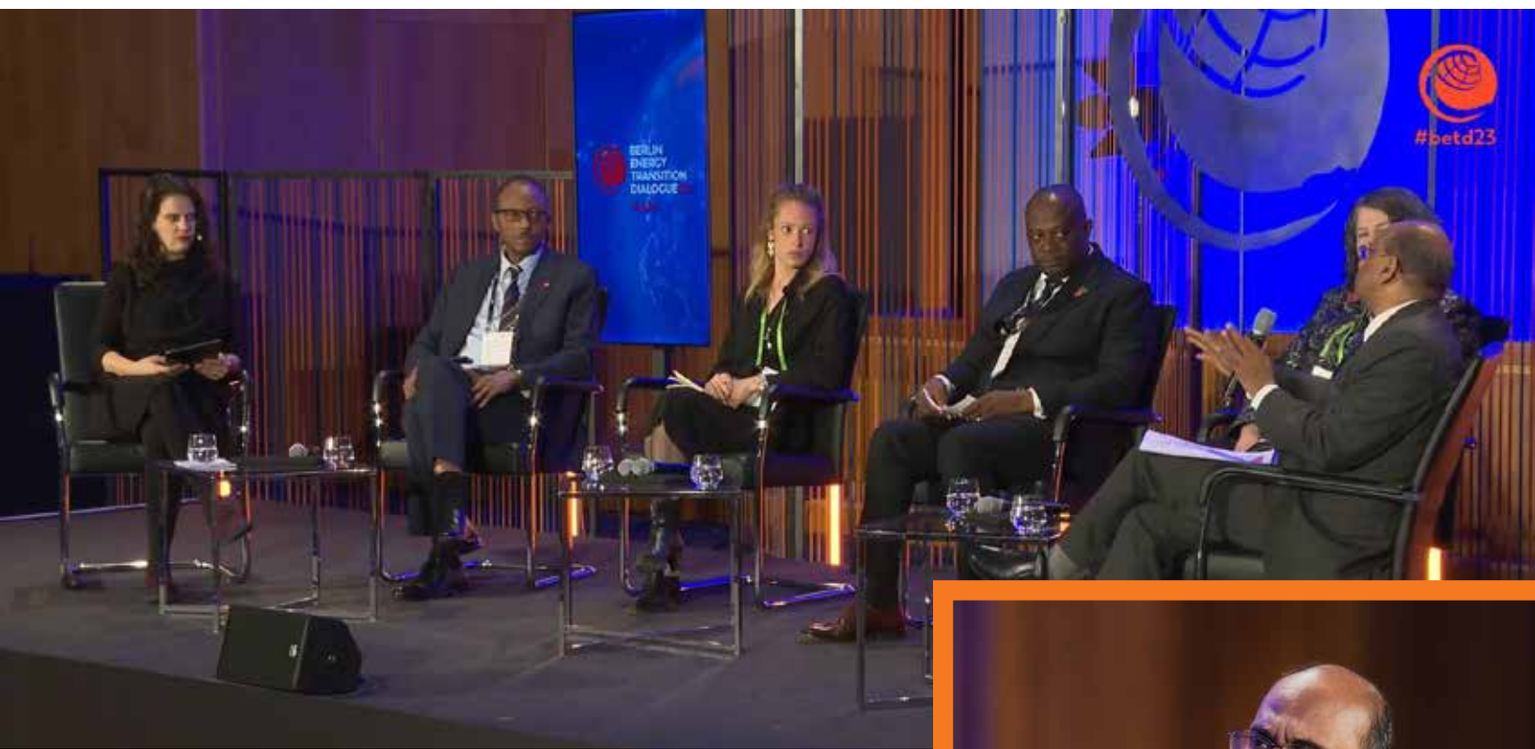
Under the **Lighthouse Initiative** – a partnership between the World Bank and International Solar Alliance, supported by FCDO, this project aims to enable knowledge sharing and transfer of experience, technology, and investments from India to African countries.

The objective of this Report is to:

- Identify the current challenges faced by some of the African countries in developing their solar energy ecosystem
- Customize and contextualise exemplary interventions by factoring in the ground realities in Africa.
- Provide examples from India in addressing similar problems. The Indian market provides evidence and learning in favour of solar energy as a viable option to reach remote areas and make clean energy affordable and accessible.

ROUNDUP

9TH BERLIN ENERGY TRANSITION DIALOGUE



DG-ISA, Dr Ajay Mathur, participated in the 9th Berlin Energy Transition Dialogue on 28-29 March. This year's forum addressed the theme, 'Energiewende – Securing a Green Future.' The forum was attended by many foreign ministers, energy ministers, international energy organisations and experts in clean energy. The two-day Conference discussed the challenges in clean energy and how to switch to renewable, more sustainable energy sources, reflecting the international trend towards a green future.

Addressing the panel, 'Innovation and Integration as Levers for Financing the Off-Grid Sector', Dr Ajay Mathur said, "We've seen a huge increase in the number of people connected through off-grid systems. Today, the off-grid sector is incredibly diverse. However, at the institutional level, the opportunities of off-grid solutions for rural electrification are often underestimated, while financial risks tend to be overvalued." He also highlighted the challenges in the off-grid sector, "The key problem that occurs is that the regulatory framework of countries often forms a barrier against private sector investment coming in. To advance the off-grid sector, we need an agreement on regulations, rules, and policies that can help scale up the off-grid sector in countries. The second is to bring that money in; we need guarantees that pull in private-sector investments. I believe that solar and particularly solar mini-grids is the way to provide rural energy access for all today."

On the sidelines of the Berlin Energy Transition Dialogue, DG-ISA met with the President of Germany, Hon'ble Frank-Walter Steinmeier and discussed the need to increase the role of and prioritise solar towards climate action. He also met H.E. P. Harish, Ambassador of India to Germany and discussed areas of cooperation in scaling solar deployment and addressing climate change.

ROUNDUP

LAUNCH OF FOURTH ANNUAL GLOBAL ELECTRICITY REVIEW

Ember's fourth annual Global Electricity Review aims to provide the most transparent and up-to-date overview of changes in global electricity generation in 2022 and a realistic summary of how "on track" the electricity transition is for limiting global heating to 1.5 degrees. (https://ember-climate.org/insights/research/global-electricity-review-2023/)

Remarks by Joshua Wycliffe, COO, ISA

Congratulations, everyone, on the report. It is great to be here this afternoon. Thanks for inviting the International Solar Alliance to participate in this launch.

I want to start on a positive note. In the last decade alone, solar and wind costs have declined drastically. Solar is about 82 per cent. However, the cost of coal-fired energy has remained similar while the cost of nuclear-fired energy increased by 61 per cent. I mention that because major conventional fossil fuel energy providers have criticised renewables' use and portrayed it as costly and unpredictable.

One of those things for the acceleration we always find is the need for higher advocacy strategies deployed in the areas where we often struggle. So I will just talk about two important things we look at, especially in transitioning into solar renewables. One of those things that would need to be addressed quickly in this decade is to look at robust financial backing from large organisations extending subsidies and incentives to green energy solar, for instance, that will pace the progress. Solar and renewables require massive investment in developing countries. Blended Finance combines concessional public funds, so commercial funds have been and will continue to grow as a powerful means to direct more commercial finance towards impactful investments. In sub-Saharan Africa, Blended Finance has achieved notable success impacting over 61 per cent of global concessional financing in 2020 alone.

› Launch of Ember's Global Electricity Review 2023

Africa needs very urgently to increase investment in electricity infrastructure. About 570 million people in sub-Saharan Africa need access to electricity, and existing infrastructure is not able to meet the demand. Yet the region currently accounts for just about four per cent of global power sector investments. Achieving universal access or inclusive transition in this decade by 2030 will require tripling annual customer increases. Catalytic instruments like blended finance, which I've mentioned, are critical for scaling up literacy investments in Africa and the rest of the world. This will undoubtedly ensure an inclusive transition, and of course, the other thing I was going to mention is the construction of off-grid solar power electric facilities around Africa like the ones the ambition shown in Nigeria for a large off-bred market which has developed to cope with chronic electricity reliability issues which are destined to provide 80 per cent of the energy demand if all plans go-to place and go to good. And they plan to develop a 13 gigawatt off-grid solar PV capacity in this decade. That's just one exemplar. One of those areas that one of the speakers did mention previously was about the issues in terms of policymakers and influencing the legislative requirements for investments to be eased and for reliability, and investment is significant.

The International Solar Alliance is heavily involved in both these topics I have discussed. We have recently launched the Blended Finance Facility; we're raising-mobilising 250 million dollars towards solar transition risk mitigation towards payment guarantees and insurance mechanisms that will go in place to ease investments into Africa and then on to Southeast Asia and other parts of the Pacific as well.

ISA ENABLERS

EXPANDING SOLAR AND LONG DURATION ENERGY STORAGE OPPORTUNITIES

According to the African Economic Outlook 2022, over 600 million people or 43% of the total population, have no access to electricity. The growth and economic development of the continent call for universal access and a cost-effective, reliable & stable supply of energy. The annual installed solar capacity hit 949 MW in 2022, a 14% y-o-y growth compared to 2021, making the cumulative capacity 10.5 GW, according to African Solar Industry Association (AFSIA). Africa is home to 60% of the world's best solar resources. Still, just 1% of the global solar capacity is installed in Africa, and it intends to maximise the continent's potential with ambitions to reach 510 GW by the end of 2030 (IEA). Solar PV is already the cheapest source in many parts of the continent. With its current economic attractiveness, it is gaining momentum and has the potential to be deployed rapidly with increasing investments.

However, daily energy shifting, seasonal variability, and balancing of grids must be addressed and that is where energy storage can play an important role in providing flexibility & reliability with a tremendous impact in enabling energy access. Long Duration Energy storage can smooth out the delivery of intermittent resources by storing excess energy when the sun is shining & delivering it both during the night and off-season periods, as well as providing flexible, dispatchable power.

The webinar opened with Alexander Hogeveen Rutter from ISA setting the context by stating that solar is the cheapest new electricity generation option in many parts of the world. The challenges are two-fold – intermittency and time shifting. Long-duration energy storage solves both problems, so the International Solar Alliance joined forces with Long Duration Energy Storage Council, LDES, to exchange ideas on having 24X7 full-time, reliable solar power.

The session featured speakers from the LDES Council, NRDC, Mali AER, ESS and VOITH.

Julia Souder, LDES Council, highlighted the greater need for LDES with benefits in terms of flexibility, resiliency, reliability, and affordability to the energy systems for moving towards the clean energy transition. This is a 4 trillion-dollar marketplace with 540 billion dollars in annual savings possible when you bring long-duration storage to utilise the benefits of solar and wind. LDES unlocks many different use cases, like supporting

island grids and industries with remote and unreliable grids for heat and power. Adapting policies to help local communities achieve the savings and benefits of long-duration storage paired with renewables can go a long way. LDES Council is formed of sixty companies around the globe providing the 4 different types of LDES – chemical, thermal, electrochemical, and mechanical working along with industry/service customers, capital providers, equipment manufacturers and system integrators and developers on the ecosystem of long-duration energy storage.

Shruti Shukla, NRDC, pointed out that global investments have steadily increased in the low-carbon energy transition sectors, including solar and storage. The key is increasing investments and pivoting financial flows to clean energy to meet the domestic demand, and low-cost financing is available in Africa. Between 2000 – 2020, only 2% of global renewable investments went to Africa. Hence, it is very important that Africa get a bigger share of global investments, securing the energy transition. Opportunities in the form of just energy transition partnerships were announced for South Africa in 2021. IRENA's energy transition, accelerator and financing platform is looking to mobilise close to 1 billion dollars in RE projects for developing countries. Climate finance must be made accessible to developing nations, and leaders must focus on providing modern energy solutions to the people.

Dr Souleymane Berthe, Mali AER, highlighted the challenges and the opportunities for huge investments and ambitions in Mali and the West African region. The Government of Mali has made efforts to increase renewable energy with a 25"% target in the energy mix (excluding large hydro) by 2036 by allowing equipment imports of renewable energy equipment and opening of the sector to public-private participation. Several solar park projects are being developed in collaboration with the International Solar Alliance in the region, and other projects for integrating solar energy into the electricity grid and improving cleaner energy access.

Aram Zamgochian, ESS, remarked that while the rate of access to electricity in sub-Saharan Africa has risen from 33% in 2010 to 48% by 2020, there are 570 million people who still lack access to reliable and affordable electricity. LDES, including solar, can unlock opportunities in Africa to transition successfully to a renewable powerhouse over the next decade. The technology at ESS uses earth-abundant iron, salt, and water for an iron flow battery. The iron flow batteries deliver safe solutions capable enough to provide twelve hours of flexible energy capacity for commercial and utility-scale customers. With no capacity and power fade, irrespective of how often the battery has been cycled, there is no degradation curve, resulting in a lower LCOS than other technologies. The safe and non-toxic batteries do not pose any thermal runaway risk, with a wide operating temperature range that suits the African continent. Also, the ESS technology does not use rare earth or critical minerals. ESS was selected last year by Eurafric Oil & Coastal Services in Nigeria with financing from the EXIM US to provide LDES services. The Eurafric project is replicable, and LDES can help unlock Africa's vast solar potential in the short and long term, extending the sun into nighttime hours during peak demand hours and creating base load solar.

Anton Harris, VOITH, called to attention that pumped storage is the only possibility of storing excess energy in an economically viable and large-scale way. VOITH supplied equipment in the Ingula PSP in South 4 X 342 MW pump turbines and wind generators, which is a multipurpose plant for grid stability (load shedding) and has black-start capability in case of complete grid failure. With the expansion of renewable energy, there is a need for at least requirement of 3 – 6 GW of pump storage needed in the coming decades in South Africa. Therefore, stakeholders need to consider that pump storage needs to be included in the long-term planning to enable the integration of the planned renewables in solar and wind.

Finally, the webinar featured a panel discussion moderated by Julia Sounder where the speakers brainstormed on where long-duration storage can fit into system planning, how can solar and LDES can be beneficial, the kinds of policy measures required in Africa for more penetration of clean energy, and how can more financing can flow into the continent and other developing countries, with further deliberations of what are the challenges and opportunities of LDES uptake in Africa.

ISA ENABLERS

MISSION STAR-C IN EAST AFRICA

The STAR-C, Solar Technology Application Resource - Centre, the initiative is a critical element of ISA's endeavour at building capacity, mobilising investments and knowledge to support innovations and promote an innovation ecosystem and accelerating the development and deployment of solar energy in the ISA Member Countries.

The ISA is actively pursuing with its Member Countries to establish STAR-Centres and aims to operationalise at least five STAR-Centres in 2023. Among these are STAR-Centres being established in Ethiopia and Somalia. Addis Ababa University and the University of Somalia have been identified as the STAR-Centres' host institutions in these two countries. In April 2023, ISA conducted a high-level mission in Ethiopia and Somalia to determine the need of the countries concerning training, testing, innovation, and knowledge generation; hardware/software requirement; human resources and a detailed business plan for these centres to generate revenue for sustenance.

The ISA mission led by the Chief Operating Officer, Mr Joshua Wycliffe, met with Mr Jama Taqal Abbas, Minister of Energy and Water Resources, Government of Somalia and other Ministry of Energy and Water Resources officials. The team discussed the progress of establishing the STAR-Centre in Somalia and the possibility of solarising the villages to set a good example and help the community be energy independent. The ISA officials also visited the Somali University. They met with the Vice Rector and his technical team to discuss different types of professional and vocational courses on solar photovoltaics (PV) to be offered by the STAR-Centre and the specification of equipment and instruments ISA is planning to procure for the STAR-Centre. Mr Joshua Wycliffe appreciated the progressive approach of the Government of Somalia and the commendable support received from Mr Abdifatah Abshir Ibrahim, Director of Energy, ISA National Focal Point in Somalia, on deploying solar energy. He offered technical support to solarise Somalia's key infrastructure, including the international airport, schools, and hospital buildings.

The mission also conducted a detailed infrastructure assessment - human resources, their skills, and any available solar equipment for STAR-Centre in Addis Ababa University, Ethiopia. The mission was hosted by Mr Gosaye Mengistie, Advisor to the Minister, Ministry of Water and Energy, Government of Ethiopia. The officials from the Ministry discussed the potential for STAR-Centre to collaborate with the DREAM project funded by the World Bank. The Distributed Renewable Energy-Agriculture Modalities (DREAM) project facilitates the implementation and private sector operation of nine renewable energy mini-grids and irrigation systems across Ethiopia. The ISA and the Ministry officials discussed the Access to Distributed Electricity and Lighting in Ethiopia (ADELE) Project and how STAR-Centres can help deliver Ethiopia's National Electrification Program (NEP). The ISA officials also visited the Addis Ababa Institute of Technology. They met with the university faculty, including Dr Frehiwot Woldehanna, ISA National Focal Point and Mr Bikila Teklu Wodajo, Chief Executive Director, Addis Ababa Institute of Technology. ISA and the officials of the Government of Ethiopia agreed on the sustainability plan of the STAR-Centre. They suggested showcasing the STAR-Centre in Ethiopia as a model STAR-Centre at the upcoming COP28 in December 2023. Mr Joshua Wycliffe appreciated the efforts of Dr Frehiwot Woldehanna, ISA National Focal Point, in making the STAR-Centre initiative successful in Ethiopia.

The STAR-Centres in both countries will start conducting regular training by mid of 2023 and work closely with the countries in East Africa to share knowledge, technology, and human resources. They will simultaneously strive to build their capability in the solar power sector. The centres will support the Government in creating a significant number of green jobs and enable the development of innovative ideas to address country-specific energy-related challenges.

#IDEASTHATHAVEWORKED: SOLAR IMPACT STORIES FROM AROUND THE GLOBE

INDIA'S SOLAR CANALS: A SMART SOLUTION FOR SPACE ISSUES

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. Beginning from this edition of the ISA newsletter will showcase innovative solar interventions that have carved positive outcomes on the ground.

We spotlight Solar Canals from India and the 500MW Dau Tieng Solar Array – the largest in Southeast Asia from Vietnam in this edition.

Introduction: A major blockade in large-scale solar projects is space to set up the panels. In India's Gujarat, a unique solution has been to cover its water canals with solar panels, helping save land, water and carbon emissions in one.

Problem statement:

One of the main challenges in building relatively large solar farms has been finding the suitable parcel of land at the right location, especially in densely populated countries and regions and in situations where property ownership might need to be more clearly defined. India faces this challenge and has committed to commissioning 300,000 MWp of installed solar PV capacity by 2030.

Solution:

Consequently, across various parts of the country, the solar energy industry has shifted focus to making the most efficient and innovative use of available land parcels and spaces. The western Indian state of Gujarat has found

› Gujarat's Canal-Top-Solar panels are suspended on a metal structure over the canal (Credit: Getty Images)

an innovative solution by installing solar arrays on canals carrying water for irrigation and consumption.

Advantages:

This avoids land acquisition, lowers the rate of water evaporation, and cools the panels above, thereby enhancing power output as well. In 2011, the provincial government of Gujarat proposed the idea of "canal-top solar" to improve energy generation without having to allocate land specifically for PV plant construction. By 2014, a pilot project involving a 750m (about 2460.63 ft) stretch leading off the Narmada River led to the first large-scale canal-top solar power plant in the Vadodara district.

The pilot was soon followed by plans for large-scale replication of "canal-top solar" installation along the lengths of the canals in the state. The long stretch of the canals was slated to permit the evacuation of electricity from multiple points.

The first large-scale canal-top Solar Power Project (1.0 MW) was implemented on the Sanand Branch Canal of the Sardar Sarovar Project at Chandrasan village near Mehsana, 45 km from Ahmedabad, Gujarat. The panels remained cooler by being located right above the flowing water, resulting in lower temperatures and more efficient energy production than traditional ground-mounted arrays. Additionally, the shade from the panels helped curtail the growth of pervasive algae in the canals that contribute to water toxicity and clog water pumps.

Challenges:

On the flip side, these canal-top solar plants were more expensive to construct than ground-mounted plants of similar capacities. They required custom-designed and heavier galvanised support structures to minimise and delay corrosion. Additionally, the winding contours of the canals made it difficult for the arrays to be oriented for maximum power output. Further, limited physical access to individual panels means that cleaning or maintenance work of the panels could only be done by using ramps and mechanical sprayers. Being in outdoor and unrestricted public spaces also increased the prospect of theft of the arrays, requiring additional investments into the deployment of cameras and security personnel to preserve and protect the power plant equipment.

Impact:

The pilot for this project was completed in 2015 at USD 18.3 million and received the Prime Minister's Award for Best Project in Public Administration in India for 2015. The large-scale canal top solar power project on Sanand Branch Canal was projected to generate 1.6 million kWh of electricity per annum and helped prevent the evaporation of 9.0 million litres of water from the canal.

As the project was primarily located in rural areas that do not have regular access to power, the energy generated from the canal-top-solar project could be transmitted to the local region directly, reducing power transmission losses. The energy was used to provide electricity for farmers during the energy-intensive irrigation season. The surplus electricity during the off-seasons was fed to the state utility grid, used by the canal authority, or sold to distribution companies. These pilot initiatives were followed by commissioning 10MWp canal-top capacity in November 2014 and 25MWp of similar capacity in 2017.

Further Action:

Notwithstanding such risks and additional costs, in May 2022, Sardar Sarovar Narmada Nigam (SSNN), the Gujarat government-owned enterprise, proposed the installation of 100 MWp of solar PV capacity over the branch canals of the river Narmada.

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#IDEASTHATHAVEWORKED: SOLAR IMPACT STORIES FROM AROUND THE GLOBE

500MW DAU TIENG SOLAR PROJECT IN VIETNAM

Introduction:

Vietnam witnessed a sudden boom in solar installations leading up to December 2021. One of the biggest projects implemented on the back of this was the 500MW Dau Tieng Solar Array – the largest in Southeast Asia.

Bird's eye view of the DauTieng Solar Reservoir in Vietnam. Taken from Wikipedia creative commons (Source: https://commons.wikimedia.org/wiki/File:DAU_TIENG_PROJECT_BIRDSIGHT.jpg)

Vietnam's nascent solar market witnessed a sudden boom in solar installations in 2019, on the back of some very attractive feed-in tariffs. The total installed capacity increased from a little more than 100MW in 2018 to 5,700 MW by December 2021. One of the major projects implemented during this period was the USD 392.5 million (~€ 344.22 million), 500 MW Dau Tieng solar array, one of Southeast Asia's largest installations.

The three-stage solar PV plant with a 220kV substation and inverters was built by PowerChina Huadong – the EPC contractor – on behalf of Vietnamese project developer Xuan Cau and Thailand based B.Grimm Power. Jinko Solar of China supplied the 330 W multi-crystalline PV modules for the project.1 The first two stages of the project with a cumulative capacity2 of 350MW had been commissioned by June 2019, while the third stage with a capacity of 150MW was commissioned in September 20193. The project sold power to the state-owned utility Electricity of Vietnam (EVN).

Problem Statement:

Notwithstanding the attention paid to the design, the project faced many challenges during the installation, including supply shortages and fluctuating water levels. However, the contractors completed the project on time, as contracted [4].

The solar array was built on the Dau Tieng Reservoir, where the water levels fluctuated wildly throughout the year: this made Dau Tieng one of the most challenging installations ever mounted.

Solution:

Since floating solar structures could not work under such conditions, special concrete pillars with heights ranging from 2.5m to 8.0m were sourced from Arctech Solar. Using a special vessel, these pillars were planted on the lake bed. Special zinc brackets were mounted on top of the pillars upon which the panels were installed.

Further Action:

Apart from such big projects, massive scaling up of roof-top installations have been seen in Vietnam. More than 9GW was installed in 2020, of which 6.1GW was done in December 2020 alone. This was because the government offered a feed-in-tariff (FIT) of 8.38 US cents/kWh, for 20 years, for projects commissioned by 31 December 2020. The installation companies had to comply with the EVN grid codes and obtain the required licenses prior to installation. The EVN was responsible for signing the Power Purchase Agreements (PPAs), supplying and installing 2-way meters, calculating the power production and making yearly payments. The optimal financing model for Vietnam was equity for the first 5-10MW, then once scalability and sufficient track record were proven, getting debtors involved.[5]

› Bird's eye view of the DauTieng Solar Reservoir in Vietnam (Source: https://commons.wikimedia.org/wiki/File:DAU_TIENG_PROJECT_BIRDSIGHT.jpg)

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4. Brian Publicover (2020) ib id.
5. Leader Associates (2021) "Scaling up Rooftop Solar in Vietnam – More than 9GW installed in 2020", PV Magazine, 19 January, https://www.pv-magazine.com/press-releases/scaling-up-rooftop-solar-in-vietnam-more-than-9gw-installed-in-2020/, last accessed 18 September 2022.

ISA INITIATIVES

CAPACITY BUILDING AND KNOWLEDGE SHARING WORKSHOP IN MAURITIUS ON SOLARX STARTUP CHALLENGE PROGRAMME

Ahead of the 31 March 2023 deadline, inviting entries to the SolarX Startup Challenge, a capacity building and knowledge-sharing workshop was hosted in mid-March in Port Louis, Mauritius.

Dr Drishtysingh Ramdenee, Director, Economic Development Board (EDB) thanks ISA and Invest India for organising the capacity building workshop in Mauritius

The International Solar Alliance (ISA) and Invest India, in collaboration with the Economic Development Board (EDB), Mauritius, organised a Capacity Building and Knowledge Sharing Workshop for startups and small business entrepreneurs at the High Commission of India, Mauritius, to encourage entrepreneurship in solar and create awareness about ISA's SolarX Startup Challenge programme. The session highlighted essential aspects of the solar energy ecosystem, key information on the criticality of entrepreneurship in solar and climate change, the 'problem statements' necessary to find a sustainable pathway and valuable knowledge that local entrepreneurs may utilise.

Dr Ajay Mathur, Director General, International Solar Alliance, said, "The SolarX Startup Challenge is part of our two-pronged strategy to ease solar deployment in Africa. The first edition of SolarX will focus on the African region to attract investments in the solar energy sector, reduce the gap between energy demand and supply, and promote a robust start-up ecosystem in Africa. "With an estimated potential of 7,900 GW of solar in Africa, and only 4 African nations having a start-up ecosystem, there is a yawning gap between what is needed and what is available. African start-ups attracted less than 1% of global venture investments. With SolarX, we aim to change this scenario. This initiative will also help implement the roadmap to mobilise USD1 trillion for solar till 2030."

While congratulating Invest India, EDB and ISA for this very timely and pertinent event during his keynote address, **Mr Vimarsh Aryan, Deputy High Commissioner of India to**

Mauritius, also highlighted key aspects of the strength and diversity of the bilateral relationship between India and Mauritius. He also emphasised the enormous opportunities and potential in the renewable energy sector, especially solar and the pivotal role that India, Mauritius and African countries can jointly play in tapping this vast potential for the benefit of mankind. He urged all participants to actively participate in the workshop and benefit from the SolarX Startup Challenge. He added, "India remains committed to supporting partner countries, especially from the Global South, by sharing its experiences and expertise in line with the Indian ethos of Vasudhaiva Kutumbakam."

Dr Drishtysingh Ramdenee, Director, Economic Development Board (EDB), thanked Invest India, the International Solar Alliance and WAIPA for the organisation of this unique challenge and for considering Mauritius for the capacity building workshop. Dr Ramdenee provided an overview of Mauritius' conducive ecosystem incepted by the Government to achieve 60% renewable energy in the electricity mix by 2030. This ecosystem caters for different categories of entrepreneurs ranging from facility scale R.E generation to start-ups. He highlighted the Mauritius advantages for start-ups which encompasses the innovator's permit allowing foreign citizens developing an innovative project to work and live in Mauritius, the regulatory sandbox license, the Innovation Property Box Scheme providing an eight years tax holiday for income derived from intellectual property assets which are developed in Mauritius, the national incubator scheme encouraging the creation of innovative businesses as well as fiscal incentives such as double deduction and accelerated depreciation applicable to start-ups.

Moreover, the unique example of Skysails, a German technology, using high altitude winds through a parachute system to produce base load electricity was portrayed. The promoter of this technology preferred Mauritius as a test base owing to its favourable business climate coupled with the unique opportunity of on-grid technology testing. This technology would be deployed in Africa, insular island states and globally upon conclusive testing. Dr Ramdenee concluded his intervention by outlying the importance of public-private partnerships in achieving the Government's RE targets.

Mrs Z.Guness-Goolbar, the Permanent Secretary of the Ministry of Energy and Public Utilities, Mauritius, welcomed the initiative of Invest India and the International Solar Alliance. She outlined the various efforts the Ministry of Energy and Public Utilities put forward during the past few years to meet the Government's objective of attaining 60% of renewables in the electricity mix by 2030 and phasing out coal by the same time frame. Furthermore, Mrs Guness-Goolbar reiterated the Government's commitment to encouraging the participation of different stakeholders in the green energy transition journey. To this effect, various schemes have been set up for commercial and industrial users, real estate developers and households. Moreover, these schemes are accompanied by preferential loans and attractive fiscal incentives.

On innovation in this sector, Mrs Guness-Goolbar pointed out that the Mauritius Renewable Energy Agency has launched the third application round for the on-grid testing of innovative RE technologies under the National Scheme for Emerging Project Concepts Based on Renewable Energy Technologies (NSEPCRET). This scheme allows innovative technologies to be tried on the national grid with a guaranteed purchase price. The scheme is open for an initial installed capacity of 2MW with the possibility of ramping up to 10MW upon conclusive testing. The PS concluded her intervention by inviting Mauritius entrepreneurs to leverage the various opportunities in the sector and maximise the openings provided by initiatives such as the SolarX Startup Challenge to expand their operations in the region."

ISA INTERVENTIONS

A Visual Record of Our Activities, and Actions

1

1. DG-ISA met with Africa 50 delegation led by CEO, Mr Alain Ebobissé, to discuss areas of cooperation.

2. As part of the ongoing ISA- GEAPP engagement, the ISA delegation met with stakeholders in Addis Ababa to strengthen areas of cooperation in solar mini-grids, agriculture, rooftop, and STAR-C.

2

3

4a

4b

5

3. DG-ISA addressed the R&D Conclave on Renewable Energy organised by the Ministry of New and Renewable Energy (MNRE) GOI in collaboration with Shakti Foundation and RTI International.

4a & 4b. Secretary (East) Ambassador Saurabh Kumar hosted resident Heads of Missions of ASEAN and Pacific Island Countries for interaction with DG, Coalition for Disaster Resilient Infrastructure and COO-ISA, Mr Joshua Wycliffe. Exchanges underlined strengthening cooperation for climate action.

5. DG-ISA addresses the G20 Energy Transitions Working Group (ETWG) side event on Diversifying RE and Critical Materials Supply Chain for Clean Energy Transition.

ISA IN NEWS

April 2023

Apr 2

Policy mechanisms, common protocol for hydrogen certification and regulatory frameworks for Hydrogen ecosystem

PIB

Apr 4

L'Alliance solaire internationale a lancé un projet pilote pour promouvoir des applications de l'#Energie #solaire dans le secteur agricole pour 9 pays

ECom News Afrique

Apr 6

ISA and Invest India Workshop Encourages Solar Startups in Mauritius

Energetica

Apr 7

Hydrogène vert: «Le Maroc a tous les atouts pour devenir un pionnier mondial de l'industrie H2

Finance news

Apr 8

AER-Mali : la souveraineté énergétique au cœur des défis

BAMADA

Apr 12

"El fin de la era fósil": las energías eólica y solar batieron récords el año pasado

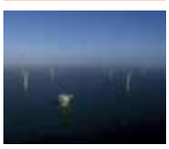
Euronews Spain

Apr 12

'End of the fossil age': Wind and solar broke energy records last year, report reveals

Euronews Green

Apr 12



L'énergie solaire et éolienne a atteint un pic historique en 2022

France Euronews

Apr 12

Produção energética eólica e solar quebrou recordes no ano passado

Portugal Euronews

Apr 13

A fosszilis korszak vége": A szél- és napenergia tavaly energiarekordokat döntött

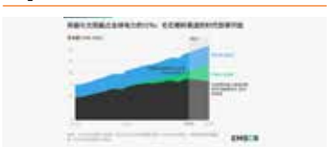
NRG Report

Apr 13

Rüzgar ve güneş enerjisinde bir rekor daha kırıldı

Yeni Safak

Apr 13



2022 In 2019, the global wind power generation reached a new high, and the turning point of energy transformation may have arrived

East Today

Apr 13

La energía solar y eólica baten su récord de producción mundial en 2022

El Norte de Castila

Apr 13

Wiatr i słońce pobiły rekordy energetyczne. Czy to „koniec ery paliw kopalnych"?

Ekologia

Apr 13

Wind, Solar record 12% share in global electricity

Power Philippines

Apr 13

Wind, solar generate record 12% of global electricity in 2022

Philippines News Agency

Apr 16

Harnessing Solar potential in Bangladesh

Energy & Power Bangladesh

Apr 17

There is a great deal of interest in Lithuania joining ISA

Mint

Apr 17

ISA & UNDP Launch Pilot Projects On Scaling Solar Applications for Agriculture In Africa

Tech Nova

Apr 17

L'ISA et le PNUD favorisent le solaire dans l'agriculture en Afrique

Commod Africa

Apr 18

International Solar Alliance led by India, France: How it could change our world

Commod Africa

Apr 18

Solar-agri projects to be launched in 10 countries

ESI Africa

Apr 19

India's fight against climate change makes it one to watch

The National

Apr 20

L'Alliance Solaire internationale lance un programme pour l'irrigation agricole solaire

PV Magazine

Apr 20

AFRICA: UNDP-supported project combines solar and agriculture in 9 countries

Afrik21

Apr 21

Développement industriel à l'africaine et enjeux de justice climatique

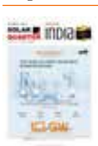
L'Opinion

Apr 23

Green energy in our collective interest

Mint, Economic Times, Business Today

Apr 24



Surging Demand Growth a Challenge But Also Opportunity for DISCOMs

Solar Quarter

Apr 26

Two health centres to receive solar supply

FBC News

Apr 30

Latest trends in sustainability standards for solar PV modules

The Economic Times