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Fifth Assembly of International Solar Alliance  
18 October 2022  
New Delhi, Republic of India

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13 October 2022

*Agenda Item 15*

## Annual Report of ISA for 2022

### Summary

The Working document presents the draft Annual Report of the ISA for the year 2022

# ANNUAL REPORT 2022





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# INTRODUCTION





# 01 Message from President

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Over the last year, the world has tentatively reemerged after the COVID-19 pandemic and countries around the world are focused on building back better. Even as we kick-start our economies and recreate employment opportunities, it is crucial that we remain cognizant of another crisis facing the planet today. The impact of climate change is greater than ever before, and India remains committed to increasing our renewable energy capacity. We aim to create 450 GW of renewable energy by 2030 and are well on our way to achieve this goal. ISA was born from our realisation that using renewable energy and the distributed network generation it offers could allow us to electrify every home, not just in India but around the world. Today, the Alliance is best positioned to lead the charge towards clean energy access globally. In a world faced with the increasingly urgent question of energy access, ISA offers an equitable, just, and feasible answer. By 2030, ISA aims to facilitate clean energy access to every corner of the world.

It is to achieve this aim that ISA has identified three key priority strategic areas. By focusing efforts into these three areas, ISA hopes to unlock USD 1 trillion in investments by 2030 by reducing the cost of technology and its financing, and increasing the skills of the solar industry workforce. Analytics and Advocacy, our first priority area, will assist Member Countries in formulating policies and regulations pertaining to clean energy through research on solar technology, investments, and markets. The emphasis on capacity building, the second priority area, will help ISA offer contextually relevant support to the Member Countries, including training various stakeholders and standardising the solar ecosystem. Finally, the third priority area of programme implementation will help ISA set up solar projects in countries most impacted by climate change, particularly Least Developed Countries and Small Island Developing States. These efforts will primarily facilitate access to funding, aggregate demand for innovative and scalable solar solutions, and enable grid interconnection in Member Countries around the world.

We are at an important juncture in our journey towards renewable energy. As the world grows increasingly aware of the dangers and implications of climate change, ISA's efforts towards global solarisation and universal renewable energy access are crucial. There are 800 million people without access to electricity around the world. If we work together, ISA can play a crucial role in achieving universal, clean, and sustainable electrification.



**H.E. Shri Raj Kumar Singh**  
Minister of Power & New and Renewable Energy,  
Government of India & President of ISA Assembly





## 02 Foreword from Director General

In the fight against climate change, the world is presently witnessing a major transition in its energy sector with dynamic changes on both the supply side as well as on the demand side. Although the dynamics of this transition are taking place differently in different countries – we are witnessing the impact of certain common factors including the need to drive economic growth, the need to meet the demand of the growing population, and greater interests in protecting the environment.

The past decade has set a strong initial momentum to transform the energy systems for the decades ahead. Energy transition for a net-zero economy is becoming an important agenda among the leaders across the globe. Contributions, governments and citizens around the world are making policies, building infrastructure and adopting more sustainable practices in an effort to ensure planetary health. ISA's work seeks to support, facilitate and catalyse these efforts.

Focusing on Sustainable Development Goals 7 (Affordable & Clean Energy) and 13 (Climate Change), we are working towards mobilising USD 1 trillion in solar investments by 2030, enabling 1000 GW of new capacity, and helping 1 billion people with enhanced access to electricity. Through this, we hope to reduce 1 billion tonnes of carbon emissions by 2030. The year 2022 has been a crucial year in bringing us closer to this goal. We solidified our strategic approach, identifying three priority areas that will facilitate energy access and security through solar energy as a sustainable and affordable way to transition to a carbon-neutral future. These key priority areas – Analytics & Advocacy, Capacity Building, and Programmatic Support – will lie at the core of all our programmes as well as our relationship with ISA's Member Countries. In specific, we seek to focus on strengthening the solar potential of our Least Developed Countries (LDCs) and Small Island Developing States (SIDS) Member Countries.

In an effort to fuel our strategic approach, ISA has also formalised a resource mobilisation strategy. This strategy details ISA's fundraising initiatives, seeking to mobilise resources for funding from various sources. ISA has mobilised about USD 80 million in the short run (CY 2022) and aims to mobilise more resources in the coming year. The ISA Secretariat has made concentrated outreach efforts to Member Countries and global foundations to seek support. We are also developing a framework for a multidonor trust fund to manage and deploy non-core funding across ISA's priority areas.

These resource mobilisation efforts as well as ISA's programmatic interventions are both driven by our robust collaborations and partnerships. We are committed to working with our Member Countries, corporate organisations, and governments to encourage and enable global solarisation. In 2022, ISA partnered with the Governments of India and the UK, and World Bank Group to launch Green Grids Initiative – One Sun One World One Grid. This first-ever international network of interconnected solar grids seeks to connect 140 countries to continuous solar power. At COP26, ISA also formalised partnerships with Global Energy Alliance for People and Planet, and United Nations Framework Convention on Climate Change to further our goals. We look forward to strengthening these conversations as we work towards global solarisation.

As we forge ahead, ISA has many important milestones on the horizon. In an effort to generate resources relevant to the solar industry, ISA is working to produce comprehensive reports on solar technology, markets and investments. We are working with Member Countries to identify needs and develop demand-based interventions. Through our Corporate Council, we intend to encourage private sector participation in the successful deployment of solar. Our advocacy and awareness efforts will continue, as we channelize our efforts towards resolving issues that countries might face in the path towards solar adoption. ISA strongly believes that working together with all the stakeholders who shall bring their strengths and capabilities shall complement each other to help achieve our targets. We are excited to work together and realise ISA's mission for global solarisation.



**Dr. Ajay Mathur**  
Director General, ISA



## 03 International Solar Alliance at a Glance

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## **Vision:**



**Let us together make the sun brighter.**

## **Mission:**

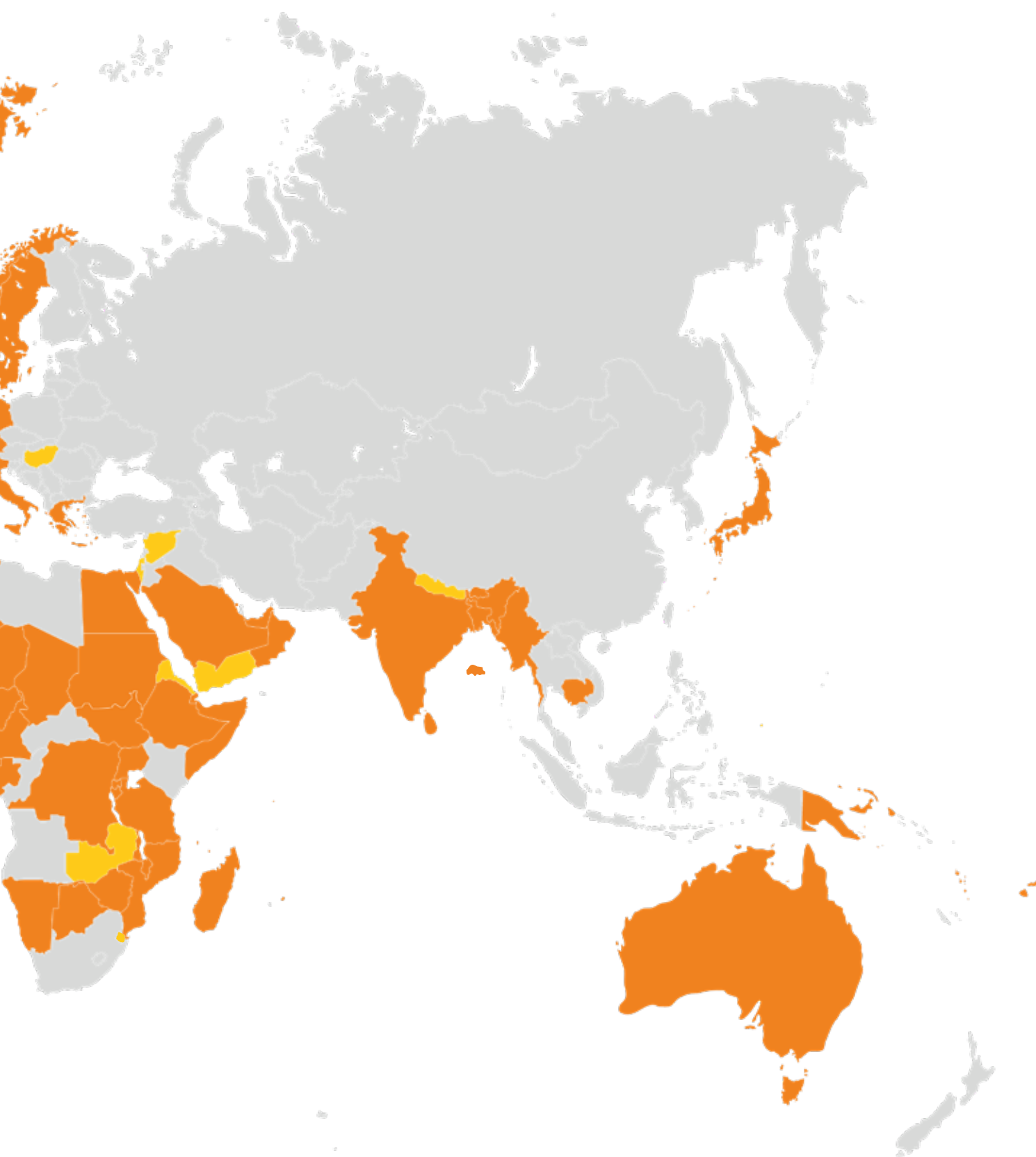
**Every home, no matter how far away,  
will have a light at home.**



## ISA's Member Countries

-  Member Countries - Countries which have signed and ratified the Framework Agreement of ISA
-  Signatories - Countries which have signed but not ratified the Framework Agreement of ISA

## I. ISA Membership



All lists accurate as on September 16, 2022

## I. List of countries which have ratified the Framework Agreement of ISA

S.No.	Country	S.No.	Country
1.	Republic of France	24.	Republic of Gabon
2.	Republic of Nauru	25.	Republic of the Sudan
3.	Republic of Mauritius	26.	United Arab Emirates
4.	Republic of India	27.	Republic of Rwanda
5.	Tuvalu	28.	Burkina Faso
6.	Republic of Niger	29.	Bolivarian Republic of Venezuela
7.	Republic of Fiji	30.	Commonwealth of Dominica
8.	Republic of Ghana	31.	Republic of Côte d'Ivoire
9.	Republic of Seychelles	32.	Grenada
10.	Republic of South Sudan	33.	Suriname
11.	Federal Republic of Somalia	34.	Republic of Namibia
12.	People's Republic of Bangladesh	35.	Republic of Benin
13.	Republic of Mali	36.	Republic of Madagascar
14.	Union Des Comoros	37.	Republic of Chad
15.	Republic of Guinea	38.	Republic of Senegal
16.	Republic of Malawi	39.	Republic of Djibouti
17.	Commonwealth of Australia	40.	Independent State of Papua New Guinea
18.	Republic of Peru	41.	Republic of Union of Myanmar
19.	Republic of Togo	42.	Kingdom of Tonga
20.	Cooperative Republic of Guyana	43.	Republic of Vanuatu
21.	Democratic Socialist Republic of Sri Lanka	44.	Republic of Kiribati
22.	Republic of Cuba	45.	Sao Tome and Principe
23.	Republic of Uganda	46.	Democratic Republic of The Congo

S.No.	Country	S.No.	Country
47.	Republic of Cameroon	69.	Oman
48.	Japan	70.	St, Vincent and Grenadines
49.	Equatorial Guinea	71.	Marshall Islands
50.	Ethiopia	72.	Nicaragua
51.	Burundi	73.	Barbados
52.	Egypt	74.	Argentina
53.	United Kingdom	75.	Belize
54.	Netherlands	76.	Denmark
55.	Mozambique	77.	Zimbabwe
56.	Haiti	78.	Sweden
57.	Maldives	79.	Botswana
58.	Gambia	80.	Germany
59.	Jamaica	81.	Italy
60.	Nigeria	82.	St. Kitts and Nevis
61.	Saint Lucia	83.	Antigua and Barbuda
62.	El Salvador	84.	Greece
63.	Tanzania	85.	Tunisia
64.	Samoa	86.	Bahrain
65.	Republic of Trinidad and Tobago	87.	Norway
66.	Cambodia	88.	Syria
67.	Saudi Arabia	89.	Bhutan
68.	Algeria	90.	United States of America



## II. List of countries that have signed but not ratified the Framework Agreement of ISA











S.No.	Country	S.No.	Country
1.	Brazil	11.	Palau
2.	Chile	12.	Paraguay
3.	Costa Rica	13.	Eritrea
4.	Dominican Republic	14.	Luxembourg
5.	Guinea-Bissau	15.	Morocco
6.	Liberia	16.	Eswatini (Swaziland)
7.	Yemen	17.	Israel
8.	Zambia	18.	Nepal
9.	Bolivia	19.	Hungary
10.	Cabo Verde	20.	Panama



## II. Governance Structure

### ISA Assembly

The Assembly of the ISA is the apex decision-making body which deliberates on critical matters like ISA objectives, its functioning, approval of operating budget, assessment of the implementation of various initiatives, programmes and activities of ISA and others. Four Assemblies and one Special Assembly have been held till now: First Assembly (October 2 to 5, 2018 in India), Second Assembly (October 30 to November 1, 2019 in India) and Third Assembly (October 14 to 16, 2020 through a virtual platform), First Special Assembly (February 15, 2021 through a virtual platform) and Fourth Assembly (October 19 to 21, 2021 through a virtual platform).

		8 Vice Presidents representing 4 regions			
 President India	 Co-President France	Asia & Pacific Region		Africa Region	
		 Fiji	 Nauru	 Mauritius	 Niger
		Latin America & the Caribbean Region		Europe & Other Regions	
		 Cuba	 Guyana	 United Kingdom	 Netherlands

### ISA Committees

#### 5 Committees (Standing Committee and 4 Regional Committees)

To provide strategic advice and guidance on the functioning of the ISA and facilitate the implementation of various ISA programmes, projects and activities

### ISA Secretariat

Providing programmatic support to Member Countries for promotion of solar solutions

Support in strategic decision making and advocacy

Facilitate engagement with diverse stakeholders for conceptualisation of programmes and projects

Till date, seven meetings of the Standing Committee have taken place. The sixth and seventh meeting took place on July 21, 2022 and September 13, 2022 respectively.



## Regional Committee Meetings



Third Meeting of the Regional Committee of Europe and Other regions & Fourth Meeting of the Regional Committee Meeting of Asia Pacific Region were hosted virtually



Fourth Meeting of the Regional Committee of the Latin America and Caribbean Region was hosted in Georgetown, Guyana



Fourth Meeting of the Regional Committee of the Africa Region was hosted in Addis Ababa, Ethiopia



## Sixth Meeting of the Standing Committee of the

1<sup>st</sup> Jul 2022

The Sixth and Seventh Standing Committee Meetings were held in New Delhi, India.







### III. Strategic Approach

ISA is a growing international organisation working towards the vision of facilitating energy access, security and transition in the world by delivering cleaner electricity to all by 2030. With this vision in mind, ISA supports governments around the world to improve energy access and security by promoting solar energy as a sustainable, affordable, and resilient way to transition to a carbon-neutral future. Globally, ISA's work is focused around three key strategic priority areas - Analytics and Advocacy, Capacity Building, and Programme Implementation.



#### Analytics and Advocacy

ISA seeks to support Member Countries in the formulation of policies and regulations by publishing reports annually on technology, investments and markets in the solar industry.



#### Capacity Building

Through its key capacity building initiative Solar Technology and Application Resource Centres (STAR-C), ISA will provide tailored capacity building support adapted to the local context. Under this programme, ISA aims to set standards and strengthen the solar ecosystems in all developing countries through solar training for all the stakeholders.



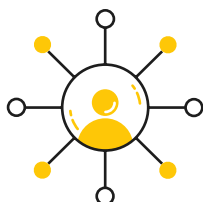
#### Programme Implementation

The focus of ISA's programmes will be to set up sustainable solar projects in countries most impacted by climate change, specifically in Least Developed Countries (LDCs) and Small Island Developing States (SIDS). ISA aims to do so in Member Countries by aggregating demand for innovative and scalable solar solutions and facilitating access to funding with risk mitigation mechanisms.

According to the Strategic Plan, funds would be deployed across various activities of ISA.



USD 200 million towards providing programmatic support to ISA Member Countries including technical assistance required for setting up pilot projects to test innovative business models and demonstrate solar applications customised to specific regions



USD 50 million towards funding country-based analytics, stakeholder engagement activities for policy advocacy, and investor engagement activities



USD 50 million towards creating content and providing training under ISA programmes, establishing STAR-C as well as preparing case studies and guidelines

The Strategic Plan intends to raise these funds from varied sources including sovereign funds, philanthropies, the private sector, and institutional investors. ISA's Resource Mobilisation Unit has played a crucial role in identifying investor organisations relevant to each priority area.

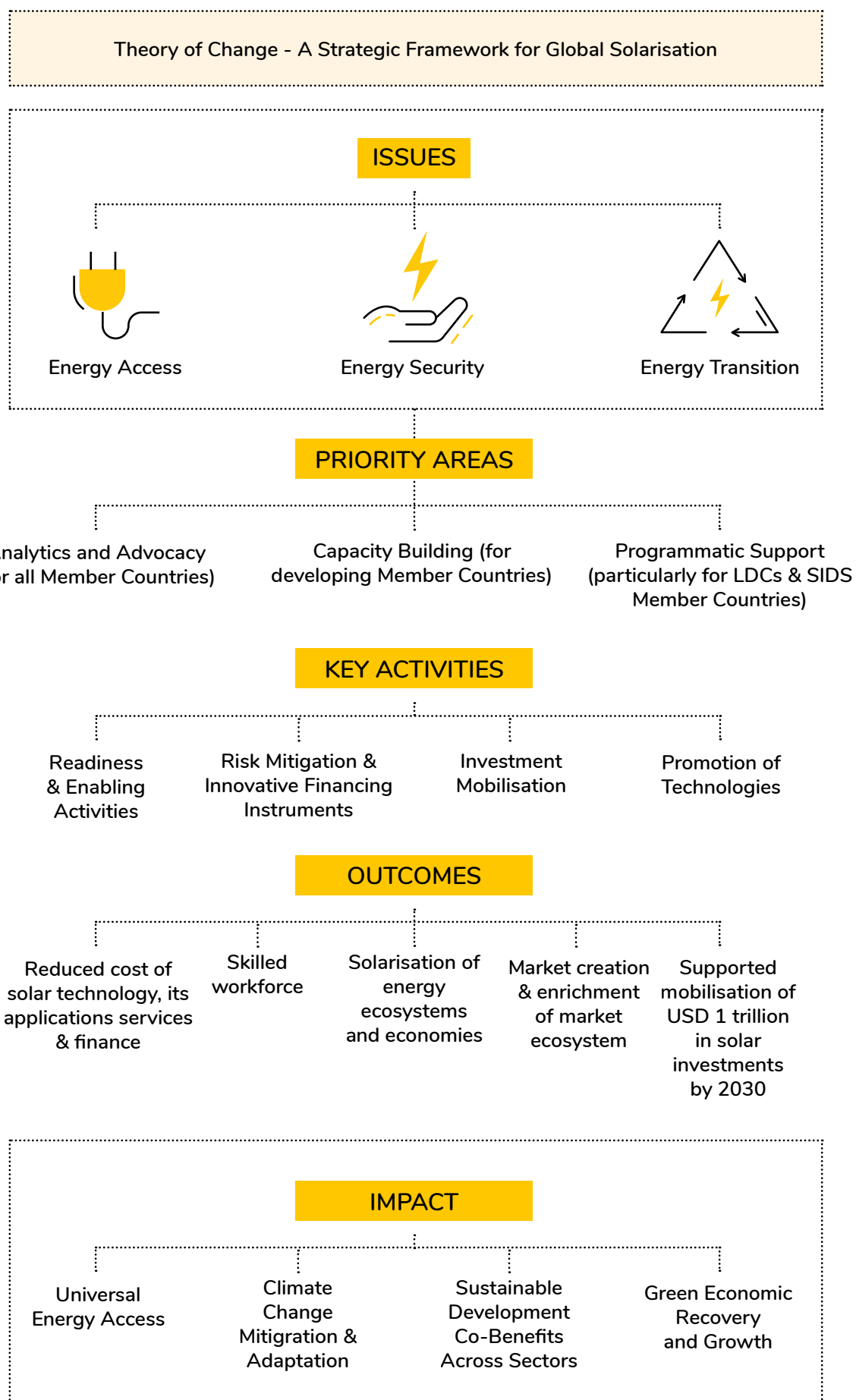


Funds required to support programmatic activities in Least Developed Countries (LDCs) and Small Island Developing States (SIDS) Member Countries of the ISA (USD 200 million) will be mobilised through the Multi-Donor Trust Fund. Approved by the ISA Assembly in 2021, the Trust Fund is under development and expected to reach the funding stage soon.



Funds required to support the Analytics & Advocacy activities and Capacity Building initiatives will be mobilised through a mix of earmarked grants from donor organisations' co-funding mechanisms and smaller, dedicated trust fund arrangements.

The ISA Secretariat has prepared a Theory of Change (ToC) which guides the resource mobilisation activities of the organisation. The ISA's ToC is built on the provisions of the Framework Agreement ISA. In preparing the ToC, the Secretariat has attempted a comprehensive analysis of the global context and mapping relevant global organisations. The ToC explains how ISA plans to accomplish SDGs 7 (Affordable and Clean Energy) and 13 (Climate Action) by concentrating on three critical energy concerns - Energy Access, Energy Security and Energy Transition.



# ACTIVITIES & ENGAGEMENT





## 04 ISA's Priority Areas of Work

### I. Analytics & Advocacy

The solar energy space is continually changing. Around the world, numerous initiatives, business models and innovations are being explored to encourage solarisation as the world's energy needs grow. Through its priority area of Analytics & Advocacy, ISA enables the adoption of policies and practices that encourage solarisation in Member Countries. This is done primarily through the publication of research and reports on the global solar energy sector spanning technology, investments and markets. ISA also develops strategies and frameworks that encourage partnerships and collaborations between Member Countries. This enables information sharing and data-driven decision making in all of ISA's Member Countries.

In the past year, ISA has published its flagship report, 'Ease of Doing Solar 2021'. This report recognises and details the progress of the solar ecosystem in ISA's Member Countries. We have also been working to accelerate private sector investments in the solar sector, primarily through our Private Sector Engagement Strategy that seeks to mobilise funding for solar energy globally. Our Country Partnership Framework, another key resource in this priority area, was formulated to guide ISA's relationship with Member Countries. Finally, this section also details our resource mobilisation efforts through partnerships with governments as well as global foundations.





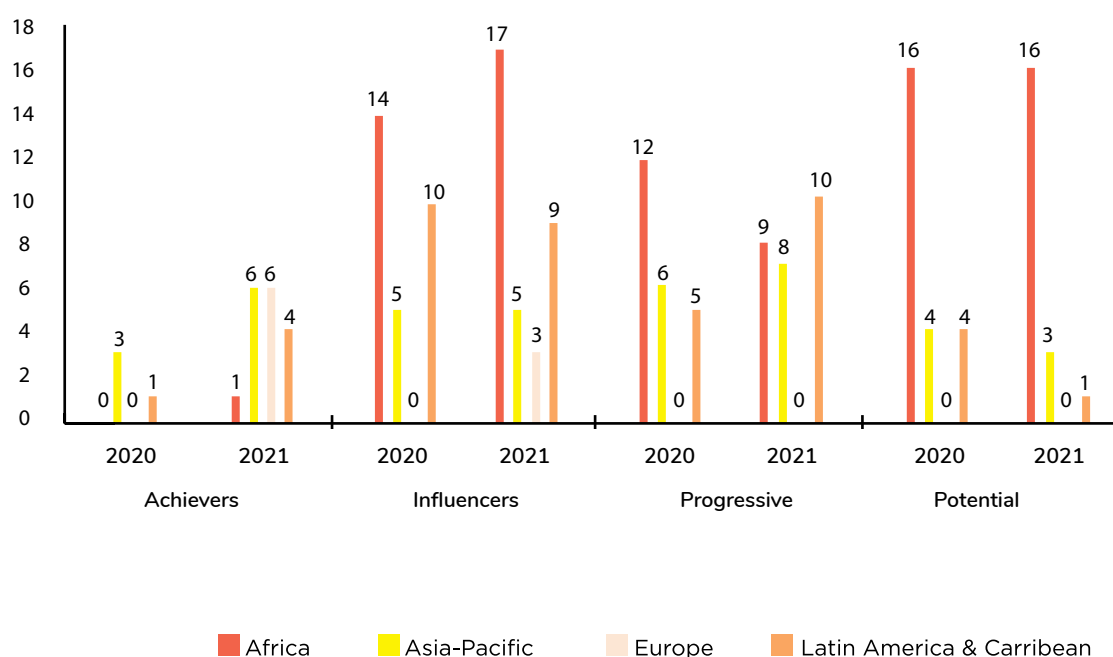
## A. Flagship Report: Ease of Doing Solar 2021

### Background & Objective

ISA aims to provide a dedicated platform through the annual 'Ease of Doing Solar' (EoDS) publication. The platform provides the global community (including Governments, bilateral and multilateral organisations, corporates, industry, and other stakeholders) an opportunity to leverage their efforts to help achieve the common goal of promoting the use and improving the quality of solar energy to meet energy needs in a safe, convenient, affordable, equitable and sustainable manner. Starting in 2019, with a pilot version of the EoDS report comprising only 4 countries, a full-scale edition was launched in 2020 with 80 countries. Last year, 18 new members joined the ISA family taking the coverage to 98 countries. This year, the number has further gone up to 107.

The objective of 'Ease of Doing Solar' is to track, recognise and support the progress of the solar ecosystem in ISA's Member Countries. All Member Countries are evaluated on a robust framework that evaluates the countries across seven key indicators - Macroeconomy, Policy Enablers, Technical Feasibility, Market Maturity, Infrastructure, Financing Ecosystem and Energy Imperatives. Based on this evaluation, the Member Countries are segregated under 4 categories, i.e., Achievers, Influencers, Progressive and Potential. Following is the comparison of the classification of Member Countries for EoDS 2020 & 2021.

### Category-wise Assessment across Regions (EoDS 2020 and 2021)



The following table depicts the classification of the participating Member Countries in the 2021 edition of the EoDS report:

Achievers		Influencers	
Argentina		Algeria	Nicaragua
Australia		Barbados	Nigeria
Brazil		Bolivia	Palau
Denmark		Burkina Faso	Peru
El Salvador		Botswana	Rwanda
France		Cabo Verde	Senegal
Germany		Costa Rica	Seychelles
Greece		Dominican Republic	Sri Lanka
India		Egypt	Suriname
Italy		Fiji	Sweden
Japan		Ghana	Tanzania
Morocco		Jamaica	Trinidad and Tobago
Netherlands		Luxembourg	Tonga
Oman		Malawi	Uganda
Saudi Arabia		Maldives	United Kingdom
United Arab Emirates		Mauritius	Zambia
		Mozambique	Zimbabwe

Progressive		Potential
Bangladesh	Nauru	Burundi
Belize	Niger	Cameroon
Benin	Paraguay	Chad
Côte d'Ivoire	Saint Kitts and Nevis	Cuba
Cambodia	Saint Lucia	Comoros
Djibouti	Saint Vincent and the Grenadines	Democratic Republic of Congo
Dominica	Samoa	Equatorial Guinea
Ethiopia	Tuvalu	Eritrea
Gambia	Venezuela	Gabon
Grenada	Yemen	Guinea
Guyana		Guinea - Bissau
Haiti		Liberia
Kiribati		Marshall Islands
Madagascar		Papua New Guinea
Mali		Sao Tome and Principe
Myanmar		Somalia
Namibia		South Sudan
		Sudan
		Togo
		Vanuatu

## EoDS 2022

The EoDS 2022 initiative is already underway and shall focus on increased participation from National Focal Points and at the country level. A set of new key performance indicators (KPIs) have been identified that shall further refine the evaluation methodology. The report will provide current progress and best practices as a guide for Governments, Investors and references for Financing Institutions investing in solar covering up to 107 Member Countries. This will be supplemented by improved data collection and validation standards, to enhance the results and outreach of the report. In line with the last year, primary research involving Member Countries shall be taken up in multiple languages (English, French, and Spanish) to promote deeper assimilation and participation in data collection from the countries. Further, the ISA Secretariat shall also perform extensive data research and target completing the same over the next few weeks. Once the data is collected, the same shall also be shared with participating countries for validation.

The ISA Secretariat aims to launch the Consultation draft of the EoDS 2022 during the 5<sup>th</sup> General Assembly in October 2022 after which the ISA Member Countries may provide their feedback for developing the final report on EoDS 2022.

## The Way Forward

As the EoDS framework becomes more complex and its coverage also extends to more countries, it has become pertinent to move from a paperback edition to a digital version of the report. The Secretariat is cognizant of the need to offer a more seamless interface and a comprehensive knowledge bank for its users and is moving in the right direction to develop a digital platform that will host the upcoming edition of the EoDS report.



## B. Country Partnership Framework of the ISA

ISA's strategic framework for the period 2022 to 2026 identifies strengthening partnerships with the private sector, development institutions and Member Countries as priority areas. Accordingly, ISA's Fourth Assembly has mandated the Secretariat to develop a process that helps Member Countries and ISA Secretariat to move from activity-based, ad hoc engagement to a more holistic partnership that can help achieve meaningful impact on the following three strategic priorities of ISA.

**Strategic Priority 1-  
Policy & Capacity Building:**  
Create an enabling policy environment and capacities for solar energy deployment and clean energy transition

**Strategic Priority 2-  
Programmatic Support:**  
Build a pipeline of bankable projects to stimulate investment in solar projects in unserved/underserved markets

**Strategic Priority 3-  
Analytics & Advocacy:**  
Provide analytics and advocate for informed and coordinated action to catalyse solar access and transition across all Member Countries



The Country Partnership Framework is a step-wise guide to developing a Country Partnership Strategy (CPS), which is a two-year agreement between ISA and a Member Country with clearly defined actions, funding, roles and responsibilities to achieve tangible results. strategic priorities of ISA.

The seven steps of ISA's Country Partnership Framework:

Conduct Country Analysis

Organise Multi-stakeholder  
Dialogues

Identify ISA Secretariat Support

Develop Country Partnership  
Strategy (CPS)

Form CPS Steering Committee

Roll-out CPS

Monitor and Evaluate

A detailed analysis of the Member Country's context, climate change and solar profile, factors enabling and hindering deployment and upscaling of solar, national priorities and plans is undertaken to identify potential areas of action. These actions are then presented to multiple stakeholders such as different ministries, international development and financial institutions, and private sector players within the country to identify joint priorities and areas of collaboration. The next two steps are to look at what support the ISA Secretariat can offer to Member Countries and then develop a two-year Country Partnership Strategy with clearly defined actions, associated funding and responsibilities. The Country Partnership Framework also provides direction on the constitution of a Steering Committee in the Member Country to guide the roll-out and implementation of the partnership strategy; along with mechanisms for monitoring and evaluating it to assess if the intended results were achieved.

The Country Partnership Framework provides a systematic, evidence-based, adaptable approach to ISA's engagement with Member Countries that is aligned with their national priorities and plans. It is designed in such a way that it helps identify critical areas where ISA can make an impact and develop plans to address these gaps systematically.

## The Way Forward

Based on an internal review of progress made to date and the experience of the Global Environment Facility (GEF), Green Climate Fund (GCF), United Nations Development Programme (UNDP) and other institutions, including feedback from consultations with National Focal Points and the Regional Committee meetings of August 2021, the following recommendations have been identified to take forward the country partnership process:

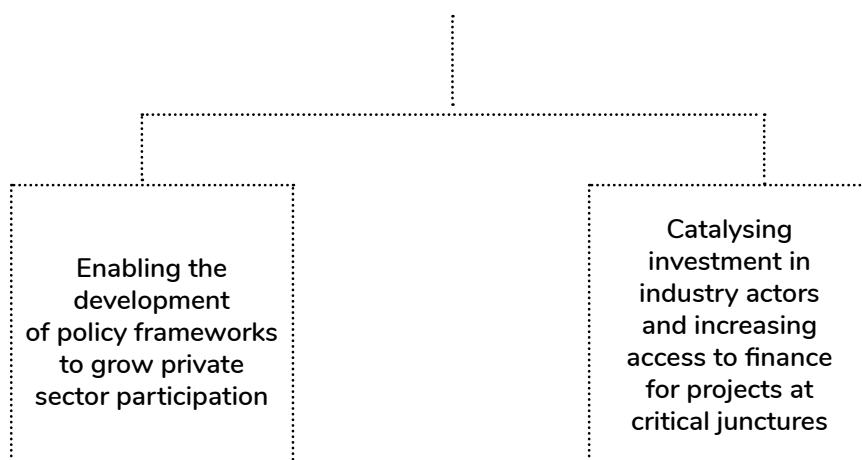
- **Country-Level Engagement:** ISA should host more events to better understand the country-specific needs particularly with regard to training and information. This understanding should then feed into the Country Partnership Framework that is contextually specific and aligned with global priorities.
- **Institutional Capacity of ISA:** ISA should build internal institutional capacity to support Member Countries to articulate their needs, train Member Country governments to implement ISA's Country Partnership Strategy (CPS), and assist stakeholders in decision-making and reporting. Institutional capacity can also be strengthened for documenting the implementation of CPS and sharing updates with ISA's international stakeholders.
- **Documentation of Country Contexts:** ISA should develop documents detailing individual country contexts with a particular focus on their renewable energy plans and roadmaps. This information will help develop the country's partnership strategies.
- **Capacity Augmentation of National Focal Points (NFPs):** ISA should engage with NFPs to determine specific input requirements needed to enhance their effectiveness. These inputs could be in the areas of human resources, technical assistance, planning and administration, and communication. This is particularly important given that ISA has received approval to provide NFPs with some resources to enable this capacity building.
- **Review Process for CPS Implementation:** A rigorous multi-stakeholder annual review process at the country, sub-regional and regional levels should be instituted. This would help reinforce ISA's role across priority country groupings, linking to the regional groupings in the Assembly process.



## C. Private Sector Engagement Strategy

ISA's Private Sector Engagement Strategy seeks to accelerate the growth and development of the private sector in keeping with SDG 7 (Affordable and Clean Energy) and the 2050 NetZero targets. This is particularly important given that the private sector contributed nearly 90% of solar investments in ISA Member Countries between 2009 and 2018. Through this strategy, ISA seeks to mobilise USD 1 trillion for solar energy by 2030 as well as link disparate efforts to form a coherent and ambitious strategy that is truly global in its mandate. Our efforts to achieve this vision are anchored on two key thematic pillars and span three interventions.

The two thematic pillars focus on reducing barriers to industrial growth are:



The interventions targeted to achieve this vision are:



Over the next five years, ISA aims to deliver meaningful impact for its Member Countries and their solar private sector players. ISA has identified five outcomes to enable this larger aim:

- 850 MW capacity installation on the ground
- Aggregation of additional 6.5 GW capacity
- 25-30 proprietary knowledge publications
- Approximately 40 global convenings resulting in model policies vetted by public and private actors
- Empowerment of policy makers through capacity building

## The Way Forward

In order to move towards this goal, ISA is focusing its resources on four main fronts:

- **Public-private convening:** Through the Corporate Advisory Group and other tailored engagements, convene public and private stakeholders to improve policy and facilitate investment
- **Support global supply chain resiliency:** Work on knowledge sharing and policy reform to support manufacturers in setting up global solar supply chain resiliency
- **Facilitate solar development in hard-to-reach countries:** With a particular focus on Least Developed Countries and Small Island Developing States, support project development to ensure bankable and manageable projects, and work with private sector developers to engage on ISA-supported projects

## D. ISA at COP26

ISA participated in the 26th UN Climate Change Conference of the Parties (COP26) hosted by the UK in partnership with Italy, at Glasgow from October 31 to November 12, 2021. The conference served as a platform for governments, businesses, local authorities, and civil society to discuss and deploy coordinated efforts to address climate change. Given its global importance, COP26 was pivotal to ISA's aim of establishing universal solar access by 2030 and adopting solar energy as a solution for climate, energy, and economic priorities around the world. H.E. Mr. Alok Sharma, President of COP26, extended the support of the UK government to ISA in the organisation's activities. Several other governments and organisations also committed their support to ISA.

### Highlights from ISA's Participation in COP26

#### Launch of GGI-OSOWOG

The Governments of India and the UK partnered with the ISA and World Bank Group to launch Green Grids Initiative - One Sun One World One Grid (GGI-OSOWOG). The first-ever international network of global interconnected solar-power grids, this initiative aims to connect 140 countries to continuous solar power and has been endorsed by 80 ISA Member Countries. It will bring together a global coalition of national governments, international financial and technical organisations, regulatory bodies, power system operators and knowledge banks to develop the infrastructure required for clean energy. The Steering Committee of GGI-OSOWOG will consist of the United States of America, Australia, France, the United Kingdom, and India. The International Solar Alliance and the UK Government will comprise the Secretariat.

**“The One Sun One World One Grid and Green Grids Initiative is an idea whose time has come. If the world has to move to a clean and green future, these interconnected transnational grids are going to be critical solutions. I congratulate the International Solar Alliance and the UK COP Presidency for bringing it nearer to implementation.”**

- Shri Narendra Modi, Hon'ble Prime Minister of India



### ISA's partnership with the newly launched GEAPP

The Global Energy Alliance for People and Planet (GEAPP) was launched at COP26 with a budget of USD 10 billion. The initiative is committed to mobilising investment for the transition to green energy and renewable energy solutions in developing economies. ISA partnered with GEAPP to announce their commitment to accelerating energy transition in Least Developed Countries (LDC) and Small Island Developing States (SIDS). The partnership aims to mobilise USD 100 billion in public and private capital as well as promote global solar capacity generation, and grid-based and distributed renewable solutions. The initiative has the capacity to provide renewable energy to one billion people, avert 4 billion tonnes of carbon emissions, and create more than 150 million direct jobs.

### Signing of MoU with UNFCCC

Dr. Ajay Mathur, Director General, ISA and Mr. Ovais Sarmad, Deputy Executive Secretary, United Nations Framework Convention on Climate Change (UNFCCC), signed a Memorandum of Understanding between ISA and UNFCCC to align national activities in renewable energy with global efforts. The two organisations agreed to coordinate in conducting activities to facilitate the implementation of mitigation measures in energy generation, implementation of Nationally Determined Contributions and long-term low emission development strategies.



### Establishing Advisory Committee and Partnership with Nordic institutional investors

ISA established an Advisory Committee and partnership with Nordic institutional investors to mobilise USD 1 trillion for investment in solar development by 2030. The Advisory Committee comprises senior representatives from Africa50, CDPQ Global, International Finance Corporation (IFC), the Development Bank of Southern Africa, Capricorn Investment Group and Temasek. It will play a role in directing partnerships that ISA enters in order to achieve the target of USD 1 trillion. The partnership aims to identify and engage investment and private sector institutions, initially from the Nordic regions. The funds mobilised will be crucial to finance solar energy development in emerging markets and developing countries.

### USA joining ISA



US Special Presidential Envoy for Climate, John Kerry announced at COP26 the joining of the United States of America to the Alliance, and becoming ISA's 101<sup>st</sup> Member Country. This served as a major boost to the organisation's goal of transforming the world through solar energy. The United States also joined the Steering Committee of the GGI-OSOWOG comprising of 5 members – USA, Australia, France, the United Kingdom, and India — and endorsed the One Sun Declaration along with 80 countries.

### Solar Compass Journal

ISA's repository and initiatives to increase solar energy usage globally now include an open-access quarterly journal, 'Solar Compass.' The first issue of the Journal was launched in June 2022 and can be accessed on the ISA website. This ISA-led initiative, in collaboration with Elsevier, a global leader in research publishing and information analytics, intends to support the international community share transformative information on policy, financing, and technology with relevant case studies among stakeholders and deliver value through innovation, information, data, and analytics that will potentially lay the foundation for better decision-making and action with the speed and scale needed in the hour for adopting solar technology and related applications. Dr. D. Yogi Goswami, Distinguished University Professor of Chemical, Biological and Materials Engineering, College of Engineering, University of South Florida, steered the preparation of this Journal as its Editor-in-Chief and was assisted by an Editorial Board of globally recognised experts who planned, solicited articles, and conducted reviews before accepting articles for publication. The first official call for papers was made by the Director General of ISA and H.E. Mr. Stephane Crouzat, Ambassador for Climate, Government of France at the United Nations Climate Change Conference (COP26) in Glasgow.

## E. Update on Global Solar Reports

**World Solar Technology Report** will be one of the three flagship reports covering vital global technology-related advancements, achievements, and challenges. It aims to provide a review of the current technological accessibility and innovations, the main trends in technologies with a focus on PV modules, including system design and solar thermal solutions, advancements in various technological applications, and supply chain in manufacturing and deployment. It will assess the potential for technological integration in different sectors, highlighting scalable innovations, digitisation, and circularity of solar components.

**World Solar Market Report** will be the second flagship report covering market trends of different technologies. These market segments are the most attractive investment for other technologies and significant trends in the market transformation and related contexts in the last few years. The report will investigate considerable factors driving the markets in different regions/countries, the role of the market so far in solar energy replacing fossil fuels, and global political dynamics impacting the market. The report will also assess the existing market standards, regulations and guidelines supporting market uptake. The information will also highlight the current partnership ecosystem, such as collaboration among the public, private and social sectors.

**World Solar Investment Report** will be the third flagship report assessing the transition needed for the financial sector fulfilling the investment requirements of the solar industry in the near future. The report will undertake a detailed assessment of investment required for the transition to mainstream solar energy in the energy mix; measures to speed up capital reallocation from fossil fuels to solar assets. It will also investigate steps undertaken by financial institutions and institutional investors to prioritise solar project lending. The report will list the risk and mitigation measures adopted in the past to safeguard investments by various countries. Best practices adopted by the financial sector in bringing down the cost of financing, particularly in countries with high debt, will be documented. The report will undertake a brief analysis of new financial instruments successfully adopted and institutionalised for upscaling deployment of solar energy.





## II. Capacity Building

One of ISA's primary goals is to enable global, large-scale solar deployment with a special focus on Least Developed Countries and Small Island Developing States (LDCs and SIDS). We recognised that for successful deployment at this scale, the sector requires increased institutional capacity and skilled human resources. In order to enable this, ISA has collaborated with global training institutions and forged meaningful partnerships to establish regular training sessions for on-ground actors as well as key decision-makers. These training programmes are thus crucial platforms that enable the consistent upskilling of all stakeholders involved in the solar energy ecosystem.

This section provides updates on ISA's capacity building efforts. The focus of this section is on the Solar Fellowship for Mid-Career Professionals, the Solar Technology Application Resource Centres (STAR-C) as well as ISA's online training programmes and webinars. Together, these interventions have significantly helped bridge the knowledge and skills needs of multiple stakeholders both online and offline in Member Countries.

## A. ISA Fellowship for Mid-Career Professionals

The ISA Fellowship for Mid-Career Professionals is a programme launched in Member Countries to enable those working in public institutions involved in the environment and renewable energy. It is jointly implemented by ISA and the National Institute of Solar Energy (NISE), an autonomous institution of the Ministry of New and Renewable Energy, Government of India. This Fellowship aims to equip professionals in the sector with improved knowledge and skills to facilitate the promotion of solar energy generation within their countries. By developing human resources and skilled professionals, ISA believes that the programme will create a workforce that can meet the requirements of policymakers, administrators in the government, and other interested stakeholders. This community would then work together to fulfil the potential of Member Countries in developing solar energy projects.

The Fellowship is offered to 20 professionals every year to pursue a two-year Master of Technology programme in Renewable Energy and Management (with a specialisation in Solar Energy Technology and Economics). On completion of the Fellowship, these individuals would be better qualified to augment ISA's and Member Countries' mutual objective of sustainable energy practices.

The Department of Energy Science and Engineering (DESE), IIT Delhi has completed the admission process for the M.Tech. programme in Renewable Energy Technologies and Management (ESR) for the 2022 – 24 cohort. This will be the 4th batch of the programme. A total of 49 applications (online and offline) from 24 countries were received, out of which 20 candidates have been selected by IIT Delhi based on their performance in the interview. Nineteen candidates have accepted the offer from Bhutan, Botswana, Burkina Faso, Cameroon, Ethiopia, India, Somalia, Sudan, Tanzania, Uganda, Venezuela, Yemen and Zambia.



*2020 – 2022 ISA Fellows being greeted by the Director General of ISA at the ISA Headquarters. The fellowship is an important ISA capacity-building initiative for mid-career professionals from Member Countries to help augment knowledge in solar technology, its management, and economics.*



## 2020-2022 Cohort

Kenya	1
Zambia	3
Nigeria	3
Somalia	2
Mozambique	1
Sudan	2
India	1
Rwanda	2
Ghana	1

Number of participants by country in the 2020-22 cohort

## B. The STAR-C Initiative

Recognising the urgent need to support ISA Member Countries with high potential for solar energy deployment, the ISA Assembly agreed to establish an international network of Solar Technology Application Resource Centres (STAR-C). The aim is to build the necessary human capacity and skills within Member Countries to undertake energy transitions on their own while also boosting economic growth and job creation.

STAR Centres act as the technology, knowledge and expertise hub on solar energy and a go-to place for the Member Countries at regional and country levels. ISA's STAR-C initiative aims to meet the ISA Member Countries' capacity-building needs by building capable solar workforces, sensitising policy makers and financial institutions, incubating enterprises, raising quality of products and services, and creating a knowledge repository on information/data related to solar energy.

STAR Centres across the globe would strengthen the capacity for deploying solar energy applications and research, business modelling, incubation, training, testing standardisation, engaging faculty members, and providing shared facilities, labs and testing centres.

## The 2022 Update

ISA has signed a Memorandum of Understanding with the Government of Ethiopia and Cuba for setting up STAR Centres in Addis Ababa University and Havana University, respectively. These two centres will be operationalised by the end of 2022. ISA has also received an expression of interest from Uganda, Somalia, Kiribati and Cameroon to set up these centres. These centres will be operationalised in 2023. Similarly, ISA is engaging with Côte d'Ivoire, Guyana, Venezuela, Sudan, Uganda, Tonga, Bangladesh, Zambia and other Member Countries.

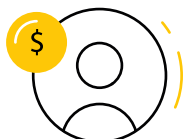
ISA is pursuing several initiatives and strengthening existing partnerships to set up STAR Centres across Member Countries. Prominent among these endeavours is the project with the Ministry of Europe and Foreign Affairs of France to build the capacity of ISA and Member Countries to structure an International Network of Solar Technology and Application Resource Centres jointly implemented by United Nations Industrial Development Organisation (UNIDO) and ISA. The project focuses on strengthening quality infrastructure and standards for photovoltaic and solar thermal products and services at the regional level with a strong focus on three countries - Bhutan, Papua New Guinea and Senegal. It also aims to improve local capacities to provide certified solar curricula and training, and strengthen solar networks and knowledge management.

The European Union has also offered its support to ISA and its Member Countries for deepening cooperation between the European Union, European solar energy-related businesses, the relevant European academic networks, financial institutions, and ISA. The project aims to strengthen ISA's role as a solar energy platform. One of the objectives of the overall project is to strengthen the academic network of the ISA, which will help in enhancing the impact of the STAR-C programme.

ISA has initiated discussions with some renowned global training institutes to create its library of training resources. This would help institutionalise capacity building in local institutions for regular training of local engineers, technicians, and decision-makers. ISA is also working towards engaging the private sector foundations to leverage technical and financial support in setting up the centres. The interest from private sector foundations is growing and ISA is working on a few partnerships which are directly supportive of and consistent with programme priorities.

## C. Online Training Programmes

ISA conducted online training programmes as a means to build capacity for stakeholders across Member Countries.



### Banker's Training Programme

Under ISA's Banking Solar Initiative, bankers were trained to bridge the knowledge gap and develop specific skills needed to assess the techno-commercial feasibility and financial viability of setting up solar PV systems. They were also equipped to analyse various financial instruments, government schemes and policies, tools, business models and risk mitigation mechanisms that are being adopted and deployed by the banks for renewable energy and energy efficiency projects. The programme was free of cost for ISA-sponsored candidates approved by the respective National Focal Points. These training programmes impacted 366 participants in 2022.

#### ASIA & PACIFIC REGION



5 Countries



45 Participants

#### LATIN AMERICA & CARIBBEAN REGION



6 Countries



146 Participants

#### EXCLUSIVE FOR WOMEN'S PARTICIPATION AND EL SALVADOR



16 Countries



108 Participants

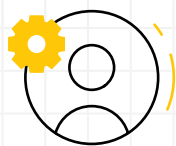
#### AFRICA REGION



4 Countries



67 Participants



## Technical Trainings

### 1. For 'Scaling Solar Application for Agricultural Use' programme

Scaling Solar Application for Agricultural Use is one of ISA's earliest programmes in the pursuit of sustainable utilisation of solar energy. Hosted in collaboration with Skill Council for Green Jobs, the main focus of the programme is to promote off-grid applications of solar power such as irrigation systems and home and street lighting, capable of functioning on stored solar energy. Trainings for this programme impacted 292 individuals in 2022.

#### MODULE 1



April 18-22,  
2022

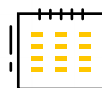


10 Countries



41 Participants

#### MODULE 2



May 2-6,  
2022

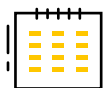


9 Countries



36 Participants

#### MODULE 3



July 4-8,  
2022

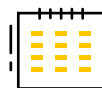


25 Countries



160 Participants

#### MODULE 4



July 11-15,  
2022



10 Countries



55 Participants



## 2. For 'Scaling Solar Mini-Grids' and 'Scaling Solar Rooftops' programmes

The 'Scaling Solar Mini-Grids' and 'Scaling Solar Rooftops' programmes primarily aim to improve the capacity of solar energy harnessed in Member Countries. Solar Mini-Grids are intended for those regions in Member Countries with limited or no connectivity to the energy grid system, in order to improve energy accessibility and reduce electricity costs. The 'Scaling Solar Rooftops' programme focuses on building solar rooftops as a solution to sustainable electricity generation in Member Countries.

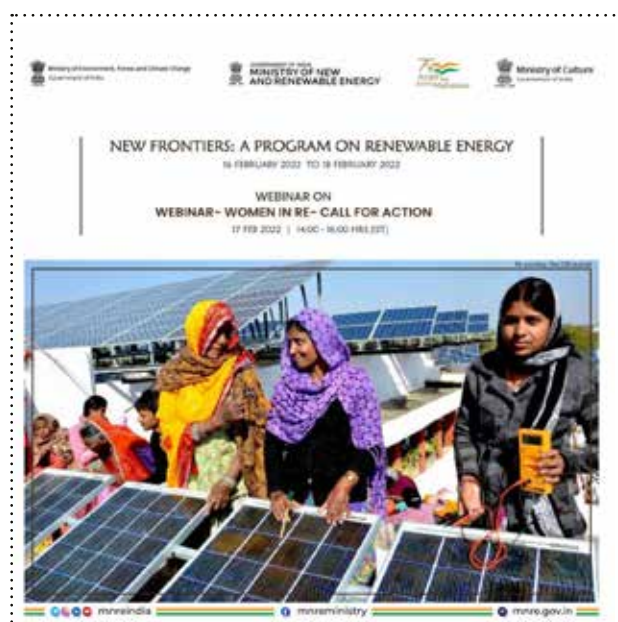
Until now, 128 participants have been trained for the Solar Rooftop programme and 215 participants have received training for the Solar Mini-Grids programme. The first batch of the online technical training by RENAC, Germany (funded by GIZ) for engineers, technicians and officials of Ministries and Utilities was successfully completed for 25 participants from Botswana in August 2022. Nominations for subsequent batches have been received.

## 3. For 'Solar Parks' programme

This ISA programme launched in 2020 seeks to develop large-scale solar power generation zones involving grid-connected ground-mounted and floating solar projects in Member Countries. In the last year, training programmes for this project have impacted 501 participants from around the world.

Module	Dates	Conducted by	No. of participants	No. of Countries
1	April 25-29, 2022	Global Sustainable Energy Solutions	85	15
2	May 9-13, 2022	Global Sustainable Energy Solutions	131	11
2	May 19-25, 2022	Global Sustainable Energy Solutions	32	2 (Ethiopia and Djibouti)
4	June 27 - July 1, 2022	Global Sustainable Energy Solutions	124	In partnership with West Africa Power Pool
5	August 22-26, 2022	Global Sustainable Energy Solutions	129	Exclusively for Asia & Pacific

## D. Webinars



Ministry of New and Renewable Energy (MNRE), Government of India webinar on 'Women in RE - Call for Action' under the event 'New Frontiers - A Programme on Renewable Energy' on February 17, 2022

Ministry of New and Renewable Energy (MNRE), Government of India organised a webinar on 'Women in RE- Call for Action'. The event was conducted as a part of 'New Frontiers - A Programme on Renewable Energy' to celebrate Azadi ka Amrit Mahotsav, celebrating 75 years since Indian independence. The online session acknowledged the role of women entrepreneurs and leaders in the renewable energy space.



**‘Role of ISA in Facilitating Energy Transition’ in Collaboration with Ministry of New and Renewable Energy (MNRE) as a part of the Government of India’s event on ‘New Frontiers: A Programme on Renewable Energy’ on February 18, 2022**

ISA collaborated with the Ministry of New and Renewable Energy, Government of India to organise a virtual session on ‘Role of ISA in facilitating Energy Transition’. The session was conducted as a part of Government of India’s event ‘New Frontiers: A Programme on Renewable Energy’ to commemorate 75 years of India’s independence as Azadi ka Amrit Mahotsav. ISA is committed to establishing solar as a shared solution to address climate exigencies and formulating energy priorities across geographies in the long term.



**Japan-India webinar co-hosted by ISA & New Energy and Industrial Technology Development (NEDO) on ‘Operational Use of Solar Mini-Grid Business Model in Uttar Pradesh, India’ on March 15, 2022**

ISA and New Energy and Industrial Technology Development (NEDO) co-hosted a webinar to bridge the policy and knowledge gaps in Solar Mini-Grid adoption. The discussions focused on a case study called “Operational Use of ‘Anchor Load Business Community Model’ Solar MiniGrids Uttar Pradesh, India” jointly put forward by ISA, NEDO, and OMC Power. This was done to encourage Member Countries to examine the applicability and replicability of solar mini-grids to accelerate clean energy transition.



## Asia Pacific Energy Week in collaboration with Siemens Energy on March 28-29, 2022

ISA participated in a panel discussion on 'Electric Grid of the Future-Connecting it All' during the Asia Pacific Energy Week hosted by Siemens Energy. The panel discussed how interconnected grids can transport energy across countries.



## Indonesia Solar Summit 2022: Bringing Indonesia to Gigawatt Order of Solar Energy on April 19-20, 2022

ISA participated in the 'Indonesia Solar Summit 2022 - Bringing Indonesia to Gigawatt Order of Solar Energy' by extending its expertise on developing markets for Solar Energy across multiple countries. The aim of the summit was to aid Indonesia's journey to energy transition and achieving net zero.





## Launch of Solar Compass Journal on June 1, 2022

The Solar Compass Journal was announced with Elsevier, a global leader in research publishing and information analytics, at COP26 in Glasgow. Following the first call for papers, the journal was virtually launched on June 1, 2022 in the presence of Dr. Ajay Mathur, Director General of ISA, Mr. Arun Misra, Senior Advisor at ISA and the Editor-in-Chief, Dr. Yogi Goswami, Distinguished University Professor of Chemical, Biological and Materials Engineering, University of South Florida. The journal is an important initiative to increase understanding and research on the use of solar power. It will cover new technology, policy, and economic developments to improve global access to clean energy and feature successful case studies in the hope of wide-scale replication.



## Green Hydrogen for Net Zero – Side Event Workshop at Asia Clean Energy Forum 2022 in collaboration with Asian Development Bank (ADB) on June 16, 2022

At Asia Clean Energy Forum, ISA hosted a panel discussion on varied topics including the potential role of the South Asian region in the global hydrogen value chain (including Electrolyser production), business and financing models, policy and regulatory support needed to facilitate favourable economics for solar energy based green hydrogen, the role of existing energy producers (including oil & gas) and identification of investment opportunities for transitioning from fossil hydrogen to solar energy based green hydrogen.



### The European Union, France and ISA – Working Together on Sharing Knowledge in collaboration with European Union & Government of France on June 27, 2022

ISA partnered with the Government of France and European Union to organise a launch event to mark two new projects initiated this year. These projects intend to build the capacity of ISA and Member Countries through Solar Technology Application Resource Centres (STAR-C) and deepen the cooperation between the European Union solar energy related businesses, academic networks, and financial institutions.

### Climate Investment Summit on June 28, 2022

ISA partnered and participated in the Climate Investment Summit 2022 on June 28. The Summit is a leading event for climate investments, green business models and public-private partnerships, taking place alongside London Climate Action Week 2022.

ISA participated in the Climate Finance & Technology Summit on June 28 to discuss ClimateAction and share views on strategising and identifying the best funding models to encourage Green Innovation.



### Tech for Solar, Solar for Tech on June 30, 2022

ISA hosted a panel discussion on June 30, 2022 themed 'Tech for Solar, Solar for Tech'. The discussion explored the partnership between the energy and the technology sector in keeping with ISA's engagement with the tech ecosystem to help achieve 2050's net zero emission targets.

## III. Programmes and Projects

### A. Programmes

ISA partners with Member Countries and global stakeholders to develop and implement nine different programmes. While each of these interventions adopt a different approach, every programme contributes to the larger goal of global solarisation and the promotion of renewable energy. Each of these programmes is crucial to furthering ISA's commitment to individual Member Countries as well as the overall goal of enabling universal energy access.

**SCALING SOLAR APPLICATIONS FOR AGRICULTURAL USE**

**AFFORDABLE FINANCE AT SCALE**

**SCALING SOLAR MINIGRIDS**

**SCALING SOLAR ROOFTOPS**

**SCALING SOLAR E-MOBILITY AND STORAGE**

**SOLAR PARKS**

**SOLARISING HEATING AND COOLING SYSTEMS**

**SOLAR PV BATTERY AND WASTE MANAGEMENT**

**SOLAR FOR GREEN HYDROGEN**

These programmes, currently at different levels of development and implementation, are tailored to fit the capacity and potential of individual Member Countries. Execution is undertaken in partnership with the Member Countries and relevant global partners. ISA's focus is thus always to ensure contextually relevant, sustainable solutions for just and accessible energy.

## SCALING SOLAR APPLICATIONS FOR AGRICULTURAL USE

Scaling Solar Applications for Agricultural Use (SSAAU), launched on the margins of signing of Paris Agreement on Climate Change on April 22, 2016, mainly focuses on decentralised solar applications in rural settings. Over the last year, there has been significant progress on the SSAAU programme's vision of implementing Solar Water Pumping Systems (SWPs) and Solar Home Lighting Systems (SHLs) as well as facilitating technical assistance. The programme has gathered traction, garnering an aggregate demand of 2,72,579 SWPs from 22 ISA nations, followed by the first ever International Competitive bid for Price Discovery.

The implementation of pilot SWPs projects has been approved under the India, Brazil, South Africa (IBSA) Fund facility in 10 countries<sup>1</sup> and will be undertaken in partnership with United Nations Development Programme (UNDP) as the implementation agency. Further, a Memorandum of Understanding (MoU) has been signed with the International Water Management Institute (IWMI) in Sri Lanka to work for the development of projects and programmes on solar energy, while steps to install 1 million SWPs have been initiated in 13 other countries under ISA-GGGI. Asian Development Bank (ADB) has provided Technical Assistance for India, Bangladesh, Maldives, Nepal and Bhutan for development of projects including solar water pumping systems. IWMI has been engaged by ADB to complete the scoping study on Solar Water Pumping Systems and the agriculture sector. ISA is also assisting 9 Member Countries in developing demonstration projects on Solar Water Pumping Systems. The Detailed Project Reports of these nine countries have been approved and grant agreements have been signed. The projects are under implementation by NTPC and Member Countries.

Apart from this progress in programme implementation, ISA has also focused on robust documentation and knowledge sharing. Over the last year, we have prepared and shared eight business models and pre-feasibility reports of SWPs for 25 Member Countries. E-handbooks on SWPs and SHLs have also been developed and shared with countries for knowledge dissemination.



<sup>1</sup> Mali, Senegal, Benin, Uganda, Niger, Togo, Sudan, South Sudan and Democratic Republic of Congo in Africa region and Tuvalu in Asia & Pacific region



This programme's progress is catalysed by its well-established methodology that helps achieve its goals. Some features of this methodology are:

- Adopting common methodologies and procedures for needs assessment in agricultural and rural settings
- Establishing a network of technological research centres to find solutions for the identified needs
- Streamlining and coordinating tendering, documentation & processes for procurement of systems and components
- Developing common standards and protocols for testing, monitoring, verification and certification
- Monitoring projects and actual performance of applications to further improve standards and execution
- Setting up common training courses, e-learning for most actors involved in all the phases of projects to improve access to knowledge and technical know-how
- Exploring innovations and technological advancements that can be undertaken to further improve decentralised solar applications for agricultural use

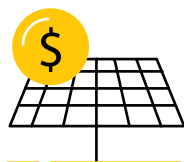
## AFFORDABLE FINANCE AT SCALE

'Affordable Finance at Scale' is an ISA programme created with the objective of exploring innovative and profitable financial arrangements to fund solar projects and renewable energy practices. The focus of the programme is to partner with financial institutions and gather investments to mitigate the risks involved in innovative energy practices. Such partnerships would then facilitate low-cost solar energy solutions on a large scale.

ISA has partnered with several financial institutions from across the world to assist solar power development projects including:

- African Development Bank
- Agence Francaise de Développement
- Asian Development Bank
- Asian Infrastructure Investment Bank
- Department for International Development - Government of UK
- European Bank for Reconstruction and Development
- European Investment Bank
- Export Import Bank of India
- French Development Agency
- German Development Bank
- International Finance Corporation
- Japan Bank for International Cooperation
- Japan International Cooperation Agency
- World Bank

The programme seeks to fulfil four key objectives, each furthering ISA's commitment to enabling financial resources for the adoption of solar energy.



**Innovative  
Financial Tools**



**Large Scale Low-cost  
Solar Financing**



**Financing for Technical  
Development**



**Guidelines for Solar  
Project Financing**

## Innovative financial tools

The World Bank along with Agence Francaise de Développement (AFD) launched the Solar Risk Mitigation Initiative (SRMI) endorsing the ISA. This venture allows reduced public funding and attracts potential private sector investors to the solar projects proposed in developing countries. The World Bank has also pledged USD 337 million to the Regional Off-Grid Electricity Project (ROGEP) in 23 ISA Member Countries in Africa. Further, the European Investment Bank (EIB) is currently working on a project to promote off-grid electricity development in Africa. They intend to achieve this through a grant of EUR 60 million as a measure to mitigate risk and act as a financial intermediary for the projects.

## Large scale low-cost solar financing

USD 1.4 billion has been allocated by the Export Import Bank of India (EXIM Bank) while Agence Francaise de Développement, the French bilateral agency, has committed EUR 700 million for facilitating solar projects in ISA Member Countries. We are also in the process of proposing similar arrangements with financial institutions in Australia, Netherlands and the UK to support further projects.

## Financing for technical development

A grant of USD 2 million has been issued by the Asian Development Bank to be utilised for technical assistance in solar projects of ISA Member Countries in South Asia.

## SCALING SOLAR MINI GRIDS

'Scaling Solar Mini Grids' caters to the needs of ISA Member Countries who experience limited or no connectivity to the grid but have the potential to harness solar energy. The objective of the programme is to promote universal energy by 2025 while harnessing solar power and reducing electricity costs.

In 2022, several Member Countries laid the foundation to channel low-cost and sustainable energy to all their regions. Ethiopia shared an Expression of Interest (Eoi) for establishing Solar Mini-Grids (SMGs) projects across the country with a cumulative capacity of 100 MW. Following this, ISA partnered with Ethiopia Electric Utilities (EEU) to identify potential sites for the development of SMGs projects. Ten more countries<sup>2</sup> have also signed Expressions of Interest (Eois) to join the programme with a cumulative capacity of 660 MW. Given the earlier Eois submitted by various countries, the total EOI received stands to be 785.6 MW from 18 countries.

Apart from scaling up the solar mini-grids in themselves, ISA has also invested in documentation and knowledge sharing. Reports on feasibility, operations and opportunities mapping, and country-specific analyses have been circulated to Member Countries to encourage their participation in the programme. Case studies and an e-handbook highlighting the advantage of SMGs in the pursuit of sustainable energy practices were also shared with ISA Member Countries.

In keeping with ISA's focus on capacity building, training programmes were hosted under this programme. Technicians across fifteen Member Countries benefited from technical training on the development and maintenance of SMGs.

The implementation model of SMGs in Member Countries is a multi-step model that includes:

- Designing SMGs based on demand analysis and energy consumption patterns
- Formulating policy framework and regulatory standards within Member Countries with concerned authority
- Shortlisting Solar Power Developer (SPD) responsible for commissioning SMG projects at given locations
- Managing distribution of SMGs depending on the total energy demand
- Determining tariffs and sign power purchase agreements based on mutual preference of consumers and authorities
- Exploring methods of revenue collection based on the type of consumer and their consumption patterns

<sup>2</sup> Burkina Faso, Botswana, Comoros, DR Congo, Guinea, Sudan, Cambodia, Kiribati, Nicaragua and Venezuela as well as Ethiopia

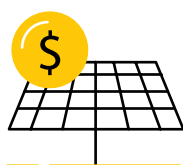


## SCALING SOLAR ROOFTOPS

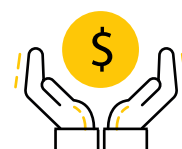
ISA's 'Scaling Solar Rooftop' programme was launched on March 11, 2018 to promote, assess potential, harmonise demand, and pool resources for rapid deployment and scaling up of Rooftop Solar (Off-Grid and Grid-Connected) in Member Countries.

Since its launch, twenty ISA Member Countries (12 from Africa region, 3 from Latin America & Caribbean region and 5 from Asia & Pacific region) have submitted Expressions of Interest to join the solar rooftop programme (with cumulative capacity of 1059 MW.)

The key focus areas of this programme are as follows:



**Demand aggregation**



**Policy and  
Regulatory support**



**Technical Assistance to  
Member Countries**



**Development of  
Bankable Projects**



**Facilitation of  
Affordable Finance**



**Capacity Building**

This programme has seen significant progress so far. Some highlights are as follows:

- The programme has been flagged off in Ethiopia with pilot projects in three government buildings along with carport having a total capacity of 1 MWp. ISA is also in the advanced stages of discussion with the nations of Sao Tome and Principe, Comoros and Botswana to assist with policy framework, potential site assessments and capacity building to develop the programme in the country.
- The implementation of Solar Rooftops on healthcare centres and government buildings in 12 countries<sup>3</sup> is under progress and shall be completed by March 2023.
- ISA trained 120 technicians through two batches of technical training conducted across 12 Member Countries.
- Business models for implementation of solar rooftop projects were circulated to National Focal Points of Member Countries for their suggestions.
- ISA prepared and shared Feasibility Study reports<sup>4</sup> for 16 countries.
- ISA prepared and shared Country Diagnostics and Analysis<sup>5</sup> for 7 countries.
- ISA prepared and shared Preliminary Country Energy Profile<sup>6</sup> for 13 countries.
- ISA developed and shared E-handbook covering the general technical aspects of Solar Rooftop projects including the advantages, type of metering arrangements, business models as well as key highlights to ensure the sustainable systems operation and maintenance. Further, Member Countries were invited to contribute suggestions.

<sup>3</sup> Benin, Burkina Faso, Comoros, Mali, Mauritius, Malawi, Niger, Uganda, Guyana, Cambodia, Fiji, Kiribati

<sup>4</sup> Submitted to Benin, Burkina Faso, Cape Verde, Cuba, DR of Congo, Guinea, Guinea Bissau, Malawi, Mali, Nauru, Sudan, Togo, Tonga, Tuvalu, Uganda and Zambia

<sup>5</sup> Submitted to Ethiopia, Ghana, Cambodia, Fiji, Kiribati, Sri Lanka and Peru

<sup>6</sup> Submitted to Cambodia, Cuba, Ethiopia, Guyana, Jamaica, Malawi, Niger, Rwanda, Sudan, Togo, Tonga, Uganda and Venezuela

## SCALING SOLAR E-MOBILITY & STORAGE

'Scaling Solar E-Mobility & Storage' is a programme that supports the creation of ecosystems for the deployment of energy storage systems. It also aims to augment the use of solar energy in the e-mobility sector. The programme comprises of two verticals that focus on providing key solutions.

### Solar E-Mobility:

This vertical facilitates select pilot projects, identifies business opportunities and provides policy, regulatory and technological insights for the following sectors:

**Solar power-enabled  
charging stations**

**Vehicle Integrated Photovoltaic  
(VIPV)**

### Storage:

**Assess suitability of energy  
storage technologies to deploy  
with solar technologies**

**Policy guidelines for storage  
system implementation**

In its efforts to strengthen solar integrated e-mobility, ISA has initiated discussions to build partnerships between public and private stakeholders. These partnerships are currently focused on publishing a concept paper outlining opportunities and challenges pertaining to solar-based EV charging. The Solar E-Mobility vertical has also hosted webinars for identifying and recommending business opportunities in the EV sector. This has been supplemented by multi-stakeholder discussions aimed at understanding the current status of the solar EV sector across ISA Member Countries.

With regards to storage, ISA aims to create an association of global stakeholders including governments, industries and financial institutions. This would provide support for infrastructure building projects and eventually increase the number of solar-integrated storage systems worldwide. Thus far, under this vertical, ISA has collected case studies and drafted guidelines for a regulatory framework that would govern the programme.

The methodology for scaling solar e-mobility involves:

- Preparing a concept paper summarising overall opportunities and challenges regarding solar-based EV charging
- Organising stakeholder meetings
- Conducting webinars, workshops and training sessions to discuss challenges and opportunities
- Compiling case studies covering various vehicle segments and operational designs
- Developing overall solar e-mobility guidelines based on learnings from above activities
- Developing a detailed Solar E-Mobility Report as a knowledge product

The methodology for building global energy storage systems involves:

- Preparing a programme, sharing guidelines and focusing on project implementation
- Organising stakeholder meetings to discuss overall scope of the programme
- Building capacity through webinars, workshops and training sessions to study challenges and opportunities
- Exploring existing practices and guidelines to determine viability and development of business models



## SOLAR PARKS

The ISA programme to develop large-scale Solar Parks was formally launched in April 2020.

Since its inauguration, there has been significant progress given the collective experience, knowledge and competence of ISA Member Countries and partner organisations. Eighteen Member Countries<sup>7</sup> with a cumulative capacity of about 7.7 GW have already joined the programme and these projects are at different stages of project development. NTPC Ltd, the Project Management Consultant endorsed by ISA, has been appointed by 11 Member Countries to provide Project Management Consultancy Services for the implementation of nearly 3.85 GW. Country-specific feasibility studies and assessment reports for setting up ground-mounted and floating solar parks have been shared with 33 Member Countries.

On February 17, 2022, ISA along with the Ministry of New and Renewable Energy (MNRE), Government of India hosted 'Role of ISA in facilitating Energy Transition'. The virtual conclave was a part of the Indian Government's event, 'New Frontiers: A Programme on Renewable Energy', commemorating 75 years of Indian independence. The discussion served as a means to explore methods of developing large scale solar parks and floating solar projects in Member Countries. It also served as a knowledge exchange platform to share the experiences and innovations of the Government of India and ISA partner, NTPC Ltd. in adopting sustainable energy practices across the ISA network.

Recent advances in the programme include a workshop and joint working group carried out for Solar Parks in Ethiopia with the implementation of capacity of 410 MW, which includes a 10 MW floating solar PV project.

NTPC Ltd. has also floated the first Request for Quotation (RfQ) for solar projects in Republic of Cuba with aggregate capacity of 1150 MW under this programme. The ISA Secretariat also hosted sessions with NTPC Ltd. in July and October 2021 to initiate dialogue between members and stakeholders about developing and implementing large scale solar parks. Earlier events also included a webinar to discuss key issues surrounding grid integration of renewable energy in February 2021 and a regional conclave to mobilise investment for the programme in the African region (November 2020). The ISA Secretariat is also in the process of empanelling firms with global repute to undertake detailed feasibility studies for floating solar PV projects across ISA membership.

This progress is also backed by knowledge sharing with all Member Countries, primarily by conducting capacity building programmes and via an e-book that details out programme guidelines, benefits of solar parks, implementation procedures and existing projects. So far, more than 450 stakeholders have been trained from around 43 ISA Member Countries under this programme. Such initiatives have been crucial to ensuring that all Member Countries remain updated on ISA programmes and can express interest to participate in those that are relevant to their local contexts.

<sup>7</sup> Togo, Mali, Cuba, Paraguay, Malawi, Suriname, Niger, Mozambique, Sudan, Guinea-Bissau, Guinea, Ethiopia, Mauritius, DR Congo, Zambia, Burkina Faso, Nicaragua and Venezuela

## SOLARISING HEATING AND COOLING SYSTEMS

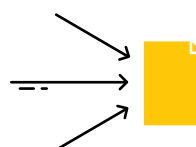
'Solarising Heating and Cooling Systems' is a programme launched by ISA at the Third ISA General Assembly. The programme aims to integrate solar energy in heating and cooling systems across commercial, industrial and residential sectors. This would have a specific impact on the food industry, significantly reducing post-harvest food loss and potentially doubling farmers' income. This impact would be especially relevant to many developing countries, where this programme would complement ISA's interventions to promote solar pumps for agricultural use. At the global level, climate-resilient cold chain infrastructure has the potential to reduce greenhouse gas emissions by approximately 19-21 gigatonnes of CO<sub>2</sub> equivalent (GtCO<sub>2</sub>e) by 2050.

Over the past year, ISA has documented three case studies on solar cooling storage. These case studies will feed into ISA's capacity building efforts, providing important technical knowledge needed to scale solar cooling storage. ISA has also prepared guidelines on the selection of solar heating and cooling system sites. The progress on this programme has further been assisted by marketing, stakeholder networking and information exchange through reports, workshops, seminars, and other media. In the future, this programme will expand to also cater to building air-conditioning, industrial solar heating, district heating and residential systems.

This programme is implemented in consultation with Member Countries who volunteer to participate. Following this, ISA assists in:



Assessing demand potential for solar heating and cooling systems in Member Countries



Facilitating aggregation of demand



Setting targets and formulating implementation plans



Assisting Member Countries to achieve economy of scale, reduction in costs and speedy programme implementation, either directly or through authorised agency

## SOLAR PV BATTERY AND WASTE MANAGEMENT

ISA's Solar PV Battery and Waste Management programme is one of two new initiatives launched on October 21, 2021. The programme aims to facilitate the reduction of solar and battery waste through recycling and reusing components wherever possible.

The programme aims to:

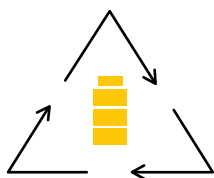
**Reduce volume of solar and battery waste**

**Re-use components wherever possible**

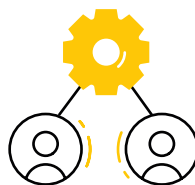
**Recycle solar and battery waste**

The Solar PV Battery and Waste Management programme has commenced with the preparation of a tender to study PV waste management, highlight guidelines and provide recommendations to Member Countries. Reports, workshops, seminars, and other media have been employed to facilitate the spread of relevant awareness and information. The programme also encourages effective collaboration of stakeholders and independent groups through marketing and networking.

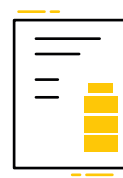
This programme works towards effective waste management in the solar industry by:



**Promoting implementation of the 3Rs principle (Reduce, Re-use & Recycle) in Member Countries for solar and battery waste management**



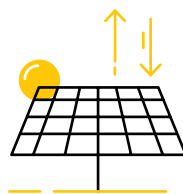
**Engaging with national agencies and policymakers**



**Developing regulations to reduce future solar battery waste generation**



**Assisting in identifying opportunities in restoration and reuse of solar components**



**Creating a framework for solar and battery waste collection and recycling**



**Identifying international organisations to partner with in different stages of development**

## SOLAR FOR GREEN HYDROGEN

Launched in the Fourth Assembly of the ISA, the Solar for Green Hydrogen programme focuses on the production and utilisation of Solar Hydrogen in ISA Member Countries. ISA will assess and facilitate the Solar H<sub>2</sub> readiness level of Member Countries by creating a framework of supporting policies and an environment conducive of investment. This programme will thus encourage the global alliance of members and stakeholders to identify and access opportunities in commercially viable solar-hydrogen systems around the world.

Since its launch in October 2021, ISA has laid the foundation for the effective use of Solar Hydrogen in Member Countries. The Programme Initiation Document (PID) and the Solar Hydrogen work plan provide stakeholders with important information regarding the project. ISA has also partnered with the Asian Development Bank and Green Hydrogen Organisation to enable capacity building, knowledge sharing, project identification, investment and development of standards. Together with these partners, ISA also co-hosted two international conferences aimed at identifying relevant stakeholders and accelerating the adoption of solar hydrogen globally. The conferences were followed up by one-on-one meetings with GH<sub>2</sub> stakeholders including governments and private sector stakeholders to boost the adoption of solar hydrogen. We look forward to expanding the reach and impact of this programme over the next year as well.

### THE YEAR AT A GLANCE

- Through the year 2022, this programme partnered with Asian Development Bank and focused on the following activities:
  - Knowledge production
  - Capacity building
  - Conference sessions
  - Development of 'H<sub>2</sub> Readiness Framework'
  - Mapping/Consolidation of existing framework of production and utilisation
- In addition, a study collaboratively launched the the African Union, the European Investment Bank, and ISA will address the requirements for setting up solar to hydrogen hubs in three African regions as the first step. The results will be presented during COP27.



## B. Demonstration Projects

As part of our focus on promoting global solarisation, ISA extends support to Least Developed Countries (LDC) and Small Island Developing States (SIDS) by providing grants to Member Countries for technical and financial assistance in setting up solar pilot projects. The grant initiative allows eligible Member Countries to access up to USD 50,000 by submitting project proposals across various solarisation themes such as Primary Health Care Solarisation, Solar Water Pumping Systems, Solar Cold Storage, and other innovative projects. These projects are implemented through one of three channels, depending on the preference of the individual country - Direct Support to a Member Country, Implementation by ISA, or co-financing with ISA partner organisations (Agency Implementation).

An important initiative taken by ISA in the wake of COVID-19, ISA CARES is an initiative dedicated to the deployment of solar energy in the healthcare sector. The initiative specifically caters to the healthcare and electrification needs of Member Countries, with particular focus on LDCs and SIDS. These projects commonly involve enabling the electrification of public healthcare services, with many benefitting rural and other marginalised communities. Often, these facilities also provide increased local employment opportunities and strengthen allied industries including agriculture and education. Several demonstration projects are being implemented under the aforementioned USD 50,000 grant to LDC and SIDS Member Countries such as Benin, Burkina Faso, Mali, Guyana, Niger, Comoros, Mauritius, Uganda and Fiji.

As of August 2022, 27 countries have expressed interest and the Detailed Project Reports of 26 countries have been finalised by the Project Team and have been approved by ISA's Director General. Of these, 22 countries have formally signed Grant Agreements. With regard to project delivery, 13 countries will be implementing the project independently while 14 have opted for implementation through ISA's project management consultant, National Thermal Power Corporation Limited (NTPC Limited). ISA further hosted three regional virtual meetings on July 14, 2022, for these 14 Member Countries to discuss queries related to the tenders floated by NTPC.

This Annual Report spotlights these 26 projects to illustrate the on-ground impact of ISA's mission of global solarisation. These projects demonstrate locally relevant clean energy solutions that, if successfully scaled, could help countries globally meet their climate goals.





## BENIN

### Solarisation of Abomey-Calavi University Hospital

The Republic of Benin, through ISA CARES, is implementing a solar power project to electrify Abomey - Calavi University Hospital.

Benin is a tropical West African country where the primary industries are textiles, food processing, construction materials, and cement. Even though the country is moving towards development, only 40% of the total population has access to electricity. Out of the 394 MW generated in 2019, renewable energy contributed only 3.4%. Similar to several other developing countries, Benin faces an issue of unreliable power supply, primarily generated through non-renewable sources. Facilities like healthcare centres, schools, and training centres face either a shortage or an irregular supply of electricity. Most of the load centres at a community level use diesel as a source of energy.

The solar electrification project planned for the Abomey - Calavi University Hospital is essential for strengthening accessible modern healthcare in a country facing high rates of maternal mortality and frequent outbreaks of infectious diseases. Providing healthcare in these circumstances would require round-the-clock power for storing vaccines and running essential equipment. The project comprises a 15 kWp solar PV capacity along with 34 kWh of battery backup to provide round-the-clock supply. Lithium-ion batteries will be used for storage, given the limited reliability of grid power. With 40% of the total population living under the poverty line, an affordable healthcare solution is crucial to national standards of living, particularly in rural communities. Accessing clean energy is integral to this goal, allowing healthcare providers to overcome soaring fuel and electricity costs. Through this project, the Abomey - Calavi University Hospital will be able to provide affordable, dependable healthcare at no cost to the environment.



The Abomey-Calavi University Hospital campus

Though agriculture accounts for 26.1% of Benin's GDP, the sector faces multiple issues such as inaccessibility of potable water, water pollution and lack of rainfall. After the pilot projects are successfully completed and confirmed to be feasible to scale up, ISA could assist the country to scale up operations based on the 50,000 units of demand aggregated for solar water pumping systems in the country. The project would directly improve agricultural production across the country. Indirectly, this will help improve the nutrition standards of citizens. Further, access to water pumping systems would directly benefit women and girls in rural Benin since they are predominantly responsible for accessing water, often travelling long distances.

Together, the potential of these two projects is immense. By promoting energy access in the healthcare and agriculture sectors, ISA looks forward to working with Benin to achieve its climate change goal of 20.15% GHG reduction by 2030.



Project site: Abomey-Calavi University Hospital



## BURKINA FASO

### Electrification of two Public Health Centres

ISA aims to assist the Republic of Burkina Faso in saving lives through the electrification of two Public Health Centres (PHCs) in the rural North Centre region; thereby ensuring energy security and providing efficient healthcare services.

A landlocked country in West Africa, Burkina Faso, has struggled with the issue of electricity access, faring poorly with an electricity rank of 183 out of 190 nations in the Doing Business 2020 report. The absence of reliable electricity for PHCs in communities has impacted the delivery of services as there is no power for running electronic appliances and energy storage systems. The Ministry in charge of Health is currently working to provide electricity access to big health facilities. Because of the need for round-the-clock power requirements for patients seeking treatment, keeping vaccines in cold refrigerators, running essential equipment, etc. reliable power supply is vital for PHCs in the most efficient, fair and cost-effective way.

Burkina Faso has chosen Solar Electrification of two PHCs in the North Centre region in the rural communes of Louda and Korsimoro under ISA CARES. The total estimated cost of the project is USD 47,914 which is to be funded by ISA. On conducting estimate studies of electricity requirements for the centres during sun hours and non-sun hours, it was established that a typical daily cycle for the health centre may be fulfilled in Louda with a 3.5 kWp PV system and a 10 kWh BESS and in Korsimoro with a 4.5 kWp PV system and a 12 kWh BESS. The project will sustain the centres' energy needs for 20 years.

The country has opted for self-implementation of the demonstration project, with financial assistance from ISA of up to USD 50,000. The Detailed Project Report (DPR) has already been prepared and the Grant Agreement has been signed. The project will be implemented by the Ministry of Energy through the Department of Renewable Energies and Energy Efficiency on behalf of Burkina Faso. Following this, it will be handed over to the management of the respective healthcare centres under the aegis of technical assistance of the Ministry of Energy.

The impact of the demonstration project looks promising. Its implementation will contribute to Burkina Faso's commitment to reducing greenhouse gas (GHG) emissions by 29.42% compared to the Business-as-Usual scenario and simultaneously, save the lives of thousands of residents.





Korsimoro Healthcare Centre



Louda Healthcare Centre



## BURUNDI

### Installation of solar-powered water pumping system in Nyagisozi

The Republic of Burundi is looking to install a solar-powered water pumping system in the Nyagisozi area with the aim of providing an environment-friendly solution to its farmers, thereby moving closer to achieving its target of Intended Nationally Determined Contributions.

Situated in the Great Lakes Region of the African continent, Burundi is one of the most densely populated countries in sub-Saharan Africa. An equatorial and mountainous country, Burundi benefits from an extremely interesting hydropower potential, coupled with favourable rain conditions and many waterfalls. Now, Burundi is planning to tap the country's solar energy potential.

The Republic of Burundi has chosen and submitted a project proposal to ISA for the installation of an off-grid solar-powered water pumping system. A requirement of 55 cum/day is envisaged at a total head of 50 m with a 4 horsepower (HP) capacity pump for the benefit of the farmers in the Nyagisozi area. The zone currently uses little mechanical irrigation. There is no access to electricity and no future plans to extend power supply to the area through connection to the national interconnected grid.

Burundi has envisaged a solar irrigation project comprising of surface pump, pump house, water tank and water pipeline connecting the pump to the water tank. The project consists of 4 HP capacity of surface water pump powered by a 4.5 kWp solar PV system and a 9kWh BESS with a dedicated 2.5 kWp array. The equipment configurations were decided to maximise the efficiency of the facility. The water distribution arrangement from the tank will be built by the officials in Burundi.

The country has opted to implement this project through ISA's project management consultant. The cost of the demonstration project, estimated to be USD 49,990, will be borne by ISA. National representatives of Burundi will provide technical support to ISA's implementing partner, NTPC, for civil work including the construction of the pump house, water storage tank, and installation of pipelines. Further, Burundi has also chosen NTPC to prepare a Detailed Project Report (DPR) on its behalf.

With an estimated life of 20 years, the solar pumping solution will have a real impact on the development of the locality concerned. Primarily, it will help achieve food self-sufficiency, especially for the thousands of internally displaced persons affected by the security situation. In the long run, it will improve living standards, create jobs, and reduce CO2 emissions, helping Burundi contribute to attaining major SDGs.



## CAMBODIA

### Solarising three schools with Battery Energy Storage Systems

**The Kingdom of Cambodia has chosen to solarise three schools with Battery Energy Storage System. This would provide the schools with an autonomous and uninterrupted power supply.**

As of 2019, Cambodia's overreliance on hydroelectric power had caused widespread blackouts due to drought conditions. In order to combat this overreliance, the country decided to increase the presence of solar as an alternative reliable source of renewable energy. This has been catalysed by the country's Basic Energy Plan 2019, allowing private and foreign entities to install solar PV in the country. Further, the country has sought to increase installed solar PV capacity from 208 MW to 415 MW by 2022 as well as set itself an objective of electrifying all villages and connecting 70% of all households to the grid by 2030.

Accordingly, the Department of Science and Technology (DST) and the Directorate General of Policy and Strategy (DGPS) in Cambodia have chosen to implement a pilot project in collaboration with ISA to electrify buildings through solar. This endeavour seeks to provide reliable power that is invulnerable to power cuts. The project will be situated in Koh Rong City located on the island of Preah Sihanouk province, and the most popular city in the region for its coastal eco-tourism. The city is dependent on imported oil products to meet the majority of its energy requirement. About half of all the imported oil is used for diesel generators which supply the main electricity grid system on the island. The dependence on diesel makes the country highly vulnerable to international oil price fluctuations.

The sites chosen for the project are three schools in Koh Rong City - Koh Toch Primary School, Sok San Primary School, and Prek Svay Secondary School. The schools have been chosen on the basis of their performance, given the importance of educational institutions to the overall development of the country. The project aims to install solar panels and power storage units to ensure that the schools have access to lights, and fans as well as water pumping and power shockers for clean water. It has also been decided that excess energy generated will be supplied to staff quarters and nearby homes and businesses after meeting the requirements of the schools.

The project will be implemented by the DST/DGPS acting on behalf of the Ministry of Environment. These institutions will procure project equipment independently and transparently, keeping with the Government's process for material supply. Upon analysing the power requirement of the schools, the project is set to include Solar PV rooftop systems with a minimum cumulative capacity of 37 kW along with a battery energy storage capacity of 24 kWh. This is estimated to cost USD 50,000 with a project life of 5 years for the battery and 20 years for the solar panels. Upon completion, the project will be handed over to the management team of the schools under the aegis of the Ministry of Education, Youth and Sport (MOEYS).

Apart from strengthening the schools' infrastructural capacities, the project will also provide the necessary training to both local technicians and beneficiaries. This training will enable capacity building of technicians to erect, operate and maintain such systems. The successful completion of the project will also be crucial to possibly scale these interventions to other parts of the country. By adopting solar, Cambodia will not only be able to reach its goal of 100% electrification but also achieve its commitment of reducing emissions by 41.7% by 2030. The country will become an active participant in the fight against climate change.



## COMOROS

### Solarisation of two rural healthcare centres

The Union of the Comoros has chosen solar electrification of two of its rural healthcare centres under ISA CARES in order to meet round-the-clock power requirements at these centres.

An archipelago of islands located in the Indian Ocean, Comoros is one of the Least Developed Countries (LDCs) and the economy is driven by export of agriculture products, tourism, fisheries, and remittances from Comorans abroad. Recurring political instability and an ongoing electricity crisis have further hampered the nation's growth. The Union of Comoros consists of three main islands namely Grande Comore (Ngazidja), Mohéli (Mwali) and Anjouan (Nzwani). This project caters to sites in Ngazidja at Banguoikouni Ngazidja North and Ivembeni Ngazidja North-West.

For Small Island Developing States (SIDS), ensuring uninterrupted access to electricity for their health centres has always been a challenge. It is a challenge that Comoros has been facing as well. The Banguoikouni and Ivembeni healthcare centres, for example, are currently dependent on grid power supplied through Diesel Generators (DGs). This solution is expensive, costing around USD 0.33 per kWh. While Ivembeni has a small backup DG set, this leads to noise and air pollution.

On analysing the connected loads and equipment in each healthcare facility, officials identified that a 6 kW (with 13 kWh BESS) solar PV system would meet the needs of Banguoikouni, given its daily cycle of 18.9 kWh. For Ivembeni, a 9kW (with 20 kWh BESS) system would be sufficient to cater to the total energy requirements of 32.4 kWh per day. The total estimated cost of the project is approximately USD 49,000, which is to be funded by ISA, and the expected project life is 20 years. The projects would be implemented by NTPC on behalf of ISA, with the organisation assisting Comoros in implementing the project from preparation of the project report to final commissioning and handing over of the project, including support during warranty period. Following this, the projects would be handed over to the management of the respective PHCs under the aegis of the Ministry of Health.

The envisaged benefits of implementing this project are many. The annual savings on power consumption for the first year is expected to be USD 3260 for Banguoikouni and USD 4304 for Ivembeni primary healthcare centre, with a 0.7% annual reduction in savings on account of degradation of the panels following this. Moreover, the local population will benefit from a better healthcare system and low CO<sub>2</sub> emissions. The two projects combined shall help reduce CO<sub>2</sub> emission of 6.2 tonnes annually by replacing burning of diesel fuel which produces 0.27 kg of CO<sub>2</sub> per kWh, as per ADB report on guidelines for estimating GHG emissions. Thus, the project aims to positively impact the environment and national healthcare systems in Comoros.





Healthcare centre at Ivembeni Ngazidia North-West



Healthcare centre at Banguikouni Ngazidia North





## CUBA

### Installation of solar-powered water pumping systems in Perico

The Republic of Cuba is looking to install solar-powered water pumping systems in Perico, Matanzas Province. This will contribute to meeting the community's irrigation needs as well as reducing 10.8 tonnes of the country's CO<sub>2</sub> emissions annually.

Situated at the intersection of the Atlantic Ocean, the Gulf of Mexico, and the Caribbean Sea, Cuba experiences subtropical climates with temperatures fluctuating between 24°C to 34°C throughout the year. These temperatures often put a strain on the country's agricultural water supply. In order to address its irrigation needs, the Republic of Cuba with the assistance of ISA has chosen to install solar-powered water pumping systems

The proposed demonstration project of a 25 HP submersible water pumping system with 25 kWp of solar PV capacity will benefit the people in Perico, situated in Matanzas Province. The identified irrigation site, owned by the Indio Hatuey Experimental Station, has an area of 5.3 hectares with a requirement of around 300 cubic metres of water a day. The site currently has a submersible pump powered by a Diesel Generator (DG) unit which pumps water to an underground irrigation system fitted with sprinklers. However, the DG pump poses challenges to sustainability caused by unreliable fuel supply, high import cost of diesel, poor availability of spare parts, and the noise and air pollution caused by burning diesel. This project seeks to substitute the DG-powered pump with a solar-powered pump with remote monitoring for easy maintenance and improved user-friendliness. The pump is expected to operate for six hours a day.

If successfully implemented and scaled to other parts of Cuba, the solar pumping solution will contribute to reducing 10.8 tonnes of CO<sub>2</sub> emissions annually.<sup>8</sup> This will play a significant role in Cuba's efforts toward SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action). It will also contribute to achieving their latest Nationally Determined Contribution (NDC) target for the Paris Agreement – generating 24% of electricity through renewable energy and cutting down fossil fuel consumption in vehicles by 50% by 2030.

<sup>8</sup> This calculation is based on Asian Development Bank's guidelines for estimating greenhouse gas emissions, which states that burning diesel produces 0.27 kg of CO<sub>2</sub> per kWh of energy.



## DJIBOUTI

### Installation of solar cold storage in Omar Jaga'a and Dougoum

**The Republic of Djibouti is looking to support the village community by implementing Solar Cold Storage projects, thereby removing constraints like non-availability of energy, high energy prices, poor storage, and conservation conditions in Omar Jaga'a and Dougoum.**

A country located in the Horn of Africa, Djibouti has no indigenous sources of oil, natural gas, or hydropower. Most of the installed capacity of 126 MW comes from thermal power facilities. However, there is significant potential for solar energy as daily insolation levels range between 5.5 and 6.5 kWh/m<sup>2</sup> across the country. The government of Djibouti is thus turning to solar to drive economic development and has submitted a project proposal to ISA for the installation of two off-grid 3kWp solar-powered cold storage projects of capacity 2 Metric Tonnes (MT). These projects will benefit villagers at two different sites, in Omar Jaga'a in the Arta region and Dougoum in Tadjourah region.

The country has opted for ISA to implement the project through its project management consultant. This implementation will take place at two different sites – Omar Jaga'a and Dougoum. The village of Omar Jaga'a is far removed from the electrical network and supports approximately 40 farmers engaged in the cultivation of fruits and vegetables, animal husbandry, dairy, and cheese production. The residents of Dougoum, which has significant potential in agriculture and grazing, are also involved in similar occupations. The availability of cold storage in these villages would directly benefit residents, allowing them to better preserve dairy and cheese products.

The proposed projects are state-of-the-art compact solar-powered cold storages that are low cost, efficient, maintenance-free and can work even in areas where there is no grid supply or diesel generator-based back-up. Access to such storage facilities will primarily impact the villages' women and the facility could act as a demonstration project for emulation in other villages of Djibouti.

The total estimated cost of the project is approximately USD 50,000. The project will be implemented by ISA with the assistance of NTPC which will assist in managing the implementation activities till successful erection and commissioning. Once the facilities are installed and functional, they will be handed over to the Government of Djibouti. The project will involve training the members of the community and users in both online and offline mode, ensuring that the community has the skills to utilise the facilities. Each village will have a management committee to manage the storage and maintenance of cold storage containers. These measures ascertain the sustainability of the project following its installation.

Such solar-based cold storage seems a viable option for villages in Djibouti with limited access to electricity to enhance their income and reduce food losses. The project can be scaled up and made bankable with support from the lending institutions by securing finance at competitive rates. The facilities will help reduce food wastage, create jobs for women, increase villagers' income and reduce CO<sub>2</sub> emissions. Once the project is implemented, both the direct and indirect benefits to various SDGs will also be quantified. Thus, the project will not only propel on-ground change but also involves robust monitoring mechanisms to better understand the impact.



## ETHIOPIA

### Solar Water Pumping System for access to drinking water

The Federal Democratic Republic of Ethiopia aims to set up a solar-powered drinking water pumping system with a capacity of 50 cubic metres per day for the benefit of its people in the Southern Nations, Nationalities, and Peoples' Region.

Ethiopia has expanded its energy production capacity tenfold in the past 25 years. Yet, it continues to experience energy shortages as it works to meet the national demand for electricity. Ethiopia's population is growing by more than 20% per year, and despite the country's attempts, only 41% of this population has access to electricity. Currently, Ethiopia is looking to harness its significant renewable energy potential to not only meet domestic demand but also become an exporter to the region. This would help address both national requirements as well as the electricity access deficit in East Africa.

Under ISA's initiative to provide technical and financial support to its Least Developed Countries and Small Island Developing States Member Countries, Ethiopia has chosen to install a solar-powered drinking water pumping system. In a country where 60 to 80 percent of communicable diseases are attributed to limited access to safe water, and inadequate sanitation and hygiene services, this could have a far-reaching impact. The pilot project will be undertaken in Haru, a site located in the Irgachefe (woreda) of Gedeo zone in the Southern Nations, Nationalities, and Peoples' Region (SNNPR) of Ethiopia.

As of today, an existing diesel generator-based water pump and a current water storage tank meet the community's requirements. This diesel generator pump will be replaced with a hybrid system which entails operation by both the existing DG set and the proposed PV array. Ethiopia has chosen the 'Implementation by ISA' route; therefore, NTPC would be the Project Management Consultant (PMC) for implementing this project. The entire project is estimated to cost USD 96,799. Of this, ISA will provide USD 49,670 as a grant and the remaining will be financed by the Ethiopian government. A solar-powered water pumping system with a 10 HP pump and an 11 kWp solar PV system is expected to fulfill the community's water needs. The project will also involve installing battery back-up (18 kWh BESS with a dedicated 3.6 kWp solar PV array) of one and half hours to ensure system availability and reliability during power interruptions. The ISA grant shall cover the procurement of solar equipment like solar panels and pumps with a battery energy storage system. The Ethiopian Government will create a new water storage tank, procure and install pipelines, and interlink the new tank with the old tank and the pump.

The solar pumping solution will have a far-reaching impact. It will help improve health and sanitation conditions and living standards, create jobs for women, and reduce greenhouse gas emissions, targeting major SDGs. The successful implementation of this project and its subsequent impact will help build more such pumps, thus significantly improving the quality of life for the people of Ethiopia. Access to climate-resilient infrastructure will empower the community's citizens - all 8209 of them. The overall anticipated cost of the project is USD 96,799. Out of this USD 49,670 is to be funded by ISA as grant and the Ethiopian government will finance the balance USD 47,129.



## FIJI

### Solarisation of healthcare centres in Beqa and Kadavu

The Republic of Fiji is looking to solarise the healthcare centres in Beqa and Kadavu Islands. This will increase the availability of reliable power, cut down expenses on electricity bills and significantly reduce CO2 emissions.

Endowed with forest, mineral, and fish resources, Fiji is one of the most developed of the Pacific Island economies, though still with a large subsistence sector. The healthcare system in Fiji is highly-structured and diversifying electricity access is an important step in further strengthening the system.

For their demonstration project under ISA's grant initiative ISA CARES, Fiji has chosen solar electrification of two rural healthcare centres in Dakui Beqa-Beka, Beqa Island and Daviqele-Kadavu, Kadavu Island. Fiji has chosen to implement the project through ISA, with NTPC acting as Project Management Consultant.

The Dakui Beqa-Beka and Daviqele-Kadavu healthcare centres are currently dependent on power supplied through isolated solar PV plants with limited capacity. Solar power with suitably sized battery energy storage systems will help provide a reliable power supply to these PHCs at an affordable cost with no pollution. On analysing the connected loads and equipment in each healthcare facility, it was found that the 8 kWp solar PV system with 20 kWh of Lithium-ion battery storage would be able to meet the round-the-clock power requirements of both the healthcare centres.



Daviqele Healthcare Centre in Kadavu



The total estimated cost of the project is USD 45,920 to be funded by ISA, with a project life of 20 years. NTPC, as the project management consultant, is assisting Fiji in implementing the project including preparation of the project report, commissioning and handing over of the project on completion and support during the warranty period. The projects would be handed over to the management of the respective PHCs under the aegis of the Ministry of Health after successful erection and commissioning.

The solar electrification systems would help Fiji meet its domestic energy needs. Further, it will contribute to Fiji achieving its targets pertaining to SDG 3 (good health and wellbeing) and SDG 7 (affordable and clean energy), and will reduce carbon emissions by 5.5 metric tonnes. The local population will also immensely benefit from the project as the reliability of healthcare centres will increase because of better equipment availability, illumination and round-the-clock power supply. The country's strong healthcare sector is poised to only improve from solarisation.



Dakuibeqa Healthcare Centre in Beqa Island



## GUYANA

### Solarisation of rural healthcare centre

**The Cooperative Republic of Guyana is looking to electrify a rural healthcare centre through solar power. This will help make healthcare accessible while also reducing the cost of electrification significantly.**

Guyana, among the only primarily English-speaking countries in South America, is currently dependent on imported-petroleum based fuels as its primary energy source. The country is working towards achieving 47% renewable energy generation by 2027 while simultaneously reducing emissions by 70%. This endeavour is being overseen by the Ministry of Public Infrastructure with the Guyana Energy Agency (GEA) responsible for renewable energy in particular. To move closer to its goals, Guyana's project under ISA CARES is the solar electrification of one of its rural healthcare centres in Orealla, a small developing, indigenous village approximately 40 miles from Crabwood Creek, Corentyne Berbice.

Without reliable electricity, service providers in Orealla have been unable to deliver healthcare to the community. The total daily energy requirement for Orealla Healthcare Centre is typically 24.4 kWh.<sup>9</sup> The 9 kW system with 37 kWh BESS would thus meet the round-the-clock power requirements of the healthcare centre. Currently, the Orealla Healthcare Centre is dependent on power from the grid supplied through diesel generators. This method costs USD 0.33 per kWh, an expensive sum for this small rural community. In contrast, solar power with a battery energy storage system will simultaneously address both the question of access as well as cost. Given the critical nature of services being provided in the healthcare centres, the limited reliability of grid power, and the remoteness of the centre, a lithium-ion battery is recommended. Further, solar energy will not pollute the environment, ensuring the larger environmental health of this rural ecosystem.

<sup>9</sup>It is 7.4 kWh during sun hours and 17 kWh during non-sun hours (including losses).



Orealla Hospital Southeast of the Orealla

The country has opted for self-implementation of the project, funded by ISA's financial assistance. The total estimated cost for this solar electrification initiative is USD 44,385. The project life is expected to be 20 years. The timeline for completion of the project is nine months from the signing of the Grant Agreement following approval of the Detailed Project Report. The project will be handed over to the management of the respective PHCs under the aegis of the Ministry of Health after construction and commissioning. If successful, this model can be scaled to other centres around Guyana and contribute significantly to the Sustainable Development Goals important to the socio-economic benefit of the country's population. The project has the potential to improve healthcare accessibility, provide affordable and clean energy, and ultimately avoid carbon emissions from power generation and consumption, first in Orealla and then in the rest of Guyana.



## JAMAICA

### Solarisation of Beacon Little Park Irrigation station

**Jamaica's proposed project will power the Beacon Little Park Irrigation station through solar power. This will reduce dependence on grid power and will positively impact 390 farmers on 470 hectares of farmland.**

Jamaica is an island country in the West Indies that was able to provide electricity access to 99% of its population by 2019. With that significant milestone achieved, the Government of Jamaica has set itself the next ambitious target - to supply 50% of the power demand by 2030 from renewable energy. To achieve this, the government has been implementing several initiatives such as a net metering policy to encourage solar PV installations, auctions, and green public procurement for capacity additions.<sup>10</sup>

In light of these targets and its high energy consumption, the agriculture sector has been an important area of focus in Jamaica. This focus is especially important given that agriculture is the pillar of the island's economy, accounting for about one-twentieth of the gross domestic product (GDP) and about one-sixth of the workforce.

The National Irrigation Commission (NIC) is a state-owned company with the primary role of providing irrigation and drainage services in Jamaica using technology, innovation, teamwork, and partnership. Being dependent on a single power provider makes NIC vulnerable to global oil and fuel price fluctuations that then translate into potentially increasing input costs for water production. To address this dependency, NIC's Energy Risk Management Strategy has implemented several initiatives to reduce energy use and associated costs. The goal is to minimise the organisation's energy footprint by installing suitably sized solar photovoltaic (PV) plants to self-generate energy for consumption.

<sup>10</sup> Ease of Doing Solar 2021 Consultation Draft  
(Available at - <https://isolaralliance.org/uploads/docs/e16620ed19952f02d86ed63dfde463.pdf>)

The proposed project to install a renewable energy system to partially power one of the three irrigation pumps in the district will be self-implemented by Jamaica with funding from the ISA grant initiative in the thematic area of Solar Water Pumping Systems. This will reduce energy use from the grid and its associated cost. For this purpose, a 30 kW ground-mounted, grid-tied solar PV system will be installed to power an irrigation pump at the F3 Little Park Pump Station in St. Elizabeth, Jamaica. The Beacon Little Park district is the second-largest energy consumer for irrigation with the NIC infrastructure. This 30 kW system will represent 8.6% of the total 350 kW PV system capacity planned for this pump facility. The proposed solar plant will power an irrigation system that serves 390 farmers on 470 hectares of farmland. The next phase of the project will scale this initiative significantly, installing a 350 kW solar PV system at the pump facility. This intervention is expected to reduce the pump facility's annual energy costs by 1.9% or approximately USD 9,500<sup>11</sup>. Through this initiative, Jamaica will reduce its annual carbon footprint by 26 metric tonnes, a significant reduction for this small island country.

The project will impact 390 farmers on 470 hectares of farmland including 100 female farmers and 1 person with disabilities, and provides short-term employment for community members during the construction phase. The project also aligns Jamaica with the Sustainable Development Goals (SDGs) of providing affordable and clean energy, developing domestic technologies in industries, and promoting responsible production practices while contributing to global climate action. Additionally, the project embraces Jamaica's National Energy Policy 2009-2030 by establishing government ministries and agencies as a leader in energy conservation (Goal 3) and realising their potential to develop their international competitiveness in renewable energy development and energy security while reducing their carbon footprint (Goal 6).

<sup>11</sup> This converts to roughly JMD 1.4 million.





## KIRIBATI

### Solarisation of Nawai Junior Secondary School

The Republic of Kiribati's Nawai Junior Secondary School has been selected for ISA's initiative to develop a demonstration solar project, with the aim to provide seamless power supply and enable quality education for its students.

Kiribati is a nation in the central Pacific Ocean comprising 33 coral atolls and islands. Like other Small Island Developing States (SIDS), Kiribati depends on imported oil products to meet the vast majority of its energy needs. This dependence makes Kiribati extremely vulnerable to oil price volatility. The country is turning to renewable energy sources to build energy security, reduce this dependence and manage its vulnerability.

For its demonstration project, Kiribati has chosen the solarisation of Nawai Junior Secondary School on the last outer island of the southern province, Tamana Island with an energy storage system. The Ministry of Education is planning to introduce computer lessons in the school, ensure access to proper toilets, and provide clean water for drinking and the gardens. The excess energy after meeting the requirements of the school shall be supplied to the staff quarters as well as the neighbouring homes and businesses. Thus, the project will impact not only the school but the surrounding community as well.

An analysis of the power requirement of the school and staff quarters has been done to design an appropriate solar photovoltaic (PV) and energy storage system. A 7kWp Solar PV rooftop system with 24-kWh battery storage is envisaged, with a total project cost of USD 47,864 to be funded by ISA. The project is expected to have a life of 20 years. Kiribati has chosen to implement the project through 'direct support to the country' and has chosen NTPC to prepare a Detailed Project Report. The Ministry of Infrastructure and Sustainable Energy and Kiribati Green Energy Solution Ltd. will implement the project on behalf of Kiribati. They will look after procurement, erection, commissioning, and operations and maintenance for the project.

The solar PV rooftop solution will help in imparting quality education, providing affordable power and reducing CO<sub>2</sub> emissions. One can expect reductions in the number of dropouts from school, improvement in the performance of the students, and better computer literacy. Solarisation of the school will directly influence the community's overall literacy and skill levels.



## MALAWI

### Solarisation of the parliament building

**The Republic of Malawi has chosen solarisation of its parliament building under ISA's grant initiative to develop demonstration solar project. The project would provide instant availability of backup power to the building in case of blackouts.**

The Republic of Malawi's parliament building is located in the capital city of Lilongwe, an important hub of transportation and commerce in the country. The Parliament is currently powered by the grid along with a Diesel Generator (DG) backup. While power outages are infrequent due to the preferential supply of electricity to the building, a solar photovoltaic (PV) system with a battery backup would reduce the dependence on grid power and fossil fuel-based backup.

Traditionally, the parliament functions from 8 AM to 5 PM with a peak load of 102.34 kW when it is in session. To meet this requirement, the country's Department of Energy has recommended the installation of a 130 kWp solar PV system with battery storage. This capacity will be installed across two phases in the new carports in the parking spaces of the building.

The first phase of the project will be financed by ISA under the grant initiative to provide technical and financial assistance to its Member Countries, particularly Small Island Developing States and Least Developed Countries, to develop demonstration solar projects. The proposed demonstration project is estimated to cost USD 47,950. The second phase will be funded through the budgetary provision of the Government of Malawi. The country has chosen implementation via ISA's project management consultant, NTPC Ltd., to carry out Phase I of the demonstration project. This phase consists of a 25 KWp solar PV system and a new carport structure of suitable size without battery backup. Phase II of the system shall cover a 105 KWp solar PV system and a new carport structure of suitable size with battery backup.

The project will serve as a foundation for Malawi's efforts to increase the availability of reliable power through affordable and clean solar. As of March 2021, only 11.4% of the population had access to electricity in the country. The current electricity generation in the country is inadequate to meet the power demand. However, recent events point to a positive change in the scenario. The parliament solarisation demonstration project and its potential success could lead to large-scale implementation of such systems in more public locations and buildings. Additionally, the country's sales of Off-Grid Solar Lighting increased to 94,000 units in the second half of 2020, a 151% increase from the previous six-month period. Scaling up low-cost solar power systems and other applications of solar will have a positive effect on the fight against climate change and contribute to the country's combined conditional and unconditional Nationally Determined Contributions of reducing greenhouse gas emissions by 51% by 2040. Malawi's economy as well as the environment will benefit from solarisation.



## MALI

### Solarisation of three rural healthcare centres

**Under ISA' initiative of developing demonstration solar projects, The Republic of Mali has chosen ISA CARES as thematic area to solarise three rural healthcare centres. The project would enable three healthcare centres to provide uninterrupted services to citizens.**

As of 2018, only 25.6% of Mali was connected to the power grid with sharp disparities between rural and urban areas. This unreliable access to electricity has a negative impact on the overall quality of life, particularly the ability to provide reliable healthcare services to the citizens. Without electricity, healthcare centres struggle to use electronic equipment and access storage systems. Koula, Sinzani, and Doumba are towns located about two hours from the capital Bamako and face similar problems. This project seeks to electrify three healthcare centres in these towns, strengthening an important part of the nation's healthcare system.

As a country, Mali has a high potential for solarisation, given existing plans for setting up large-scale solar projects and tax waivers on equipment such as solar panels. Since reliable power supply in remote areas is a challenge, solar power with Battery Energy Storage Systems (BESS) offers a solution that is both sustainable and economical. This would directly help provide reliable power, particularly to healthcare centres dependent on uninterrupted power supply.

The project intends to install systems of 4 kWp with 13 kWh BESS in Koula, 3 kWp with 7 kWh BESS in Sinzani, and 6 kWp with 23 kWh BESS in Doumba. These comprehensive systems will be able to successfully meet the power requirements of the PHCs, with Lithium-Ion batteries being used for efficient and low-maintenance backup. The project is estimated to cost USD 49,995 to be funded by ISA and is scheduled to be completed within nine months of signing the grant agreement after the approval of a detailed project report. It will have a lifetime of 20 years.

The country has chosen 'Direct support to Small Island Developing States/Least Developed Countries Member Countries' as the modality to implement the demonstration project. The project will be implemented by AER-Mali on behalf of Mali. Upon completion, the project would be handed over to the management of the PHC under the protection of the Ministry of Health and Social Action (MSAS). The operation and maintenance of the project would be the responsibility of the respective PHCs, monitored by AER-Mali on a fortnightly basis or as required by ISA.

Since Mali has committed to solarisation as a means of energy generation, the potential impact of this project is immense. If this pilot project is successful, the model can be implemented in primary health centres and other key buildings across the country using rooftop solar installations. This would not only help reduce the country's emissions but also have a direct and long-lasting impact on the lives and overall health of the people in Mali.



Koula Dispensary



Sinzani CSCOM Building



CSCOM Building and Housing



## MAURITIUS

### Solar electrification of Jawaharlal Nehru Hospital

The Republic of Mauritius has chosen the solar electrification of Jawaharlal Nehru Hospital in Rose Belle as their project under ISA CARES. The project will be a cost-effective alternative to the electricity needs of the hospital.

In 2019, Mauritius achieved an important national milestone - 100% access to stable electricity. However, a vast majority of this electricity was generated from non-renewable sources. The Jawaharlal Nehru Hospital, the proposed project site, was one such recipient of this electrification, receiving reliable and continuous grid power supply through the Central Electricity Board (CEB). However, the hospital authorities want to reduce their operating expenses and are looking at cheaper, more efficient sources of electricity as a means to achieve this aim. Solar energy fulfils this requirement.



Entrance to Jawaharlal Nehru Hospital





Campus of Jawaharlal Nehru Hospital

The envisaged project is to install a grid-connected solar PV system without a battery storage system. This cost-effective solution also takes into account the lack of space for a battery storage room in the hospital. In an effort to make efficient use of the limited available space, the project will be installed on the rooftop. The rooftop system can also reduce the net energy consumption charges. Not only can the hospital run partly through the power generated by the solar PV rooftop system, the excess energy can also be fed back into the grid. However, the project estimated to cost USD 50,000 cannot completely accommodate the energy requirements of the hospital. Since the annual demand is about 1500 MWh and the load connected is around 400-450 kW, the solar PV system will only supplement energy consumption. It has been anticipated that a maximum DC capacity of 50 KWp rooftop solar PV system can be installed through the available grant, which would be able to generate 66 MWh of energy annually given the climatic conditions of the location. The project, once implemented by ISA's implementation partner NTPC, will be handed over to the management of Jawaharlal Nehru Hospital under the Ministry of Health and Wellness to operate and maintain for its life of 20 years.

Since the current penetration of solar PV systems in healthcare centres and utility buildings in Mauritius is limited, this pilot project would serve as a means to unlock the potential of solar energy in the country. If this project is successfully implemented, public buildings like primary and secondary schools, training centres and other essential facilities can also replicate the model to efficiently harness abundantly available solar energy. In the long term, the large-scale implementation of the project will significantly help Mauritius reach its target of reducing greenhouse gas emissions by 40% by 2030.



## MOZAMBIQUE

### Installation of solar-powered water irrigation pumping system in Macate

The Republic of Mozambique has chosen and submitted a project proposal to ISA for the installation of solar-powered water irrigation of pumping system in the Macate district. The project stands to benefit the local farmers in the community.

The Republic of Mozambique is a South-East African country with a tropical to sub-tropical climate, usually sunny throughout the year. The country is supported by robust growth in agriculture and mining, recording an average GDP growth rate above 7% between 2000 and 2016. While the economy was adversely affected by COVID-19, recovery in these key industries is expected to contribute to a growth rate of 5.3% in 2022 and further increase it to 12.6% in 2023. The country is looking at renewable energy as an important contributing factor to driving this growth.

The planned solar irrigation project utilises the ISA grant to help local community farmers of the Macate district and contribute to Mozambique's development goals through renewable energy. The project site is 1 kilometre away from the grid and currently does not have access to electricity. Through the project, an existing irrigation system feeding a part of the farm area will be supplemented by a new system that expands the coverage of the irrigated area. Both systems are intended to work in parallel.

The project, to be implemented through ISA and its implementing partner NTPC, will be located near a dam where the existing pump is installed. The scope of work includes the provision of an 11 Hp solar pump set providing 175 cu m per day at a dynamic head of 50 m, 10 kWp ground-mounted solar panel, and a piping system connected to two water tanks with a capacity of 5000 litres each. The water will reach the water tanks situated in different locations, from where water will flow through the open channel aided by gravity to irrigate the farmlands. The project is estimated to cost USD 45,457, accessed from the ISA grant of USD 50,000, and will be managed by the country after successful erection and commissioning. The project life is estimated to be 20 years. Any amount that exceeds the grant value at the time of price discovery will be funded by the country.

The solar pumping system will help in improving health, sanitation, and living standards for a nominal user fee charged for the consumption of water. The user fee will go a long way in ensuring the sustainability of the project in the long term. By successfully implementing the project, the country can focus on potentially scaling up this intervention to address irrigation needs and improve agricultural practices in other parts of Mozambique. This will have a positive impact on major SDG targets and contribute significantly to reducing CO2 emissions.



## NIGER

### Installation of solar park to support Gaweye Hospital

The Republic of Niger aims to install a solar park to support the Gaweye Hospital. The project would enable electricity access in case of a lack of supply from the national grid.

As of 2019, only 19% of Niger's population had access to electricity, with a per capita consumption of a meagre 25 kWh in 2020. Rural communities were even more vulnerable, with only 13% having access to power. The proposed project seeks to tap into renewable sources of energy like solar to address the growing challenges of electricity inaccessibility in rural areas and the consequences faced by the rural population.

By installing a solar park with a capacity of 18 kWp with 30 kWh Battery Energy Storage System (BESS), this project will support a section of the Gaweye Hospital. The hospital is currently supplied by Medium/Low Voltage transformers and faces frequent power outages since it is not on the priority power line of the national grid. For the hospital to effectively provide patient care, this unreliability of electricity needs to be addressed as a priority. The aim of the project will be used to equip the operating theatre with a reliable source of energy available in case of a power outage on the national grid. The solar park will thus enable service continuity and improve the quality of healthcare provided in the country. Niger has chosen to implement the project via the modality of 'direct support to Small Island Developing States/Least Developed Countries Member Countries'. The Ministry of Energy will coordinate and monitor the implementation and commissioning of the project, after which the Ministry of Public Health will monitor its operation.

This solarisation project feeds into the larger national focus on sustainable public health services in Niger. The country has a public health strategy and has transformed some public medical centres into regional hospitals to respond to the high number of patients caused by the growth in the country's population. Successful completion of this pilot project will set an important precedent, allowing the intervention to scale to more hospitals. Not only will this help generate clean, renewable energy but it will also directly facilitate the provision of reliable healthcare in the country. The project will play a key role in enabling multiple national goals such as providing accessible healthcare and clean energy while increasing electricity generation.



## SAMOA

### Installation of solar street lights

**The Independent State of Samoa has chosen to utilise the ISA grant of up to USD 50,000 to install standalone solar street light at the compound periphery of a number locations comprising schools, colleges, community centres and churches.**

Samoa is a small island country in the southwest Pacific having a total land area of around 2,900 km<sup>2</sup>. The country consists of four inhabited islands, of which Upolu and Savaii are the largest. As of 2020, about 50% of power generation was through imported fossil fuels. Recognising this vulnerability and dependence, the Samoan Government plans to shift to 100% renewable energy by 2025. However, COVID-19 has posed as a major hindrance to this national target. The envisioned project will assist in the efforts to increase the renewable energy footprint on electricity generation, even as the country reemerges from the pandemic.

The project, to be implemented by the Ministry of Natural Resources and Environment of the Samoan Government, will install 276 street lights consisting of 6V/30Wp polycrystalline Solar PV panels, 180W of LED lamps, and 3.2V/20Ah of Lithium-ion batteries. The street lights will be given to 47 applicants who will receive six sets of lights each. Through the project, the Samoan Government aims to support and promote community awareness of solar street lights as a cost effective, essential and sustainable source of outdoor lighting. They also aim to improve social wellbeing and security during night times for communities, specifically in rural areas. With reliable lighting, the government hopes to reduce the incidence of violence and sexual assault.

Being highly vulnerable to natural disasters, particularly cyclones, another main objective of the project is to provide lighting during natural disasters. One such disaster, Cyclone Gita in 2018, left parts of Samoa without power for almost two weeks. The only communities with access to lighting at the time were those who had received solar street lights. This experience and the positive feedback from the community acted as a powerful reminder of the advantages of solar energy, particularly in situations of crisis.

Currently, 95% of the population of Samoa has access to electricity. However, these sources of electricity are often not reliable, resulting in communities experiencing multiple vulnerabilities. This project seeks to be a crucial step forward in addressing these vulnerabilities, providing a cost-effective, efficient way of keeping Samoans safe while also achieving the nation's target of 26% reduction in greenhouse gases by 2030.



## SENEGAL

### Installation of off-grid solar-powered cold storage unit

The Republic of Senegal has chosen and submitted a project proposal to ISA for the installation of an off-grid solar-powered cold storage unit with a capacity of 5 MT. The unit will benefit the farmers in the Theippe region of Niayes.

The Republic of Senegal has identified an agricultural production area in the municipality of Theippe for a project proposing to install an off-grid solar-powered cold storage facility. The project site has no electrical connectivity but has one of the highest solar potentials in Senegal. UMFT, a collective of farmers with 2,081 farmers divided into 26 groups and operating on a total area of 16,900 hectares, has been selected as the proposed beneficiary of the project. The key crops grown by the farmers of UMFT include potatoes, tomatoes, cabbage, onions, and carrots among others.

UMFT farmers were identified because of the particularly high price they pay on account of poor electricity access. In 2018-19, the farmers lost approximately 40-50% of the total onions and other vegetables produced due to a lack of electricity and access to modern preservation methods. The identified project site is about 7 kilometres away from the main road route between Lompoul and Leona and approximately 200 kilometres away from the port of Dakar. The land is a few kilometres away from the distribution line that supplies electricity to villages of the commune. Its remoteness means there is no reliable electrical grid connectivity. This project seeks to address this problem.

The country has opted for 'ISA implementation' as the modality of developing the demonstration solar project and will be implemented through NTPC Ltd., the project management consultant of ISA. At an estimated cost of USD 48,010, the 5 MT solar cold storage project consists of a cold storage room with a 5 kWp capacity of solar PV with a thermal storage unit to provide round-the-clock cooling to the storage room. The state-of-the-art compact solar-powered cold storage is low-cost, efficient and maintenance-free, and stores energy in the form of thermal storage, limiting the use of electrochemical batteries to preserve the agricultural produce in non-sun hours.

Through the project, Senegal can remove the constraints of non-availability of energy, high energy prices, poor storage conditions, and post-harvest losses, mitigating risks largely faced in agriculture. The successful implementation and further development of the project would also enable Senegal to meet its Nationally Determined Contribution objectives of reducing greenhouse gas emissions while also keeping in line with SDGs. As of 2018, renewable energy consists only of 8% of total electricity generation, highlighting the potential for Senegal to transition to solar power. The project acts as a means to fight climate change while ensuring minimal food wastage and tackling the issues of poverty and hunger. Cold storages also increase job opportunities, which can be beneficial for women in rural areas to gain employment and reduce gender inequality. The project is well positioned to bring about overall development and growth, particularly in the country's rural communities.





## SEYCHELLES

### Installation of solar-powered cold storage unit at La Digue

The Republic of Seychelles has chosen to implement a project with ISA to install 1 solar-powered cold storage of capacity 5 MT at La Digue Island. The project seeks to benefits multiple stakeholders within the agriculture sector.

Seychelles has the distinction of reporting the highest per capita GDP in Africa. In 2019, the country also achieved another important milestone, successfully reporting 100% electrification. While this is a remarkable achievement, the government recognised its dependence on fossil fuels and has decided to increase its share of renewable energy up to 15% by 2030. This project, which seeks to install a solar-powered cold storage unit at La Digue despite the presence of an electrical grid at the site, is a step forward in this direction. The storage unit aims at reducing food wastage and increasing income while simultaneously limiting the country's dependence on fossil fuels.

The envisaged project involves a state-of-the-art compact solar-powered cold storage unit of 5 MT capacity with a 5 kWp capacity solar-panelled rooftop. The system stores energy as thermal power and limits the use of electrochemical batteries to preserve produce. It can be regulated using a mobile-based application and has remote monitoring features that measure the temperature, humidity, door status, and other important parameters. This infrastructure is low cost, efficient, maintenance-free, and can work even in areas where there is no grid supply or diesel generator-based back-up.

Seychelles has chosen to implement the project through ISA. NTPC will act as the project management consultant and implementing partner. The Ministry of Agriculture, Climate Change and Environment (MACCE) is the nodal agency while the Seychelles Energy Commission and the Department of Agriculture will work together in project implementation. The project is estimated to cost USD 49,330 which will be funded by the ISA grant. The project infrastructure will not be subjected to customs duties and taxes on supply and services, further creating an ecosystem conducive to solarisation. The storage unit will have a rental charge of up to SCR 0.5 per kg per day, contributing to the self-sustainability of the project.

Apart from assisting the shift towards renewable energy, the project will have a significant community impact on the 2973 inhabitants of the island. The storage unit will increase the shelf life of fruits and vegetables, reduce food wastage, increase income levels, and provide training and job opportunities to the population of the region. Successful implementation at La Digue will not only positively impact the local community but will also prove the viability of the project, encouraging adoption in agricultural communities across Seychelles. If scaled up into bankable projects across the country, the project can contribute to major Sustainable Development Goals and the country's responsibility of reducing greenhouse gas emissions by 26.4% by 2030.



## SUDAN

### Installation of solar-powered cold storage unit in Assunaytah

The Republic of Sudan has chosen and submitted a project proposal to ISA for installation of 1 solar-powered cold storage with a capacity of 5 MT in the village of Assunaytah in West Kordofan state. The solar cold storage solution will help in reducing the food wastage, creating jobs for women, increasing villager's income, and reducing CO2 emissions.

The problem of agricultural waste is a significant concern for farmers in Sudan. The country's solarisation project seeks to address this concern, ultimately aiming to facilitate an increase in farmer income.

Without access to adequate storage facilities and reliable electricity, farmers in Sudan often have to waste produce and absorb the associated losses. Those in the village of Assunaytah are particularly vulnerable. With a population of 235,000, the village is located 639 kilometres from the capital city of Khartoum. Its remoteness heightens the need for storage mechanisms for agricultural produce.

The envisaged project is a state-of-the-art compact solar-powered cold storage, which is low-cost, efficient, maintenance-free, and can work even in areas where there is no grid supply or diesel generator backup. The project will increase the shelf life of fruits and vegetables, mainly tomato, cucumber, potato, and bananas, allowing farmers to make their produce available for domestic consumption as well as urban customers.

The country has opted for 'ISA implementation' as the modality of developing the demonstration solar project. NTPC Ltd., the project management consultant of ISA, will work with the officials in Sudan to set up the solar photovoltaic (PV) cold room with thermal storage technology. The project can support the storage of fresh agricultural produce by maintaining a temperature in the range of 4-10°C with a provision of pre-cooling the fresh agricultural produce at ambient temperature. The storage is a compact composite unit having a refrigeration unit and cold room with a capacity of 5 MT. This would accommodate 250 crates of 20 kg capacity each. The solar panels will be installed on top of the cold room. The total estimated cost of the project, to be completed in nine months, is USD 48,010. Following the initial setup, the project seeks to be self-sustaining, with a per-day per-crate renting cost acting as a source of revenue.

The success of this project will have significant implications both for the nation's domestic agriculture sector as well as their international SDG contributions. The solar-based cold storage is a viable option for villages across the country with limited access to electricity, mitigating their income and food issues. Training of members of the community along with government officials, and energy and resource officials, will allow for the creation of jobs at the implementation site. This could potentially impact a large number of women in rural communities, enabling their independence and empowerment. The successful implementation and impact of this pilot project could then lead to its adoption in other parts of the country, transforming it into a bankable project for Sudan's rural communities.



## SURINAME

### Installation of solar-powered water pumps in four villages

Through ISA's initiative of developing demonstration solar projects, the Republic of Suriname will install water pumps in four villages to enable easy access to water sources. This will directly benefit communities that currently need to fetch water from the river for their daily needs.

Suriname is a northern South American country rich in topographic diversity. The country and its rainforests, savanna, coastal swamps, and two mountain ranges, however, are entirely dependent on rainfall for their water needs. The rivers, groundwater aquifers, and swamps found in the coastal areas are all fed by rainfall, with an annual average varying from 1750 mm per annum in the north to about 3000 mm per annum in the centre of the country. This high dependency on rainfall has directly influenced Suriname's choice of project. The country is interested in utilising the grant provided by ISA to help rural households access water through a common source in the village. Currently, villagers collect water in vessels or buckets directly from the river. This is not only unsafe but is also time-consuming. By bringing water to their village, the project will help make a necessary resource easily accessible to underserved rural communities.

Suriname has identified four villages - Dangogo, Bigiston, Wanhatti, and Godo Olo - where surface water pumps will be installed to pump water from the river to overhead storage water tanks at a common location in the village. The country has chosen 'ISA Implementation' as the modality to implement the project. A surface pump of 2 horsepower (HP) capacity with 2.5 kWp capacity of Solar PV for each pump is envisaged to meet the daily water requirement of each of the communities. The tanks will be accessible at all times of the day, overcoming the present difficulties of accessing the river after dark. Currently, a water storage tank has been installed only in Bigiston.

Realising the project's dependence on electricity, the Government of Suriname has plans to extend the power supply to the area through connection to the national interconnected grid. This will allow the pumps to work and will electrify rural households through a village-level distribution infrastructure. In order to strengthen this electrification, the project has also proposed installing a hybrid inverter in these sites. This would increase the reliability of the system once grid power is available.

ISA shall implement and fund this project, estimated to cost USD 49,688. Some aspects will be funded and implemented by the Government of Suriname. The project is expected to be completed in nine months from the date of signing the grant agreement between ISA and Suriname. By improving health and sanitation as well as reducing CO2 emissions, this solar pumping solution will address major SDG targets and improve the living standards of rural citizens of Suriname. With energy requirements only set to increase over the years, utilising solar can also help Suriname achieve its Paris Agreement commitment of reducing the usage of fossil fuel and maintaining its 93% forest cover.



## THE GAMBIA

### Installation of two solar-powered water pumping systems

The Republic of the Gambia has chosen and submitted a project proposal to ISA for the installation of two solar-powered water pumping systems for irrigation for the benefit of its farmers in the communities of Julangel and Wassadou.

The project chosen by The Gambia stems from a lack of water supply in the identified project sites and it has the potential to be successful given the country's very high solar irradiation. The proposed site in Julangel is divided into four sections of farmland, irrigated through an existing source that provides water to just two sections of the area each day. This irregularity in irrigation negatively affects the yield of banana plantain. The proposed solar-powered water pumping system having a 9 HP pump with a 10 kWp solar PV system will be installed in an abandoned borewell at the site to meet the water requirement of approximately 106 cubic metres per day. The second site proposed in Wassadou village has an existing borewell for the solar pumping system. The proposal is to replace the existing pump and solar PV panels with a 2 HP pump with a 3 kWp solar PV system to meet the water requirement of about 24 cubic metres per day.

The project, estimated to cost USD 42,790, will utilise the ISA grant for equipment such as solar panels and the pump. It will be implemented by the Ministry of Petroleum and Energy (MoPE) on behalf of the Government of The Gambia, with the Ministry of Agriculture as the implementing partner. On successful installation, the project will be handed over to the respective Village Development Communities of Julangel and Wassadou, where they are expected to have a project life of 20 years. Currently, both the project sites have insufficient storage capacity with two tanks of 5000 L. Hence, the plan is to discharge the water directly to the fields through the existing water distribution pipelines at both locations. The additional water storage capacity will be made available at both sites at a later stage by The Gambia, to provide potential backup during non-sun hours. The system will be user-friendly, having a remote monitoring function for monitoring vital parameters. The system can also be easily managed through a mobile application-based forward linkage.

Over the next twenty years, the solar water pumping system will help reduce CO<sub>2</sub> emissions and improve the health, sanitation, and livelihoods of the communities. This impact will specifically benefit women while also serving as a reliable source of irrigation water for the two communities. Given the renewable nature of generation, the project can also be further replicated in other regions of The Gambia. The large-scale application of such systems can help the country achieve its latest Nationally Determined Contributions (NDCs) target of reducing greenhouse gas emissions by 49.7% by 2030.



## TOGO

### Installation of solar water pumps in five administrative regions

The Government of the Togolese Republic has chosen to install solar water pumps across its five administrative regions under the ISA's initiative of developing demonstration solar projects in Small Island Developing States/Least Developed Countries Member Countries. The solar pumping solution will help provide improved and reliable access to water for irrigation.

Togo is a West African country and is amongst the smallest in the continent. The country enjoys one of the highest standards of living in Africa owing to its valuable phosphate deposits and a well-developed export sector based on agricultural products such as coffee, cocoa beans, and peanuts. As of 2019, 52% of the population had access to electricity, with over 60% generated through hydroelectric plants. Though renewable energy accounted for 75.1% of the country's total energy generation in 2018, petroleum continues to be an important source of energy. Working towards a target of universal electrification by 2030, Togo has turned to solar to achieve this goal. The country has launched one of the largest solar plants in West Africa under the IRENA-ADFD facility to deliver clean energy to nearly 160,000 homes.

Under ISA's initiative of developing demonstration solar projects, the country has chosen to install ten solar water pumping systems with a capacity 1.7 m<sup>3</sup>/h and Total Manometric Head (TMH) of 80 m at three localities in the Savanes administrative region (Kpadjenta, Kpong Mossi and Kotooure). The proposed projects will be implemented by A2TER on behalf of Togo. The ISA grant shall be used mainly for equipment procurement, installation, commissioning of the system, training, and a five-year warranty. The project is expected to have a life of 20 years. A2TER will lead the implementation process as well as integrate the systems into a centralised monitoring system.

The selection of the beneficiary farmers will be based on the model of the Agricultural Financing Incentive Mechanism (MIFA), which is a risk-sharing platform of the Ministry of Agriculture to ensure the repayment of solar pump credit by farmers. The revenue generated from the buyers will allow the farmers to reimburse the pump cost over a three-year period into an A2TER special account that will permit 'revolving' (thus following the same process to acquire solar pumps for another batch of farmers). The proposed structure is a replica of another programme financed by AfDB in Togo.

This synergistic approach to solarisation is expected to yield important results in Togo. Facilitating irrigation for agriculture can result in higher yields, generating more income. The increased food availability will improve food security and nutritional intake, especially in rural areas, aligning the country with the Sustainable Development Goals (SDG) of reducing hunger and poverty. The implementation of the project will create jobs, and no Greenhouse Gases (GHG) will be emitted due to the clean energy source. This allows Togo to stay on track to achieving the SDGs to reduce emissions and promote affordable clean energy while also contributing to their Nationally Determined Contribution targets of reducing greenhouse gases by at least 20.51% by 2030.





## TONGA

### Livelihood enhancement through Solar Pump Systems

The Kingdom of Tonga is looking to implement its Livelihood Enhancement through Solar Pump Systems Project (LET-SPS-ROC) to help communities dependent on underground water.

Tonga's energy challenges are multifold. The country, particularly the communities targeted by this project, is heavily dependent on groundwater and rain water. In periods of drought, these sources of water often dry up, forcing citizens to bear the brunt of inadequate water supply. In order to at least partially address this vulnerability, the Ministry of Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) of Tonga will be implementing this demonstration project. This project is the first phase of the Solar Water Pump Systems (SWPs) programme for 258 units as initially proposed to the ISA Secretariat. The proposed project intends to address multiple issues affecting the country and its citizens - limited commercial activity and productivity in remote communities, heavy reliance on high-cost fossil fuels, hygiene and livelihood during the COVID-19 pandemic, and lack of employment opportunities for rural communities. By addressing these challenges with renewable energy, the country seeks to provide its population with affordable, healthy, and reliable water and energy as well as new employment opportunities.

The pilot project of 4 SWPS aims to impact four rural villages in the main island of Tongatapu Group, spanning about 1126 households with 6642 people. These households are traditionally dependent on underground water for chores and rainwater for drinking. Underground water is commonly pumped using diesel engines that consume an estimated 15 litres of diesel per week to serve 200 people. This reliance on diesel engines accounts for over 1% of the country's primary energy consumption. Used oils and diesel spillage further affect underground water tables. Coupled with excessive pumping, the reliance on underground water poses a serious environmental problem. Tonga's overreliance on fossil fuels for electricity generation also results in a vulnerability to price fluctuations. Coupled with periods of drought, the nation's population battles against significant resource vulnerability, particularly with regard to water.

The LET-SPS-ROC Project aims to use SWPs to increase economic production and income generation opportunities for Tongatapu communities. During COVID-19, the project will enable remote communities to access affordable and hygienic water. Close collaboration with the Department of Geology is also expected to redevelop existing water wells to ensure sustainable water use. The training and education in photovoltaic (PV) technology accompanying these SWPs is also expected to increase employment opportunities for communities in remote areas. Finally, the collaborative effort with ISA also contributes to the country's aim of curbing emissions by 13% by 2030. Overall, the project is expected to reduce the usage of fossil fuels in rural water pumping while also creating positive externalities like employment opportunities.



## UGANDA

### Solar electrification of rural healthcare centre and primary schools

The Republic of Uganda has chosen Solar Electrification for one rural healthcare centre and three primary schools under ISA's initiative of developing demonstration solar projects in its Small Island Developing States/Least Developed Countries Member Countries. This will facilitate reliable electricity in healthcare and education institutions in the non-urban area of Kasese.

Uganda is aiming to provide continued access to electricity in rural regions, where the lack of reliable energy is detrimental to several key aspects of life, including education and health facilities. This need is particularly heightened in areas like Kasese, a small developing, indigenous reservation, approximately 370 kilometres from the capital city of Kampala. Without access to electricity, healthcare centres in Kasese struggle to treat patients, store vaccines and run essential equipment. Given the increased need for computer literacy, the lack of electricity also affects the quality of education available to the children of the area. It is because of this vulnerability and compounded impact that the country chose Kasese as the site to develop the demonstration solar project.

The project seeks to provide solar energy to one healthcare centre and three primary schools in this district with no source of electricity currently. The solar power system with battery energy storage will provide affordable, reliable power in the schools and healthcare centre without polluting the environment in any way. The country has chosen ISA to implement the project through NTPC Ltd. as the project management consultant for the project. NTPC will also prepare a Detailed Project Report based on the four facilities.

The report calculated the total daily energy requirements of the Kasanzi healthcare centre, the Kasanzi primary school and the primary schools in Maghoma and Mbata respectively. The healthcare centres and primary schools currently have no electricity supply. Solar power with battery energy storage system will address this need, providing reliable power supply to the four institutions at an affordable cost with no pollution.

Given the critical nature of services these facilities provide, the project aims to set up small rooftop solar projects in each of them with Lithium-ion batteries as backup, particularly given the limited reliability of grid power, the remoteness of the district and the easy maintenance of the batteries. The project will provide for a 3 kWp system with 5.2 kWh BESS at the Buhuhira Public Health Care centre, 2.5 kWp system with 7 kWh BESS at the Kasanji Primary School, 1.5 kWp system with 2.5 kWh BESS at the Maghoma Primary School and 1.5 kWp system with 2.5 kWh BESS at the Mbata Primary School. The project is estimated to cost USD 48,835 to be funded by the ISA and will have a life of 20 years.

The heightened vulnerability of the Kasese region is a crucial factor in understanding this project's potential impact. The availability of electricity will directly affect the quality of education in the schools, improving learning levels and literacy. The healthcare centre will be able to perform minor surgeries, detect illnesses earlier, and facilitate vaccinations among the communities. The success of this project could further catalyse its adoption in other vulnerable regions of Uganda, capitalising on the country's immense solarisation potential to increase electricity access while maintaining low emission levels.



Primary Schools in Kasese District



Buhuhira Healthcare Centre

## IV. Resource Mobilisation

In line with the mandate of the ISA Framework Agreement, ISA has developed a Strategic Plan for the next five years to support the mobilisation of investments of about USD 1 trillion in ISA Member Countries by 2030. The Strategic Plan envisages programmatic support focusing on Least Developed Countries (LDCs) and Small Island Developing States (SIDS) Member Countries, capacity building support for all developing Member Countries, and analytics & advocacy support for all Member Countries. The plan aims to support Member Countries in developing a vibrant solar energy ecosystem, and creating a viable and bankable solar energy project pipeline through readiness & enabling activities, risk mitigation & innovative financing instruments, investment mobilisation, and promotion of technologies.

ISA has estimated an expenditure of around USD 300 million till CY 2026. This will enable ISA to fulfil the goals articulated in its Strategic Plan. These goals are to:

<b>Facilitate mobilisation of USD 1 trillion in solar investments</b>	<b>Enable 1000 GW of new solar capacity</b>	<b>Help 1000 million people with enhanced access to electricity</b>	<b>Reduce 1 billion tonnes of carbon emissions</b>
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The resources will be used for specific activities to further ISA's Strategic Plan, which includes:

- Policy support and training
- Implementation support
- Knowledge, data, analytics and advocacy support
- Support global initiatives like building a roadmap for mobilisation of USD 1 trillion in solar investments and Green Grids Initiative — One Sun, One World, One Grid (GGI-OSOWOG)

In the short run, ISA has mobilised about USD 80 million from both governments and philanthropies this year. ISA is also partnering with Global Energy Alliance for People and Planet (GEAPP) to mobilise USD 25 million in two phases. The first phase will involve funds of USD 10 million and will be scaled to USD 25 million based on ISA's progress.

To achieve these goals, ISA is looking forward to receiving support from numerous stakeholders, including Member Countries and global foundations. A partial list of stakeholders is as follows:

To achieve these goals, ISA is looking forward to receiving support from numerous stakeholders, including Member Countries and global foundations. A partial list of stakeholders is as follows:

S.No.	Stakeholder	Amount
1	Republic of India	Approx. USD 40 million for core budget activities
2	Republic of France	EUR 1 million for STAR-C
3	United Kingdom	GBP 1 million for GGI-OSOWOG implementation
4	United States of America	USD 960,000 for programmatic support
5	Sweden	USD 50,000 for programmatic support (capacity building and STAR-C)
6	Japan	USD 36,000 for programmatic support for mini grids
7	Global Energy Alliance for People and Planet (with contributions from Rockefeller Foundation; Bezos Earth Fund; and IKEA Foundation)	USD 25 million for three to four years for the three priorities of the strategic plan
8	Children's Investment Fund Foundation (CIFF)	USD 8 million for four years for supporting the three priorities of the strategic plan
9	Bloomberg Philanthropies	USD 6 million for three years for analytics & advocacy, and programmatic support
10	Sequoia Climate Fund	USD 0.5 million for one year for capacity building and programmatic support / USD 2 million for 2 years
11	The John D. and Catherine T. MacArthur Foundation	USD 0.4 million for two years for programmatic support



### Update on resource mobilisation efforts

The ISA has no membership fee. Article VI of the Framework Agreement of ISA states that the operating costs of the Secretariat and Assembly, and all costs related to supporting functions and cross-cutting activities, form the budget of the ISA and are inter-alia covered by voluntary contributions by its Members, UN & its agencies, and other countries. The expenditure of the ISA has been met so far by the general grant received and interest accrued on the general grant. It can also be met from the interest earned on the Corpus Fund.

The ISA Secretariat has made assertive outreach efforts to Member Countries and global foundations to seek resources. The Secretariat has submitted specific proposals to potential donors. A multi-donor trust fund framework is also being developed to receive, manage, and deploy non-core funding resources. The essential elements of the design and governance of the multi-donor trust fund were approved by the Fourth ISA Assembly.

In order to achieve its goals of mobilising resources, in partnership with World Resources Institute (WRI), ISA is developing a roadmap to mobilise USD 1 trillion by 2030 to scale up solar investments. Further, ISA is collaborating with Climate Policy Initiative (CPI) to draw out an investor toolkit and has made a global advisory group to promote investments for solar energy. ISA is working with World Climate Foundation (WCF) and the Concito group to promote investments for solar for the Nordics. The key focus of ISA's Strategic Approach is to promote solarisation in our Member Countries.

# GLOBAL FOOTPRINT



## 05 Global Partnerships

Over the years, ISA has established meaningful partnerships with the United Nations (UN), UN's specialised agencies and organisations, Multilateral Development Banks (MDBs), Development Finance Institutions (DFIs), and Public and Private Organisations.

These partnerships enable ISA to implement existing projects by providing technical assistance, mobilising investment, mitigating risks and building capacity and competency in Member Countries. Strategic collaborations with partners based on their capabilities and objectives also facilitates the development of innovative solar power initiatives, contributing to ISA's larger goal of empowering Member Countries to access renewable energy.

Recent updates:

- ISA has partnered with the World Bank and Agence Française de Développement to launch the Sustainable Renewable Risk Mitigation Initiative (SRMI) to provide loans for reinforcing grid infrastructure.
- ISA partnered with United Nations Development Programme (UNDP) in Member Countries to implement Solar Water Pumping systems (SWPs) for agricultural use with the assistance of the India, Brazil and South Africa (IBSA) Fund of the United Nations Office for South-South Cooperation (UNOSSC).
- We partnered with the Global Green Growth Institute (GGGI) to develop a trust fund to deploy 1 million solar pumping systems in ISA and GGGI Member Countries.
- The organisation collaborated with ClimateWorks and Bloomberg New Energy Finance (BNEF), and presented the Solar Investment Action Agenda during ISA's Fourth Assembly with the aim to mobilise funds of USD 1 trillion in the solar energy sector by 2030.
- ISA joined the Green Grids Initiative - One Sun One World One Grid (GGI-OSOWOG) initiative where it supervises feasibility studies and the development roadmap for setting up cross-border transmission links for a globally integrated grid network.
- ISA launched multiple investment plans with Climate Policy Initiative, Concito Group and World Climate Foundation, to organise resources through institutional investors. Potential investors would be provided with a platform to contribute to scaling up resources for solar power generation.



## ISA Partner Organisations



## ISA Partner Organisations





## ISA Corporate Partners



## 06 The Solar Facility

The Solar Facility aims to catalyse solar investments in Africa's underserved segments and geographies, thereby unlocking commercial capital. The facility would focus on investing across solar technologies – off-grid solar, rooftop solar, productive use solar, utility scale solar – across Africa through a country specific intervention approach. ISA will stimulate investments into solar through a financing vehicle (the solar facility) with the following three components:

- a. Solar payment guarantee fund
- b. Solar insurance fund
- c. Solar investment fund

The Solar Facility will accelerate high potential solar technologies by attracting private capital to flow into underserved markets in Africa while ensuring a payment and insurance mechanism as a first loss guarantee.

### **Solar Payment Guarantee Fund**

The Solar Payment Guarantee Fund will support projects at the time of default and reduce the risk of early closures/bankruptcy of solar energy projects. Projects will pay a premium to be covered by this guarantee fund. It will reduce lenders' apprehensions and enable financing for projects that otherwise might not have received financing. The payment guarantee fund will only provide a partial guarantee to minimise free riders and bad projects. With minimal default, the guarantee fund would enable the short-term investment in geographies that do not receive investments and, in the longer term, would allow investors to invest without recourse to the Guarantee Fund.

### **Solar Insurance Fund**

One of the key factors that affect the bankability of solar projects is the non-availability of affordable insurance products (specifically designed for the solar sector). It is primarily because the insurance provider sector has limited historical data to determine the project viability for 25 years (lifetime of solar projects). Additionally, the understanding of insurance companies about solar PV systems/projects in specific geographies remains limited. It results in costly insurance premia since they are considered high-risk markets. These high insurance premiums not only impact the overall project returns but also impact the cash flow for projects, especially during the initial stages (i.e., construction or the pre-revenue stage). The impact on cash flows often makes the projects unviable for debt financiers. The Solar Insurance Fund will reduce the burden of insurance premiums for solar developers in the pre-revenue phase of the project. It will offset the cost of insurance for a specified period (e.g., only for the construction phase of the project or pre-revenue phase). The insurance would be provided by organisations that are in the business of project insurance, such as MIGA. The projects could recoup the insurance premium covered by the fund during the pre-revenue phase of the project by charging an additional tariff during the revenue phase.

### Solar Investment Fund

The investment fund would provide the core investment upto 10% of project costs in projects that are participating in the solar payment guarantee fund and/or solar insurance fund. The core investment would provide the comfort of due diligence to other investors and thus crowd-in other investors into these projects. It would help to:

- Stimulate demand through TA facility (10% of the fund) – focused on creating a pipeline of bankable projects by supporting project development and building capacities of enterprises/sponsors as well as local governments
- Attract commercial capital providers – the Facility will bring risk capital on less-than-commercial terms to make the risk-return profile of solar investments more favourable

Additionally, it would be presented at the Fifth Assembly of ISA seeking approval for functioning.

## 07 One Sun One World One Grid (OSOWOG)

The One Sun, One World, One Grid (OSOWOG) initiative is rooted in the vision put forth by the Hon'ble Prime Minister of India Narendra Modi at the First Assembly of the ISA in October 2018. Driven by the mantra “The Sun Never Sets”, the OSOWOG initiative envisages the interconnection of all forms of renewable energy (solar, wind, hydro, and green hydrogen) generators, storage, and loads across continents with a trans-continental power transmission grid - One Grid for One Sun in One World. The initiative received endorsement by all the member countries at the Third Assembly of the ISA in October 2020.

Under this initiative, a Steering Committee of Ministry of New and Renewable Energy (MNRE), World Bank, and State Bank of India (SBI) was constituted to carry out the implementation of this concept. Further, the need for a technical study was identified to determine a few viable pilot interconnections for the development of the solar grid. Following the signing of a Memorandum of Understanding (MoU) by the Ministry of New and Renewable Energy (MNRE), the Government of India, the International Solar Alliance (ISA), and the World Bank at the First World Solar Technology Summit on 8 September 2020 for the implementation of a technical study under the OSOWOG initiative, ISA assisted the steering committee in bid process management activities.

A consortium of consultants led by Electricité de France (EDF), France along with AETS and The Energy and Resources Institute (TERI), was onboarded by signing the contract in May 2021, to conduct the technical study for the identification of viable pilot interconnections in three phases. The study is intended to be carried out in three phases.



**Phase 1:** The assessment phase of the technical study on OSOWOG includes finalising inputs, assumptions and constraints (bounds) for the OSOWOG simulation model for identifying techno-economically viable interconnections in the OSOWOG perimeter.

**Phase 2:** Based on finalised inputs, the model would be created for simulations to identify techno-economically viable interconnections in the OSOWOG perimeter. Simulations using PLEXOS software will aim to assess the power system within the GGI-OSOWOG perimeter to better understand the social welfare benefits, CO2 reduction, and other indicators with and without interconnections between large regions that form a part of the OSOWOG study.

**Phase 3:** Subsequently, a comprehensive roadmap for 2-3 pilots in the OSOWOG perimeter shall be developed. This phase will seek to provide overall recommendations on coordination with various country-level stakeholders such as governments/ministries, apex power sector entities, regulators, policymakers, and market operators. These recommendations shall focus on scaling the OSOWOG initiative globally by developing an institutional framework, governance mechanism, policy & regulatory frameworks, and inter-country cooperation mechanisms.

The consortium kicked off the study in May 2021 through an inception workshop which witnessed participation from more than 160 stakeholder officials. More than 10 in-depth stakeholder consultations were undertaken covering a range of topics varying from technical and commercial aspects of long-distance interconnections, experiences of existing interconnections, economies, possible business models, etc. Consequent to the approval of the inception report by the Steering Committee, the consortium has submitted the final draft report on the findings of Phase 1 of the study to the Steering Committee for their comments and approval. Upon receiving the approval on the same, the consortium shall progress with the work on the simulations under Phase 2 and then, subsequently work on the preparation of the comprehensive roadmap under Phase 3.





## Green Grids Initiative - One Sun One World One Grid

### One Sun Declaration

Glasgow, November 2, 2021

The untapped potential of the sun is well known – all the energy humanity uses in a year is equal to the energy that reaches the earth from the sun in a single hour. The sun never sets – every hour, half the planet is bathed in sunshine. By trading energy from sun, wind and water across borders, we can deliver more than enough clean energy to meet the needs of everyone on earth. This trading is already beginning to happen through discrete bilateral and regional arrangements. But to meet the sheer scale of the challenge, these efforts need to be brought together and supplemented to create a more inter-connected global grid. We call this vision: One Sun One World One Grid.

We need new transmission lines crossing frontiers and connecting different time zones, creating a global ecosystem of interconnected renewables that are shared for mutual benefit and global sustainability. This must be combined with expanded and modernised national and regional grids and complemented with the rapid scale-up of mini-grids and off-grid solar solutions.

To help deliver the vision of One Sun One World One Grid, we have resolved to combine our efforts and create a more inter-connected global grid. Our next step is to develop an action agenda for global cooperation on this agenda. Through working groups of interested governments, regulators, financiers, institutions, companies, legislators and researchers, we will seek to provide a common global framework for efforts on:

- Investing in solar, wind, storage and other renewable energy generation in locations endowed with renewable resources for supporting a global grid
- Building long-distance cross-border transmission lines to connect renewable energy generators and demand centres across continents, underpinned by effective and mutually beneficial cross-border power trading arrangements
- Developing and deploying cutting edge techniques and technologies to modernise power systems and support green grids which can integrate billions of rooftop solar panels, wind turbines and storage systems
- Supporting the global transition to zero emission vehicles through incorporating the role of electric vehicles to help improve grid flexibility
- Attracting investment into solar mini-grids and off-grid systems to help vulnerable communities gain access to clean, affordable, and reliable energy without grid-access in their own areas, enhancing socio-economic development and a resilient power supply for all
- Developing innovative financial instruments, market structures, and facilitate financial and technical assistance to attract low-cost capital, including climate finance, for global solar grid infrastructure

Through these and other efforts, we intend to cooperate internationally to share ideas and learn from each other's successes and expertise. In this common endeavour, we can ensure that the sun becomes a secure and reliable source of energy for all, especially for the world's underprivileged citizens.

Realising One Sun One World One Grid through interconnected green grids can be transformational, enabling all of us to meet the targets of the Paris Agreement to prevent dangerous climate change, to accelerate the clean energy transition, and to achieve the Sustainable Development Goals. These efforts can stimulate green investments and create millions of good jobs. By sharing the sun's energy, we can help to build a more peaceful and prosperous world.

#### Members of the Green Grids Initiative – One Sun One World One Grid

Steering Committee:		
Australia France	India United States of America	United Kingdom
Endorsed by:		
Algeria Argentina Bangladesh Barbados Belize Benin Botswana Burkina Faso Burundi Cambodia Cameroon Chad Comoros Cote d'Ivoire Cuba Democratic Republic of Congo Denmark Djibouti Dominica Egypt El Salvador Equatorial Guinea Ethiopia Fiji Gabon Gambia	Germany Ghana Grenada Guinea Guyana Haiti Jamaica Japan Kiribati Madagascar Malawi Maldives Mali Marshall Islands Mauritius Mozambique Myanmar Namibia Nauru Netherlands Nicaragua Niger Nigeria Oman Papua New Guinea Peru Rwanda	Saint Vincent and the Grenadines Samoa Sao Tome and Principe Saudi Arabia Senegal Seychelles Somalia South Sudan Sri Lanka St. Lucia Sudan Suriname Sweden Tanzania Togo Tonga Trinidad and Tobago Tuvalu Uganda Ukraine United Arab Emirates Vanuatu Venezuela Zambia Zimbabwe

## 08 ISA Engagements

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ISA actively collaborates with various organisations that share the vision of providing universal access to renewable solar energy. These collaborations are often strengthened by ISA's participation in global conferences and international fora to promote discourse on the development and utilisation of solar power. Through these activities, ISA aims to ensure that a larger population is aware of the importance of working towards sustainable, renewable energy practices. ISA regularly engages with global stakeholders through these platforms, encouraging them to work together in achieving the shared goal of environment-friendly energy generation.



## August 2022



*Meeting with Rt. Hon Patricia Scotland QC, Commonwealth Secretary-General at the ISA Headquarters to review the progress of collaborative initiatives and determine the future course of action*



*Meeting between Director General of ISA and Deputy Head of Mission of Brazil in Guyana, Paulo Vassily Chuc to discuss Brazil's potential to become the hydro-storage for South America and impact of Brazil's solarisation on the region*



*Meeting with Hon. Deodat Indar, Minister within the Ministry of Public Works of Guyana to discuss strengthening the grid, reducing cost of solar, connecting solar & storage solutions, net metering, mini-grids & other opportunities in Guyana towards Climate Action*



*Meeting with Hon'ble Deputy Minister Tania Masea of Ministerio de Energía Eléctrica, Venezuela to discuss accelerating solar power deployment in Venezuela.*

## July 2022



Meeting with Rt Hon Alok Sharma, COP26 President in ISA Headquarters to discuss success & progress on the ISA initiatives including progress on GGI-OSOWOG



Meeting with representatives from World Association of Investment Promotion Agencies (WAIPA) and Invest India



Meeting with H.E. Mr. Abderrahmane Benguerah, Ambassador of Algeria in India to discuss forward steps in scaling up solar in Algeria



Meeting with Multilateral Investment Guarantee Agency (MIGA) to discuss the creation of feasible projects with credit guarantee mechanisms in high potential markets

## June 2022



Dr. Ajay Mathur, DG, ISA & Mr. Pradeep Kakkattil, CEO, Health Innovation and Investment Exchange Association inked an MOU to promote the use of solar energy for sustainable development with a focus on SDG3: Good Health and Wellbeing



## May 2022



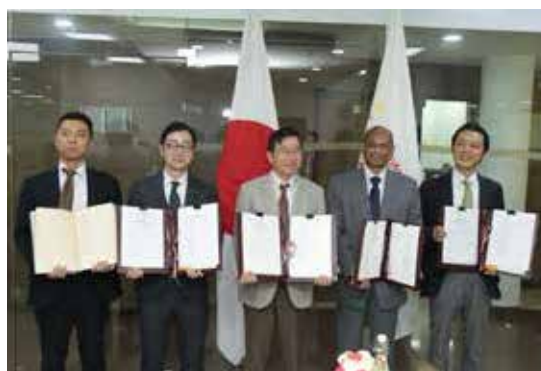
Meeting with H.E. Chang Jae-bok, Ambassador of the Republic of Korea to India to discuss a partnership for promoting solar energy



Meeting with H.E. Ms. Tizita Mulugeta Yiman, Ambassador of Ethiopia, Embassy of Ethiopia to discuss and plan ISA's upcoming Regional Committee Meeting for Africa region in Ethiopia



Meeting between Director General of ISA and Jean-Bernard Lévy, President and CEO, EDF



ISA & the Government of Japan, Japan Bank for International Cooperation (JBIC), Japan International Cooperation Agency (JICA), NEDO sign a Memorandum of Cooperation in the solar energy field at ISA Headquarters



Signed a Memorandum of Cooperation with BSW Solar to facilitate collaboration in matters of mutual interest, focusing on renewable energy development



ISA and Government of Ethiopia ink agreements to scale-up solar interventions in the country



Meeting with H.E. Mukangira Jacqueline, High Commissioner of Rwanda to India to discuss projects for Solar Street Lighting and Solar Minigrids in Rwanda



Meeting with H.E. Patrice Uwase, Minister of State in Charge of Infrastructure, Government of Rwanda & officials from the Ministry of Finance and Economic Planning in Kigali

## April 2022



President of European Commission H.E. Ursula von der Leyen and President of ISA Assembly, Minister of Power & New and Renewable Energy, Government of India, H.E. Raj Kumar Singh addressed Industry on Solar Energy Development at the ISA Headquarters



Participated in the Green Climate Fund Private Sector & Financial Institutions Consultation Workshop conducted by the Government of India and UNDP



Meeting with Director General of the International Renewable Energy Agency (IRENA), Francesco La Camera to facilitate cooperation between the two agencies regarding green hydrogen

## March 2022



Meeting with H.E Dan Jørgensen, Minister of Climate, Energy and Utilities, Denmark & H.E Pooja Kapur, Ambassador of India to Denmark to discuss next steps to strengthen the partnership to expedite global energy transition



Meeting with H.E Livan Nicolas Arronte Cruz, Minister of Energy & Mines, Republic of Cuba for increasing efforts on solar energy development



Meeting with H.E. Mr. Juan Angulo Monsalve, Ambassador of Chile in India to discuss the future roadmap for scaling up solar in Chile



Meeting with H.E. Ugo Astuto, Ambassador and Head of Delegation of the European Union to discuss further actions on the EU-ISA cooperation for scaling up solar energy

## February 2022



Meeting with Vivek Mittal, CEO, Africa Infrastructure Development Association (AfIDA) to sign a letter of cooperation to work towards mobilising funds for solar energy projects in Member Countries in the Africa region





Meeting with H.E. Sarah Storey, Australia's Deputy High Commissioner to India to discuss ISA-Australia Cooperation to accelerate energy transition



Participation in a digital exhibition on '75 Years of Development Partnership' organised by the Ministry of External Affairs (MEA), Government of India and Research and Information Systems (RIS)

## January 2022



Meeting with Hon. Dave Turk, Deputy Secretary, U.S Department of Energy and Hon. Andrew Light, Assistant Secretary for International affairs, U.S Department of Energy

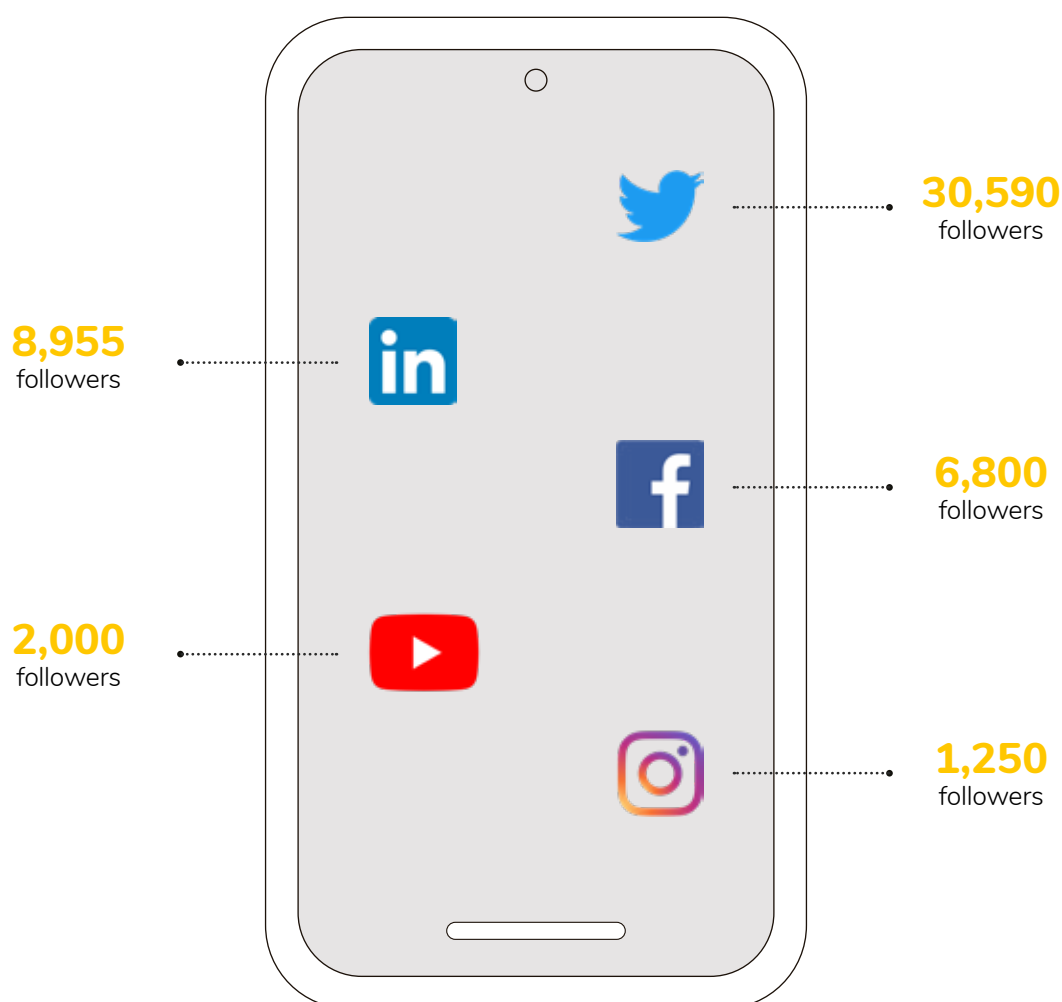


Meeting with UN Secretary General Antonio Guterres at the UN Secretariat in New York, USA to discuss partnerships for achieving Sustainable Development Goals (SDGs)

## 09 ISA Digital Footprint

ISA's significant digital media presence has been crucial to sharing the organisation's vision and initiatives with relevant stakeholders around the world. The organisation's digital media engagement traditionally spans updates on activities, event proceedings, and future initiatives. These platforms have also been critical in spreading awareness on solar energy and other renewable practices among a diverse global audience spanning geography, age groups and institutions. By promoting its activities and creating a reservoir of information online, ISA hopes to increase global involvement and investment in the pursuit of sustainable solar energy practices.

ISA social media following as on August 15, 2022:



Along with a dedicated effort to interact with the target population on social media, ISA also publishes monthly newsletters reporting events and activities of interest on the official website. All other publications by ISA are also made available on the website, allowing a wide audience of stakeholders invested in global solarisation to benefit from the organisation's knowledge pool.



# CONCLUSION

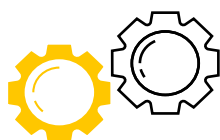


# 10 Way Forward

Globally, solar energy is increasingly becoming the preferred source of renewable energy, and this is evident from the fact that solar PV capacity addition during 2021 has been higher than the capacity addition from all other forms of renewable energy put together. Even though most of this momentum can be attributed to the falling price of energy from solar PV, a significant push is being also provided by the favourable policies that are being implemented by countries around the world. Countries such as Germany, the Netherlands, Norway, South Africa, Italy, France and Brazil have benefitted from recent policy interventions.

Despite the rapid growth in the global installed capacity, the regional disparities do persist in the sector. Most of the solar energy deployment continues to be driven by a small group of countries – more than 2/3<sup>rd</sup> of the global capacity addition during 2021 was contributed by 10 countries, which include 7 developed countries, India, China, and Brazil. Meanwhile, the scale of deployment in the Least Developed Countries (LDCs) and Small Island Developing States (SIDS) continue to be miniscule as compared to these countries. Even as the challenges of land availability are getting addressed by innovations such as floating solar and agri-PV, availability of affordable finance and risk mitigation mechanisms continue to be significant hurdles in many of these developing countries.

ISA is committed to establishing solar as a shared solution addressing various priorities across countries globally while getting several stakeholders on same platform. ISA has been able to aggregate Solar Projects concept proposals of about 9.5+ GW from Member Countries which indicates countries' ownership. ISA is getting private sector on board for successful deployment of solar, by creating ISA's Corporate Council which will comprise manufacturers, developers and financiers from across the world. The aim is to:



**Strengthen relationship and support development of favourable policies & regulations for solar**



**Enhance private sector participation in ISA projects & programmes in Member Countries**



**Put in place different instruments needed to facilitate investments flows**



**Enable ecosystem to facilitate diversity of supply chains at the global level**

Advancing the past efforts in Analytics and Advocacy, ISA is aiming to launch three flagship reports covering Solar Technology, Markets and Investments this year in addition to the annual publication of the Ease of Doing Solar report. ISA is looking forward to seeking views from the experts on these three reports to produce comprehensive knowledge products.

- **World Solar Technology Report** covering vital technology-related advancements, achievements and challenges, globally
- **World Solar Market Report** covering market trends of different technologies, market segments that are the most attractive for investment for different technologies, major trends in the market transformation and related contexts
- **World Solar Investment Report** assessing the transition needed for the financial sector fulfilling the investment requirements of the solar industry in the near future

Capacity Building, one of the priority areas of ISA, will promote development of skilled work force for solar industry, successful installation and functioning of demonstration projects and consequently leading to new policy frameworks promoting solar energy. ISA is closely working with Member Countries to identify needs of solar industries, corporates, bankers, policy makers, grid regulators, etc. for developing demand-based training modules and further implement training programmes to create the required skilled work force.

ISA is reporting on the resources that have been mobilised. Thanks to generous contributions by our host country, India, and others, the commitments are almost touching USD 90 million. We would strongly encourage countries to enhance the voluntary contributions and also to consider moving to a system of membership fees which makes resource mobility a lot more certain.

ISA intends for all its efforts to making all activities in the organisation transparent and process oriented, and bring to you various policies to ensure we are a process and rule driven organisation.

# 11 ISA Staff and Consultants



Hon'ble Minister of Power and New & Renewable Energy, Government of India, Shri Raj Kumar Singh, President of ISA Assembly, visited the ISA Headquarters in Gurugram on August 23, 2022. The President was accompanied by Shri Indu Shekhar Chaturvedi, Secretary, Ministry of New and Renewable Energy, Government of India; Shri Alok Kumar, Secretary, Ministry of Power, Government of India; Shri Ghanshyam Prasad, Chairperson, Central Electricity Authority; and Shri Dinesh Dayanand Jagdale, Joint Secretary, Ministry of New and Renewable Energy, Government of India.

# 12 Financial Reports

## FINANCIAL STATEMENTS FOR THE YEAR ENDED DECEMBER 31, 2021

### INTERNATIONAL SOLAR ALLIANCE

#### I. Statement of financial position as at December 31, 2021


(Amount in USD)			
Particulars	Note No.	As at December 31, 2021	As at December 31, 2020
<b>Assets</b>			
<b>Current assets</b>			
Cash and cash equivalents	3	29,38,313	11,14,414
Bank balances other than cash and cash equivalents above	4	19,13,926	28,12,639
Prepayments	5	2,88,984	4,07,707
Other current financial assets	6a	1,85,693	3,40,949
<b>Total current assets</b>		<b>53,26,916</b>	<b>46,75,709</b>
<b>Non-current assets</b>			
Property, plant and equipment	7	44,726	19,193
Intangible assets under development		38,853	9,887
Other non current financial assets	6b	4,24,24,968	3,80,07,303
<b>Total non-current assets</b>		<b>4,25,08,547</b>	<b>3,80,36,383</b>
<b>Total assets</b>		<b>4,78,35,463</b>	<b>4,27,12,092</b>
<b>Liabilities</b>			
<b>Current liabilities</b>			
Accounts payable and accrued liabilities	8	8,62,443	5,31,238
<b>Total current liabilities</b>		<b>8,62,443</b>	<b>5,31,238</b>
<b>Non-current liabilities</b>			
Long-term provisions	9	8,341	38,392
<b>Total non-current liabilities</b>		<b>8,341</b>	<b>38,392</b>
<b>Total liabilities</b>		<b>8,70,784</b>	<b>5,69,630</b>
<b>Net assets/equity</b>			
Corpus fund	10	4,20,02,733	3,69,13,642
General fund	11	34,48,395	60,20,388
Award fund	12	16,52,092	15,55,590
Specific fund	13	31,40,852	1,18,192
Foreign currency translation reserve		(32,79,393)	(24,65,350)
<b>Total net assets/equity</b>		<b>4,69,64,679</b>	<b>4,21,42,462</b>
<b>Total liabilities and net assets/equity</b>		<b>4,78,35,463</b>	<b>4,27,12,092</b>

See accompanying notes forming part of the financial statements

1 to 24

In terms of our report attached

For **DELOITTE HASKINS & SELLS LLP**  
Chartered Accountants

  
**Pramod B. Shukla**  
Partner

Place: Gurugram  
Date : July 12, 2022



For and on behalf of  
**INTERNATIONAL SOLAR ALLIANCE**

  
**Ajay Mathur**  
Director General

Place: Gurugram  
Date : July 12, 2022



  
**Jagjeet Sareen**  
Assistant Director General

Place: Gurugram  
Date: July 12, 2022





Sl. No.	Programme	Budget Amount (USD)	Total Estimated Expenditure for 2022 (USD)
<b>A</b>	<b>Programme Cost</b>		
A.1	Affordable Finance at Scale (AFS) Programme	1,117,915	1,186,293 (0.97mn from Other Contributions)
A.2	Scaling Solar Applications for Agriculture Use (SSAU)	270,412	238,445
A.3	Scaling Solar Mini Grids (SSMG) Programme	287,207	236,702
A.4	Scaling Rooftop Solar (SRS) Programme	343,150	240,780
A.5	Scaling E-mobility and Storage (SEM&S) Programme	258,513	143,513
A.6	ISA Programme on Solar Parks	369,160	396,445
A.7	ISA Programme for solarising heating and cooling systems	369,160	92,651
A.8	Funding for viability gap and for Demonstration Projects in ISA Member Countries	940,000	794,440
A.9	ISA Programme on Solar & Battery Waste Management	500,000	59,651
A.10	ISA Programme on Solar for Green Hydrogen	500,000	78,651
A.11	STAR C	400,000	400,000 (From other contribution)
<b>Sub-total</b>		<b>5,355,517</b>	<b>3,867,571</b>
<b>B</b>	<b>Communications, Outreach and Strategic Engagement &amp; Partnership</b>		
B.1	Capacity Building	1,346,327	500,000
B.2	Communication, Knowledge Management & Outreach	1,012,756	500,000 (0.38mn from Other Contributions)
B.3	Strategic Engagement and Partnerships	400,000	1,220,000
B.4	Secretariat support to GGI-OSOWOG initiative	435,400	4,966
<b>Sub-total</b>		<b>3,194,483</b>	<b>2,224,966</b>
<b>C.</b>	<b>Management Support</b>		
C.1	Management Support	5,000,000	2,240,000
<b>Sub-total</b>		<b>5,000,000</b>	<b>2,240,000</b>
<b>Total</b>		<b>13,550,000</b>	<b>8,332,537</b>





**International Solar Alliance**

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[linkedin.com/company/internationalsolaralliance/](https://linkedin.com/company/internationalsolaralliance/)

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