International Solar Alliance

Making solar a preferred choice of energy
Agenda

1. About ISA
   1a. Programmatic Support
   1b. Resource Mobilization
   1c. Capacity Building

2. Global Initiative - One Sun One World One Grid

3. Supply Chains
Who are we?

Inter-governmental treaty-based international organization.

United Nations Observer Status.

Global mandate to catalyse global solar growth by helping to reduce the cost of financing and technology for solar

114 Signatories including 92 Member Countries

Universal and Affordable last-mile electricity connectivity towards facilitating economic development and environmental impact

Recently concluded ISA’s 5th general assembly, yesterday on 18th October 2022
**Journey So Far**

- **2023**
  - 114 Signatory countries, 92 member countries as on date

- **2022**
  - 110 Signatory countries, 90 member countries

- **2021**
  - 98 signatory countries, 81 member countries
  - 9 programmes

- **2020**
  - 71 member countries
  - 7 programmes

- **2019**
  - 62 member countries
  - 6 programmes

**2020**

- Resources mobilized from member countries & global foundations: **USD 83M+**
- Aggregated Concept proposals received from 44 members: **9.5 GW+**
- Personnel trained on aspects of solar: **2,974**

**27 Demonstration Projects**

- Demonstration projects in pipeline for 27 LDC & SIDS Member Countries, all DPRs approved. 3 Projects commissioned

**ISA Flagship Reports**

Governance Structure

**ISA Assembly**
- **India** President
- **France** Co-President

**8 Vice Presidents representing 4 regions**
- **Asia & Pacific Region**
  - Tuvalu
  - Bangladesh
- **Africa Region**
  - Somalia
  - Mali
- **Latin America & the Caribbean Region**
  - Venezuela
  - Dominica
- **Europe & Other regions**
  - Denmark
  - Sweden

**ISA Committees**
- **5 Committees (1 Standing Committee and 4 Regional Committees)**
  - To provide strategic advice and guidance on functioning of the ISA and support in facilitating 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 conceptualization of programs and projects

**Current Membership Status**
- **Prospective Member Countries:** 193
- **No. of countries signed ISA framework agreement:** 114
ISA’s Mandate

Mobilize USD 1 trillion in solar investments till 2030

a) Enable 1000 GW of new capacity
b) Helping 1000 million people with enhanced access to electricity and consequently reducing 1000 million tons of carbon emissions.

Roadmap to mobilize USD 1 trillion launched
Theory of Change – ISA’s Strategic Framework for Global Solarization

ISSUES
- Energy Access
- Energy Security
- Energy Transition

PRIORITY AREAS
- Analytics & Advocacy (for all member countries)
- Capacity Building (for developing member countries)
- Programmatic Support (particularly for LDCs & SIDS member countries)

KEY ACTIVITIES
- Readiness and Enabling Activities
- Risk Mitigation & Innovative Financing Instruments
- Investment Mobilization
- Promotion of Technologies

OUTCOMES
- Reduced cost of solar technology, its applications, services & finance
- Skilled workforce
- Solarization of energy ecosystems and economies
- Market creation & enrichment of market ecosystem
- Supported mobilization of USD 1000 billion investments for solar by 2030

IMPACT
- Universal Energy Access
- Climate Change Mitigation & Adaptation
- Green Economic Recovery & Growth
ISA’s Multi-faceted Support

9 ISA PROGRAMMES

Scaling Solar Application of Agriculture Use
Affordable Finance at Scale
Scaling Solar Mini-Grids
Scaling Solar Rooftop
Scaling Solar E-Mobility & Storage
Solar Park
Solar Heating and Cooling Systems
Solar PV Battery and Waste Management
Solar for Green Hydrogen

STRATEGIC PRIORITY AREAS

Advocacy and Analytics | Capacity Building | Project Implementation

3 upcoming Global Analytical Reports:
- The World Solar Technology Report
- The World Solar Market report
- The World Solar Investment Report

Impact Areas:
- Energy Access
- Energy Security
- Energy Transition

GOAL 7
Ensure access to affordable, reliable, sustainable and modern energy for all

GOAL 13
Take urgent action to combat climate change

ISA’s Capacity Building Initiatives for Various Stakeholders

Total People Trained: 2974

- Technical - Solar Parks: 461
- Technical - Solar Pumping System: 466
- Technical - Solar Village Grids: 548
- Technical - Solar Mini-Grids: 255
- Training of Solar Trainers: 226
- Awareness Training: 255
- Awareness: 1226

[Image of world map showing various initiatives]
## Driving Multiplier Effect through Collaboration: 1+1 = 11

<table>
<thead>
<tr>
<th><strong>Readiness and Enabling Activities</strong></th>
<th><strong>Risk Mitigation &amp; Innovative Financing Instruments</strong></th>
<th><strong>Investment Mobilization</strong></th>
<th><strong>Promotion of Technologies</strong></th>
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<tr>
<td>EIB</td>
<td>World Bank</td>
<td>GGGI</td>
<td>WB Lighthouse</td>
</tr>
<tr>
<td>Enhancing energy access through Solar Home Systems</td>
<td>Sustainable Renewables Risk Mitigation Initiative for mobilizing USD 850 million in 20 countries</td>
<td>Joint fund raising for deployment of 1 Million Solar Irrigation Systems</td>
<td>Transfer of best practices and innovative business models</td>
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<td>AFD and GCF</td>
<td>BP-WRI</td>
<td>IBSA and UNDP</td>
<td>UNEP</td>
</tr>
<tr>
<td>Technical Assistance for Decentralized Solar Applications</td>
<td>Developing roadmap for mobilizing USD 1 trillion in solar sector</td>
<td>Solar Water Pumps in 10 countries with IBSA fund</td>
<td>Solar Waste Recycling Study</td>
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<tr>
<td>UNIDO</td>
<td>CIF</td>
<td>UNAIDS</td>
<td>SDF and ADB</td>
</tr>
<tr>
<td>Creating a network of Solar Technology and Application Resource Centres</td>
<td>Investment Series to engage Institutional Investors</td>
<td>Joint Fund Raising for Solarizing Health Centres</td>
<td>Programmatic Support for solar applications</td>
</tr>
<tr>
<td>Rockefeller</td>
<td>IRENA</td>
<td>CIF and BNEF</td>
<td>European Union</td>
</tr>
<tr>
<td>Technical Assistance for developing DRE markets</td>
<td>Collaboration on finance, technologies and R&amp;D</td>
<td>Global Solar Investment Report</td>
<td>Development of knowledge products</td>
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<tr>
<td>WAPP</td>
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<td>Olade</td>
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<tr>
<td>Scaling Up Utility-Scale Solar Projects</td>
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<td></td>
<td>Facilitate development and implementation of policies and regulations</td>
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</table>
1a. Programmatic Support

Facilitate the attainment of SDG 7 (universal energy access), SDG 13 (combating climate change) and SDG 8 (Decent Work & Economic Growth) goals through the following programmes:

- Scaling Solar Applications for Agriculture Use
- Scaling Solar Rooftop
- Solarizing Heating and Cooling Systems
- Affordable Financing at Scale
- Scaling Solar E-Mobility and Storage
- Solar PV and Battery Waste Management
- Scaling Solar Mini-Grids
- Solar Parks
- Solar for Green Hydrogen

Implementation of Pilot Projects in LDC & SIDS
Operative model

Countries join one or more of ISA’s Programmes by indicating interest through an Expression of Interest (EoI).

ISA Secretariat support the countries to prepare a Road map for scaling of solar applications.

Prepare Guidelines based on the best practices for the benefit of the Countries.

Support the countries to identify the projects and carry out pre-feasibility studies.

Support Pilot Project implementation in LDCs & SIDs

Help the countries to create pipeline of Solar Projects and attract the investments
Aggregated Projects Concept Proposals (9.5 GW+) Received from Member Countries

- Solar Water Pumps: 276,229 Nos.
- Solar Rooftop: 1,059 MW
- Solar Mini-Grids: 785.6 MW
- Solar Parks: 7,657 MW
Solarisation: 12 projects
Water Pumping: 9 projects
Cold Storage: 4 projects
Solar Streetlights: 1 project
Solar RO Water System: 1 project

Demonstration projects in the pipeline in 27 LDC & SIDS Member Countries
## 1b. Resource Mobilization for Solar

### Contributions from Member countries for core funding

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Country</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Republic of India</td>
<td>USD 40 million (approx.) pledged as core funding</td>
</tr>
<tr>
<td>2.</td>
<td>Republic of France</td>
<td>USD 1.08 million for the STAR-C initiative</td>
</tr>
<tr>
<td>3.</td>
<td>United Kingdom</td>
<td>GBP about 1 million for GGI-OSOWOG initiative implementation</td>
</tr>
<tr>
<td>4.</td>
<td>United States of America</td>
<td>USD 0.9 million for programmatic support to member countries</td>
</tr>
<tr>
<td>5.</td>
<td>Sweden</td>
<td>USD 50K for capacity building</td>
</tr>
<tr>
<td>6.</td>
<td>Japan</td>
<td>USD 36K programmatic support for mini grid projects</td>
</tr>
<tr>
<td>7.</td>
<td>Australia</td>
<td>AUD 92,000 for capacity building</td>
</tr>
<tr>
<td>8.</td>
<td>European Commission</td>
<td>EUR 1 million (in-kind)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>USD 44 million (approx.)</strong></td>
</tr>
</tbody>
</table>

Additionally, the Secretariat has also received positive signals and in-kind contributions from the following countries regarding their intention to strengthen the ISA Secretariat for implementation of priorities identified in the Strategic Plan:

❖ Kingdom of Denmark
❖ Republic of France
❖ Germany
❖ Kingdom of the Netherlands
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Organisation</th>
<th>Amount</th>
</tr>
</thead>
</table>
| 1.     | **Global Energy Alliance for People and Planet** with contributions from Rockefeller Foundation; Bezos Earth Fund; and IKEA Foundation (for strategic priorities of ISA including programmatic support, capacity building and analytics and advocacy) | **Part A: USD 10 million** (Including OD Grant – 1.5 million)  
**Part B: USD 15 million** |
| 2.     | **Children’s Investment Fund Foundation (CIFF)** (for strategic priorities of ISA including programmatic support, capacity building and analytics and advocacy) | **Grant III - USD 8 million** (including OD Grant - USD 0.4 million) |
| 3.     | **Bloomberg Philanthropies** (for strategic priorities of ISA including programmatic support, capacity building and analytics and advocacy) | **USD 6 million** |
| 4.     | **Sequoia Climate Fund** (implementation of strategic plan) | **USD 0.5 million** |
| 5.     | **The John D. and Catherine T. MacArthur Foundation** | **USD 0.4 million** |
| **Total** |                                                                 | **USD 40 million (approx.)** |

Additionally, in-kind contributions have also been received from the following organisations for implementation of various projects and activities in ISA member countries over the years:

- European Commission
- World Bank
- Asian Development Bank
- United Nations Development Programme
- United Nations Environment Programme
- Shakti Sustainable Energy Foundation
ISA’s Solar Facility

The Solar facility aims to catalyze solar investments in the underserved segments and geographies of Africa, 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.

The facility was approved at ISA’s Vth General assembly by Hon Minister, Sh RK Singh in Delhi, India

The Solar Facility would comprise of 2 funds and one mini-sub component:

Solar Payment Guarantee Fund

The Solar Payment Guarantee Fund will support projects at the time of default and reduce risk of early closures/bankruptcy of solar energy projects.

Solar Insurance Fund

The Solar Insurance fund would accelerate solar project development in Africa via offsetting insurance premium related expenses (during construction and pre-revenue stages).

The Solar Investment /PPF 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.
International Solar Alliance is organizing a Global Startup Challenge to attract entrepreneurs from African region. The first leg was launched in Africa on Nov 10, 2022 during COP27.

**The Purpose**

- Attract Global Investments in Solar Energy Sector
- Catalyze the solar adaption-rate
- Motivate innovators and researchers to add value to the solar sector
- Promote NFPs to invest more in the startup ecosystem enablement
- Make Africa energy independent and reduce dependance on fossil fuel resources
- Identify innovations that can offer cost-benefits

*Following the approval from the Fifth Assembly, the ISA, in collaboration with Invest India, jointly launched the ‘SolarX Grand Challenge’ at CoP27 on November 10, 2022.*
1c. Capacity Building

**Key Outcomes**

- **Support Member Countries in formulation of supporting policies and regulations**
  - Promotion of R&D and innovation in solar technologies
  - Facilitating conceptualization and development of structured and bankable project proposals
  - Enhanced institutional capacity of key stakeholders
  - Support in strategic decision making for deployment of various solar solutions

**Our Offerings**

- PhD & M.Tech fellowships
- Training of scientists under STAR-C Programme
- Training of Master Trainers under ITEC
- Professional Degree Programmes (MBA and Undergraduate)
- Skill Development of Technicians
- Training of bankers under ‘Making Solar Bankable’ initiative
- ISA Infopedia

**Key Stakeholders**

- Policy Makers and Regulators
- Researchers and Scientists
- Consumers
- Engineers, Technicians, Entrepreneurs
- Financiers, Investors
- Project Developers and Discoms
- Policy Makers and Regulators
- Researchers and Scientists
- Consumers
- Engineers, Technicians, Entrepreneurs
- Financiers, Investors
- Project Developers and Discoms

**Delivery Mechanism**

- Development of Knowledge Material
- Training Delivery
- Post-Training Interventions
- Monitoring & Evaluation

- Analyze training needs, review existing training materials, develop training plans, case studies & guidelines
- Identify & select stakeholders, organize training workshops & webinars, disseminate guidelines & case studies
- Conduct follow-up sessions with stakeholders & collect feedback for scope of improvement
- Identify measurable indicators, set data collection instruments, and prepare M&E reports and findings
ISA's Capacity Building Initiatives for Various Stakeholders

- **Total People Trained (Feb 2023):** 2974
- **Training of Master Trainers:** 215
- **Bankers Training:** 1226
- **Technical - Solar Rooftop:** 258
- **Technical - Solar Mini-grids:** 348
- **Technical - Solar Parks:** 461
- **Technical - Solar Water Pumping System:** 466

Data updated: March 2023
# Solar Technology Applications Resource Centres (STAR-C)

<table>
<thead>
<tr>
<th>NEED</th>
<th>OPPORTUNITIES</th>
<th>GAPS</th>
<th>STRATEGY</th>
<th>STAR C</th>
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<tbody>
<tr>
<td># More than 700 Million people without access to electricity.</td>
<td># High coal and fossil gas prices profoundly makes solar energy more attractive.</td>
<td># Private capital does not yet see the right balance of risk and reward in clean energy projects in Africa.</td>
<td># Building the necessary human capacity and skills within member countries for them to undertake energy transitions on their own while also boosting economic growth, trade and job creation.</td>
<td># Establishing technical facilities undertaking testing/standardisation, demonstrate and upscale replicable solar energy applications.</td>
</tr>
<tr>
<td># The import cost of energy is a big burden for majority of the ISA member countries.</td>
<td># More and more under-developed and developing countries are seeing solar as one of the major energy sources.</td>
<td># Quality infrastructure and standards for solar products and services often missing.</td>
<td># Undertaking training and skills development for better-qualified solar professionals, decision makers, financial institutions etc. supporting accelerated solar deployment.</td>
<td># Creating a global network for exchange of knowledge and expertise.</td>
</tr>
<tr>
<td># High coal and fossil gas prices profoundly making solar energy more attractive.</td>
<td># Transition towards solar energy is a powerful engine for growth, trade, creating jobs and contributing to climate action.</td>
<td># Technical capacities and skills are inadequate.</td>
<td># Creating a global network for exchange of knowledge and expertise.</td>
<td># Establishing technical facilities undertaking testing/standardisation, demonstrate and upscale replicable solar energy applications.</td>
</tr>
<tr>
<td># Lack of country capacity poses huge risk to investments.</td>
<td></td>
<td># Low awareness level with insufficient data and knowledge.</td>
<td># Undertaking training and skills development for better-qualified solar professionals, decision makers, financial institutions etc. supporting accelerated solar deployment.</td>
<td># Creating a global network for exchange of knowledge and expertise.</td>
</tr>
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</table>
2. Global initiative: One Sun, One World, One Grid

- The OSOWOG initiative will aim to connect different regional grids through a common grid that will be used to transfer renewable energy power and, thus, realize the potential of renewable energy sources.

- The initiative, through the developed interconnected regional grids, would also help in addressing the risk associated with intermittency of sources by allowing flow of power from a region with excess generation to a region with increased demand.

GGI-OSOWOG aims to achieve global grid interconnection through three key pillars:

- Political engagement
- Institutional engagement
- Research and knowledge sharing
3. Supply Chains

Solar PV supply chains have become increasingly globalized with key goods being traded include, machines to manufacture PV wafers, cells, modules and panels, and select PV components, such as generators, inverters, cells.

- **Project Planning**: Pyranometers, pyrheliometers, solar energy simulators
- **Procurement & Manufacturing**: PV panels, inverters, glass, polymers, cells, batteries, aluminium, steel, silicon, electronic & IT tools
- **Transport**: Transport of solar PV plant components
- **Installation & Grid Connection**: Glass, steel, aluminum, concrete, silicon, copper, plastic, electrical & electronic instrument and control systems
- **Operation & Maintenance**: Taking place over 20+ years; involves preventive & corrective maintenance

**Global Trade in Solar PV**

USD 300 billion in 2019  
*Increase from USD 111 billion in 2005*

**Global Trade in Machines Manufacturing Solar PV**

USD 136 billion in 2019  
*Increase from USD 52 billion in 2005*

Source: IRENA – Trading into a Bright Energy Future
Our team has significant experience across renewables, multilaterals and organization building

Dr Ajay Mathur
Director General
Prior Work Experience
• Director General, The Energy and Resources Institute (TERI)
• Director General, Bureau of Energy Efficiency

Mr Joshua Wycliffe
Chief of Operations
Prior Work Experience
• Permanent Secretary, Ministry of Environment, Republic of Fiji

Ms Pragya Gupta
Resource Mobilisation Specialist
Prior Work Experience
• Country programming, Green Climate Fund
• Financial Management Specialist, Asian Development Bank

Ms Nidhi Bakshi
Human Resource Analyst
Prior Work Experience
Project Fin-HR Manager- MEDECINS SANS FRONTIERES-France

Onyi Iyizoba
Legal Specialist
Prior Work Experience
• Senior Legal and Regulatory Consultant Nextier Power, The Nextier Group

Mr Remesh Kumar
Acting Chief of Unit PPIC (Secondment from NTPC)
Prior Work Experience
• General Manager: (Project Planning and Monitoring), NTPC

Mr Nikhil Kumar
Senior Consultant, Communication and Advocacy
Prior Work Experience
• Associate Vice President, Edelman

Mr Philippe Malbranche
Assistant Director General
Prior Work Experience
• Director General, INES (French Solar Energy Research Institute)
Thank You
Demonstration Solar Projects

- Eligible LDCs/SIDS member countries: 47
- Total proposal received from LDCs/SIDS member countries: 27
- Total DPRs finalized: 27
- Projects Commissioned: 06
Grid Connected Solar Projects

Country Analytics - Country Assessment Reports with Outreach to 32 Countries

AFRICA

22 Countries

ASIA AND PACIFIC

03 Countries

LATIN AMERICA AND CARIBBEAN

07 Countries

About 7.5 GW of capacity aggregated across 19 Countries

Togo (500 MW)
Mali (500 MW)
Malawi (100 MW)
Niger (50 MW)
Cuba (900 MW)
Paraguay (500 MW)
Guinea-Bissau (10-60 MW)
Ethiopia (410 MW)
Venezuela (2000 MW)
Guinea (70 MW)
Suriname (100 MW)
Zambia (400 MW)
DR Congo (1,000 MW)
Mauritius (32 MW)
Mozambique (30 MW)
Bangladesh (5 MW)
Sudan (200 MW)
Nicaragua (100 MW)
Burkina Faso (750 MW)
Solar Technology Applications Resource Centres (STAR-C)

- **Capacity building and skill development**
  - Develop training modules and skill qualification packs for the coursework on aspects such as technical, commercial and installation of solar technologies in local language

- **Testing and certification**
  - Test and certify components (modules, inverters, Balance of System, solar pumps) based on international guidelines

- **Research & Development**
  - R&D activities focused on performance improvement of components, cost reduction, developing end-use applications.

- **Standards**
  - Setting standards for manufacturing, project setup and quality assurance based on international best practices

- **Consultancy**
  - Location assessment Study, conduct feasibility analysis of projects, Grid reliability studies, Project implementation support, Concept to Commissioning support

- **Solar resource assessment**
  - Knowledge sharing on assessment of solar irradiation data and calibrate it to suit the ground realities, Preparation of Solar maps

- **Start-up incubation**
  - Identify and incubate entrepreneur in solar domain by providing infrastructure, industry connects

- **Setting standards for manufacturing, project setup and quality assurance based on international best practices**
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- **Location assessment Study, conduct feasibility analysis of projects, Grid reliability studies, Project implementation support, Concept to Commissioning support**
  - Knowledge sharing on assessment of solar irradiation data and calibrate it to suit the ground realities, Preparation of Solar maps

- **Identify and incubate entrepreneur in solar domain by providing infrastructure, industry connects**
The booming global solar PV market will create space for new industry players
But these opportunities will not be distributed evenly across value chain’s steps

Key takeaways from the quantitative analysis

❖ The solar PV industry already is on the right path, Incumbent actors are thereby in position of power

❖ Growth will have to occur mainly between today and 2030 (from polysilicon to wafers)

❖ Production capacities will have to increase at least by a factor of 3 (“Minimal Transition”) and even a factor of 10 (“Total Transition”)

❖ The window of opportunity for new entrants thereby depends of the considered step of the solar PV value chain

❖ For cells and modules the technology turnover is higher (5-7 years), which will create opportunities, especially after 2030

❖ Demand for components will also explode, with opportunities in glass, encapsulants, frames, backsheet or inverter manufacturing