

# Newsletter

September 2022

• Volume 9

<b>Snapshot: 2022 Governance Meetings .....</b>	<b>1</b>	<b>ISA's Interventions .....</b>	<b>10</b>
<b>Spotlight: 'Solar Compass' 2nd issue analyses solar cooling, interconnection, solar in Asia Pacific, and innovations in solar fuels .....</b>	<b>4</b>	♦ ISA, World Resources Institute (WRI) & Bloomberg Philanthropies Roundtable: Socialising ISA's Roadmap to Mobilise USD 1 trillion for Scaling Solar Investments .....	10
♦ Is a Solar Future Inevitable? How to shape policies to capture the opportunities of cheap solar .....	5	♦ Launch of ISA Corporate Advisory Group .....	11
<b>Roundup: Country Missions to the Bolivarian Republic of Venezuela and Republic of Paraguay .....</b>	<b>6</b>	♦ ISA launches 'Transforming Solar: Supply Chains' Workstream .....	11
<b>Initiative: .....</b>	<b>8</b>	♦ ISA hosts Roundtable on Building Resilient Global Solar Supply Chains .....	12
♦ Solar E-Mobility Webinar Series Charging for Change: Vehicle Integrated PV Sector: Technical and Regulatory Aspects .....	8	♦ Solar Roadmapping: Transition to Action .....	13
♦ ISA Fellowship for Mid-Career Professionals .....	9	<b>New Developments .....</b>	<b>14</b>
		<b>Photo Gallery .....</b>	<b>16</b>
		<b>Upcoming events .....</b>	<b>17</b>
		♦ Fifth Assembly of the International Solar Alliance .....	17

## Snapshot: 2022 Governance Meetings

The International Solar Alliance (ISA) held its Fourth Regional Committee Meeting for Africa in Addis Ababa, Ethiopia, from 29 – 31 August 2022. The Meeting witnessed the participation of around 100 delegates and 7 Ministers from across countries of Africa, who gathered to accelerate the impact of solar solutions on the adverse effects of climate change. The ISA, which has 44 African Member Countries, highlighted that increasing solar penetration in Africa would improve health, bring electricity to rural hospitals, free citizens from toxic emissions, empower small businesses, drive education by electrifying rural schools, and increase access to the internet.

The Meeting was attended by Hon'ble Lamine Seydou Traore, Minister of Mines, Energy and Water, Republic of Mali; Hon'ble Aly Ibouroi, Minister of Comoros; Hon'ble Mohammed Abdullahi Farah, Minister of Somalia; Hon'ble Dr Maminata Traore Coulibaly, Minister of Burkina Faso; Hon'ble Soda Zhemu, Minister of Energy and Power Development; Hon'ble Arthur Bertrand Piri, Minister of Central Africa.

During the Meeting, several countries highlighted the need for accelerating projects in solar parks, mini-grids, rural electrification, solar water pumps for irrigation, solar home & street lighting, and rooftop solar. A few Member Countries also expressed the need for building



an ecosystem for encouraging start-ups that would bring forth innovative local solutions.

The Meeting focused on the need for pools of finance from developed countries and multilateral banks apart from the private sector for greater uptake of solar. Towards this, the International Solar Alliance informed that it is designing a Blended Finance Facility to stimulate high potential solar technologies by attracting private capital to flow into such technologies. This Facility's current geographical focus is Africa, with potential for

expansion to other regions. The Facility is open for all countries to join to maximise its impact across regions. The ISA is creating a relatively small pool of concessional capital and grants (about USD 700 million), which would mitigate risk and thus attract around USD 10 billion in follow-on investments and will enable energy access in 35–40 million African households by 2030, thereby impacting 200 million people in the Region. It will also offset more than a million tonnes of CO<sub>2</sub> emissions in intervention countries.

“The Regional Committee Meeting of the International Solar Alliance is to advance discussions on how we may find long-term solutions for energy access, security, and transitions. Solar energy offers unlimited opportunities for securing a sustainable future for all and addressing the many economic and climate challenges countries face today. Ethiopia is blessed with potential renewable energy resources that can be tapped to impact the nation's welfare. Although we have tremendous potential from various energy sources, we only generate 5,000 MW, mainly hydropower (92%). Therefore, the government is prioritising extensive and diverse renewable power generation. ”

**H.E. Dr Sultan Wali,**  
*State Minister of Water & Energy, Ethiopia*



“It was heartening to learn that eight of our Member Countries from the Region are on track to join the Gigawatt Club. Special efforts being put in by Algeria, Zimbabwe, Zambia, Congo, Namibia, Ethiopia, Morocco, and Botswana are encouraging. We look forward to supporting Africa's call to the world at COP27 to 'Act Now' as the need for a just energy transition intensifies amidst a worsening climate crisis in the Region, which is the most vulnerable to extreme weather like drought and flooding already becoming commonplace for the continent. ”

**– Dr Ajay Mathur,**  
*DG-ISA*

The final day of the Regional Committee Meeting witnessed a **Public-Private Roundtable**. The proceedings were marked by experts sharing insights on mini-grids, solar pumps and other productive use applications, manufacturing and assembly in Africa and solar-powered electric vehicles.

The first segment of the Roundtable, **Unlocking Mini-Grids in Africa**, witnessed a keen dialogue between government representatives and panellists: William Brent, Chief Marketing Officer, Husk Power; Ganapathi

Srinivasan, Head of International Business, OMC Power; Joan Chahenza, Director, Energy Access Financial Advisory, AMDA; and Collins Kuinda, Sunfunder. Discussions focussed on the 'how': to craft regulations and policies to bring down the implementation time and reduce the cost of mini-grids. Furthermore, successful mini-grid examples were shared, and ideas were exchanged when mini-grids are the best approach for bringing power to Africa's 600 million unelectrified.





The second segment on **Solar Pumps and Other Agricultural Applications** brought experts: Ramesh Patidar, Director, Shakti Pumps; David Njugi, GOGLA; and Francis Elisha from RMI, who discussed the economic potential of displacing diesel consumption and the opportunity to uplift remote areas through pumps, mills and other productive uses of solar power. There was an insightful dialogue on how government can ensure policies are supportive of welcoming the private sector to implement these solutions across Africa.

The penultimate session focussed on **Solar Technologies Manufacturing and Assembly**. Global manufacturing experts: Gaëtan Masson, Director and Co-founder, Becquerel Institute; Tewabech Workie, CEO, ESEDA; Anubhav Berry, CEO, Bridgeselect; Dr Eicke Weber, Chair of the European Solar Manufacturing Council, Fraunhofer, UC Berkeley and Nabil Ishak from the Ethiopian Solar Energy Development Association spoke of the potential for solar manufacturing and defined it as huge. Policy levers were also discussed



to support local businesses and develop regional manufacturing ecosystems. The tremendous potential for global collaboration was highlighted, including working with European and other companies to build African solar value chains.

The final session on **Solar Electric Vehicles for Autonomous eMobility** brought Ato Fitsum Deresse, CEO – Green Tech Africa, Ethiopia; Ato Fitsumbrhan Tsegaye, Advisor to the Minister of Transport and Logistics, FDRE; and Ato Bereket Tesfaye, Advisor, GIZ – Ethiopia. They shared the tremendous work that has already been done building electric vehicles in Africa, including Vehicle-Integrated Photovoltaics. There is an enormous opportunity to save money, promote a healthy environment, and create local manufacturing by embracing solar-powered electric vehicles. ISA thanks the 80+ delegates for an inspiring and productive session and looks forward to fostering further collaboration among the private sector and government representatives.

## Glimpses from the Seventh Standing Committee Meeting hosted in New Delhi on 13 September 2022



The meeting was co-chaired by India as the President of the ISA Assembly and France as its Co-President.

## Spotlight: 'Solar Compass' seeks to fill information gap 2<sup>nd</sup> issue analyses solar cooling, interconnection, solar in Asia Pacific, and innovations in solar fuels

The mission of ISA is very much in line with my own life-long mission and my dream to see us achieve the global goal of net zero carbon emissions for which solar energy will be the key. After 50 years of experience as a researcher, author, editor, educator, and entrepreneur, it is my honour to lead Solar Compass as its Editor-in-Chief to help ISA achieve its vision. I realised almost half a century ago during turmoil in the global oil markets that the only sustainable energy source for our future is solar energy in its direct and indirect forms. That realisation motivated me to start my research and development to advance scientific knowledge and technologies for solar energy applications. As we became aware of the global climate change in the 1980s, it became my passion to be a part of the solution.

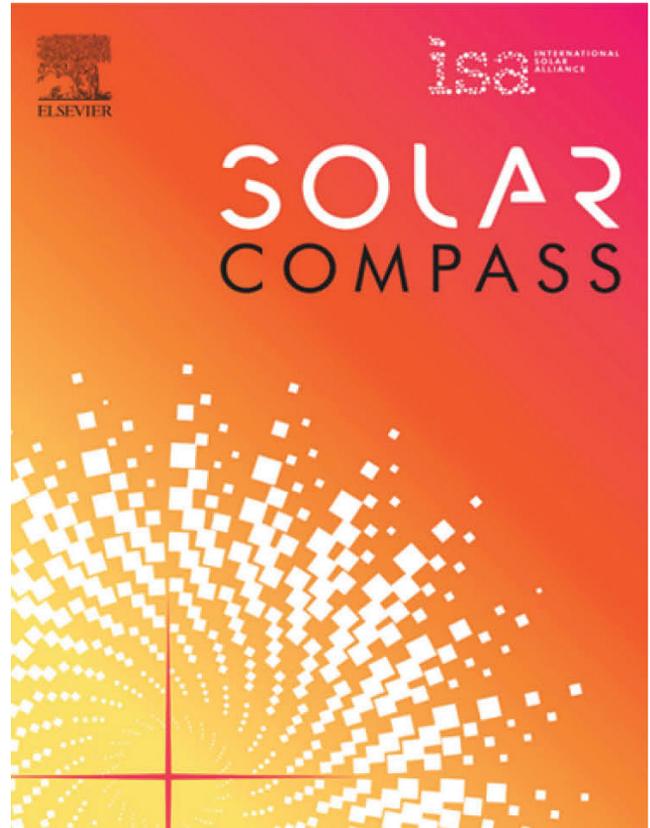
There is not one silver bullet to achieve the net zero goal. It will require a multi-pronged approach on new, innovative and more efficient technologies, lower-cost manufacturing at scale, investments at scale to support entrepreneurship in new technologies, and financing at the consumer end to ensure adoption, while also taking care of the global societal issues to ensure access for all people of the world.

One key ingredient is the communication of information to the stakeholders. Solar Compass will play this key role. While other solar and renewable energy journals are doing a great job of publishing progress in long-term scientific research, and the renewable energy magazines are providing current news to the public, there is a serious gap of information needed to help accelerate the use of the most appropriate solar technologies in the world. Solar Compass is designed to fill this important gap.

The first issue of Solar Compass was published in May 2022 and was featured here in the June ISA newsletter. For the second issue, we have covered topics of policy and finance for smaller solar systems in the Asia Pacific regions that might be applicable to other regions like Africa; interconnection of solar and wind systems in the grid in the USA and lessons from these systems that might apply to other developed economies; decarbonising cooling of buildings around the world; and inventions, innovations and new technologies of liquid fuels using carbon dioxide and water from the atmosphere and solar radiation.

### A brief description of the articles in this issue follows:

- Dr. Priyantha Wijayatunga and his co-authors Dan Millison, Len George, and Jiwan Acharya from the Asian Development Bank have reviewed the solar development in Asia and the Pacific, highlighting the external factors that have been driving the global market and the internal policy responses for domestic energy needs. Their article focuses on the role of smaller scale solar systems and micro finance in Sri Lanka and Bangladesh and how this strategy could be replicated in other places. The article also describes the concept of Solar Parks developed in



India and then replicated in Cambodia, including a modification of the Feed-in-Tariff (FiT) with reverse auction. The article reviews the challenges and the solutions that could be applied elsewhere. <https://www.sciencedirect.com/science/article/pii/S2772940022000169>

- Ms. Radina Valova from the Interstate Renewable Energy Council in the USA describes the key challenges for interconnection of the distributed energy resources (DER) with the main grid and highlights leading solutions to address those challenges. Interconnection, in particular, can pose a significant challenge to growing DER penetration. Her article focuses on the interconnection rules and regulations that spell out the procedural and technical requirements for connecting DERs to the grid. She concludes that when these rules are well-designed, they can support faster and more cost effective DER integration, but when they are outdated or poorly designed, they can slow or even halt DER growth. <https://www.sciencedirect.com/science/article/pii/S2772940022000157>
- Global demand for cooling of buildings is growing very fast, driven by not only the economic development around the world but also by the climatic changes due to global warming. Dr. Bibek Bandopadhyay reviews the increasing global demand for cooling, the existing cooling technologies and the low-carbon alternatives that could reduce and in some case eliminate carbon emissions. He concludes that the building sector in warm and tropical climates has significant untapped potential, and therefore offers a potential means for decarbonization. He recommends a review of the policies and suggests policies that could play a major

role in decarbonizing this fast-growing energy sector. <https://www.sciencedirect.com/science/article/pii/S2772940022000182>

- Transportation fuels are a major contributor to the global carbon emissions and must be tackled to achieve the goal of net zero carbon emissions. Although electric automobiles and other surface transportation are the focus of many governments, aviation fuels will continue to be a problem, unless they can be produced sustainably. High temperature thermochemical processes can be used to convert the atmospheric carbon dioxide and water to sustainable liquid aviation fuels using solar energy. In this article, Dr. Samantha Wijewardane has briefly reviewed inventions, innovations, and commercialization prospects of solar thermochemical fuels. He has highlighted the opportunities and prominent attempts for commercialization and identified the related challenges. The review is followed by a list of notable recent patents and articles. This article will

be especially helpful to existing industry interested in commercializing new technologies, as well as for start-up companies, investors, entrepreneurs and new technology developers. <https://www.sciencedirect.com/science/article/pii/S2772940022000170>

The articles in the present issue were selected and the authors invited by the editorial board members, who are themselves globally renowned in their areas of expertise. All articles are peer reviewed by other experts before acceptance for publication. As the editors are planning articles for the future issues, we welcome any suggestions for articles that fall within the aims and scope of *Solar Compass*. We welcome you to submit your manuscripts to Solar Compass and join us in this journey. For more information on the submission, review, and publication processes, please visit the Journal Homepage: [journals.elsevier.com/solar-compass](https://journals.elsevier.com/solar-compass).

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**Author:** Yogi Goswami, *Solar Compass*, Editor-in-Chief

## Is a Solar Future Inevitable? How to shape policies to capture the opportunities of cheap solar

**Solar power looks set to dominate global electricity production, a joint policy brief by ISA and the Economics of Energy Innovation and System Transition project concludes. The modelling suggests solar is on track to dominate the global power sector by 2050, even with no additional financial incentives. Its deployment will increase faster than is typically assumed, and costs including storage are projected to continue falling. New fossil fuel plants are set to become uneconomic earlier than anticipated: solar power with energy storage could cost half as much, by the end of this decade. Grid upgrades and policies to support the deployment of energy storage will be important to taking full advantage of this opportunity.**

Rising deployment and falling costs of solar have pushed each other on, in a virtuous circle, or reinforcing feedback. Deployment drives learning in both the production and installation of solar panels, as well as economies of scale, pushing down costs. The fall in costs then encourages further deployment. Past projections for solar deployment were so wide of the mark because they failed to take full account of these feedback effects.

The state-of-the-art macroeconomic model E3ME-FTT includes these feedback effects. Instead of making a static calculation of the 'optimum' technology mix in the power sector at a future moment in time, as conventional models do, it performs a bottom-up simulation of investor choices, based on observed historical relationships in technology development and diffusion.

If observed trends in technology development

continue, solar PV could make up over half of global electricity generation by 2050, even with no additional deployment subsidies or carbon pricing. This is significantly more than previous modelling suggests: for example, the International Energy Agency's baseline scenario projects solar will take only a 20% share of global electricity generation by 2050.

The rapid expansion of solar power globally is highly likely, creating the opportunity of very low-cost electricity. However, there are barriers that countries need to overcome to take full advantage of this opportunity. Most importantly, grids need to be adjusted to accommodate a more variable and distributed supply of energy, making increasing use of energy storage and long-distance transmission. Markets will need to be reformed to provide more incentives for diverse or flexible energy resources.

In the Global South, investment may be delayed due to lack of access to finance for renewables. Strategies to address this finance gap can include mechanisms to absorb currency and investment risks; alongside well-designed power sector regulatory reforms, these can unlock international capital flows.

As the world moves rapidly towards a solar-dominated power sector, countries that take the right steps to encourage investment and upgrade their grids will realise significant benefits, making low-cost electricity available to their consumers and industries.

**Authors:** Femke J.M.M. Nijssse, Jean-Francois Mercure, Nadia Ameli, Francesca Larosa, Sumit Kothari, Hector Pollitt, Jamie Rickman, Simon Sharpe, Pim Vercoulen.

## Roundup:

### Country Missions to the Bolivarian Republic of Venezuela and Republic of Paraguay

The ISA Secretariat undertook country missions to the Bolivarian Republic of Venezuela from 18 – 21 September 2022 and to the Republic of Paraguay from 22 – 24 September 2022 for the implementation of large scale solar projects in Venezuela and Paraguay under

ISA Programme-06 (Solar Parks) to secure vital inputs regarding site & substation conditions and discussions on the framework for the development of large-scale solar projects as well as to take forward implementation of other ISA programmes in these countries.

### Country Mission to the Bolivarian Republic of Venezuela:

The Government of the Bolivarian Republic of Venezuela has submitted an expression of interest and appointed NTPC as Expand Project Management Consultant (PMC) to implement 2000 MW Solar Projects in Venezuela. ISA and NTPC teams met officials from the Ministry of People's Power for Electric Energy, CORPOLEC and FUNDELEC to discuss upon policy and regulatory framework of Venezuela's Energy Sector. They carried out site visits to Planta Termozulia, Subestación la Villa and Planta Centro to evaluate the proposed sites, transmission line and sub-station facilities for the first

phase of the 2000 MW Projects, along with Ms Tania Masea, Hon'ble Vice Minister of Ministry of People's Power for Electric Energy and National Focal Point (NFP) for ISA Mr Benjamin Bustamante. ISA team also presented a brief overview of the ISA offerings across various pillars such as programmatic support, analytics & advocacy, and capacity building, along with discussions on other ISA Programmes, including solar water pumping systems, solar mini-grids, solar rooftop & STAR-C.



Meeting with Ms Tania Elizabeth Masea Linares, Dy. Minister of New Resources and Rational Use of Electrical Energy & officials from MPPEE & Corpoelec, Venezuela



Visit to National Distribution Centre, Venezuela



Site Visit to Planta Termozulia, Venezuela

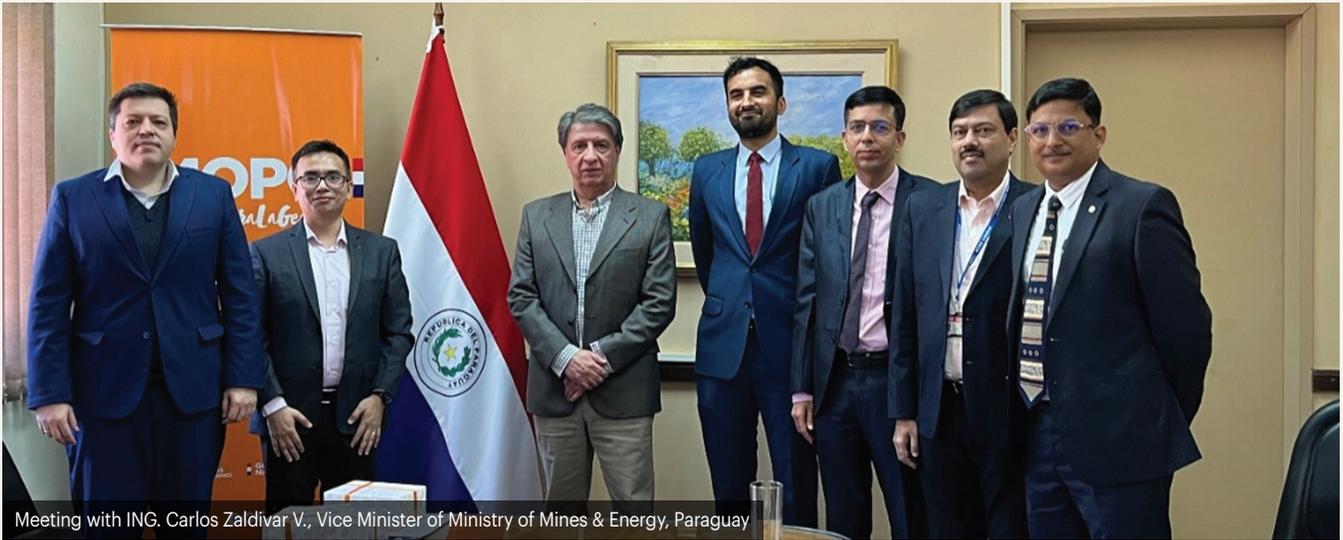


Site Visit to S/E La Villa, Venezuela



Meeting with Mr Abhishek Singh, Ambassador of India in Venezuela

# Country Mission to Republic of Paraguay:



The Government of the Republic of Paraguay has submitted an expression of interest and appointed NTPC as PMC for the implementation of 500 MW Solar Projects in Paraguay. ISA and NTPC teams met ING. Carlos Zaldivar V., Hon'ble Vice Minister of Ministry of Mines & Energy, Paraguay, and National Focal Point (NFP) for ISA Dr Ing. Felipe Mitjans along with senior officials from ANDE to discuss the finalisation of site

location in line with site visits to Loma Plata and La Patria carried out by NTPC earlier in the week and discuss the structuring of the projects, tendering process to be adopted, project agreement clauses etc. ISA and NTPC teams also met officials from the Ministry of Industry & Commerce and legal firms regarding the investment scenario in Paraguay.



## Initiatives:

# Solar E-Mobility Webinar Series Charging for Change: Vehicle Integrated PV Sector: Technical and Regulatory Aspects.

The second webinar in the Solar E-Mobility Webinar Series Charging for Change led by ISA was hosted on 20 September 2022. The second edition of the series focused on the theme of 'Vehicle Integrated PV Sector: Technical and Regulatory Aspects.' The Vehicle Integrated Photovoltaic (VIPV) technology allows PV panels to be integrated with vehicle bodies. However, the benefits, and current technical & regulatory landscape pertaining to PV-integrated electric vehicles are avenues which require much conversation followed by appropriate actions. The webinar deliberations engaged a diverse group of experts from industry and government aiming at the following outcomes: Learning techno-economic viability aspects of VIPV sector and industry perspective through select case studies and business models; reviewing technical, policy, and regulatory challenges encountered by the VIPV sector stakeholders; assess recommendations proposed by each category of the stakeholder community; and, help build consensus on the next steps.



ISA launched this webinar series in April earlier this year. This four-part series aims to bring together experts to address challenges, opportunities, and avenues of collaboration to promote solar in the EV deployment scenario.

You can tune in for the [first webinar here](#) and the second can be accessed [here](#).

### The webinar featured the following speakers



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



**Mr. Jiwan S. Acharya**  
Principal Energy Specialist,  
Asian Development Bank



**Ms. Mahua Acharya**  
MD and CEO, CESL,  
Govt of India



**Mr. Mahesh Babu**  
CEO, Switch Mobility



**Dr. Philippe Malbranche**  
ADG, ISA



**Mr. Sajid Mubashir**  
Scientist (G), Dept of  
Science and Technology,  
Govt of India



**Mr. Fitsum Deressa**  
Green Tech, Ethiopia



**Mr. Sandith Thandasherry**  
Founder and CEO,  
NavAlt Solar and Electric  
Boats, India



**Mr. Harman Arora**  
Founder and CEO,  
SN Solar Energy,  
India



**Prof. Daniel Madyira**  
Univ. of Johannesburg,  
South Africa



**Dr. Komoto Keichii**  
Mizuho Research &  
Technologies Ltd, Japan



**Dr. Anand Deshpande**  
Senior Deputy Director,  
ARAI, India



**Mr. Bereket Tesfaye**  
eMobility/Solar  
Vehicle Researcher,  
African Context



**Dr. Ugochukwu Ugbor**  
Chief of Unit,  
Knowledge Management  
Cluster, ISA

# ISA Fellowship for Mid-Career Professionals

**ISA Fellowship for Mid-Career Professionals** is a programme launched in Member Countries and 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 environmental and renewable energy professionals with improved knowledge and skills to promote solar energy generation within their countries. By developing human resources and skilled professionals, ISA believes that the Fellowship 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.



Mr P.C. Sharma, ISA NFP/CP Coordinator, meet with awardees of the 2022-2024 Fellowship in New Delhi, India.



The Fellowship is offered to 20 professionals yearly to pursue a two-year Master of Technology programme in Renewable Energy and Management with a specialisation in Solar Energy Technology and Economics. 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 – 2024 cohort. This will be the fourth batch of the programme. A total of 49 applications from 24 countries were received, out of which IIT Delhi selected 20 candidates based on their performance in an interview. Nineteen candidates have accepted the offer from Bhutan, Botswana, Burkina Faso, Cameroon, Ethiopia, India, Somalia, Sudan, Tanzania, Uganda, Venezuela, Yemen, and Zambia.

## ISA's Interventions

@26th WAIPA World Investment Conference, Geneva | 13-14 September

### ISA, World Resources Institute (WRI) & Bloomberg Philanthropies Roundtable: Socialising ISA's Roadmap to Mobilise USD 1 trillion for Scaling Solar Investments

Access to finance for solar sector investments is one of the biggest challenges, particularly across developing geographies. ISA has been working to assist Member Countries in mobilising USD 1 trillion of investment for massive deployment of solar energy technologies and expanding solar markets by 2030, thereby paving the way for future technologies tailored to the Member Countries' needs. In collaboration with WRI and Bloomberg Philanthropies, ISA is preparing a Solar Investment Roadmap for Mobilising USD 1 trillion by 2030. The roadmap will be completed and launched during CoP27 at Sharm El-Sheik, Egypt, in November 2022.

This session served as a round of consultation, bringing together various stakeholders to discuss their views on scaling investments across the solar energy

supply chain. The high-level closed-door session was organised to socialise the draft Roadmap and its goals with global political and financial leaders worldwide. It was attended by leaders from various FIs, MDBs, donor agencies, and organisations – Asian Development Bank, UN Environment Programme (UNEP), World Bank, Energy Sector Management Assistance Program (ESMAP), ASEAN Centre of Energy, Deloitte and CDPQ, CONCITO Group, our donors - Children's Investment Fund Foundation (CIFF) & BP, Dalberg, Climate Policy Initiative (CPI) and IPAs (investment promotion agencies) and many others. The discussions revolved around financing channels and tools, including the role of DFIs, MDBs and innovative financing instruments. Deliberations also focused on regulatory interventions, including the synergies between the public and private sectors and the creation of aggregated platforms.



@ Clean Energy Ministerial | 21 - 23 September, Pittsburgh, PA

## Launch of ISA Corporate Advisory Group

ISA has developed a private sector engagement (PSE) strategy to achieve its goal of mobilising USD 1 trillion for solar by 2030. ISA's ongoing engagements with the private sector span various programmes across solar applications, affordable finance, mini-grids, rooftop solar, solar parks, and building resilient global solar supply chains. ISA envisions a thriving solar industry that grows in line with SDG 7 and 2050 NetZero targets by supporting the development of enabling policy frameworks and catalysing investments.

On 22 September 2022, the **ISA Corporate Advisory Group (CAG)** was officially launched in the presence of Marisa Lago, Under Secretary of Commerce for

International Trade, U.S. Department of Commerce; ISA Director General Ajay Mathur and solar world leaders. This ISA-CAG will be chaired by a solar visionary, Pranav R Mehta, founder of the National Solar and Sustainable Energy Federation of India and past Chairman of Global Solar Council. The advent of this Group is essential as the private sector is responsible for >90% of solar investments. With a worldwide platform of 109 Member governments, ISA is uniquely positioned to convene private-public sector dialogues to mobilise financing in the least developed countries, reduce global policy barriers to solar development and encourage cross-country collaboration in building manufacturing.

## ISA launches 'Transforming Solar: Supply Chains' Workstream



ISA launched a workstream on Transforming Solar: Supply Chains at Clean Energy Ministerial in collaboration with International Renewable Energy Agency (IRENA). The initiative is focused on solar manufacturing around the world to meet 800-1000 GW of production by 2030 in a resilient, diversified way.

On 22 September 2022, ISA, in partnership with IRENA, launched the 'Transforming Solar: Supply Chains' Workstream at the Clean Energy Ministerial in Pittsburgh. The Workstream is supported by Australia, Germany, India, UAE, and USA and will work over the next three years to develop reports, industry standards and commitments to boost solar manufacturing around the world to meet the 800-1000 GW requirement by 2030 (up from ~200 GW manufacturing capacity today). Key representatives from ISA, IRENA, Australia, USA, and UAE spoke. Hon'ble Minister Dave Bowen of Australia, said, "The 'Transforming Solar' workstream will contribute to building resilient solar supply chains. This is important because meeting international energy

and climate goals requires the global deployment of solar PV to grow on an unprecedented scale. Major additional expansion in manufacturing capacity is needed to meet demand and manage risks to supply chains. Australia has a vital role to play in supporting solar supply chains, from mineral inputs to world-leading expertise in innovation. Australia is in a prime position to be a key player in supporting the global energy transition. Australia is excited to co-lead this new workstream on solar manufacturing and supply chains within the Clean Energy Ministerial. We look forward to working with India, Germany, and the United States on this important programme, and thank the International Solar Alliance for coordinating."

DG-ISA, noted, “Diversification of supply chains in solar panels remains a significant challenge in making solar the energy of choice. The recent solar price fluctuations have been because of the choking of various supply chains. As we go to a future where the global demand for PV is likely to increase to 800 GW each year, i.e. five times of current capacity needs to be shipped, we will need to diversify. We expect newer technologies, including solar plus batteries, to become competitive. These are significant scale changes required to move from fossil fuels. Therefore, future policies to attract manufacturing need to attract efficiency in manufactured goods as well. Currently, manufacturing is concentrated in a handful of countries. We expect and believe that module manufacturing will be occurring everywhere. There is a need for support in the early years, and as a global community, we need to support countries in enabling manufacturing environments.”

Anna Shpitsberg, Deputy Assistant Secretary for Energy Transformation (United States), added, “Solar

energy is essential to the clean energy transition and to addressing the climate crisis. Diversification of the global solar supply chain will require unprecedented international cooperation. This initiative demonstrates how we can collaborate with like-minded partners to achieve a mutually beneficial goal.”

We can scale up solar manufacturing without sacrificing social and environmental sustainability, including labour protections and low-carbon manufacturing practices. In our view, the most important policy objective is to emphasise transparency and resilience in the solar supply chain. We will expand reliable solar supply chains with robust due diligence processes and high social and environmental standards if we succeed.

The Director General of ISA, Ajay Mathur, and IRENA, Francesco La Camera, spoke with representatives from Australia and UAE and various technical experts. The ISA is excited to take this workstream forward and support countries in building resilient global solar supply chains.

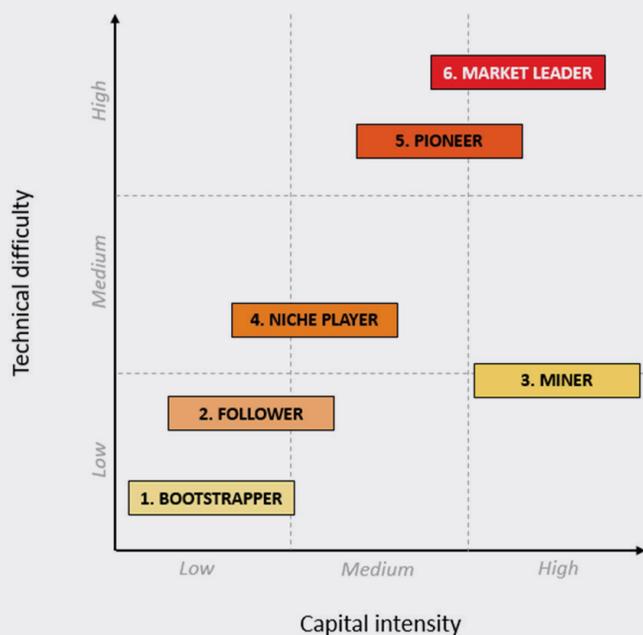
## ISA hosts Roundtable on Building Resilient Global Solar Supply Chains

In partnership with E3G, ISA hosted a roundtable on Building Resilient Global Solar Supply Chains on 23 September 2022 at the Clean Energy Ministerial in Pittsburgh.

Philippe Macé of the Becquerel Institute presented the draft findings of ISA’s commissioned report. It outlined the trajectory for solar manufacturing development over the next decades and recommended six approaches countries could take to building their manufacturing ecosystem (see the graphic).

Claire Healey of E3G moderated the roundtable with opening remarks by Anna Shpitsberg of the Department of Energy Transformation in the United States. Panellists included: Nicole Kuepper-Russell, 5B; Samantha Sloan, First Solar; Doug Arent, NREL; Ardeshir Contractor, Ohio State University; Vic Van Vuuren, International Labour Organisation; Celia García-Baños, IRENA; and Swati D’Souza, IEA.

The event was well-received, with keen insights from the panellists and active engagement from the audience. Key areas of focus included the need for supportive and inclusive government policy to support solar manufacturing, support for fossil fuel communities to transition to clean energy jobs and the development of innovative technologies to continue to drive down the cost of solar manufacturing and deployment. ISA will continue to convene industry



and government stakeholders and support industry players collaborating across borders to boost global solar manufacturing.

On 23 September 2022, DG, ISA joined fellow leaders in addressing the CEM principal session, ‘The Clean Energy Ministerial: Actions to Accelerate Clean Energy Transitions.’ DG-ISA emphasised the importance and urgent need for waste management to achieve the overall goal of Net Zero. He also spoke about quality standards for solar panels to bring uniformity and increase efficiency while decreasing costs.

## Solar Roadmapping: Transition to Action

**PV leaders and policy planners discussed the mechanics of developing country-specific roadmaps, shared prevalent roadmapping success stories, and identified practical next steps to support successful solar deployment at desired speed and scale.**

As many countries enhance their share of renewable energy, especially solar photovoltaics, it is necessary to set ambitious yet realistic targets and, more importantly, to lay out the roadmap to reach them. This is especially true for 'emerging solar' countries expanding their energy systems and relying increasingly on solar energy.

In collaboration with IEEE Electron Devices Society, WIP, ISA hosted a parallel event titled 'Solar Road Mapping: Transition to Action' at the 8th World Conference on Photovoltaic Energy Conversion in Milan, Italy, on 28 September 2022. The event was structured into four sessions featuring presentations by global PV leaders and policy planners describing the formulation of Solar Roadmaps for a country.

The first session underlined the need to set objectives for solar energy development, Christian Breyer, Professor for Solar Economy Organisation, LUT University, Finland, presented on 'Managing the solar energy transition within 100% renewable energy mix scenarios', focussing on emerging and developing countries. Monica Maduekwe, Programme Officer Resource Mobilization and Project Development,

"Guidelines & key take-aways for successful solar transition require periodic consultations combined with discussion proceedings. We want to set up a regular advisory committee to support our Member Countries in their various pathways towards energy transition."

**Dr Ajay Mathur**, DG-ISA

ECOWAS, spoke of ECOWAS' approach to more renewables and funding for the next milestone.

Learnings from three countries – Italy, India, and Togo on the formulation of roadmaps were presented by Matteo Gianni, Senior Energy Analyst, Studies & NECP Monitoring Unit, GSE; Indian learnings were shared by Deepak Gupta, Director General, National Solar Energy Federation of India (NSEFI) via a video message and Anil Kottantharayil, Professor, IIT Bombay & National Centre for Photovoltaic Research and Education (NCPRE). Todine Salifou, Renewable Energy Engineer Rural Electrification and Renewable Energy Agency of Togo (AT2ER), shared learnings from Togo.

Daniel Mugnier, IEA PVPS Chair and Philippe Malbranche, ADG, ISA, presented guidelines and key takeaways which can lead toward a successful solar transition.



The closing panel discussion was chaired by Heinz Ossenbrink, Executive Committee Member, WCPEC, focussing on the imperative topic of how to kick off and monitor the transition. And how best challenges can be addressed, and local added value be increased. Panellists: Mohamed Kileh Wais, Secretary General, Ministry of Energy in charge of Natural Resources, Djibouti; Monica Maduekwe, Programme Officer, Resource Mobilisation and Project Development, ECOWAS; Christian Breyer, Professor for Solar Economy Organisation, LUT University, Finland; Juser Vasi, NCPRE, IIT Mumbai; and Stefan Nowak, NET MD & former IEA PVPS Chairman shared pragmatic and concrete actions to help trigger solar (PV) deployment efforts in specific country contexts.

The event was conducted as a hybrid event.

"Panellists addressed all aspects of road mapping: implementation, regulation and financing. "ISA is here to help us" was acknowledged by Prof. Lawrence Kazmerski in his presentation. We look forward to building on this trust."

**Dr Phillippe Malbranche**, ADG, ISA

## New Developments:

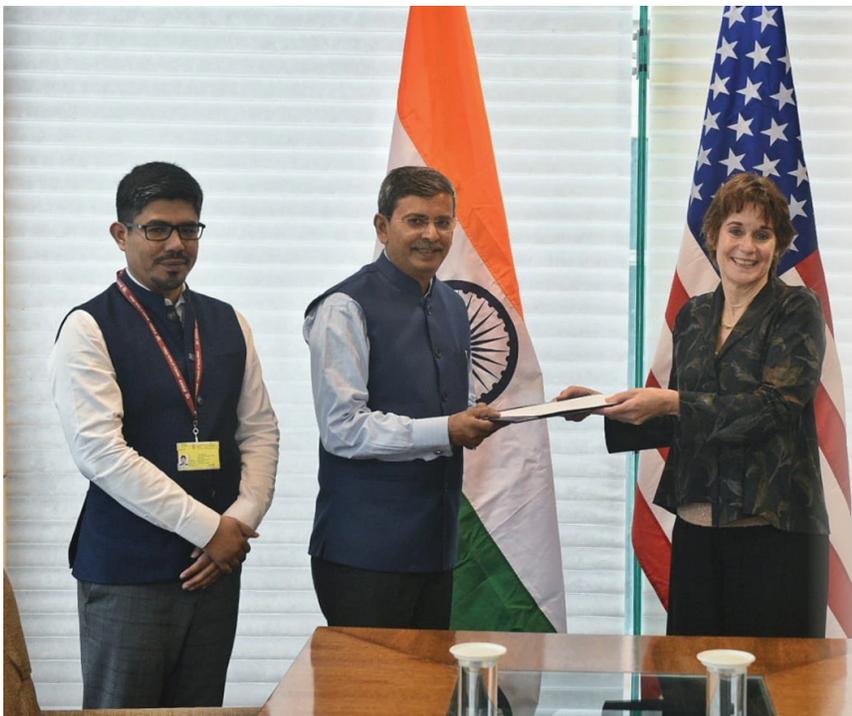
### Bhutan ratified the International Solar Alliance Framework Agreement

Ambassador of Bhutan to India, Maj. Gen. Vetsop Namgyel handed over the instrument of ratification to Secretary ER Dammu Ravi, in the presence of DG ISA.



### USA ratified the International Solar Alliance Agreement

Chargé D'Affaires, Patricia Lacina handed over instrument of ratification to AS(ER) Prabhat Kumar and JS (ED) Noor Rahman Sheikh, Ministry of External Affairs, GOI.



ISA signed an MOU with International Civil Aviation Organisation to work towards enhancing the use of solar energy in international civil aviation.

Listen-in to the message

[Message of DG-ISA on the signing of the MOU between the ICAO and the ISA](#)



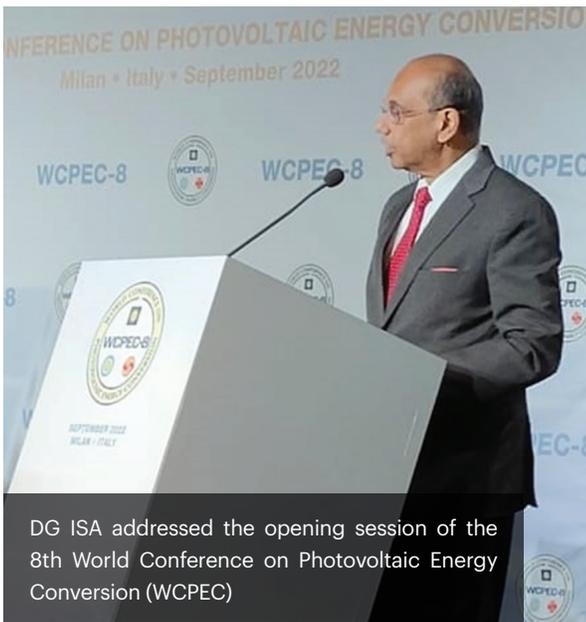


Strong, resilient, and successful organisations thrive on their values and culture. The values of the International Solar Alliance, which all staff members will imbibe and abide by, were released by the Director General on 15 September 2022 in an exclusive ceremony. The ceremony also witnessed the Director General lead all members of the ISA staff in taking an oath of allegiance to work in the solemn interests of ISA. This act is an integral part of the roles and responsibilities, reiterating commitment to the ISA Mandate in line with the ISA Framework Agreement.

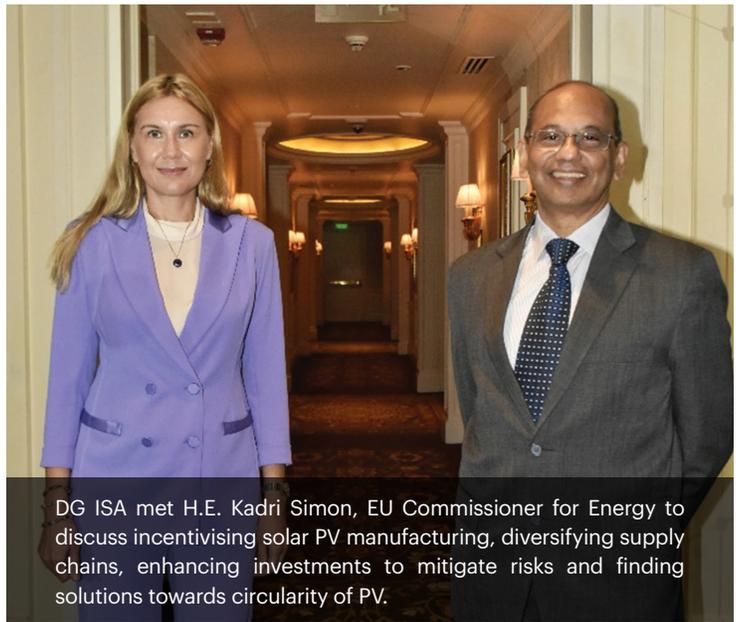
## Photo Gallery



ISA joined a discussion with CEEW, IEA and NSEFI on polysilicon & wafer manufacturing and is strengthening collaborations in its work to build resilient global solar supply chains.



DG ISA addressed the opening session of the 8th World Conference on Photovoltaic Energy Conversion (WCPEC)



DG ISA met H.E. Kadri Simon, EU Commissioner for Energy to discuss incentivising solar PV manufacturing, diversifying supply chains, enhancing investments to mitigate risks and finding solutions towards circularity of PV.



ISA launched a Corporate Advisory Group on the sidelines of the Clean Energy Ministerial at Pittsburgh. The objective of CAG is to find solutions for key challenges facing solar adoption and supporting ISA's Towards 1000 Vision.



DG-ISA met representatives of European Investment Bank and discussed opportunities to strengthen solarisation and agreed to explore new avenues and projects especially in the context of South-South cooperation.

UPCOMING

# FIFTH ASSEMBLY OF THE INTERNATIONAL SOLAR ALLIANCE

17 - 20 October 2022 | NEW DELHI, INDIA



[Click here for Registration](#)

[Click here for Advisory](#)

[Annexures](#)

#### Contact Us

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## List of countries which have ratified the Framework Agreement of ISA (90)

S. No.	Country	S. No.	Country
1.	Republic of France	52.	Egypt
2.	Republic of Nauru	53.	United Kingdom
3.	Republic of Mauritius	54.	Netherlands
4.	Republic of India	55.	Mozambique
5.	Tuvalu	56.	Haiti
6.	Republic of Niger	57.	Maldives
7.	Republic of Fiji	58.	Gambia
8.	Republic of Ghana	59.	Jamaica
9.	Republic of Seychelles	60.	Nigeria
10.	Republic of South Sudan	61.	Saint Lucia
11.	Federal Republic of Somalia	62.	El Salvador
12.	People's Republic of Bangladesh	63.	Tanzania
13.	Republic of Mali	64.	Samoa
14.	Union Des Comoros	65.	Republic of Trinidad and Tobago
15.	Republic of Guinea	66.	Cambodia
16.	Republic of Malawi	67.	Saudi Arabia
17.	Commonwealth of Australia	68.	Algeria (Ratified on June 14, 2020, Received on August 4, 2020)
18.	Republic of Peru	69.	Oman (Ratified on August 26, 2020, Received on 18 September 2020)
19.	Republic of Togo	70.	St. Vincent and Grenadines (Ratified on September 24, 2020, Received on September 30, 2020)
20.	Cooperative Republic of Guyana	71.	Marshall Islands (Ratified on December 24, 2020. Received on January 1, 2021)
21.	Democratic Socialist Republic of Sri Lanka	72.	Nicaragua (Ratified on 28 September 2020, Received on 15 October 2020)
22.	Republic of Cuba	73.	Barbados (Ratified on 18 January 2021, Received on 25 January 2021)
23.	Republic of Uganda	74.	Argentina (Ratified on 29 January, 2021, Received on 15 February, 2021)
24.	Republic of Gabon	75.	Belize (Ratified on 22 February 2021, Received on 18 March, 2021)
25.	Republic of the Sudan	76.	Denmark (Ratified on 27 April, 2021, Received on 28 April, 2021)
26.	United Arab Emirates	77.	Zimbabwe (Ratified on 28 April, 2021, Received on 3 June 2021)
27.	Republic of Rwanda	78.	Sweden (Ratified on 3 May, 2021, Received on 18 June 2021)
28.	Burkina Faso	79.	Botswana (Ratified on 28April, 2021, Received on 22 June 2021)
29.	Bolivarian Republic of Venezuela	80.	Germany (Ratified on 10 August 2021, Received on 26 August 2021)
30.	Commonwealth of Dominica	81.	Italy (Ratified on 23 November 2021, Received on 15 December 2021)
31.	Republic of Côte d'Ivoire	82.	St. Kitts and Nevis (Ratified on 10 December 2021, Received on 10 January 2022)
32.	Grenada	83.	Antigua and Barbuda (Ratified on 17 February 2022, Received on 22 March 2022)
33.	Suriname	84.	Greece (Ratified on 21 March 2022, Received on 23 March 2022)
34.	Republic of Namibia	85.	Tunisia (Ratified on 27 January 2022, Received on 28 March 2022)
35.	Republic of Benin	86.	Bahrain (Ratified on 21 March 2022, Received on 28 March 2022)
36.	Republic of Madagascar	87.	Norway (Ratified on 26 April 2022, Received on 9 June 2022)
37.	Republic of Chad	88.	Syria (Ratified on 7 July 2022, Received on 2 August 2022)
38.	Republic of Senegal	89.	Bhutan (Ratified on 31 August 2022, Received on 13 September 2022)
39.	Republic of Djibouti	90.	United States of America (Ratified on 24th April 2022, Received on 16 September 2022)
40.	Independent State of Papua New Guinea		
41.	Republic of Union of Myanmar		
42.	Kingdom of Tonga		
43.	Republic of Vanuatu		
44.	Republic of Kiribati		
45.	Sao Tome and Principe		
46.	Democratic Republic of The Congo		
47.	Republic of Cameroon		
48.	Japan		
49.	Equatorial Guinea		
50.	Ethiopia		
51.	Burundi		

## II List of Countries which have signed but not ratified the ISA Framework Agreement (109-90)

S. No.	Country
1.	Brazil
2.	Chile
3.	Costa Rica
4.	Dominican Republic
5.	Guinea-Bissau
6.	Liberia
7.	Yemen
8.	Zambia
9.	Bolivia
10.	Cabo Verde

S. No.	Country
11.	Palau
12.	Paraguay
13.	Eritrea
14.	Luxembourg
15.	Morocco
16.	Israel (signed on 18 October 2021)
17.	Nepal (signed on 2 April 2022)
18.	Hungary (signed on 25 May 2022)
19.	Panama (signed on 24 August 2022)