INTERNATIONAL SOLAR ALLIANCE

SPECIAL EDITION FIFTH ASSEMBLY OF THE INTERNATIONAL SOLAR ALLIANCE 17-20 OCTOBER 2022

The 2022 Governance Meetings

of the International Solar Alliance (ISA) were initiated in July 2022. The governance bodies of the ISA, namely the Assembly, the Standing Committee, and the Regional Committees, offer an integrated approach to governance and decision-making within the Alliance. The Governance Meetings comprise of deliberations across the four regions of Africa, Asia-Pacific, Europe & Others and Latin America-Caribbean at the Regional Committee. These inform the deliberations of the Standing Committee, comprising the Hon'ble President, Co-President and 8 regional Vice-Presidents.

- Third Meeting of the Regional Committee of Europe and Others region was conducted virtually on 12 July 2022
- Fourth Regional Committee Meeting for Latin America and the Caribbean Region was hosted from 3-5 August 2022 in Georgetown, Guyana
- Fourth Meeting of the Regional Committee of the Asia Pacific Region was hosted virtually on 17 August 2022
- Fourth Regional Committee Meeting for Africa was held from 29-31 August in Addis Ababa, Ethiopia

Convened at the Ministerial level, the Governance Meetings facilitate in-depth analysis of the ISA's strategic initiatives, programmes, activities, and regional priorities through moderated discussions. The Sixth & Seventh Standing Committee Meetings were hosted in New Delhi, India, on 21 July and 13 September 2022, respectively. These Meetings extend the ISA Secretariat the opportunity to enhance cooperation with ISA Member Countries, as well as provide Member Countries with the ability to improve collaboration among themselves and mutually identify avenues of cooperation and partnership. The Fifth Assembly of the International Solar Alliance was hosted in New Delhi, India, from 17-20 October. Ministers from 20 countries and delegates from across 110 Member and Signatory countries and 18 prospective countries joined the inaugural ceremony.









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GLIMPSES FROM THE ISA FIFTH ASSEMBLY





















Inaugural Addresses



Excellences, Honourable Co-President, H.E. Ms Zacharopoulou, the Special Representative of the UN Secretary-General for Sustainable Energy for All Ms Damilola Ogunbiyi, the Honourable Vice Presidents of the International Solar Alliance Assembly, honourable ministers, ambassadors, high commissioners, and other excellencies. I welcome you all to New Delhi and to the Assembly of the International Solar Alliance, which is taking place in person after a long gap of two years.

The world has changed dramatically over this period as we travelled through an entire economic cycle in this short duration, going from a period of uncertainty to a slump to recovery and now progressing ahead, but we stand together; we stood together. The world stood together throughout this period of the crisis more robust and resolute than ever before, trying to tackle the challenge of the pandemic as well as the challenge which is ever present that of global climate change and the need for a Just Energy transition.

The past two years have reminded us that global dependence on fossil fuels is unhealthy for the environment and the economy. We have seen unprecedented weather events, floods at a time when floods were not expected, winters extending beyond all expectations and forest fires, and summer heat scalding

countries, which they had never seen before. Leading to inflationary pressures across the world, and climate change is resulting in catastrophic weather phenomena ranging from heat waves and the drought-like situation in Europe to flooding in Pakistan and fires and severe storms around the world. The good news is that we have the solutions to these, and development and technology ensure that even more effective resources are available in the coming years. It is now for us to decide how quickly we can deploy these.

Global warming has resulted from more than a century of fossil fuel-driven industrialisation, and even at our best pace, it will take us a few decades to make the transition from fossil fuels to non-fossils - the question we must ask ourselves is, are we doing our best in pursuit of the energy transition. We are also responsible for enabling development in the parts of the world that lack access to energy today. More than 650 million citizens worldwide do not have access to a power supply. Double that number live in cities and communities with unreliable access to energy, and brownouts or blackouts are common. Access to power or energy security is essential for improving the quality of life and ensuring access to the correct critical facilities, healthcare, and clean drinking water. Most experts agree that distributed generation primarily powered by solar photovoltaic systems is the most cost-effective and fastest solution. We have ensured universal access, and it was possible because we had solar to enable us to set up mini grids in far-flung hamlets, you know, deep in the Himalayas where the grid could not reach or even in the deserts in the Thar desert in Rajasthan, the far from far-flung hamlets where it was too costly to connect, we deployed many grids, and they work.

Most experts agree that distributed generation powered by solar photovoltaic systems is the most cost-effective and fastest solution we have experienced. We have seen that when we put in place almost about 170 gigawatts of non-fossil fuel capacity, which is today about 42 per cent of our total established capacity, something which we had placed that we shall achieve by 2030, but that 170 gigawatts, that capacity which we installed almost 90 per cent of it have been installed by private investment. Hence, the availability of resources is not the issue. The issue, I think, is making sure that the investors have the confidence that we put in place structures so that the investors have the confidence to come and invest in the generation of renewable energy in the generation of solar this also will require a building up of capacities and enhancing readiness to accept and scale up interventions now that is what we are there for that is why we have come together to support each other on

this aspect. ISA's support to its member countries is built around capacity-building initiatives, analytics and advocacy efforts, and programmatic support. All these are means to drive holistic development in countries leading to the creation of strong and sustainable project pipelines. The idea is not just to make the country selfsufficient in meeting the energy needs but also to help them put in place systems and structures such that investments can come and the availability of energy expands to meet requirements as they go up.

The International Solar Alliance has come a long way since its formation, and we are moving forward rapidly, thanks to the guidance and support of each member of ISA. We are proud to present updates on the proposals that will be tabled today. It is heartening to see our colleagues from more than 100 countries joining us today to guide the International Solar Alliance in its future endeavours and initiatives. You will be happy to know that ISA which hosted its first General Assembly in 2018, is already extending support to numerous countries, both programmatic support and helping put structures, guidance, expertise, and consultancy. I am extremely glad that Ms Damilola Ogunbiyi could join us on this momentous occasion when the International Solar Alliance Assembly convenes in person after a long gap to make decisions on some remarkable initiatives.





Honourable Minister of Power and the New and Renewable Energy, Director General, Special Representative of the UN, ministers, and colleagues, I'm very happy to be here with you today and to cochair our Assembly with Mr Singh. I want to thank the Secretariat of the International Solar Alliance, who have made this meeting possible. France deeply believes that this International Solar Alliance is a key initiative for global action against climate change. Since its institution in 2018 by Prime Minister Modi and President Macron. France has been very proud to cochair the International Solar Alliance with India. The Alliance has made constant progress towards being an efficient, results-oriented international organisation; we are meeting today at a key moment for global climate efforts and energy issues.

First, COP26 has opened a new cycle of increased ambition and, most importantly, implementation. We need concrete, urgent actions if we truly want to maintain global warming under 1.5 degrees, and solar energy will play a key role in facing this challenge. Second, as we all know, this is a crucial time to act on global energy matters. Russia's war of aggression against Ukraine has led to an energy crisis in many EU countries and beyond. We are facing a double emergency; we need to save energy, and we need to save the climate by phasing out our dependence on fossil fuels. The EU has taken decisive steps in response to the global energy market transition, and renewable energies are at the heart of our response. In May of this year, the European Commission proposed the RepowerEU plan, and one of its key pillars is accelerating the rollout of renewable energy. An EU external energy strategy was also adopted to build long-term partnerships, including on green technologies, to improve energy efficiency and accelerate our transitions collectively.

President Macron has made the development of renewable energies one of our key priorities in France. A new national energy planning exercise will be launched next year and confirm this direction. In September, our government presented a draft law to accelerate renewable energy production. On solar energy, our objective is to multiply our production by 10 in 2050 to reach 100 gigawatts. To do so, our measures are based on three pillars: simplified procedures to deploy more renewable energy projects, mobilising abundant or degraded areas to increase installation surfaces, and better sharing the benefits with local territories and citizens.

We believe solar development will bring about energy security, industrial development, job creation and improved public finances. We know that for many countries, solar power is already the best solution for the large-scale and affordable deployment of renewable energy. This is the reason why India and France jointly launched the International Solar Alliance in 2015. Since then, its success has been based on strong political



commitment and tangible initiatives making solar energy a competitive energy source in every region. There is proof that the Alliance is working, 107 states have already signed the Framework Agreement, and 87 have ratified it. Our Solar Alliance is active on the ground with an expanse of its programmes worldwide. I want to welcome the new members this year, including several from the European Union. I want to stress that France is particularly supportive of two of the Alliance's priorities: first, capacity building through the STAR C programme in partnership with UNIDO to create a solid network of expertise and training centres, and our contribution of 1 million euros to this STAR C programme is now leading the project to be implemented, focusing on the first phase of three pilot countries - Senegal in West Africa, Papua New Guinea in the Indo-Pacific, and Bhutan in Asia.

Second, on access to finance, at the launching Summit in 2018, French President Emmanuel Macron pledged to mobilise 1.5 billion euros to finance solar projects worldwide, mainly through the French Development Agency. I am pleased to inform you that our development agency has already committed 1.5 billion euros towards concrete projects worldwide, including 1 billion euros in ISA signatory countries; there are concrete projects that make huge differences in multiple countries. In Benin, the deficit project combines solar power plants and grid management. In Haiti, we have supported the deployment of photovoltaic streetlamps in the Palms region. In Mauritius, we have financed solar desalination in Rodriguez. These projects illustrate the multiplicity of use for solar energy. France also supports risk mitigation to promote increased access to financing. It involves leveraging private sector investment in solar energy under the Alliance's Affordable Finance and Scale programme, even in the underserved region.

Our agency has participated in the launch of the Solar Risk Mitigation Initiative, which is actively being implemented. Solar energy is fated to play a central role in the near future, and we can already see the momentum accelerating. This Alliance will play a crucial role - we must contribute to the Just Energy transition around the world. Let's never forget the word 'just' and always bear in mind the social consequences of our transition to make them fair and affordable for all. COP27 under the Egyptian Presidency will allow us to reaffirm our ambition and accelerate solar energy development. India's G20 Presidency will, too. France looks forward to working with all of you, particularly on the Life Initiative for Sustainable Ways of Living, which resonates so well with our concept of energy sobriety. Today is a unique occasion to move forward on key issues, and I'm sure we'll have a very productive day. France is very honoured to participate in this Alliance, and we look forward to achieving great progress with all of you. Thank you.

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I am honoured to welcome you to this Fifth Assembly of the International Solar Alliance; we have come a long way since we last met here in 2019. Unfortunately, because of the pandemic, we did not have in-person meetings though we did meet virtually in the years 2020 and 2021.

I will discuss the Alliance's initiatives over the past two years. Right now, it would suffice to say that your association has been present at several events, and I'm sure this Assembly and ISA will be closely watched by the world as well. I have great pleasure in welcoming the President, Mr R.K. Singh, the Hon'ble Minister for Power and New and Renewable Energy, Government of India, and the Honourable Co-President Ms Chrysoula Zacharopoulou, the Honourable Minister of State for Development, Francophonie and International Partnerships of the Republic of France. Together they oversee more than 75 gigawatts of solar installations in the two countries.

Their excellencies will preside over the meetings today; we are also joined by the Special Representative of the UN Secretary-General for Sustainable Energy for All, Ms Damilola Ogunbiyi. Most of our members work closely with the SEforAll, and I am delighted that she has agreed to be here. She has been a close ally of the International Solar Alliance and a fervent supporter of all our objectives; she's a pioneer for all that the ISA stands for. When she was in Nigeria, she spearheaded the deployment of mini solar grids of solar home lighting systems and the electrification of educational institutions and hospitals through off-grid captive power solutions. Damilola, I welcome you here on behalf of ISA and the Fifth Assembly.

The incumbent Honourable Vice Presidents of the ISA Assembly, honourable ministers from our Member Countries, from signatory countries from prospective Member Countries, Honourable ambassadors, high commissioners, honorary councils, and excellencies, I'm delighted to see you and your country's efforts and particularly your support for the International Solar Alliance and its governance framework. I welcome all of you to this Fifth Assembly. I would especially like to welcome those countries who are here for the first time - Antigua and Barbuda, the Kingdom of Bahrain, the Kingdom of Bhutan, the Hellenic Republic of Greece, the Italian Republic, the Kingdom of Norway, the Federation of Saint Kitts and Nevis, the Svrian Arab Republic, the Republic of Tunisia, the United States of America all of whom are here for the first time.





Thank you, Minister. Excellencies and distinguished guests, it is my pleasure to be here. I want to first thank Dr Mathur, the Director General, for inviting me to address all of you at this Assembly of the International Solar Alliance. I also want to thank and acknowledge the excellent leadership of the Honourable Minister RK Singh, the President of the ISA Assembly, and the Honourable Minister, the Co-President of the ISA Assembly, here today from France.

The ISA's work in supporting and advancing the solar ambitions of Member Countries has seen tremendous success over the last few years, and I am sure we will hear more about it during the course of this Assembly. As CEO and Special Representative of the UN Secretary-General for Sustainable Energy for All, my mandate is clear. I lead the work of Sustainable Energy for All, where we have partnered with governments, philanthropy, development finance institutions and the private sector to ensure the global delivery of Sustainable Development Goal 7 in a way that is just, equitable, and makes sure we leave no one behind. This includes ensuring universal access is affordable and reliable, and modern energy services increasing the share of renewables in the global energy mix and doubling the global rate of improvement in energy efficiency. Energy lies at the heart of the sustainable development goals and is part of the 2030 Agenda. Therefore, ensuring universal access is imperative for development outcomes such as job creation, economic development, food security, gender equality, improved health, and education, just to name

a few. But, unfortunately, in the most recent tracking SDG7 Report shows that we remain far off track from achieving universal access to clean and affordable energy by 2030. We still have 733 million people living without electricity and 2.4 billion people without clean cooking, which shows how vital the role of ISA is in this task. At the current pace of movement, by the end of the decade, we will still have 670 million people without electricity and 24 per cent of the global population living without access to clean cooking solutions.

Moreover, our climate goals and clean energy transition will be impossible unless we achieve SDG7 by the end of this decade. While several regions have made progress and several countries have made progress. As we see in India - getting to a state of complete electrification, energy access and scaling up renewables, different conflicts have hindered our growth, and a lot of our hard-won successes, especially in energy access and the pace of delivery of renewables, is suffering due to supply chain challenges. African countries, however, have not yet made nearly as much progress and are often facing the brutal effects of climate crisis and energy poverty. The African continent of which I am from is willing and is ambitious and has tremendous potential for renewable energy and solar energy but requires support from the global community, especially financial support, to successfully transition to clean energy that brings billions of people out of poverty. There's a chronic lack of investment in the clean energy sector in developing countries, especially on the African continent, and this must change, must change now, and I'm sure through your deliberations, you will talk about equity in financing.

This is essential not for millions of people in vulnerable communities facing the severe impacts of climate change but also in terms of energy poverty. We must get to a point where we focus on three main issues: energy poverty, climate change and economic development together. Solar power is available, and it is feasible to lift billions of people out of energy poverty and decarbonise our energy sector. Still, we need to scale solar deployment rapidly in developing countries. The ISA is a critical international partner in ensuring that we meet our goals; as an intergovernmental agency, the ISA's work is crucial in accelerating solar energy adoption through technology demonstration, policy and regulatory frameworks for affordable financing and building human capital. At the UN High-level Dialogue on Energy last year, we launched the UN Energy Compacts, and I am delighted that ISA submitted its own compact. Committing to contributing to SDG7 through global solarisation with a specific focus on facilitating access to clean energy for vulnerable communities in the LDCs and the SIDS. And this should be done by deploying almost a thousand gigawatts of solar capacity and mobilising a trillion by 2030 towards solar investment. I look forward to ISA making sure these commitments come into action, but everybody around this table should also be making sure these actions are done. I'm delighted to note that ISA supports demonstrational projects on issues of great consequence and significance to developing countries, such as solar appliances for agriculture, scaling solar mini-grids and solar rooftops, as well as e-mobility and green hydrogen initiatives. We must support the scale-up of such demonstration projects throughout the ISA member states as this is critical to building capacities on technology knowledge, understanding of policies and regulations, creating market mechanisms, and localisation of manufacturing value chains.

We at the UN and SEforAll are partners in this endeavour

of supporting countries to navigate their energy climate and development priorities in an integrated, evidencebased manner. Please accept my highest assurances of our support to your countries in developing your energy transition plans that are just, inclusive, equitable and they talk about the realities of your countries, they take in consideration the whole of the economy approach, and allow your domestic priorities to be balanced with your international commitments.

We cannot have a clean energy future without investing in people and vulnerable communities, and I commend the effort of ISA towards capacity building for tomorrow's solar energy workforce. We offer our support, especially to mainstreaming gender and training women in the energy workforce. Further, to complement a ready skilled force, there is a need for market readiness to attract capital at scale. This resonates with ISA's focus on mobilising capital in large volumes; however, it is also essential for many countries here today to participate more fully in global markets. It is, for this reason, that I'm focusing many of my efforts on developing mechanisms for developing emerging economies to participate more fully in the global carbon markets to attract to act as suppliers of credits to meet the demand for both compliance and voluntary markets so the global carbon Finance can flow into your countries and pay for your energy transition.

I also commend ISA for its pioneering work in the sector, especially the innovative green grid initiative, the One Sun, One World, One Grid, launched at COP26 based on Prime Minister Modi's vision which will be a game changer in decarbonising global energy systems and providing affordable electricity for growth. Lastly, I thank ISA for being a strategic partner in raising ambition and accelerating action for sustainable energy for all. SEforALL sees the work of ISA and its member state as an important effort towards leaving no one behind. Finally, I'd want to thank the ISA presidencies and the DG for their warm hospitality, and I wish the ISA Fifth General Assembly every success. Thank you.



Glimpses of the Press Conference



















High-level Conference on New Technologies for Clean Energy Transition

The International Solar Alliance, in partnership with the Asian Development Bank and the Ministry of New & Renewable Energy, Government of India, hosted a **High-Level Conference on New Technologies for Clean Energy Transition** on the sidelines of the Fifth Assembly of the ISA on 19 October 2022

The day was structured into plenaries, and thematic tracks, with the plenaries framing critical issues

around solar energy technologies, investments, and markets, to deepen understanding in subsequent thematic sessions. The Conference featured speakers from government agencies, academia, think tanks, industry, and the financial sector. Five technical panel discussions provided perspectives from technology experts, developers, financial experts, and other stakeholders to enable thriving markets for new technologies.

Speakers

- Welcome Address: Dr Ajay Mathur, Director General, ISA
- Inaugural Address: Mr Takeo Konishi, Country Director, India, Asian Development Bank
- Special Address: Shri Indu Shekhar Chaturvedi, Secretary, Ministry of New and Renewable Energy
- Keynote Address: H.E. Shri Raj Kumar Singh, Hon'ble Minister of Power and New and Renewable Energy and President of the ISA Assembly



The session was inaugurated by imminent speakers highlighting the need to increase solar energy generation and make it more affordable. The session underscored the growing importance of solar energy in the context of green growth and energy transition towards renewables. The speakers were highly optimistic regarding the success of solar energy with respect to making communities resilient and combatting climate change. The session highlighted the need for a green transition to limit the impacts of climate change and only possible with leadership and cooperation among state and non-state actors. The speakers agreed that stronger international cooperation is needed to accelerate the ongoing energy transition. The session recommended strengthening regulatory measures with financial and public policy support on solar energy.

Dr Ajay Mathur, Director General, International Solar Alliance (ISA), marked the conference as a springboard for climate change and solar technologies discussions. Director General, International Solar Alliance, highlighted, "Solar energy is increasingly becoming the preferred energy choice for several reasons, including its applicability and cost competitiveness. To accelerate the pace, we need to make available customised and efficient technology, low-cost financing and a well-informed market."

Mr Takeo Konishi, Country Director India, Asian Development Bank, highlighted the climate change issues faced by the people living in Asia, where about 2.5 billion people have been displaced due to natural disasters. He underlined the increasing demand for energy globally and the continued reliance on fossil fuels and said that access to energy remains critical in many parts of the world. Highlighting the importance of energy in economic development, he noted that "there have been studies establishing that clean energy can stimulate economic growth, create more job opportunities and have a positive impact on environment and health,". He further emphasised the role of technology and knowledge transfer in enhancing the process of providing energy to all. He stated that merely developing technologies is not enough. The technology must be made available for all.

Mr Indu Shekhar Chaturvedi, Secretary, MNRE, Government of India, said that renewable energy (RE) is an evolving area and that it will see rapid changes in the next few years. Governments across the world have done a remarkable job in promoting RE and making it commercially viable. He also underscored the need for proactive public policy for emerging energy areas. "Regulatory measures, design of schemes and direct financial support can be some of the measures of this public policy support," he said. He also pointed out that solar efficiencies are being established, which involves scaling up and lowering costs. Highlighting the importance of storage technologies and the recycling of solar waste, he emphasised the importance of international cooperation for building resilient and diversified solar supply chains and cross-country trade in hydrogen technologies.

H. E. Mr R. K. Singh, Hon'ble Minister of Power and New & Renewable Energy, India & President, International Solar Alliance Assembly, highlighted the challenges to enhance efficiency as the demand for solar power grows. He said that renewable energy has emerged as a solution to tackle climate change and as a viable substitute for fossil fuels. He said that in the last few years, there had been unprecedented momentum for solar energy deployment globally, and it is increasingly becoming the least-cost option for the power sector. He said this high-level conference is a collective approach that takes us beyond the pledge of making our space sustainable and ensuring we are doing enough to implement our commitments and achieve the vision of ISA.

The inaugural session emphasised the role of technology and knowledge transfer in enhancing the process of providing renewable energy to all. More importantly, the session focused extensively on promoting innovation in solar technologies for accelerated deployment at all levels across the globe. It concluded with the unveiling of ISA's annual flagship reports for 2022: the World Solar Technology Report, the World Solar Market Report, and the World Solar Investment Report.



UF THE SOLAR ALLIANCE WORLD SOLAR REPORTS

The **World Solar Technology Report** covers global technology-related advancements, achievements, and challenges. It reviews the current technologies available at all the steps of the value chain, the main technological trends, including system design and solar thermal solutions, advancements in various technological applications, and supply chains in manufacturing and deployment. It will assess the potential for technological integration in different sectors, highlighting scalable innovations, digitisation, and the circularity of solar components.

The **World Solar Market Report** covers market trends of different applications. It investigates 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 also assesses the existing market standards, regulations and guidelines supporting market uptake. The information highlights the current partnership ecosystem, including collaboration among the public, private and social sectors.

The **World Solar Investment Report** assesses the transition needed for the financial sector to fulfil the solar industry's investment requirements in the near future. The report undertakes a detailed assessment of the investment required to transition to mainstream solar energy in the energy mix; measures to speed up capital reallocation from fossil fuels to solar assets. It investigates steps undertaken by financial institutions and institutional investors to prioritise solar project lending. Risk and mitigation measures adopted in the past to safeguard investments by various countries have been highlighted in the report, in addition to a brief analysis of new financial instruments successfully adopted and institutionalised for upscaling the deployment of solar energy.







Technical Session - I: Panel Discussion Global Solar Technology Update

Session Chair: Mr. IBRAHIM YACOUBOU, Hon'ble Minister and ISA Vice President for Africa Region, Minister de l'Energie et Energies Renouvelables, Republic of Niger

Moderator: Dr Philippe Malbranche, Assistant Director General, ISA



Panelists:

- Mr Máté Heisz, Director, Global Affairs, SolarPower Europe, Belgium; Chair-elect of Global Solar Council
- Mr Neil Spann, CEO, Power Roll, United Kingdom
- Ms Mahua Acharya, MD & CEO CESL, Ministry of Power, India
- Mr Gaëtan Masson, Managing Director, Becquerel Institute, Belgium
- Mr Ujjwal Kanti Bhattacharya, Director (Projects) NTPC Ltd, India
- Dr Christian Breyer, Professor of Solar Economy, Lappeenranta-Lahti University of Technology, Finland

This thematic session on global solar technology provided a platform to discuss new technologies and applications in the solar PV and related sectors required for large-scale commercialisation to support the economy-wide clean energy transition, including hard-to-abate sectors. The panellists spoke highlighted the availability of the technologies, affordability, and correct application as the need of the hour for accelerated deployment of solar energy. The session also focused on the need to bridge the inequality gap to enhance the use of technologies. The session vividly highlighted the imperative to make solar energy technology available to the developing world "and without delay." The session saw speakers noting the urgency to make the solar manufacturing supply chain more robust to ensure that a repeat of the recent supply chain shocks is avoided. Along with discussing the future outlook for solar technology development, the socio-economic benefits of new technologies, government policy interventions for diversification of PV systems and applications, and new technologies like solar rolls in SIDs and LDCs, were also discussed.



Technical Session-II: Global Solar Markets Update

Session Chair: Ms UWASE PATRICIE, Minister of State in Charge of Energy, Ministry of Infrastructure, Republic of Rwanda

Moderator: Mr Joshua Wycliffe, COO, ISA



Panellists:

- Mr Raffaele Rossi, Head of Market Intelligence, Solar Power Europe, Belgium
- Mr Manish Karna, Head Business Development, Adani Green Energy, India
- Mr Somesh Kumar, Partner, E&Y
- Mr Arnulf Jaeger Waldau, Senior Expert at EU Joint Research Centre (JRC- Europe)
- Mr Gaëtan Masson, Managing Director, Becquerel Institute, Belgium
- Mr Pranav Mehta, Chairman, National Solar Federation of India

The technical session on global solar markets focused on the development of markets across the world for different solar technologies, comprising on- and offgrid solar PV and their different applications, solar thermal electricity, and solar thermal heating. The session discussed the main segments/markets in which solar deployments occur. The session provided a perspective of different future PV capacity scenarios from private sector companies, research institutes and other stakeholders. A qualitative overview of the main policies and instruments used across the globe to support the development of solar energy is also provided, together with an analysis of the main challenges and barriers typically standing on the road of solar development. The panellists prioritised the need to balance the huge opportunities with responsible growth in association with the market players on how we can ensure that large-scale solar deployment is truly sustainable. The session identified success indicators for countries to compare each other in terms of progress and brought out different tools to compare solar deployments across countries and regions that may differ in terms of population and development.



Technical Session III: Panel Discussion on New Technologies in Solar Energy

Session Chair and Moderator: Professor Juzer Vasi, IIT Bombay, India **Special Address:** Dr Vandana Kumar, Additional Secretary, MNRE, Government of India

Panellists

- Dr William Tumas, Associate Laboratory Director, Materials, Chemicals & Computational Science, NREL, USA
- Mr Jonas Moberg, CEO, The Green Hydrogen Organization, Geneva, Switzerland
- Mr Máté Heisz, Director of Global Affairs, SolarPower Europe Belgium, Chair-elect of Global Solar Council
- Dr Milind Kulkarni, President, PV Manufacturing Reliance New Energy, India
- Dr Heinz Ossenbrink, Band Gap Consult, Germany
- Mr Anurag Agrawal, Director, South Asia SOURCE, India
- Mr Manoj Gupta, Vice President, Renewable Energy Business-Asia, Fortum India Pvt Ltd., India

The session was chaired and moderated by Professor Juzer Vasi, IIT Bombay, India.

The session saw leading companies discuss emerging technologies in the solar energy sector. The session showcased flagship technological innovations such as the solar indoor cooking device, Surya Nutan, hydro solar panels for clean drinking water in rural India, land or desert-based solar power plants and balcony solar systems. The session also provided a big-picture view of how solar energy can decarbonise electricity generation and other energy sectors, such as transportation and building infrastructure. The speakers drew attention to remarkable progress in solar energy, including cost-efficiency and reliability of solar energy supply chain materials and availability. They underscored the importance of green technology and a circular economy for clean and renewable energy.

The speakers drew attention to energy and environmental justice issues in producing renewables and solar energy. Matters relating to the reliability and durability of solar energy also figured prominently in discussions. Some speakers voiced concerns





about the long-term functioning of solar technology. Concerns regarding the tariffs and bureaucratic red tape, amongst numerous other hurdles, were also expressed by the solar industry representatives present. They appealed to the governments to help increase the ease of doing business. The progress of the solar energy sector in India was highlighted in the session, drawing much appreciation from those present. India has registered a massive growth in solar energy due to the introduction of new technologies. The Indian government's comprehensive mission to cover demand and supply, infrastructure, and R&D for solar energy for India was also discussed.

Professor Vasi opened the session by stressing solar energy's importance in decarbonising the global economy. Solar energy can play an essential role in decarbonisation in the electrical and all energy sectors, such as transportation and building infrastructure. "We need great marketisation, great integration and lots of energy storage. We need to consider the energy and environment justice throughout the clean energy transformation," he said. He added that sustainability, green technology, and a circular economy would be critical for the clean energy transition. Improvement is required from the material to the system level in the solar energy field to ensure the reliability and durability of solar energy.

Dr Kumar appreciated the participation of the solar companies and expressed immense optimism for the solar technologies presented, like the Balcony solar system. She further appraised the session of India's solar manufacturing plans and the associated supply chain diversification. She stated that India is looking to manufacture solar energy to the tune of 75 GW capacity and working on a comprehensive mission to cover demand and supply, infrastructure, and R&D for various renewable energy technologies. She further elaborated on India's solar capacity: "In 2011, solar installations were 100 MW capacity; Today, we stand at 60 GW of installed solar capacity." She said that the new technologies have made it possible for such rapid growth in the sector. On diversification of supply chains, she said, "We have taken a bouquet of measures for the supply chains and hope to have a manufacturing ecosystem in the next three to four years." Alluding to the national green hydrogen mission, she said that the Indian government has essentially extended all the benefits required to establish the hydrogen project.

Key Takeaways

- Solar energy can play a crucial role in decarbonising the electrical and all energy sectors, such as transportation and building infrastructure.
- Solar energy production in India is growing exponentially, with 60 GW of installed solar capacity this year.
- Continuous innovative solutions are required for the solar panel modules
- Solar loans and income tax benefits for the solar energy business should be considered

Technical Session-IV: Panel Discussion on Global Solar Investment

Session Chair: Mr JONE USAMATE, Hon'ble Minister and ISA Vice President for Asia & Pacific Region, Ministry of Infrastructure, Meteorological Services, Lands and Mineral Resources

Moderator: Dr Philippe Malbranche, Assistant Director General, ISA





Panellists

- Ms Sabine Cornieti, Energy Specialist, World Bank Group, France
- Mr Chintan N Shah, Director (Technical), IREDA
- Dr Gagan Sidhu, Director of the CEEW Centre for Energy Finance
- Ms Neha Kumar, Head India Programme Climate Brands Initiative
- Mr Dushyant Thakor, Senior VP, Invest India & Senior Advisor, WAIPA



The session facilitated the exchange of insights and ideas among experts on topics like speeding up capital reallocation from fossil fuels to solar assets, prioritised lending for solar energy by financial institutions and investors, evolving and successful financial instruments for solar etc. The speakers highlighted the changing trends of investments in solar energy with a detailed trend analysis of changing solar assets globally and regionally. The panel discussion focused on key elements of the World Solar Investment Report, which was released earlier in the day. The session emphasised speeding up investment growth in the solar energy sector through a country-led investmentspecific plan and roadmap for adopting solar energy and prioritising investments in solar energy over fossil fuels, especially for developing countries.

This technical session brought together various stakeholders from the financing sector, governments,

and the private sector to discuss financing instruments to support solar energy and the development of solar energy in developing countries. Speakers also shared their views on assessing financing tools for driving investment by ISA Member Countries. The session tried to bring in a proper balance of early-stage de-risking between the donor, development, and private sectors/ entrepreneurs working towards adopting disruptive technologies. Speakers also cautioned that some risk mitigation instruments will always be required and stressed the need to deploy more innovative financing mechanisms. The session discussed various ways of efficiently replicating successful large-ticket transactions and quickly scaling up smaller deals systemically depending on the variation within the global markets with a clear role in the regulatory environment for attracting investments and asset management.

Technical Session-V: Panel Discussion on Technology Transfer & Absorption in Solar Energy

Session Chair: Mr Mohit Bhargava, CEO, NTPC Green Energy Ltd (NGEL) and CEO, NTPC Renewable Energy Ltd (NREL)

Moderator: Mr Jiwan S. Acharya, Principal Energy Specialist, South Asia Energy Division, Asian Development Bank, Philippines



Panellists

- Dr Rikiye Abe, Dr Rikiye Abe, Chairman of DG Consortium and CEO of DG Capital Group, Japan
- Mr Scott Woodard, Deputy Director, Bureau of Energy Resources, Office of Energy Transformation U.S. Department of State
- Mr Mathieu Geze, Director Asia, HDF Energy, Indonesia
- Mr Are Gløersen, Director Southeast Asia and Pacific, Oceansun, Singapore
- Ms Belen Linares, Innovation Director, Acciona, Spain
- Dr Neeraj Gupta, Senior Team Lead New Battery Systems, Reliance, India
- Ms Eva Vandest, Group Head, Public Affair Amarenco, France
- Mr Sandith Thandasherry, CEO, Navalt Solar and Electric Boats Pvt. Limited, India

The session was chaired by Mr Mohit Bhargava, CEO, NTPC Green Energy Ltd (NGEL) and CEO, NTPC Renewable Energy Ltd (NREL). Mr Jiwan S. Acharya, Principal Energy Specialist, South Asia Energy Division, Asian Development Bank, Philippines, moderated the session.

The session discussed the critical role of technology and innovation in the clean energy transition through solar energy. Some technologies discussed included building solar channels, biomass-based solar floating panels, carbon capturing, green hydrogen energy, and lithium-ion batteries. The panellists deliberated on the challenges the renewable energy sector faces and solutions such as expanding markets, public awareness of the climate situation and how to combat it as a world community.

The session underscored the imperative of climate action and the need for global cooperation. Speakers highlighted efforts and initiatives to creatively use technologies for the profitable solar energy business. Spain, for example, is planning the first solar channel. The session highlighted green hydrogen technology, its application, and avenues to make green hydrogen a cost-effective energy option. The panellists observed that green hydrogen technology would be more costeffective in the future as more investment is made in R&D to improve the technology. Technologies for floating solar panels projects, solar ferries and lithiumion batteries were also featured in the discussions. The session discussed options for a digital grid and solar power plant on islands.

Mr Jiwan S. Acharya focused on enhancing technology cooperation and the selection of technology which can adapt to local conditions. He emphasised that climate change can only be countered by reducing emissions and transitioning to clean energy using appropriate renewable energy technology. Carboncapturing technology is still at the initial stage, and we request that other countries share such technology for the benefit of all. He cited the example of the ADB's 92 MW capacity Floating Solar Project in Kerala, India.

Mr Bhargava stressed the need for large-scale transfer and absorption of solar energy. "It will fulfil the shortage of global energy consumption that is growing at a rapid pace and is bound to increase significantly in days to come", he said. More than half of the energy consumption increase is due to developing countries' strong economic growth. Although fossil fuels will continue to be part of primary energy resources for developing countries, Mr Bhargava was optimistic about these countries moving away from fossil fuels in the future. Further emphasising the Technology transfer from a developed country to a developing country or emerging economy, he noted that Technology transfer is an inclusive term that encompasses the diffusion of technologies and technology cooperation across and within countries. "It comprises the process of learning to understand and replicate the technology, including the capacity to adapt to local conditions," he said. Looking ahead, the world needs to eliminate its dependence on fossil fuels. Greater use of low-carbon energy technologies such as solar PV needs to be promoted. To that end, Mr Bhargava expressed NTPC's willingness to share technologies it developed with interested stakeholders.



Key Takeaways

- Carbon-capturing technology should be shared among nations.
- Renewable energy technology is necessary for combating climate change.
- Reliance plans to develop in the battery segment and wants to scale safer lithium-ion batteries.
- Spain is trying to generate green hydrogen energy and technology and make it a cost-effective energy option for the world.



Closing Plenary



The closing plenary of the "High-Level Conference on New Technologies for Clean Energy Transition" encapsulated vital takeaways from the day-long discussions, structured in five technical sessions, for enhancing the production, affordability, and adaptability of solar and solar energy. The closing plenary underlined that three key tools of ISA activities would continue to be Analytics and Advocacy, Capacity Building, and Programme Implementation. As data plays an important role, more importance will be given to data collection, management, and extrapolation. The session ended with an urgent appeal to all stakeholders to increase international collaboration across segments to accelerate the green transition.

In his valedictory address, Mr Joshua Wycliffe, COO of ISA, highlighted that to accelerate the pace, we need the right leadership to promote this and partnerships involving government, the building industry and research institutions. This one-day conference intends to do the same. He emphasised that the role of the ISA is to make solar the centre of ambition of Member Countries to achieve economic growth, environment, and social well-being. Mr Hoe Yun Jeong, Deputy Country Director, India Asia Development Bank, stated that as seven out of ten countries are suffering from the negative impact of climate change, the increased supply of affordable and clean energy would ultimately improve the living conditions of millions across the globe. This will also promote investment and increase employment opportunities, particularly in the LDCs and SIDs. He thanked ISA for creating a global collective to address these global challenges. Mr Jiwan S Acharya, Principal Energy Specialist, South Asia Energy Division, Asian Development Bank, Philippines, presented the vote of thanks to all the Ministers, Missions, and delegations from the Member and Signatory Countries. He specially thanked H.E. Mr R.K. Singh, Hon'ble Minister of Power and New and Renewable Energy and President of the ISA Assembly, for successfully presiding over the Assembly and providing leadership.



Site Visit to solar PV installation at Indira Gandhi International Airport, New Delhi

On the final day of the Assembly proceedings, October 20, 2022, delegates of the Fifth Assembly of ISA visited the Indira Gandhi International (IGI) Airport, New Delhi Terminal 2, as part of ISA's initiative to find out suitable models to be incorporated to achieve its ambitious plan of massive deployment of solar energy.

The delegation was introduced to the solar facilities of the airport via a brief presentation. Delhi International Airport Limited (DIAL) has installed a 12.36 MW (7.84+3.723+0.802) plant at IGI, and it is the first airport in India to have a mega solar power plant at airport premises. This measure has been taken to promote renewable energy use, reduce associated emissions, and support India's National Climate Change Action Plan. The representative from DIAL informed that Special Design and Permission Processes had been adopted to place the solar system near the runway area. The USP of the site lies in the fact that IGI Airport is the first airport to generate 2.14 MW of renewable energy. Subsequently, 5.7 MWp was added in 2016. The project was conceived to create awareness and demonstrate the organisation's commitment towards sustainable airport development.

Post the presentation and discussions; delegates were guided to the rooftop where solar photovoltaics were installed. Members of the delegation interacted with the DIAL team to understand several technical details and requirements of the solar plant. On behalf of the delegation, Mr Jean Fanfan Jourdain, Director of Coastal and Marine Management, Government of Haiti, made brief remarks thanking ISA for organising this field visit and pointed it as one of the most critical components of the whole Assembly. He described ISA as a great symbol of South-South cooperation and thanked the government of India for hosting the delegates.



