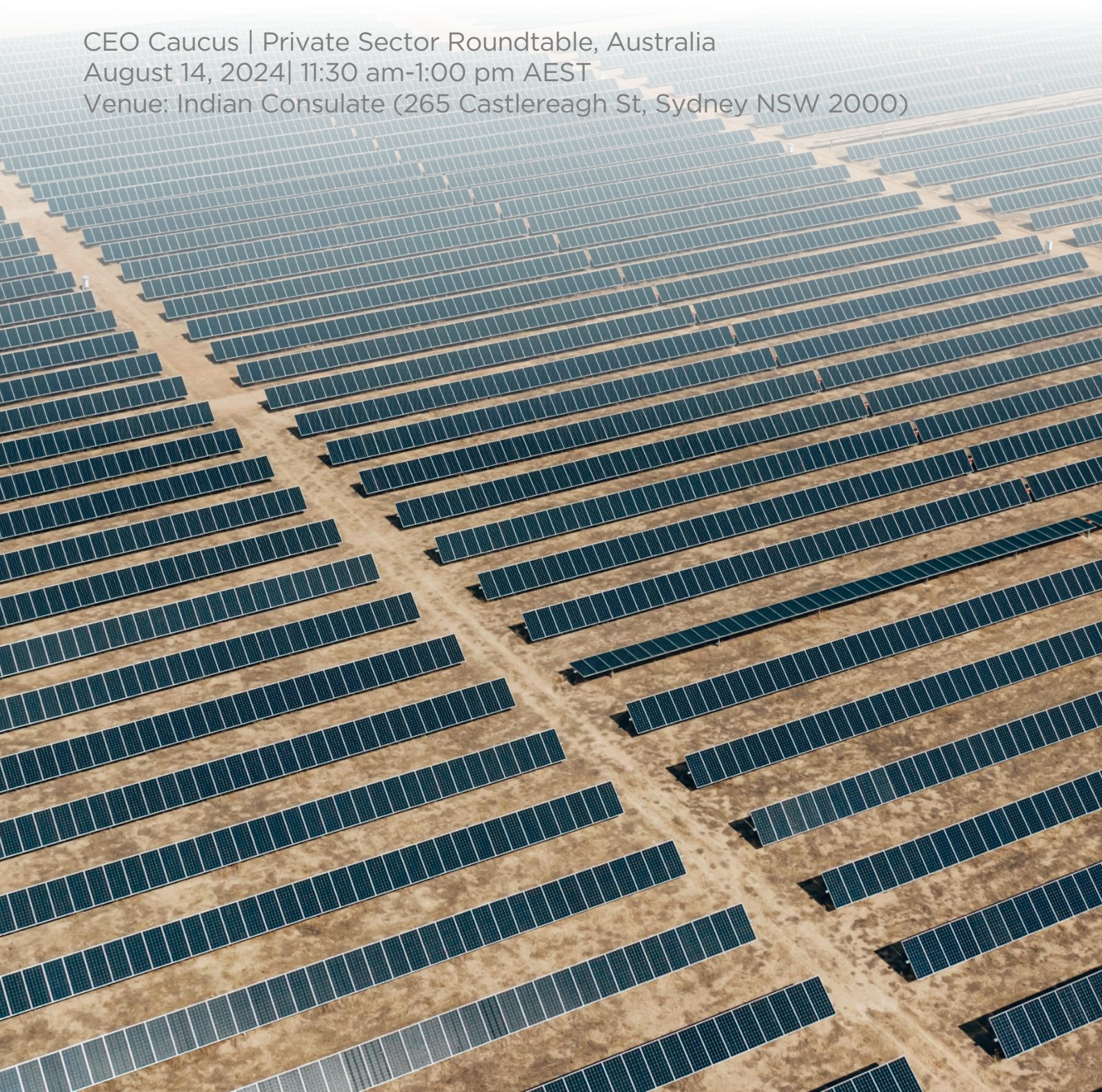


Solar Innovation & Manufacturing Resilience: Paving the Way for Australia's Sustainable Future

CEO Caucus | Private Sector Roundtable, Australia

August 14, 2024 | 11:30 am-1:00 pm AEST

Venue: Indian Consulate (265 Castlereagh St, Sydney NSW 2000)





Background

The International Solar Alliance (ISA) constituted a high-level forum of select CEOs, to forge a greater understanding of crucial issues and achieve quantum growth in solar energy. The forum will help garner insights into developing a diversified and resilient global supply chain, support technological innovations, access and assist in mobilizing capital, and map out an enabling policy environment. With these founding objectives, ISA officially launched the CEO Caucus with a virtual meeting on 6th June, in New Delhi.

The fifth and final in the first edition of the series, the Australian roundtable was held on 14th August 2024, bringing together noted experts from Australia's private sector, including experts in clean technologies, finance, solar manufacturing and deployment, renewable energy companies, and global conglomerates with significant Net Zero commitments.

A vigorous discussion about the opportunities and challenges facing the Australian solar industry ensued, with a focus on identifying measures for a smooth transition to green energy.

Context

In his opening remarks, Dr. Ajay Mathur, DG ISA, outlined Australia's remarkable jump to 39.4% in the share of renewables in its energy mix, adding 5.9 GW of new capacity. Complimenting Australia's Target to become a Net Zero Nation by mid-century, Dr. Mathur pointed out the pivotal role solar would play in this transition. To back his statement, Dr. Mathur quoted data from the Commonwealth Scientific and Industrial Research Organization (CSIRO), which predicts that by 2050 around 30% of Australia's energy supply will come from solar. He further commended Australia's long-standing commitment and the role the nation played in developing crucial solar technologies such as solar heaters and the inclusion of solar in telecom infrastructure.

This advancement propels Australia as the leading producer of solar energy on a per capita basis. Dr Mathur also commended the massive \$4.9 billion investment in power storage technology along with the government initiatives that made this advancement possible. He also elaborated on programs such as the Powering Australia Plan, Future Made in Australia, Solar Sunshot, and the Battery Breakthrough Initiative that have catapulted Australia into the league of frontrunners in the renewable energy space.



While the trends are promising and point to Australian leadership in the sector, achieving the targeted 82% share of renewables in the energy mix by 2030 may be difficult, he stated, attributing it to the skill gap in the storage sector and the need for skill standardization of technicians. Further highlighting the over-reliance on a single trade partner for solar PV, he emphasized the need to diversify the supply chain.

Dr. Mathur emphasized the need to address the roadblocks faced by the Australian Solar industry to ensure a smooth transition to green energy and declared the session open for discussion.

One of the important takeaways from Dr. Mathur's address was his acknowledgement of Australia's potential to position itself as a recycling giant with some of the best ESG practices. He also called for the implementation of necessary policies to achieve their ambitious targets. Dr. Mathur lauded Australia's constant efforts to strengthen the solar infrastructure through grants to academic research centers in solar, focus on rooftop solar and Vocational Education Training (VET) programs to upskill the workforce.





Key deliberations:

The roundtable discussed four critical themes:

1. Steps to strengthen the domestic solar manufacturing industry to create a robust domestic solar supply chain.

The key issue:

Establishing a complete supply chain from the ground up is a daunting and capital-intensive task for any nation. While some countries have made initial strides toward developing a complete supply chain within their borders, panelists have suggested that it might not be in Australia's best interest to aim for a fully integrated supply chain. Instead, they recommend focusing on strengthening key segments of the supply chain that provide the nation with a competitive edge over its contemporaries.

Points of discussion:

a) Strengthening the domestic mineral refining industry

Achieving Net Zero emissions globally will depend on the availability of essential minerals which are necessary for the manufacturing and operation of low-emission technologies, including solar photovoltaics, wind turbines, and energy-storage batteries. However, shortages of these vital minerals are likely as the global energy transition accelerates. Australia has a long history of mining and supplying minerals and possesses an abundance of key minerals that are in high demand.

Australia's economic goal has always been to move beyond the "dig and ship" economy that sells raw materials for processing overseas. By leveraging the increasing demand for low-emission technology, Australia can enhance its domestic value-adding capabilities. Establishing domestic refining units to convert critical mineral resources into high-value components for PV manufacturing could strengthen Australia's economy.

b) Identification of gaps in the solar supply chain and fulfilling them

Australia has been an epicenter of technological excellence with a unique selling proposition (USP) of quality production. Therefore, the first step in establishing a domestic supply chain would be to use imported goods to expand the market for Australian-made modules, as this phase is the quickest to implement. Subsequently, production of additional components, such as aluminum frames and solar glass used to cover the panels, can also be scaled up.



2. How should the solar industry address critical Environmental, Social, and Governance (ESG) issues such as biodiversity, water usage, human rights, health & safety, and actions related to product stewardship, including e-waste recycling, circular design, and the circular economy?

Key issue:

To achieve Net-Zero targets within the designated time frame through green practices, the integration of ESG principles and circular economy practices is crucial. Panelists emphasized the importance of leveraging Australia's position as a global leader in the recycling industry to capitalize on the growing volume of solar waste. This strategic approach would not only enhance sustainability but also ensure that Australia remains at the forefront of the green energy revolution.

Points of Discussion

a) Establishing Australia as the global leader in Solar PV recycling

Australia is becoming increasingly solar-friendly, with over 100 million solar panels installed nationwide. This growth will produce new types of waste materials which will increase as solar installations abound. By 2040, Australia is anticipated to generate 450,000 tonnes of PV waste. At least 1-2% of solar panels would be damaged or unusable before installation.

With safe disposal techniques and recycling, Australia can develop a best-practice model for solar panel recycling for other countries to adopt. By ensuring that solar panels are managed responsibly throughout their lifecycle, Australia can become a global leader in the shift to clean and sustainable energy. Developing a specialized recycling industry would not only reinforce Australia's reputation as a global innovator in renewable energy but also create new economic opportunities. As other nations follow suit, the collective impact could be substantial, making solar energy even more sustainable and contributing to the global effort to combat climate change.



3. What role can trade partnerships with countries investing in solar manufacturing play in supporting Australia's clean energy and climate goals, particularly in terms of enhancing technological collaboration and supply chain resilience?

Key issue:

Australia has established itself as a global leader in solar research and technological innovation, consistently producing cutting-edge advancements in renewable energy. However, the nation faces a critical challenge in the form of its limited capability for large-scale manufacturing. This gap between innovation and production presents a significant roadblock in fully capitalizing on technological breakthroughs. Without the ability to manufacture solar components at scale, Australia risks falling behind in the global race to lead the renewable energy market.

Points of discussion:

a) Establishment of regional partnerships to create a diversified supply chain

Strategic partnerships that capitalize on the strengths of partner countries are crucial. For example, collaboration between the Indian company, Waaree Renewable Technologies Limited and 5B Industries, an Australian solar technology company, has helped accelerate the deployment of utility-scale solar power in India and other global markets.

The collaboration focuses on the localization and scaling of 5B's innovative Maverick solar technology, which is designed to streamline solar installations by making them faster, more cost-effective, and easier to maintain. Maverick technology uses prefabricated solar arrays that can be rapidly deployed, significantly reducing the time and labor required for installation. This technology is expected to enhance the efficiency and scalability of solar projects, which is crucial for meeting the growing demand for renewable energy. This provides a workable alternative to potential buyers.



4. How can Australia strengthen the overall enabling environment for the solar ecosystem by streamlining approval processes and incentivizing solar projects?

Key issue:

To strengthen Australia's solar ecosystem, it is essential to streamline the often complex and time-consuming approval processes that can delay solar project development. Lengthy bureaucratic procedures, particularly those related to land acquisition, can deter investment and slow down the deployment of solar infrastructure.

Additionally, there is a pressing need to implement more robust incentives, such as tax credits, subsidies, and feed-in tariffs, to make solar projects financially attractive. By simplifying regulatory frameworks and offering stronger incentives, Australia can accelerate solar adoption, attract more investment, and ensure a smoother path toward achieving its renewable energy targets.

Points of discussion:

a) Addressing bottlenecks to incentivizing projects and addressing land rights

As climate change adaptation and mitigation become increasingly critical, particularly in nations with limited resources, land access remains a major barrier to renewable energy investments. The viability and practicality of infrastructure projects are significantly influenced by land availability, and the optimal performance of climate-resilient infrastructure relies on appropriate land access.

Enhancing development projects to utilize state and public lands holds considerable promise for facilitating, funding, and strategically placing infrastructure investments. Effective land management requires high-quality land administration supported by clear land use rights, accurate boundary data, spatial planning, and efficient planning and permitting systems. As climate change adaptation and mitigation become increasingly critical, particularly in nations with limited resources, land access obstructs renewable energy investments. The viability and practicality of many infrastructure projects are greatly influenced by land availability, and the optimal performance of climate-resilient infrastructure relies on appropriate land access.

Enhancing development projects to access state and public lands holds significant promise for facilitating, funding, and strategically placing infrastructure expenditures. Effective land management ultimately requires high-quality land administration and policies that are supported by precise land use rights, boundary data, spatial planning, and workable planning and permitting systems.



Annex 1: List of Participants





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1. Keynote Address: Dr. S. Janakiraman, Consul General of India in Sydney
2. Dr Oliver Hartley, Director, Bright Dimension
3. Prof. Scott Hamilton, Senior Adviser, Clean Energy Council
4. Mr. Glenn Morelli, Owner and Director, Tindo Solar
5. Dr. Brett Hallam, Senior Consultant, ITP Renewables
6. Dr. Richard Corkish, Honorary Senior Lecturer, UNSW
7. Mr. Julian Kasby, Senior Development Manager, Spark Renewables
8. Mr. Roshan Dharmasena, Head of Operations and Maintenance, Gentari Australia
9. Mr. Manfred Fahr, Solar Portfolio Manager, Enel Green Power
10. Mr. Con Hristodoulidis, Acting Chief Policy and Impact Officer, Clean Energy Council
11. Mr. Tom Stapelton, Partnerships Manager, Agile Energy
12. Prof. Iain McGill, Professor, University of South Wales (UNSW)
13. Dr. Rong Deng, Lecturer, University of South Wales (UNSW)





Annex 2: Event Background Note



Solar Innovation & Manufacturing Resilience: Paving the Way for Australia's Sustainable Future

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Context

To realize the green transition dream and fulfill its global commitments, the Government of Australia launched the Powering Australia plan aiming for a 43% reduction in emissions by 2030 and achieving Net Zero by 2050.

In this context, enabling the renewables shift envisions an annual deployment of 5-15 GW of solar PV. This journey would not be uneventful. Domestically, at present, over 90% of Australia's PV supply comes from a single trade partner, which could be an impediment as was evident during the Covid crisis compounded by other geo-political uncertainties.

A robust domestic solar manufacturing ecosystem is emerging as a national and strategic priority and will need a supportive framework of active industry policies outlining priorities, technological & skill development, permits, partnerships, and concessional finance. This will help to realize the true potential of Australia's rich solar resources, unlocking the nation's potential to become a global solar PV superpower.

It is encouraging to note that groundwork is already underway. Australia recently launched its Future Made in Australia initiative, a program not dissimilar to the USA's Inflation Reduction Act, that aims to rejuvenate the manufacturing industry and make it self-sufficient in strategic technologies, by allocating \$1.5 billion to build capability in solar and battery manufacturing. It will also strengthen Australia's supply chain resilience. Another flagship initiative, the Solar SunShot targets an investment of \$1 billion in reviving Australia's solar manufacturing industry and replacing coal and gas jobs for those in the solar industry.

To boost green jobs, the Australian government's coordinated action scenario predicts that achieving Net Zero targets would open up plentiful new employment opportunities in the solar sector by 2050, about 59% of which would be highly skilled jobs consisting of technicians and trade workers. While skill development in solar, wind, and clean energy has grown over the last 10 years with the Vocational Education Training (VET) program, there is a clear need to ramp up efforts in this regard to also include technicians proficient in storage facilities.



To tackle the storage issues specifically, the Australian government announced an astonishing \$523.2 million for the Battery Breakthrough Initiative to promote the development of battery manufacturing capabilities. [5] Further, to promote innovation, the Australian Renewable Energy Agency (ARENA) announced \$11m in funding to Australian solar technology company SunDrive Solar which uses copper instead of silver in its manufacturing processes bolstering Australia's commitment to supporting renewable technological innovation.

Product stewardship initiatives will also contribute towards the Net Zero push. According to a new report published by the CSIRO, Australia's research into solar recycling stands at near the top as the world comes to terms with new forms of waste material and their responsible disposal.

Australia's research, development, and demonstration (RD&D) investments to develop mid-stream processing technologies for critical minerals, such as rare earth minerals and silicon used in solar cell and panel technology, can potentially enhance sustainability competitiveness and lower costs. The development and optimization of solar recycling technologies would help recover the quantity and quality of critical minerals for improved circular economy as volumes increase.

It is evident that Australia has embarked on a transitional journey for a greener future. Trade partnerships with solar-producing countries can offer significant benefits to Australia's solar industry by enhancing technological capabilities, ensuring supply chain diversification & resilience, and fostering sustainable economic growth. These collaborations will be crucial as Australia aims to increase its solar capacity and transition to a more sustainable energy future.



The Meeting:

The private sector roundtable hosted by ISA on 14th August 2024, in Sydney, aims to discuss the opportunities and challenges to create networks for collaboration with Australian companies. We aim to gain perspectives from the Australian private sector focusing on technological advancement, financing initiatives, and the creation of a sustainable production industry that can be extrapolated for global application. We also aim to facilitate collaboration and learning from these targeted developments to the developing world.

The participants for this session will include leaders from the private sector in Australia working on clean technologies, finance, solar manufacturing and deployment, renewable energy companies, and leaders from global conglomerates with significant Net Zero commitments.

Themes for Deliberation:

This high-level forum shall facilitate discussions among industry leaders and experts in solar manufacturing, technology, and finance to identify areas of opportunity and collaboration.

The focus areas for the Roundtable include:

1. Policies and programs like Solar SunShot, Renewable Energy Scheme, Powering Australia Plan, and Future Made in Australia Act strive to establish a supportive environment for the clean energy sector. What new measures and resources are required to drive R&D and innovation in next-generation solar technologies, including advances in energy storage, AI and automation in manufacturing, and improved processes for domestic solar supply chains?
2. How can Australia strengthen the overall enabling environment for the solar ecosystem? Should the focus be on streamlining approval processes, investing in advanced energy storage, and enhancing workforce reskilling initiatives?
3. How should the solar industry address critical Environment, Social, and Governance (ESG) issues such as biodiversity, water usage, human rights, health & safety, and actions related to product stewardship, including e-waste recycling, circular design, and the circular economy?
4. What role can trade partnerships with countries investing in solar manufacturing, for enhanced technological collaboration and supply chain resilience, play in supporting Australia's clean energy and climate goals?



About CEO Caucus

The International Solar Alliance (ISA) launched the CEO Caucus on June 6, 2024, as a high-level consultative platform for industry leaders to collaborate with other key stakeholders. Their task was to identify and address challenges to accelerating solar deployment at scale to achieve Net Zero goals by mid-century. Over the course of these roundtables, many critical challenges and bottlenecks ailing the solar industry have been identified and deliberated upon. These include:

- The need to incentivize the domestic solar industry to enhance manufacturing capacities in emerging markets as well as developing economies.
- Collaborations between R&D centers to accelerate technological advancements and scale next-generation solar technologies.
- Additional initiatives that are required to enhance demand for solar deployment, such as facilitating finance, and fostering technological innovations across industry and among countries.
- Innovative funding schemes to raise private capital and make concessional finance available particularly for solar deployment initiatives in the Global South.

The current series shall reach its culmination on September 5th-6th, 2024 in New Delhi with ISA's "Solar Festival", where a Pathway document charting the future course will be revealed.

CEO Caucus Events:

1. Addressing Bottlenecks for Building the Global Solar Energy Sector – June 6, 2024 (Virtual)
2. Empowering Europe's Solar Future: A Roadmap to Diversify, Innovate, and Sustain– June 13, 2024 (Brussels)
3. Driving Solar Energy Revolution: Growth Insights for Global Impact – July 15, 2024 (New York)
4. Energizing Africa: Accelerating Development with Solar – August 5, 2024 (Virtual)
5. Solar Innovation and Manufacturing Resilience : Paving the way for Australia's Sustainable Future-August 14, 2024(Sydney)
6. CEO Caucus: Global Leadership in Accelerating the Solar Revolution –September 05 (New Delhi)



Annex 3: Event Series Note





CEO
CAUCUS
INTERNATIONAL SOLAR ALLIANCE



CEO Caucus:
A Global High-Level
Consultative Platform for
Industry Collaboration



1. Building an industry collective to unlock full capacity of solar

Achieving net-zero emissions by mid-century to maintain the 1.5-degree Celsius climate target is critically dependent on a successful transition to clean energy. To achieve this transition, and meet the goal of tripling renewables by 2030, it is essential to add at least 600 GW of solar power annually from 2023 to 2030, requiring investments of USD 500 billion per year. However, the road to accelerate solar deployment remains full of obstacles. There's a need to create a diversified and more resilient global solar manufacturing supply chain, conditions to unlock financing and for fostering technological innovations, and to strengthen solar powered applications as demand drivers to boost deployment of solar at scale across the world. The private sector plays a critical role across all these aspects and their perspectives on these issues are essential for framing the way forward.

To catalyze this, the International Solar Alliance (ISA) is constituting high-level forum of select Leaders to deliberate on measures and potential collective action for addressing challenges to unlock the full potential of the sector. The 'CEO Caucus' will provide industry leaders with a platform to collaborate with key stakeholders to create pathways for global growth through interventions across the solar value-chain. In this process, ISA will also collaborate with like-minded organisations from across the world to achieve its mission of facilitating the private sector for accelerating clean energy transitions.

This initiative is in continuation to ISAs on-going efforts to further strengthen public-private partnerships to enhance adoption of solar energy across the globe.





2. A consultative platform to build pathways for global growth

The CEO Caucus will bring together global leaders working on clean technologies, solar manufacturing and deployment, renewable energy companies, and leaders from global conglomerates with significant net-zero commitments. The platform will enable targeted discussions on the shared challenges within the industry, foster private sector's engagement with key policymakers and propose solutions to accelerate the adoption of solar energy across regions

ISA will conduct a series of roundtables under the 'CEO Caucus' and also gather global viewpoints on the solar sector on the sidelines of ISA's Regional Committee meetings (RCMs). The discussion points from each session will be developed into specific discussion notes. Finally, all of the topics and suggestive measures covered in every meeting will be combined into a "*Pathway Document*", outlining a suggested path forward for all stakeholders—both private and public—to promote the growth of solar markets.

This platform will serve as an ongoing forum, continuously engaging with stakeholders to develop and actualize a comprehensive roadmap for expanding solar adoption.

3. Key themes of discussion for the CEO Caucus

1. Expanding the global footprint of solar manufacturing

The main challenge in manufacturing is that it is highly concentrated in specific regions which can lead to supply chain disruptions. Through initiating deliberations, ISA wants to boost the global footprint of solar manufacturing. Direct support measures for solar manufacturing play a key role in incentivizing the exponentially large scale-up needed for new market entrants to be competitive. However, some of these measures can be perceived as protectionist. Furthermore, concerns are increasing about recyclability, waste, and the total life cycle footprint of solar modules and other components. Therefore, ISA CEO Caucus will work towards designing a holistic strategy for solar manufacturing, targeting both upstream and downstream parts of the value chain.

2. Unlocking capital to propel solar manufacturing led growth

One of the major obstacles to developing resilient global solar supply chains is the lack of adequate financing for solar manufacturing. Support for both capital and operating expenses is especially crucial in emerging markets. Currently, financing for solar manufacturing is concentrated in a few countries, and the significant multi-billion dollar investments required for polysilicon, wafer/ingot, and cell production pose an even greater challenge for smaller and less developed nations. Innovative ways of capital deployment can help overcome these challenges and drive ecosystem growth by propelling solar manufacturing. There is a significant opportunity for nations and international institutions to gradually increase their investments in clean energy manufacturing within their energy portfolios.

3. Fostering technological innovations

Emerging markets that have significant plans for solar installation may have limited expertise and R&D funding to develop solar supply chains domestically. Research on next-generation higher-efficiency technologies, including interdigitated back-contact cells, which supersede existing crystalline silicon cells are even more concentrated with only few countries. Further, critical equipment (particularly in the polysilicon, wafer/ingot and cell manufacturing) are often bottlenecked, with a small number of suppliers worldwide. Emerging markets may be challenged in procuring or gaining access to this equipment. Therefore, there is a need to increase access to technology for all regions through collaborative action.

4. Applications oriented demand generation

Market depends on demand and therefore countries may consider offering "guaranteed demand" to manufacturers setting up new capacity, as a buyer of last resort at a guaranteed price, but only after market forces have been exhausted. Further, the 'CEO Caucus' can look at leveraging the platform for cross-sectoral partnerships and engagements to foster application-based demand generation in the solar sector.



4. Series of consultative forum

Leading up to the Solar Festival and at the Festival, a series of roundtable sessions will be organized. Below is the proposed calendar for this year under the first CEO's Caucus.

1. Private Sector Roundtable- June 6, 2024 (Virtual)
2. Private Sector Roundtable - June 13, 2024 - Brussels, Belgium
3. Private Sector Roundtable - July 15, 2024 - New York, USA
4. Private Sector Roundtable - August 5, 2024 - Africa (Virtual)
5. Private Sector Roundtable - August 14, 2024 - Sydney, Australia
6. **Solar Festival - September 5-6, 2024: A high-level plenary, building on the Private Sector Roundtable series, with select CEOs, will be convened on September 5, 2024. The Pathway document will be released at the festival*.**

