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International Solar Alliance: The Geopolitical Imperative for India

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ABSTRACT

The formation of the International Solar Alliance received great commendation, particularly by the USA. It was established in 2015 as a 121-nation alliance at the Paris Climate Change Conference (COP21), and India and France both contributed to its founding. It plans to expand solar energy in nations with plenty of sunshine that are entirely or partially located in the torrid zone. The ISA is the first international organisation with a treaty-based structure and an Indian headquarters. India's involvement in the ISA may be credited to use it a geopolitical tool. It can also be utilised as a tool for foreign policy. India, however, does not have sufficient financial resources and neither invented nor produces low-cost solar products. This raises the question of whether and how the ISA may help India's geopolitical situation. The organisation is continually growing and is crucial to the current globalised society. With its sizable local demand and subsequent achievements in increasing solar energy, India may have some opportunity to exercise solar leadership, which, if the outcomes are favourable, may open up prospects for exercising more geopolitical impact. Among them include resolving obstacles to its domestic solar programme, maintaining institutional resilience, and gaining a reputation for oneself in a competitive worldwide ecosystem of solar firms. This paper aims to examine ISA as a geopolitical instrument and to show the timeframe of its emergence. This paper also discusses India's domestic solar advancements and its role as a global solar leader.

Keywords: India, geopolitics, solar energy, climate change, world, development

INTRODUCTION

During the 2015 Paris climate summit, India and France teamed together to create the International Solar Alliance (henceforth ISA). The ISA, the first worldwide organisation with its headquarters in India, promotes solar energy throughout all of the sunshine belt states, which are mostly situated in the torrid zone (i.e. between the Tropics of Cancer and Capricorn). India's primary motivation for joining the ISA was to utilise it as a tool for geopolitical power. Whether India has to be able to financially support this project or not is debatable because China has made considerably greater improvements in solar technology and India, is neither a solar technology pioneer nor a provider of low-cost solar products like panels or inverters. So, the question of whether and how India may gain geopolitical advantages from the ISA is raised.

Solar power is a type of sustainable green energy that protects both the environment and the economy. Murray (2019) have generalised that the agreed-upon countries for the ISA may be able to harness solar energy in an economical way if a concerted and coordinated effort is made to share experience from other comparable countries and focus on finding solutions that are designed to be locally appropriate for challenging conditions. Together, these nations might lessen the effects of climate change by developing solar energy and solar technology. By utilising low-tech, easily accessible goods like solar panels and solar appliances that only need to be scaled up and made available where they are needed.

It may be possible to use the excellent solar insolation seen in nations that sit wholly or mostly in the torrid zone to enhance people's lives and build a more sustainable future. The Indian government acknowledged the importance of the globalisation of the supply chain and the idea of "joining hand" to maximise the effect of energy security at the Paris climate summit in 2015. It was recommended to form a cooperation with countries with insufficient access to energy and who do not cooperate to increase societal incomes and production. These countries need a voice on the international stage so they can organise to collaborate and share ideas in order to close their technological gaps. Scaling up solutions can lower expenses once they've been established. The ISA, a federation of nations keen to employ solar technology to enhance the quality of life for their populations, has proposed this role of cooperation and coordination. As ISA's leader, the Indian Prime Minister, has declared that India's goal is to make solar energy a necessary component of daily life, accessible to even the most isolated villages and cities (Varadhan, 2018). Therefore in order to promote the ISA at the 2018 climate discussions in Poland, the Indian government held a number of subsidiary sessions (Shidore & Busby, 2019).

According to Shidore and Busby (2019), India has made some significant strides in increasing its solar capacity. If these achievements are acknowledged, they may present India with opportunities to exercise leadership in the solar industry and may also open up a number of opportunities for expanding its geopolitical influence.

TIMELINE

A variety of things happened that led to the ISA's conclusion. The reader may better appreciate the overall picture and the importance of ISA in the current world by reading about these instances in detail. PM Modi first broached the issue of an alliance of tropical developing nations during the October 2015 India-Africa Forum Summit in New Delhi. His concept for the Forum was the gathering of one-third of people under one roof. The subtext was that this coming together would be overseen by Indian leadership. India wanted to create an "association of solar-rich countries" in order to increase its "south-to-south" global leadership. By the time French President Francois Hollande, who was hosting the summit, saw the ISA as a method of furthering French interests as well, Prime Minister Modi was prepared to present the International Solar Alliance in Paris (Ananthkrishnan, 2015). Hollande therefore had a major impact on the ISA statement. Other industrialised countries including the United States, the United Kingdom, and the Netherlands also joined the ISA steering committee after China. As a result, the ISA's initial focus as a coalition of underdeveloped tropical nations was broadened to include industrialised powers outside of the tropics. The cornerstone for the ISA headquarters at the National Institute of Solar Energy (NISE) in Gwalpahari, Gurgaon, was laid by PM Modi and Francois Hollande in January 2016. In addition, India gave the ISA corpus money 175 crore rupees and gave its secretariat 5 acres of land at NISE. In order to start the organisation, India contributed \$30 million over the course of five years, while France provided 300 million euros for solar research. Later that year, the World Bank and UNDP made public their plans to promote solar energy on a worldwide scale. The ISA framework agreement went into effect on December 6th, 2017, when Guinea became the fifteenth nation to ratify it. India gave this agreement its approval on December 28, 2016.

India's dedication to fostering solar energy was also acknowledged throughout the world, as seen by the nation's victories in three straight presidential elections, most recently in October 2022 and earlier in 2018 and 2020. The organisation gained more drive once the United States ratified the framework agreement (PTI, 2021a). The International Civil Aviation Organization (ICAO) most recently joined the organisation in September 2022 (Bhattacharyya, 2022) after the UNGA gave the ISA observer status (PTI, 2021c). The organization's finance system was also improved by two key events. The creation of a \$350 million Solar Development Fund was originally announced by the Indian government during the World Future Energy Summit (WFES), which was held in Abu Dhabi in January 2018. Second, the ISA authorised the "Solar Facility" on October 19, 2022, a payment guarantee mechanism that combines an insurance fund and a payment guarantee fund to draw investments in solar projects (Koshy, 2022).

DOMESTIC DEVELOPMENTS

Since Chinese President Xi Jinping said that China intended to reach a peak in greenhouse gas emissions in 2032 when joined by President Obama, India has been lagging behind China in its efforts to combat climate change. Despite its reluctance to make such a commitment, India did declare a goal to produce "40% of its electricity from non-fossil sources by 2030" at the Paris climate change summit. India said at COP26 in Glasgow that it will obtain 50% of its energy needs from renewable sources and grow its renewable energy output from 150 GW to 500 GW by 2030. Energy researchers disagree on whether India's 50% objective applies to capacity or generation, but one thing is certain: the renewable energy sector is now seeing an unprecedented surge. Between 2014 and 2021, India's solar energy capacity more than quadrupled. The government plans to increase installed solar capacity from 2020's 37 GW to an incredible 270 GW by 2030, and maybe even more. It is clear that India has high goals for solar energy (Vanak & Madhusudan, 2022).

More than 10 years ago, states like Gujarat, Maharashtra, Tamil Nadu, and Madhya Pradesh greatly boosted their wind capacity, marking the beginning of India's renewable energy history. The wind turbines, on the other hand, utilised the pricey feed-in-tariff (FiT) mechanism. This made sense because it used to be far more expensive to produce renewable energy. The National Solar Mission (NSM), which began in 2009, is India's effort to scale up solar energy. At a time when other major renewables leaders like Germany, China, and the US were still largely focused on subsidising the sector through FITs, the NSM incorporated competitive bidding right away. The solar effort received a big boost from Prime Minister Modi's announcement of the ambitious quintupling of national solar objectives to 100 GW by 2022. As of the end of 2021, India stands fourth internationally in terms of solar PV installations thanks to its impressive progress in the solar industry to far. The installed capacity of solar energy was about 61.97 GW as of November 30th, 2022. The solar costs in India have now hit grid parity and are quite competitive (Ministry of New and Renewable Energy, 2022).

It's critical to remember that solar energy is rising more quickly than wind energy and will probably overtake it in the next years. The most recent innovation in the renewable energy story is solar-powered agricultural equipment. In certain large states of India, where more than half the population depends on agriculture for a living, agriculture consumes a third or more of the country's total electricity output. States are experimenting with a variety of methods to enable solar energy in agriculture, such as the Grid Powered Pumps in Maharashtra and the Solar Pump Program in Madhya Pradesh. The story of the agricultural pumps is just one illustration of the many approaches to renewable energy used by the several states of India, which are comparable to European nations in terms of their population and diversity. Some states have lagged considerably behind others despite the federal government's continued efforts. The story of India's renewable energy may be used to learn from its successes as well as its failings. Among the problems that lagging governments must resolve include a shortage of easily available land, opposition from influential interest groups, and a lack of political will. Though its distribution companies, or discoms, which are almost wholly controlled by its federal states, may pose the biggest challenge because to their enormous monopolistic pricing power. The latest attempts to make many discoms financially sustainable haven't been particularly effective because of their high levels of debt (Chatterjee, 2020). Discoms have acted as substantial roadblocks to rooftop adoption in a number of states due to present lock-in agreements with coal plants and stand to lose from expanded solar procurement. Other challenges include poor profits for solar firms and challenging grid and land integration (Shidore & Busby, 2019). Additionally, low bids face the risk of handing project developers too little money, which might deter additional investment. India's ambitious capacity plans for 2022 are unlikely to be met because of these constraints, but even so, its scale-up would be exceptional by global standards. The establishment of a regional solar manufacturing sector was another goal of India's programme, however it was not successful. It

attempted to enact a quota system to ensure the use of locally produced panels, but failed after the WTO ruled in favour of a lawsuit launched by the US against such rules. In any case, compared to China, the industry leader, its industrial productivity is far lower. However, India's expansion of renewable energy under challenging conditions provides many invaluable lessons for the rest of the developing world, providing it an opportunity to take the lead on a global scale. India thinks it can offer assistance and knowledge to other developing countries that wish to use solar energy widely, enhancing its reputation both inside the developing world and beyond. This served as a crucial impetus for New Delhi and France to work together to create the ISA (Shidore & Busby, 2019).

ISA is expected to support innovation in the field of renewable energy through initiatives like "Make in India," as well as help India establish itself as a technological powerhouse with the capacity to produce solar panels on its own without relying on imports. The Indian Ministry of External Affairs is expected to assist in "marriage Indian tech and finance skills with certain global objectives" (Bhattacharya, Niranjana, & Purushothaman, 2018).

GEOPOLITICAL SIGNIFICANCE

The following subheadings, which are also the ISA's main objectives, help explain the geopolitical relevance of the ISA. Therefore, when looking at these subheadings, extra attention is paid to the concerns that go along with them and the results so far. Even though the ISA has been in existence for about 7 years, an effort is being made to determine whether or not the organisation is headed in the correct way.

Combating Climate Change

ISA and the United Nations Framework Convention on Climate Change (UNFCCC) inked a commitment to battle climate change at the COP26 meeting in Glasgow. In order to implement mitigation strategies in the energy sector, assist in the implementation of Nationally Determined Contributions, and promote the enactment of Long-term Low Emission Development Strategies, the two institutions will collaborate with the UN Climate Change secretariat on a number of initiatives. Additionally, this will help parties from developing nations, such as SIDS and LDCs, speed the implementation of decarbonization technology and policy options. When signing the agreement, Ajay Mathur emphasised that the fight against climate change "may be made accessible by deploying solar and renewable energy." Therefore, both organisations are willing to collaborate in order to "provide long-term, financially viable, and significant answers." (PTI, 2021b)

The "Towards 1000" initiative seeks to raise \$1 trillion in investments in solar energy technologies by 2030, as well as provide access to electricity for 1,000 million people using clean energy solutions, also governs the ISA. A 1,000 GW solar energy capacity will be installed as a result of this policy. As a consequence, solar emissions would be reduced by 1,000 million tonnes per year. ISA is undoubtedly making efforts to reduce global warming, and given that its energy is pure, these efforts are probably going to be successful in the long term.

Enhancing Energy Supply

In order to considerably fulfil the local population's need for power and raise the level of living of the populace, it is important to capture solar energy and use it for electricity generation. Additionally, it has been noted that since nations that are between the "Tropic of Cancer and Tropic of Capricorn" have access to constant sunlight, it is imperative to take advantage of these resources for the benefit of civilization. The success of this coalition, which was formed during COP21, was questioned when India and France took the initiative to develop alternative energy sources.

The hope of PM Modi about the ISA that it is going to be the "alternative OPEC" is gaining ground as Saudi Arabia also joined it in 2019. Thus it is clear that ISA is expanding itself as "an important platform for equitable production and distribution of energy resources". Solar energy is beneficial in that it may be used locally, as opposed to conventional energy sources like coal, oil, and gas, which must be mined and sent to third countries by pipeline or shipping (Mohapatra, 2019). As most developing countries, like India, enjoy a lot of sunshine yet struggle with a lack of electricity. India's goal is to produce useful power from a part of the solar radiation that it receives. Although the expense of such a change continues to be a major problem. It will take further technical advancement for solar energy to be cost-competitive with coal. The Solar Constancy Problem is another cause for concern since no solar electricity can be produced when the sun is not shining, which might happen at night, during bad weather, or, increasingly in India, when air pollution blocks the sun. Therefore, if energy from the sun is to be accessible even when the sun is not shining or is veiled, power storage technology must be improved. Two significant partnerships, "Mission Innovation" and "Breakthrough Energy Coalition," can bridge this technology gap. The first one concerns the expansion of clean energy research by the governments of 20 countries, while the second one involves 28 investors from the private sector who want to give early-stage, patient funding for the development of clean energy. It is important to highlight that ISA and India may act as a connecting point between the funding promised by the Breakthrough Energy Coalition and the additional research offered by the Mission Innovation nations.

It is crucial that the ISA supports organisations working in similar or adjacent disciplines, like International Renewable Energy Agency (IRENA), to prevent efforts from being duplicated. Focus should be placed on developing investment-worthy projects, and economically successful solar businesses should be urged to support a massive effort to raise up to \$1 trillion for solar energy. It is obvious that such a large sum cannot be generated only from public resources and that only private sector investment can lead to economically viable results. The ISA, in collaboration with Mission Innovation, the Breakthrough Coalition, and the Indian government, might internationalise programmes like the Renewable Energy Investment Program (RE Invest), which is supported by the US government and others. Another such initiative would be a set of solar energy innovation incubators similar to those being considered for the Indian National Institute for Solar Innovation.

Promoting Cooperation

According to Annual Report 2022 of ISA, around 90 countries have signed and ratified the Framework Agreement and 20 countries signed it but not ratified. Taking a number to 110 in total and the important thing about these members is that the advanced countries along with Somalia and Fiji which are not developed are also represented as to ensure global equity (International Solar Alliance, 2022). Apart from the countries certain other organisation are also joining hands in order to make solar energy a viable option across the globe. The World Bank, UNDP and ICAO are such organisation. This is a significant stance, as noted by PM Modi in his speech to the ISA's inaugural Assembly in October 2018; this was a step toward "One World, One Sun, and One Grid." Given that the main goal of the ISA is to assist developing nations, areas like Africa, as well as some portions of Southeast Asia and Latin America, become the focus of India's intended geopolitical advantages.

The ISA's less wealthy nations can band together and negotiate with the oil-rich nations to end their monopoly on oil and gas. This can further assist them in lessening their reliance on West Asian nations for their energy needs and assist them in making significant currency savings. Due to the abundance of solar energy, unstable nations like Afghanistan, Uzbekistan, and Turkmenistan can band together to create an institutional body to harness solar energy. This may encourage the development of a solar-powered alternative electrical energy infrastructure. Within the ISA, efforts in that direction have already begun. An important step in this approach was taken by the Indian Ocean Renewable Ministerial (IORM) conference, which was held in October 2018. Other regional organisations like the Organizational African Union, the Shanghai Cooperation Organization, and the Group of Latin American and Caribbean Countries can work together in a similar manner. The example of India and Bolivia's cooperative collaboration in solar energy shows how trans-regional solar energy cooperation may open the door for equality and a just energy order in the international sphere. Both nations committed to work together to develop lithium batteries during Indian President Ram Nath Kovind's visit to Bolivia. Bolivia also indicated its interest in joining the ISA. Collaboration on solar energy amongst diverse areas has the benefit of giving the idea of the Global South fresh life (Mohapatra, 2019).

Due to the fact that the Democratic Republic of the Congo, which approved the accord, contains 60% of the world's cobalt deposits. Chile, although merely being a signatory, is a member of the "lithium triangle," a group of nations that together have around 54% of the world's lithium deposits. Even though Chile has not yet ratified the ISA accord, collaboration with these mineral-rich ISA nations can lead to significant advancements for solar energy (Bhattacharya, Niranjana, & Purushothaman, 2018).

GLOBAL LEADERSHIP PERSPECTIVES

The ISA is a huge stride forward for India as the organisation expands its presence in the globalised globe and provides answers to two crucial issues facing the modern world, namely, climate change and energy production. Through its domestic solar investment and ISA, India can fundamentally alter how solar energy is applied and solidify its position as the world's solar leader, elevating its status and enhancing its soft power. India will need to translate its soft power into concrete advantages for itself in the international system. Solar energy will overtake other sources of energy as the primary means of producing power in a significant portion of the world by 2030, according to R.K. Singh, Union Minister of New and Renewable Energy (PTI, 2020). As a result, initiatives like distributing LED lights, providing 500 training slots to ISA member countries, and launching a mission to advance solar technology were all positive moves in the right direction (Raghavan, 2018). He said that there are now six programmes and two projects addressing various facets of solar energy under progress. To address the lighting, irrigation, drinking water, and productive energy needs of the ISA member nations, which up to now have been mainly devoid of modern energy services, a substantial pipeline of more than \$5 billion has been built for solar energy applications. Under its different programmes, the ISA has gathered "demand for more than 270,000 solar pumps across 22 countries, more than 1 GW of solar rooftop across 11 countries, and more than 10 GW of solar mini-grids across nine nations" (PTI, 2020).

To get the most out of the ISA, India must make sure that the bulk of its goals are achieved. Although it is insufficient, Indian progress in its domestic solar programme is necessary for this. This will show New Delhi's leadership skills as the main architect of the ISA. It is necessary to internationalise the Indian approach of solar production, which includes strategies to power distribution plant auctions and efforts to promote optimal conditions for rooftop and off-grid distributed solar. India's internal attempts to promote this paradigm would therefore be seen as unilateral action, but its efforts to bring others together under the ISA's auspices to learn about the Indian model of solar production are an example of effective leadership. To be acknowledged as the organization's primary contributor, India would need to showcase its achievements to a larger international audience.

It might be difficult to make a direct connection between certain geopolitical advantages and increasing soft power. India's status as a "global solar powerhouse", however, will likely help it in other circumstances, such as future climate debates or directing the pattern of global green investment flows in its favour. India would want, though, for its status rise to extend to fields other than energy and the environment. As a result, Indian goals at the UN, including securing a permanent representation in the Security Council or establishing a robust global anti-terrorism accord, may have stronger backing from ISA beneficiary countries. There is a danger that other countries, like those in Africa, could regard India's leadership approach as being overly strong, which would undercut its efforts to take the lead and harm its efforts. Relationships between India and Africa have periodically suffered because of this mismatch. The most difficult obstacle to overcome will probably be the one of converting greater standing in one area to other domains. India would need to effectively employ its soft power to achieve this. (Shidore & Busby, 2019).

Concerns over India's position as a global leader in the solar business are specific but very genuine. First off, India hasn't fully embraced the notion that projects ought to guarantee a long-term, reliable income stream that provides significant economic advantages to attract investment. Second, India's steadfast insistence on utilising coal as fuel to construct the majority of its new power plants. Thus, offering solar energy to foreign nations while producing thermal energy at home is scepticism in and of itself, undermining India's credibility. Finally, India's position on protectionist policies for its local solar

businesses undercuts the globalisation of solar development. The budget is plainly protectionist because it raises import duties on industrial solar equipment and componentry (Vickery, 2016).

CONCLUSION

As "the dawn of new hope, not just for clean energy but for communities and houses still in darkness, for mornings and evenings filled with a clear view of the beauty of the sun," ISA represents a new era. Thus, it is evident from the discussion above that the ISA plays a crucial role in cutting CO₂ emissions and expanding the energy supply. The ISA's increased collaboration is also crucial. The success of the ISA is dependent on India's domestic solar programme continuing to advance, which is a required but not sufficient condition for its success.

However, in order for India's big solar bet to succeed in the long run and for the country to take the lead globally, more research, funding, and viable solar projects are needed. Soft power must also be channelled into practical benefits, and Indian efforts in this area must be recognised internationally. In conclusion, it can be said that the ISA will undoubtedly provide fresh momentum to energy and climate diplomacy in the twenty-first century. If solar energy and other renewable types of energy can be utilised more effectively, a just and equitable energy regime may be seen in the near future (Mohapatra, 2019)

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