CHAPTER 4

The Role of International Solar Alliance in Advancing the Energy Transition in Asia

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4.1 Introduction

Globally, investments in renewables-based electricity capacity have beaten fossil fuels consecutively for the past three years. In India renewables have dominated power sector investments since 2015. Since then, much of the power sector investment in India and around the world has been in renewable energy. Yet, investors continue to remain circumspect about renewable energy. Developing countries have a lot of untapped solar and wind energy resources, but their markets are perceived to be risky and challenging.

For more than two decades of climate negotiations, developing countries have been demanding technology and finance for a transition to a low-carbon future. Even after technology costs have fallen, investments in clean technologies are largely bypassing the bulk of developing countries.

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In 2015, at the start of the Paris climate summit, India and France offered an alternative in the form of the International Solar Alliance (ISA). ISA was conceived as a platform to bring together countries with rich solar potential (along with solar innovators, developers, and financiers) to aggregate demand, create a global buyers' market for solar energy, reduce prices, facilitate deployment of existing solar technologies at scale, and promote collaborative solar R&D and capacity.

As the world's newest intergovernmental organisation (ISA became a legal entity on 6 December 2017), so far the ISA has 79 signatories to its Framework Agreement, 57 of which have also ratified the Agreement (International Solar Alliance 2019). At a time, when global collective action on climate change is under threat of backsliding, ISA has the potential to facilitate climate action across the developing world, and particularly in Asia, if it can catalyse innovations in finance, technology and deployment of solar at scale. Building on the lessons that have emerged from previous treaty-based institutions, that have played an important role but have been constrained by their operational structures or political paymasters, the ISA has been designed as a lean, nimble, financially independent entity with responsiveness and support to member countries being its primary objective.

This chapter begins by exploring two themes. First, energy demand and growth in Asia, establishing why the energy transition in fast growing economies in Asia would be central to the global energy transition. Secondly, the premise and the purpose of the ISA, and how its value proposition is contingent on a bias for action since its design is different from that of a traditional intergovernmental institution. In this regard, the ISA has a role in aggregating demand, facilitating technology collaborations, and enabling experiments with new business models or in training and building capacity in Asian countries. Thereafter, the chapter's focus turns to the most difficult challenge facing many emerging economies: How to lower the cost of finance associated with investments in clean energy? In particular, the chapter outlines the design of an innovative financial solution—the Common Risk Mitigation Mechanism—which the ISA has facilitated but which still requires implementation in its true spirit. The chapter ends with specific recommendations for the ISA to demonstrate its value to its member countries.

4.2 What Is Holding Back the Energy Transition in Asia?

There are currently over six billion energy consumers in the developing world whose demand is projected to grow another 30 per cent over the next 15 years, up from 7000 million tonnes of oil equivalent (Mtoe) in 2015 to 9100 Mtoe in 2030 (Benoit 2019). Powered in large part by rapidly expanding economies, specifically industrial growth and rising standards of living, the energy options available to developing countries and the choices they make are issues of global concern.

The growth in energy demand worldwide has been driven by fast-growing developing economies since the early 2000s, especially led by India and China. In 1990, members of the Organisation for Economic Cooperation and Development (OECD) accounted for almost two-thirds of energy demand, with developing countries consuming just one-third. However, energy transition projections for the mid-century shows reversed positions, with non-OECD countries accounting for over two-thirds of the demand.

4.2.1 Asia's Role in Driving Global Energy Demand

Much of this rise in energy demand in concentrated in developing Asian economies (India, China, Vietnam, Thailand, Malaysia and Indonesia), where improving living standards and prosperity will support this rise in consumption demand (BP Energy 2019). Primary demand (Fig. 4.1) in Asia is expected to grow annually at 2.5 per cent until 2035, reaching 7.3 btoe (billion tons of oil equivalent). This will be 42 per cent of global primary energy demand (RECAP Asia 2012). Figure 4.1 showcases the global energy transition highlighting the heightened role that developing economies will play in the energy market.

Currently Asia (including China and India) accounts for more than 41 per cent of global energy demand (Ritchie and Roser 2018a, b). This growth has been driven by the booming economies of China and India, which led to energy demand growth rates of 5.5 per cent and 6 per cent, respectively (RECAP Asia 2012).

Excluding India and China, however, other Asian economies will observe a gradual rise in energy consumption from less than 1 btoe in 1990 to nearly 2 btoe by 2040 (Fig. 4.1). Unlike China, this growth is a lot more gradual than the sudden boom in consumption that China

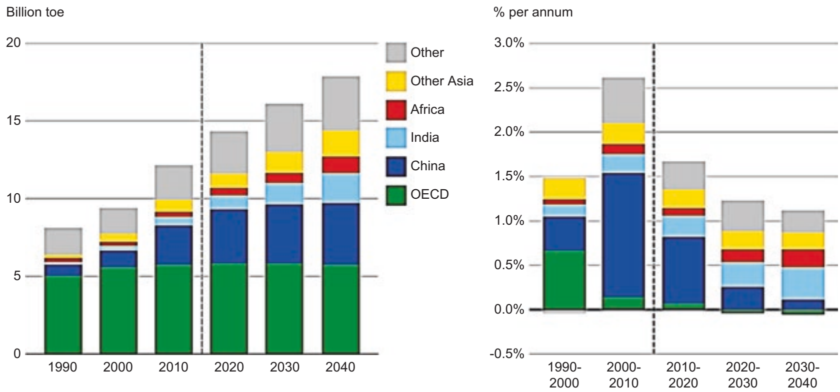

Fig. 4.1 Primary energy consumption by region (left); Primary energy growth and regional contribution (right). (Source: BP Energy (2019). BP Energy Outlook: 2019 Edition. BP PLC. Note: There is a global energy transition underway with developing countries increasing their role as the main market for energy consumption)

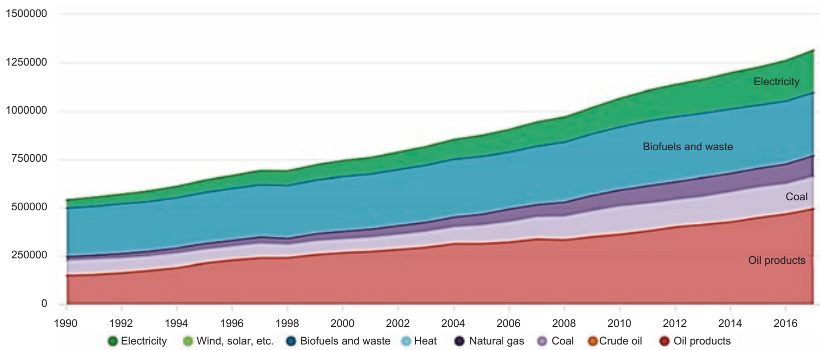

Fig. 4.2 Total final consumption by source for Asia (excluding China) from 1990–2017. (Source: Ritchie and Roser 2018a, b)

observed during 2000–2010. Figure 4.2 shows the total energy consumption for Asia (excluding China) from 1990–2017, highlighting the steady rise in all sources of energy.

Primary energy demand in Southeast Asia grew by 7 per cent during 2000–2016. Fossil fuels dominated the energy mix, accounting for nearly

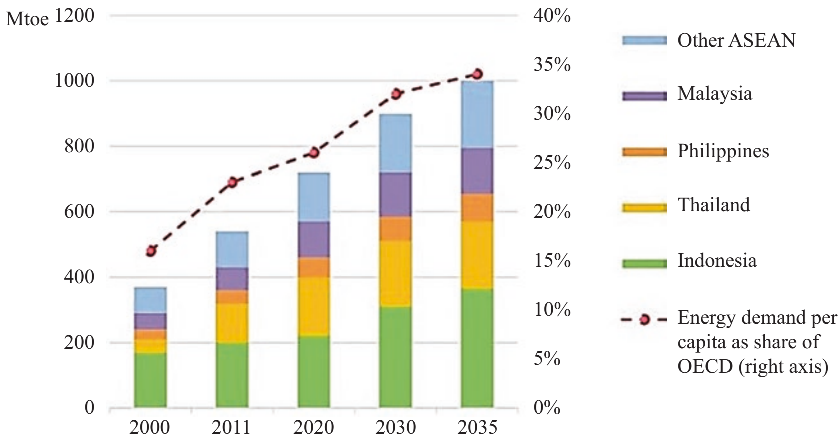

Fig. 4.3 Energy demand for ASEAN countries from 2000–2035. (Source: Ito et al. 2006)

75 per cent of the total share in 2016. Among members of the Association of South East Asian Nations (ASEAN), Indonesia has the highest energy demand, more than 35 per cent of the region's total, followed by Thailand (IEA 2017a, b). Figure 4.3 shows the role of key emerging economies in ASEAN's energy growth. Indonesia, Thailand, Philippines and Malaysia collectively accounted for 87 per cent of the total primary energy demand for ASEAN in 2016, and are projected to have a similar share until 2035.

As has been the case with China and India, ASEAN countries will also see the share of agriculture fall. Meanwhile, rising urbanisation will continue to boost the construction sector. As a result, industrial energy consumption in other non-OECD Asian countries, excluding China and India, is projected to increase by 60 per cent between 2015 and 2040, with demand for natural gas and renewables steadily increasing and demand for coal increasing and then tapering off at about 11–13 per cent by 2030 (Fig. 4.4) (IEA 2017a, b). Total transportation energy consumption among the other non-OECD Asia nations is likely to grow from 7.6 quadrillion Btu in 2012 to 17.0 quadrillion Btu by 2040 (U.S. Energy Information Administration 2016).

With rising living standards in non-OECD countries, there will also be growing need for energy in new segments, such as home appliances, industrial equipment or commercial services. Coal use in residential and

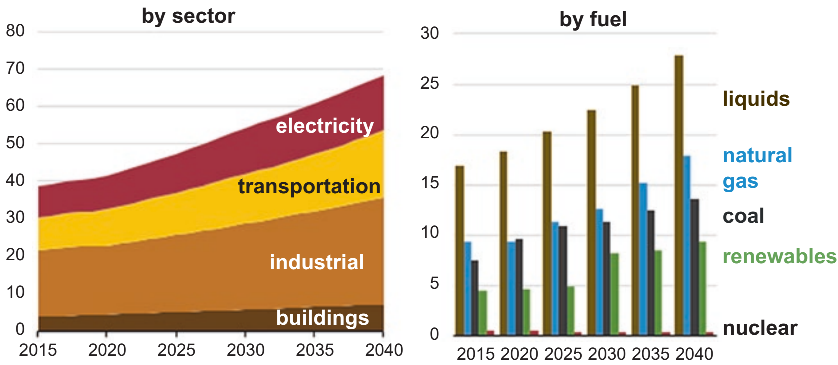

Fig. 4.4 Energy consumption (quadrillion British thermal units) for non-OECD Asia, excluding China and India from 2015–2040. (Source: Energy Information Administration 2017)

commercial sectors remains relatively low, and natural gas will be used more for cooking and heating.

Burgeoning energy demand in Asian economies underscores the opportunity to leapfrog to a cleaner energy mix, rather than having to retrofit legacy infrastructure in fossil fuel-based energy. As Fig. 4.4 shows, energy consumption in the electricity, transportation and buildings sectors will be about the same as for industry. These three sectors lend themselves to a shift to clean energy sooner than heavy industries, where greenhouse emissions are relatively harder (but not impossible) to abate. If Asian countries (not just China and India) shifted to clean energy, a double energy transition would unfold: growing access to modern energy to drive economic growth in emerging economies combined with a greater role for clean energy in driving global energy demand in the first half of the twenty-first century.

4.3 International Solar Alliance's Premise and Promise

In the lead up to the Paris Climate Summit in 2015 it had become clear that earlier approaches to clean energy technology cooperation had not worked. Several climate/energy technology partnerships had been initiated across the world, with many emerging during 2005–2015. Many of these were discussion forums, with a few concentrating on research and policy matters. While targeted technologies formed the basis of some partnerships, others had a geographical approach towards cities and regions. Despite more than 30 initiatives that had been launched, very few extended beyond sharing knowledge and some preliminary R&D activities (Ghosh et al. 2015). There was seldom any actual transfer of technology, nor any explicit mandate to deploy advanced clean technologies.

Moreover, the global energy landscape was dominated by groups of countries, which controlled the supply of energy (Ghosh and Chawla 2018). The Organization of Petroleum Exporting Countries (OPEC) served as the oil cartel. The Nuclear Suppliers Group controlled access to uranium in nuclear power plants. Even coal exports were dominated by just five countries. In contrast the International Energy Agency, while a group of major energy demanding countries, was a club of OECD member states, excluding the major new energy demanders in developing countries, particularly Asia.

ISA was conceived against this background. The countries between the tropics were mostly developing nations, were experiencing or going to experience rapid increase in energy demand, were not part of any major energy demanding group or association, and had high potential for generating solar power thanks to abundant sunshine. Therefore, when the ISA was designed, it had three main aims: To aggregate demand across countries to reduce solar technology costs; to lower the cost of finance for rapid solar deployment of existing technologies; and to pool resources for research and development (R&D) for the next generation of solar and related technologies.

This promise of an aggregated solar energy market excited many countries in Paris in 2015. When India and France proposed this new alliance, 121 countries expressed interest in being part of the grouping. Against the standards of the glacial pace of global diplomacy, ISA charted an accelerated path. By November 2016 its Framework Agreement had been opened for signature and by December 2017 (just two years after being proposed) ISA had enough ratified signatories that it was born as the world's newest intergovernmental organisation. At the ISA Founding Conference in New Delhi on 11 March 2018, senior representatives of 46 countries (including many heads of state) attended along with the senior membership of 10 multilateral development banks.

The ISA also demonstrates an important shift in the geopolitics that will emerge from a global energy transition. India's diplomatic tact and political leadership was clear when it joined hands with France to launch the ISA. India's actions on climate change are currencies for its soft power. It has used shifts in domestic policies, pursued values of equity and justice to manoeuvre in international negotiations, and upended received wisdom on the ability of developing countries to conceptualise and lead international institutions (Ghosh 2016). These are significant examples of soft power, in principle and in practice; with the writing on the wall—the geopolitics resulting from an emerging energy world will be more dissipated, with several countries playing a role, rather the highly polarised energy markets of the present. With enhanced energy security and energy independence, the levers in play will be controlled by demand groups more than by supply groups, putting emerging economies that are the growing demand centres of energy at the heart of the energy markets of the future.

The Government of India has supported the ISA since inception, allocating 5 acres of land for the construction of its headquarters, and an additional USD 27 million (INR 175 crore) for building infrastructure, creating a corpus, and supporting the costs of the ISA Secretariat for the first five years. The Government of France has also committed EUR 700 million to support the ISA and its activities in member countries.

The ISA is governed by its Assembly, comprising all member countries. It is a member-driven organisation and its activities are divided into work programmes, approved annually by the Assembly. In order to encourage cooperation between countries, any ISA work programme requires at least two-member states to jointly propose it, while allowing for any other member to voluntarily join the programme. This arrangement allows for only those programmes to be launched in which several countries find common interest and avoids the pitfall of any one country dominating the agenda. Any ISA programme should be ultimately respectful of national sovereignty, applicable in various regulatory environments, and yield maximum returns on limited amounts of public funds.

A number of work programmes have been launched since 2016. These include: scaling solar applications for agricultural use; mobilising affordable finance at scale; scaling solar mini-grids; scaling solar rooftops; and scaling solar e-mobility and storage.

But the ISA is also expected to be an action-oriented organisation. Therefore, any work programme is only as good as the actions it catalyses and the investments it is able to attract. This means that the ISA has to act in collaboration with other stakeholders. It has a small Secretariat, whose role is intended to be to bring together the right set of actors (from industry, financial institutions and civil society) to ensure that the objectives of any work programme are fulfilled. A lean ISA Secretariat will be effective only if it is strong in diplomacy, clear in its communications, and inspires confidence by the mastery of content related to solar technologies, policies, finance and markets.

4.3.1 Building Demand and Stimulating R&D

Four ideas could demonstrate how ISA can deliver on its promise of being an action-oriented organisation.

First, creating credible demand. In principle, if solar-rich but capital-poor developing countries aggregated plans for solar power, a big global market would emerge. ISA could work with its members towards a coordinated tender for large-scale solar deployment. For instance, one of its programmes plans to deploy 500,000 solar irrigation pumps, amounting to as much as 2500 megawatts of capacity.

But ISA is not a power utility. It cannot sign power purchase agreements. Technology suppliers and project developers do not respond to political announcements as well as they do to enforceable contracts. For a synchronised pumps programme to be credible, it has to be backed by business and financial models that generate maximum returns on investment.

ISA should bring together policymakers, rural enterprises, pump manufacturers, and commercial lenders to respond to this call for products and services for scaling solar applications in agriculture. In work done by the ISA secretariat in recent months, it has worked closely to facilitate a global tender that aggregates demand from all ISA member countries, in order to drive down prices for the collective demand pipeline. In the next phase, it would be valuable to work with individual member countries to streamline contracts such that contracts across countries are bankable, and standardised to some extent so as to reflect similar clauses. This will be critical to addressing the challenge of high cost of due diligence of these individual country level contracts. If unaddressed, the transaction cost of evaluating these contracts could undo the cost advantages discovered through aggregation.

Secondly, facilitating targeted innovation. Developing countries cannot afford to invest vast sums in solar R&D. Pooling resources, in cash and kind, makes eminent sense, but for what purpose? Targeted innovation is needed for technology challenges specific to developing countries. These include: efficiency of solar cells in dusty environments; solar applications in income generating activities in the rural economy; renewables for small and medium industries; sturdy batteries for rough ambient conditions.

But ISA is not a technology laboratory. It should, instead, design targeted and time-bound innovation prizes for the developing world. For each research area, ISA must define specific parameters. For instance, the ISA could coordinate with the G20, OECD, major Asian powers and other emerging economies in the ASEAN region to launch a multi-billion-dollar five-year programme for R&D in energy and other low-carbon technologies (Ghosh et al. 2019). Such a multi-institutional approach should have specified timelines, objects and metrics to measure progress, such as (a) efficient solar cells; (b) reducing the cost of production of solar modules; and (c) energy storage solutions for large-scale and decentralised energy projects.

For this programme to succeed, participating entities would have to necessarily include commercial enterprises. It would be co-financed by partnering ISA member countries up to 49 per cent with private enterprises contributing the remainder. For cash-strapped developing countries, contributions in kind (laboratory facilities and research personnel) should be permitted. Any technology resulting from the collaboration would have jointly owned intellectual property. Advanced market commitments from governments to procure new products that meet specified parameters would give an added incentive for private investment to invest in R&D and manufacturing facilities at scale, to bring down the costs of emerging technologies.

Thirdly, ISA has a role in promoting new business models in distributed solar energy in Asian economies. For rapidly urbanising Asian countries, energy demand in residential buildings, commercial enterprises and transportation networks will grow. Distributed generation of energy reduces the need to build additional capacity, reduces transmission and distribution losses for electricity utilities, allows for new business lines to be created utilities, and enables the integration of rooftop power and charging of electric vehicles (Kuldeep et al. 2018). New business models for rooftop solar are being developed in India, Indonesia, Singapore, Thailand and other Asian economies. These business models allow for deployment even when roof space is limited for individual households or where their credit histories make it hard for them to access capital.

In rural areas, distributed solar energy can support income generating activities. Examples include solar-based irrigation, food processing units, milk chilling plants, cold storages, small manufacturing such as textiles, and so forth. India, alone, has a market of more than USD 50 billion in using distributed renewables in farm and non-farm activities in rural areas (Waray et al. 2018).

ISA could catalyse these business models and technologies for distributed solar power by creating a cross-learning platform, supporting business delegation visits and investor meets in different Asian countries, and helping to create a warehousing facility to aggregate demand for distributed generation projects across many geographies.

Fourthly, ISA can support technical capacity building of energy and finance officials in Asian economies. As discussed earlier, many of these countries are experiencing rapid energy growth but have legacy infrastructure embedded in fossil fuels. They require training in clean energy technologies and opportunities. Moreover, officials in finance ministries are more conservative and wary of infrastructure investments in renewables when there is a risk of stranded fossil fuel assets. Training on how to manage the energy transition, how to finance renewable energy infrastructure, how to aggregated demand and offer portfolios of projects, or how to create solar parks are among the topics for which there is likely to be significant interest in many Asian economies. ISA should facilitate such training programmes drawing on the expertise in think-tanks working in the region with a knowledge of technologies, regulatory frameworks, and business conditions in many countries.

4.4 The Real Barrier: Cost of Finance

In 2018, global energy investment stabilised at more than USD 1.8 trillion (IEA 2019) and power sector investments exceeded those in oil and gas. The road to decarbonisation starts with greater electrification. Moreover, investment in low-carbon energy, both in supply and demand side measures, amounted to a third of total investment at USD 620 billion (IEA 2019). Nearly half of clean energy investment came from investments in renewable energy (BNEF 2019), with investments in electricity grids, energy efficiency, battery storage, etc. contributing the rest. And the amount invested in renewable power capacity globally in 2018 (USD 289 billion) was three times as much as the investment in coal- and gas-fired power generation capacity (BNEF 2019).

This good news is shrouded by the fact that low-carbon investment needs to ramp up significantly—by 250 per cent by 2030—if the goals enshrined in the Paris Agreement have to be met (IPCC 2018). But mobilising of large volumes of capital that can be invested in deploying or developing low-carbon energy solutions has proven to be the main stumbling block to the energy transition in emerging economies.

There is no dearth of capital. Estimates based on publicly available data suggest that there is nearly USD 250 trillion of commercial capital (Hewlett Foundation 2017) available globally in five primary capital pools: Asset Owners; Retail Bank Deposits; Development Finance Institutions (DFI) and Multilateral Development Banks (MDB); Private Equity; and Venture Capital. More than USD 200 trillion worth of assets are under management in the world's pension funds, insurance firms and sovereign wealth funds. But the capital is not flowing to where it is needed the most.

4.4.1 Availability and Affordability of Capital

Energy investment and income levels are highly correlated. High-income countries, home to just over 15 per cent of the world's population but where energy demand is not growing much, got more than 40 per cent of energy investment in 2018. Lower-middle and low-income countries, which account for 40 per cent of the world's population and where energy deficits are huge, received less than 15 per cent of energy investment (Chawla and Ghosh 2019).

To be sure, some large emerging economies do receive a lot of renewable investments. Excluding large hydropower, out of USD 2.6 trillion invested globally during 2010–2019, only China, India, Brazil, Mexico and South Africa had investments of more than USD 20 billion over the entire decade (UN Environment, Frankfurt School and BNEF 2019). Further, since 2010 the total number of emerging markets recording investments in excess of USD 100 million in any one year has stagnated at 27 countries annually (BNEF Climatescope 2018).

China is the clear leader, accounting for 31 per cent of global renewable energy investment. Other regions have also seen steep expansions. For instance, renewable energy capacity in the Middle East and Africa increased from 3 gigawatt (GW) to 45 GW between 2010 and 2019. In 2018, developing economies invested more in renewables than developed countries, skewed due to the large investments being made in renewables in China and India. Barring investments in the two Asian giants, investments in other developing economies stood at a record USD 47.5 billion, higher than previous years but a small share of the total of USD 272.9 billion invested in 2018.

The concentration of absolute investments in a few economies is not the only challenge. Compounding this is the limited amount of foreign capital available even in the leading developing countries. The share of foreign capital in renewable asset financing in China, Brazil or India is well below that in developed countries like Canada, United Kingdom or United States.

Despite deepening energy markets in Asian countries, many investors remain wary of investing in renewable energy in developing countries. Technology costs are no longer a barrier to the energy transition in developing countries. In 2017, tariffs for solar and wind fell to record lows. A project in Saudi Arabia invited a bid of just 1.78 cents/kilowatt-hour (¢/kWh). The price of onshore wind fell to 1.86 ¢/kWh in Mexico. In India, solar and wind tariffs reached 3.8 and 4.1 cents per unit, respectively. But prices will not fall further if several risks are not mitigated.

The determinants of renewable energy tariffs include land, equipment-related factors and financing costs (costs of debt and equity). And the financing costs account for the largest component—between 50 and 65 per cent—of current renewable energy tariffs in India (Chawla, Aggarwal, and Dutt 2020). This share is even higher in other developing countries where the risk premium is higher.

In other words, the real reason for lower foreign investment is the cost of finance i.e. return on equity and debt servicing. Whereas it accounted for about 50 per cent for bids in Dubai, for instance, it was 66 per cent in the lowest solar bid India has achieved. Cost of capital for solar projects in India is at times twice as much, in dollar value, as the cost of finance for projects in the Middle East.

This poses a twin challenge for renewable energy markets in emerging economies: renewable energy projects face both an availability and an affordability constraint. Several investors, especially those with limited risk appetites such as institutional investors, do not even consider investing in most developing economies. Capital that is willing to move into these markets is often priced at prohibitively high rates thanks to the combination of real and perceived risks. Lack of low-cost finance is now the main barrier to rapid deployment of solar technologies.

4.4.2 Real Versus Perceived Risks

Why do many emerging economies in Asia face high cost of finance for renewable energy projects? Some real risks are unique to the sector itself, such as technology risk or integration of infirm power supply into the grid without destabilising the grid. Other risks are economy-wide, such as currency fluctuation risk, counterparty risk, policy and political risk, etc.

However, there is a third risk category that is playing spoilsport for clean energy markets in emerging economies: the perception of risk. Specifically, in the case of renewables, there is often a delta between perceived risk and actual recorded risk. Left unmitigated, this delta deters investment. The delta exists because of a paucity of adequate data on actual ground realities, resulting in a lack of coherence among various stakeholders in clean energy markets.

Take India as an example. Renewable energy is no longer a fringe player in India's electricity system. More than 80 gigawatts (GW) have been installed and India is making progress (albeit haltingly) towards its target of 175 GW of renewable energy capacity by 2022. With variable renewables expected to contribute as much as 20 per cent of generation capacity by 2022 (much higher shares if all renewable energy sources, including large hydropower, were considered), there is a growing need to better understand the project-level performance of renewable energy assets and identify impediments that can retard progress. Continuous tracking of the sector and a strong data regime would be central for energy planning in the future, as well as for cost-effective monitoring and management of the grid. This would help to reduce information asymmetries regarding renewable energy, and support better decision-making by system operators, policymakers, project developers, and investors.

Information asymmetry can be bridged, with dedicated efforts to monitor market activity and increase transparency. Recent analysis indicates rising levels of market consolidation in the Indian renewable energy sector (Chawla et al. 2018). Firms with access to financing on favourable terms dominated solar photovoltaic and wind auctions in 2018. The top 10 developers in the solar and wind sectors accounted for over 80 per cent of the capacity awarded. This kind of information helps both existing and potential investors.

Further, growing familiarity with renewables has also boosted confidence among lenders, resulting in a decline in interest rate spreads over benchmark bank lending rates for both wind and solar PV by 75–125 basis points during 2014–2018 (Dutt et al. 2019a, b). The reduction in interest rate spreads, coupled with improved bankability of projects, and improved debt-to-equity ratios for solar PV (80:20), and wind energy (75:25), is a significant contributor to rapidly reducing renewable energy tariffs in India to among the lowest in the world.

Tracking on-ground activity shines a light on the effectiveness of government actions to make it easy to do business. The risks of land acquisition, access to evacuation infrastructure, and licenses etc. have reduced thanks to solar parks. In 2017, 54 per cent of total capacity added was in solar parks, driving down tariffs and attracting international power producers. The share dropped to 24 per cent in 2018 due to a slowdown in solar park development, although absolute capacity awarded at solar parks remained largely unchanged.

Without this kind of market information, perceived risks will tend to dominate real risks on the ground, holding back investments in clean energy sectors. But even in India, despite rapid progress in renewables since 2010, information barriers persist. For other emerging economies in Asia, where the renewable energy sector is less developed, these perception-based risks are even greater.

4.4.3 But Investors Also Perceive Risks Beyond the Projects

Some risks are inherent to project development. Transmission uncertainties are major risks for RE projects. Once upfront capital costs have been incurred, the power generated must be sold, without payment delay or default, in order to avoid recurring losses. The technical capacity of the grid to absorb renewable power is critical. Even with plans to install transmission infrastructure, RE capacity gets installed faster, increasing the risk of curtailment of power procured thanks to technical reasons.

Further, delays in land acquisition add to construction and commissioning risks, adding to the cost of finance. The difficulty of securing large, contiguous tracts of land has made developers intentionally scale down projects.

But there are other risks, well beyond the control of individual project developers. The most significant is offtaker risk, resulting in delayed payments or altogether default in payments. Project developers find it harder to predict curtailment when the financial health of distribution companies is at play. The power purchase agreements (PPAs) might oblige distribution companies to offtake power, but enforcement of contract varies from country to country and from province to province.

A second major non-project risk is associated with foreign exchange. If a developing country has a currency whose value fluctuates frequently, the burden of debt denominated in foreign currency could greatly increase with currency devaluation. Moreover, many developing countries also have the risk of currency inconvertibility, which makes foreign investors wary of locking in their money in jurisdictions from which they cannot withdraw easily.

A third major systemic risk is political and policy uncertainty. Much premium is still placed on the political commitment to renewable energy and the overall low-carbon transition. If political support dissipates, or is perceived as uncertain, investors hold back from making long-term investments.

This problem is especially true in countries where the complex political economy of the power sector makes investments in clean energy prohibitive. Indonesia is a good example (Dutt et al. 2019a, b). Despite having considerable solar and wind power generation potential, 208 GW and 61 GW respectively, and both latent unmet energy demand as well as growing demand on some islands, renewable energy sources remain largely untapped. Solar and wind tariffs realised in other countries are much lower than Indonesia's average generation costs of US cents 7.66/kWh. These compare unfavourably against US cents 4/kWh in India and with lowest tariffs achieved globally standing at US cents 2/kWh and US cents 3/kWh for solar and wind, respectively.

There is recognition of this opportunity that renewable energy presents, with Indonesia's National Energy Policy (NEP) 2014 targeting at least 23 per cent of new and renewable energy (NRE)[1] in the energy mix by 2025. The Indonesian electricity utility PLN (which is a vertically integrated behemoth) also targets 23 per cent renewable energy in the electricity generation mix by 2025, and a planned renewable energy capacity addition of 16.7 GW over the period 2019–2028. However, planned solar and wind capacity addition over the 2019–2028 period so far stands at a meagre 908 MW and 855 MW respectively (PLN, RUPTL 2019–2028, 2019).

Multiple interests and the complex governing mechanisms have resulted in heightened risks for investors, thereby constraining the growth of

[1] This includes hydro, geothermal, solar, wind, biomass and other renewable sources.

renewable energy investments in Indonesia. These include: uncertainty over a pipeline of projects, regulatory provisions impacting project viability and bankability, transmission related risks, challenges in land allotment and acquisition, and absence of strong and clear policy ambition for variable renewable energy.

4.5 ISA's Role in Reducing the Cost of Finance

The non-project risks are where the role of the ISA becomes particularly important. Institutional investors remain wary of high-risk renewable energy projects in poor countries. ISA is not a multilateral bank. Its role would be best demonstrated if it facilitated market-ready financial instruments, which crowded in large volumes of private investment. ISA members should politically signal their readiness to work with existing public and private institutions (Chawla 2018). Together they could build a platform that works as an efficient clearing house for portfolios of pooled projects.

4.5.1 Common Risk Mitigation Mechanism

Whereas renewable energy investments need large upfront capital, have long payback periods, and create assets that last a long time. These factors build in an inherent conservatism among investors. The modest credit ratings of most renewable energy projects make it harder for them to attract such investment.

The trouble is that existing options to hedge against risks are either narrow in scope or too expensive. An alternative route is possible. This is to combine various types of risks and spread them across several countries. The premise is that a multi-risk and multi-country approach reduces the exposure for any single country, investor or project developer. At least three such categories of risks—offtaker risk, currency risk, and political risk—could be handled through a single facility, the Common Risk Mitigation Mechanism (CRMM).

On 18 May 2017, the governments of Argentina, Australia, Brazil, Burkina Faso, Cameroon, Chad, France, India, Ivory Coast, Mali, Namibia, Niger, Nigeria, Senegal, Seychelles, Uganda and Yemen (all of which are now members of ISA) gave the mandate to a taskforce of institutions to develop and design a mechanism, which could help to de-risk solar energy investments. The taskforce comprised the Council on Energy, Environment and Water (CEEW), the Currency Exchange Fund (TCX), the Terawatt Initiative (TWI), and the Confederation of Indian Industry (CII).

The taskforce conducted extensive consultations in New Delhi, Abu Dhabi, Paris, New York, Buenos Aires, etc. The range of stakeholders included solar developers, private capital markets, insurers and re-insurers, and development finance institutions (DFIs). Dedicated briefings were given to government officials, in Paris and Delhi—and to diplomatic representatives in those cities. The taskforce, then, presented its study at the Twenty-third Conference of the Parties to the UN Framework Convention on Climate Change (COP 23) in Bonn in November 2017.

Discussions continued between ISA member countries and relevant stakeholders and a pilot version was announced on the occasion of the ISA Summit held in New Delhi on 11 March 2018. The pilot would use the CRMM as a means to leverage public funds, underwrite risks across countries, and crowd in private capital investment by a multiple of at least 15 times.

4.5.2 Need for a Platform

The Common Risk Mitigation Mechanism (CRMM) is designed as a solar project insurance scheme for members of the ISA. Its main idea is to offer countries with rich solar potential a voluntary option to participate in a joint instrument, which would hold the promise of faster and cheaper capital in larger volumes. This joint approach could begin with an instalment of 15 GW of solar capacity, deployed over five years across 20 countries. This would translate to channelling and de-risking about USD 10 billion of senior debt into these countries. Given the growing demand for energy in Asia, the CRMM could act as the trigger to make the adoption of solar solutions to meet this demand significantly more attractive for investors, industry, and counterparties alike in these markets.

If the initiative were driven by ISA, the accelerated route would have the following components:

– A digital platform, whose role would be to pool demand but also create a marketplace or clearinghouse to match investors, project developers and insurers, and create competition among them to secure the best deals.

- A common guarantee, which would be necessary to lower the risks, which have not been removed altogether.
- A common regulatory and contractual framework, so that market participants would have lower transaction costs in identifying, evaluating and closing deals.

The common guarantee, in turn, would also have an instrument to transfer risks, necessary to offer dedicated swaps and guarantees against a listing of the main risks. The entity offering the guarantee would have very low capital requirements if it managed to transfer a substantial portion of the subscribed risk to risk hedging instruments already being offered by various multilateral and regional development banks (including World Bank Group, European Investment Bank, European Bank for Reconstruction and Development, Inter-American Development Bank, Asian Development Bank), or development finance institutions (such as Agence Française de Développement, KfW, Netherlands Development Finance Company, CDC Group, and Overseas Private Investment Corporation), and even to public-private or private insurance and re-insurance entities (TCX, GuarantCo, ATI, AXA, etc.). In fact, the extant measures to de-risk investments could now have a longer pipeline of solar projects in more diverse markets and would be provided with bundled risk packages that are more easily manageable.

4.5.3 How Would ISA Members Benefit?

ISA member countries could benefit from such a mechanism in at least five ways.

First, risk mitigation. Solar projects in developing countries would have access to a 'one stop shop' guarantee mechanism at an affordable price, through competition between insurers. This would further bring down the price of solar electricity, as risks relating to delay in payments or foreign currency fluctuations are removed.

Secondly, foreign investment. CRMM-insured projects would have a rating of AA and above (investment grade globally). This would attract foreign investment, including institutional investment from low-cost sources of capital such as pension funds, sovereign funds, etc. This would further drive down the cost of solar electricity, as the cost of finance continues to account for at least two-thirds of the per-unit cost of solar electricity.

Thirdly, new consolidated markets. The CRMM would leverage public money, which if used to underwrite risks could lower the cost of private finance, and increase the quantity of capital accessible to developing countries. In short, it would create a large aggregated global market for solar projects, especially where the potential is the greatest. This would enable project developers to take build on their lessons in their home country and access new markets and expand their business footprint in other ISA countries. The CRMM would allow them to be covered against non-project risks in these overseas markets.

Fourthly, NDC commitments. In 2018 pressure began to mount on countries to ratchet up their climate commitments, as stated in their Nationally Determined Contributions. The ripple effect of scaling up solar in ISA member countries, aided by CRMM, could help many developing countries present a strong case against the mounting pressure. Despite very limited climate finance made available to them, they would have demonstrated real action on the ground.

Fifthly, climate leadership. With the exit of the United States from the Paris Agreement on Climate Change, a seat has opened up at the global head table on climate change. India with its domestic action and ambition in renewable energy is well placed to take that seat. Through the CRMM, and as a potential key backer of the initiative, India could share its lessons on solar energy with other developing countries, and make a larger impact. Other developing countries could contribute to this effort and showcase their climate leadership as well.

4.5.4 How Would ISA Benefit?

For an institution in infancy, established not to mimic other energy-related institutions, a successful CRMM pilot, which mobilises private capital into markets that are found wanting for investments at scale, would yield tremendous returns in the form of creating value for.

First, signalling action. ISA's unique value proposition is its focus on being an action-oriented organisation. As a market instrument that could mobilise finance for solar deployment, the CRMM could support ISA in signalling its commitment to practical solutions, with the potential to transform markets. This would give ISA an early win, and establish ISA as an institution of great value.

Second, responsive to member states. The CRMM would respond directly to the objectives identified by ISA member states. The CRMM responds directly to the current needs of countries struggling to harness their solar resource due to limited availability of affordable finance. In the process, CRMM also supports the development of harmonised solar markets in participating countries.

Third, collaboration with the private sector. A noteworthy feature of the ISA is its commitment to engage with the private sector to increase the development and deployment of solar in member countries. The CRMM would create a marketplace for existing and new private and public insurers to access new and consolidated bundles of solar projects. Further, it would also facilitate the creation of new markets for solar developers in countries with abundant solar potential.

Fourth, expanding membership. Through the CRMM, the ISA could successfully support countries in accessing new and affordable finance for solar projects, and develop an integrated global solar market. As a result, more countries would see the benefits of being associated with the ISA. This could support the ISA's endeavours in expanding its membership base and achieving its broader vision.

Implementing the CRMM pilot would require:

- The capitalisation of a guarantee entity up to USD 1 billion in cash and sovereign guarantees. This amount would have to be pooled together from international sources including the Green Climate Fund and other DFIs. Furthermore, those countries that seek to take advantage of the de-risking facility could contribute to the guarantee entity via mutual capital deposits but only in proportion of their target volumes.
- Five years of funding for the first phase of the digital platform, which would have to aggregate demand as well as the guarantees. The platform could be financed by private capital, impact investors and strategic philanthropies.

For the expansion and transition in the energy system of countries across Asia, policymakers and markets need to turn their attention to the financing of renewables, rather than merely celebrate the lower costs of solar panels and wind turbines. The CRMM, as conceptualised, could offer a way out and could, in the long run, create a sustainable solar market, which would be less and less reliant on public investment. The sun would, indeed, shine more brightly if the risks don't cloud it.

4.6 Recommendations and Conclusion

The key recommendations are:

4.6.1 Implement a De-risking Facility

Solar projects get unfavourable risk ratings when they face political instability, or electricity utilities with weak balance sheets, cannot resort to legal adjudication easily, and fluctuating exchange rates. For CRMM to function effectively and offer lower premiums for members, ISA must support member countries to develop robust policies and regulations, build strong dispute resolution mechanisms, and reduce policy uncertainty. ISA should demonstrate the potential by facilitating de-risked investment into a major solar project in a member state.

4.6.2 Design Solar Irrigation Programmes for At Least Five Member Countries

India's experience of driving down prices of solar pumps by offering a large aggregated market to manufacturers has lessons for ISA member countries. ISA would need to create a global marketplace, synchronise procurement, and recognise opportunities in extended manufacturing value chains. Thus far, it has asked member countries to outline their demand for such technologies. But this is not an accurate approach as the real demand can only be estimated after examining available finances, the appropriate applications for different kinds of agricultural activities, and the impact on the power sector overall. Support on this estimation and aggregation could add significant value to the member countries.

4.6.3 Develop a Model Rooftop-Solar-cum-e-Mobility Initiative

Rooftop solar combined with charging stations for electric vehicles create new business opportunities for cash-strapped power utilities. ISA can facilitate a coalition in two- or three-member countries to design and pilot such projects.

4.6.4 Productive Mini-grid Investment Facility for Small Island States

The viability of mini-grids and distributed solar is greater when linked to productive, income-generating activities. ISA could design and pilot a dedicated facility for small island member states to attract distributed solar investment into tourism, handicrafts and food processing industries in such countries.

4.6.5 Consistently Assess Progress Against Work Programmes

In order to do so, ISA must have three priorities cutting across all programmes. First, it must be able to lend assistance to member countries to design policy and set targets based on evidence. Secondly, it should be in the lead in establishing a global marketplace, whereby member countries (thanks to their aggregate demand and economies of scale) would be able to bring down prices. Thirdly, ISA can support the financial community and entrepreneurs by building their capacity, in understanding the technologies, the deployment opportunities and the differing market conditions in member countries.

The reputation of a results-oriented institution hinges not only on what it claims to be but also on what it is not. It need not replicate what other institutions do. In fulfilling niche but strategic roles, ISA must work closely with industry, investors and civil society. This is a tall order for any international organisation. As a nimble young entrant on the international block, ISA could chart a new course (Chawla 2018).

Business is combination of realism and sentiment. Bridging gaps between perception and reality can bring the two fuels in an economy—energy and finance—closer. This is necessary to lower the chances of investor sentiment swinging wildly between exuberance and vapidity. This is also necessary to ensure that policymakers make evidence-based decisions rather than keep developers on tenterhooks. The energy transition in Asia is already underway, and continuing. The ISA could play a pivotal role in accelerating its pace.

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