



SOUTH ASIA REGIONAL ENERGY PARTNERSHIP (SAREP)

ROUNDTABLE DISCUSSION PROCEEDINGS HELD
ON OCTOBER 22, 2021

'FINANCING CLEAN ENERGY AND SMART METER
ROLLOUT'

INTRODUCTION

South Asia is amongst the fastest growing regions in the world and is projected to require \$1.1 trillion worth of investments over the next 20 years. India has already announced its plans to become a \$5 trillion economy by 2025. The Government of India has announced the GatiShakti plan recently, envisaging an investment of \$1.5 trillion in infrastructure.

Rapid economic development will mean significant increase in energy consumption and necessitates setting up of new capacities. South Asia needs to transition its energy systems to modern and clean energy sources, given the forecast of burgeoning energy demand in the near future and the region's vulnerability to climate change. India has taken lead in transitioning to clean power sources and has pledged to install 500 GW of renewable energy (RE) capacity by 2030 at the COP26 Climate Summit being held at Glasgow.

To achieve this ambition, India will need to add 25 to 35 GW of RE capacity every year compared with average annual capacity deployment of 8-10 GW each over the past 5-7 years. This will require investment of more than \$500 bn over the next 10 years. Of this, approximately \$300 bn would be required towards RE capacity, \$50 bn for firming the grid, and \$150 bn towards expanding and modernizing transmission.

While the current policy framework has enabled reaching the 100-GW RE capacity mark, the new targets for 2030 need further reinforcing of that support, especially in terms of capital deployment. Further refining of public private partnership (PPP) policies, building institutional capacity, lowering the cost of capital, encouraging novel financing instruments and frameworks, and development of new business models are the areas that can go a long way in creating the right investment climate India's green goals need.

USAID's South Asia Regional Energy Partnership (SAREP) program organised a roundtable and stakeholder discussion on October 22, 2021 titled 'Financing Clean Energy and Smart Meter Rollout' to discuss potential options for financing India's ambitious renewable energy targets over the next decade.

The workshop discussed the decarbonisation plans of large organisations as well as potential funding options for them and smart meter rollout. There were ten speakers and over 40 participants at this high-level consultation, which was divided into the following sessions:

1. Clean Energy Roadmaps and Strategy – This segment discussed the decarbonisation and net zero plans of Indian railways and NTPC, who shared their goals and the associated challenges
2. Recent Experience with Emerging Financing Instruments – This segment shared experiences of private sector entities-- ReNew Power, Virescent Infrastructure and Azure Power – with novel financing structures and instruments such as special purpose acquisition company (SPAC), infrastructure investment trusts (InvITs) and green bonds. The respective roles of these financial instruments in augmenting existing capital to support decarbonisation/net zero goals going forward was also discussed.
3. Financing Smart Meters to Enable Clean Energy Transition – This was divided into two sub-sessions:
 - a. Smart meter programme of Government of India – Implementing agencies, Power Finance Corporation (PFC) and Rural Electrification Corporation (REC), discussed

targets and funding requirements for the Government of India's smart meter programme

- b. Potential Interventions by Development Finance Institutions (DFIs) – The World Bank, the Asian Development Bank and the US International Development Finance Corporation were participants who discussed programmes/schemes that could support smart meter roll-out in India

PROCEEDINGS OF THE ROUNDTABLE DISCUSSION ON 'FINANCING CLEAN ENERGY AND SMART METER ROLLOUT'

SESSION I: Clean Energy Roadmaps and Strategy

Hon'ble Prime Minister of India while participating in the recently held Climate Change Summit at Glasgow announced India's commitment of becoming a Net Zero economy by 2070. Some of the other national climate change commitments that were announced at this Summit include:

- RE capacity to reach 500 GW by 2030
- 50% of energy with RE by 2030
- Reduction in carbon emissions by one billion tonnes from now to 2030
- Reduction in carbon intensity of its economy to less than 45% by 2030

In November 2020, a set of 24 key industry captains committed to a Voluntary Declaration of the Private Sector on Climate Change with an intent to work with the government on initiatives towards climate change mitigation and sustainable development. Some companies such as the Reliance Industries have announced ambition to achieve carbon neutrality by 2035. Public sector enterprises such as the Indian Railways have committed to decarbonize its operations by 2030 and deploy 20 GW of solar power. Likewise, NTPC, India's largest thermal power generator, has committed to 60 GW of RE by 2032 and 10% reduction in its energy intensity.

Indian Railways and NTPC were the participants in this segment. Their discussion highlighted that a decarbonization plan is a starting point, which requires a sizeable investment roadmap. This requires not only a robust business plan but also identification of the right partners to be able to execute it. While both the participants were public sector entities, one is associated with power generation and the other is a consumer, hence, the paths to be followed for decarbonisation are very distinct. Describing the scale of decarbonization to be undertaken, the Indian Railways shared that in a business as usual (BAU) scenario, the organization is estimated to emit 60 million tons of carbon dioxide (CO₂) by financial year 2030, from 23.2 million tons in fiscal 2020. In addition, the energy consumption is expected to become 3.5 times of current levels. Indian railways identified the need to 'green' its large growth requirements with plans to become net zero by 2030, the roadmap for which rests on four main pillars:

1. Shift from diesel to electric traction (Track electrification)
2. Reduction in energy consumption through regenerative braking and head-on generation
3. Adopting carbon neutral/low carbon sources through installation of renewable energy (RE)
4. Carbon capture to sequester/offset emissions through afforestation

As part of the above plan, Indian Railways expects shifting 97% of its traffic to electric traction by 2029-2030 which will result into reduced diesel locomotives from 40% currently to under 4% by then. For greening its operations, the organization's estimated requirement is projected at 30 GW of renewable energy installation by 2030 and it has planned to float RE project tenders for 16 GW by the year 2024-25.

NTPC stressed the case for new opportunities in clean energy, identifying green hydrogen as the most important business opportunity for the country. NTPC has also announced goals of reaching installed RE capacity of 60 GW by 2030 and reduction of 10% in its emissions. Out of this 60 GW capacity, NTPC plans to use over 10% or more for the production of green hydrogen. The company is looking at several pilots to build its green hydrogen business. It is contemplating a pilot on hydrogen mobility using green methanol, hydrogen microgrids and supply towards production of green ammonia for industrial use, among others. In addition, NTPC expects its intervention in battery energy systems to play a significant role in India's clean energy transition once cost of the technology falls further. NTPC will not set up any greenfield coal power projects in future.

According to NTPC, the rapidly falling cost of renewable energy is now emerging as a challenge as it deters offtakers from signing new contracts and hinders capacity addition. Owing to lower tariffs discovered in every subsequent auction, energy procurers/discoms get caught in a wait and watch game, delaying signing of power purchase agreements (PPAs). One of the possible solutions, as per NTPC, is for Solar Energy Corp of India (SECI)—the federal agency for conducting RE auctions-- to aggregate power and sell it at a weighted average price to the distribution companies. India, according to NTPC, could become a leader the in production of green hydrogen and manufacturing of associated equipment, as this space is not yet occupied by any country.

Key Learnings

- Many large corporates in India including PSUs are committed to decarbonisation/net zero emissions and have announced ambitious plans in this area
- Indian Railways, one of the largest consumers of electricity in the country, has commenced activities for decarbonisation and plans to become net zero by 2030
- NTPC, the largest thermal power plant generator shall not be establishing any new greenfield coal projects, and has shifted its focus entirely on RE/clean energy/green hydrogen
- Issues pertaining to delayed signing of PPAs is one of the major hindrances for the overall implementation of the RE programme in India

Way Forward

- Collaborate with Indian Railways and NTPC to provide technical assistance especially on financing to enable smooth and timely transition to clean energy

SESSION 2: Recent Experience with Emerging Financing Instruments

Clean energy developers ReNew Power, Azure Power and Virescent Infrastructure were participants in this segment and shared their experiences with non-traditional financing instruments/structures, which can augment the current sources of capital and accelerate transition towards renewable energy. During the session, experiences and learnings of the private sector on special purpose acquisition

company (SPAC), infrastructure investment trusts (InvITs) and green bonds were presented and discussed.

The speakers underlined that India would need \$300 billion to support the ambitious national RE capacity addition target of by 2030. In comparison, the Indian bond market has a size of \$20 bn, of which 75% is constituted by government securities. This demonstrates the urgency for a revised structure that allows more Indian companies to tap the bond market.

Taking a leaf from its own experience with green-bonds, Azure Power highlighted three main benefits of the debt instrument: 1) it helps release the construction-finance related domestic banking limit, allowing it to become available again 2) cash remains fungible across the bond portfolio for a developer having multiple SPVs and 3) green bonds allow raising a large sum with fixed costs. Currently 60% of Azure Power's operational portfolio is under green bonds. The company has done three issuances so far, raising \$1.25 bn in all. It was further mentioned that the fall-back guarantee structure of USAID and other DFIs could be helpful to enable scaling up of green bond issuances. International green bond investors are quite familiar with the Indian RE sector as a lot of successful issuances have been done in the past.

Adding to the discourse on green bonds, ReNew Power said it believes in having a diversified source of capital, both on the equity and debt sides, which was the reason why more than half of its debt is constituted by green bonds. The company in order to fuel its capacity goals, listed on NASDAQ in August 2021 using the special purpose acquisition company (SPAC) route, which was a first for India's RE industry. The main difference between SPAC and traditional listing was that in SPAC, marketing is followed by scrutiny, and there is a major advantage of lining up the potential/strategic investors in private placement in public equity (PIPE) facility. Capital pool of ESG funds in India is very deep and that was one of the main reasons for Renew Power to consider SPAC.

Virescent Infrastructure, much like ReNew Power, also falls in the category of industry-firsts in having listed the maiden renewable energy infrastructure investment trust or InvIT. In its market scoping, Virescent found two opposite examples of InvITs to draw from: 1) the transmission sector, which has long-term sustainable cash flows from 35-year long arrangements and 2) the roads sector with uncertainty in tolling revenues due to traffic variations. A renewable InvIT was assessed to be leaning more towards the transmission sector owing to long-term PPAs that offered certainty in revenues. While several companies have been evaluating the InvIT option to raise capital for renewable energy portfolios over the last 2-3 years, Virescent became the first one to attract investors to its issue by ensuring a AAA credit rating. The company described an AAA credit rating as the defining factor for a successful RE InvIT. Many RE companies, have not been able to obtain such a rating, due to which InvITs remain absent from the RE space. Assured yields and growth perspective are two major parameters that evince investor interest in RE InvITs.

Key Learnings

- To achieve the goal of 500 GW RE capacity addition by 2030, a quantum leap in investment is required and new capital sources of financing is crucial for the same
- SPAC is one such instrument, which utilises the international pool of ESG capital and could be a good source of financing RE/clean energy
- First RE InvIT was successfully launched in India this year. 'AAA' credit rating for the issue was one of the major reasons for its success
- Several Indian RE firms have raised funds from international green bond market, which is a familiar territory for the sector

Way Forward

- Accelerate adoption of new capital sources by use of structures/instruments like InvITs, green bonds, SPAC etc. to assist faster transition to clean energy

SESSION 3: Financing Smart Meters to enable Clean Energy Transition

REC, PFC, WB, the US DFC and ADB were participants in this segment. Speakers highlighted both the significance of deployment of smart meters in India and also investment appetite for mass rollout for GOI's smart meter program. The session highlighted the significance of private sector participation for this program.

The speaker from REC pegged the investment required for smart meter rollout at INR 1.5 trillion, of which 20% was being provided through a government grant with additional provision enabling states to set up their own grant mechanism. This is intended to make the initiative more attractive for the private sector by lowering risk. The smart meter national programme is proposed to be developed through the public private partnership (PPP) route on a Design-Build-Finance-Operate-Transfer (DBFOT) model. It would adopt a Totex approach i.e. the investments are based on lifecycle costs. The initial capital investment would be at 50% of the lifecycle investment, of which the government would cover 30 to 35%. The private sector would be required to bring the balance 60 to 65%. As the implementing agency for smart meter roll-out in the country, REC will issue the bidding document with guidelines on procurement soon. A global tender would be issued for smart meters and it will not be limited only to participation by entities in the power sector. For ensuring timely payments, a direct debit mechanism in the standard bidding documents was also suggested.

The speaker from PFC stressed on the significance of smart meters for turning around utilities. With the introduction of smart meters, distribution utilities are expected to reap the benefits of energy accounting by cutting on both commercial and technical losses. The associated data analytics would assist them in better decision making. Meanwhile, smart meter technology can help shape consumer behaviour eventually, leading to higher energy and billing efficiencies.

ADB stressed its bullishness to partner with private entities to enable smart meter rollout in the country. It is going to partner with Energy Efficiency Services Ltd (EESL) for 5 million smart meters and has signed an agreement with the government of Meghalaya to install 0.2 million smart meters. The multilateral institution described its appetite for a certain scale of project size, preferred also by many other similar lenders, to be able to meaningfully participate in the sector. A minimum ticket size of \$5-10 mn was described as preferable for participating in this new upcoming segment. It stated its preference for robust

contracts for co-funding smart meter roll-out with private partners. The speaker from World Bank echoed ADB in various ways and shared it is in discussion with other multi and bilateral agencies to pool in more funds for the expected smart meter rollout. The Bank is also keen on ways to integrate a technical assistance component for partners in smart meter lending programs. It is working with the states of Jharkhand and West Bengal on smart meters and is also evaluating a line of credit for India's smart meter scheme.

The US DFC shared it is evaluating supporting a smart meter programme in Africa with a \$20 mn loan and views this intervention as a highly developmental one.

Key Learnings

- INR 1.5 trillion worth of investment is required in smart meters, of which government grant is to the tune of INR 225 bn.
- The smart meter national programme shall be implemented through PPP on a DBFOT model using the Totex approach
- Implementation of the smart meter programme with associated data analytics can help discoms in better decision making as well as reduction of AT&C losses
- DFIs such as World bank, ADB and US DFC are working in this area and are keen to collaborate on funding as well as technical assistance.

Way Forward

- Exploring mode of collaboration/partnership between DFIs (World bank, ADB, US DFC) and implementing agencies of smart meter national programme (PFC and REC) to enable financing at lower costs

Annexure I: About USAID

USAID is the world's premier international development agency and a catalytic actor driving development results. USAID works to help lift lives, build communities, and advance democracy. USAID's work advances U.S. national security and economic prosperity; demonstrates American generosity; and promotes a path to recipient self-reliance and resilience.

U.S. foreign assistance has always had the twofold purpose of furthering America's interests while improving lives in the developing world. USAID carries out U.S. foreign policy by promoting broad-scale human progress at the same time it expands stable, free societies, creates markets and trade partners for the United States, and fosters good will abroad.

USAID works in over 100 countries to:

- Promote Global Health
- Support Global Stability
- Provide Humanitarian Assistance
- Catalyze Innovation and Partnership
- Empower Women and Girls

In India energy sector, USAID programs have already supported:

- \$600 million in investment through Green Bonds
- \$150 million from Indian financial institutions through credit guarantees for clean energy loans
- \$40 Million in private equity and debt in 30 clean energy enterprises
- \$20 million in investment for micro-finance institutions to implement clean energy lending
- \$300 million for EV Charging Infra and buildings energy efficiency in partnership with EESL through new business models
- \$20 billion market size opened through bidding documents and policy support for smart meters roll-out in India

Annexure 2: Agenda of the Roundtable and stakeholder consultation

South Asia Regional Energy Partnership (SAREP)

Financing Clean Energy and Smart Meter Rollout: Roundtable and Stakeholder Consultation

22 October 2021; 1500 – 1740 hrs

Virtual Meeting

Moderator: Gaurav Bhatiani, Chief of Party, SAREP and Namrata Mukherjee, DCOP (Trade and Investments)

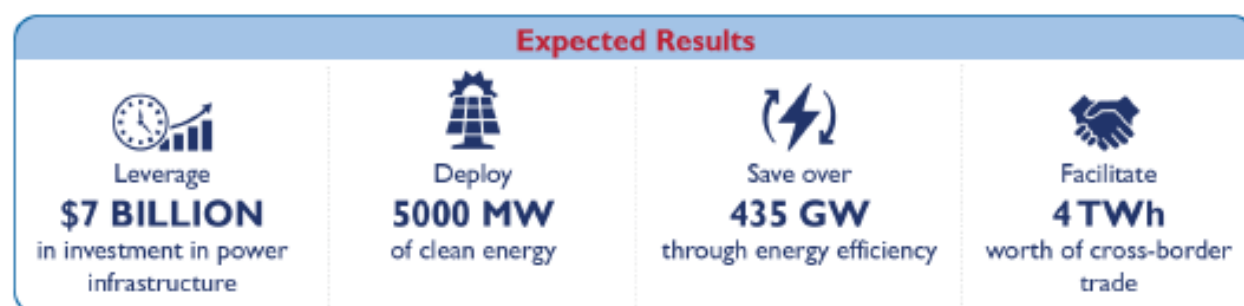
Time	Session	Speaker
1500-1510	Welcome Remarks – U.S.-India Strategic Clean Energy Partnership	John Smith-Sreen, Director, Indo Pacific Office, USAID/India
1510-1520	Introduction to SAREP and the workshop	Anurag Mishra, Senior Clean Energy Specialist, Indo Pacific Office, USAID/India
1520-1530	Presentation by SAREP team on Clean Energy Financing Interventions	Gaurav Bhatiani, Chief of Party, SAREP and Namrata Mukherjee, DCOP – Trade and Investments
Part-1: Clean Energy Roadmaps and Strategy		
1530-1550	Decarbonisation and clean energy roadmap	Manish Gupta, ED, EEM, Indian Railways
		Mohit Bhargava, ED, NTPC REL
1550- 1600	Moderated Discussions	
Part-2: Recent Experience with Emerging Financing Instruments		
1600-1630	InvITs – challenges and opportunities	Parin Mehta, CFO, Virescent
	SPAC – challenges and opportunities	D. Muthukumaran, CFO, Renew Power
	Green Bonds – challenges and opportunities	Sandeep Arora, Head Capital, Azure Power
1630- 1640	Moderated Discussions	
Part-3: Financing Smart Meters to enable Clean Energy Transition		
1640-1720	Smart Meter Implementation – Targets and Funding requirements	R. Lakshmanan, CEO, RECPDCL
		Saurav K Shah, ED, PFC
	DFI Plans and instruments for Smart Meter Financing	Amol Gupta, Senior Energy Specialist, World Bank
		Keshari Nandan Agrawal, Investment Specialist, ADB
1720- 1730	Moderated Discussions	
1730-1740	Summary and Way Forward	Apurva Chaturvedi, Senior Clean Energy Specialist, Indo Pacific Office, USAID/India

Annexure 3: SAREP Factsheet

SUPPORTING THE SOUTH ASIAN ENERGY SECTOR TRANSITION

South Asia is the fastest-growing region in the world, with a booming economy and impressive growth in energy demand. However, the region faces several energy-related challenges, such as energy-access deficits, limited energy diversity, high levels of energy imports, inefficient power systems, poor-performing utilities, low regional connectivity, and limited private sector investment. Rapid urbanization and rising middle-class incomes have led to explosive growth in energy demand, accompanied by carbon emissions and air pollution. The vast untapped potential for energy efficiency and renewable-energy deployment, combined with an opportunity to leapfrog to advanced technologies and infrastructure, point the way toward a quick transition to sustainable energy, leading to a wide range of economic, employment, commercial, health, and gender benefits for the region's 1.5 billion citizens.

The USAID South Asia Regional Energy Partnership (SAREP) will improve access to affordable, secure, reliable, and sustainable energy in six countries—Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka—strengthening systems and processes in line with these countries' economic and energy-security priorities. This five-year program serves as the linchpin of the US Government's Indo-Pacific Vision, and will facilitate collaboration among its six countries of operation to accelerate the transition to clean energy, mitigate climate change, and promote energy security, economic development, self-reliance, livelihoods, health, and productivity throughout the region.



SAREP IN CONTEXT

SAREP will support activities that contribute to the Strategic Clean Energy Partnership (SCEP) and the Climate Action and Finance Mobilization Dialogue of the recently established Indo-US Climate and Clean Energy Agenda 2030 Partnership (CCEP). Through this collaboration, India and the US aim to demonstrate how the world can align swift climate action with inclusive, resilient development, taking into account national circumstances and sustainable development priorities.

SAREP builds on USAID's successful legacy of energy sector projects over five decades, particularly the recent bilateral projects Partnership to Advance Clean Energy Deployment 2.0 RE (PACE-D), Greening the Grid Renewable Integration Sustainable Energy Initiative (GTG), Smart Power for Advancing Reliability and Connectivity (SPARC), Market Integration and Transformation for Energy Efficiency (MAITREE), Nepal Hydropower Development Program, and South Asia Regional Initiative for Energy Integration (SARI/EI). SAREP will complement ongoing USAID activities in Bangladesh (BADGE), Nepal (URJA), and Sri Lanka (SLEP) as part of the Asia EDGE hub-and-spoke model.

WORKSTREAM 1: REGIONAL ENERGY HUB

The first of the two project workstreams will support regional stakeholder coordination and assume the responsibilities of USAID/India's South Asia Regional Energy Hub (SAREH) from 2022 onwards. SAREH works to enhance coordination among the initiative's various stakeholders, lead communication and outreach efforts, and drive a consolidated approach to monitoring and reporting on USAID's energy programs in South Asia.

WORKSTREAM 2: TECHNICAL SERVICES

SAREP will ensure that its efforts are aligned with the initiative-wide strategies and national/regional priorities of its countries of operation, working across four technical objectives:



Objective 1: Enhanced regional energy markets and integration. SAREP will increase cross-border trade of electricity and gas and establish regional energy markets. Integration activities will support the transition of the region from bilateral to tri- and multilateral trade, strengthen institutions, develop common regulations and technical standards, and enhance energy cooperation through sharing of best practices.



Objective 2: Increased deployment of advanced energy solutions and systems. SAREP will support enabling policies, regulations, and standards, build institutional and human capacity, drive deployment of innovative technologies and business models, and mobilize finance for advanced energy systems and technologies. These technologies will help SAREP countries achieve their clean energy goals.



Objective 3: High-performing modern utilities. SAREP will focus on transforming utilities through advanced technologies, new management systems, and enhanced customer orientation. Innovation, technical and process improvements, and reorientation of utilities will improve service delivery and modernize the energy sectors of SAREP countries.



Objective 4: Transparent, best-value procurement and private sector investment. SAREP will mobilize billions of dollars' worth of investment from the private sector and development partners, through supporting public-private partnerships, energy transactions, risk mitigation, and working with government to create a more-enabling environment for private sector engagement through improved regulations, policy, and tariff frameworks.

SAREP PARTNERSHIP FUND

Through its \$12 million Partnership Fund, SAREP will issue multiple grants to advance demonstration and scale-up of transformational and replicable business models, new technologies, innovative financing mechanisms, and other solutions. The Partnership Fund will maximize the impact of USAID resources, expand private sector engagement and partnerships, and facilitate opportunities for co-creation.

CROSS-CUTTING THEMES

SAREP operates in accordance with several cross-cutting themes, all of which support effective implementation, attract private capital, address the political and health challenges of pollution, and increase regional self-reliance:



Private sector engagement. SAREP will scale pilot projects, leverage funding for grants, and advocate for better and more streamlined regulation at both the national and regional level to improve the enabling environment and promote replication of successful approaches.



Gender diversity and inclusion. SAREP will increase awareness of gender mainstreaming in the energy sector and promote women leaders and entrepreneurs, through activities such as expanding the membership of South Asian Women in Energy (SAWIE) in its five countries of operation outside India.



Pollution mitigation. SAREP will work with pollution regulators in partner countries to develop policies, regulations, and innovative financing.



WIND FARM, MAHARASHTRA STATE, INDIA

IMPLEMENTING CONSORTIUM

RTI International leads the SAREP consortium, in partnership with its India affiliate, RTI India. Five other private sector firms with extensive expertise in the region round out the SAREP consortium: PTC, Fichtner India, e.Gen, CrossBoundary, and Asia Clean Energy Partners.



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