PROCEEDINGS

NATIONAL SEMINAR ON

PROMOTION OF CLEAN ENERGY ACCESS IN NORTHEAST INDIA

23 June 2023, 9:00 AM–5.30 PM
At Courtyard by Marriott, Jail Road, Police Bazar, Shillong, Meghalaya - 793001
The Centre for Science and Environment (CSE), Ministry of New and Renewable Energy (MNRE), and the Meghalaya Non-conventional and Rural Energy Development Agency (MNREDA) jointly organized a national seminar in Shillong on 23 June. Participants included renewable energy nodal agencies, think tanks, academia, ministries, industries, researchers and other stakeholders from the North Eastern Region.

With 8 per cent of India’s total land area, the North Eastern Region possesses remarkable renewable energy potential. However, the utilization of renewable energy resources in the region stands at less than 4 per cent of the total potential. To add to this, the per capita energy consumption in the northeast is the lowest in the country, with figures amounting to one-third of the national average (488 kWh in 2021). This energy poverty resembles the situation in some African countries and necessitates immediate action toward developing climate-resilient programmes that incorporate renewable energy. This was the major driver of discussions at the national seminar.

**JAY C SHIV, Programme Director of the Renewable Energy Programme at CSE,** stated during the event, “Our objective with this seminar is to provide insights into the different technologies, policies and obstacles associated with facilitating a cleaner and more sustainable energy future for the northeastern states. We examined the current energy composition in these states and underscored the significance of transitioning towards a decentralized and distributed deployment of renewable energy. The discussion primarily revolved around biogas, compressed biogas, hydropower, wind, and hybrid mini-grids, which could play crucial roles in this transition.”

**JORAM BEDA, IAS, Director, MNREDA** highlighted in his address that several MNRE-designed projects are currently facing feasibility challenges. In order to address this issue, it is imperative that we undertake a reframing process to enhance their viability, accounting for the specific geographical characteristics of each region. The North Eastern Region has demonstrated the suitability of standalone off-grid projects, as evidenced by successful initiatives carried out by NGOs operating in the area. Recognizing renewable energy as a fundamental pillar for sustainable
development, it is essential that our initiatives, technology and operational strategies align with the unique geography of the region, ensuring a healthy and harmonious integration of renewable energy projects.

**J.K. JETHANI, Executive Director of AREAS, MNRE,** emphasized the significant disparity in energy consumption levels between India and the North Eastern Region. With India’s per capita energy consumption already as low as one-third of the global average, the North Eastern Region’s per capita energy consumption is even lower at one-third of India’s average. MNRE has allocated 10 per cent of its fund to the North Eastern Region but is unable to fully utilize the amount. To address this issue, MNRE is actively planning to introduce a comprehensive scheme exclusively aimed at promoting renewable energy in the northeast. Immediate actions involve mapping and identifying potential locations within the northeast suitable for the successful implementation of renewable energy projects. Additionally,
it is crucial to reassess the biomass and wind potential in the region, since the last such assessment was done quite some time ago. MNRE intends to release a concept note for the North Eastern Region soon, outlining a vision for achieving energy independence in the region by 2030 and reducing reliance on other states to fulfil their Renewable Purchase Obligation (RPO) requirements.

**ASEEM KUMAR, Director of MNRE,** highlighted the pivotal role of energy transition in addressing climate change and achieving Sustainable Development Goals (SDGs). He also highlighted India’s ambitious renewable energy targets outlined in the Nationally Determined Contributions (NDCs). Recognizing the immense potential of the North Eastern Region, he pointed out the presence of abundant resources including hydroelectricity, wind, solar and biomass. Waste-to-energy conversion—utilizing agricultural residue, municipal solid waste and biomass—holds significant promise for bioenergy generation, with MNRE providing incentives under the National Bioenergy Programme. Further, projects installed in the North Eastern Region receive 20 per cent higher Capital Financial Assistance (CFA). To fully capitalize on these opportunities, he stressed the need for collaborative action among various stakeholders, including knowledge sharing, technology transfer and capacity-building initiatives.
Addressing the participants in the introductory session, **ABU TAHER MONDAL, Meghalaya’s Hon’ble Minister of Power**, emphasized the significance of the recently launched Chief Minister’s Solar Mission. According to him, the Mission’s objective is to promote self-sufficiency in electricity, thereby reducing dependence on the grid and resulting in substantial power savings. To participate in the mission, households and institutions will receive solar hybrid power systems comprising photovoltaic cells, an inverter and battery backup. This initiative will ensure long-term power stability in the state. He said that relying solely on power purchases is not a viable long-term solution; instead, the key lies in power generation.

**RUPERT M. MOMIN, Chairperson, MNREDA**, gave a special address in which he acknowledged the state’s considerable potential for generating energy from renewable sources. Further, he pointed out that Meghalaya
could produce around 400 MW from small hydro energy projects. The state relies on hydroelectric projects for its power supply, but recent changes in rainfall patterns have posed a challenge, leading to power shortages. “To tide over this crisis, the state is actively pursuing the exploitation of solar energy,” he said.

**ARUN KUMAR SARMA**, Director General of the North East Centre for Technology Application and Reach (NECTAR), shared insights into the ongoing innovations in the field of renewable energy. He specifically highlighted the upcoming establishment of the first compressed biogas (CBG) plant in the North Eastern Region in Assam, with partial support from NECTAR. This plant is set to have a daily production capacity of 8 tonnes of bio-CNG, utilizing a variety of feedstocks. He also elaborated on the available funding mechanisms for facilitating the commercialization of this product within the North Eastern Region.

**VIKRAM DHAKA**, Scientist-C from MNRE, discussed the National Bioenergy Programme and the use of biomass pellets and briquettes as fuel sources. He highlighted the main goals of the programme, which include supporting the utilization of biomass resources such as crop...
residues, energy plantations, weeds, wood waste from industries, and agro-based industrial residue for energy recovery. Furthermore, he emphasized the importance of biomass for power generation and other conversions that can contribute to meeting heating requirements.

S.R. MEENA, Scientist-D from MNRE, discussed the expansion of small- and medium-scale biogas plants, with a particular emphasis on the North Eastern Region. During the presentation, he showcased different designs of biogas reactors, discussed relevant policies, and shared successful case studies. Notably, he highlighted the Flexi biogas system and its potential suitability for the region.

LEPAKSHI BARBORA, faculty member at IIT Guwahati, delivered a presentation on the significance of innovative technologies in scaling up biogas production. She specifically focused on biogas purification technologies for biomethane production and the conversion of biogas into electricity. Additionally, she underscored the crucial role played by the eight Biogas Development and Training Centres (BDTC) in providing technical support to various stakeholders for the promotion of bioenergy throughout the country.

NEIZENO PESEYIE, representing the Department of New and Renewable Energy (DNRE) in Nagaland, provided an update on the state’s renewable energy initiatives. She mentioned that a 5 MW solar power plant is currently under construction, and by September 2023, the generated energy will be integrated into the grid. Alongside this development, she also shed light on other renewable energy activities undertaken by the department. However, she acknowledged several challenges faced by the department, including the issue of land availability for renewable energy projects; lack of funding for implementation and expansion of such initiatives; the cost of transportation for equipment and materials to remote areas; the absence of a comprehensive renewable energy policy, which
creates uncertainty and difficulties in planning and execution; difficulties in staying updated with the latest technologies and making them easily accessible; and lastly, the general lack of awareness and understanding among the public regarding renewable energy, which hampers its widespread adoption.

**D.S. DAS, Joint Director of Tripura Renewable Energy Development Agency (TREDA),** emphasized the progress already made by the agency. Twenty remote hamlets, habitations and villages, encompassing 435 households, have been covered by the installation of 65 kW microgrids powered by solar energy. Additionally, there are 274 microgrids in the pipeline with a cumulative capacity of 3,335 kWp, requiring an investment of Rs 81 crore. Furthermore, the agency has installed seven solar community-based drinking water plants in remote hamlets, incorporating iron removal and water purification systems. Looking ahead to the year 2030, he also outlined the agency’s ambitious plans. These include the installation of 5 MW of solar microgrids, 10,600 solar pumps as part of components B and C, 60 MW of rooftop solar systems, and 10,000 biogas plants. These initiatives reflect the agency’s commitment to expanding renewable energy infrastructure, promoting sustainable water solutions, and fostering the adoption of solar and biogas technologies in Tripura.

**RUPESH BADKHAL, Senior Program Associate, Energy Access & Livelihoods, Customized Energy Solutions India Pvt Ltd,** highlighted the mini/microgrid based entrepreneurial activities and solutions implemented in the North Eastern Region. These interventions include:

- **Solar Hybrid Mineral Water Bottling:** Implementing solar energy in the process of mineral water bottling.
- **Pine Needles Pellets Making Unit:** Setting up a unit to produce pellets from pine needles.
- **Improved Cookstoves Deployment:** Promoting the use of improved cookstoves for efficient and clean cooking.
- **Biochar Jumbo Kiln:** Establishing a jumbo kiln to produce biochar, a form of charcoal used for soil improvement.
- **Solar-Powered Turmeric Processing Unit:** Introducing a solar-powered unit for processing turmeric.
• Solar Hybrid Sanitary Pad Making Unit: Implementing solar energy in the manufacturing of sanitary pads.
• Solar Water Pump for Community Drinking Water: Installing solar-powered water pumps to provide clean drinking water to communities.
• Pineapple Processing Unit: Setting up a unit for processing pineapples.
• Solar Pico Hydro Hybrid System for Coffee & Livestock Feed Processing: Utilizing a solar pico hydro hybrid system for processing coffee and livestock feed.
• Solar-Powered Cold Room: Establishing a cold room powered by solar energy for storage and preservation purposes.

These interventions aim to promote sustainable practices, harness renewable energy sources, improve productivity, and enhance the overall economic and environmental sustainability of the region.

SHARAD TIWARI, Technical Head of Tata Power Renewable Microgrids Ltd (TPRMG), highlighted the unique characteristics and benefits of using microgrids in the North Eastern Region. He mentioned that the region boasts approximately 64 per cent forest cover, which means it is rich in natural resources and is ecologically significant. However, the hilly terrains pose challenges for grid extension, especially in remote rural areas, due to the difficulty and high costs involved. This makes microgrids an ideal alternative solution as they are easy to install and replicate, making them a convenient option for remote locations. Moreover, they require low maintenance, reducing operational costs in the long run. Additionally, microgrids are particularly suitable for small-scale capacity and distributed generation, allowing power generation to be decentralized and tailored to local energy needs. These microgrids have proven their effectiveness through successful implementation in various models. By leveraging microgrids, the North Eastern Region can overcome limitations posed by
hilly terrains and extend reliable and sustainable energy solutions to rural communities, contributing to their development and improving their quality of life.

**RAHUL JAIN, Deputy Program Manager for Renewable Energy at CSE,** emphasized the importance of compressed biogas (CBG) during his presentation. He discussed the potential and conversion efficiency of various biogas feedstocks, with a particular focus on the suitability of cultivating Napier grass in the North Eastern Region for CBG production. The presentation covered a wide range of topics, including plant economics, different financial incentives and policies available for CBG plants such as the MoPNG’s SATAT scheme, MNRE’s Waste to Energy Scheme, GOBARdhan, Agro Infrastructure Fund, corporate social responsibility (CSR) funds, carbon credits, and state-specific incentives. Notably, operational CBG plants across the country provided valuable insights and were highlighted during the session. Furthermore, he shared key findings from CSE’s latest report titled “Greening India’s Energy Mix with Compressed Biogas,” which offers a comprehensive overview of India’s current CBG strategy and provides recommendations to overcome challenges associated with the large-scale adoption of CBG.
The objective of the session was to gather different viewpoints from multiple stakeholders in order to gain a deeper understanding of the challenges involved in designing and implementing renewable energy interventions in the North Eastern Region. The session was chaired by N. Praveen Singh, IAS, Director of the Manipur Renewable Energy Development Agency (MANIREDA), with the participation of S.R. Meena from MNRE, Sharad Tiwari from Tata Power, Shweta Kumari from NABARD, and Jay C. Shiv from CSE. Their collective presence added valuable perspectives to the discussion.

N. PRAVEEN SINGH, IAS, Director of MANIREDA
It is imperative for northeastern states to collaborate with all stakeholders to facilitate the implementation of biogas plants across the region. He highlighted the significance of this initiative, emphasizing the need for collective action to promote sustainable energy solutions.

He acknowledged the enormous potential for bioethanol production in Manipur, Meghalaya, and other northeastern states where bamboo cultivation is prevalent. He urged the Ministry of New and Renewable Energy (MNRE) and the Centre for Sustainable Energy to include these areas in their upcoming programmes by recognizing the value of bamboo resources for bioethanol production. Furthermore, he reiterated a point raised by D.S. Das of Tripura Renewable Energy Development Agency regarding central funding. Specifically, he highlighted that the National Bank for Agriculture and Rural Development (NABARD) releases sanctioned amounts on a reimbursement basis, except for an initial mobilization advance of 30 per cent for northeastern and hilly states and 20 per cent for other states. By fostering collaboration, implementing solar initiatives,
promoting bioenergy production, and addressing funding procedures, northeastern states can accelerate their transition towards sustainable energy and contribute to the region’s overall development.

SHWETA KUMARI, NABARD

Currently, the Government of India has approved 39 activities under the Rural Infrastructure Development Fund (RIDF). These activities are divided into three main categories: Agriculture and related sectors, social sector, and rural connectivity. States have the authority to borrow money for infrastructure development under Article 293 of the Constitution, with these projects falling under priority sector lending.

In the case of Meghalaya, NABARD has projected a potential of Rs 9 crore for renewable energy in the annual credit plan for 2023–24, compared to Rs 8.5 crore in the previous year. The Meghalaya government implements various sub-missions, providing 60–70 per cent of the subsidy itself, while facilitating the remaining 30 per cent of the subsidy through the Meghalaya Gramin Bank under a memorandum of understanding (MoU) with the government.

In relation to RIDF, NABARD has disbursed Rs 10.45 crore for the development of 220 small hydro projects in Meghalaya, with capacities ranging between 3–5 kWp. The speaker emphasized the need for the state government to prioritize schemes through government departments and submit them to NABARD for consideration. Additionally, NABARD’s subsidiary, NABCONS, successfully completed a solar lighting system project in 60 community schools, with an investment of approximately Rs 9 lakh. NABARD aims to prioritize the financing of biogas projects through climate change funds such as the Green Climate Fund (GCF) and the National Adaptation Fund for Climate Change (NAFCC).

However, NABARD faces two major challenges in disbursing funds. Firstly, many farmers lack land holdings, which poses a hurdle for bank financing. Secondly, both communities and farmers in the North Eastern Region are hesitant to take credit, and discussions on this matter have been ongoing in forums like the State Level Bankers’ Committee (SLBC) and District
Consultative Committee (DCC). Efforts are being made to address these challenges and encourage credit uptake among farmers and communities in the region.

**JAY C. SHIV, Programme Director of the Renewable Energy Programme at CSE**

Jay concurred with Sharad Tiwari’s perspective, stating that the cost of tariffs in mini/microgrids tends to be higher due to various risks associated with the business, such as uncertainty in grid connectivity. However, he emphasized the importance of finding a solution to ensure a level playing field and equitable tariff structures. Energy-deprived communities also have the right to access electricity at affordable rates, and government intervention is necessary to bridge the gaps. Feed-in tariffs (FiT) can be explored as a potential mechanism to address this issue, and CSE is actively working on developing FiT frameworks.

The situation in the North Eastern Region presents its own unique challenges, affecting stakeholders such as the state nodal agencies, beneficiaries and developers. Nevertheless, Jay highlighted that there is no dearth of solutions or schemes available. The key lies in adopting the right approach and fostering effective coordination among all stakeholders.

To advance the conversation and address these challenges, CSE proposes the establishment of a Regional Steering Committee. This committee will comprise representatives from the ministry, state nodal agencies and entrepreneurs, who will provide guidance and direction for energy access development in the region. CSE plans to announce the formation of this committee soon, encouraging the participation of all relevant stakeholders.
KEY TAKEAWAYS AND RECOMMENDATIONS

During the event, key recommendations emerged from the fruitful deliberations, highlighting a clear way forward to advance clean energy adoption in the North Eastern Region. One of the key recommendations is to promote coordination among various agencies, including esteemed institutions like IIT Guwahati, North East Center for Technology Application and Reach (NECTAR), and state nodal agencies.

Another crucial recommendation focuses on the imperative of capacity building for renewable energy nodal agencies in the northeastern states. By enhancing their technical knowledge and managerial capabilities, these agencies will be better equipped to drive the renewable energy transition in the region.

Conducting a comprehensive resource mapping exercise for Northeast India will provide valuable insights into the deployment potential of various renewable energy technologies in the region. This strategic mapping will enable informed decision-making and facilitate the identification of suitable areas for renewable energy projects.

Furthermore, knowledge dissemination was identified as a critical component for promoting clean energy technologies, policies, and successful practices in the North Eastern Region. It is recommended that state nodal agencies, with guidance and support from MNRE, lead the activities on enhancing energy access through DRE systems in the northeastern states.
EVENT DETAILS


(Please click on the link to find all the presentations)

LINKS TO KEY PUBLICATIONS

Greening India’s Energy Mix with Compressed Biogas (CBG)

Repowering Wind Farms

Resurgence of Offshore Wind

Mini-Grids: A Just and Clean Energy Transition Volume-1

Mini-Grids: A Just and Clean Energy Transition Volume-2

UPCOMING TRAINING


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https://www.downtoearth.org.in/blog/renewable-energy/can-india-s-g20-presidency-tackle-climate-change-while-ensuring-energy-access-security-transition-87620


MEDIA COVERAGE

https://hubnetwork.in/shillong-cse-mnre-organise-national-seminar-on-promotion-of-clean-energy-access-in-northeast-india/

https://highlandpost.com/national-seminar-on-clean-energy-access-in-ne-held/

https://themeghalayan.com/seminar-on-clean-energy-access-held-in-shillong/


https://theshillongtimes.com/2023/06/24/govt-intends-to-use-other-forms-of-renewable-energies/


CONTACT FOR FURTHER INFORMATION:

RAHUL JAIN
Deputy Program Manager, Renewable Energy
Centre for Science and Environment (CSE)
Email: rahul.jain@cseindia.org
Mobile: +91-8901448131
SNAPSHOTS FROM THE EVENT

Dignitaries posing for a group photograph after the inaugural session. From the left, Vikram Dhaka, Scientist, MNRE; Rahul Jain, Deputy Program Manager, CSE; Arun Kumar Sarma, DG, NECTAR; Rupert M. Momin, Chairperson, MNREDA; Abu Taher Mondal, Meghalaya’s Hon’ble Minister of Power; Joram Beda, IAS Director, MNREDA; N. Praveen Singh, IAS, Director MANIREDA; Jay C Shiv, Programme Director of the Renewable Energy Programme at CSE; Kaifee Jawed, Program Officer, CSE; Binit Das, Program Manager, CSE

CSE, MNRE and MNREDA officials posing for a group photograph
Abu Taher Mondal, Meghalaya’s Hon’ble Minister of Power addressing the gathering

Jay C Shiv, Programme Director of the Renewable Energy Programme at CSE, giving the opening remarks