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South Asia Group for Energy–Sri Lanka

Sri Lanka set a target of generating 70% of its electricity from renewable energy sources by 2030. This goal includes the addition of 5.8 GW of renewable power capacity, comprising hydropower, solar, wind, and biomass, between 2023 and 2030, with an interim target of adding 2.5 GW of renewable capacity by 2026.

To accomplish this, Sri Lanka's power grid needs significant transformation and modernization to handle the integration of variable renewable energy sources effectively. The **South Asia Group for Energy (SAGE)** is helping Sri Lanka's grid operator, the Ceylon Electricity Board (CEB), understand the gaps for operating the grid with higher renewable share and identifying technology and research requirements to establish a variable renewable energy control center.

Project Activities

1. System-Wide Assessment

SAGE team members from the National Renewable Energy Laboratory (NREL) and CEB are conducting a comprehensive assessment to understand the gaps in operating the power grid with an additional variable renewable energy load by 2026. This assessment:

- Explores CEB's existing power system operation practices and infrastructure
- Evaluates the National System Control Center (NSCC) capabilities
- Identifies hardware/software, procedural, and data analysis needs for NSCC expansion
- Establishes a planning process for higher renewable power grid operation standards, including curtailment policies
- Develops strategies for maximizing renewable energy absorption, curtailment guidelines, and regulations
- Shares best practices from other countries with highly renewable power grids
- Creates a road map of technical solutions and research needs, as well as recommendations for NSCC expansion.



SAGE team members from the National Renewable Energy Laboratory (seated center), U.S. Agency for International Development (USAID) Sri Lanka (seated left), and team members from CEB during a July 2023 site visit. *Photo courtesy of Thushara de Silva, NREL.*

Throughout the assessment process, SAGE is hosting regular technical feedback sessions and presentations on strategies and tools to maximize renewable energy absorption in the grid. This activity results in a comprehensive assessment of the NSCC, as well as a set of technical recommendations for NSCC expansion.

2. Training and Capacity Building

NREL is also facilitating several hybrid and in-person workshops and a study tour to enhance the knowledge and capacity of CEB technical staff in managing a high variable renewable energy-share grid. Topics covered include renewable energy forecasting, electricity load forecasting, renewable energy curtailment planning, system control center operation with high variable renewable energy share, and communication methods between renewable energy power plants and control centers.

The goal is to ensure that CEB staff are well-equipped to handle the challenges and opportunities presented by a grid with a significant renewable energy share. Additionally, NREL is helping CEB network with global power sector experts through the Global Power System Transformation Consortium (globalpst.org) to provide ongoing technical assistance and support.



The first of many collaborative workshops between SAGE and CEB teams, hosted at the CEB system control center during the July 2023 site visit. Photo courtesy of Thushara de Silva, NREL.



The front office of the Ceylon Electricity Board's national system control centre. Photo courtesy of Thushara de Silva, NREL.



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About SAGE

SAGE is a consortium consisting of USAID and three U.S. Department of Energy national laboratories: Lawrence Berkeley National Laboratory, NREL, and Pacific Northwest National Laboratory.

Through SAGE, governments, public institutions, and private sector partners in South Asia can access best-in-class energy expertise from U.S. national labs to support long-term planning and strategic development and receive consultation on complex energy challenges.

SAGE is supporting Sri Lanka's transition to a more sustainable and renewable energy future, aligning with the nation's ambitious goals for a greener energy grid by 2030. Learn more and explore SAGE resources by visiting www.sarepenergy.net/sage.

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South Asia Group for Energy



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