

CENACE-Energinet Partnership

The Mexican-Danish Climate Change Mitigation and Energy Program (CCMEP) supports Mexico in implementation of its climate policy and energy reform. Under the Renewable Energy (RE) component of the Program Denmark supports the partnership between CENACE and the Danish Transmission System Operator Energinet (sub-component RE1).

The objective of the RE1 sub-component is to support CENACE (as well as CRE and SENER) to integrate increasing shares of renewable energy and cogeneration in the power system. The clean energy goals as formulated in the Energy Transition and Climate laws are:

- 25% by 2018
- 30% by 2021
- 35% by 2024
- 50% by 2050

OUTPUTS:

- Grid codes: Input provided to 4 grid codes: generation, demand, criteria for planning and HVDC links. Codes are influenced by ENTSO-E/Denmark and officially approved by the CRE. Grid codes for generation and demand also reviewed after one year of operation and improvements suggested based on feed-back from stakeholders;
- Planning methodologies and operational flexibility: Methodology for planning and economic assessment of specific projects analyzed and presented at 2 workshops (eg. HVDC link to Baja, pumped storage of hydropower and smart charging of electrical vehicles as a way to increase flexibility in the system; Visit to Denmark by CRE and CENACE with focus on smart grids and distributed generation;
- HVDC planning and operation: Workshops, telecommunication and visit to Denmark providing technical assistance and specific input in the

planning of the first HVDC links in Mexico (first link to Oaxaca already tendered, Baja links included in PRODESEN).

- Forecasting: Through workshops, internships and close supervision by Energinet, CENACE has developed its own day ahead and real time forecast models;
- Market based systems operation with variable generation: Training provided in CENACE control centers and through internships in Energinet control center on how to operate the electricity system with variable generation from wind and solar;

OUTCOME:

- The expected outcome of the partnership is that CENACE with support of the expertise from Energinet is able to efficiently integrate increasing shares of renewable energy in the electricity system. As an example, the first HVDC link from Oaxaca to Puebla/center of Mexico will allow integration of additional 3,500 MW wind, and the planned connections to Baja will allow additional 1,900 MW wind and solar.



The partnership has been very useful for CENACE, for example the support we are getting for the HVDC links which is a new area for Mexico.

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