Danish Energy Agency

Mexico: Vast Bio-energy Potential in Mexican Sugar Cane Industry

The potential for energy generation is literally piling up outside of sugar cane plants in Mexican suburbs. During Danish Energy Agency's (DEA) most recent visit in Mexico, a trip to 7 different sugar mills have proven that there is a substantial potential for increased use of biomass in electricity generation in the short term. It is interesting to explore the possibility of utilizing this potential, especially in the light of Mexico's desire to reach a proportion of 35 % renewable energy in 2024 and a generation of 2,142 GWh based on biomass in 2018.

Denmark and Mexico in Climate Change Mitigation Programme

As of January 2014, Danish Energy Agency (DEA) has cooperated with Mexican partners in the Climate Change Mitigation and Energy Programme. The Danish-Mexican cooperation supports Mexico's own strategies and action-plans by sharing Danish experiences on energy system analysis and policy development.

The main focus of the government-to-government cooperation is to assist and strengthen policy and regulatory frameworks that enable Mexico to reach their targeted goals for emission reductions by drawing up and presenting a biomass roadmap by 2017.

At the biomass inception visit in the beginning of April 2015 the need for a biomass baseline description and mapping was identified. At this visit it was also acknowledged that the use of bagasse in the sugar industry could be optimized and be a possible renewable energy power source in the near future. DEA's second and most recent mission further elaborated on different approaches for Mexico to reduce emissions and optimize their energy production and thus appointed the sugar cane industry to be an area suitable for future collaboration.

From Canes to Kilowatt-hours

The sugar cane industry in Mexico is comprehensive. 51 sugar mills in 15 states employ, directly and indirectly, 2 million people, including 170,000 cane growers and 80,000 cane cutters. These mills vary greatly in size, age and technology and many are old and not very efficient. App. 25 % of the sugar cane is converted into bagasse which is used to produce energy for the milling process. Nevertheless, the energy in the bagasse is far higher than the energy needed, so there is a great potential for the industry to produce excess electricity which could be exported to the grid.

However, Mexico is facing a number of regulatory, economic and technical barriers to an unhindered change in production methods and energy outcome. One of the main barriers is the regulatory aspects of connecting the mills to the grid. As part of the Mexican/Danish cooperation Mexico could use some of the Danish lessons learned to lower these barriers and ultimately make the sugar industry a part of the green energy transition in Mexico.

Aside from developing a sustainable energy mix, successful agreements would also enhance the mills' positions on a future, more competitive sugar market; create a possibility for sugar mills to have a business outside the cane season plus an increase in farmer income and rural jobs.

What's Next

The next step for the Danish-Mexican cooperation is to work on a detailed description of the current situation for bio-energy in Mexico, including an identification of key steps in the development of the bio energy roadmap and an initiation of a bio- technology catalogue.

DEA will be contributing on many aspects, including:

- Regulatory: Strategic Energy Planning, including methodology and introduction to Danish planning tools such as (socio-) economic assessments. Sustainability issues.
- Technical: DEA has a vast experience with biomass resource handling and logistics and technical solutions (e.g. biomass boilers, co-firing etc.)
- International relations: Support for study visits to Denmark

On the Danish cooperation with Mexico, Materials on the cooperation, On Energinet.dk' s cooperation with CENACE

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