

## Havana energy storage for demand response

Cuba is the largest island in the Caribbean Sea, with a 109,884 km<sup>2</sup> territory and 11.2 million inhabitants. Energy production, particularly power generation and its sustained growth, constitutes an indispensable element for the country's economic and social growth.

Cuba is Canada's largest export market in Central America and the Caribbean with a two-way bilateral merchandise trade in 2021 totaling \$981 million. Before the pandemic, over 1 million Canadians visited Cuba in 2019. Canadian exports included mainly cereals (mostly wheat), machinery, vegetables, electrical and electronic machinery and equipment, and oilseeds. Canadian imports are mainly nickel ores, seafood, rum and cigars.

Concerns over Cuba's dependence on Venezuela are translating into the need for a fundamentally redesigned energy sector and more flexibility for investors. The pandemic has accentuated Cuba's need to diversify and move from oil-generated energy to renewable sources of energy (RES).

RES with large potential on the island include solar, wind, biomass (bagasse, agriculture and forestry), and hydropower. Cuba has in place a "Plan Nacional de Desarrollo Económico y Social" (the National Social and Economic Development Plan), which aims to increase the proportion of clean energy output to 37% by 2030 (2,000 MW).<sup>Footnote6</sup>

These goals are facing significant challenges given Cuba's financial constraints. By the end of 2021, the program for 2030 was 40% behind schedule (only 303 MW installed compared to the 506 MW goal).<sup>Footnote7</sup> In 2021, renewable sources still accounted for just 4.5% of installed power generation capacity.<sup>Footnote8</sup>

Under Cuba's RES strategy, solar energy is deemed the most suitable for a fast expansion. There are currently 84 solar photovoltaic parks operational with a 227MW capacity, which account for 2.37% of daily electricity produced.<sup>Footnote9</sup> There are also plans to install 100,000 solar water heaters on private homes and 33,000 more in factories, hotels and hospitals.<sup>Footnote10</sup>

By 2030, Cuba also plans to install wind parks with a 700 MW capacity.<sup>Footnote11</sup> Four wind parks are currently operational, with an 11.8 MW capacity.<sup>Footnote12</sup> They were built by state companies with cooperation from and with Chinese firms.

Cuba is developing a domestic RES industry, including solar panels, wind turbines, hydro turbines, poles, and boilers for use in small bioelectric plants. This strategy is expected to enable Cuba to integrate domestic products into RES projects, thus reducing import costs and energizing the economy.



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