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## PUBLIC-PRIVATE PARTNERSHIPS BRIEFS

# India: Gujarat Solar



### Overview

Gujarat province in India has a long-term goal of making its capital, Gandhinagar, a solar-powered city. With over 300 sunny days per year and supported by the Indian government's commitment to reducing carbon emissions, it plans to install 500 megawatts (MW) of solar capacity by March 2014. As a first step, the government of Gujarat turned to IFC to help it with an innovative 5 MW solar rooftop public-private partnership (PPP) project to add power generating capacity, develop contractual models for further solar projects, and demonstrate the technical and economic feasibility of rooftop-based solar power.

Azure Power and SunEdison each won 25-year concessions for 2.5 MW solar rooftop projects. Under the agreement, the developers will install solar photovoltaic panels on the rooftops of public buildings and private residences and connect them to the grid. Besides attracting \$12 million in private investment, 10,000 people will benefit from increased access to power and 7,154 metric tons of greenhouse gases will be avoided per year. The project agreements were signed in April 2012.

The project was supported by the Ministry for Foreign Affairs of Finland and the Ministry of Foreign Affairs of the Netherlands.

This series showcases how the World Bank Group supports the development and implementation of public-private partnerships. This support comes in the form of public sector loans, private sector finance, sector and transaction advice, guarantees, and output-based aid.

## Background

The state of Gujarat, located in western India, has embraced the idea of renewable energy. With over 300 sunny days per year, the government of Gujarat plans to develop 500 MW of solar power capacity by March 2014 to meet its energy needs. It also plans to make its capital, Gandhinagar, a model solar city. However, many technical, regulatory and commercial challenges lie ahead. The government of Gujarat needed assistance in selecting the most appropriate technology, and suitable agreements between government, private investors, and the power procurer had to be concluded.

To pave the way for large-scale solar power development, the government sought private sector participation to finance and build two 2.5 MW pilot solar projects in Gandhinagar that will generate a total of five MW annually through rooftop solar panels. Although modest, the project will address issues constraining the adoption of solar power, provide extra power capacity to the grid, and contribute to the reduction of greenhouse gas emissions.

## Project Description

IFC recommended a 25-year build, own, operate (BOO) concession.

Under the agreement, the winning bidders will place thousands of solar panels on rooftops throughout the city divided into two clusters, each with 2.5 MW of installed capacity. Most of these will be on public buildings, such as schools, hospitals, and offices. The remaining panels will be placed on private residences, which will receive rental income for hosting the panels. The developers will then connect power generated by the panels to the city grid.

Total project cost is estimated to be \$15 million, all of which will be provided by the winning bidder. The government of Gujarat will provide access to roofs of buildings it owns, facilitate purchasing agreements with the power procurer for the electricity generated, and guarantee a subsidy if required.

The developer will be responsible for identifying private buildings that will participate in the project, producing solar power and delivering it to the grid.

Interest in the project was strong, with 38 firms submitting expressions of interest. The winning bidders were those quoting the lowest tariff.

Azure Power and SunEdison each won one of the two 2.5 MW projects. The project agreements, including the power purchase agreements (PPAs), were signed on April 20, 2012.

## World Bank Group Role

IFC was appointed lead transaction advisor to execute the pilot project by Gujarat's Department of Energy and Petrochemicals. Besides providing transaction advice, IFC's role included technical, legislative, analytical and marketing support. IFC's support included:

- Analyzing the technical options for solar panels, for example, using concentrated solar power or photovoltaic solar panels; resolving connectivity issues, and determining maintenance requirements. IFC recommended using solar panels mounted on rooftops;
  - Reviewing social, legal and commercial issues related to renting rooftop space from residential and commercial buildings, and then developing terms for the rental agreements;
  - Organizing an investors' conference to discuss the project with potential investors and obtain their feedback. Over 40 firms attended, demonstrating strong interest in the project;
  - Leading discussions with the client and the local private distribution company, Torrent, on the power purchase agreement. IFC helped broker the terms so that Torrent would purchase electricity generated by the rooftop panels.
- IFC also recommended a transaction structure and managed the bidding process, including preparation of bidding documents and evaluation of bids.

## Outcomes

- Improved access: 10,000 people will benefit from improved energy services at affordable prices with virtually no state subsidies.
- Mobilization of private sector investment: the transaction will attract \$12 million in private investment to the region.
- Climate change: reduces carbon emissions by 7,154 metric tons annually.
- Proof of concept: demonstrates the technical, regulatory, and financial viability of rooftop solar panels, which will enable the expansion of solar power in Gandhinagar and elsewhere in India. As a result of this initiative, IFC has already signed mandates to advise on similar initiatives in five other cities in Gujarat.

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