The municipality of Saltillo was responsible for establishing a payment guarantee to the benefit of IDEAL. To establish the guarantee, the municipality obtained a current-account credit facility through Mexico's National Bank of Public Works and Service. In order to access such a facility, the municipality obtained the financial support of Trust (fideicomiso) No. 1902, known as the infrastructure investment fund (Fondo de Inversión en Infraestructura), through the National Bank of Public Works and Services. This trust is a source of direct and alternative payments for the administration of the resources allocated to the project.

The municipality, as the project's primary source of funding, pays into the Fideicomiso, which in turn pays IDEAL a monthly tariff made up of three elements: a) investment fixed costs; b) operation fixed costs; and c) operation variable costs. The tariff is contingent on the quantity and quality of water treated at each of the plants.

The estimated investment for the project was MXN 436 million (USD 22 million). Of this amount, 29.4 percent was contributed by the Infrastructure Investment Fund; 50.8 percent was debt; and the remaining 19.8 percent was the private investor's equity contribution.[55]

Lessons Learned

Reports indicate that in 2016 the wastewater treatment plant started operating a system for electric and thermic energy co-generation, which will allow the plant to stop emitting greenhouse gasses and also produce the energy needed to run the plant.[56] Furthermore, it is reported that, by the second half of 2019, the plant will start selling treated water (between 1 to 6 liters per second) to three companies that have expressed interest.[57]

It has also been reported that the project has benefited agricultural works in the region, as it enabled a change from forage crops to vegetables, which have a higher commercial value. The project further promised to increase the commercial value of the previously polluted lands, as the project will help to significantly decrease or eliminate discharges that were producing unpleasant odors and harmful environmental impacts.

26. Industrial Water Supply, Surat Municipal Corporation, India

Photo Credit[58]

Background

As the economic capital of Gujarat, Surat City was experiencing booming industrial growth, particularly in the textile and diamond industries. To meet the resulting rapid increase in water demand amidst an existing shortage, the city needed to reduce its dependence on groundwater and be more innovative in its approach to water management.

Project Structure

In 2014 India's Surat Municipal Corporation (SMC) and the Asian Development Bank (ADB) jointly initiated a wastewater recycling project with a total estimated cost of INR 2.8 billion (USD 40 million). The project aimed to deliver infrastructure that could recycle sewage and generate industrial-grade water, including through the construction of new, state-of-the-art tertiary treatment plants (TTPs). The TTPs would be equipped with sand filtration, ultrafiltration, reverse osmosis, and activated carbon filter technologies and have the capacity to treat 726 million liters per day (MLD) of wastewater and distribute it for reuse by industries located in the city.

Through a competitive bidding process, M/S Enviro Control Associates (I) Pvt. Ltd (with M/S Hyflux from Singapore as their technological partner) won the bid for the EPC (Engineering, Procurement, and Construction) contract. As per customary practice in the SMC, the winning bidder for the EPC contract would automatically be awarded the contract to operate and maintain (O&M) the plants under a separate agreement for a period of 10 years. The plants would be handed over to the SMC at the end of the concession period. The Government of India, the Government of Gujarat, and SMC contributed INR 415 million (USD 5.83 million), INR 466 million (USD 6.55 million), and INR 378 million (USD 5.3 million), respectively, to the project. SMC also provided the land to build the TTPs and was responsible for supplying the wastewater for recycling by the plants.

[55] MuniAPP. 2013. "Asociacion Publico-Privada Entre la Empresa Ideal Saneamiento de Saltillo S.A. de C. V. y el Municipio de Saltillo Coahuila." CCA. Accessed April 1, 2019. http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos_de_apoyo/informaciontematica/capp/Saneamiento_Integral_Aguas.pdf;

Paz, Jussaira R., and Priscilla Delgadilo Diaz. 2017. "Asociaciones Publico Privadas (APP's)." Contraloria del Poder Legislativo. Accessed April 1, 2019. http://www.contraloriadelpoderlegislativo.gob.mx/pdf/Cursos/A_P_P.pdf.

[56] El Diario. 2016. "Arranca Cogeneracion de Energua Electrica y Termica en Planta Tratadora." Accessed April 1, 2019. http://www.eldiariodecoahuila.com.mx/locales/2016/8/3/arranca-cogeneracion-energia-electrica-termica-planta-tratadora-594631.html.

[57] Reyes, Jose. 2019. "Finalmente sera util la planta tratadora de Saltillo, venderan el agua a empresas de Ramos Arizpe." *Vanguardia,* February 21. Accessed May 21, 2019. https://vanguardia.com.mx/articulo/finalmente-sera-util-la-planta-tratadora-de-saltillo-venderan-el-agua-a-empresas-de-ramos-arizpe.

[58] Rahul Bhadane (https://commons.wikimedia.org/wiki/File:Surat_Aerial_View.jpg), https://creativecommons.org/licenses/by-sa/4.0/legalcode

Project revenue was expected to come primarily from user charges collected from industries that purchased the recycled water. The user charge was set at about INR 19.84 (USD 0.28) per 1,000 liters of water (based on a yearly increment on an indexation base). The fee was less than the price SMC charged to industries for freshwater, which was around INR 23 (USD 0.32) per 1,000 liters. Revenues received were expected to cover the total annual O&M cost of INR 277 million (USD 4 million).

The TTPs in the Bamroli and Dindoli areas would take in domestic sewerage water and supply the treated, recycled water primarily to textile factories in the Pandesara and Sachin industrial clusters, which house over 400 printing and dyeing units.

Lessons Learned

To date, SMC has been converting 57 MLD of sewerage into 40 MLD of treated water distributed to industries in Pandesara. The TTPs output capacity is expected to expand to 115 MLD by March 2019. Total income received from the sale of industrial-grade water through November 2017 was reportedly INR 747 million (or USD 10.6 million). SMC is also planning to extend the project's scope by supplying recycled water to other industrial clusters outside of the city.

The project was originally intended to be wholly privately financed, that is requiring no direct financial support from the government, and was procured as such in 2011. However, despite successfully awarding the project, it could not be executed as initially conceived and required some restructuring. Subsequently, the project was divided into two contracts, one for EPC and another for O&M, and retendered in 2017. Under this arrangement, the EPC portion would be paid in full by the government, while the ensuing costs of O&M would be recovered from the revenue generated by the project.

Ultimately, the project's O&M component is self-sustaining, in terms of the cost and revenue received. It has allowed SMC to reduce the strain on water resources in the city, while limiting the public fiscal burden of the project. The project has been identified by some as a leading example of successful wastewater treatment projects in India.[59]

The project highlights the following:

- Developing and preparing a successful PPP can take time and municipalities should be open and responsive to changes as the project develops. In this case, following the first unsuccessful effort to tender and deliver the project, the PPP needed to be restructured in order to be viable over the long term.
- Pricing should be carefully determined in light of all of the municipality's aims in pursuing a PPP. In this case, the user charge for the recycled water was set at a rate below the fee charged for freshwater. While this may have contributed to the project requiring some government support, it was also key to ensuring demand for the recycled water, and so the long-term financial viability of the project, as well as achieving the city's aim of conserving freshwater resources,

[59] Langa, Mahesh. 2018. "In managing water, Surat takes lead." *The Hindu,* September 16. https://www.thehindu.com/news/national/other-states/in-managing-water-surat-takes-lead/article24962211.ece;

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