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## Seychelles to boost water supply by raising the height of La Gogue dam

Construction work to heighten La Gogue dam in the Seychelles is planned to begin this November, following the signing of a civil works contract with China's Sinohydro Corporation on 24 August. The contract, which is valued at Rupee 185 million (about US\$ 13.65 million) and is being co-financed by the African Development Bank (AfDB), covers the heightening of the current dam, seepage control of the northern and southern saddle dams, construction of a new spillway on the right bank, upgrading of the existing intake tower, and replacement of pipelines and pipe fittings in the intake tower and tunnel. The civil works, including the raising of the dam height by 6 m, is expected to take two years, and when completed in 2019 will increase the reservoir's total storage capacity by 60 per cent or by 600 000 m<sup>3</sup> to 1.6 × 10<sup>6</sup> m<sup>3</sup>, allowing the dam to collect more of the overflows during the rainy season.

Studio Pietrangeli of Italy has been contracted by the Seychelles' Public Utilities Corporation (PUC) to monitor the civil works.

The La Gogue dam, which was completed in 1979, impounds one of the main water supply reservoirs for Mahé, the main island of the Seychelles. The dam, in the northern Mahe district of Anse Etoile, is a homogeneous earthfill dam with a maximum height of 35 m from the foundation level and a length of 152 m at the crest. Its reservoir is fed by two small streams, but most of the inflow is transferred by pipeline from the river Rochon and Rochon dam reservoir, which has a storage capacity of 50 000 m<sup>3</sup>.

The heightening of the dam to increase storage capacity has been under discussion since the 1990s and was prioritized in the archipelago's Water Development Plan (WDP) 2008-2030, as the least-cost and most efficient solution towards addressing growing water shortages on Mahé. The project is a key component of the Mahé Sustainable Water Augmentation Project, co-financed by the AfDB, and which was prioritized by the WDP to ensure water security. Owing to high withdrawal rates and limited storage volume, water levels at the dam are often very low during the dry season, and projected demand greatly exceeds the current supply capacity. This additional resource is equivalent to about 50 days of water for the islands, representing 14 per cent of

water currently produced. According to the WDP, which was approved by the Government of the Seychelles in June 2011, the unmet water demand for the Seychelles is estimated at around 40 per cent, with the deficit expected to continue to increase if timely investments are not made, inhibiting the economic and social development of the country.

The Public Utilities Corporation has already embarked on smaller scale improvements to transfer water to the La Gogue reservoir, but its impact would be limited without the raising of the dam height and an increase in storage capacity. The Salazie and Mount Simpson transfer schemes (4500 m<sup>3</sup>/day capacity) being implemented by the PUC with an outlay of SCR 35 million (about US\$ 2.56 million) are examples of the efforts to increase availability of water resources. The storage enhancement will also enable the La Gogue distribution system to be improved, which is also part of the first phase of the WDP. The area has intermittent supply issues owing to problems of low pressure and long distances from the existing treatment plants at Hermitage and Le Niol. The construction of a new gravity-fed water supply treatment plant, with a treatment capacity of 4400 m<sup>3</sup>/day, will improve supply, as well as the efficiency of the system, and reduce operation and maintenance costs. The improvement of the system will lead to a reduction of pumping stations, thus lowering high energy costs and shorter distances along the distribution network thus resulting in better pressure management and leak control.

The other alternative considered for storing water was the construction of a new dam on the Grand Anse river in western Mahé. This option was suspended as a result of environmental concerns and engineering complexities. The heightening of La Gogue dam was considered the most attractive option because of the amount of fresh water storage to be achieved, and the potential for transferring surplus water from the adjacent catchment. However, the need for further water storage, with demand for water on the island of Mahé, expected to increase to 130 per cent by 2030, could see the project revived. Prequalification bids are currently being sought from consultancies to carry out a feasibility study and detailed design for the proposed Grand Anse dam (see p25).