

Financing water for growth in Africa



The Infrastructure Consortium for Africa
Le Consortium pour les infrastructures en Afrique

Urban Water Supply, Antananarivo, Madagascar

Summary

The proposed project involves the provision of piped potable water to a number of municipalities (townships, districts) on the fast-growing outskirts of Antananarivo, the capital of Madagascar. The majority of the population in this area is poor and has no access to piped water at present.

A total of 15 municipalities are involved in the scheme so far; others have expressed interest and may be added. The number of people to be supplied by the project is estimated at 205,000 in 2010, rising to 328,000 in 2020.

Discussions have also been held with the government-owned water utility JIRAMA concerning the supply of bulk water along the route of the proposed project's transmission mains, to be delivered to users through JIRAMA's network. This could benefit up to 550,000 people, some of whom do not have access to any piped water at present and some of whom are connected to the JIRAMA network but experience shortages of a severe or sporadic nature.

The project would be implemented by a private-sector project company that would enter into a long-term concession contract (20–30 years) with an association of the municipalities (a subset of an existing and active municipal association OPCI-FIFTAMA). The project company would have full responsibility for financing, investments, operation, maintenance, and collection of tariff revenue direct from users.

Project sustainability is assured by a number of positive factors as follows:

Initial **affordability studies** indicate that tariffs can be set to cover the entirety of operation and maintenance costs – and part of capital expenditures. Grant funding would be required to partially cover some of the capital expenditures. Tariff setting will be governed by the terms of a concession contract.

Strong **performance incentives** will be incorporated into the project design: private sector investors and project finance lenders will receive their return only if the project performs well and generates sufficient revenue over the long term.

There is a supportive **government policy and legal regime** for a project of this nature.

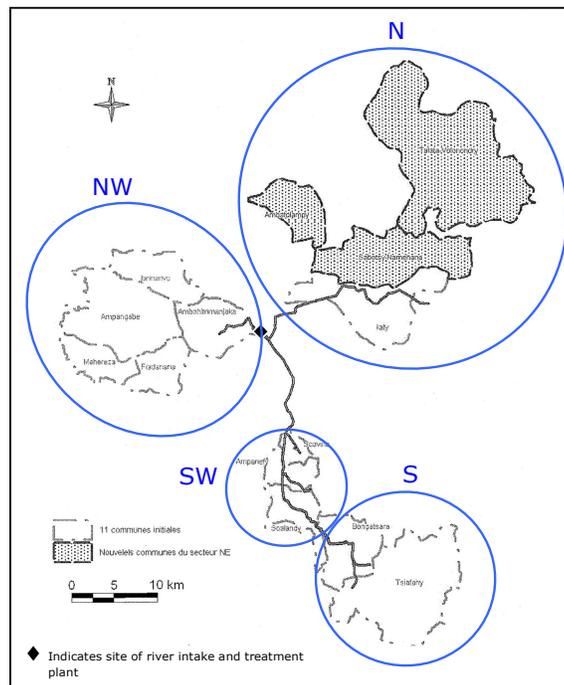
The project is being developed by InfraCo in partnership with a local company, Sandandrano. Sandandrano, established in 1998, is the predominant private company in the water supply business in Madagascar and already operates long-term concession-type arrangements in seven municipalities outside the zone of the proposed project. It is on the basis of its excellent reputation that the target municipalities first asked Sandandrano to provide water to their residents.

Total financing needs are estimated at approximately €42 million. In order to keep tariffs at a level that would be socially acceptable, partial grant funding of initial investments will be needed in an amount estimated at €13 million.

The project

Description and opportunity of the project

InfraCo and its local partner, Sandandrano, have proposed a project to supply safe drinking water to municipalities in the periurban areas of Greater Antananarivo, the capital of Madagascar, Antananarivo beyond the current



MADAGASCAR
Urban water supply, Antananarivo

beyond the current service area of the national public utility. The municipalities chosen for this project are located in the North-West, North, South and South-West part of Antananarivo, as shown in the map below. They total a population of about 207,000 inhabitants.

In addition, discussions have been held with the public water utility, JIRAMA, concerning the supply of bulk water along the route of the proposed project's transmission mains, to be delivered to users through JIRAMA's network. This could benefit up to 520,000 people as shown in the Table below, some of whom do not have access to any piped water at present and some of whom are connected to the JIRAMA network but experience shortages of a severe or sporadic nature.

Name of municipalities	Estimated population to be covered by the project	
	2011	2021
Area NW Iarinarivo, Ambohitrimanjaka, Ampangabe, Mahereza, Fiadanana	50,160	75,707
Area SW Ampanefy, Soavina, Ankadivoribe Soalandy	33,713	60,375
Area S Bongatsara, Ambatofotsy Tsiafahy	19,296	31,431
Area N Nouvelle Ville Avaradrano comprising Ankadikely Ilafy, Sabotsy Namehana, Ambotimangakely, Fiherenana, Vilihazo; plus Ambatolampy Tsimahafotsy, Ambohimanga, Talata Volonondry, Andranovelona, Manandriana	103,824	174,303
Sub-Total	206,993	341,816
Bulk water sales: Estimated additional population to benefit from bulk water sales to JIRAMA	126,000	522,000



Typical view of area served by the project

An investment programme for JIRAMA financed by the European Investment Bank (EIB) includes the production and treatment of additional water from underground sources and, in a later phase, the extension of the distribution network to areas other than those covered by the proposed project. Except for the EIB project, JIRAMA does not have any concrete plans to extend distribution outside its present service area. The InfraCo-Sandandrano project would therefore help address the pressing need of the poorer areas outside the current service area to be provided with a safe supply of water.

The InfraCo-Sandandrano project would be implemented by a private water services company (*greenfield project*) that would enter into a long-term concession contract (20-30 years) with an association of municipalities (for the most part, a subset of an existing and active municipal association OPCI-FIFTAMA). The project company would have full responsibility for financing, investments, operation, maintenance and collection of tariff revenue direct from users.

Replicability

The proposed project has two important features that could contribute to a new model for private sector participation in water provision in fast-growing peri-urban areas in Africa:

- Most private sector participation (PSP) in full-scope urban water utility systems in Africa has involved taking over an existing water service or company (on a management, lease, or concession basis), with all the problems that this often entails. In contrast, the InfraCo-Sandandrano project would start fresh by setting up a new utility company to serve the target areas.
- The proposed project builds on local experience in the sector and is not led by a foreign water company, thus avoiding a number of problems that have affected PSP in the sector in other countries in recent years.

Technical features

The principal physical components of the proposed project are the following:

- Intake from the Ikopa River, which runs through the greater metropolitan area
- Water treatment plant
- Transmission pipelines conveying the treated water to different areas of the metropolitan area

- Service reservoirs and networks of secondary and tertiary water mains
- Service mains and connections of three types (depending on willingness to pay):
 - Standpipes (and in some cases, communal wash basins) serving the public on a paying basis;
 - group taps, each serving several participating families (this alternative eliminates the need for a paid standpipe caretaker);
 - Individual house connections.

The production capacity of the project would be about 7,000 to 33,000 m³/day. This would represent an increase of 4.3 to 20.5% over the present total capacity of JIRAMA. One of the project variants includes bulk sales to JIRAMA for its own network. This would increase the production capacity of the project.

The project is consistent with the technical solution set out in the 2003 Master Plan for the expansion of water production in Greater Antananarivo – namely, abstraction of river water from the Ikopa at approximately the same location (there being no further plans for the abstraction of underground water after the EIB project mentioned above).

Social impact

The InfraCo-Sandandrano project would help reduce water-borne diseases and contribute to alleviate poverty in the areas to be supplied. Greater Antananarivo has a population of about two million



and is growing at a rate of 4–5% per year. The socio-economic characteristics of the various municipalities are broadly similar containing a mix of small farmers, labourers and workers that commute to the inner city. At present, only a small percentage of households (approximately 2-5%) closest to the inner

Girl washing clothes using public tap

city receive water from the state-owned electricity & water company, JIRAMA, which serves the inner city. Residents of the target municipalities rely on water from streams and wells. Family members fetch water from these sources, often spending hours every day in the process, or they pay others to do so, at rates that can be two to ten times as high as the price of piped water. Water becomes scarce during the dry season, and water from wells is sometimes polluted by sewage seeping into the ground. Of necessities, some families boil the water they use for drinking purposes, which adds to their costs. Child mortality due to water-borne diseases is a severe problem.

Environmental impact

The pre-feasibility study included an initial review of possible environmental problems and did not reveal any unusual or unmanageable issues for a project of this type. A more detailed environmental study will be carried out as part of further feasibility work.

Feasibility

Legal, institutional and regulatory environment

The government has launched the Madagascar Action Plan that places great emphasis on increasing availability of water through public-private partnerships and has shown strong support for this proposed Project. The Water Code (1999) states that publicly run water services should be the exception rather than the norm.

The former Ministry of Energy and Mines (responsible also for water) closely followed and encouraged the early stages of preparing the proposed project. A separate Ministry of Water, created in July 2008, strongly supports the proposed project and sees it as one way to help meet the ambitious goals for piped water coverage set out in the Madagascar Action Plan.

There are 29 small municipalities on the periphery of Antananarivo, within a radius of about 15 km of the centre. The 29 municipalities all belong to an inter-municipal association, FIFTAMA, which has expressed strong support for the project proposed by Sandandrano and InfraCo. The affected municipalities have either already signed letters of intent.

Business environment

The Project will be developed in partnership with a private small-scale water operator, Sandandrano.

Established in 1998, Sandandrano is the predominant private company in the water supply business in Madagascar and already operates long-term concession-type arrangements in seven municipalities outside the zone of the proposed project, where it supplies potable water through small systems of standpipes and domestic connections. It is on the basis of its excellent reputation that the target municipalities first asked Sandandrano to provide water to their residents.

The proposed project will operate in localities beyond the current service area of JIRAMA. Sandandrano has held serious discussions about the project with eleven municipalities, which have indicated readiness to sign strong letters of intent, with a combined population at present of about 215,000 (expected to be 300,000 in 2015). Other municipalities – both in and outside the FIFTAMA area – have also expressed interest.

Sandandrano has demonstrated through its previous concessions that even in the poorest communities, households are willing to pay for safe and convenient drinking water.

Economic and Financial analysis

The economics of the Project varies depending on the number and location of municipalities to be served, and on the sale or not of bulk water to JIRAMA. Different project variants have been examined, involving supply to different groupings of municipalities and including a variant that involves some bulk water sales to JIRAMA.

Financial structure of the targeted Project

Capital Costs (in million €)	
Capex and related costs	41.7
Proposed Financing (in million €)	
Debt	24.2
Equity	10.5
Grants	10.7
Grants as % of total capital costs	24%

^(a) This includes development costs and interest during construction.

Highlights and drivers of the economics of the Project

Operating expenditures can be covered in their entirety by water tariffs.

Capital expenditure requires about 30% grant funding to keep water tariffs at a socially and politically acceptable level. This level of subsidy compares with (explicit and usually implicit) subsidy

components in other countries, including in advanced economies (see table 2 below).

Since we are dealing with a *greenfield project* in an unserved area, and unlike most water supply projects, no cross-subsidy can be used from either existing customers, commercial/industrial customers (absent from the covered areas) or from high-return activities such as electricity supply. – Plus, the project cost includes the full cost of transmission network since there is no existing network.

Table 2. Subsidy levels in water prices (explicit and implicit)

Location	Percentage subsidy in price of water
England & Wales	28–58
New South Wales, Australia	5–38
Czech Republic	Up to 65
Chile, urban systems	0

Source: CEPA

Fees and affordability

Our present assumption is that the **maximum “social” tariff** (applicable to standpipes and to group taps) that would be socially and politically acceptable is **MGA 1500 (€0.58; \$0.88) per cubic metre**. Assuming that the social tariff would equal 60% of the tariff applicable to house connections sets the **house connection tariff** to **MGA 2500 (€0.96; \$1.47)**.

As for the **fee for bulk sales to JIRAMA**, it reflects the cost of production (water collection and treatment) and transmission to JIRAMA and equals **MGA 1200 (€0.46; \$0.71) per cubic meter**. It was set to match the fee level charged to municipalities after taking off all costs additional to production and transmission (i.e. distribution, connections and administration costs).

Development status

Conceptual design and pre-feasibility studies have been completed, including an exploratory study on water demand, technical feasibility of the various variants of the Project and preliminary financial modelling of these variants.

Extensive discussions have been conducted at the national level, with the (former) Ministry of Energy and Mines, the new Ministry of water, JIRAMA, and the secretariat in the Presidency responsible for the Madagascar Action Plan.

Preliminary agreements in principle are under discussion with the Ministry of Water of Madagascar, and with the municipalities to be served.

Discussions with potential donors have begun.

Next steps

- Feasibility studies including market and affordability study, and technical design.
- Environmental Impact Assessment study
- Further discussions with potential donors concerning the provision of the grant funding required for the project in order to understand their interest in the project in principle and their requirements, preferences, and concerns.
- Signing of MOUs with municipalities and with the Ministry of Water.

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