

# A Detailed survey of water resources in south-western Madagascar

O.C. Ramanambohitra

May 2015



© O.C. Ramanambohitra

## What is the issue?

Located in south-western Madagascar, the Mahafaly Plateau is a semi-arid area where water availability, already a concern, has been made worse by climate change. The difficulty of accessing water in this area is mainly due to the poor management of existing resources. The lack of synergy between sectors in implementing integrated water resources management exemplifies the problem. The national rate for access to water in rural areas is only 44%, and the rate of 41% for the south-western portion of the country is an indication of the seriousness of the problem.

The project *Accès Eau: Enhanced Water Access for Bio-diversity Conservation and Community Well-being on the Mahafaly Plateau, Madagascar*, funded by the International Development Research Centre (IDRC), is collecting reliable information on surface and groundwater sources located on the plateau and assessing their availability over the long-term.

## What did we do?

An in-depth survey of water sources (i.e. quantity, quality and location) and a survey of the population's practices and needs were conducted in three communes: Masiaboay, Beantake and Itampolo. The water sources survey was conducted by the National Centre for Water, Sanitation and Rural Engineering in partnership with the Research and Technologies Group. These organizations also collected data from other institutions, such as the United Nations Development Programme (UNDP), with support

## Key messages

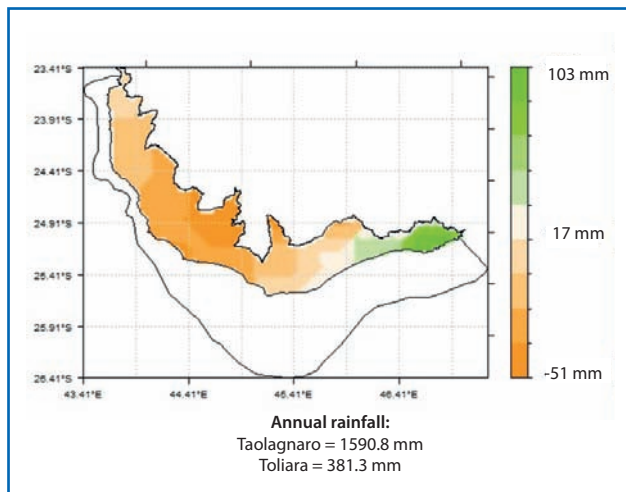
- Poor management of dwindling water resources in the Mahafaly Plateau region of Madagascar at all levels (household, community, commune and regional) makes access to water difficult for communities living in the area.
- Water shortages force women and children to travel up to 20km to get water, and also creates tensions between communities.
- Prior to this research, no information was available on Madagascar's water sources, due to lack of data. This study collected information on 253 water sources across three communes (Masiaboay, Beantake and Itampolo), referencing type, features, location, use and management.
- Information about water sources will be used to prepare an infrastructure and management model for the Mahafaly Plateau. The three communes under study will provide technical and organizational support for this model to ensure the sustainability of water sources.
- The implementation of a system for monitoring and modelling water availability, in partnership with the *Direction général de la météorologie*, will help in addressing the population's current and future water needs.

from the Ministry of Water. The results were processed and added to a database to be used by stakeholders, local authorities and the Ministry of Water. The surveys revealed that some villages are without any nearby water sources; the geophysical study showed that while there is groundwater available, its use varies from village to village.

Current practices were assessed through discussion groups and surveys with 15,000 households. The most important findings were that populations need to be better informed about nearby water sources and that water management needs to be improved and overseen by a reliable body. Villagers are willing to pay for water services, provided that there is transparency. Results from the analysis were shared with local communities and verified through community-level workshops.

## What did we learn?

- For the first time, detailed data is available on surface and groundwater sources in the Mahafaly Plateau. This data confirms the widely held hypothesis that water resources are scarce and need to be managed sustainably.
- During the dry season, women and children often travel up to 20km to get water, which often leads to tension between villages. This situation needs to be considered within a broader climate change adaptation strategy.
- Traditional well and water storage systems have been identified, indicating that communities are already beginning to adapt



**Figure 1: Annual rainfall in southern Madagascar**



© O.C. Ramanambohitra

**During the rainy season, puddles of water are sometimes used as water sources for households, which can lead to negative health impacts**

to water stress. For example, many harvest water from roads during the rainy season and then store it in baobab trees for later use. Practices such as these, unfortunately, can have negative effects on both human health and biodiversity, and should be replaced with more sustainable adaptation options.

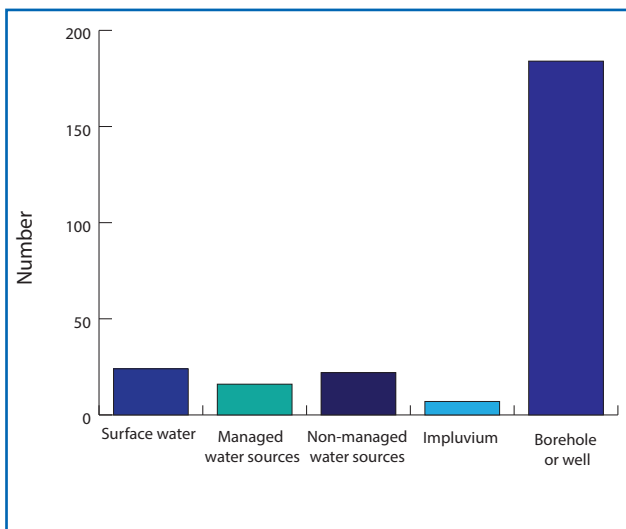
- The project has collected more than 15,000 data points on water sources across the three target communes, including practices surrounding their use.

## Stories of change

Thanks to the important data collected in this study, there is increased dialogue and collaboration between national and international stakeholders working in the study area, including the *Direction régionale de l'eau*, Madagascar National Parks, Jiro sy Rano Malagasy—JIRAMA (Madagascar electricity company), the *Institut et Observatoire de Géophysique d'Antananarivo* and the *Association Soarano*. The NGO Action Against Hunger (AAH) and the WWF's Sustainable Land Management project, in collaboration with a consortium of German universities, are working collaboratively in the intervention sites.

Randrema Raymond, the representative from the Ministry of Water for this project, was recently promoted to Secretary General. He has given the project his full support, declaring that the project is very relevant and will serve to inform discussions on improving national water policies.





**Figure 2: Number of surveyed water sources by type**

## What are the policy implications?

- The communes of Masiaboay, Beantake and Itampolo are responsible for water infrastructure and will need to provide technical and organizational support to management structures, to ensure the sustainability of different water sources. Water supply features must be considered in the improvement of land use planning at the commune level.
- The project has initiated *Comité Eau*, a framework for information sharing and discussion among water stakeholders in the Mahafaly Plateau. The committee includes representation from regional water, health, environment, agriculture and mining organizations (e.g. GIZ, WWF, AAH, Trans'mad Development and *Association Soarano*).
- The Ministry of Water intends to incorporate the research results into a national database, which will be used to inform an integrated water resource management plan and to develop new projects for improving access to water.



© O.C. Ramanambohitra

**Baobab trees are often used to store water, by cutting a hole in the trunk and pouring water inside**

## What next?

The project developed a runoff-climate model, which can be further strengthened and expanded by collecting local data over several seasons. A more robust model would take into account a range of climate factors and contribute towards better planning for water availability over the long term. The following is needed to advance on this work:

- Meteorological services will need to support the implementation of conventional weather stations in the three communes. Regular monitoring of the local climate is needed to periodically adjust the runoff-climate model. For the current phase of the research, satellite data was used, since climate data was not available for the three communes.
- Sufficient quantities of specialized equipment is needed, including piezometers, which are used to measure ground water pressure.
- Partnerships with regional water and agriculture departments need to be developed, and funding will need to be secured in order to acquire necessary equipment and build the required infrastructure.



**Poor management has led to wells and boreholes being abandoned**

## Need more information?

Olivier Christian Ramanambohitra  
Project Leader  
World Wide Fund for Nature  
[cramanambohitra@wwf.mg](mailto:cramanambohitra@wwf.mg)

Website: <http://www.wwf.mg/>



[@wwf\\_mada](https://twitter.com/wwf_mada)

## References

Rafanomezantsoa, S. (2012). Accès Eau: Enhanced Water Access for Bio-diversity Conservation and Community Well-being on the Mahafaly Plateau, Madagascar. Madagascar : CRDI. [<http://bit.ly/1G8TWvw>].

Assemblée nationale de Madagascar. (1999). Code de l'eau-Loi n ° 98.029 - Journal officiel. Assemblée nationale de Madagascar: Madagascar.

Fauroux, E. (2007). *La perception de la pauvreté dans les sociétés lignagères de l'ouest et du sudouest malgache*. l'Institut de Recherche pour le Développement (IRD): Madagascar [<http://bit.ly/18JYtXQ>].

Direction du développement rural de la région du sudouest. (2010). *Plan de développement de la région du sud-ouest*.

World Bank. (2013). *Madagascar : pour un dialogue sur les enjeux de développement*. [<http://bit.ly/18h5gls>].

Gouvernement malgache. (2015). *Plan National de Développement 2015-2019*. Gouvernement malgache: Madagascar.



Canada



This brief reports on research supported by the International Development Research Centre's Climate Change and Water program: [www.idrc.ca/ccw](http://www.idrc.ca/ccw).  
Produced by WRENmedia in May 2015.