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sustainable environment, education & development

Interim Report on:

**Project Tatirano (Phase I): Improving access to clean drinking water via
rainwater harvesting in Sainte Luce, Anosy, southeast Madagascar**



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1. Summary

In rural Madagascar, just 35% of people have access to improved water sources (JMP, 2015). In the small village of Sainte Luce in the remote southeast Anosy Region, wells are in extreme demand as people struggle to find water for drinking, cooking and washing purposes. Exacerbating the problem, these wells are often broken, dirty or dry for much of the year. The only other water sources are a stagnant pond, a heavily contaminated river and a forest stream which is a three hour walk away.

Project Tatirano was developed to take advantage of the high annual rainfall that the east coast of Madagascar receives, helping to alleviate water provision problems in Sainte Luce by the use of rainwater harvesting. Tatirano seeks to provide clean drinking water to students of Ambandrika Primary School by collecting rainwater that falls on the roof of the school building. By coupling the collection and distribution of clean drinking water with Water, Sanitation and Hygiene (WASH) education at the school, the community will gain an understanding of the imperative of using safe drinking water, while accessing a sustainable and replicable model for safe water collection.

Activities in the first three months of Project Tatirano set the foundations for the long term sustainability of all project outcomes. SEED's Tatirano Project Manager and the Head of Communications met with both regional and local authorities to ensure their cooperation, support and understanding of the project and its aims. Following the identification of all relevant stakeholders, a Memorandum of Understanding (MOU) was written and signed to document and highlight the agreed responsibilities of all nine parties.

In order to measure progress at later stages in the project, baseline studies were designed and conducted across Sainte Luce to gather information. During this week spent in Sainte Luce, a meeting was held with the chiefs, elders and presidents of various associations to discuss the management of the project and resulting new water resource. In the week following this meeting, a Tatirano Management Committee was elected and subsequent meetings have solidified responsibilities of members for best management and maintenance practices.

The majority of the construction element of the project took place over the Christmas holiday period in late December to avoid class disruption during term, including the complete replacement of the roof. The remaining construction, involving the installation of the conveyance system and the completion of the tank foundations, was completed during the following four weeks. The rainwater harvesting system was designed for use with two large plastic tanks with a total capacity of 20,000 litres. After extensive research these tanks have been sourced from South Africa and are expected to arrive in the coming weeks.

2. Activity Details

2.1. Meetings

Introductory meetings were carried out in the first three weeks of the project in order to inform all relevant authorities and stakeholders of the commencement of Project Tatirano. In Fort Dauphin, meetings with Directors from the Regional Ministry of Water, Sanitation and Hygiene (DREAH) and the District Ministry for Education (CISCO) were productive, with both departments enthusiastic to keep informed of Tatirano's progress. A meeting with the Chief of Sainte Luce, the Directress of the School and the President of the Parent's Association in Ambandrika formally acknowledged the start of the project and outlined key phases to take place over the following months within their *fokontany* (village). These three influential parties were eager to work with SEED to ensure that the project is managed for future sustainability.



(From left to right) Tatirano Project Manager, Harry Chaplin, the President of the Parent's Association, the Directress of Ambandrika Primary School and the Chief of Sainte Luce.

In early December a meeting was held in order to discuss the project and collectively decide on the next phases. The following parties participated:

- Chief of Sainte Luce;
- Secretary of the Chief of Sainte Luce;
- Chiefs of Ambandrika, Ampanasatomboky and Manafiafy hamlets in Sainte Luce;
- Presidents of the Women's Associations for Ambandrika, Ampanasatomboky and Manafiafy;
- President of COBA (local management committee of the forest in Sainte Luce);
- SEED representatives and translators.

The meeting concluded that the Chief of Sainte Luce would chair the election of the Tatirano Management Committee (TMC). The first meeting discussed the roles of the committee as a whole

and the responsibilities of each member individually in achieving the aims of the project. All members participated whilst respecting one another's opinions and ideas, a very important dynamic in the group that seemed naturally forthcoming and is very encouraging for productive meetings in the future.

2.2. Baseline Studies

A set of surveys were designed to capture knowledge, attitudes and practices (KAP) before project implementation, allowing progress to be measured for future monitoring and evaluation purposes. The surveys were based around obtaining information regarding demographics, income, health and most importantly water consumption, usage, collection and storage. It should be noted that whilst health information was recorded from both household and school pupil surveys, it will be difficult to observe any notable improvements in health within the short timeframe of the pilot phase. However, changes in water consumption and perceptions of water quality are likely to be attainable during this time.



Left: The team practice some rainfall collection before heading out on a busy week of interviews. **Right:** One of the 48 households interviewed about their drinking water situation, health and income.

Designed to be as comprehensive as possible, the study was completed across four intense days in Sainte Luce by two SEED Pioneer Volunteers, a temporary Tatirano intern from the SEED office and the Project Manager. Three translators were used to allow for three teams to undertake surveys simultaneously. The study included the following:

- 30 household surveys in Ambandrika;
- Nine household surveys in Ampanasatomboky;
- Nine household surveys in Manafiafy;
- 30 surveys of school children;
- A focus group with the three teachers at Ambandrika Primary School;
- Two water point observation sessions at dawn in Ambandrika.



48 Household surveys undertaken across the three hamlets took an average 40 minutes each to complete.



Left: A focus group with the school teachers facilitated by the translators and volunteers, and led by the Project Manager, Harry Chaplin. **Right:** School children surveys undertaken in three teams.



Azafady Pioneer volunteers with translators interviewing the school children.

The focus group with the school teachers began to explore sustainability of the system and the role of the teachers, and their involvement within the TMC. Interestingly, the teachers suggested that some of the old roofing material could be used to replace the roof and doors on the school latrines to encourage pupils to stop openly defecating on the school site. If the project were to undertake this small construction task on the latrines, the school could become a recognised and official, UNICEF defined, “Friend of WASH”, addressing all elements of WASH.

Immediate observations from the raw data suggest encouraging signs, including almost all of the households interviewed expressing interest in trying to make their own system on their house after seeing a successful system on the school. The raw data will be analysed using a statistical analysis software, *R* and in the coding language, *S*. The surveys are available upon request and the results of the analysis will be published in the six-month progress report due in April.

2.3. Memorandum of Understanding (MOU)

The MOU represents an agreement between signed partners of their respective responsibilities and their commitment to achieving these. All nine parties signed a single document to ensure absolute transparency of a) all parties involved, and b) everyone's responsibilities. The Tatirano MOU includes the following nine parties:

1. SEED;
2. Chief of Sainte Luce;
3. Chairman of the Tatirano Management Committee;
4. Directress of Ambandrika Primary School, Sainte Luce;
5. President of the Parent's Association, Sainte Luce;
6. Teachers of Ambandrika Primary School, Sainte Luce;
7. Regional Ministry of Water, Sanitation and Hygiene (DREAH), Fort Dauphin;
8. Chief of Education for the Fort Dauphin Commune (CISCO);
9. Chief of Education for the Mahatalaky Commune (ZAP).

The presence of these high-level authorities in Fort Dauphin as signatories adds status to the document and is likely to ensure responsibilities are taken seriously. Nine copies of the MOU were signed by all parties in three languages: English (SEED), French (Fort Dauphin authorities) and Malagasy (all Sainte Luce and Mahatalaky parties).



Left: Members of the TMC sign the MOU (from left to right) the lead teacher; the Directress of the School; and, the President of the TMC. **Right:** The TMC at their first meeting following the signing of the MOUs.

2.4. Materials and Construction



Left: Loading of the camion in Fort Dauphin with the materials including the 5 m lengths of pre-galvanised corrugated metal sheeting. **Right:** The ground breaking ceremony before the start of construction, during which the elder of the village made an offering of rum to the ancestors and asked that they keep the workers safe.

Materials were selected and purchased before collection on the morning of Saturday 19th December. Between the 19th and 24th December, two skilled SEED construction staff, two unskilled casual labourers from Sainte Luce and SEED's Head of Construction completed the replacement of Ambandrika Primary School's old, rusty roof and one of two concrete foundations for the tanks. Work was quick, efficient and carried out to a very high standard with only a few items of future work to complete.



Left: The first sheet of old corrugated metal roofing is removed. **Right:** The clear contrast between old (left) and new (right) roofing is visible.

Unfortunately, the plan to return to Sainte Luce on the 26th December to repair the fascia boards, install the guttering system and complete the second concrete foundation did not take place due to guttering components not arriving from Antananarivo. Whilst this meant that the entirety of the system could not be completed before the start of the school term as intended, as the most disruptive element of construction to school classes, the roof was completed outside of term time.



Left: The concrete ends of the roof are chiselled away in order to remove the end corrugated sheeting. **Middle:** Skilled construction workers fill-in the wooden mould with a concrete mix and new reinforcement. **Right:** The finished concrete end with the new roofing panel in place.



The stages of construction for the first tank foundation.

2.5. Tank Procurement

Sourcing plastic tanks of sufficient capacity at reasonable cost comparable to the UK has been challenging. The two manufacturers of tanks in Madagascar, Makiplast and Groupe SMTP, both produce tanks at costs twice those quoted by others. The two best international options were a Mauritius based company called Duraco, and a South African tank producer, JoJo. The latter produce tanks at a very low cost and at far superior quality than the others. Combining this with low shipping costs through Heneways Freight Services (Pty) Ltd, the JoJo tank was found to be the best option. The exact cost of the two 10,000 litre tanks and guttering accessories, shipping, local charges and internal transport is currently being finalised. The construction team will return to Sainte Luce immediately following the arrival of the tanks to complete installation as soon as possible.

Once the tanks are installed and the system is completed, maintenance training days will be run by the Tatirano Project Manager with the Community Liaison Officer for Sainte Luce and the relevant members of the TMC.

3. Conclusion and Future Work

Work completed to date has been positive and encouraging, and the coming months promise to be just as busy and challenging. The formation of the TMC has been particularly positive, with all members enthusiastic about making Project Tatirano a lasting and effective project. Future meetings and training sessions with the TMC will hopefully yield even more positive steps towards long term sustainability as well as move forward to reach more people with clean drinking water.

The construction and the installation of the system will be completed within the next three months and WASH educational classes will be introduced to the school's curriculum. Water testing of current sources in Sainte Luce and of the rainwater collected on the school will be carried out, alongside further surveys of school children to determine the initial effectiveness of the new water source. Analysis of baseline information is underway, ensuring the ongoing effectiveness of monitoring and evaluation. Dependant on the outcomes of activities in the coming months, further research may be conducted to inform a scale-up across Sainte Luce that could replicate the school system on individual households.