



<b>Title</b>	<b>Ecological Sanitation in Guara-Guara</b>
<b>Keywords</b>	Protection, comfort, sustainability, changes.
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<b>Photograph attached (jpg)</b>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>Mr. Luís MACÁRIO</b></p> </div> <div style="text-align: center;">  <p><b>Ms. Madeliene Fogde</b></p> </div> </div>

## **INTRODUCTION**

Mozambique is considered as one of the poorest sub-Saharan countries where 54% of the population live below the national poverty line (World bank).

Root causes to the poverty and poor health status are found in the lack of access of potable water and sanitation. Every year more than 20 000 Mozambican children under five years die in diarrhoeal diseases, it means 55 deaths daily (UNICEF, Moz). The coverage for water and sanitation is low in rural areas. In 2004, 44.7% of the population has been reported to have access to safe drinking water, (taking the official rate of 500 persons/water source) and 33% have, at least, a pit latrine.

The Sofala province in central Mozambique was considered one of the poorest provinces in the national census of 1997. The climate characterised by seasonal floods and droughts worsens the difficult conditions of access to safe water. The demographic mapping reveals that the majority of the population of 1.5 million is concentrated along the 4 riverbeds in the province. The rural settlements are extremely vulnerable during periods of heavy rains and floods with a critical sanitary environment. Cholera is endemic and only during the first months of 2005, 295 cases with 8 deaths were reported in the provinces of Sofala and Manica (OCHA –Relief Web). In this context it is necessary to act with caution in order to improve and not deteriorate the existing fragile environment.

Mozambique introduced a successful project for low cost sanitation in 1985 with a simple sanplat placed over a pit. According to the national guidelines for the low cost sanitation, the technology is only applicable in areas where the ground water table is 2 meters below the bottom of the pit latrine. Improving the sanitary situation in areas with a high groundwater table with national standards compliance implies promotion of different technological approaches.

In 2001 the Program for Rural Water Supply and Sanitation in Sofala (PAARSS) introduced the first double vault latrines with urine-faeces diversion in 3 primary schools and one health centre at Municipality of Dondo. One year later a domestic toilet model with a bathing room was introduced in the resettlement area of Guara-Guara in the district of Búzi. The comfort, safe faeces disposal, functionality and robustness provided made the latrine acceptable and desired among the beneficiaries and the local government. Other donors and local organisations operating in the province adopted the technology into their own project in areas with a critical high groundwater table.

## **THE PROGRAM FOR RURAL WATER SUPPLY AND SANITATION IN SOFALA- PAARSS**

The PAARSS program initiated the activities in the Sofala province in 1999. It has been conceived as part of the existing decentralized cooperation between the provincial government in Sofala and the Austrian Federal Government through the Austrian Development Cooperation. The program aims at improving the livelihood of rural poor through access to sustainable water points and basic sanitation infrastructures in rural areas.

The program supports the provincial directorate of public works and housing through its department for water and sanitation, DAS, endeavour to implement the National Water Policy and the Rural Water Transition Plan, to achieve the targets of the poverty reduction plan, PARPA, and to elaborate strategies to achieve the target 10 of the MDG's. PAARSS operates geographically in 5 districts and two municipalities but technically and strategically it supports the entire province. By application of a communication and gender strategy PAARSS managed to mobilise, organise and train remote rural communities to participate in the process of procuring a safe water supply and sanitation, as well as assuming the responsibility for management and maintenance of the infrastructures. The local private

sector has been encouraged to actively improve the capacity and contribute to the sector development through technical expertise since private companies through subcontracts carry out all program activities. The challenge for PAARSS is to find technical solutions that are practically applicable, durable and easily sustained in a rural context in collaboration with the future users.

## **INTRODUCING THE ECOSAN CONCEPT**

In year 2000 devastating floods affected the Sofala province in particular the districts of Búzi and Machanga. In the district of Búzi thousands became homeless and more than 4000 people were resettled in the locality of Guara-Guara 15 km Southwest of the district headquarters. As the major Water and Sanitation project already operating in the area, PAARSS was one of the first actors in the emergency support. Sanitation was the major problem in Guara-Guara since the ground water table was high and all the emergency water supply was provided from shallow wells. One of the first actions was construction of 16 emergency latrines using drums of 210 litres capacity.

The idea was to prevent groundwater contamination. During the flood release period and population resettlement, the PAARSS programme was responsible for planning the future water supply in the resettlement area. Guara-Guara had become area with urban planning in a rural context. The resettled families had already started to construct low cost latrines with sanplat but encountered difficulties digging the pit since they always reached the groundwater table. Their solution to the problem was to pile up earth and then open a hole through it.

The acceptance and understanding of the composting latrine technology based on EcoSan concept was not difficult for the future users and the local administration. For them having such latrine that would not contaminate the groundwater was an advantage. To get the concept accepted by among advisors and donors took longer time, 1 ½ year. Only when the replaced families were given the choice between receiving electricity to their new community or to contribute for a private latrine construction and the community chose sanitation, the donor was convinced and the project could initiate as pilot and monitoring process is in progress to evaluate the use, maintenance and cultural behaviour changes.

In the mean time EcoSan had been introduced in a smaller scale in Dondo at public buildings by PAARSS and the Project for Integrated Participatory Development (DEC).

## **OBJECTIVES**

The main objective with the introduction of EcoSan was to guarantee a safe water supply by choosing a technology for toilets that would not contaminate the ground water. Constructing 9 water sources in area with a concentration of 4000 people, high ground water table and addressing with the due importance to sanitation issue would not be sustainable and eventually could be hazardous to public health.

## **METHODOLOGY**

Being part of newly introduced technology in Mozambique and taking in consideration the need from the project to apply construction in massive scale, a model using construction material available in the local market had to be designed for promotion purpose. The task of elaborating the first models for public latrines was tendered out. Only one construction company was modest enough to accept that they really didn't know anything about Ecological Sanitation but on the other hand they accepted to elaborate a model suitable for the context. In close collaboration with the program coordinator a suitable design was elaborated.

In Mozambique slabs for EcoSan latrines were not available on the market and reading about the difficulties maintaining the plastic imported slabs for longer time in a tropical climate made the team opt for the design and construction of a simple squatting plat in local material hence the families would be familiar to how to maintain the surface.

When the basic model had been elaborated it was introduced to the future beneficiaries for approval. The community reaction to a construction in conventional material was that they wanted an enclosed bathroom to the construction.

Traditionally the families have one separate place for washing oneself and a latrine in their yard but now they wanted the two utilities under the same roof. During the elaboration of the model it was fully understood that the future users would provide part of the construction material as well as the labour.

Since one of the project goal is to improve the local capacity it was decided that the construction would be done by local artisans preferably among the replaced settlement and the future users. This would guarantee sustainability since the beneficiaries would know where to find the technical expertise locally to solve their problems with the latrines.

Together with the local administration local artisans were identified and trained by the consultant to produce slabs and construct the infrastructure. A construction site was organised in the middle of the community where the local artisans could work together with non-experienced apprentices.

To guarantee the community participation and the future correct use of the latrines 7 local activists in the settlement, 4 women and 3 men, were contracted. The same activists were active all during the emergency phase encouraging the resettled families to maintain the hygiene at household level by applying PHAST methodologies.

As the programme was under emergency frameworks, the construction material and technical assistance support was provided to the beneficiary after signing a Memo of Understanding where the family committed to participate actively in the construction process and in the future maintenance of their own latrines.

The local radio station and a local theatre group from with the task to stimulate a Demand Responsive Approach for water supply and adoption of appropriate and best sanitation practices in Búzi district during the floods contributed on marketing the new introduced toilet and approach. The theatre group preformed frequently in the resettlement area. Construction of latrines and the messages launched in the communities by theatre, radio and activists made the demand grow from few hesitating families to a long list of applicants, which the program alone could not be able to satisfy.

During the construction the district administration and administrative staff working in the resettlement area were trained in the principles of Eco Sanitation to be able to provide long-term support to the community.

At provincial level technicians from provincial directorate of public works and housing, the directorate of agriculture and the directorate for environmental affairs were all trained in the concept of EcoSan.

## RESULTS

### Direct results

- Rise sanitation profile and EcoSan concept of decision-makers as well as the community, particularly in Sofala and Mozambique in general;
- A sanitation technological option based on community needs and constructed by the local artisans has been made available in Guara Guara;
- 210 composting latrines constructed and correctly in use instead of the 105 planned initially. It was possible to double the planned number due to active contribution of beneficiaries and budget increase from donors;
- 10 local artisans trained and constructing more toilets in and out Guara-Guara; and
- 7 local activists trained to disseminate the concept and give long-term support to users

### Indirect results

- Project implementation guideline for artisans and activists elaborated;
- Technology applied by other local initiatives in other towns or districts;
  - Mozambican Red Cross constructed 12 latrines in Nhamatanda district and Beira;
  - Rotary Club of Beira 4 geminated toilets in Beira and 4 in Mussassa primary school;
  - UNICEF constructed 265 more toilets in Guara-Guara and 43 in Marromeu and 50 in Beira;
  - Italian Cooperation is planning to construct 30 latrines in Munhava, Beira;
  - Individuals start to collect material (bricks) for construction of latrines in Búzi and Marromeu;
- Awareness on water resources protection;
- Under geo-hydrological adverse conditions the technology is being considered as potential acceptable option if cheaper options are not suitable; and
- Sanitation on the agenda as something attractive.

## PROJECT COST AND DURATION

The project had a time span of 9 months, August 2002 – April 2003. The total amount spent was US\$ 117,000:- approximately, distributed as follows:

**Table** – Cost distribution per activity

<b>Activity</b>	<b>Cost (US\$)</b>	<b>Beneficiaries (Persons)</b>
200 Family toilets	78,940.9	1200
10 Public toilets	7,000	2000
Community Education	10,398.6	2000
Consultancy	13,982.	Project
Supervision	6,215.59	DAS/Project
<b>Total</b>		

Taking the funds spent for construction, community education and supervision, the average cost per family was US\$ 478 for the 200 families, corresponding to an investment per capita of about U\$ 80 while public toilets had an average cost of US\$ 700/unit. In this calculation, the consultancy fees were not considered as direct cost to the infrastructure.

In collaboration with UNICEF it will be possible to increase coverage in the settlement. Local artisans have constructed additional 200 latrines and the activists help families solving basic

problems.

## **RECYCLING URINE**

Although the toilet option is suitable for recycling, the focus during the implementation was not the reuse but find with the communities a safest way of handling the excreta and reduce groundwater contamination in an area where cholera is endemic.

Use of compost as well as ecofert for growing vegetables and gardening have been reported in some communities and in one primary school in Búzi and Dondo, however this use is not program guided therefore has not yet been monitored.

## **LESSONS LEARNED**

- Community participation in the design of sanitation infrastructures contributes to appropriate use and maintenance;
- Community participation in the project implementation has impact in reduction of investment costs and increase the number of beneficiaries;
- EcoSan technologies solve problems of sanitation in adverse hydro-geological conditions and protect the environment
- Adoption of double chamber EcoSan infrastructure is long lasting investment.