Project Title: Sustainable Management of Eflows for west coast rivers of Madagascar: a case of the Betsiboka River

7th WIOSAP PROJECT STEERING COMMITTEE
DARES SALAAM, TANZANIA
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Name of IP: Ministry of Environment and Sustainable Development

Management Pollution, Waste and Environmental Dimension Integration Directorate

Environmental Assessment Service

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Why the Project?

- **Objective:**

Overall Objective : To promote sustainable management of the river basins in the west coast of Madagascar to maintain a healthy flow and reduce sediment load to minimize detrimental impacts on coastal ecosystems.

- Specific Objective 1: To increase awareness on EFA and sustainable practices for reduced sediment pollution and downstream impacts
- Specific Objective 2: To conduct the EFA in the pilot rivers catchment of Betsiboka to inform sustainable management of river flows Specific Objective 3: To implement the recommendations of the EFA for sustainable river management

Why the Project?

- **Partners:**

➢Ministry of Water, Sanitation and Hygiene (MWSH)

➢Ministry of Fisheries and Blue Economy

➢Ministry of agriculture and livestock

➢Ministry of Mines and Strategic Resources (MMSR)

➢Ministry of Meteorology and transport (MMT)

➢National Authority for Water and Sanitation (NAWS)

➢National Environmental Research Center (NERC)

➢National Center for Water, Sanitation, and Rural Engineering (NCWSRE)

➢National Oceanographic Research Center (NORC)

➢Decentralized Local Authorities (DLA), local authorities and Community Associations

➢ Sokoine University (Tanzania)

Key Achievements

Outcome1 : The capacity of the stakeholders on EFA and sustainable practices for reduced sediment pollution and downstream impacts increased

- Collection of available data from different stakeholders and organization and literature review(bibliography, sectories (National and Regional in Livestock, Agriculture, fishing, Forest, Mines, Water Sanitation and Hygiene and National Authority of Water and Sanitation)
- National launching and communication workshop with the National Technical Committees (NTC) established and validation of the ToRs of the attributions NTC and RTC and identification of the intervention sites in Antananarivo.
- Courtesy visit to administrative authorities, local and

Key Achievements (cntd)

Outcome 2 : The EFA for the pilot rivers catchment of Betsiboka conducted and used for sustainable flows management

- TORs for the consultant to conduct the study of EFA elaborated and validated by NTC and RTC in Antananarivo and Mahajanga.
- Call interest manifestation to conduct the EFA effected
- Conduct of the EFA (according to TOR and methodology): inventory, surveys, data analysis, evaluation matrix on fields, (effected hydrological study in results of flow measurement, implementation of hydrological modeling of Betsiboka watershed, hydrological modeling results and hydraulic modeling results, sil analysis and modeling water erosion(rain erosivity, soil erodibility, calculation of LS factor and C factor, soil losses in the watershed), study of fish, macroinvertebrates, vegetation and water quality
- Monitoring the development of the EFA at Antanetibe Anativolo, Anjozorobe, and at Ambolotarakely, Ankazobe for Region Analamanga,, at Ambodiroka Maeavatanana for Region Betsiboka, at Madirovalo, Marovoay and Boanamary for Region Boeny

Key Achievements

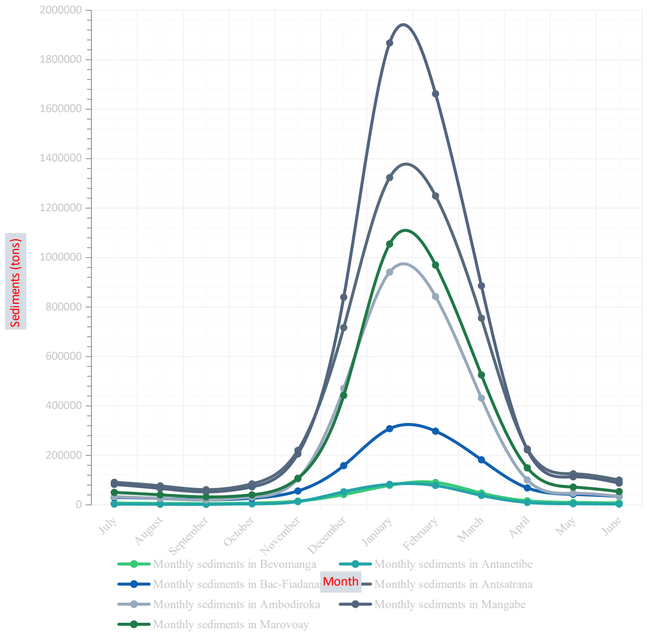

Photo: Silting of the Betsiboka bed in MarovoayPhoto: Erosion on the right bank of Betsiboka in Marovoay
Photo : Monthly sediments of Betsiboka river

Key Achievements

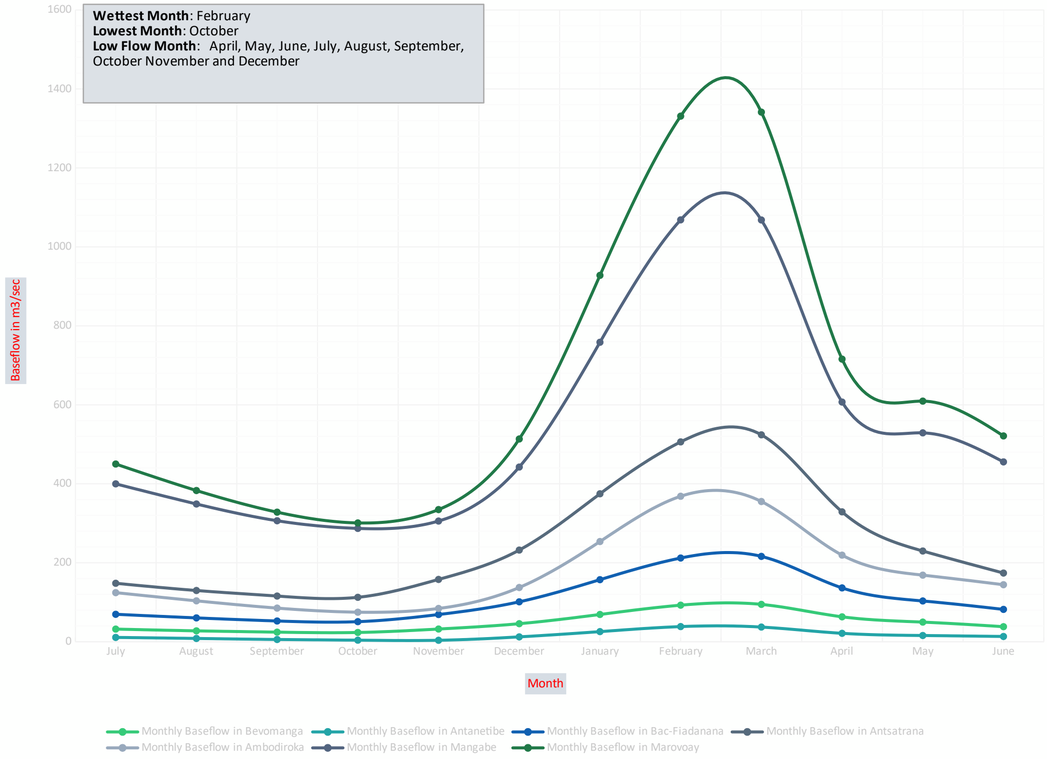

Photo: Monthly baseflow of river Betsiboka

Key Achievements

Outcome 3.0: Improved the quality of the water and ecosystem condition through the EFA implementation

- Information and awareness meeting at the pilot site with different sectors like fisheries, Water, Mineries and agriculture and livestock
- Setting up learning groups by sector and common interests with establishement associations of fisheries, agriculture and miner
- Implementation of farmer school fields by sector and interest group with technical awareness by each sector
- Implementation of the actions recommended by the EFA (Three sanitary toilett installed in the pilot site Ambodiroka, Re-stocking of 15,000 fingerlings in a lake at Ambodiroka to ameliorate the fisheries production, Plantation trees in Ambodiroka pilot site and Antanetibe Anativolo, Analamanga , Distribution of paddy to the farmers' association in the pilot site and distribution miner’s cartes of members minner association in the pilot site
- Monitoring the effectiveness of carried out actions in the pilot site and Completion of recommended actions. Adherence to ecological restoration,

Key Lessons Learnt

- It is necessary to revitalize the basin agencies along the Betsiboka watershed and affluents
- the large flows of Betsiboka generate large quantities of sediments coming from natural phenomena (water erosion) and anthropogenic activities (mining, bush fires, deforestation, failure to comply with regulations on the geometric pitch of banks of 25m by agriculture)
- Strict monitoring and control of formal and particularly informal mining activities throughout the basin but especially in the Districts of Anjozorobe, Ankazobe, Maevatanana, Ambatoboeny, Marovoay and Tsaratanana

Key Lessons Learnt

- establishment of artificial basins north of Antsatrana, Ambodiroka, Madirovalo and Marovoay to recover the large mass of water, during the cyclone season, which floods the great plains north of Maevatanana;
- installation of a complete measurement station for physical parameters (pH, conductivity, turbidity, MES, etc.) and chemical parameters (toxic or non-toxic contaminants) of the Betsiboka river at the outlet Boanamary.
- annual measurements of flow rates of the Ikopa, Betsiboka and their main tributaries by technicians from the MEAH Regional Directorates through the

Project Sustainability

- Local, districal and regional authorities , as well as the technical sectors are convinced and ready to apply banks protection, and the right method of distributing growing water.
- Formalizing gold miner’s associations improves the health of the Betsiboka watershed.
- Reducing bush and forest fires improves the health of river flows
- We hope that in the end, the establishment of an ecological flow in the Betsiboka watershed will serve as an example for other basins in Madagascar, knowing that everything rests on the one hand, on the will expected from the Government, aware of this

THANK YOU