ENHANCING COMMUNITY ACCESS TO CLIMATE FINANCE THROUGH WATER PAYMENTS FOR ECOSYSTEM SERVICES IN ANDAPA MADAGASCAR

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I-INTRODUCTION

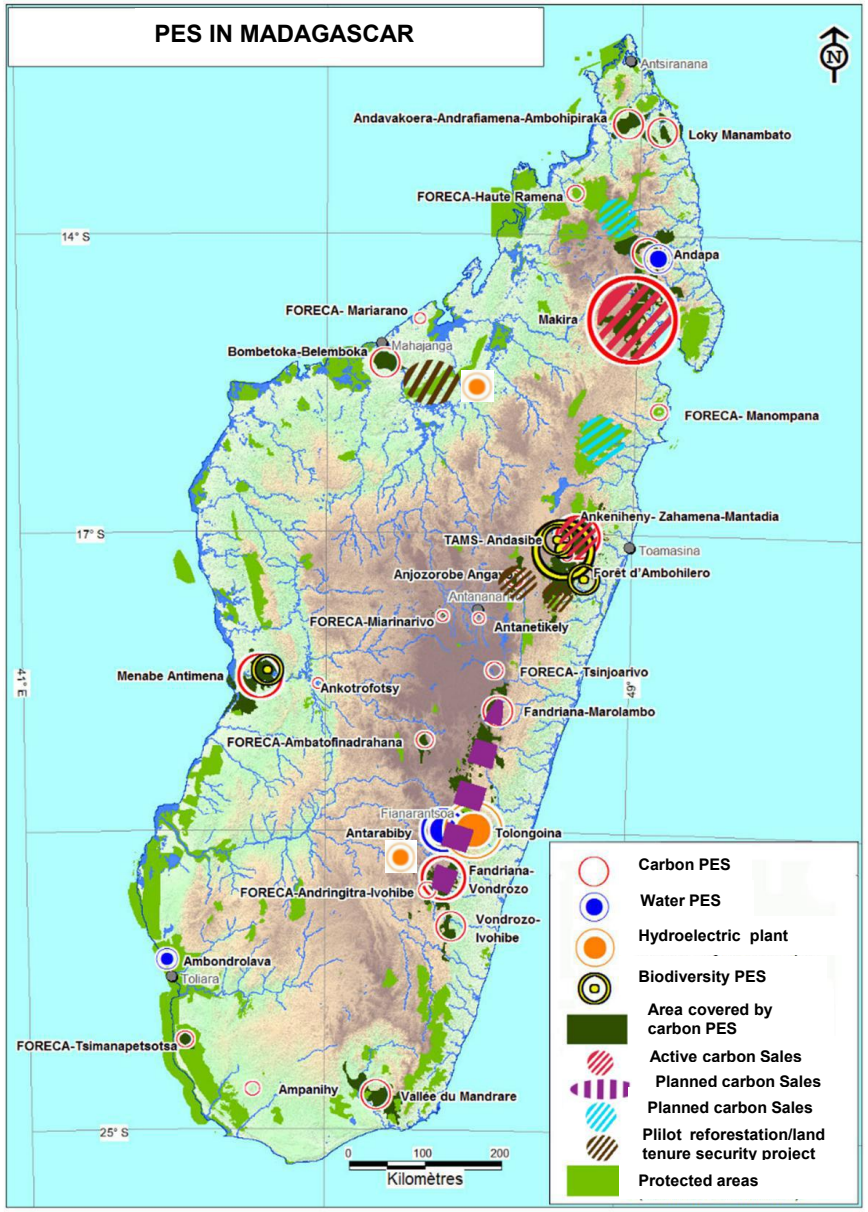
- Madagascar has an area of about 590,000 km²
- Population: 28,000,000 according to the general census in 2018
- Population in 2025: 30,000,000 according to the projection
- Madagascar has a unique biogeography reflected in an exceptional rate of endemism. Thus, more than 85% of the flora, 39% of birds, 91% of reptiles, 99% of amphibians, and 100% of lemurs are endemic to Madagascar, amounting to around 15,000 plant species on an island that represents only 0.05% of the Earth's land area.
- Economic and monetary values of biodiversity and ecosystem services in Madagascar:
  -Total value within Protected Areas: 13 to 22 billion dollars per year, including 953 million for regulatory services (carbon, hydrology, erosion, pollination)

  -Total value outside Protected Areas: 25 to 38 billion USD/year
  -Total combined value (PA + outside PA): ≈ 38 to 60 billion USD/year
  -Estimated share of national GDP (2022 ≈ 15 billion USD): About 250 to 400% of GDP

- Madagascar is covered by 7 to 8 million hectares of forests. However, forest losses are detrimental to biodiversity, with 40% of forests and natural habitats, which serve as the main refuges for this extraordinary biodiversity, lost over the past 50 years. About 100,000 hectares of forests disappear every year. This erosion of biodiversity goes hand in hand with the degradation of biophysical resources (soil and water), particularly water, which is manifested by a decrease in both its quantity and quality, given that the predominantly rural population is heavily dependent on natural resources.

- Consequently, the lack of water has been felt, for example, for several years, and the problems caused by water shortage are among the main concerns of the Malagasy government due to low water availability and its quality being threatened by overexploitation, poor management, and pollution.

- To address this ongoing degradation, Madagascar is developing tools to enhance ecosystem services, such as the Payments for Ecosystem Services (PES) mechanism, through its institutionalization within the Ministry of Environment and Sustainable Development .



II-MATERIALS AND METHODS

- Literature review
- Interview with the president of Tohampotsy PES platform
- Tools : Maps

THE FOUR MAIN TYPES OF ECOSYSTEM SERVICES

Provisioning ecosystem services

Supporting ecosystem services/ecological functions

ECOSYSTEMS

Regulating ecosystem services

Cultural ecosystem services

WHAT IS A PES MECHANISM?

Payement for Ecosystem Services (PES) is the voluntary transactions in which a well-defined Ecosystem Services (ES) or a land-use likely to secure this service is being bought by at least one ES buyer from at least one ES provider if, and only if, the ES provider secures ES provision during a specified period of time (conditionality). (Sven Wunder 2005)

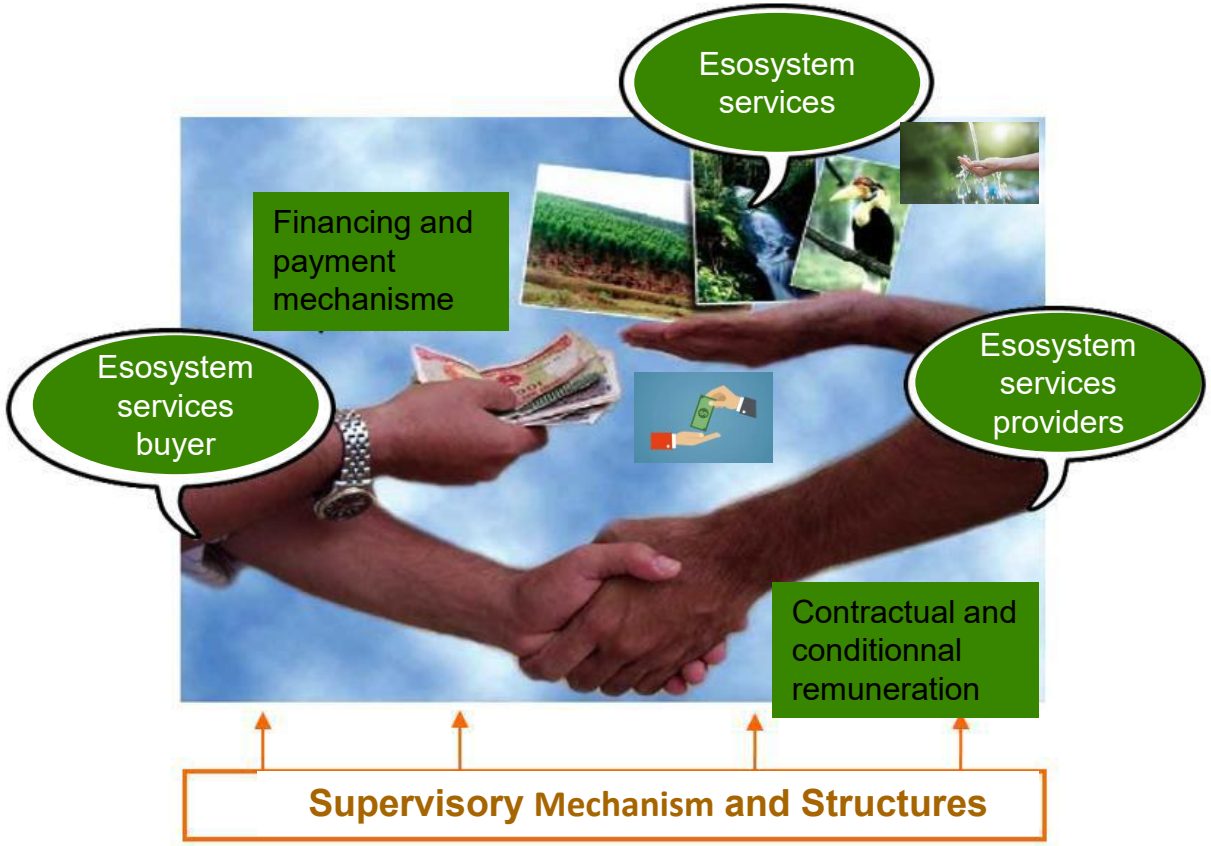


Fig. 1 Structures of PES mechanisms (Mayrand & Paquin, 2004 ;
Pagiola & Platais, 2005 ; Wunder, 2005)

III-RESULTAT
CASE STUDY : WATER PES IN ANDAPA

LOCATION

- Andapa is a town of approximately 70,000 inhabitants, spread across 10 Fokontany: Antangena, Ankevaheva, Beanana Atsimondrano, Andapa Betsakotsako, Sahamazava and Andongozabe, Beanana Avaradreno, Sud Anjiahely, Antohobalo, Andongozabe.

IMPLEMENTATION OF THE PES MECHANISM

- From 2009 until the end of March 2010, APMM, or the TAMBOHITRAVO MALAGASY Association, led an awareness campaign among the population of the urban Commune of Andapa. The goal was focused on environmental education within the framework of the application of the PES system for sustainable water resource management.

- In April 2010, the PES was discussed at the municipal council level and the related text was adopted by the municipal council.

- Thus, the urban commune promulgated Municipal Decree No. 36/10/CU/AND regarding the implementation of the PES system. The Tohampontsy Association was tasked with setting up all governance and management structures.

- In Andapa, the implementation of the PSE Eaux system is legal. Access to drinking water service is paid.

STRUCTURE OF THE WATER PES MECHANISM

MEMBERS OF THE PLATFORM

Upstream: providers of ecosystem services

- Initially, the service providers consisted of 35 farming families in the Fokontany of Sahamazava. They manage 42 hectares of watersheds with cash crops. The practice of slash-and-burn agriculture, or tavy, has been prohibited since 2010. They are grouped in an association called MAMY RANO. .
- Since 2013, following the installation of a new infrastructure base for the drinking water supply in the Fokontany of Andapa Sud, another association called TCA Tsara Rano Cascade of Andapa was established. This association brings together around one hundred families to manage 200 hectares of watersheds: approximately 130 hectares of cultivated land and 70 hectares of forest, which cover the main water resources to supply the 500m³ reservoir.

STRUCTURE OF THE WATERSHED PES MECHANISM (CONTINUED)

Amount of water supplied by the watersheds

- For public water fountains: the consumption of distributed drinking water is 212.6 m^3/day, or 6,380 m^3/month.
- For households: 351.6 m^3/day, or 10,553 m^3/month.
- In general, daily consumption is 564.2 m^3/day, whereas the source can supply 750 m^3/day, accumulated over two reservoirs at Sahamazava and Andapa Sud.

STRUCTURE OF THE WATERSHED PES MECHANISM (CONTINUED)

Downstream: beneficiaries of ecosystem services

- The main beneficiaries of water distributed through 86 water fountains include :

-JIRAMA (Malagasy Electricity and Water)

-Urban Municipality through consumption tax and surcharge for work funds

-Private and public institutions
-102 households
-Schools
-All other water users

TYPE OF PAYMENT AND FINANCING

Payments by ecosystem service beneficiaries

- Household consumer contribution: $0.5/household/month
- Municipal surcharge: not yet paid into the Tohampotsy PES platform fund
- Partnership with:

-JIRAMA: Training on plumbing and electrical maintenance for members of the Tohampotsy PES platform

-NGO Graines de Vie:

-NGO Tsinjo Aina: financial management

USE OF COLLECTED FUNDS

- Reforestation of the Sahamazava watershed
- Protection of watersheds
- Expansion of water infrastructure
- Training and awareness campaigns
- Creation of nurseries
- Promoting green employment

SUMMARY OF RESULTS OBTAINED

- 77 ha of protected areas in Sahamazava
- 200 ha of protected areas in Beanana
- 10,553 m^3/month of water distributed
- 86 water fountains installed
- Strong community involvement
- Fundraising and partner mobilization
- These ecosystems are vital for maintaining water flow, improving water quality, and ensuring hydrological stability, while also contributing to climate regulation through carbon sequestration and oxygen production.
- Ecologically, the reforestation and watershed restoration activities financed through the PES scheme reduce erosion, stabilize soils, and maintain water availability during dry seasons. They also contribute to the conservation of biodiversity, particularly endemic species found in the humid forests of northern Madagascar, while acting as essential carbon sinks in the global fight against climate change.
- Economically, the Andapa PES model demonstrates that small, consistent financial contributions can evolve into an effective sustainable financing mechanism. It supports green jobs (creating green jobs related to nursery development and reforestation), and promotes environmental awareness, while aligning with Madagascar's Nationally Determined Contributions (NDCs) and national climate strategies

So, it contributes to improve living conditions through acces to drinking water and various training programs provided by the parteners organizations

IV-DISCUSSIONS ET RECOMMENDATIONS

KEY LESSONS

- Operational PES
- Participatory governance model
- Tangible benefits for the population
- Example to be replicated in other areas

RECOMMENDATIONS

- Development and implementation of the legal and regulatory framework for the PES mechanism in Madagascar
- Development of national water-related PES initiatives
- Strengthening awareness and capacity building in PES
- Increasing funding for the effective implementation of the PES mechanism

CONCLUSION

- The Tohampotsy PES is a successful example of sustainable natural resource management by and for the community
- It links ecological protection with access to drinking water

Thank You

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