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## **Developing a sustainable financing of protected areas: watershed-based payment for ecosystems services in Madagascar**

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### **Abstract**

In order to address its severe environmental degradation, the government of Madagascar adopted the creation of protected areas as the most important conservation strategies. According to the Foundation of protected areas, Madagascar has about 108 protected areas for a total cover of about 6 million ha. Although this strategy has helped to slow deforestation, protected areas are still under pressures from the surrounding communities.

Slash-and-burn agriculture is the primary cause of deforestation around protected areas. However, persuading farmers to abandon slash-and-burn has remained challenging over the years. Farmers living in the peripheral zone of a protected area are already compensated by receiving 50% of the park entrance fees through ecotourism, but this is insufficient to eliminate all pressures.

In addition, the national park service, called Madagascar National Park, is highly dependent on foreign aid and faces a financial gap to manage effectively the national park network. However, the USAID Bureau for Africa pointed out in its report after the political coup in 2009 that the scarcity of resources might lead donors to re-think about their priorities and invest in more urgent issues or other countries where their investments have more chance to bear fruits.

Therefore, it is more than ever urgent to develop a more cost-effective way to tackle the persistent threat from slash-and-burn agriculture on protected areas and seek a financial sustainability if it is to save and protect the remaining and highly threatened biodiversity and forests.

In this perspective, Payments for Ecosystems Services (or PES) were proposed by academics in 1995 as a possibly more cost-effective way of meeting rural needs around protected area compared to traditional and indirect conservation policy tools (Ferraro, 2001; Wendland, K.J., et al., 2009; Wunder, 2005; Pagiola et al., 2005). In fact, such direct payment is specifically targeted at project outcomes which will defray the costs of managing protected areas by strengthening the links between local communities' well-being, their actions and habitat conservation (Dudley, N. and Stolton, S., 2003, Ferraro, 2001).

Despite its promising potential to address more efficiently and effectively environmental issues, PES is still at its nascent phase in African countries due to certain

barriers which hinder its development.

This research aims at assessing the potential of payment for ecosystem services as a sustainable financial tool for environmental conservation and poverty alleviation in Madagascar, and, at designing a payment scheme adapted to the local context. There are different types of ecosystems services but our research focus is on watershed-based services of forests for the following reasons:

- ♦ Payment for watershed-based services (or PWS) is rare in the country as all initiatives remain at the planning stage due to multiple barriers hindering their development (Ferraro, 2009).
- ♦ PWS have deserved less attention compared to carbon services. In contrast with carbon services, markets for watershed services are largely unexplored.
- ♦ Due to time and resources constraints, assessing a payment for watershed services is more feasible technically since it has a local setting.

The Ranomafana National Park was chosen as a case study. Data were collected from existing publications and a fieldwork conducted in Madagascar from September to mid-October 2010. The fieldwork objectives were to understand the situation on the ground and interview key stakeholders to the development of the PWS mechanism, ranging from public to private institutions and individuals.

Based on a holistic analysis, it is concluded that a PWS mechanism can be put in place in Ranomafana for the following reasons:

- (a). The demand for the watershed services is clear and financially valuable to a potential buyer, namely the existing hydroelectric company
- (b). The provision of this watershed service is threatened by slash-and-burn practices, but abandoning this unsustainable land use has the potential to address the problem.
- (c). NGOs are active in the Ranomafana region and can serve as intermediaries to assist the villagers and the potential buyer in developing negotiations and sharing expertise on PES
- (d). Villagers have a clear land title
- (e). Existing policies and laws do not forbid the market-based mechanism under a PES scheme.

Two possible PWS scenarios could be suggested: (1) The PWS scheme is integrated with the National Fund for Water Resources or (2) the hydroelectric company could directly pay upland farmers

**Keywords:** *payment for ecosystems services, watershed services, slash-and-burn, financial sustainability, protected area, willingness-to-accept*