

Introduction

The Abuan watershed in the Municipality of Ilagan, Province of Isabela, provides a wide range of watershed services that benefit upland and lowland farmers, residents and indigenous communities. The upper catchment is part of the 300,000 hectare Northern Sierra Madre Natural Park, which hosts the largest remaining old growth forest in the Philippines. The park is known for its rich biodiversity and is the habitat for the jade vine and the rare Philippine Eagle.

However the watershed and the park resources are under threat from illegal logging, swidden farming and forest clearings. In deforested upland areas, the exposed soils erode during rainfall events resulting in water pollution and sedimentation of waterways. In the Abuan river, for example, more than 100,000 board feet of illegal timber were confiscated in 2008-2009 at the height of enforcement campaign launched by the Provincial Government of Isabela.

The ongoing enforcement campaign focuses on “hard” enforcement such as forest patrols, surveillance, search and seizure of illegal logs, legal support and monitoring over the Abuan River. The “bogadors” or timber haulers numbering about 150 have lost their livelihoods due to enforcement activities. They are expected to return to the forests and renew timber poaching if no alternative livelihoods are given them.

Before the campaign, enforcement has been weak due to lack of personnel & equipment, corruption, slow prosecution of cases and lack of political will. The systemic causes of upland poverty, high population growth, lack of property rights and poor governance contribute to the malaise of illegal logging.

Given the ecological importance of watersheds in the Sierra Madre and the extent of human dependence on their ecological services, watershed degradation has huge environmental and socio-economic costs. These costs are in the form of present or future losses of clean and abundant water, silted canals, diminished base flows, landslides, increased flooding, loss of biodiversity and forest-based livelihoods.

Lately, payments for environmental services (PES) emerged as a market-based tool to secure watershed services for socio-economic development. Through incentives given by downstream water users to upland farmers, the latter refrain from destructive activities. The forests are maintained and the watershed functions are sustained.

These payments are renewed and made contingent on satisfactory delivery of outputs, whether in areas reforested, adoption of agro-forestry practices, or forest patrols by upland beneficiaries. Payments for watershed services, however, are not a panacea to forest problems. Combined with regulation and enforcement, awareness raising and education, tenurial security and capacity building, PES can be an effective mechanism to produce conservation results in a sustainable and equitable manner.

This report provides baseline information and better understanding on the hydrological and geological characteristics of the Abuan watershed that lay the foundation for present agricultural uses and potential uses for hydropower, irrigation, water supply and ecotourism. It is divided into five chapters corresponding to topics of commissioned studies and a proposed PES scheme.

The first chapter on the Hydrology of the Abuan Watershed by Engr. David Rojas Jr. describes the water balance, river hydrography, land use scenarios and simulated impacts on the hydrology. He also presents a conceptual feasibility of a combined development of irrigation, hydropower and water supply facility.

The second chapter on the Hydrogeology of the Abuan watershed by Mr Reynar Rollan describes the hydrogeological characteristics of the watershed and its groundwater potential for domestic use.

The third chapter on the Soils and Land Uses of the Abuan watershed by Dr. Perfecto Evangelista characterizes the soils and the present land uses. He presents a soil erosion model based on present land use. An agro-forestry and reforestation scheme on upland corn and open grasslands respectively are proposed.

The fourth chapter on River-based Eco-Tourism Study by Anton Carag presents the tourism potential of Abuan watershed and feasibility of an ecotourism program.

Finally, the fifth chapter on Payments for Environmental Services by Edgardo E Tongson summarizes the watershed services, potential economic use and benefits and presents the relevant sectors that may contribute to PES schemes and the sustainable financing of the watershed.