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Options for the Payment of Hydrological Services in South-west Ethiopia



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PREFACE

This study was produced through the collaboration of Wageningen University and the Non-Timber Forest Products Research and Development Project in South-west Ethiopia. The following students were involved in the production of this study concerning payment for water services:

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The Project is very grateful to the students from Wageningen University and their staff supervisors for their involvement in this study which is assisting the project in achieving its goals of reducing poverty and achieving sustainable management of the forests of southwest Ethiopia. The Project hopes that the students involved in this study will have gained from this experience and that it will assist their progress toward their career goals.

Prof. Adrian Wood
Project Manager.

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ABBREVIATIONS

CONAFOR	National Forestry Commission (Mexico)
CTO's	Certified Tradable Offsets
ES	Environmental Services
FONAFIFO	National Forestry Finance Fund (Costa Rica)
FDRE	Federal Democratic republic of Ethiopia
GEF	Global Environmental Facility
GHG	greenhouse gas
HS	Hydrological Services
INE	Instituto Nacional de Ecologia (Mexico)
IFM	Innovative Financial Mechanisms
MARN	Ministry of Environment and Natural Resources (El Salvador)
NGO	Non Governmental Organization
NPA	National Program of Action (Ethiopia)
NTFP	Non Timber Forest Products
PA	Peasant Associations (Ethiopia)
PES	Payment of Environmental Services
PHS	Payment of Hydrological Services
PSAH	Payment of Hydrological Services (Spanish)
SLA	Sustainable Livelihoods Action
SNNPR	Southern Nation, Nationalities and Peoples Region
SW	South-West
WRC	Water Resource Cooperation (Ethiopia)
WU	Wageningen University

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Fig 1 - **Fig1: Administrative Map of SNNPR**

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CHAPTER ONE: GENERAL BACKGROUND INFORMATION

1.1 Introduction

Ascent Environmental Consultancy is an agency which provides advice in the field of environmental and rural development sectors. The present study in the international policy framework and case studies is intended to enrich NTFP (non timber forest products)-Research and development project in SW-Ethiopia with relevant information it needed to meet its goals. Accordingly, the team has investigated strength and opportunities of challenges in implementing payment for hydrological services (PHS) in SW-Ethiopia. The major goals of the agency to undertake this study are listed below as general and specific objectives:

The general objective of the this study is: *to explore possibilities for payment of hydrological services with the aim poverty alleviation and conservation of natural resources in Ethiopia by investigating international related policy frameworks and relevant case studies.* Moreover, the agency was specifically interested in:

- To analyze international policy framework related to payment of hydrological services and to summarize the key-points obtained from policy frameworks.
- To analyze the potential of the outcomes of the policy framework found for implementing payments for hydrological services in the forests of SW-Ethiopia.
- To make recommendations concerning the possibilities of project intervention, on the topic of payment of hydrological services.

To achieve its goal, the agency has carried out a literature study to gather relevant and qualitative information on the issue. In line with this, written documents, journal articles, bibliographic databases (WU-Library) and electronic documents from the internet were used as secondary sources of information to look up Environmental policy framework and case studies related with payment of hydrological services existing globally.

The outcome of the literature study is organized to produce a complete report. The specific topics addressed in its first part; biophysical relationship between forests, water, and people. Secondly, international policy frameworks, more importantly on the creation of market for PES and policy recommendations to governments and parties, thirdly, the report is entirely devoted on the identification of case studies in the world (particularly, cases of Mexico and Cost Rica are dealt with in detail) to adopt experiences to the Ethiopian realities and finally, the Ethiopian situation with regard to natural resource conservation and water development strategies. Which are being undertaken by the current Ethiopian government, is **exhaustively** discussed. Furthermore, the conclusion and recommendation part has been written to take future action for development of PES.

1.2 The Project Area

The Southern nation, nationalities, and peoples regional state (SNNP) is one of the regional states of the Federal Democratic Republic of Ethiopia. The region has a relatively wide area of forest land with about 11% of the total area covered in forest (Million, 2004). These patches of forests are mainly found in Bench Magi, Keffa and Shekka zones. They are among the wettest areas in the country and covered with the last remaining areas of the Tropical African Montane forest. The local population of the SNNP region of SW-Ethiopia depends for an important part on non-timber forest products. Hence, the forests in the region are very important for both conservation and sustainability of the livelihood of local communities.

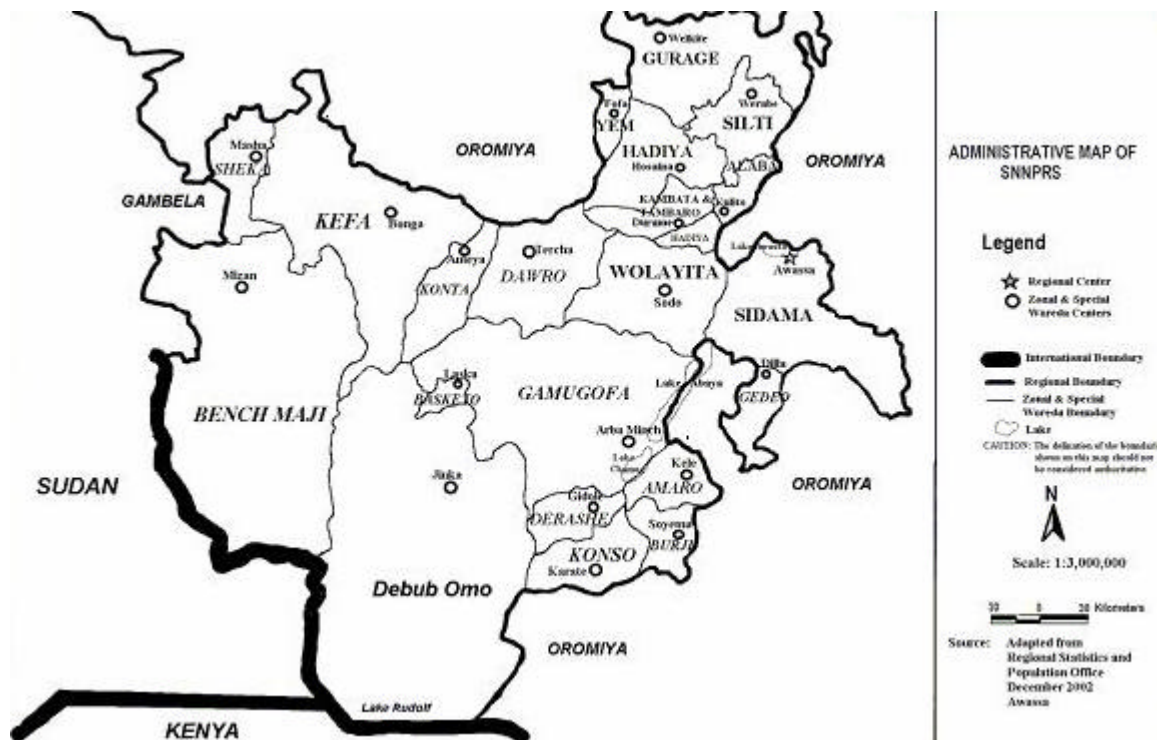


Fig1: Administrative Map of SNNPR

source: Abbute 2003

NFTP- Research and Development project-SW-Ethiopia, aims at both, improving household income and conserving the forest biodiversity, however, the project experiences some drawbacks to fully attain its objectives. This is mainly due to the prevailing fact that an increase in population and little chance for off-farm employment opportunities and the pressure on forest resources is increasing, on top of this, there is a growing trend of investment in agricultural plantations in the region. The latter mainly finds its **root** on policy decisions of central and regional governments both focusing more on private sector investments in agro-industrial development and settlement of agriculturalists from food insecure parts of the region to the SW-region. These policy decisions made by the current Federal Democratic republic of Ethiopia (FDRE) give way to agriculture led rural development with little emphasis on the use and conservation of natural forests and forest products. As a consequence, the livelihood of the local people is in fragile state and could be a potential pitfall for accelerated degradation of natural forests in the region. To circumvent these difficulties the NFTP-Research and development project is looking for different uses of the forests in the region in order to lay a foundation for sustainable use of these resources. Among others, one of these uses might be the range of hydrological services that forests on a watershed scale.

CHAPTER TWO: CONCEPTUAL BACKGROUND

2.1 Introduction

Payments for environmental services (PES) are mechanisms used to facilitate reward by a demander of a particular service to a provider for supplying the service. These payments may be directly made between demander and supplier, or they may be indirectly made through an intermediary. Typical environmental services include: carbon sequestration, biodiversity conservation, disaster prevention, or watershed protection through reduced sedimentation and hydrological benefits protection. In the case of watershed services these payments are typically made between users downstream that demand certain changes in water quality or supply to providers of these services upstream. Payments for watershed services have the potential to set up systems that result in payments flowing directly to the poor and thereby addressing quality of life, while at the same time addressing issues around improving the natural resource base. Environmental services are often taken for granted until they are lost. The hydrological services provided by forested areas, for example, are often only noticed after deforestation, resulting in flooding or declining water quality. If we define ecosystem services as those ecological functions that directly benefit people, then by definition all ecosystem services will have some level of economic value. Costanza et al. (1997) A controversial study estimates that the annual value of ecosystem services worldwide is \$33 trillion. Of course, very little of this value is captured or traded in markets and most of it may never be, even with ecologically literate citizens, consumers, and policy makers. Of the many services that forests provide, hydrological services, such as water quality and water flow, are among the most valuable. As we look ahead into the next decade, water will become an increasingly critical issue as it becomes an increasingly scarce resource. The value of these hydrological services will only grow over time. Policy makers, forest landowners, and investors in downstream utilities are recognizing the financial value of healthy forests and are developing innovative mechanisms to finance forest conservation, markets for hydrological services are potentially immense with every person a potential participant. Not only is the global market for water huge, but investments in ecosystem management have been shown in several cases to be cheaper than investments in new water supply and treatment facilities (Johnson et.al). The conservation of ecosystems is often seen as a cost to society rather than as an investment that sustains nature and human livelihoods. For example, natural forest and wetland ecosystems filter and purify water while absorbing rain and snow melt for gradual release. When these ecosystems become degraded, large investments in water treatment plants, dams, and flood control structures may be needed to replace these lost "ecosystem services." Despite the economic value of these services ecosystem protection is chronically under-funded. By understanding the financial value of these services and investing in their conservation it may be possible to save money spent, to replace lost services and to increase investments in sustainable forest management. The hydrological services of forests, chiefly water quality and water flow, are among the most valuable of the many ecosystem services from forests, an ecosystem approach to watershed management seeks to achieve water management objectives by conserving forest and wetland habitats, creating buffer zones along rivers and streams, shifting away from farming and road-building on steep slopes, and avoiding agricultural chemical use in sensitive areas. Reid (2001) estimates that the majority of the world's population live downstream of forested watersheds and therefore are susceptible to the costs of watershed degradation. Furthermore, about 13 percent of the world's land area is needed to protect water supplies for the global population an area that will grow with the population. By investing approximately \$1 billion in land protection and conservation practices New York City hopes to avoid spending \$4-6 billion on filtration and treatment plants (Echavarría and Lochman 1999). Elsewhere in the United States, Portland, Oregon; Maine; Washington and Seattle, have found that every \$1 invested in watershed protection can save anywhere from \$7.50 to nearly \$200 in costs for new filtration and water treatment facilities (Reid 1997). The potential for watershed protection services and related markets to address the water scarcity gap, and improve livelihoods under the umbrella of demand management tools, requires a shared understanding of the best practices in different catchments, including clarity on catchment management goals and strategies across the country. These need to be established and effectively communicated to all water users, understanding the true value of water to the economy and the nature of consumer responsiveness to price changes, will enable water managers to set water prices at their most efficient and effective levels in order to drive the correct behaviour. Such a mechanism however does not actively allow the poor to participate in the broader water demand debate, as their survival will to a large extent be dependant on subsidization and free access to water for basic human needs. Markets do however, to some extent, provide the framework for

broader participation, but markets as they currently exist in South Africa represent informal water trades, amongst like uses such as irrigation agriculture farmers, most of which have established property rights, infrastructure and accessibility, relatively low associated transaction costs and clearly defined demanders or sellers with which to trade. By nature then, these trades do not at this stage create space for the participation of emerging traders or subsistence farmers. **Payments for watershed services** however, provide a mechanism that enables the shortfalls in the existing systems to be addressed as it allows for development of markets around the provision of the “right” kind of services without focusing specifically on the ownership of a defined water right. Critical to understanding and pursuing this kind of mechanism is the task of designing payments that can internalize the link between land management and water service provision for the benefit of the poor. Market-based development of environmental services from forests has recently attracted attention as a potential tool for promoting sustainable forest management by providing new sources of financing and incentives to adopt sustainable management practices. At present, extensive markets exist only for forest products that are directly consumable, such as timber. Proper markets rarely exist for environmental services.

2.2 Biophysical Relationships that Link Forests, Water, and People

The biophysical relationships between forests and water are highly variable from one location to another depending on climate, soils, and vegetation types; there is no substitute for site-specific information. The following are a few simplified basic relationships:

Forests slow the rate of runoff in a watershed: Forest vegetation takes up water and delays the time to soil saturation (after which water pools or runs off the land into the nearest watercourse). Forest soils also usually have a higher water storage capacity than non-forest soils (Falkenmark et al. 1999), and, the more complex structure of the forest ground surface and underlying soil allows more efficient soil infiltration compared to a deforested watershed. By slowing the rate of runoff, forests can help to minimize flooding in smaller watersheds (although they may not influence large-scale flooding). By slowing the runoff rate forests may also increase minimum stream flows during the dry season.

Forests reduce soil erosion and sedimentation of waterways: Interception of rain and snowfall by forest canopies means that less water falls on the ground compared to a deforested watershed. Understory forest vegetation and leaf litter protect the soil from the impact of rain that does fall through the canopy. Extensive root systems help hold soil more firmly in place and resist landslides compared to clear-cut or heavily disturbed watersheds. Sedimentation levels in waterways of forested watersheds are generally lower than in nearby agricultural or urbanized watersheds, but the degree depends on soil type, topography, and climate (Falkenmark et al. 1999).

Forest soils filter contaminants and influence water chemistry: Forest soils are more waterlogged than other soils (except wetlands) and contain more nutrients, allowing them to filter out contaminants (Falkenmark et al. 1999). Clearing and cultivating forest soils tend to accelerate decomposition and to release large amounts of nutrients that leach into groundwater, surface water runoff, and streams. For example, streams in agricultural areas in temperate regions typically have nitrate levels 10 times higher than streams in nearby forested watersheds (which is partly the result of fertilizer applications).

Forests reduce the total annual water flow in a watershed: Contrary to popular opinion forests generally reduce the total annual stream-flow (Calder 1998). This is because trees consume water for transpiration, which is then evaporated back into the atmosphere. In general, trees consume more water than other types of vegetation, including grasses and annual crops. The degree to which forests reduce stream-flow, however, depends on various factors. For example, shallow-rooted trees tend to use less water than deep-rooted trees. Young regenerating forests tend to use much more water than mature and old growth forests (Bruijnzeel In press).

Forests can increase or decrease groundwater recharge: Forest cover can lower groundwater recharge because more precipitation is intercepted by vegetation and returned to the atmosphere through evapotranspiration. In some areas, however, removal of forest cover can result in a crusting of the soil surface that reduces or prevents water infiltration and groundwater recharge (Falkenmark et al. 1999).

Forest loss shifts aquatic productivity: Forest cover plays an important and complex role in sustaining aquatic productivity (Thomas et al. 1993). Trees shade waterways and moderate water temperatures. Woody debris provides fish with habitat while leaves and decaying wood provide nutrients to a wide array of aquatic organisms.

Forests may influence precipitation at a large regional scale, but the effect of forest cover on rainfall in most areas is limited: The distribution of forests is a consequence of climate and soil conditions, not the reverse. Some evidence suggests large-scale deforestation has reduced rainfall in China and some climate models indicate extensive forest losses in Amazonia and Central Africa could lead to a drier climate (Institute of Hydrology 1994; Xue 1994). Still, afforestation is not an effective strategy to increase rainfall (Kaimowitz 2000).

CHAPTER THREE: INTERNATIONAL POLICY FRAMEWORK

3.1 Introduction

There is no specific international policy framework about PES due to the fact that it is a new approach that is being developed at this moment. Nevertheless, some guidelines could be extracted from the bibliographic documents analyzed. There are good demand prospects for watershed services, they are among the main forest ES recognized to have potential for market-based transactions (Katila and Puustjärvi, 2004), but on the other hand is not easy to convert what is considered as public goods into market goods. This is one of the challenges of this new approach for sustainable development, nature conservation and poverty alleviation.

3.2 Creation of Markets for PES and financial mechanisms

PES market refers to any transaction where financial compensation is made for providers of environmental services (ES). These transactions vary from trading between governments to more spontaneous market-driven trading involving the private sector. Actually, there is a continuum of market-based approaches, with varying degrees of government involvement (Katila and Puustjärvi, 2004). Katila and Puustjärvi (2004) also state that it is important to realise that all these interventions are not always market-based approaches and that equating valuation of ES is different from markets for ES. For example, many protected area management projects financed by the World Bank's Global Environment Facility (GEF) have considered the State as the manager, controller and "buyer" of the service. Despite the proliferation of various kinds of private payment schemes for forest ES, most schemes still rely on active public-sector involvement and financing, therefore, no free market-based approach exists based on demand and supply flow mechanisms. It would not be correct to classify bilateral grant aid or development bank financing for forest biodiversity conservation as market demand. A clear definition about the limits of the market for PES is needed. A too broad scope can be counterproductive, because it may confuse the respective roles of the market (private sector) and the State. This situation may result in ineffective policies that will implement development interventions with unfair allocation of benefits and costs. The local context is essential when deciding for one approach instead of another. The social, economic and political situation has to be analyzed in every specific case (Katila and Puustjärvi, 2004). Verwey (2003a) states that the regulatory and policy framework in place provides an important starting point for the development of PES, and at the same time can put serious limitations to their potential. In a lot of cases policy failures seem to be an important factor causing forest exploitation and degradation. Many factors influence market creation of ES the following ones have been extracted from Katila and Puustjärvi (2004): demand and supply potential, value and significance of the service, geographic location of the market, commoditization potential, ease of defining and enforcing property right, degree of excludability (extent to which the owner of the resource can exclude others from exploiting it) and rivalry for the service provided, transaction costs, scientific uncertainty and verification possibilities and risks. Development of mechanisms to maintain or enhance ecosystem services can begin either by purchasers or suppliers, government agencies or NGOs. Governments and NGOs, however, often play the critically important role of initiating the debate around the ecosystem cost of degraded ecosystems and bring investors and sellers together for the first time. The basic economics of a strategy to use financial mechanism in watershed management may be good and there may be willing buyers and sellers (Research will be needed in many areas to define and trace the flow of ecosystem services). Other expenses may include monitoring and enforcement, conflict management, and making necessary changes in legal and regulatory frameworks. The complexity and expense required to address these issues will vary tremendously from watershed to watershed. According to Katila and Puustjärvi (2004) transaction costs appear to be a common limiting factor for creating efficient markets for forest-related environmental services, in most cases they are not included in the analysis of the situation or they are taken into account too slightly. Underestimating them can greatly influence price formation of a forest ES, especially when significant market creation costs are involved. They vary depending on the service but generally include costs associated with the time, effort and resources needed to search out, initiate, negotiate, complete a deal and also during the operation phase. Transaction costs are likely to be higher in a watershed with many small forest landowners than in a watershed with a few large owners. Negotiating with established associations of forest owners, for example, can reduce the costs in a watershed with many small owners.

Donor agencies have often facilitated market creation by covering transaction costs, but schemes assisted in this way will be financially sustainable only if outside financing continues or ways to reduce transaction costs are identified and adopted (Katila and Puustjärvi, 2004). Local communities are often not involved in the development of PES, which in the case of restriction of access to forest resources can lead to impoverishment, or to increased exploitation of forest resources elsewhere. The potential of contributing to sustainable livelihoods and poverty alleviation and criteria of equity should form important guiding principles in the design of new financing mechanisms (Verwey 2004a). Indeed, introducing market mechanisms into ecosystem management raises important and difficult questions about ethics and equity. Clearly defined rights and responsibilities are important factors in the use of market tools to protect ecosystem quality. If citizens have a right to high quality water they may be unwilling to pay landowners for improving degraded water quality. In this situation the market opportunity may be limited to transactions among landowners as they seek the most cost-effective ways to meet their responsibilities. On the other hand the "involvement of many stakeholders" is an important constraint to the development of effective PES because of the institutional complexity of multi stakeholder arrangements but is unavoidable and necessary (Verwey 2004b). According to Katila and Puustjärvi (2004) another important factor to be taken into account for ensuring the success of PES is verification, transparency and accountability, it builds credibility of the service delivery. It is easy to understand that private investors and other beneficiaries want to know that they get what they pay for. An option could be independent third-party certification. It would help land managers gain public confidence and credibility however it will add to the transaction costs.

3.3 Public Payments versus Private Payments

At this moment, Payments for Hydrologic Services (PHS) have not reach yet international levels, by far, the most common arrangement is the public payment scheme. Generally, funding comes from national, sub national or municipal governments' budgets, not from direct beneficiaries. In some cases, beneficiaries contribute with complementary financing. In addition, fiscal constraints and the need to satisfy many other pressing social needs often mean that public conservation budgets are severely limited (Georgieva, 2003). Private sector companies are among the most important users of ES and need to play a large role in PES efforts, but Katila and Puustjärvi (2004) say that payments schemes arranged without governmental participation are scarce. Anyway, they emerge, for instance, when the economics incentives are considerable and when the link between watershed protection and later benefits are clearly defined. The lack of a robust institutional framework and private capital hinder the advance of private investments in developing countries, in the future, it is likely that public payment schemes will remain the dominant arrangement. This tendency may take root in the high transaction costs involved in other types of arrangement and the public-good nature of watershed services. It is also worth noting the influence of the lack of scientific evidence on the contribution of forests to watershed services. *In most situational ownership, responsibilities to protect ecosystem services are poorly defined, as are the rights to be compensated for providing them. In some situations private entities have developed their own mechanisms to pay for watershed protection with little or no government involvement. These cases are more likely to be found where an ecosystem approach can provide private interest with water services at a lower cost than can traditional treatment approaches.* In the case of PHS, private companies will be involved downstream if they are hydropower or irrigation companies. Therefore they have the need of water provision and also the potential for establishing a market and the willingness to pay for the service; this is an interesting aspect to become developed. On the side of the providers, according to Georgieva et al. (2003) ES on private lands are often lost because land users typically receive no compensation for the services that their land generates for others, and so do not take into account in making land use decisions.

As a conclusion Katila and Puustjärvi's (2004) argue that market mechanisms and regulations are both needed to increase demand for services generated by sustainable forest management (markets cannot develop and operate without government interventions). Finally, international environmental agreements and regulations have a strong potential to increase demand for services generated by sustainable forest management.

3.4 Market Development Potential and Constraints of Watershed Protection

Katila and Puustjärvi's (2004) analyse the eases and the difficulties of marketability for PES in the specific case of watershed protection:

- Defining and enforcing property rights are in many cases difficult.
- Excludability and rivalry are possible in some cases.
- Commoditization potential is very high if forest-watershed service link can be established.
- Demand and supply of the service are unclear
- Value of the service may be limited
- The market is predominantly local, not yet transboundary.
- Transaction costs are often very high because of the large number of actors and the difficulty of monitoring.
- The lack of scientific evidence of benefits is the main problem for market creation.
- The risk of non-delivery of requested services is high because of scientific uncertainty
- The impact of trade is insignificant on the global level but may have importance at the national level in the selected countries.
- The impact of sustainable forest management has a positive contribution. It is insignificant on the global level but may have importance at the national level in the selected countries.

3.5 Essential steps for the Promotion of Markets that Benefit the Poor and that motive Private Investors

The following steps are taken from the article of Landell – Mills, N. and Porras. I. (2004) and from Georgieva et al. (2003). They deal with essential steps to be taken to promote and create markets which will benefit the poor.

Begin from the demand side, not the supply side. Without demand there can be no market. Beginning from the supply side risks developing mechanisms and it can lead to supply wrong services, in the wrong places, or at prices that buyers are unwilling to pay. By focusing on the demand for services and asking how best to meet it, it is more likely that an effective and sustainable PES mechanism will be developed. The enabling conditions to generate demand are frequently insufficient or lacking. Markets often originate from the establishment of (international) regulations and agreements.

Define appropriate commodities and clearly identify the services being provided. These must be simple, flexible, self enforced and suitable for local livelihood strategies. Potential buyers are interested in clean water or in a reliable dry-season water supply or in access to generic information and not in generic forest, water or biodiversity services.

Understand and document the links between ecosystems and services. Too often, conservation advocates simply rely on conventional wisdom, such as “forest improve water supply”, therefore, understanding how these services are generated is essential. Even the conventional wisdom is right, it is often insufficiently precise to allow effective mechanisms to be designed (e.g. tree species, location, kind of forest, compatibility of uses).

Devise cost-effective payment mechanisms and monitor effectiveness. In case of weak regulatory capacity and where trading skills in short-supply and market infrastructure are underdeveloped (e.g. communication, information systems, transport and monitoring), simpler payment mechanisms will be most effective. Finding the right balance of the information and compliance costs.

Ensure poor can participate. Providing additional income sources to rural land users as well as reduced risk through diversification and other indirect benefits requires that particular efforts be made to ensure that the poor are not excluded. Some examples are secure land tenure of marginalized groups, support for cooperative institutions for bundling and bargaining, access to training and start-up capital.

Formalize forest service property rights held by the poor. This is necessary to give poor people control over and rights to “returns from environmental sales”. On the demand side, actors who pay for forest goods and services preferably deal with identified and legitimate parties, land users without land titles often face difficulties in having access to markets for ES.

Create an appropriate institutional structure and strengthen cooperative institutions. Cooperation among the service beneficiaries and the poor land owners is critical, this is essential to share the costs associated with market participation, PES programs require a supporting institutional infrastructure. Private sector firms need to have the confidence that the payments they make will be used to protect or generate the services they seek and not diverted to other uses or frittered away inefficiently.

Invest in training and education. Important fundamentals for effective participation are; training in marketing, negotiation, management, financial accounting, contract formulation and conflict resolution. Besides these, technical skills concerning forest management for environmental services are also essential.

Establish a market support centre. For market information, a contact point for potential buyers, sellers and intermediaries is needed. Also an advice bureau to support the design and implementation of contracts is desirable

Improve access to finance. To prepare, negotiate and conclude environmental service deals, access to finance is essential

Market payment schemes appropriate. Make payments ongoing as long as land use is maintained. Target payments have to pay those actually providing the service and avoid perverse incentives (payments for reforestation can encourage deforestation).

Design flexible mechanisms. PES mechanisms must also be sufficiently flexible to respond to changing demand and supply conditions and improvements in knowledge about how ecosystems generate services.

Long term trajectories. Long term trajectories are required to develop new marketable products and services, this is partly due to the complexity of institutional arrangements needed to internalize real costs and benefits into market prices.

Some of the steps of this approach are being based on the self-interest of private sector firms rather than their generosity, but they are not in contradiction with the aim of poverty alleviation. Following these steps may be hard to implement, but if implemented successfully is likely to prove highly sustainable.

3.6 Policy Recommendations to Governments and Parties

The following recommendations are cited from the Tropenbos document (2002). Tropenbos International calls on Parties and Governments to:

- 1. Support the development of PES that reflect the values of ecological services and products from forests. Education of potential consumers and suppliers of ecosystem services may be needed to expand the willingness of consumers and suppliers to use market-based instruments.*
- 2. Create enabling conditions for the development of markets for a sustainable supply of forest goods and services. Use the strong potential of international environmental regulations to increase the demand for products and services generated by sustainable forest management.*
- 3. Integrate property and use rights in relation to forest resources in a proper legal framework.*
- 4. Develop financing mechanisms that generate revenues for those stakeholders possessing property and use rights in relation to the forest land concerned.*
- 5. Ensure participation of local communities in the development of effective IFMs.*
- 6. Strengthen the capacity at the level of local communities to manage forests for the maintenance of ecological services and to increase access to financial revenues rewarding the corresponding local and global benefits.*

7. Monitor the effectiveness of current IFMs in contributing to sustainable forest management, forest conservation, sustainable livelihoods, and social equity objectives. Create a clearing house mechanism to exchange information on successful projects and examples of IFMs.

A policy recommendation with regard to finance maintenance of water services is supporting the development of financing mechanisms of hydrological functions, such as water funds with revenues collected from taxes on drinking water and payments by large water users.

CHAPTER FOUR: IDENTIFICATION OF CASE STUDIES IN THE WORLD

4.1 Introduction

Nowadays PES schemes have been implemented in many countries, among others PES projects exist in Mexico, Ecuador, Colombia, India, Guatemala, the Philippines, South Africa, Vietnam and Costa Rica. From the literature it has become clear that most cases of PES in Latin America with Costa Rica being the leader country in PES. As most projects were introduced recently, not much is known yet about their effects. Available literature is often limited to discussing the general aspects of the programs, instead of assessing their positive and negative effects on both the local population and the natural resources involved. In this chapter the experiences with payment of hydrological services in Mexico and Costa Rica will be discussed as these cases are relatively well documented. Mexico and Costa Rica are of course only two examples of the many different PES projects that exist in the world. Differences exist in the way governmental authorities are involved in the project and the roles played by private companies and NGOs. In El Salvador, for example, the Ministry of Environment and Natural Resources (MARN) has given official consideration to the question of PES in the Law of the Environment, the presidential administration of El Salvador has thus become interested in the implementation of PES to combat deforestation and promote reforestation. Article 75 & 77 of the law states that MARN will promote a special program for training and transfer of technologies as well as a national plan to combat erosion and desertification with governmental cooperation's (Ministry of Agriculture & Husbandry etc.). At the same time market mechanisms like PES are elaborated and applied to facilitate and encourage reforestation (Herrador & Dimas 2000).

In Ecuador, the municipal water authorities in Quito and Cuenca are allocating part of their revenues to financing protection activities in the watersheds from which they receive the bulk of their water. The World Bank is assisting the Government in preparing a project on payments for environmental services from private lands. Experiences from Colombia has shown that international organizations like the International Timber Organization together with national organizations started a project to further develop the concept of PES, in some cases entire upper watersheds are bought by water user groups. Furthermore, power companies are obliged by law to pay a percentage of their revenues from Hydroelectricity Projects to the regional corporations that are responsible for watershed management. (Carmenza Robledo 2002). As stated by Verwey, in Verwey 2004b, in Latin America most IFMs for water services correspond to institutional set-ups at a range of scale levels varying from national to sub-watershed level and they are mostly operational at the lower scale levels of watersheds and sub-watersheds. She further states that the complexity of the institutional set-ups decreases with lower scale levels and the administrative costs involved are correspondingly lower. According to Verwey in Verwey 2004c, pilot projects of PHS started at municipal level in Nicaragua and Honduras. She further stresses that NGOs play an important role in the creation of payment systems for water services at (sub) watershed level and that whether legal frameworks are absent or present, more private companies and international donors are taking their responsibility in creating proper mechanisms to transfer money to service providers upstream for the provision of hydrological services.

4.2 An Example from Mexico: Paying for the Hydrological Services of Mexico's Forests

Deforestation in Mexico is certainly an issue by itself, despite debates concerning methodologies, there is no doubt that even by the conservative estimate of a rate of 1.3% per year during the 1990s (Torres y Flores, 2001), Mexico has been losing its forests at an alarming rate. The main driver of deforestation has been land use changes to produce crops and feed cattle. The federal government has a policy strategy to deal with water scarcity, which consists mainly of two aspects. On the one hand there is the expansion of physical infrastructure, financed mainly from the general taxes, and complemented with the revenues obtained from industrial and service sector users, which pay the highest fees. For a couple of years now, municipalities have actually started to pay for the water delivered, however they still face timid water pricing schemes. On the other hand, the Mexican forest policy consists of a series of programs that subsidize plantations and other commercial forestry, help build capacities among poor forest-owning communities so they can have their own community forestry firm, and directly invest in reforestation. The Program for Payment of Hydrological Services (PSAH for its acronym in Spanish) seeks to complement these policies by becoming an interface between the forestry and water policy. The PSAH Program was designed by the federal government to pay participating forest owners for the benefits of watershed protection and aquifer recharge in those areas where commercial forestry is not currently competitive.

In Mexico, there is a strong perception that forests do indeed play an important role in protecting water resources. The payment of HS are linked to maintaining forest cover, assuming that this forest cover will assure the provision of hydrological services. A particular feature of forests in Mexico is that almost four fifths of them are owned as common property by Ejidotes and Comunidades, a particular Mexican institution where groups of peasants own land in combination of private and common property. The ownership structure has a positive influence because community interests are taken into account for decisions of use of resources, however it also has the potential problem of collective action, as conflicts may arise between users. The Mexican government pursues a strategy to reduce deforestation that combines two elements: direct regulation that prohibits land use changes, and strategic support for sustainable forestry activities.

The three main direct regulation instruments are: 1) the need to present an Environmental Impact Assessment to obtain an authorization for land use changes, 2) the need to present a sustainable forestry management plan that includes extraction limits and fragile areas conservation before initiating any timber extraction operations, and 3) the tougher requirements and additional restrictions imposed on landowners if the forest is within a Natural Protected Area.

Despite of these regulations, the vast majority of deforestation has occurred without authorization, in a sense the PSAH is therefore paying to give incentives to forest owners to avoid doing something that is considered illegal.

How much to pay

There are two approaches on how much to pay for environmental services. One of them is to pay the value for the consumer of those services the other is to pay for the opportunity cost of providing them (i.e. the loss of income due to a not chosen land use), because there was so little information about the value of the environmental service, the design team recommendation was to pay for the opportunity cost of not deforesting on the areas considered to be of highest hydrological value. The voluntary nature of the program constitutes a self-selection mechanism that would provide additional information on the true opportunity costs and information that could be used in different rounds of the program. After choosing a fixed payment, two circumstances can arise: the first one is that on priority areas some of the opportunity costs of keeping the forest might be zero; the second one is that some of the opportunity costs in these areas might be higher than the amount paid. Both circumstances deserve some attention, an opportunity cost of zero means that forests would be preserved independently of governmental intervention, mainly because agricultural and grazing are not profitable at all, or less profitable than forest activities.

Instituto Nacional de Ecología (INE) and the National Forestry Commission (CONAFOR) proposed initially a payment scheme of \$200 pesos (\$18.2 USD) per hectare to owners of all types of forests except for cloud forest, which would be paid \$300 pesos per hectare (\$27.3 USD) due to their higher value in terms of hydrological services. This amount would ensure that at least a fifth of the candidates in the area more likely to switch to agriculture would be interested in joining the program. The payment would be done each year, after verifying that no land use change occurred, and would be renewed for 5 years if the conditions were fulfilled.

Program Conditions

The conditions of the PSAH program are simple and at the same time aim to provide well defined incentives to conserve and protect the forest. In order to perform as a true economic instrument the program must have clear negative consequences for non-compliance, in this case these are of two types. If there was a purposeful land use change, then there is no payment at the end of the year, no matter how small the change was. If deforestation occurred for other reasons, for example because of a forest fire or timber theft, then the participating community is still responsible and does not get paid for what was lost, but it does get paid for whatever forest was successfully preserved.

Participation by Landowners

The launching of the PSAH program strongly attracted the attention of Ejidotes, Comunidades and private owners. In 2003 over 900 applications were submitted, consisting of close to 600 thousand hectares to be included in the program.

One of the explanations for the high number of applications for PSAH during 2003 and 2004, can be that the payments were set too high. The submission of nearly three times as many applications as

could be included in the project, is a signal, that the opportunity costs for many is lower than assumed by the project. This outcome had been predicted by INE because the estimation of the distribution of opportunity costs had shown a potential participation of between 20% and 40% of those offered the program.

Results from the Mexican experience

One way to assess the impact of the payments is to consider how activities undertaken in the forest may have changed as a result of the program. In annex 1 an overview is given of conservation activities and forest use by different communities, before the implementation of PES. Also the conservation activities as existing after PES introduction are included in this table. In many of these cases, communities were not deforesting and in all cases were practicing some kind of forest conservation measures before receiving payments from the program. In some cases, payments induced an increase in conservation activities and, in two instances, it resulted in greater participation of community members in these activities. In only one case was 100% of the money distributed equally among all Ejido members. In all of the other communities, a percentage ranging from 3 to 100 was invested in some kind of public good, where public goods in this case go from equipment used to monitor the forest commons (radios, trucks) to infrastructure like school classrooms and road maintenance. One very interesting development in two of the studied communities is the proposal to form local micro banks using the PES money as seed capital. The decision had been made to give commons rights to those with very small private parcels, prior to the program, all Ejido members had participated in forest surveillance and maintenance. Once the payments were received, no-recipients withdrew from these activities, in two happy cases, we observe that the allocation of the PES funds resulted in an increased environmental awareness and participation of a greater number of community members in conservations activities.

4.3 PES in Costa Rica

Costa Rica is one of the first countries that implemented PES, because of this the country is often mentioned as an example in the literature on these market based conservation strategies. Because of this much literature exists on the experiences in Costa Rica, which makes it an interesting case to discuss when assessing possibilities for PES for hydrological services in Ethiopia. Here it must be remarked that the reviewed literature on the Costa Rican PES scheme only discussed expected outcomes of the PES scheme, this leaves out of consideration all effects the PES might have on other aspects of people's lives. Examples of this are possible effects on gender relations or unintended effects on power relations. Another aspect that was not discussed in the literature refers to possible negative effects for participants *after* entering the PES program. The current PES system in Costa Rica is based on three decades of forestry policies, which aim at putting a halt to the high figures of deforestation. The system of paying for environmental services in Costa Rica finds its roots in the 1996 Forest Law 7575. This law enables compensating owners of forest area, or property in the process of reforestation, for the environmental services provided by their activities. Four environmental services are included in the law: regulation of hydrological cycles, scenic beauty, carbon sequestration and biodiversity conservation. (Reyes et al. 2001/2002; Zbinden and Lee 2005) The PES system in Costa Rica consists of two main types of agreements. Firstly private land owners can apply for monetary compensation for three different categories of forest management. These categories are 1) reforestation, 2) sustainable forest management, and 3) forest conservation. The compensation is agreed upon in 5 year contracts, paid yearly on a per hectare basis. The minimum area under one PES contract is 2 ha., with a maximum of 300 ha.. The contracts and payments are made by the National Forestry Finance Fund (FONAFIFO). (Reyes et al. 2001/2002; de Man 2004) The second type of agreements consists of voluntary agreements with mainly hydropower companies, negotiations with a brewery company, several hotels and tourism agencies still exist. These agreements with companies can take different forms, private companies can make private agreements with an NGO. In this case FONAFIFO, or other State organizations, are not involved, and the company directly pays a certain amount to the NGO for hydrological services. An example is formed by the agreement between hydropower company 'La Esperanza' and the conservation organization 'Asociación Conservacionista Monterverde'. In this case the company pays \$10/ha/year to the NGO. The other type of voluntary agreements are made between FONAFIFO and private companies. Different examples exist if these agreements, all of them concerning hydropower companies. 'Energía Global', who owns two hydropower plants, for example pays \$10/ha/year to FONAFIFO. Another company pays \$15/ha/year to FONAFIFO and signed a 10 year

contract for compensating local landowners, including those without official land titles, with \$30/ha/year. (Reyes et al. 2001/2002; de Man 2004) Here it is important to also mention the initiative of a drinking water company in central Costa Rica. In 2000 the company introduced a fee of \$0.0057 /m³ on consumed water, these finances were to be used for investments in forest conservation and reforestation in the area. This initiative was not based on agreements with the government nor with FONAFIFO. (Reyes et al. 2001/2002)

Financing FONAFIFO

FONAFIFO receives its funding mainly through government tax on fossil fuel consumptions, one third of these taxes is transferred to FONAFIFO. Secondly, as discussed above, some private companies contribute to FONAFIFO. In the case of 'Energía Global' the company contributes \$10/ha/year to FONAFIFO through an intermediary organisation, FUNDECOR. This amount covers a quarter of the \$40 paid annually by FONAFIFO to the participating landowners, the reason why the hydropower company only pays for a quarter of the costs is that they are only interested in the maintenance of one of the four environmental services recognized by the Forest Law. According to de Man (2004) contributions of private companies, account for the financing of three percent of the total area under the PES scheme. (de Man 2004; Savy and Turpie 2004) Another source of finances is formed by the governmental sale of greenhouse gas (GHG) emission rights as Certified Tradable Offsets (CTO's). These rights are handed in by project participants and sold again by OCIC, a governmental institution, however, so far only one such transaction has been made. A final source of funding is formed by international donors. One example is the World Bank's GEF program, which donated a total of \$8 million for payments to participants and institutional strengthening of involved organisations. (Savy and Turpie 2004)

Despite of these different sources of funding, de Man (2004) argues that at the moment FONAFIFO experiences a lack of funding. This deficiency results in the fact that only 30% of the applications by landowners can be contracted.

Participation by Private Companies

Different reasons exist why private companies would be interested in participating in a PES scheme. Labatt and MacLaren (in de Man 2004) distinguish as driving forces the threat of stricter regulations, economic considerations (pe improvement of water quality can improve a company's market position), the company's public image (triggered by social and consumer pressure) and peer pressure.

Governmental regulations play an important role in these considerations. In Costa Rica for example the governmental decision to privatise electricity companies resulted in increased competition. Pressure from environmental organisations to minimise damage in watersheds by these companies, resulted in the importance to acquire an environmentally friendly image. Another example is formed by the governmental policy on watershed protection and management, as this had, until recently, not received much attention by the government, companies that relied on these resources had to implement these measures themselves. (de Man 2004) One of the reasons why Costa Rican hydropower companies might be interested in PES agreements can be formed by experienced negative effects from sedimentation. Deforestation can result in increased erosion, and thus in increased sedimentation, it must however be taken into account that many other aspects besides deforestation play a role in this sedimentation, one of which can be agricultural practices. Depending on the situation a more integrated approach is needed to reduce sedimentation levels. As a rule of thumb de Man (2004:22) states that *"especially if hydrological conditions are already favourable, small hydropower companies generally have an interest to control erosion and sedimentation levels associated with deforestation and conserve remaining forests in the upper watersheds."* The type of companies that might be interested in participating in PES, as well as the specific services that these companies will be willing to pay for, depends on the local hydrological conditions, therefore it is important to clearly define the different water users and the types of hydrological services they have interest in.

Participation by landowners

According to the Forest Law, all forest owners, or land owners who plan on reforestation, can apply for compensation. The Costa Rican State is responsible for determining which areas will be appointed for PES and, within these areas FONAFIFO decides which applications will be contracted. Today the large majority (according de Man over 70%) of the contracts consist of payments for forest protection, only a small percentage of the payments go to sustainable forest management and reforestation. In 2004, one

of the participating companies decided to put a halt to contracts for conservation purposes in that area, one of the reasons for this was the existing uncertainty about the effectiveness of PES. (de Man 2004)

In several cases studies showed that only a small percentage of the inhabitants participated. De Man for example talks about a participation of around three percent, he argues that despite of the fact that the existence of the program was well known amongst the landowners, people often only were interested in actually joining the program after having spoken to a project employee. Here another problem occurs, as de Man's research also showed that the PES employee who was supposed to contract landowners, preferred larger landowners over people with only small land areas. This preference may be related to the fact that this person received payment **per ha put under PES contract**. Often it is assumed that landowners will be interested in participating in PES when the benefits from PES can cover the expected expenses. These expenses include opportunity costs, transaction costs (p.e. paperwork and transport costs) and the costs of implementation (amongst others investments and labour costs). (de Man 2004; Zbinden and Lee 2005; Reyes et al 2001/2002) It must be stressed that these considerations are always based on perceptions of these costs and benefits, which will not necessarily correspond to the actual costs that might be experienced, furthermore will not all landowners always opt for the economically most profitable activity, since other, non-economic, considerations play a role in the decision-making process as well. A study of the economic valuation, including the opportunity costs, can however be very useful to look at the costs of landowners and the feasibility of long term provision of hydrological services. Based on an economic valuation it can be concluded that owners of highly productive lands will be less likely to participate in a PES program as they will face high opportunity costs. When looking at the economic valuation studies from Costa Rica, the economic valuation is calculated to vary between \$100/ha/year and \$176/ha/year, depending on the specific situation, showing a considerable difference between the actual benefits of PES and the calculated costs. (Reyes et al 2001/2002)

PES for poverty alleviation

It is argued that in general the poorer inhabitants live in the higher zones of Costa Rican watersheds, this would enable a combination of forest conservation and poverty alleviation by payment for hydrological services. However different studies (de Man 2004; Zbinden and Lee 2004; Miranda et al. 2003) show that in practice mostly larger land owners participate in PES. Apart from a possible preference for larger landowners by project staff, as discussed above, several other constraints for smaller land owners can be identified. Based on surveys held amongst Costa Rican PSA participants and non-participants, Zbinden and Lee (2005:255) likewise argue that *"farm size, human capital and household economic factors, and information variables significantly influence participation in PSA program alternatives. Large farmers and forest owners are disproportionately represented among program participants"*. They continue to argue that PSA participants tend to be *"better-educated, wealthier farmers who possess larger farms and forest areas, and who are better diversified into non-farm income-generating sources"* (ibid:270). **As often financial compensated** is linked to land ownership, having (access to) land is thus the most important prerequisite of the program, this landownership is a major constraint for landless people to participate in the program. Different programs require official land titles in order to approve of a contract, however, often landowners are not in possession of this official document and attaining the land title brings along costs. It is argued that these costs are relatively high for small landowners, making it less interesting for them to participate. De Man (2004) discusses that some landowners suggested that this problem could be overcome when the organisation provide upfront loans to cover land-titling costs. Earlier this chapter briefly discussed that some projects also include people without official land titles, however, no detailed literature could be found on the aspects of these cases. In one case the PES scheme initially did not require the participants to possess an official land title, but after confronting conflict due to overlapping land claims, the project decided to change its policy (de Man 2004). In some cases NGO's have offered group contracts as a means to overcome the problems faced by smaller landowners. These group contracts can lower transaction costs, and furthermore the organisations can offer help with different kinds of prerequisites, such as forestry activities and the drawing of management plans. However, the same company that stopped allowing people without official land titles, also banned group contracts, this measure was taken as a result from problems with individuals who did not comply with the project requirements. (de Man 2004)

When looking at the income effects of PES in Costa Rica, both Miranda et al. (2003) and de Man (2004) show that household income of larger landowners has increased considerably due to PES. Miranda et al. argue that the importance of income from PES on the household budget decreases to around 5% amongst owners of small properties. De Man states that the majority of the participants do not consider

PES as an important source of income, even when in reality income from PES increases household income with around 50%.

Additionality

An important question that must be answered when exploring the possibilities and desirability of implementing PES in Ethiopia is the question of additionality. Is the PES project likely to give better results (in the sense of forest conservation), compared to the situation without the implementation of PES? Looking at the Costa Rican case can give some insight in aspects that play a role in answering this question. The added value of PES in Costa Rica can be questioned because of three reasons. Firstly, the Forest Law strictly prohibits deforestation, it can be argued that when deforestation rates are low, further forest protection, for example by implementing PES, is unnecessary. Indeed, different researchers indicate that deforestation rates already slowed down during the 1990s. (Zbinden and Lee 2005) Despite of this strict restriction, evidence exists of illegal deforestation. PES can be a means to reduce these illegal activities in different ways, as the forest owners voluntarily sign the contract to conserve the forests, it is more likely that they will refrain from illegal deforestation activities. Secondly, as the forests under PES contract are monitored more intensively than non-contracted areas, possibilities are reduced for illegal deforestation to go unnoticed. (De Man 2004)

Another reason for questioning the added value of PES for forest conservation lies in the restrictions of land use included in the contract. We already discussed that it is more likely for owners of less productive lands to participate in PES, due to high opportunity costs. Furthermore, when signing the contract, landowners make a commitment of several years to not change their land use. Miranda et al. (2003) mentioned this as an important reason why people did not join the PES programme in Costa Rica. Embedded in a mistrust of the Costa Rican State, people were reluctant to restrict future use of the land, therefore it is possible that landowners might only want to join the PES program when their land can not be used for other activities than forest conservation.

Finally the added value of PES must be discussed by looking at the expected outcomes of the program, when putting a halt to deforestation is seen as a means to reduce sedimentation levels, one must look at other factors influencing this. In the case of the Aranjuez watershed it can be questioned whether deforestation is indeed the main cause of erosion. Erosion might be more a result from poor land use practices by farmers who do not apply soil conservation techniques, it can be questioned whether the PES program is the appropriate method for declining the sedimentation levels in that area, or whether a more integrated watershed management plan is needed.

CHAPTER FIVE: ETHIOPIAN SITUATION

5.1 Introduction

When exploring the possibilities of implementing PHS it is important to take the local legislation on water and land resources into account, obviously the implementation of such a scheme must be in accordance with the local and national law. To obtain a better view on the possibilities of PHS in the Ethiopian SNNP district, this chapter discusses the Ethiopian legislation on sustainable use and management of natural resources. Furthermore it discusses existing and planned water policy as well as the actors that are involved in water management.

5.2 National Conservation Strategy and Policies

The current constitution of Ethiopia is environmentally sensitive and contains provisions that recognize the importance of the environment and the need for its proper management. In Ethiopia, the rural land administration policy, the national forest proclamation of 1994, the national conservation strategy, the Ethiopian forestry action program of 1996 and the draft forestry policy all support the need for participatory involvement of local people in the management and benefit sharing from state and regional forests. The main policy document that has been formulated in the conservation strategy of Ethiopia recognizes and protects the customary rights of access to and use of land and natural resources of local people (Million, 2004). According to Million (2004) traditional community institutions are legally empowered for resource management if are preferred by local communities. The national conservation strategy document also encourages forestry development by individual farmers and private sectors with support to research and extension work. In addition, the full participation of local communities in forest demarcation is emphasized. There is a Federal Rural Land administration proclamation number 89/1997 which states that land is a common property of the nations, nationalities and peoples of Ethiopia and shall not be subject to sale or other means of exchange. It emphasizes the need to share benefits to manage and protect land and other resources (Million, 2004). According to the proclamation, regions are responsible to administer rural land and regional councils are responsible to enact a law on land administration that is in conformity with the provisions of laws on environmental protection

5.3 SNNP Regional State Conservation Strategy, Policy and Legislation

In accordance with article 52/2/d of the constitution of Federal Democratic Republic of Ethiopia the regional governments are entrusted with the power to administer land and other natural resources according to the Federal laws. The use right over land is granted under article 40 sub article 4 which reads "The farmers or the state have rights to obtain land without payment and not to be displaced from it".

According to the SNNP Regional State Rural Land Administration and Utilization proclamation No. 53/2003, more focus is given to the following points as to relate with this case study:

Rural land possession and use rights

- *The right of getting land for communal use of both peasant and the pastoralist, that is, for grazing, social and cultural affairs and religion shall be reserved.*
- *By giving priority attention to peasant and pastoralists: investor, government and non-government organizations, social and economic institutions have the right to use in rural land based on the development objective they present and plan of land utilization.*

Transferring possession of Land

- *Any legal person who is given the right to use on land has the right to sale, bequeath and pledge the property produced by his labour or capital on the land.*
- *Any peasant or pastoralists has the right to lease the land under his possession when there is an agreement of the family.*

Limitations imposed over land possession and use right

- *The right of using the land of any person who is the legal user of the land is extinguished when the land is needed for more public purpose and when this is determined by the participation of the public.*
- *Where damage resulted on the land due to lack of proper care in utilization of the land, and when this cannot be excused by penalty the user of the land shall lose his right of use by the decision passed against him.*
- *Where any person or organization is found using a land without proof of possession, he/she will be obliged to leave the land he is holding without possession; pursuant to article 24 of this proclamation, he is liable for his acts committed.*

Users of communal possession

- *To use properly the known communal possession of domes, damaged, degraded infertile lands, sloppy and mountainous areas, that can easily be damaged, management and utilization plan shall be made based on the participation of the community. If necessary based on formulating detailed regulations and accepted by the community such lands shall be changed in to private possession and by using modern techniques utilizing the land for grazing, forest and other perennial crops.*

Here it's been put in black and white that the regional government is responsible in "making local laws issued by the society, and customary practices, which are not in contravention with proclamation in to force". This proclamation also underlines the duty of users of communal land, "They shall be responsible for protecting wild animals, plants, birds, and other natural and artificial resources and heritages found on the community possessed land".

Land that can be developed by Irrigation

- *In an area where there is irrigation development, the maximum land holding size for one household shall not exceed 0.5 hectares. In the process of distribution and reallocation the remaining irrigable land shall be distributed for the use of peasants who are living near and around the irrigable land.*

However, land holding size for activities other than irrigation is not mentioned in the regional proclamation except that it put the prerequisite to use rural land. Accordingly, any peasant or pastoralist who has given the title deed, which authenticating his rights of using land, from the competent authority can benefit from this advantage.

Land administration and valuation of payment

- *Payment of tax for using rural land shall be based on the size of the land, the level of fertility, expansion of infrastructure, the climatic condition and the like.*

However, there is no explicitly set up limit of land holding size on which payment of tax based for land users. Moreover, this provision seems in dispute with what is put in the country's constitution that reads "land is the common property of the nations, nationalities and peoples of Ethiopia". There should be no reason that people should pay tax to the government if the land is their property and valuable asset.

Penalty

- *Where any user of the land is found contravening the proclamation or rules issued based on this proclamation, he shall be penalized in accordance with the pertinent law.*

This provision, when we see it from the viewpoint of poverty reduction, has its own set back. Supportive to this, if a peasant farmer has no money to pay a tax, the penalty rule is binding and hence a farmer most likely obliged to effect the payment, which would obviously degrades farmer's sense of belongingness to property right. There is also an Environmental policy that stresses the need to harmonize policies and integration of strategies at all levels. The country's forest development and conservation policy statements are believed to address a number of issues currently hampering the development of the sector such as participatory forest management, private sector involvement in forest development and the issue of ownership of land and forest resources.

The most recent forest legislation the SNNP Regional State issued to determine forest Management, Development and Utilization, is **proclamation No.2004**. It is called the "proclamation to provide for the conservation and development of forest resources" and recognizes two types of forest ownership. According to this proclamation, the following forest ownership status can be recognized state-owned and private forests. State-owned forests, pursuant to this proclamation, shall be utilized in accordance with a plan issued and approved by the pertinent regional body. According to (Million, 2004) the proclamation however, has not been enforced and did not help for the sustained utilization of the remaining forest resources. In favour of Million (2004), despite the existence of policies related to natural resources management at regional levels, a number of research findings shows that the impact of legislations in conserving forest at lower administrative levels is insignificant. This obviously implies the underlying fact of the need for harmonization of policies at various administrative levels in order to reverse the on going massive natural resource degradation in the region.

Based on the principle of the proclamation, the focus pertaining to this study is given to the following points:

State-owned forest management

Naming, reserving and registering forests; the regional government shall classify, name and register the region's forest and forest lands in to reserved forest and productive forest, demarcates their area, and makes their boundary on the region's official newspaper.

When the region finds it necessary to develop and conserve any kind of tree species, bushes and other plants, it can classify them as reserve forests to:

- a. *Harness shores of water bodies and river basins and avert soil erosion.*
- b. *Conserve and preserve genetic resources and plant species exposed to extinction.*
- c. *Expand Eco-tourism and conserve special kinds of natural resources.*

Private forest conservation and development

- *Individuals, associations, and organizations are encouraged to engage in forest development activities with a view to nurturing various species of trees useful for fire wood, construction and environmental conservation.*
- *Individuals, associations and organizations have the right to develop forest on their private area or on the area given to them by the government to meet their demand for forest products and enhance their source of income.*
- *The necessary support would be made to encourage the private sector to involve in the development of artificial forests useful for industrial raw materials. Any person has the duty to replace the tree he/she consumed.*

Utilization of private forest

- *Individuals, investors and organizations engaged in forest development shall be provided with a transfer confirmation that would help them to sell their products at the convenient place and price.*
- *Individuals with private forestlands can rent out their possession to another person or organization for forest or related development activities.*

Participation

- *The local people should directly participate in identifying the problems associated with afforestation as well as forest conservation and development and the preparation of relevant plans.*
- *The necessary support shall be rendered to maintain the local inhabitants' awareness on forest and environmental conservation. The society should be allowed to relish the relevant benefits.*
- *Women in the region should be encouraged to actively participate in forest conservation, development and utilization as well as plan preparation and savor the benefit.*

- *A tree-planting day shall be observed in the region to commemorate the contribution of forest for the socio-economic growth of the region and the country as a whole.*

Importance of forests in tourism

- *The natural forests of the region are the home of various plant, bird and animal species. Thus efforts should be made together with the pertinent bodies to make these precious resources ready for tourism services and earn income.*
- *Various development infrastructures shall be carried out with the income obtained from tourism for the benefit of the local people.*

Income obtained from the region's forest and forest products

- *Efforts shall be exerted to involve the local people in fixing the price rate of public and state-owned forest products.*
- *A timely forest products price rate shall be fixed based on a relevant study and in collaboration with the concerned bodies.*

Forbidden activities

- *No person without prejudice to sub-article /1/ of the article 19 in the region's proclamation No. ...1996 can carry out the following activities without having a written permission from the pertinent regional body:*
 - *Cut down any trees in reserve areas, cut down trees like *Cordia abyssinica*, *Podocarpus gracilior*, *Juniperus procera* and *Prunus africana**
 - *Practice hunting*
 - *Deploy cattle for grazing*
 - *Involvement in field of works related to forest products*
 - *Hand processing a timber out of any tree species, transport, and use or store them.*
 - *Can take away the natural resources inside a reserve forest area or carry out other activities that could inflict damage to on the products.*

All in all, there must be the consent of the authorized regional bureau to carry out state farm, mining, road construction, water-well sinking, irrigation activities and etc. inside a reserved forest area according to the regional government forest policy legislations.

5.4 Water Resource Development in Ethiopia

According to the Ministry of Water Resources' recent "Letter of Sector Policy" which describes the overall objectives of the water sector, water for agriculture and community water supply will be given priority by the present government. The development of water resources for agricultural purposes on the one hand and rural water supply schemes on the other are the focus of the country's priority schemes to sustainable development. Of the two sub-sectors, the first has attracted high levels of investment, and the second was neglected until the post-Imperial period said, (Dessaiegn, 1999). The author further describes that, even today, rural water supply programs, which affect the majority of the country's population, have not been given sufficient attention, on the other hand, modern water development schemes are a relatively new phenomenon in the country. There have been different estimates of the irrigation potential of the country, Recent estimates, however, place the figure somewhat higher. The Indian engineering firm Water and Power Consulting Services' 3.5 m ha. is the highest estimate and this figure has been mostly used up until early 1990s. Generally the figures are derived by adding up the irrigation potential of the country's eight river basins. Except for the Awash River and the Rift Valley lakes, all the other basins are part of the major trans-boundary river systems that drain out of the Ethiopian highlands and flow into the neighbouring countries of Sudan, Kenya and Somalia (Dessaiegn, 1999).

Rural Water Supply

Water supply services in Ethiopia are among the lowest in Africa (in Annex 2 an overview is given of access to safe water in a number of African countries). Moreover, the strong urban bias on the part of successive governments since the early 1970s has kept water supply investments in the rural areas quite low. According to the Water Resource Cooperation (WRC), by the beginning of this decade, only 19 percent of the country's population, and 11.5 percent of the rural population had access to safe water.(Dessalaegn 1999). The present government has expressed a strong commitment to rapid progress in the provision of safe water to the rural population. According to the five-year National Programme of Action (NPA) for Children and Women, extending from 1996 to 2000, the government has made promises to provide safe and dependable water supply services to 42 percent of the rural population. Rural water consumption per capita at the end of the five-year period is expected to reach 20 litres per day. The plan is to achieve an annual increase in coverage by 5 percent beginning in 1996 (Ethiopian Government 1995). The indicative financial requirement of the entire water supply and sanitation programme is estimated to be 363.5 million US dollars, of which 44 percent will be provided by the government and the rest by external support agencies. This is beyond the ability of the government to provide and the active support of donor agencies and NGOs will have to be sought if real progress in water supply is to be made and if Ethiopia is to catch up with some of countries in Africa. (Dessalaegn 1999)

5.5 Current and Potential Stakeholders of Water Development

In broad terms, stakeholders are defined as individuals, organisations, public sector agencies and donors that are concerned with water resources and have an interest in their development (Desalegn. 1999). The definition can be broad or narrow depending on the kind of water resource management and ownership under consideration. The Ministry of Water Resources is the main public body charged with the preparation of studies, plans and guidelines, and the formulation of policies and strategies for the allocation and utilisation of trans-regional and trans-boundary water resources in the country. The regional administrations are responsible for the implementation of these plans, policies and strategies within their jurisdiction. There are also a number of public sector agencies, which are in one way or another concerned with water resources issues and activities. If the definition of stakeholder is set broadly, it will include all these public agencies (federal and regional) as well as individuals and NGOs at the local level (Desalegn, 1999). In this view, stakeholders will include water users and their local organisations, NGOs involved in local development schemes, and the relevant branches of local administration, where appropriate, the private sector may also be considered as a stakeholder.

The Community or direct stakeholders

Rural communities are blamed for not taking an active part in water resource development activities, for lacking the necessary technical expertise, and for showing a lack of ownership or responsibility. Peasants have had ample experience of ill-advised state policies, unfulfilled state promises, and the alienation of individual or community resources by the state (Dessalegn, 1999). The author carries on describing that there have been numerous cases where state initiatives have taken advantage of peasants. The long term relationship between the government and rural communities, has frequently been unfavourable to the latter. Secondly, the approach of government agents in the rural areas has invariably been top-down. Peasants have been given to understand that they are in no position to run development projects, that they do not have the technical expertise to manage them, and that therefore their participation is not needed (Dessalegn, 1999). On the other hand, there are a variety of local schemes that have been successfully managed by peasants themselves. Here, one good example is community managed pasture and forest resources. In the past, before the radical reforms of the Derg military regime, there were a number of forests that were owned and managed by communities. In each case, there were mechanisms for maintaining the schemes, resolving conflicts, and sharing the benefits which to some extent ensures the sustainability of natural resources.

Community organisations

Natural resources may best be managed by peasants' organisations, such as Peasant Associations (PAs), or Service Co-operatives, in some instances, traditional community organisations, such as the *qire'* or *idir*, may be able to play an active role. Peasant organisations could provide the needed management structure at the local level, and can be co-partners with the government or NGOs, however, at present, the PAs have been dissolved in many parts of the country and replaced by the *Kebbelle* Administration,

which is in effect the lowest unit of the government structure. Although the government's rural policy does recognise the importance of Peasant Associations, the organisations are either inactive or moribund in many parts of the country. On the other hand, the government is encouraging the growth of multi-purpose rural co-operatives, there is at present plans to re-organise and revitalise the co-operative movement. (Dessalaegn 1999)

Government agencies

With the administrative decentralisation introduced as part of the political reforms of the present government, a good deal of water development initiatives, in particular of rural water supply have devolved to the Regional administrations, While the central government is too far away and cannot adequately plan what is beneficial for each local area. Local authorities are placed closer to the people and should be better equipped to understand local needs and priorities, on the other hand, the Regional Bureaux responsible for water development are short of trained and technical staff, and there is a lack of clear policy and co-ordination. (Dessalaegn 1999)

Non-Government Organisations (NGOs)

NGOs have an important role to play in water development, especially in rural water supply and small-scale, farmer-managed surface irrigation, while simultaneously it is important that the government provides clear guidelines regarding their participation in the water sector. There should also be periodic and independent evaluation of NGO activities and performance in this sector (Alemayehu, 2004). Here it seems important to check out an overlap between NGOs and community organizations that shoulder water resource development, this becomes so vital when it would become hardly possible to demarcate a boundary between local NGO's and local community associations doing same development activity to avoid potential conflict among the actors.

The Private sector

The private sector at present has a low profile in the water sector, apart from a few businesses that sell water drilling equipment, there is hardly any private activity in water development and irrigation and rural water supply schemes do not lend themselves to private initiatives. In this country, the private sector can play a role in the manufacture, merchandising and distribution of pumps, tubes and similar equipment, though at the moment its contribution is insignificant. Despite the encouraging investment policy both at national and regional levels, there are few private sectors that are engaged in businesses like Hydro-electric power, Brewery, irrigation-farming. In this country, Hydro-electric power plants are monopolized by the state, nevertheless, currently many national and international investors are seen to get involved in Floriculture, tea-plantation, Coffee-plantation, and Spice-development businesses.

5.6 Summary of Water Resources Management Schemes of Ethiopia related to Forest Hydrological Services

- Devising and implementing demand management measures, such as pricing, improved extension services, public awareness, and regulatory measures that improve efficiency and conserve water resources particularly from the forest areas.
- Undertaking soil and water conservation measures that reduce soil erosion by capitalising the advantages that forests render, thus forests would enhance the productivity of the region by keeping the fertile soil in place since trees act as a barrier against a run-off due to the potential rain of the region that virtually falls through out the year.
- Encouraging and promotion of local community participation in watershed management and water conservation measures and practices is considered to be indispensable in uplifting local communities sense of belonging towards natural resource development. Moreover, enforcing legislative mechanisms and penalties to prevent indiscriminate discharges of toxic materials into water bodies would obviously be a plus to provide quality drinking water and to conserve aquatic ecology.

Financing

- Establishment of tariff structure for water services based on site-specific characteristics of the schemes, and ensure that water prices lead projects to full cost recovery based upon users' payment capacities and by giving using appropriate technologies.

- Establishment of financial management rules, feasible arrangements of resource allocation, cost sharing and accessing funds for demand driven water supply systems. In addition, Promotion of local self-financing of programs and projects, based on the overall socio-economic development condition of local communities, and through appropriate incentive mechanisms would help sustain judicious exploitation of water resources from forests.

Stakeholders Participation

- Promotion, building and strengthen partnerships between community, government, private sector, and external support agencies would enable mutual cooperation among different stakeholders undertaking same objectives. For this purpose, establishing mechanisms such as, water committees, water boards, and water users associations, professional and civic associations sought to be vital. Most importantly, launching public awareness campaigns, and organizing regular meetings and workshops as means to provide forums for different stakeholders to air their views on how to strengthen these partnerships would seem necessary.

Gender Mainstreaming

- Enhancing the active involvement of women for sustainable development and management of water projects, assigning a specific number of seats for women in community-based organizations is one way to empower them in decision-making, in line with this, taking steps to relieve women from the burden of fetching and carrying water for the family would likely increase the productivity of rural women to get them out of poverty.
- Designing and implementing special training programs for women and strengthen their technical capacities in organization and management of water supply systems and small-scale irrigation schemes could also lift up their leadership attitude and gender equity.

As part of project preparation, carrying out social surveys to better understand how, in a given social setting; women could make meaningful contributions towards the management of any rural development projects.

CHAPTER SIX: GENERAL FINDINGS

6.1 Introduction

Before exploring the opportunities for implementing PHS in the SNNP region in Ethiopia, we will briefly discuss our findings derived from the literature study. These findings form the basis upon which our analysis of the possibilities for PES in Ethiopia will be based, as different conclusions can be made from the different chapters, we will discuss our findings accordingly.

6.2 Policy Framework

First of all, we would like to stress that a PHS scheme suitable to be implemented needs to be clearly specified. The kind of ES, the link between the service itself and the right management to provide it, the stakeholders and the institutions that should be involved, the regulations and the kind of payment are important to define as precise as possible. We have found that a specific policy framework to set up PES at this moment does not exist either at the international, or the national level. When a PES scheme is set up, the regulations are arranged "in situ" and specifically addressed to the context in which it is carried out, therefore a broad range of PES schemes exist, all with different involvement of the public and private sectors. When deciding on the approach, it is essential to have analysed the specific social, economic and political situation. Another relevant conclusion of the study is the importance of the public sector when developing PHS. The State is in the majority of the cases the investor, the manager, or the buyer of the ES, in this way, free-market flows cannot be set up. Private companies are huge potential buyers of ES, but they are not always willing to pay if they do not see a well-defined PES scheme. In this line of reasoning, the State seems to be the most likely option as a buyer in the long-term, also showing the importance of governments and NGOs in initiating the debate around the ecosystem cost of degraded ecosystems, as well as in bringing investors and sellers together for the first time. International agreements like the Rio Convention and the Kyoto Protocol can be the starting point for these discussions on PES and can help developing the outline and strategy of the PES scheme.

Governments and NGOs furthermore play an important role in providing the initial funding for the PES scheme. These funds are important to finance research to define and trace the flow of ecosystem services. Other expenses may include monitoring and enforcement, conflict management, and making necessary changes in legal and regulatory frameworks. The complexity and expense required to address these issues will vary tremendously from watershed to watershed.

When thinking of introducing market mechanisms into ecosystem management it is important to keep in mind questions about ethics and equity, clearly defined rights and responsibilities are important factors in the use of market tools to protect ecosystem quality. The involvement of local communities can be important when dealing with issues concerning the restriction of access to forest resources, especially since these restrictions can lead to impoverishment, or to increased exploitation of forest resources elsewhere. At the same time the involvement of multiple stakeholders is an important constraint to the development of effective PES because of the institutional complexity of multi stakeholder arrangements, this involvement is however unavoidable and necessary. Another important factor to be taken into account for ensuring the success of PES is verification, transparency and accountability. It builds credibility of the service delivery. It is easy to understand that private investors and other beneficiaries want to know that they get what they pay for; an option could be independent third-party certification. It would help land managers gain public confidence and credibility; however it will add to the transaction costs, which are already an important constraint for the successful implementation of PES.

6.2 Case Studies

In Mexico the PES scheme functions as an interface between the forestry and water policy. The PES Program was designed by the federal government to pay participating forest owners for the benefits of watershed protection and aquifer recharge in those areas where commercial forestry is not currently competitive. Although already strict regulations exist concerning forest management, the vast majority of deforestation has occurred without authorization, in a sense the PSAH is therefore paying to give incentives to forest owners to avoid doing something that is considered illegal. Because of increased surveillance and control of forest use, this however might be an effective way to halt illegal deforestation.

A characteristic of the Mexican PES scheme is the involvement of local communities, as around 80% of the country's forests is communal property, this approach has both positive and negative effects. An important advantage is that the interests of the local community are taken into account when making

decisions on the use of resources, however at the same time the problem arises of conflicts among users. The payment of ES on a community level had some interesting results. Looking at the way the money was spent by communities shows that almost always (part of) the money was spent on public goods, sometimes it resulted in an increase of conservation activities, however most participating communities were not involved in deforestation activities before receiving payment for ES. One last observation that we would like to mention in relation to the Mexican PES scheme is the high amount of communities that were interested in participating in PES. One of the reasons for this can be that the Payment was set too high, related to too high estimations of the opportunity costs. Like in Mexico, also in Costa Rica the main funding of PES comes from government involvement. Despite of the fact that different private organisations are involved in the PES scheme in Costa Rica, these contributions only account for about 3% for the PES funding. While the national government contributes a considerable amount, still the PES project lacks funding, and only 30% of the applications can be contracted. An important observation made in the Costa Rican experience with PES is that only a small percentage of the land owners actually participated in PES. Participation generally required personal conversation with the project staff. Another conclusion that can be made in relation to the Costa Rican case is related to poverty alleviation. Although PES has the potential for poverty alleviation, several cases show that in practice mainly larger land owners participate in PES. A main constraint for smaller landowners to participate are the transaction costs that tend to be relatively higher for them, furthermore might personal preferences by the project staff be of influence. Group contracts and the provision of upfront loans might be solutions to problems related to transaction costs. However one case has shown difficulties in competing land claims and free-riding effects.

When looking at the added value of PES in Costa Rica, some important questions arise. Just like in Mexico, also in Costa Rica deforestation is strictly prohibited. PES is therefore a way of preventing activities that are already illegal. However, as in Mexico, also the Costa Rican case shows the opportunities that are provided by stricter controls. Another question that arises is related to which landowners are interested in applying for PES. Some authors suggest that landowners will only be interested in PES when no other land uses are feasible.

One last aspect related to the additionality of PES concerns the existence of a direct link between forest conservation and the expected outcome, only when such a direct link exists will PES be feasible.

6.3 The Ethiopian Law and Regulations

According to the Federal Rural Land administration proclamation number 89/1997 land is a common property of the nations, nationalities and peoples of Ethiopia and shall not be subject to sale or other means of exchange. According to the proclamation, regional governments are responsible to administer rural land and regional councils are responsible to enact a law on land administration that is in conformity with the provisions of laws on environmental protection.

According to Million (2004) traditional community institutions are legally empowered for resource management if they are preferred by local communities. The national conservation strategy document also encourages forestry development by individual farmers and private sectors with support to research and extension work. In addition, the full participation of local communities in forest demarcation is emphasized.

The "proclamation to provide for the conservation and development of forest resources" recognises State-owned and privately owned forests. The proclamation states that State-owned forests shall be utilized in accordance with a plan issued and approved by the pertinent regional body. According to the regional law the consent of the authorized regional bureau is needed to carry out activities like state farming, mining, road construction, water-well sinking and irrigation inside a reserved forest area. Despite of this a number of researches show that the impact of legislations in conserving forest at lower administrative levels is insignificant, this shows the need for harmonization of policies at various administrative levels in order to reverse the on going massive natural resource degradation in the region. When looking at water resource development in Ethiopia, the Ministry of Water Resources claims to give priority to the water sector, including water for both agriculture and community water supplies. Of the two sub-sectors, the first has attracted high levels of investment, while the second was neglected until the post-Imperial period. Water supply services in Ethiopia are among the lowest in Africa, moreover, the strong urban bias on the part of successive governments since the early 1970s has kept water supply investments in the rural areas quite low. The present Ethiopian government has however expressed a strong commitment to improve the supply of safe drinking water to the rural population,

this shows a potential interest of the government in PHS schemes as a means of improving water quality for drinking water. Apart from the governmental institutions other potential stakeholders should be taken into account when considering the implementation of PHS. The main stakeholders we have identified are the local community and the direct stakeholders, Community organizations, NGOs and the Private Sector.

CHAPTER SEVEN: OPPORTUNITIES FOR PHS IN SW-ETHIOPIA

7.1 Introduction

After the analysis of the bibliography and information we have collected, this chapter looks at the possibilities of implementing PHS in the SNNP region in Ethiopia.

7.2 Opportunities for PHS

Among the different hydrological services that can be included in PHS, in the context of SW Ethiopia only those services that provide water for hydropower energy generation and maybe water for irrigation and wetland management purposes have a realistic likelihood of success. PHS for drinking water is at this moment not suitable because the region is mostly rural. Important cities with enough infrastructures like tap water do not exist in the surroundings, thus no taxes could be charged to those citizens. Moreover, eco-tourism is neither a feasible option yet, because it is not developed in the area and tourists are not very common. About PHS related to irrigation purposes, we should remark that irrigation activities are not close to the area, but in the neighbour regions of Oromia and Gambela, across the adjacent wetlands. There agricultural companies and small-farmers make use of irrigation schemes, and also individual farmers are present in smaller, drained headwater wetlands. However, implementing PHS on a interregional scale would require more complex institutional arrangements than implementing PHS on a more local scale. Despite of this difficulty, the wetlands can fulfil important roles like regulating the water flow, recharge aquifers, stock water and facilitate sedimentation of erosion materials, therefore sedimentation levels downstream can be reduced, in this way improving water quality for either irrigation or hydropower. Including the headwater wetlands in PHS schemes can be an interesting option, since the link between the HS provided and the sustainable management of the land to obtain the HS seems less diffuse. Finally, PHS related to water for hydropower energy generation is the most appropriate destination at this moment because one small hydropower company is working in the region. Most probably this hydropower company is State-owned, as all hydropower companies in the country, however, as the Costa Rican case showed, this does not have to be a constraint for PHS. Apart from this opportunity, PHS for hydropower energy generation has a great potential at the national and maybe even at the international level in the future. Linked to the location of the buyers far away from the providers, we would like to remark that in the future it might be possible to establish PHS at a national level or across national boundaries, but at this moment it does not seem realistic. Up to the present, almost all PHS are developed within the national boundaries or even the regional boundaries but rarely have gone beyond. Different authors (e.g. Katila and Puustjärvi 2004, Verweij 2004b) have stressed the benefits from starting at a local level. Important advantages of implementing PES on a local level are the adaptation of the project to the specific local situation and the reduced complexity of institutional set-ups. Furthermore it makes it easier to pinpoint the relationship between forest conservation and water quality and to identify clear stakeholders. Nevertheless, international PHS has a great potential, especially due to the character of rivers themselves. Rivers come across different countries as is the case in Ethiopia, there are eight relevant river basins that drain out of the highlands of Ethiopia and its rivers cross the frontiers of the country to spill in the adjacent countries of Sudan, Kenya and Somalia and indeed in others like Egypt. Because of this the area is considered an important headwater catchment for the Nile basin, therefore, in the SW Ethiopian specific case, setting up international schemes for PHS might be potentially suitable, but in the long-term. In the same line of reasoning, international treaties like the Rio Convention and Kyoto Protocol are relevant for the PES outline and strategy. Also the Ethiopian government has signed these treaties, these international agreements are potential starting points for developing PES procedures on a standard basis at the international level. Related with the role of the State, a big problem emerges in the relationship between local communities and Government. Peasants have doubts about the stability and trustworthiness of the Ethiopian State. These doubts are based on previous experiences of, among others, ill-advised State policies and unfulfilled promises, although the situation is improving due to governmental efforts to build trust and support communities, these doubts might play an important role when implementing PHS. Although the doubts of the Ethiopian peasants can be an important constraint for PHS, also opportunities for PHS exist. An example is the willingness of the Ethiopian Government to promote sustainable development and nature conservation, as well as their aim of improving drinking water quality.

As stated in the Ethiopian law, deforestation is banned. Despite of this attitude the reality is that illegal deforestation is destroying large parts of forests. As seen in the two case studies, PHS can be an interesting option for tackling illegal deforestation. It must however be noted that PHS seems to be an expensive solution to the deforestation problem, due to high opportunity costs. Payments to land owners should be high enough to cover the opportunity costs, and stimulate them to conserve the fertile highland forests, instead of convert them in farmlands. A Governmental program to relocate people from shortage-food provision areas to forest high-land areas is bringing immigrants to the SW region of the country to cultivate crops, as they need space for living and harvesting, large areas of natural forests are cleared. Private investors as well are cutting trees to establish plantations under a legal contract and it contributes to the disappearance of forests. Moreover, plantations, NTFP-harvesting and livestock are the most popular ways of earning money, they provide tangible goods and the idea of not touching the forests to implement PHS might be difficult to instill. In the case of Ethiopia, group contracts might be combined with participatory forest management arrangements and local organizations involved in NTFP production and marketing. These group contracts can help to overcome the problems of involving poorer and marginalized groups in PES. When special attention is given to participation of marginalized groups (as they are important forest users in the area especially when considering NTFPs), the involvement of these groups in PES schemes can be a good opportunity for empowerment and the strengthening of peasant organizations. However, attention must be paid to potential problems of free riding. Here it is also important to note that institutions supported by the Government are needed for PES to work properly. Lastly, the perception of the people regarding water can be a constraint. The belief that water is provided by the gods and that it is a free public good can constitute a big difficulty for finding buyers for HS.

To sum up, we think that although the establishment of PHS for irrigation purposes might be feasible, it will be difficult to implement. We also think that it can only be suitable if an appropriate economic scheme is arranged, if the correct stakeholders are found, if initial financing is available until the management is self-sufficient, and if the authorities support the whole process and ensure a long-term operation. The next chapter summarises the opportunities and constraints of implementing PHS in SW Ethiopia, and gives some recommendations.

7.3 Opportunities and Constraints

As shown in the previous paragraph, both opportunities and constraints exist related to the implementation of PHS in the SNNP region in Ethiopia. Here we will briefly list the ones we identified in this report.

Opportunities

- The small hydropower company in the area might be a possible buyer of HS.
- The wetlands used for agriculture might provide an interesting opportunity for PHS.
- Irrigation activities might be included in PHS in the future.
- Opportunities exist for PES on an international level in the future, due to the importance of the Ethiopian rivers for the Nile basin.
- The Ethiopian legislation shows a willingness of the government to invest in nature conservation and sustainable development, as well as an interest in improving drinking water quality.
- PHS can be an interesting option for tackling illegal deforestation, due to improved control of areas under PHS contracts.
- PHS might be used for empowering peasant associations and/or women organisations. The existence of several of these organisations might be used to involve the poorer population groups in PES schemes. These organisations can for example play a role in arranging group contracts for people that would otherwise be excluded from the PHS scheme.

Constraints

- PHS for drinking water is not feasible at the moment, due the rural environment and the lacking infrastructure. Despite of this the possibilities can be analysed to include the smaller towns of Mizan and Masha in a PES scheme.
- Absence of (eco) tourism since the area is difficult to reach and other sites in the country attract more tourists. This restrains the possibilities for including the tourist business in PHS.
- Including irrigation activities in PHS will require more complex institutional arrangements due to the fact that these schemes cross regional boundaries.
- Peasants have doubts about the stability and trustworthiness of the Ethiopian State. PHS contracts however rely on a trustful relationship.
- The opportunity costs of the forest areas PHS tries to conserve will be very high. This makes PHS an expensive solution to the problem of deforestation. When PHS can be combined with NTFP production the payments for HS might be lowered.
- The added value of PHS can be questioned as deforestation is already banned by law. The implementation of PHS will thus mainly be aimed at putting a halt to activities that are already illegal.
- Different case studies have shown that, although poverty alleviation can be a side effect of PES, it should not be a main objective. Often mainly larger and better-off landowners participate in PES schemes. Although the participation of the poorer population can be stimulated by offering group contracts or up front loans, effects of free riding must be taken into account.
- The Ethiopian population often consider water to be a free public good, provided to them by the gods. This view questions the willingness of people to pay for hydrological services.

CHAPTER EIGHT: RECOMMENDATIONS

8.1 Introduction

When will be chosen to implement PHS (either solely or together with other forms of PES, or a more integrated water management approach) some aspects need to be taken into account. Below an overview is given of recommendation we would like to give related to the implementation of PHS in SW-Ethiopia. First the recommendations will be discussed that are related to activities that the NGO can undertake itself. We will continue to discuss the activities that can be undertaken in relation to the providers of the HS and after this the activities will be listed that can be stimulated within the government. Lastly some final remarks are made discussing further aspects that should be taken into account.

8.2 Related to the NGO itself

- Select a pilot area

- Coordinate research providing a better understanding of the specific situation in the SNNP Region in Ethiopia related to the following aspects:
 - Analyse the context of the region covering technical, political, environmental and socio-economic aspects and identifying the potential stakeholders.
 - Analyse the importance of forest conservation for watershed protection and water quality.
 - Define clearly the ES (e.g. water for irrigation downstream, clean water for hydropower energy with a maximum of sediments of X μg , etcetera).
 - Internalize the link between the ES and what is paid for (e.g. the payments will be addressed to the conservation of the trees in the surroundings of the river).
 - Analyse the specific economic value of the forests, taking into account the opportunity costs, and define the preferred height of payment.
 - Define commodities and make the ES marketable (e.g. payments will be done per Hm^3 of water with a maximum level of sediments of X μg).

- Stimulate the establishment of an institute (governmental or NGO) that is responsible for administration and payment of the land users. This institution can overcome problems of trust in governmental agencies by not explicitly giving the government the final responsibility of implementing PES.

- Seek users or buyers of the ES within the private sector (the spontaneous appearance of buyers would be the best option as it means that a market exists).

- Ensure transparency and accountability of the payment schemes. Invest in monitoring and verification of the operation (e.g. by means of third-party evaluation).

- Provide assistance to ES providers by offering technical support and assistance with application procedures and management plans. Special attention must be given to gender aspects and marginalised Ethnic groups.

8.3 Related to the Providers

- User rights in relation to forest resources should be organised in a legal framework. Special attention must be given to lower transaction costs of these rights, in order to make it accessible to marginalised users.

- Stimulate the establishment of user groups and support the empowerment of already existing groups, such as Peasant Associations, cooperative, associations, or groups of participatory forest management. User groups can make PES better accessible to marginalised groups as transaction costs can be lowered when group contracts can be made, however in this case the possibilities of the free-riding effect must be taken into account and accurate control measures must be designed.

- Assess the options to take on an intermediating role, offering group contracts to people that do not have access to user groups. Here the possibilities for providing an up-front loan to marginalised ES providers **must** be taken into account as a possible way of overcoming constraints related to transaction costs, to participate in PES.

8.4 Related to the Government and Local Authorities

- Stimulate the adoption of a law that enables the compensation of forest users for the provision of hydrological services. This law can be adopted on regional scale, e.g. by the Regional Bureaux, when PES would be implemented on a regional level, which requires authorization by the national Government, giving permission to regional governments to adopt regulations that enable PES schemes.
- Stimulate the Ethiopian government to provide funding for PES schemes. The Costa Rican case learned that although private companies invested in PES, the main funding was provided by the government.
- Stimulate the government to create a favourable climate for private investors who are interested in PES. Possibilities can be found, for example, in the establishment of private hydropower or irrigation companies.
- Stimulate policy harmonization among different sectors of forestry, water development, investment and rural land administration to integrate their efforts and make them complementary to each other, this can avoid possible conflict and misunderstanding among policy makers.

8.5 Other aspects to be taken into account

- The Ethiopian government could collect taxes on large water users, and/or urban water and electricity users, (Part of) these fees can be used for financing the PHS scheme.
- A market support centre could be established, to function as contact point between potential HS buyers, providers and intermediaries.
- Attention should be given to possible consequences for existing social structures, taking into account for example existing cultural traditions.
- Literature has discussed a positive effect of combining PES schemes with awareness raising programs about the need to conserve forests. These programs focus on the relation between forest conservation and the continuity of water and the way PES can play a role in this.
- Attention should be given to good promotion and information supply of the PHS scheme. The Costa Rican case has shown that personal communication is needed for landowners to participate. With regard to this promotion and communication it must be ensured that both larger and smaller landowners are reached.
- In order to formalize the land use rights, the possibilities offered by community forestry can be taken into account, for this the users should be identified on the basis of traditional user rights. Participatory resource mapping could help to delineate the forest users. Experiences of other countries can provide valuable information on this aspect.

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Annex 1: Summary of results from Mexican PES

<i>Ejido</i>	Pre-payment extractive activities	Pre-payment conservation activities	Post-payment conservation activities
A	Firewood extraction, felling of trees to get orchids, stealing of wood by outsiders	Fire breaks every 3 years	Fire breaks every year
B	Firewood extraction, stealing of wood by outsiders, neighboring cattle enter forest	Forest surveillance	Increased surveillance
C	Agricultural activities by <i>ejido</i> members, neighboring cattle enter forest	Forest surveillance and firebreak maintenance once a year. Biosphere.	Forest surveillance and firebreak maintenance twice a year
D	Wood extraction for sale and domestic use, firewood extraction	Maintenance of firebreaks. Biosphere.	Increased maintenance, surveillance of forest area
E	On private parcels (where there is forest), agricultural uses	Annual maintenance of firebreaks, surveillance of boundaries by all members. Biosphere	Same activities, but only by members receiving payments (those with rights to the commons)
F	Neighboring cattle enter forest, stealing of wood by outsiders	Firebreak maintenance and surveillance	Increased surveillance
G	Forestry, stealing of wood by outsiders	Thinning of dead trees, pest control, surveillance and firebreak maintenance	Same activities
H	Neighboring cattle enter forest, stealing of wood by outsiders	Firebreaks, reforestation, removal of dry wood	Same activities
I	Wood extraction	Trimming, pest Control fire brigades, reforestation where necessary.	Same, plus fenced in PES land.
J	Wood extraction	Firebreak maintenance, trimming of trees, thinning	Same, plus dug canals to aide in the infiltration of water from PES parcel.
K	Neighbouring cattle enter forest, forest fire in 1998, cattle grazing by some <i>ejido</i> members	Surveillance of fire prone areas	Removal of cattle from PES area, otherwise same activities.

Annex 2: Access to Safe Water in Selected African Countries (% of Pop.)

Country	Urban	Rural	Total
Ethiopia	80.0	11.5	19.0
Kenya	61.0	21.0	28.4
Tanzania	75.0	40.4	52.1
Ivory Coast	100.0	75.0	82.8
Senegal	85.4	26.0	51.2

Source: World Bank 1995 (figures for 1988-93). For Ethiopia: WRC 1990 figures.