IVM Institute for Environmental Studies

"Sustaining and enlarging the Payment for Watershed Services (PWS) program in the Naivasha Catchment"

- An analysis for developing sustainability mechanisms to sustain the PWS program -

By: Marijke Boonstra

Master course: Environment and Resource Management

Report: Final Version
Date: August 29, 2010

This report was commissioned by: WWF Netherlands
It was internally reviewed by: Frans Oosterhuis en Pieter van Beukering

IVM
Institute for Environmental Studies
VU University Amsterdam
De Boelelaan 1087
1081 HV Amsterdam
T +31-20-598 9555
F +31-20-598 9553
E info@ivm.vu.nl

Preface

This study is initiated by the Institute for Environmental Studies (IVM) of the Vrije Universiteit Amsterdam and is carried out in cooperation with the World Wildlife Fund for Nature (WWF). This is study is part of the 'Linking Futures' program of the WWF Netherlands that aims to reduce overall poverty and environmental degradation in the Naivasha basin in Kenya. The IVM selected two master students of Environmental and Resource Management (ERM) program to collect data for a period of six weeks on two different research topics; Payment for Environmental Studies (PES) and Reducing Emissions by Deforestation and Degradation (REDD). This study contributes to the development of the existing PES project of the WWF-EARPO in the Naivasha basin.

Acknowledgements

This study could not have been executed without the help of the staff of WWF both in Naivasha and the Netherlands. First of all, I would like to thank Bart Geenen of the WWF – NL for giving me the opportunity to travel to Kenya and see by myself how WWF – projects work in practice. I would like to thank the whole staff of the WWF – Office in Naivasha (Robert Ndetei, Johnstone, Nancy, Josphat, Chep, George, Catherine and John) for their assistance and guidance throughout the period of the field research in Kenya. They have provided useful information, documents and assisted me with setting up appointments with the relevant stakeholders. Most of all, I am thankful for their hospitality and kindness. A special thank you is for Niels Bijleveld, who conducted his field research at the same time, and who provided me with useful comments and with whom I shared a number of great Kenya experiences. Next, I want to thank Philip Cook, an independent researcher with whom I a conducted a number of interviews and provided me with useful comments. All of them truly made my experience in Kenya unforgettable. Furthermore, without the cooperation of the people I have interviewed, this study would have not been possible. I would like to thank them for their time for discussing their opinions, thoughts and knowledge. I also want to thank my boyfriend, Anders Purup who supported throughout the writing process of this thesis. Finally, I would like to thank my supervisor Frans Oosterhuis for his support and guidance during the period of writing this thesis.

Contents

LIST OF FIGURES, TABLES, MAPS AND PICTURES

Executive Summary

The ecosystems of the Lake Naivasha basin are under pressure. In order to improve and sustain watershed services the WWF and CARE have initiated the Payment for Watershed Services (PWS) program. In 2009 a pilot scheme was set up in order to improve the downstream water quality, by training local landowners to take conservation measures on their lands. This relatively new market – based instrument strives to internalize externalities and tries to put a price on the use of an environmental service. This study is focused on how to sustain and enlarge the current user-financed PWS program. Based on a Payment for Environmental Services (PES) literature review, a number of conditions and criteria have been formulated. These are assessed by conducting interviews with local stakeholders. The results are summarized in table 1.

Table 1: Criteria and conditions to sustain and enlarge the PWS program at Lake Naivasha basin

Condition / Criteria	Description	Assessment
Clear evidence that the PWS program is improving water quality downstream	Clear (scientific) evidence needed to create a market value for the ES targeted	Weak
Sufficient demand for the watershed services	Sufficient demand needed to secure payments for local landowners that implement conservation measures	Needs be improved
Enough supply of lands that can be targeted for conservation	Upstream farmers willing to participate in the PWS program	Show potential to enlarge scheme
A favorable institutional and regulatory environment	Sufficient institutional and financial capacity to run the program independently	Needs to be improved
Willingness to pay	Indirect and non- direct water users are convinced that the PWS program is an effective and efficient tool to improve water quality downstream	Problematic
Financial ability to pay by water users downstream	Water users downstream have enough financial resources to support the scheme	Problematic

The following recommendations have been formulated:

1	Create a clear business strategy e.g. roadmap with priorities how to establish an self – sufficient PWS program;
2	Further development of performance indicators to show accurate results for increase of livelihoods of PWS recipients;
3	Explore the use of new technologies to decrease transaction costs;
4	Develop a business strategic plan to target new ES – buyers in the lower catchment;
5	Develop a communication / marketing plan to promote PWS on national and international level;
6	Conduct advocacy at the regional and national level to improve availability of funds for community based organizations;

7	Cooperate with other NGO's that have implemented PES programs to establish a stronger lobby group to convince governmental officials to give their (political and financial) support;
8	Further investigate the possibilities to increase the water tariff in order to create funds to sustain the PWS program;
9	Investigate the feasibility of integrating other environmental services such as carbon sequestration into the current PWS scheme or in a separate PES scheme;
10	Conduct advocacy activities at the international level to integrate PWS program in existing environmental certification schemes.

LIST OF ABBREVIATIONS

CARE	Defending Dignity, Fighting Poverty
CFA	Community Forestry Association
CSR	Corporate Social Responsibility
ES	Environmental Services
FAO	Food and Agriculture Organisation
ICRAF	International Centre for Research in Agro-forestry
IIED	Institute of International for Environment and Development
IPCC	Intergovernmental Panel on Climate Change
KenGen	Kenya Electricity Generating Company
KFS	Kenyan Forest Service
LANAWRUA	Lake Naivasha Water Resources Users Association
LNGG	Lake Naivasha ‘s Growers Group
LNRA	Lake Naivasha Riparian Association
LNRG	Lake Naivasha Tourist Group
MARACOF	Malewa River Ecosystem Forum
MEA	Millennium Ecosystems Assessment
NARUWASCO	Nakuru Water and Sewage Company
NEMA	National Environment Management Authority
NGO	Non Governmental Organisation
NRM	Natural Resource Management
PES	Payment for environmental services
PRESA	Pro-poor Rewards for Environmental Services in Africa
PWS	Payment for Watershed Services
REDD	Reducing Emissions from Deforestation and forest Degradation
SNV	Netherlands Development Organisation
UN	United Nations
UNEP	United Nations Environmental Program
WRMA	Water Resource Management Authority
WRUA	Water Resource Users Association
WSTF	Water Services Trust Fund
WWF - Netherlands	World Wide Fund for Nature, Netherlands Office
WWF - EARPO	World Wide Fund for Nature, Eastern Africa Regional Program Office

Introduction

According to the Millennium Ecosystem Assessment (MEA) two thirds of the global ecosystems[1] have declined (MEA, 2005). Humanity greatly depends on these ecosystems as they are the primary drivers of our livelihood, both directly and indirectly. The world's ecosystems offer various environmental services (ES) being water, carbon, biodiversity and landscape beauty. They are transformed into (commercial) goods (e.g. food, timber) and services (e.g. climate control). While the conversion of natural capital has lead to prosperous economic development worldwide, the existence of market failures such as the overexploitation of natural resources are now exceeding the global social optimum (Engel et al., 2008 p. 664). Market failures occur when property rights are not well defined or enforced and where there insufficient information and knowledge available (Kahn, 2005). These failures result in pollution and over – abstraction or inefficient consumption of ES.

Most of the ES are seen as pure public goods i.e. one user cannot be excluded from benefiting from the ES (non- excludable) and consumption of the ES in question, by one other user. Another characteristic of a public good is that it is non- rivalry meaning that one user does not affect the availability of the ES for another user. Historically, there was a perception that natural resources were unlimited and could be exploited to serve humans needs. The (global) typology of ES as public goods has lead to the neglect of giving ES economic (monetary) values. With a growing world population and an ever-increasing demand for ES, this typology has lead to the tragedy of commons to occur. Contanza et al. (1997) estimated that the global ecosystems services account for an average monetary value of 33 trillion dollars per year. Due to the fact that most ES are not yet integrated into commercial markets or valued according to the economic services and manufactured capital they provide, market failures will continue to exist, leading to further degradation of ecosystems. Economists believe that scarcity and the increasing demand and inelastic supply, provide ES to become a potential subject to commercial trade (Wunder, 2005).

In recent years there has been a growing interest in developing market-based instruments to conserve valuable environmental services to sustain economic development while conserving ES. One particular concept the Payment for Environmental Services (PES) has gained substantial interest of non-governmental organizations (NGO's), scientists, governments and private actors. This market-based instrument aims to facilitate transactions between environmental services (ES) users and providers (landowners or holders) that secure the use of the ES. From an economic perspective it aims to internalize environmental externalities and put a price on the use of an environmental service. By doing so, a market for ES can be created. Once a free market is established, with clear defined property rights, socio- economic gains in efficiency of ES will be obtainable (Coase, 1960). Already, various programs have been set up worldwide, mainly by NGO's.

Regulatory and voluntary markets for environmental services have developed gradually. In 2006, it was estimated that market value of the regulatory carbon market was approximately 30 billion US dollar; the voluntary carbon market comprised a market value of about 91 million US dollars (FAO, 2007). Though, since the global economic crisis, the market value for the voluntary carbon market has dropped tremendously (Ecosystems Marketplace, 2010). The market value for

[1] Ecosystems services, often also referred as environmental services are defined by Daily et al. (1997 p 1-3) as *"a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfil human life. These services maintain biodiversity and the production of ecosystem goods, such as seafood, wild game, forage, timber, biomass fuels, natural fibres, and many pharmaceuticals, industrial products, and their precursors. The harvest and trade of these goods represents important and familiar parts of the human economy ".*

voluntary watershed management payment was estimated around 5 million US dollar in 2008 (Forest Trends and Ecosystems Marketplace, 2008).

The World Wide Fund for Nature (WWF) and CARE Kenya have been facilitating the development of Payment for Watershed Services (PWS) program in the Lake Naivasha basin, Kenya. This PES mechanism focuses on a specific environmental service, namely water services; this is a specific type of a PES program. The PWS mechanism provides upstream farmers an economic incentive paid by downstream water users to take conservation measures[2] on their lands in order to improve water quality downstream. Currently, the program it is in its pilot phase. The aim of the WWF and CARE is to establish a long term structure of PWS that could be sustained without the assistance of external donor organizations.

This research paper will address the challenges and opportunities of sustaining the PWS program in its current design and will provide insights how it can become self – sustainable and how, if possible, be enlarged. The first chapter contains relevant background information of the Lake Naivasha basin; the PWS program objectives and describes the research objectives; methodology and limitations of this paper. In the following chapter, the characteristics of PES concept are explained in order to give an accurate understanding of the concept. It also presents conditions based upon a literature review how PES programs can function effectively and efficiently in order to become sustainable. Chapter 3 describes the current status of the PWS program and is followed by the results of the field research and a critical analysis how and whether PWS program can be sustained. The last chapter contains conclusions of this study and prescribes a number of recommendations to secure self- sustainability and enlargement of the PWS program.

[2] Conservation measures include rehabilitation and maintenance of riparian zones, establishment of grass strips and terracing along steep slopes, reduction of fertilizers and pesticide use and tree planting (WWF, 2009a).

Chapter 1 Background and research approach

This chapter describes the context of this research project. It provides background information about the Lake Naivasha basin and the 'Linking Futures' program of the WWF. In the following sections, the research approach, questions, methodology and limitations are explained.

1.1. Lake Naivasha basin

The Lake Naivasha basin is one of the most important areas for biodiversity conservation and economic activities in Kenya. The basin lies 80 kilometres northwest of Nairobi and is located in the Kenyan Rift Valley, covering a total area of 3.184 km^2 (WRMA, 2007 p. 1-2). It features Kenya's second largest freshwater lake, Lake Naivasha covering a total area of 1000 km2, and is fed by two perennial rivers, the Malewa and the Gilgil. The basin has variable altitudes reaching 1887 meters (above sea level) at the lakeside and reaches 3906 metres in the upper catchment (WRMA, 2007 p. 1-2). Map 1 gives a detailed outline of the Lake Naivasha basin.

The basin is characterized by its unique and diverse ecosystems that make it an attractive area for agriculture. Together with the proximity to Nairobi and availability of cheap labour, the basin has become the most important location for large-scale flower farming in Kenya. The flower industry in Kenya accounts for over 80% of the total horticultural output of the country, and contributes almost 1% to the GDP and 5% of foreign export earnings (WWF, 2010a). Furthermore, due to volcanic activity, a geothermal power plant was built in the area in 1982, which accounts for 15% of the total energy supply in Kenya. Lastly, the beautiful landscape and the existence of vast amounts of wildlife, attract about 40.000 local and international tourists a year (Becht et al. 2006). In addition to these economic activities, fishing, livestock and timber-production, mining and subsistence farming are performed.

1.2. Environment and social pressures

Over the last 30 years, economic activities in the Lake Naivasha basin have greatly intensified. The landscape of the basin has been changing simultaneously. Changes in land- use driven by the demand for agricultural land have altered the natural ecosystems of the basin (WWF, 2010a). Due to the expansion of agricultural practises, deforestation has been taken place on a large scale. Poor land use practices, water pollution, unsustainable water abstraction and climate change have been identified as factors that constitute to the degradation of natural resources (WWF, 2009a, Harper & Mavuti, 2005).

Due to the increase of employment opportunities in the basin, many Kenyans have migrated to the area. Based on population growth figures from 2007, the population in the Naivasha basin is expected to rise from just over 800.000 to 1.1 million by the year 2015 (WRMA, 2007 p. 2). This increase in population puts additional pressure on the existing and already deteriorating natural resources. Together with the existence of weak institutional governance, these environmental and social pressures have led to the major environmental degradation of the ecosystem in the basin. In light of this, it is safe to say that the further deterioration of these resources will not only have immense consequences for the basin' ecosystems and the people that live and work there, but also for the economy of Kenya as a whole.

1.3. WWF in the Naivasha catchment

In order to conserve the unique ecosystem of the Lake Naivasha basin, the WWF Netherlands initiated the 'Linking Futures' program in 2007[3].This worldwide program is currently active in Kenya, Cameroon (Camp- Ma'an) and Mozambique (Lower Zambezi). The central idea of the program is based on the idea that poverty and environmental degradation have a causal relationship. It focuses on an integrated approach to reduce poverty and increase conservation of the environment by promoting sustainable land-use practices and provide knowledge and training for alternative livelihoods (e.g. ecotourism, bee- and butterfly keeping). In short, the 'Linking Futures' program aims to: 1) reduce poverty; 2) strengthen civil society; 3) influence governmental policy; 4) promote the sharing of knowledge concerning natural resource-livelihood programs on both local (micro), regional (meso) and (inter) national (macro) levels (WWF, 2006b).

Since the program became operational in Naivasha basin, many achievements have been realised. Achievements have been made particularly in the area of capacity building of communities to help implement sustainable land use practices. In addition to this, the establishment and development of the Community Forestry Associations (CFA's) and Water Resources Users Association's (WRUA's) have been accomplished by providing training to improve management and organizational skills of association members and providing policy tools to influence national, regional and local decision making (WWF, 2010e).

1.4. CARE and WWF consortium

The goal of building civil society, partnering with other (non-) governmental and private organizations, has led to the establishment of a joint global program between CARE Kenya, a NGO focused on poverty alleviation and the WWF- East African Regional Program Office (EARPO). Both organisations target to link poverty reduction with the protection of the environment and embarked to jointly design and implement Payment for Environmental Services (PES) schemes on the African continent. The Equitable Payment for Watershed Services (PWS) is designed to promote social equity, improve the livelihoods in the rural areas and to protect the environmental services that the watershed provides to all water users in the basin (IIED, CARE WWF, 2006). The main goals of the program are;

1) Promote good agricultural practices (down – and upstream farmers);

2) Encourage and finance conservation efforts;

3) Increase welfare of poor farmers upstream;

4) Preventing social conflicts by the establishment of well-defined relations between social and natural capital (IIED, CARE, WWF, 2006)

In 2006-2007, a feasibility study was conducted that included a hydrological -, national, regional and local legal & policy, livelihood assessments, a cost benefit analysis, an environmental screening, a program cost benefit analysis for the PWS as a whole and the mapping of areas that were highly degraded or sensitive to erosion due to high slope gradients. The results of this study were used for the development of the business case for the PWS program in the Naivasha basin. Since the pilot scheme was set up in 2009, 510 farmers have been trained in applying sustainable land use practices and have undertaken voluntary conservation efforts such as the planting of grass stripes and threes on their plots, with the objective of improving water quality downstream. The beneficiaries downstream, such as the large water users, committed themselves to reward

[3] The WWF intend that the 'Linking Futures' program is active until 2011.

these efforts by giving a small financial incentive to the farmers involved. Currently, the pilot scheme is not yet of enough scale to be able to show environmental changes. The need for enlargement and securing the timely commitment of more downstream beneficiaries are of crucial importance to achieve the objectives of the PWS program. When the PES is successfully scaled-up, the WWF and CARE believe that it has the advantage of reaching higher conservation goals and improving the livelihoods of rural communities in the upper catchment (WWF, 2006).

1.5. Research approach

The development of the PWS pilot scheme at Lake Naivasha has been successful. In light of the goal of the WWF and CARE to develop sustainability mechanisms for the existing projects, PWS was selected for study in order to provide insights and strategic recommendations on how the PWS program can be continued and enlarged in the future.

This study focuses on the analysis of the current status of the program and how the financial support ES buyers be maintained and enhanced. It also focuses on the institutional capacity of key – stakeholders to identify the challenges and opportunities for ensuring the sustainability of the scheme. Results of this research project can be applied for future program designs of PES schemes for both CARE and the WWF.

1.5.1. Research question(s)

How can a larger market for watershed services at Lake Naivasha basin be established and sustained?

Sub questions:

- What are the preconditions for the PES schemes to function efficiently, effectively and how can they be sustained?
- What is the current situation of the PWS scheme in the Lake Naivasha basin?
- Which stakeholders are identified as potential buyers, sellers and facilitators?
- What are their current and future interests to participate in the PWS schemes?
- Which other ES – buyers could be identified?
- Which policy developments (national, regional and local) could have an impact on the current PWS mechanism?
- What are the challenges and opportunities (economic, social, hydrological and institutional) of the current PWS scheme?
- What kind of mechanisms can be implemented to prevent a so-called ‘free-rider mentality’ or other inefficient perverse incentives?

1.6. Methodology

This research is divided into four phases. In the first phase a literature study was conducted to compare and analyze different PES programs that have been implemented worldwide. Since PES is a relatively new approach to stimulate nature – conservation by using market- based incentives, and has not yet been implemented in many places on the African continent, the literature available is limited. However, PES schemes have been widely implemented throughout the American and European continent and could potentially provide useful information on how to enlarge and sustain PES schemes in an effective and efficient way in Africa. In light of the research approach and the time available for conducting the research project, this paper will not address the question whether PES is an effective instrument for poverty alleviation.

Secondary sources such as scientific articles and journals, NGO reports, policy documents and other electronic sources have also been reviewed. When comparing PES schemes a careful analysis of influential factors such as governmental structures and climatic conditions were taken into consideration. On a general note, every PES scheme has unique characteristics that make it difficult to simply apply project experiences into another scheme. On the basis of the literature review, a theoretical framework for the analysis of the PES program was developed in the second phase. As mentioned before, every PES scheme has unique features; it was therefore of crucial importance to collect first hand data from primary sources[4].

In phase three, a field research was conducted in Lake Naivasha basin. For a period of six weeks, from May 2nd, 2010 until June 11th, 2010, the project site of the PES program has been visited and interviews with key stakeholders were conducted (see Appendix B). During the field research, the researcher was stationed at the WWF office in Naivasha. The interviewees can be separated into three groups; 1) sellers of ES; farmers in the upper catchment, 2) buyers of ES; either flower farmers, or representing organizations of landowners and/or growers in the lower catchment and governmental organizations 3) governmental and supportive organizations; NGO staff, community based organizations, researchers and regional and local governmental officials. For the purpose of this research project, interviews were conducted in a semi-structured and unstructured manner in order to collect information and ideas on how improvements and financial sustainability of the PES program could be secured. The face – to – face interviews lasted around 30 minutes to 1.5 hours with a list of themes and questions that were covered, these varied per interview, leaving room for additional questions and discussion. In collaboration with local WWF staff members and the VU supervisor, the questionnaire for the interviews was designed. All interviews were conducted in English. Important stakeholders were visited more than once to verify their ideas and comments. This type of interviewing is called non- directive (Saunders et. all, 2003). A number of the interviews were recorded using a digital recorder; in other cases note taking was used to record data. In case the interviewee could not be met face-to-face, he or she was approached by email. Further national, regional and local policy documents, qualitative data and other relevant reports were collected in this phase.

In phase 4, the information gathered from the interviews, the literature study and general experiences during the field research in Naivasha Kenya were evaluated and integrated into the report.

1.7. Limitations

Since the information is collected from primary and secondary sources, there are a number of limitations of using these forms of data collection that must be clarified. First of all, the period of the field research was limited (6 weeks only), considering the time needed for the researcher to adjust to a new culture and environment, this period is rather short.

Furthermore, the research is primarily based on qualitative data. In terms of the interviews conducted, the issue of subject or participant bias has to be taken in consideration. Specifically, some of the interviewees could have been restrained due to their position in the organisation that may have had an influence on their response to questions and/or themes discussed. In addition, external factors such as the global economic crisis and favourable weather conditions (in comparison with the drought in 2009) may possibly have had an effect the perspectives of the stakeholders concerning the PWS program. Further, the previous factors mentioned could also have an effect on the general results in terms of successfully implementing conservation measures. In addition, the interviewer could have an observer or error bias due to the fact that the interviews were not conducted in the interviewer native language (being Dutch), but in English.

[4] People who directly observed or participated in events they describe (Rozakis, 2007).

For the interviewees it may have been possible that questions were sometimes difficult to interpret because they were not posed in their native language, being Swahili.

Another bias could have played a role for the downstream users that were interviewed. The 'strategic bias' refers to fact that downstream water users prefer a willingness to pay that can secure a benefit in excess of the costs they have to pay for being involved as ES buyer in the PWS scheme (Mitchell and Carson, 1989). As a result, downstream water users could have an incentive to not tell the truth concerning the level of payment that represents the actual value of the ES provided by upstream farmers. Because the ES is now practically available for free, downstream water users could express a lower price for the ES in order to protect their profits.

In order to ensure reliability, the primary data gathered has been crossed referenced and evaluated carefully. Also, results were validated with assistance of the WWF staff. A number of limitations concerning the availability and quality of secondary data were found. Firstly, some of the secondary data such as policy documents were difficult to obtain due to lack accessibility[5] and availability[6]. Secondly, some of the data found was lacking in academic quality[7].

[5] Due to poor ICT infrastructure (lack of a central database, slow Internet access, lack of virus protection programs) not only at the WWF Naivasha Office but also at other governmental offices, secondary data was difficult to obtain or was lost due to computer virus infections.

[6] Some of the documents were only available in hard copy and could not be lend out.

[7] Due to the lack or improper referencing to other (academic) sources.

Chapter 2 The characteristics of PES

This chapter gives short an explanation of the general characteristics of the PES concept. It starts by giving background information concerning the development of the concept. Thereafter, a number definitions and explanations of the preconditions of PES are given. In addition, section 2.3. and 2.4. give an explanation of the variety of existing schemes and their different characteristics and give an overview of issues concerning sustaining and scaling up and down of PES schemes. Lastly in section 2.5. an overview is given of the development of PES programs in Kenya.

2.1. Defining PES

There are various definitions of Payment for Environmental Services (PES). Wunder outlines the concept of PES *as "external ES beneficiaries make direct, contractual and conditional payments to local landholders and users in return for adopting practices that secure ecosystem conservation and restoration"* (Wunder, 2005 p.1). Engel et al. (2008, p. 663) defines PES as a *"mechanism to translate external, non – market values of the environment into real financial incentives for local actors to provide environmental services.* PES is recognized as market – based mechanism to reach environmental objectives in a more direct and cost – effective manner by creating a market for ES. Others (Ferraro, 2009, WWF, 2006a) have defined PES as a mechanism to raise funds for nature conservation.

Despite of the existence of various definitions, the PES concept has received much attention from many NGO's, governmental institutions, scientists, economists and the private sector as an innovative management instrument to improve and sustain conservation efforts by rewarding local land managers for implementing conservation measures on their lands. Many PES schemes have been established, mainly been implemented in developing countries in Latin America, Asia but also in Europe and the United States. Currently four main ES have been targeted in existing PES programs; watershed services, carbon sequestration, landscape beauty and biodiversity (WWF, 2006). While different PES programs have been implemented, a standard design for PES is yet to be formulated. The main reason for this is that PES is a relatively new natural resources management (NRM) tool and is yet to be fully defined. In addition to this, existing PES schemes are designed to be flexible. PES programs differ in scope, scale, design and are mostly custom made to fit local economic, social, institutional and biophysical characteristics, and are therefore difficult to compare and standardise as a 'one size fits all' concept.

It can be argued that the lack of a clear definition of the concept of PES, constitutes as a negative factor to the development of PES programs. However, this is not the case, as environmental policy making and implementation differ per governance level (local, regional, national or international) and it is therefore logical that a PES program implemented as a tool or instrument, is flexible in its forms of design and implementation. In this way, better individual results can be achieved.

2.1.1. PES conditions

Most schemes are implemented in a specific area; e.g. a watershed with definable environmental services provided by a group of landowners or managers (ES providers), a group of users or direct and indirect beneficiaries (ES buyers) and an intermediary actor (NGO, government, private actor). Wunder has developed a number of five conditions, which describe PES in more detail (Wunder, 2005 p. 3):

1. a voluntary transaction in which;

2. well defined environmental service (s) (ES), or a form of land use likely to secure that service;

3. is bought by at least one ES buyer;

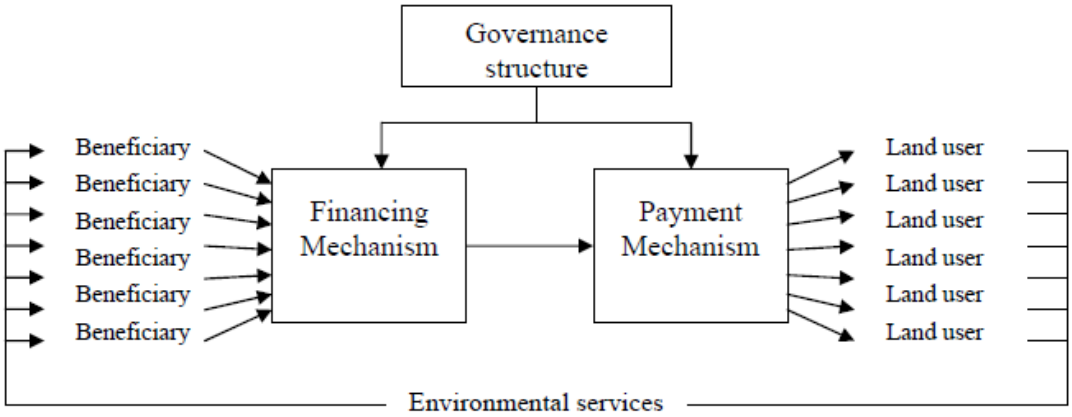
4. from a minimum of one ES provider;

5. if and only if the provider continues to supply that service.

A simple transaction structure is illustrated in Figure 1. Before establishing a PES mechanism, the existence of the ES must be verified in advance in order to establish a baseline to measure environmental changes compared to the 'business as usual' scenario. An accurate and credible baseline study can assist in the selection of ES providers and conservation measures to be taken to ensure the highest environmental outcomes possible. There are three different types defined by Wunder: 1) area – based, implementation of land – and resource – use caps for a pre- agreed number of land units; 2) product –based, consumers pay a green premium upon of the market price to finance the adaptation of sustainable practices of a company; 3) use – restricting, ES providers are rewarded for implementing conservation measures (Wunder, 2005 p. 7-8). Existence of property rights is of major importance for the ownership of the project by land managers. In this way, direct benefits are allocated and obtained by the specific targeted ES providers.

Figure 1: A simple transaction structure of PES

Source: Pagiola, 2003



Source: Pagiola & Platais, 2003

The ES buyers that benefit from the activities performed by ES providers supply the voluntary payments. Most of the voluntary transactions made are variable and can be transferred as a payment in cash or in-kind by the ES buyer. These can be paid for a single the provision of single ES or can include different ES in 'a bundled' package e.g. carbon sequestration and watershed services. The determination of the opportunity costs for implementing conservation activities is important for the type and amount of the transaction that is to be determined during private negotiations between the parties involved. Though before negotiations can start, a number of economic conditions are of crucial importance in order secure cost effectiveness and efficiency of the PES program. These include; 1) the payment must exceed the additional benefit derived by the implementation of the conservation measure; 2) the payment must alter the net benefits of the ES provider on the short term; 3) the program costs and transaction should not exceed benefits in order to maintain the net value of the ES (Engel et al. 2008, Ellis –Jones, 2007); 4) the payment must be less than the value of the benefit of ES in order to secure willingness to pay by ES

buyers, (Engel et al. 2008). In terms of payments, most of PES schemes reward ES- providers by a fixed payment per hectare for implementing conservation measures. According to Wunder and Santiago (2010), PES programs run more effectively if differentiating payments rates in space/or across agents are allocated. In this way, landowners will be rewarded with a fair payment according to the land that is put under conservation. When the payment is smaller than the actual opportunity costs of using the land for other purposes than conservation, the willingness of (poor) landowners to participate as ES - providers will, in the long term, decrease or even all together vanish.

Most PES schemes payments are conditional, meaning that the transfer of the payment by ES buyers depends on whether the value of the ES confirms the expectation of the environmental outcomes, e.g. improvement of water quality or observable performance indicators, reached by the transaction. A monitoring system must be established in order to record changes in quantity and quality of the ES targets and for the determination of the performance of conservation activities. The complexity of the interlinkages of ecosystems services in the specific area where PES is implemented requires a thorough understanding of *"causal pathways (processes) that recognize spatial extent and distribution (patterns) in order to develop proxies or indicators for easy recognition of environmental outcomes"* (Tomich et al. 2004 paraphrased by Engel et al. 2008 p. 668). Since assessing all these processes and patterns is time-consuming and rather costly, most of the existing PES programs are based only on observable performance indicators (Pagiola and Platais, 2007).

In order to sustain and enhance continuous ES payments must be provided by users of the ES services. The willingness to pay by service users plays for a foremost and crucial role. Wunder (2005) describes that the willingness to pay depends on three factors*: "clear additionality vis a vis carefully established baselines; if trust – building processes with service providers are sustained; if PES recipients livelihood dynamics is better understood "*(Wunder, 2005 p. 1).These factors also play an important role when planning an enlargement of a PES scheme. With a higher number of participants, transaction and program costs will increase which evidently need to be covered by ES buyers. Especially in user- financed schemes there needs to a willingness of enough ES users and they need to have a capacity to pay, otherwise ES payments will not be supplied and the scheme will be brought to a standstill. Willingness to pay highly depends on trust between ES – buyers and ES – suppliers. In this light, communication plays a central role in building trust between involved actors. Next, the provision of reliable and trust-worthy information concerning additionality and livelihoods dynamics is very important in demonstrating results of the PES program.

2.2. PES programs with side objectives

PES programs developed and transformed over the years. Traditionally, PES was designed to finance natural resource management and to establish efficient and effective use of ES. Most of the PES programs implemented by NGO's and government, have transformed into a management tools to serve not only environmental goals but also economic, social and governmental goals. Four main approaches have emerged: namely; pro – market, social – development, conservation and the governmental approach (Gutman, 2003). Each approach has a different focus on which goals need to be achieved. An example of a social- development approach is that PES programs have side – goals e.g. to empower local communities to improve institutional capacity of governmental institutions. Many PES schemes in developing countries have different multiply goals.

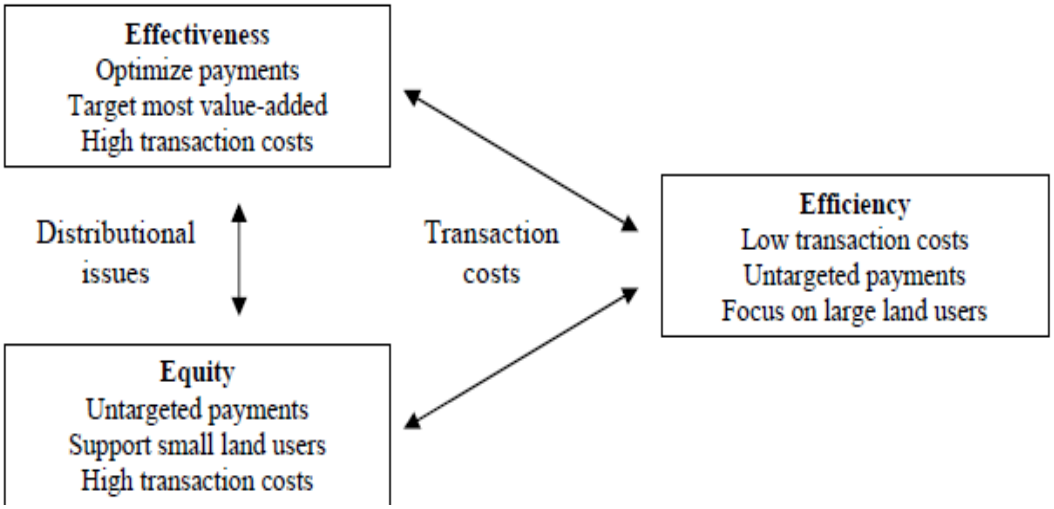
Due to the fact that in most developing countries there is a lack of enforcement of environmental policy, in some countries, it is even non – existent and poverty levels are high (Szirmai, 2003). One of the biggest problems is the large-scale degradation of natural resources (Szirmai, 2003).

Most poor people live in rural areas and are dependent on 'public' ES that their surroundings offer to sustain their livelihoods, health and security (WWF, 2009). Since poor farmers have little resources available, it is attractive for local land managers to convert their land for agricultural purposes to gain individual profits rather than maintaining the land in its natural state. Agriculture offers easy benefits. The problem is that most of these small – scale farmers to do not have the knowledge or skills to implement sustainable land practices. Not only are ecosystems damaged by the transformation of land, the use of unsustainable land practices leads to further environmental degradation. Consequently, poverty levels will only further augment due to increased scarcity of natural resources.

Traditionally, poverty and conservation policies are not well integrated but as more studies show, there is a direct casual relationship between poverty and environmental degradation. If policies are not integrated, conservation efforts will be undermined if poverty is not addressed at the same time (Adam et al., 2004). From a NRM perspective, integrating other objectives such as alleviating poverty into PES schemes next to reaching environmental goals seemed like a logical development for initiators of PES schemes.

However, designing PES schemes with multiply goals is not that simple. Critical views developed as to whether poverty alleviation is really possible with PES. Economists argue that there is a clear trade – off when implementing programs that focus on conservation and poverty alleviation simultaneously. When integrating multiply goals, transaction costs are likely to increase which has an impact on the effectiveness and efficiency of the scheme. Including equity principles into a scheme will complicate distributional issues and increases transaction costs thereby decreasing the effectiveness and efficiency (see Figure 2). Although there are clear trade-offs, whether PES can become a successful tool for poverty alleviation is highly depended on the type, design and management of the scheme. A number of the constraints to implement PES programs and evolving issues are explained in the following section, other relevant issues that relate to the PES program in Lake Naivasha basin will be addressed in chapter 3.

Figure 2: Trade- offs in PES design



Source: Pagiola & Platais, 2003

2.3. Types and designs of PES schemes

There are two types of PES schemes; government- financed and user- financed. The most common are the government-financed PES schemes. A much smaller number is user – financed, supported by individual private and sometimes public users. The advantage of government-

financed scheme is that it is legitimate meaning that the concept of PES is integrated into national, regional and local laws and policies and therefore, it can be implemented at a larger scale. Large PES schemes tend to be more cost – effective from an economic and administrative point of view due to economies of scale (Wunder & Santiage, 2010). Though, the institutional capacity to implement and manage a large PES scheme is crucial for programs to become successful. For this reason, government- financed PES schemes are more common in developed countries. However, national scaled PES programs have also been implemented in developing countries such as Mexico and Costa Rica (Ferraro, 2009). Another advantage is that greater environmental objectives can be reached in a relatively short period depending on the scale of the project. Funds for payments can be collected by general or specific tax revenues paid by direct or non – direct ES users. In this way, a continuous flow of money to compensate administrative and supply of funds for ES is provided. Also, free rider behaviour is limited because a large number ES beneficiaries is targeted when payments are collected by general taxes.

The disadvantages of government – financed programs are that they tend to include side objectives other than reaching environmental goals. Competing political objectives can pressure the shift of the project focus and can negatively compromise environmental outcomes. The Mexican government that implemented a national watershed scheme, shifted their main focus to reduce deforestation to increase the livelily hoods of the poorest ES providers. The shift negatively influenced the environmental goals targeted (Wunder & Santiage, 2010). As earlier discussed, PES programs with different goals tend to be less effective due to existing trade- offs. Having a policy instrument with an approach to 'kill two birds with one stone' is not always as effective as focusing on reaching one objective (Tinbergen, 1952) On the other hand, the PES program in South Africa 'Working for Water' (WfW) that is focused on providing employment for the unemployed and other less fortunate people to clear invasive species in mountain catchments and riparian zones to restore natural ecosystems, has been successful (Turpie et al., 2008). Again, the success of PES program highly depends on how the program is designed and executed.

Another disadvantage is that government – financed schemes tend to be less flexible because of bureaucratic constraints. The red- tape problem is often mentioned as an obstacle to alter governmental policies or projects in a short period. As the situational conditions where PES schemes operate are vulnerable to economic, institutional, environmental, and social changes, government – financed programs are slower at responding which can have a negative impact on the efficiency of the program. In terms of allocating differentiate payment rates to ES – providers for effective resource allocation, government-finance schemes have difficulties to target high-value and high threat zones and rewarding ES providers with the right of payment to accomplish the highest quality and quantity of the service provided (Wunder & Santiage, 2010). As mentioned before, most payments rates are fixed. Differentiate payments are more cost effective, as they reflect variations in costs, quality and amount of service provided by the ES – provider (Wunder & Santiage, 2010, Wunscher et al., 2008, Engel et al, 2008).

User – financed PES schemes tend to be more effective because they directly target high-value and high-threatened zones in a specific area. In addition, user – financed programs target direct end –users as ES - buyers. The user – financed scheme is more flexible in the sense that it usually comprises a smaller number of actors involved within a smaller area and therefore can be managed easier. Due to its small- scale, there is more room for interaction between ES buyers and providers, which promotes a participatory process. By this process, private negotiations concerning the payment rates and design of the program are stimulated resulting in improved relationships and awareness creation (Engel et al., 2008). The buyers of ES play a more important role as they are the ones that are paying directly for the ES service provided.

Considering its smaller size and scope, the outcomes of the user – financed programs can be less significant. Furthermore, from an economic perspective, to set up a program for a smaller group

of ES buyers and providers has the disadvantage that is constitutes to higher transaction costs. Although, private negotiations between the actors involved have positive outcomes, at the same time this can result in the PES program design and its objectives being altered constantly which can have negative influence on the actual performance and the intended outcomes (Wunder & Santiago, 2010). Because payments are conditional, ES – buyers can withdraw from the program easier when they are not satisfied with the results or with how and by whom the project is managed. Also, the PES program is dependent on the financial capability and willingness of ES – buyers to provide their support. Because user – financed programs are voluntary, the choice of ES – buyers to participate can have other reasons than only striving for environmental goals. User – financed schemes are vulnerable to 'free riding behaviour' as only ES – users that are willing and financial capable are included in program to supply funds. As in government – financed schemes, ES – buyers can also have other political, economic and social objectives than intended.

For both types of schemes, the initiator (in most cases) becomes both the designer and manager and therefore has a large influence on how the PES program is shaped. Based on their views, a PES program is shaped by environmental, economic, social and political contexts at the location site. It is therefore, of crucial importance to have a thorough understanding of the current situation in where the PES program is implemented to analyse (Wunder, 2005).

2.3.1. Up- scaling PES schemes

For both user and government – financed schemes, up scaling of a PES scheme can be performed vertically and horizontally. When a small scale pilot scheme has been successful, it can be promoted on a higher governmental level as a showcase and can inspire higher governmental officials to implement larger government financed PES schemes (Wunder & Santiago, 2010). With horizontal up scaling, the PES scheme is enlarged by including a larger number of local ES – buyers and sellers within a predefined zone (Wunder & Santiago, 2010). The trade – offs described in the previous section also account for scaling up PES schemes. Transaction costs will likely to increase with a larger number of participants though on the long run can provide benefits in terms of economies of scale. The prerequisites for enlarging a scheme is existence of enough supply and (long term) demand of ES and favourable institutional and regulatory environment in where the program is executed (FAO, 2007). In respect to the enlargement of PWS scheme in the Lake Naivasha Basin, the prerequisites will be further discussed in chapter 3 and 4.

2.4. PES in Kenya

Most PES schemes have been implemented in Latin America and Asia. A much smaller number of schemes are developed and implemented for the African continent (Ferraro, 2009). The Katoomba group assessed PES in East and Southern Africa between 2005 and 2006. For Kenya a number of 16 PES projects were listed though not all projects included a clear buyer – seller model and some only included elements of PES based on the definition of the earlier described definition (Mwangi, 2008). In appendix A, an overview of the PES projects can be found. Compared to the assessment conducted in 2005, in 2008 the number of water projects, planned or ongoing, increased significantly from one to nine projects. Carbon projects decreased from four to three projects and biodiversity projects remained eight.

The projects are mainly funded with overseas development assistance monies, international conservation and development organizations and governmental organizations or specific providers (see Appendix A). The Kenyan government is involved in a number of projects namely Arabuko and the Kikopey Water and Conservation Project, especially the Kenya Forest Service (KFS) on the regional and local level, is engaged in carbon projects. Though, the actual

participation as an immediate or provider of funds to cover operational costs seems limited. On the other hand, most of projects are designed with user – financed design though the actual contribution of the private sector is rather small.

There is not one underlying clear-cut reason behind why there are a smaller number of PES programs in Africa. As Africa is the most capital-poor and overpopulated continent in the planet, the pressures on ecosystems is very high. From this perspective, PES schemes can offer an opportunity to assist in stopping the degradation of ecosystems in Africa. However, there are a number of constraints that limit the development of PES programs in Africa. These limitations are of course also relevant for Kenya. A number of these obstacles are summarized by Ferraro; *"lack of technical and market information, limited institutional experience, inadequate legal framework, limited successful business models, suspicion of market for public goods and equity concerns"* (Ferraro, 2009 p. 535). Though, there are other underlying factors why PES is not as popular as in Latin America and Asia. Ferraro outlines a number of issues related to; institutional sources of payments; ability of pay of ES users; high transaction costs; land tenure security; lack enabling legislations and policies; lack hydrological information and lack awareness and lack of knowledge and skills. These factors complicate the actual implementation of PES programs on the African continent and explain why there is small number of PES programs in Africa. In addition, these factors constitute a risk for initiators to whether PES programs can really become successful.

Chapter 3 Current situation of PWS program in the Naivasha basin

In this chapter the concept of Payment for Watershed Services (PWS) will be outlined, followed by a description of the arising water issues in the Lake Naivasha basin and the local political and environmental implications of the local situation in where the program is implemented. Lastly, in section 3.5 a detailed description of the current status of the PWS scheme is portrayed.

3.1. Payment for Watershed Services (PWS)

Water is the most important natural resource; all life and ecosystems are dependent on this valuable resource. Water falls to the Earth's surface as rain or snow and drains down streams that form rivers that eventually flow downhill back to the sea. The region where the water falls down is defined as a watershed. Watersheds provide a number of environmental services which include: flood- , erosion- , sediment- , water quality- , soil salinization control, and maintenance of aquatic habitants and dry season flows (WWF, 2006a). Indirectly and directly, they provide benefits to humans. Fresh water provision (non- consumptive and consumptive) is one of the most important ES.

In the last decades, non- consumptive and consumptive fresh water use has increased tremendously and water is now defined as a scarce good (UN, 2009). Especially in Africa, where more than 300 million of the continents 800 million inhabitants, live in water-scarce environments (Ferraro, 2009 p. 535). Together with other environmental hazards such as pollution of agricultural runoff, sewage and industrial discharges taking place on a large scale, the water quality and availability in Africa is subject to huge levels of stress. Against the global benchmark of 1,500 m3 fresh water that must be at least available per capita, projections of Water Resources Management Authority in Kenya (WRMA) state that this availability will decline to 235 m^3 by 2025 if further interventions are not implemented (WRMA, 2009 p. 1). The WRMA describe the benchmark for 1,000 m^3 water per capita as "absolute water scarcity", and imply that a continued decrease in fresh water supply could have startling economic, social and environmental consequences for Kenya as a whole. The Payment for Watershed Services (PWS) aims directly at the protection and conservation of specific environmental service related to water services.

3.1.1. Water as an economic good

As most ES are seen as public goods, technically this is not the case for water. Water is recognized as a rival good; one water user can decrease the availability and the water quality for another user (Dalhuisen et al., 1999). Water is a trans- boundary good, when it falls from the sky, it flows or evaporates and disregards any private, state or national boundary. Although water is renewable, its supply depends on seasonal fluctuations and therefore has an uncertainty in its supply (Dalhuisen et al., 1999). Furthermore, water is not considered to be a homogenous good, the quality can differ both in space and time (Dalhuisen et al., 1999). This characteristic creates the development of different water markets. As the demand for water services is rising due to shortage of water in large areas in the world, it is becoming very attractive to create a market for this service (Wunder, 2008). Especially in watersheds, the demand for watershed services originates from downstream water users such as farmers, hydrological producers, and domestic water users in urban areas (Ferarro, 2009). The ES providers are mostly located upstream in the watershed. When the hydrological relationships are well –defined in the watershed, a mechanism can be implemented for individual payments to increase water quality, water quality and flood control. By targeting individual water (upstream and downstream) users that can be defined as

geographically contiguous and homogenous agents, PWS can have an additional value as a management tool to control non-point source pollution and overall improvement of watershed management (Kosoy, et al., 2006).

3.2. Arising water issues at Lake Naivasha Watershed

Water scarcity and pollution is a major issue in the Lake Naivasha Watershed. Mainly due to deforestation, water quality in the catchment has been affected by erosion, sedimentation and nutrient input. Another effect of deforestation is the change of rainfall absorption by forest cover. When the forest cover decreases, the amount of rain absorption by forest cover can decline which leads to a lower water input in the basin. Harper & Mavuti (2005) and Becht et al. (2006) have recorded major changes in water quality and quantity, and aquatic ecology. There is strong scientific evidence that the water levels have decreased throughout the 20th century due to large scale irrigation of commercial crops (Becht et al., 2006). These major changes in water abstraction have immense effects on the ecological and hydrological systems in the basin.

Table 2: Estimated Water Availability in sectoral Rift Valley Catchment based on water abstraction data from 1992

	Annual Water Availability (MCM)		Water Use (MCM)		
Year	Surface water	Ground water	Domestic & Livestock	Irrigation	Industrial
2008	2784	126	60	49	6.698

Source: WRMA, 2009 p. 29

The estimated water availability in the Rift Valley catchment is summarized[8] in table 2. According to this data, the industrial water abstraction is the largest compared to domestic and livestock and irrigation water use. According to Harper & Muvuti (2005), the drainage of water is now dominated by surface flows rather than natural ground water flows due increased economic activities in the Naivasha basin. This has resulted in the degradation of rivers, streams and disturbed the water balance level in the lake. Due to other factors such as the practice of poor land management in the upper catchment, erosion has led to higher turbidity levels, especially in the rainy season (Kitaka, 2001 paraphrased by Githaiga, 2008 p. 1). The WRMA has identified four major water issues: pollution of water resources from both point and non-point sources, illegal abstraction and over-exploitation, quarrying and mining along river banks, and destruction and human encroachment into the watershed (WRMA, 2009 p.28).

Due to weak governmental structures and lack of cooperation between the government and local landowners, enforcement of environmental laws and regulations is relatively low (WWF, 2010a). Illegal abstraction of water for domestic and agricultural use and dumping of waste water in the lakes and rivers are examples of practices that unfortunately are frequently seen (WWF, 2009b). The government has therefore taken a number of steps to help improve water management; these are outlined further in the following section.

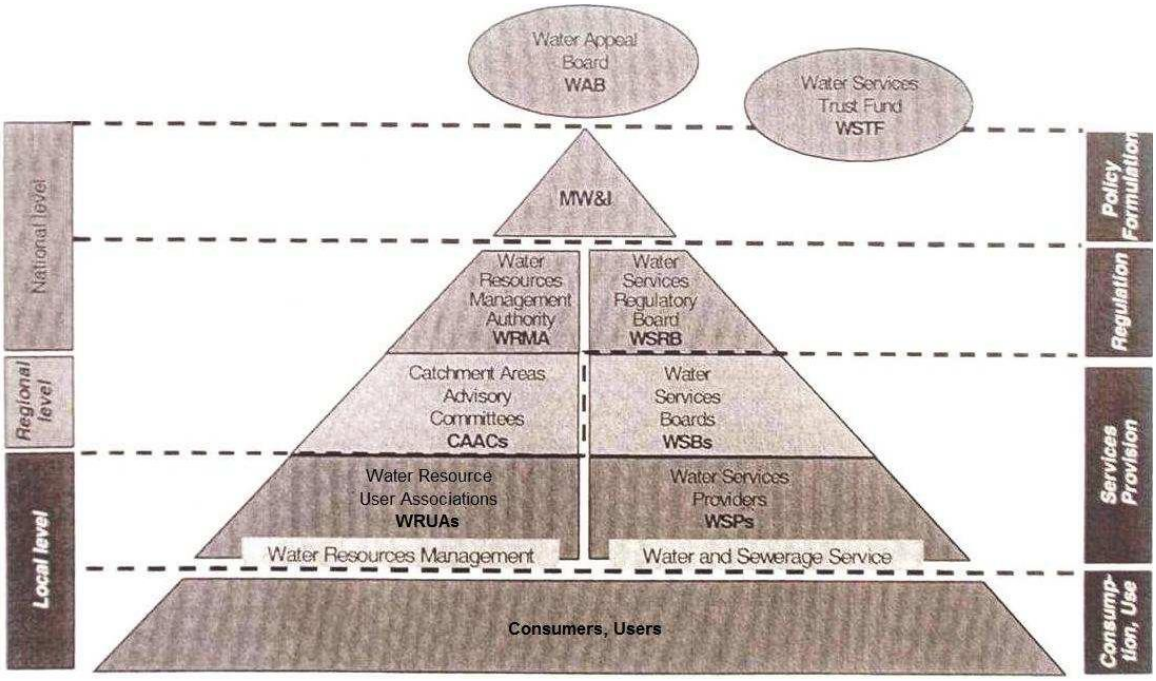
[8] Although these numbers are considered to be out-dated, they do present an image of the water use and availability in the Rift Valley Catchment

3.3. Policy developments

One of the major policy reforms carried out by the Kenyan government was the Water and Forest policy reforms. The aim of the Water reforms was to improve water management in the whole of Kenya. One the major changes, was the implementation of the Water Act in 2002. This act separated different functions within the water sector those being; water related policy formulation, regulation and services provision. In addition, it prescribes the establishment of new institutions to carry out those functions, each with its own responsibilities. The institutional framework is shown in figure 3. The Water Act also prescribes Water Resources Management Rules. One of institutions that have been established is the WRMA. The WRMA is responsible for the planning, regulation and management of the water resources. It was established in 2003 to become the lead agency of water resource management in Kenya (WRMA, 2007). WRMA has the following responsibilities;

- *Water Allocation and Appointment*
- *Monitoring and assessment of water resources;*
- *Gathering and publishing information on water resources;*
- *Receiving and determining applications for permits of water use;*
- *Regulation and protection of water quality;*
- *Management and protection of water quality;*
- *Water conservation and control;*
- *Determine and collect water use charges;*
- *Coordination with other bodies for better water management;*
- *Advising the minister with respect to water resources management* (WRMA, 2009 p. 14).

Figure 3: The institutional framework of Water Act (2002)



Source: WRMA, 2007 p. 7

Table 3: Roles and responsibilities of water sector institutions according to the Water Act (2002)

Institution	Roles and responsibilities
Ministry of Water and Irrigation	Responsible for the formulation of water policies, overall sector coordination, supervision and planning.
Water Services Trust Fund (WSTF)	Assists in financing the provision of water services in areas of Kenya without adequate water services.
Water Appeal Board (WAB)	Responsible for solving disputes between water related institutions and organizations.
Water Services Regulatory Board (WSRB)	Responsible for the regulations of water and sewerage services.
Water Services Providers (WSP)	Responsible for the efficient and economical, reliable and sustainable provision of water and sewerage services by developing facilities and contracting effective commercial Water Service Providers.
Water Resources Management Authority (WRMA)	Responsible for sustainable management of Kenya's water resources. Has both national, regional and sub-regional offices.
Water Resource Users Association (WRUA)	Responsible for local participatory management of water resources in sub-catchment areas.
National Water Conservation and Pipeline Corporation (NWCPC)	Responsible for the development and management of assets for bulk water supply

Source: WRMA, 2007 p. 7

To encourage local participatory management, the Water Resources Users Associations (WRUA's), are recognized in Water Act as a legitimate vehicle for community participation of water users to improve efficient water resource management and to prevent and resolve conflict on water use. The Naivasha basin is separated into 12 different WRUA's that are listed in table 4,their specific jurisdictions are shown on Map 1. Membership to the WRUA is voluntary, most of water users are small – scale farmers, domestic users, water projects, water services providers and commercial water users. By law, the WRUA is obliged to register itself as an association under the Societies Act, it also needs to formulate a constitution, and appoint a (democratically-elected) management committee before it has a legal mandate. Once established, the WRUA can apply for funding by the Water Services Trust Fund (WSTF) by submitting a sub-catchment

management plan with detailed descriptions of planned activities to improve water management in their jurisdiction. Other funds can be collected by registration fees, annual subscriptions, voluntary contributions and other payments rendered by the WRUA.

Table 4: List of Lake Naivasha Catchment Area Water Resources Users Associations

List of Water Resources Users Associations
1. Mukurgi Kitiri
2. Upper Turasha Kinja / Tuluga Geta
3. Upper Malewa
4. Middle Malewa
5. Lower Malewa
6. Lake Naivasha
7. Upper Gilgil
8. Middle Gilgil
9. Lower Gilgil
10. Karati Longonot
11. Marmanet / Wanjohi
12. Mariba

Source: WRMA, 2007

3.3.1. Forest Act

Before the forest policy reforms took place, the Kenyan forests were under the management of the Forest Department under the Ministry of Environment and Natural Resources. In 2005 forest policies were reviewed and a new governmental institution, the Kenyan Forest Service (KFS) was formed to manage the forests of Kenya under the new Forest Act.

With the implementation of the Forest Act (2005), communities that live within a 5 km radius of the forest are encouraged to co- manage the forest. Similar to the Water Act, communities can form Community Forest Associations (CFA's) and submit participatory forest management plans for approval at the KFS. When approved, the CFA receives a legal mandate as co-managers of the forests and are entitled to forest user rights that include the right to collect fuel wood, building materials and harvest non- timber forest products such as honey, fruits and medicinal herbs.

3.4. PWS program design

A joint program of the WWF, CARE and the International Institute for Environmental Development (IIED) was proposed in 2005 to initiate a user – financed equitable PWS in different watersheds in Asia, Africa and Latin America. The central goal of this project is too *"ensure a sustainable flow of watershed services to beneficiaries of these services into the future and to improve the livelihoods for the rural poor"* (WWF, CARE, IIED, 2005). In order to

develop and implement the equitable PWS schemes, a three-phased strategy[9] was outlined (see table 5).

Table 5: The three- phased strategy of PWS project

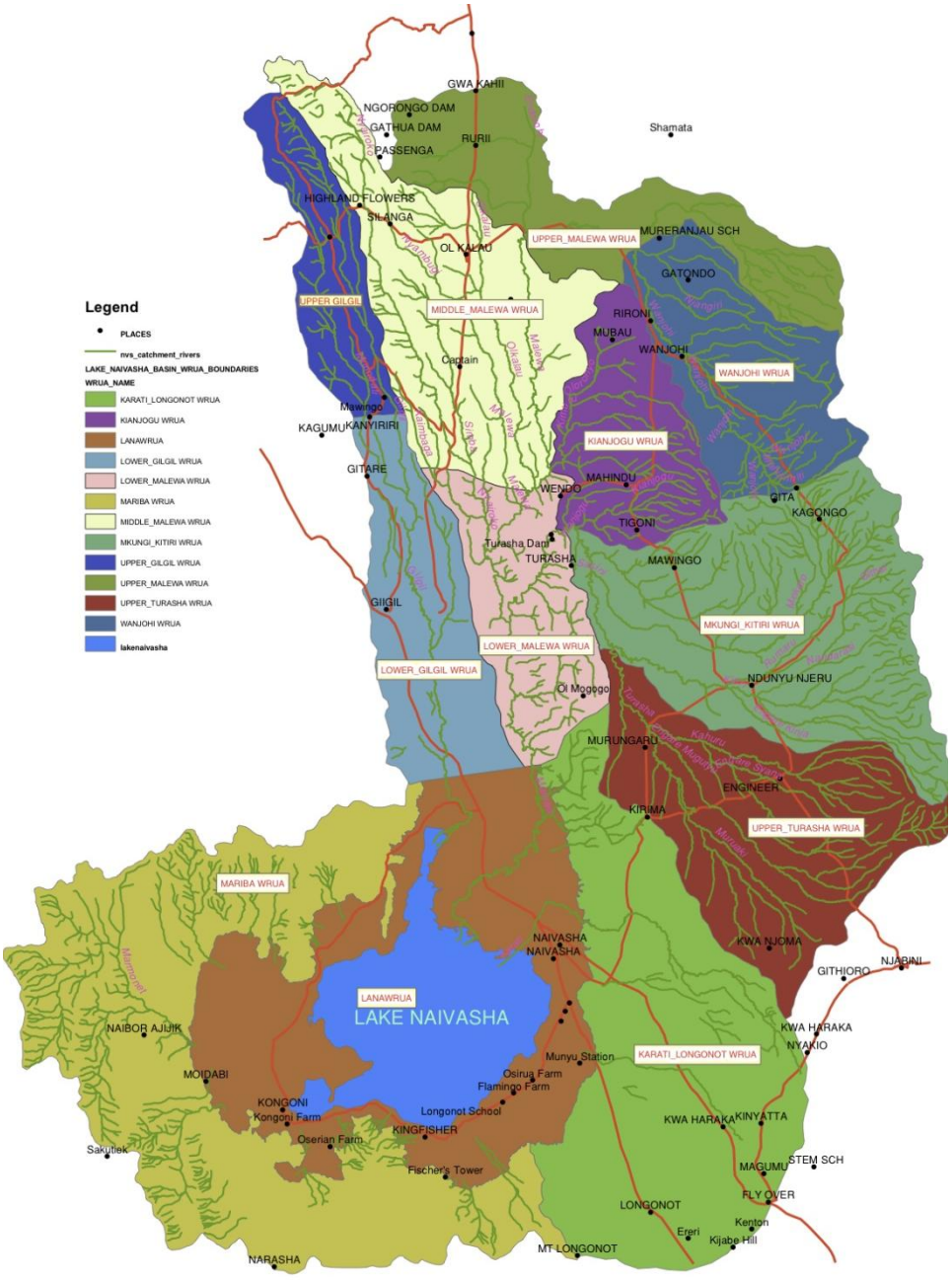
PROJECT PHASE	ACTIVITIES
PHASE 1 **Feasibility Study** **Hydrological, legal, institutional and economic assessments;** **Identification of buyers, sellers and facilitators;** **Memoranda of Understanding between buyers and sellers is signed**	In this phase a feasibility study is conducted. This study includes a baseline study of the hydrologic aspects in a specified region to identify the drivers of environmental degradation. Also the possible alternative land use management interventions are identified that could be implemented to prevent or reduce degradation of ecosystem services. The potential buyers, sellers and facilitators are identified and a memoranda of understanding between participants is signed.
PHASE 2 **Implementation of PWS** **Application of alternative land use practises;** **Monitoring of results;** **Evaluating of program impacts upon livelihoods and ecosystem services** **Establish local capacity**	In this phase the PWS scheme is implemented and buyers will make payments to environmental services sellers. The results are monitored and documented. Data from monitoring activities are analyzed and evaluated. An impact assessment is conducted to identify the positive or negative impacts on rural livelihoods and ecosystems services. Local actors are trained to manage the PWS scheme.
PHASE 3 **Long term establishment of PWS** **Establishment of legally binding contractual agreements between sellers and buyers;** **Retreat of external agents (donors, mediators)** **Lobby activities to integrate regulations in the legal system**	In this phase the PWS program is continued and legally binding contractual agreements between sellers and buyers are signed. There is local capacity to manage the PWS scheme and for that reason external agents can retreat from the project. When the project proved to be successful, lobby activities can be initiated to integrate PWS features into the legal system.

On the basis of this phased strategy, a feasibility study was carried out in the Naivasha basin between 2006 and 2007. It included a hydrological assessment, a national legal & policy assessment, a livelihood assessment, a local level legal assessment, a seller's cost analysis screening and a program cost benefit analysis. It provides justification of the implementation of the PWS scheme though it does show that major questions were unproven; 1) land- use change

[9] This phased strategy is described in the technical guidelines document *'Equitable Payments for Watershed Services, a guide to developing an innovative finance mechanism'* (2006) that was designed by Institute of International for Environment and Development (IIED) in cooperation with WWF and CARE

can improve downstream watershed services; 2) PWS payments can provide benefits to upstream communities; 3) downstream environmental benefits and increases in on-farm productivity are mutually exclusive (Ellis -Jones, 2007). Although, these were key questions for the justification of the implementing the PWS scheme, the author emphasized that these limitations should be taken in consideration when designing the PWS pilot scheme.

Map 1: Lake Naivasha Basin WRUA's



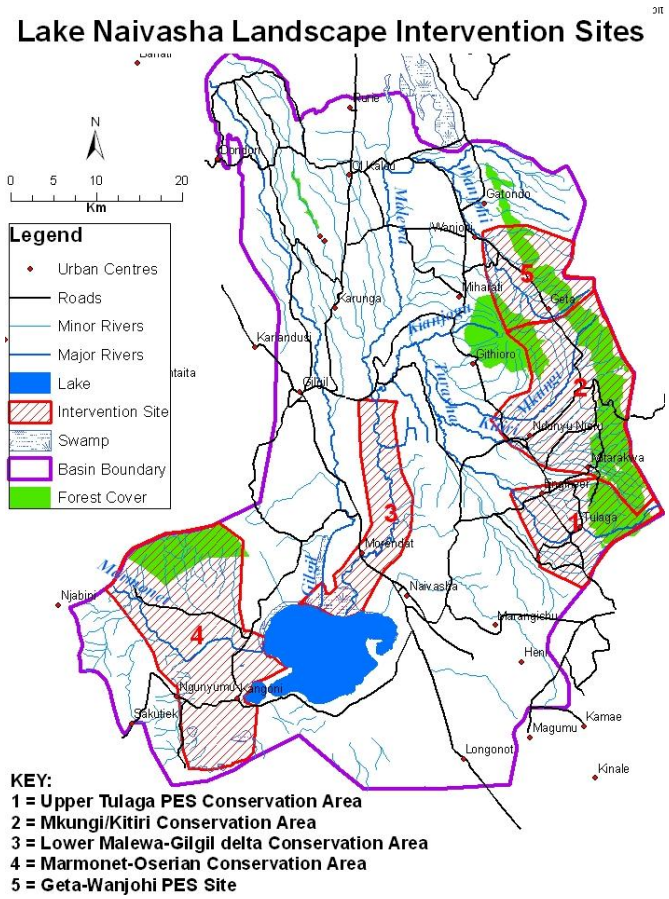
Source: WWF, 2010b

3.5. Pilot scheme

In phase 2, a pilot scheme was developed by the WWF and CARE for the Lake Naivasha basin. The pilot scheme aims to improve the overall environment in the Naivasha catchment, in particular the quality of the water flowing downstream into the lake and to improve and secure of the livelihoods of upstream farmers. The central environmental service that is targeted is to improve the water quality in the rivers by reducing sediment and nutrients input caused by unsustainable land – practises upstream. Based on the hydrological facts, lower turbidity levels will reduce water treatment costs and directly lead to lower uses of chemicals and therefore assists in additional improvement of water quality downstream.

Two WRUA's are selected as ES sellers are the; Upper Turusha – Kinja that covers the Turusha river and its tributaries and Wanjohi – Geta that cover river Wanjohi and its tributaries. The specific location of the two WRUA's is shown on Map 2. A number of criteria for hot spot[10] farms selection were identified on the basis of the hydrological assessment. These criteria included farmers that cultivate without soil conservation i.e. terraces, grass stripes and trees; next too or in close proximity to rivers and valleys; with unprotected riverbanks; with poor land- use practices and plots with water- unfriendly trees such as Eucalyptus located near riverbanks (WWF, 2009a).

Map 2: Lake Naivasha Landscape Intervention Sites



Source: WWF, 2009c

[10] Hot spot are the priority areas that have been identified and recommended to be included in the PES program due to high levels of degradation. Most of the hot spot are located near river banks.

With the assistance of the WRUA's and local Agricultural Officers, a number of farmers were selected on a number of criteria, including ownership of their legal property rights and showing will and enthusiasm to participate in the PWS program. When farms were marked, some farmers were concerned that governmental officers would take their land as agricultural laws forbid farming on steep slopes and due to previous experiences with the government taking ownership of land. By cooperating with local agricultural officers, farmers were encouraged to participate and secured that land would not be taken from them.

Thereafter, a mapping exercise was carried out to select the most critical farms where degradation of land on the basis of land cover, land use and slope gradient, were most likely to contribute to sediment and nutrient flowing downstream. A number of 548 farms were mapped and in specific places conservation measures were marked (WWF, 2009a). During the marking process, farmers were given training in sustainable land-use practices and restoration material that was selected by participatory process between the Ministry of Agriculture and its Agricultural Officers, CARE, WWF, Kenya Forest Service (KFS) and the farmers themselves to firstly improve soil and water conservation on their lands and secondly to provide on-farm benefits when land-use changes where implemented. In this way, farmers became aware of importance of conservation measures and conflict was avoided concerning the fairness of 'rewarding' farmers who neglected to take conservation measures in the past and were now going to be rewarded. According to CARE, most farmers did not have the knowledge how to take conservation measures but were very keen to learn.

The conservation materials promoted by CARE and WWF are Napier grass and Cock's foot grass and agro-forestry trees and tree seedlings (Olives, Cedar, Dombeya, Prunas Africanas, Rosewood, Gravellia)(WWF, 2009a). These were to be planted on the marked areas of the selected plots by the farmers themselves.

A total of area of 365,803 m^2 being 216,125 m^2 of grass stripes and 149,678 m^2 of riverbank protection was marked for conservation (WWF, 2009a). In June 2009, 4000 tree seedlings were planted and another 25,000 seedlings will be planted in the coming years (WWF, 2009a). These exercises are evaluated by WWF and CARE as crucial to confirm ownership of lands, define their approximate size, and to collect data on previous farming activities. This valuable information can be exploited for the overall improvement of NRM by the WRUA's, CFA's and other institutions.

To ensure implementation of the conservation measures, monitoring and training of the selected farmers is conducted by joint cooperation between local CARE staff-, WRUA staff and local Agricultural Officers. In order to monitor hydrological changes e.g. river flow, sediments and rainfall, monitoring equipment e.g. water meters, turbidity instruments have been set up in a number of locations. CARE collects the data with assistance of the WRUA's, the analysed results are used for the quantification of the progress of the PWS program.

3.4.1. Stakeholders

The development of the PWS scheme is intended to improve relationships between different local and regional stakeholders that have a mandate related to natural resource management. The stakeholders and their specific role in the PWS are described in table 6.

Table 6: Direct Stakeholders in PWS program at the Lake Naivasha basin

Name of organization / institution	Type of organization	Role (s)
Lake Naivasha Growers	Private	The LNGG represents private

Group (LNGG)		downstream water users; Supply of ES payments; Institutional support by promoting PWS to her members and partners.
Lake Naivasha Riparian Association **(LNRA)**	NGO / private	The LNRA represents public and private downstream water users: Supply of ES Payments; Institutional support by promoting PWS to her members and partners.
WWF	NGO	WWF is the co- designer of the PWS program; it facilitates the process of capacity building of participating WRUA's and the implementation of PWS. It provides funds and human resources. Promotes partnerships of participating organizations; Promotes PWS program on national and international levels.
CARE	NGO	WWF is the co- designer of the PWS program; it facilitates the process of capacity building of participating WRUA's and the implementation of PWS. It provides funds and human resources. Conducts monitor activities; Promotes partnerships of participating organizations; Promotes PWS on national and international levels.
WRMA (at sub-regional level)	Governmental	Provides human resources to facilitate the implementation of the PWS program at local, regional level; Provides data concerning water quantity and quality in the basin; Promotes PWS on local, regional and national level.
Ministry of Environment & Mineral Resources (National Environmental Management Authority NEMA)	Governmental	Local and regional support for the implementation of PWS. (NB: current role is limited)
ICRAF / PRESA	NGO / Research	Facilitator and fund provider for knowledge exchange activities for

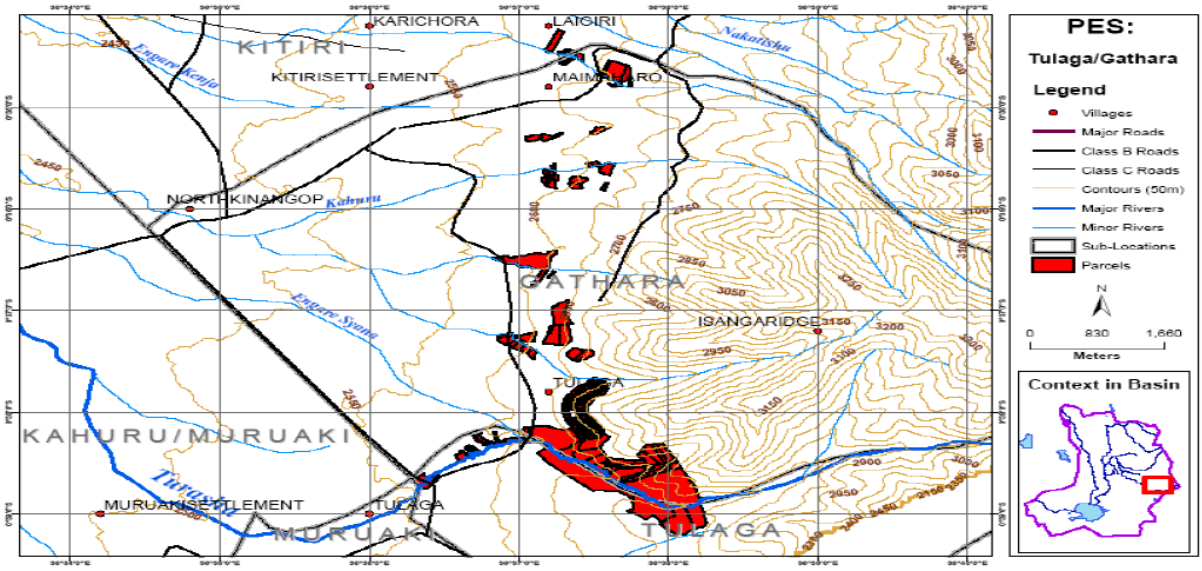
	Institute	institutions involved in PES regional and local programs;
WRUA – LANAWRUA	Community-based	Represents the downstream water users; Legal body that has a PWS contract with upstream WRUA's. Provides data in relation to water quantity and quality at downstream level in the basin; Promotion of PWS to her members;
WRUA- Wanjoni	Community – based	Represents individual upstream farmers, water projects officials, tree nursery operators, group leaders : Legal body that has an PWS contract with downstream WRUA; Provides data in relation to water quantity and quality at downstream level in the basin; Promotion of PWS mechanism to her members and partners;
WRUA – Upper Turasha	Community – based	Represents individual upstream farmers, water projects officials, tree nursery operators, group leaders: Legal body that has an PWS contract with downstream WRUA; Provides data in relation to water quantity and quality at downstream level in the basin; Promotion of PWS mechanism to her members and partners;
Ministry of Agricultural (local, regional level)	Governmental	Local agricultural officers assist and support by: Provide human resources for organizing trainings to local farmers; Provide institutional support through promoting PWS on higher governmental levels.

3.5.2. Sellers

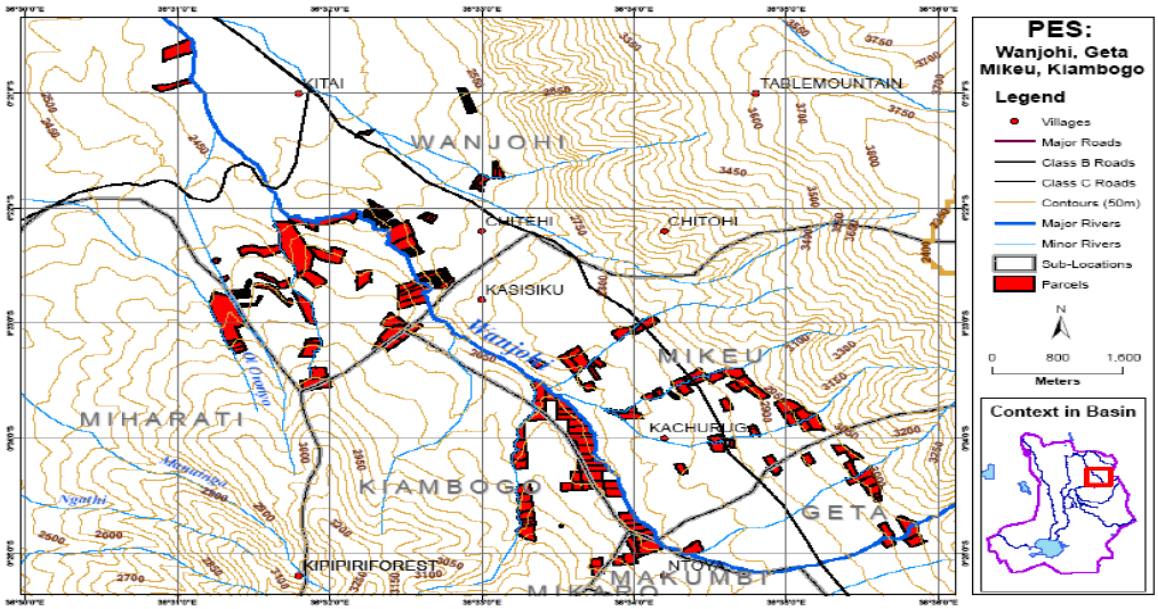
The ES providers are individual small – scale farmers located in the upper catchment. The location and sizes of the participating farmers are illustrated by the red areas on Map 3. The participating PES farmers have relatively small plot sizes which are located near riverbeds or on steep mountain slopes. Currently, 563 farmers that have been registered as participating PWS farmers; though only the farmers that have registered in the previous year during the marking exercise will receive a payment. Out of the 563 farmers, 107 are female farmers (CARE, 2009).

Map 3: Detailed maps of relative position and size of PWS farms in Wanjohi – Geta and Tuluga

Tuluga



Wanjohi Geta



Source: WWF, 2009a

The Marmanet / Wanjohi WRUA and Upper Turasha Kinja operating in the area are relatively young organizations. During other project activities of the WWF in previous years that focused on the capacity building of community based organizations, the WRUA's were assisted in obtaining a legal mandate as community based organizations.

3.5.3. Buyers

In a user – financed scheme, the buyers are the actual users of the environmental service. These are the water users of the lower catchment of the Naivasha basin, located around the lake. Buyers of user – financed schemes can be local governmental institutions (funds obtained through taxes, tariffs and charges), private corporations (farms, commercial water users, electricity providers, tourism industry) and private individuals (domestic water users, individual tourists) and NGO's. In chapter 2, it has already been explained that user – financed schemes are likely to be more efficient than government – financed schemes due to their smaller scope. Direct involvement of water users has the advantage of involving actors that have information about the value of the ES and constitutes a *"clear incentive to ensure that the mechanism is functioning well and can observe directly whether the service is delivered and has the ability to re- negotiate (or terminate) the agreement if needed "*(Engel et al., 2008 p. 666).

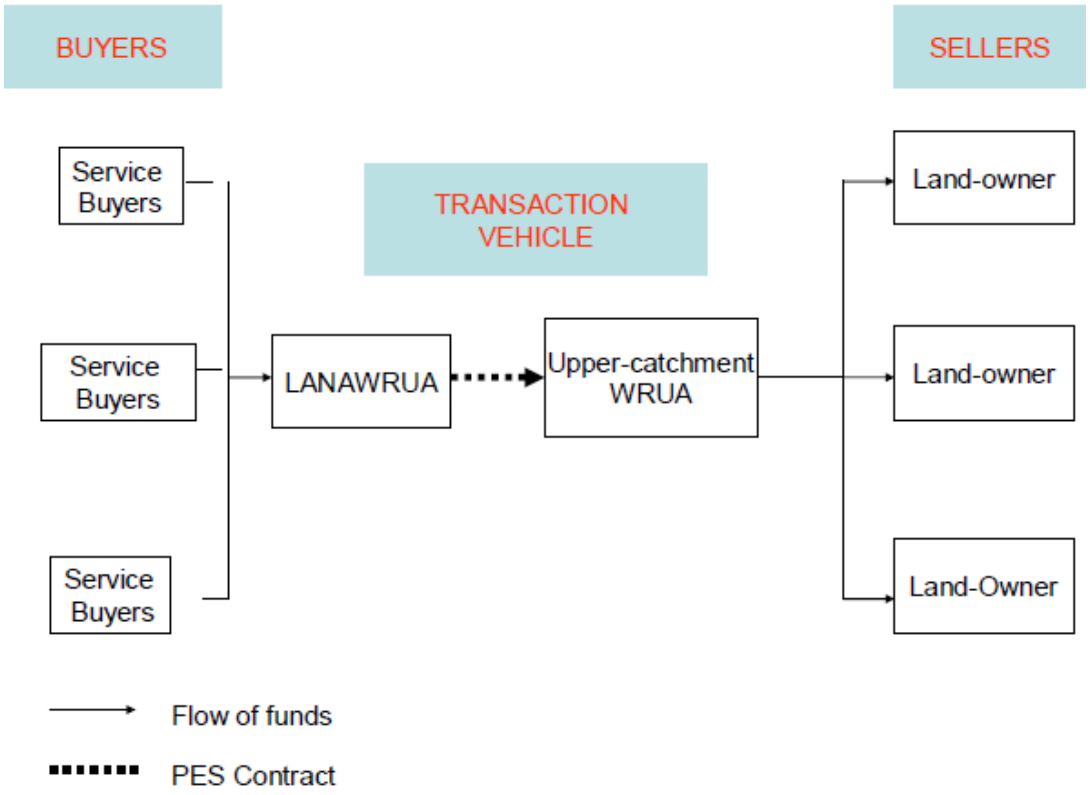
In order to find legitimate ES buyers, the LANAWRUA representing downstream water users, the NARUWASO (a semi – private organisation) were targeted as potential ES buyers. The potential ES – buyers have been sensitized by individual presentations held by CARE and WWF staff to gain support. Initially, NARUWASCO, LANAWRUA and Lake Naivasha Tourist Group (LNRG) were targeted as potential ES – buyers. NARUWASO and LNRG retreated in the negotiation phase during discussions concerning the level of payments. LANAWRUA was targeted as an entry institution to sensitize the Lake Naivasha Riparian Association (LNRA) and Lake Naivasha Growers Group (LNGG). These well – established organizations represent a large number of downstream water users, private and public.

3.5.3.1.Background LNRA and LNGG

In 1929, private landowners were alarmed by lakes dropping water levels and the lack of government intervention to act to resolve the environmental issues arising at the time and decided to establish the Lake Naivasha Riparian Owners Association (LNROA). The main objective was to protect the riparian area around the lake and to stop further human and business settlements. In the 90's the association become more active and started to develop other environmental objectives. In 1995, Lake Naivasha was designated as the RAMSAR site, the organisation the association became an influential stakeholder in the formulation of the Lake Naivasha Management Plan. The main goal of the LNRA *"is to coordinate and plan development in the vicinity of the lake and catchment area in order to deter permanent damage to the ecosystem"* (LNRA, 2007). The association has about 140 members that represent various private and public sectors i.e. tour operators, small and large- scale farmers, cooperatives and local governmental representatives.

In 1997, the LNGG was established by a small number growers (located downstream) that felt that their commercial interests did not corresponded with the objectives and ambitions of the LNRA (Becht, 2006). As conflicts arose between the associations, they now work together in more institutionalized forms of management, though political tensions do continue to exist (Becht, 2006). The LNGG (2010) strives "to balance commercial and environmental sustainability", the organization is open to any grower that abstracts water from the Naivasha basin. Though, it mainly has members (23) that are large and medium horticulture growers. To promote 'environmental sustainability', the LNGG has developed a Code of Conduct that aims to stimulate sustainable horticulture farming to improve and promote sustainable development of the area around Lake Naivasha (LNGG, 2007).

Figure 4: Current Transaction Structure PES program



Source: WWF, 2009a

3.5.4. Contract

The LANAWRUA, representing the interests of both LNGG and LNRA entered into a one-year legal contract with the upstream WRUA's on the 26th of March, 2010. The two contracts prescribe the conservation measures being grass stripes and riparian restoration that should be implemented and maintained by the participating landowner to a 'reasonable satisfaction' of the LANAWRUA. All participating farmers have been registered at their local WRUA and are included in the Catchment Conservation Plan that identified the farms where conservation measures are to be implemented (see Appendix D). There are no specific environmental objectives mentioned in the contract itself.

3.4.5. Payments

Both LNGG and LNRA committed themselves to the PWS program as ES buyers. A total sum of 10,000 dollars was dedicated; 6,700 to be paid by LNRA and 3,300 by the LNGG. CARE and WWF have a coordinating and facilitating role as an intermediate vehicle. As policy developments of the Water Act established the Lake Naivasha Water Users Association (LANAWRUA), it was decided that the compensation payment should go through this institution to improve the direct linkage between upstream and downstream WRUA's. Thus, at the same time this transaction structure targets the improvement of cooperation between the upstream and downstream WRUA's and the WRMA to promote and strengthen sustainable water management in whole catchment.

Picture 1: Presentation of PES cheque to upstream farmers
Photograph taken by Marijke Boonstra

In May 2010, an event was held where a cheque worth 10,000 USD was presented by LANAWRUA to the upstream WRUA's (see picture 1). Although this was a symbolic cheque, the contract states that LANAWRUA is obliged to the agreed sum of money stated in the contract to both WRUA's if conservation measures have been implemented. The contract states that incentives shall be paid with a cash value 17 USD, or the equivalent in Kenyan Shillings, to each participating farmer. The actual payment is given in the form of a voucher that can be used for the supply of goods and services at outlets, suppliers or other shops identified by the WRUA and agreed upon by the LANAWRUA.

The transparency of the payments that are carried out by the WRUA's are secured by Clause 2 in the contracts, where it is stated that the WRUA's have to demonstrate signed receipts of the incentives given to the participating farmers (see Appendix D). In this pilot phase, the actual financial administration is still managed by CARE and WWF, who administer and strictly monitor the flow of money from the LNGG and LNRA through LANAWRUA to the WRUA's and the participating farmers.

Chapter 4 Research results and analysis of the PWS program in Naivasha basin

This chapter describes the research results and gives an analysis of the PWS program in the Naivasha Basin. The hydrological, social and economic, program design, program costs and institutional challenges and opportunities of the PWS program are described in sections 4.1- 4.5. In section 4.6. current policy developments that have influenced the implementation and design of the PWS are addressed. The following sections describe the targeting methods of ES buyers and how to sustain a continuous and sustained flow of ES payments.

4.1. Hydrological features

The PWS hydrological assessments show that the adoption of alternative and thereby more sustainable land – practices by farmers upstream can improve the water quality downstream to the lake. The implementation of conservation measures can decrease the sediment yield and reduce the water pollution threat (Ellis -Jones, 2007). Though, the modelled changes are calculated over period of 8 years, as the small – scale pilot scheme has only been running for one year, quantified results in the improvement of water quality downstream cannot yet be presented with credible hydrological data. The number of participating farmers in the current pilot scheme still only covers a relatively small area. It has been assessed that *"land use change in the upper – catchment is unlikely to influence catchment water yield in the medium term being 8 year"* (Ellis - Jones, 2007 p. 16).

At the same time, there are a number of other factors that have an influence on the water flowing kilometres downstream before it reaches Lake Naivasha. The hydrological characteristics of the Naivasha catchment are not fully understood due to its complex ground and surface flows and the lack of hydrological data concerning water abstraction, sedimentation following downstream, pollution and climatic factors (Becht et al., 2006, Ellis - Jones, 2007). This problem occurs in other PWS programs as well, due to the complex hydrological characteristics of watersheds and the existence of seasonal, annual or multi- year fluctuations of water flows, which make the quantification of the (improved) water services very difficult (Pagiola, 2004).

With a growing population, run-off and effluent from towns in the upper catchment could also augment. Although there is no data available yet to back up this claim, the general perception among the WRUA chairmen and agricultural officers interviewed, indicated that this was a major problem due to the fact that most of the towns and villages upstream have a lack of or inadequate, waste management policies in place. Some of the observations in the upper catchment that have been recorded were; large amounts of plastic waste on the streets, blocked sewages, inadequate sanitation and commercial car washing in the vicinity of rivers. The lack of financial resources allocated by the government and the issue of widespread corruption has been identified as factors that can complicate the general improvement of overall water management. Based upon the conclusions of the hydrological assessment, these issues could contribute to increased water pollution in the basin and in turn result in a negative impact on the outcome of the PWS program.

In addition to this, almost all interviewees identified climatic factors such as the changes in rainfall patterns as a rising challenge for the PWS program as it can undermine conservation efforts. Climate change is mentioned as the cause for the change in weather conditions. These perceptions correspondent with the existing climate models of the IPCC that indicate that the African continent is likely to experience more intense rainfall resulting in more floods and droughts (IPCC, 2007). The drought that took place last year had a major economic and social

impact on the population living the catchment. On top of the existing issues of poverty, high population growth and rapid urbanization in the Naivasha basin, climate change can have a direct impact on availability of water resources and could possibly lead to social conflicts in regards to the allocation of water resources.

Moreover, since external factors play a major role on the actual quality and quantity flowing downstream, it will be difficult to present reliable scientific data on whether the PWS program can contribute to improved water quality downstream. According to Wunder, the willingness of ES buyers highly depends on the *"clear additionality vis a vis carefully established baselines"* (Wunder, 2005 p. 1). In order to establish a real market for watershed services, a real market value is needed. Whether potential buyers are willing to pay for a service that cannot be proven is questionable.

Currently, both ES buyers; LNGG and LNRA are fully aware of the fact that the current PWS program cannot produce significant changes in water quality. The main interests of ES – buyers in participating in the scheme were to encourage sustainable land- use practices upstream in order to maintain and possibly increase overall incomes levels of farmers living upstream and thereby stimulating sustainable economic- and social development in the upper catchment. The support of LNRA and LNGG therefore depends fully on the good will and their views on social- economic development programs of the members to contribute to the scheme. As contributions are voluntary, these can be terminated easily when the LNGG and LNRA are not satisfied with the outcomes and proceedings of the program.

4.2. Social and economic features

The PWS program is focused on alleviating poverty of upstream farmers and strives to provide on-farm net benefits such as increased future productivity of land. With training in sustainable land use practices, farmers became aware of how to make their farming activities more effective, efficient and sustainable. Levels of participation for the trainings have been above all expectation according to CARE field officers. Both WRUA's chairmen and CARE field officers stated that PES farmers had obtained profits that were associated with the selling of dry grass for animal consumption (obtained from conservation grasses) to neighbouring milk producing farmers. Local agricultural officers stated that the PWS program led directly to the increase of milk production. Local CARE staff observed that non – registered farmers copied similar conservation measures on their lands to gain more profits and to conserve their lands. One of the participating farmers even constructed a water storage basin and had implemented a simple irrigation system. These are examples of behavioural change of upstream farmers.

Upstream farmers have become more aware of the PWS program and its benefits due to sustainable land use trainings and events that have been organised by CARE and WWF. The number of participating farmers that are willing to participate has, according to CARE, increased tremendously. Though, concerns have been raised whether the right people (poor farmers) are targeted by these activities. It is therefore important when continuing the scheme, that participating farmers are monitored, in order to verify who is participating and on what basis. In this way, it can be determined if other strategies should be implemented to change the targeting of certain farmers to secure equity features. The disadvantage to include this verification method is that transaction costs will increase.

Next, the name of the PES scheme that include payments is said to influence the participating PWS farmers and potential future farmers' expectations of future in cash payments. Even though the PWS farmers have been properly informed, MARECOF believes that PWS farmers are expecting a higher fee in the next phase. This expectation is not very likely to be realised. MARECOF warns for a possible conflict, if farmers are not informed well.

The word payment is perhaps emphasizing too much on the economic gains and not the overall socio – economic gains it can provide. A solution to take away could be to change the name of the program. Especially the word payments could be replaced with rewards or incentives when directly communicating with PWS farmers.

Moreover, there have been no records of tensions arising between non- participating and PWS farmers. One of the concerns mentioned in the literature is that non – participating farmers can take perverse incentives to become selected as PWS farmer. Further, other incentives are that participating farmers would damage their land that is not used for the implementation of conservation measures e.g. use of polluting chemicals and cutting of trees. Though, these have not been observed by local stakeholders yet. In order to avoid these incentives in the future, Pagiola et al. (2004) describes that the PWS contract should state that perverse incentives are not allowed to be taken before entering into a PWS program and the contract should be terminated if participants deliberately damage other parts of their lands that are not under conservation. Exceptions should be made under the force majeure clause in the contract (see Appendix D).

Local WWF staff indicated that participating PWS farmers have feelings that non – participating farmers in the middle and downstream catchment, free ride on the benefits of the PWS program, as they benefit directly from improved water quality upstream. These feelings could indicate that the willingness of PWS farmers could decrease when they do not feel rewarded enough. Since the payment, at this moment, is rather low (only 17 dollar), this could be an indicator to increase the payment.

4.3.Program design

The PWS program is successful in training farmers upstream sustainable land- use practises and creating partnerships between WRUA's, WRMA and other governmental institutions involved. Part of the 'Linking Futures' is to build civil society and the influencing of environmental policies. When the PWS program was initiated, the WWF started to organize workshops to strengthen the institutional capacity of the WRUA's and WRMA to improve general water management. This has resulted in higher levels of institutional capacity of the Wanjoni and Upper Turasha WRUA's, LANAWRUA and the establishment of the umbrella WRUA. This process has been financial supported and facilitated by SNV and the WWF. By means of workshops, meetings and trainings, WRUA staff has been trained on how to organize themselves and how to improve water management (e.g. conducting monitoring activities, enforcement of Water Act) in their jurisdictions. Part of the success of the PWS program is said to be the result of other implemented activities the WWF and CARE described above. All stakeholders involved in the development of PWS program, have indicated that the PWS program in its current design, has functioned as a catalyst to improve cooperation and the relation between governmental institutions, community – based organisations and private actors and land – owners. The program on itself is recognised as a policy tool to drive policy change and stimulate good environmental behaviour. However, it should not be implemented as a single instrument.

One of the criticisms mentioned by different mostly private stakeholders, is that the current PWS program is too focused on the development on poverty alleviation in upper catchment. Sustaining of the PWS program depends on the financial support of the ES – buyers to maintain the PWS mechanism on the long term. Based on experiences with PES programs worldwide, Pagiola and Platais (2003) state that *"PES programs usually have to be made on a long-term basis if the desired services are to be generated sustainably"* which indicates that the current contract length of one year should be extended. At the same time, this indicates that trust between ES sellers and buyers should be of such a level to allow negotiations (further explained in section 4.5).

Because PWS is an relatively new policy tool, the understanding of PWS and the work experiences of local WWF and CARE staff vary and with it, their views. Approaching new ES

buyers does require new skills in comparison with other development projects. This has an impact on the actual program design of the PES concept and views on how to approach new buyers.

Wunder (2005) has a rather pessimistic view on NGO's implementing PES schemes due the fact that the primary focus is diluted by multiply objectives which undermine its principle performance as market based instrument (Wunder, 2005). The risk of the PWS program turning into a 'normal' development project based on ideological principles of the involved NGO's instead of economic principles should not be underestimated.

4.4. Program costs

As LNGG and LNRA are providing funds for the PWS program, only LNGG has started to pay its contribution. Due to financial problems at the LNRA caused by the non – payment of membership fees and lack of foreign funds, the LNRA is described as non – functional at this moment. Whether the LNRA can fulfil its payment this year is unclear.

CARE and WWF contribute a substantial amount of financial and human resources into the program. According to the Mwangi (2008), the program costs were estimated on 450,000 dollars. In comparison with the collected private funds of 10,000 dollars, the PWS program highly depends on the funds of CARE and WWF. Initial costs of implementing a PWS scheme are always high, by enlarging PWS programs transaction costs tend decrease as the relative costs decline (Wunder, 2005).

Moreover, reducing transaction costs do play a role in creating a more cost – effectiveness and sustainable scheme (Pagiola, 2004). Transaction costs are high in most PES schemes, an example are the transaction costs of carbon sequestration projects, these constitute for 6% to 45% of the program budget (USAID, 2007). Although, these costs to set up carbon sequestration projects have overall higher implementation costs (e.g. estimation of carbon pools), it does require a number of similar implementation costs such as training and capacity building of local organizations.

As described in chapter 2; integrating side objectives can increase transaction costs, by keeping guidelines for design and formulation of PES programs simple and focused makes implementation easier and less – time consuming. Further, transaction costs can be lowered by altering monitoring techniques. Training local agricultural officers, WRUA members and PWS farmers to monitor their own progress instead of hiring external experts, can reduce monitoring costs significantly. The LNGG and LNRA are positive concerning the integration of self monitoring.

In terms of future payments to ES sellers, the expectations concerning an increase of payment in the next phase of PWS are high according to MARACOF representatives who directly communicate with PES farmers. Since all PWS farmers receive the similar cash value voucher, there is no distinction made between sizes of the plot of PWS farmers. Although, the opportunity costs related to the implementation of conservation measures do in fact differ, the obtained benefits by avoiding other farming costs even these out at the same time. CARE and WWF have suggested that in the next phase, farmers could be rewarded with an incentive that corresponds with the specific size of the farm. In other PES schemes, doing this will result in more effective environmental and economic outcomes (Wunder, 2005). Moreover, when expectations of the level of payments/ incentives are not delivered, this could have influence on the willingness to participate of PWS farmers to implement or maintain conservation measures.

4.5. Institutional features

As previously described in chapter 2, good effective governance can influence the development of a successful PWS program. Moreover, the current community- based organizations involved in the scheme are relatively young and inexperienced organizations. Both LNGG and WRMA stated that the current institutional capacity of the upstream and downstream WRUA's is too weak to run a PWS independently due to inadequate knowledge concerning PES mechanisms, lack of financial resources and lack of management and coordinating skills. Further, both upstream WRUA's are not yet equipped with a computer to conduct simple administrative tasks. Although, this might be an insignificant issue, communication is crucial to maintain good relations between ES providers and sellers according to SNV, LNGG and LNRA. Since organizing meetings can be challenging due to factors such as extreme weather conditions and poor infrastructure, digital communication may be a solution to improve or enhance communication between the stakeholders.

Integrating the PWS concept in local policies is recognised by CARE and WWF as a method to sustain PWS on the long term. The concept has now been integrated in the sub- catchment management plan of the LANAWRUA. While LANAWRUA had enough financial resources to develop such as plan, other WRUA's struggle to find enough financial resources to hire skilled consultants to write their sub catchment management plans. The WRMA has to approve their plans and sets high standards. The actual costs for the developing these plans, are perceived as substantial by the WRUA chairman. Because WRMA does not supply funds for development of these plans, WRUA's are dependent on their own financial recourses, which in itself is a difficult task since most of water users in the upstream have little financial resources. The WRUA are thus highly dependent on funds supplied by NGO's or other external donor – organisations. Both CARE and WWF identify this as an obstacle for the institutionalisation of PES into sub-catchment management plans. To take in account the high turnover levels in organisations Kenya, especially at the WRMA, knowledge and experience that relate to the implementation of PES can be lost easily when not integrated into local and regional development plans (WRMA, 2009).

Moreover, the management of the Naivasha basin is characterised by complex and conflicting legislative frameworks. Both the Water Act, Environmental Management and Coordination Act and Local Government Act have a mandate to conserve catchment areas and each institution desires to have a leadership role (Mireri, 2005). On a more regional level, the Lake Naivasha Management Plan developed by various stakeholders (over a period of 5 years) in the Naivasha basin was opposed by the Naivasha Municipal Council due to the proposed management structure that assigned LNRA with an executive role. Currently, one the stakeholders have asked the judicial court to rule over this matter which has prolonged the implementation of the plan. Because of the various interests of stakeholders being social, economic or political, conflicts can arise easily. Although, these conflicts on higher institutional levels do not mean a direct threat to the PWS program as it is arranged at this time, it could have a negative influence when the program is enlarged. More stakeholders would become involved which could cause conflicts concerning roles and responsibilities of PES activities.

On the local level, Schilt (2009) describes that the overlapping jurisdictions of the established WRUA's and CFA's, both being community- based organisations, could cause conflicts in coordinating and managing activities that need be undertaken in the catchment. Indicators of the existence of such conflicts in relation to the implementation of PES have not been identified as a factor that could negatively influence the further enlargement of the program. Conversely, the CFA's support and encourage further enlargement, they perceive PES as a program that can assist their members (mostly small-scale farmers) to increase their incomes and stimulate general economic development in the catchment. According to MARECOF, some PWS farmers are both member of the CFA and the WRUA, it offers opportunities to integrate other ES such as carbon

sequestration to be 'sold' to local, regional, national and international buyers to raise funds for the conservation, rehabilitation and reforestation of degraded forests.

The district Ministry of Agricultural officer and district officer of NEMA indicated that they were neither familiar with the concept of PWS nor aware of the PWS program being operational in the catchment.

In relation to the institutional capacity of local WRUA's to run the program independently, the majority of the interviewees indicated that the institutional capacity of the WRUA's and WRMA is limited.

4.6. Current policy developments

Due to water reforms, the WRMA at the district level has started, together with LANAWRUA (with support of the WWF and Netherlands Development Organisation) to conduct an abstraction survey to quantify water abstraction data from water users in the Naivasha basin. This data is used for examine the compliance of water permits that have been assigned years ago. The sub regional officer the WRMA stated some of the water use permits allocated to registered water users do not correspond with the actual water that is abstracted from ground and surface water sources. A number of large- scale water users have neglected water management rules and in some cases have not fulfilled their yearly water fee payment to the WRMA. The information of the abstraction survey is of crucial importance for marking water abstraction points e.g. boreholes and identification of illegal water users. Although, the process of obtaining the data is rather time – consuming and costly, the benefits are said to have a significant influence on the improvement of general water management in the catchment. The PWS program is said to have had a positive influence on this process, as the relationships between the downstream and upstream WRUA's were established and trust was build.

Already, the outcomes of abstraction survey have led the recent appointment of the appointment of the LANAWRUA as a representing agent within the policy area of the WRMA. On the basis of primarily results of the survey that were shown by WRMA officials, it showed that many water users do not hold a legal permit for abstraction water. A legal notice that was drafted by the Ministry of Water & Irrigation in May this year and was signed by the Minister of Water & Irrigation himself in July 2010 (Ministry of Water & Irrigation, 2010). This is an important step towards stricter water management around Lake Naivasha. The LANAWRUA *"will be assisting with gathering information about water resources within jurisdiction, monitoring the use of water; inspecting compliance to these rules; enforcing compliance with the conditions of water use permits and the collection of water fees"* (Ministry of Water & Irrigation, 2010). By the enforcement of the legal notice, authority to enforce the Water Act is transferred from the WRMA to the LANAWRUA.

With the data obtained from the water abstraction survey, illegal and over- abstracters of water resources can be pressured more easily to obey the water abstraction rules and to enforce the Lake Naivasha Catchment Area Water Allocation Plan (designed by LNGG, WRMA and Rural Focus). In the regards to the collection of water fees, the LANAWRUA is now authorised to collect water fees and is entitled to retain a proportion of the revenues collected. The revenues must be used to *"meet the administrative and operational costs of performing its obligations under the instrument of appointment"* (Ministry of Water and Irrigation, 2010).

In addition, the sub-catchment management plan of the LANAWRUA has been approved by the WRMA after a long period of negotiations and revisions. Next to the description of the planned management activities, the PWS concept is integrated in the plan as an initiative that needs continued support in the coming years. With the approval of the sub – catchment management plan, the LANAWRUA is entitled to receive funding of the Water Services Trust Fund for conducting her management tasks. The LNGG indicated that they the process of approval has

been a long and frustrating. During the interviews with LNGG, it has stated that governmental reforms usually are lengthy because they imply the loss of power and authority of well established governmental officials that are in many cases resistant to change. Moreover, private stakeholders interviewed have criticised the government for being not being cooperative and pro-active to act upon the alarming water resources issues that have aggravated by the lack of enforcement of the Lake Naivasha Catchment Area Water Allocation Plan. While the LNGG (and others) have allocated private funds and human resources to assist with the development of the Water Allocation Plan and the sub-catchment management plan, the lack of support whether financial or institutional of the WRMA has created tensions between the private and the public sector. The appointment of the LANAWRUA as an agent of WRMA will hopefully assist in building a stronger relationship.

Although, current policy developments and program activities of the WWF and CARE have strengthened the institutional capacity of the involved organizations, the PWS in its current state strongly relies on its (external) program designers. Sustaining PWS with its current and intended features will depend on knowledge transfers from CARE and WWF to local representatives of the WRUA's, LNGG and LNRA. Gutman (2003 p. 38) describes that *"investment in training and education are prerequisites for effective participation of ES buyers, sellers and intermediaries".* Direct involvement in program design and proceedings can enhance ownership and thereby securing sustainability of the program.

4.7. Targeting of future ES buyers

In light of enlargement of the PWS program and securing financial feasibility, securing the commitment of ES buyers highly depends on efforts to integrate more buyers into the scheme. The targeting of ES buyers should take place before enlarging the scheme in order to prevent disappoints of ES sellers when payment cannot be made. The LNRA pointed out that CARE and WWF should develop a more strategic approach and develop a strategic plan to target potential buyers. This will also include individual targeting of downstream water users that are not members of LNGG or LNRA.

The main criticism of the LNGG and LNRA on the current program design is that CARE and WWF should put more emphasis on getting the government, semi – governmental organizations committed and other private actors that are not a member of LNRA or LNGG to contribute to the program. CARE and WWF have taken steps to target governmental organization such as NARUWASCO, though they have not yet succeeded to secure their commitment. During the field research, a number of semi- and private organisations that were identified as large scale water users have been visited to examine the willingness of potential ES – buyers to provide financial resources (see Appendix B).

Table 7: Potential ES - buyers

Organisation / company	Type of organisation
Kenya Electricity Generating Company Limited (KenGen)	Semi private - National electricity provider
NARUWASCO	Semi private - Regional Water Service Provider
Oserian*	Private - Horticulture

Home Grown / Flamingo Holdings*	Private – Horticulture
Nini*	Private – Horticulture
Maridadi Flowers*	Private - Horticulture
Marula Farms	Private – Cattle Ranching / Horticulture /Vegetable grower
Longonot*	Private - Horticulture
Wildflowers*	Private - Horticulture

* Information collected by independent researcher Philip Cook.

Most of potential buyers had an interest in the PES program but were reserved when they were asked to provide financial resources. One of reservations is that taking conservation measures is a task of the WRMA (see mandate in section 3.3 and should be financed with the revenues collected from the water fees). While is debatable whether this is done effectively and efficiently, it is an argument that is used by a number of water users to exempt themselves from providing financial resources. The majority of the flower farmers feel that the government should provide funds to the PWS scheme as they collect funds for conservation through the water fee.

Because there is lack of knowledge concerning water flows in the catchment, large scale users such as KenGen have different views than peer reviewed research data shows, from where they obtain their water. Sources of water are surface water from Lake Naivasha and drainage water from Naivasha and the Mao River basin (outside the Naivasha basin). Especially there is a dispute concerning the origin of steam water (see Appendix E).

Most of the large- scale water users that are not members of the LNGG or LNRA are companies that are already committed to other corporate social responsibility (CSR) projects. For example, KenGen is involved in a social afforestation program where they provide seedlings from their own established tree nurseries to local communities in the upper catchment. Nini farms and Maridad flowers have their own CSR projects. These companies have preference to run CSR projects themselves in order to keep ownership and control. In relation to the PES program, some companies expressed mistrust in the current project design due to political reasons. Nevertheless, KenGen expressed their interest to provide in – kind payments e.g. supply of tree seedlings to the program. Since the costs for in – kind payment are in most cases are lower than cash – payments, discussions could arise whether payments are made fairly among ES - buyers. Nevertheless, if the negotiation process is convoyed well, disputes could be avoided. Pagiola and Platais (2007) argue that PES schemes are made to be flexible, if conditions change and ES buyers retreat, it is seen as part of the natural development of a ES market. In practice one do needs enough buyers in order to establish a market with sufficient demand and supply, which is not yet the case in the basin.

4.8. Sustaining payments

As described in section 4.1. short term and long term permanence of the PWS scheme is limited. It constitutes a rather significant investment risk for private ES – buyers to participate and could threaten the PWS program on the long run (Engel et al. 2008). However, due to current policy developments, PES is now integrated in the sub-catchment management plan on the ES- buyers side. The LANAWRUA, LNGG and the sub- regional WRMA has therefore suggested to raise funds for the continuation of the PES program by increasing the water user fee of downstream water users. The present water fee is rather low, being 0.5 shilling/m^3. A small increase of 0.1 shilling/m^3 would be sufficient to create at least some funds. By doing this, all downstream water users will be targeted as ES- buyers and additional funds for enlarging the scheme could be

secured. Nonetheless, increasing the water fee is decided by the WRMA. LANAWRUA is not authorised yet to make these changes (see Water Act). However, using the argument to convince water users that regulation is under way, companies are more likely to invest in PES mechanisms (Forest Trends and Ecosystems Marketplace, 2008).

At the same time, if local politicians integrate the PWS mechanism into local policy, one may question if the intended objectives of CARE and WWF will be sustained. Governmental priorities to allocate money to implement conservation measures could be altered when desired by local governmental officials. The Netherlands Development Organisation (SNV) indicated that the Kenyan government is currently more focused on stimulating water use to increase economic development than on conserving water resources. Based on WRMA policy documents, their financial needs are well above their actual budget. One must question whether revenues from an increased the water fee, will actually arrive at the upstream farmers within the agreed timeframe (WRMA, 2009 p. 41-49).

The LNGG and LNRA indicated that they would be encouraged to participate when is it is clear that PWS can deliver a return on investment either in terms of financial or non – financial benefits e.g. positive media attention. To show the importance of positive media attention for current ES buyers, the coverage of the PWS event held this May shows an interesting insight. The event held by CARE and WWF had the aim of promoting PWS nationwide, for this reasons a group of TV (and paper)- journalists was invited to cover the event. Once the papers and TV items were published and broadcasted, LNGG criticized CARE and WWF for not receiving any media attention and recognition as ES – buyers. Although, it was agreed that LANAWRUA would represent the downstream water users, it does show that there was a lack of communication and agreement on which message was to be conveyed to the media concerning the support of LNGG to PWS program. During the interviews with the LNGG, they indicated that this was a major disappointment receiving little credit for supporting the PWS program. Since the current PWS program relies heavily upon these private actors, providing benefits to ES – buyers in terms of positive media attention is rather crucial to maintain good relations and trust. Misunderstandings between stakeholders could harm established partnerships and determination of the scheme (Gutman, 2003).

The LNGG pointed out that the WWF and CARE could take efforts to empathize on good environmental practices performed by large scale farmers to improve their business image and brand image, this account in particular for flower farmers. Previous international and national media attention has negatively changed the image of businesses around Lake Naivasha. A win – win situation can be created, when WWF and CARE provide positive publicity for private actors in order to secure ES payments. Using these marketing tools could enhance participation of ES – buyers when these are carefully applied.

Chapter 5 Discussion, Conclusion and Recommendations

5.1. Discussion

This research paper was aimed to analyze the current PWS program and provide the WWF with strategic recommendations to ensure sustainability in the future. In addition, the possibilities for enlargement of the project have been addressed. The question is can this research project provide the WWF and CARE with usable recommendations? By all means, some critical issues need to be addressed before reaching the conclusions and recommendations.

As already mentioned in the chapter 1 in the section 1.7., there are a number of limitations of this research project. This research project is based on scientific PES research and interviews with key stakeholders involved in the PWS program in Naivasha Kenya. Internal financial issues of the WWF have not been addressed. The WWF is dependent on donor support to finance PWS programs worldwide, how PWS is designed and executed partly depends on the desires of donors supporting the programs of WWF. In addition, local staff might have other ideas than PES scientists prescribe. In this light, there are some crucial differences on how to establish markets for environmental services efficiently and effectively. These should be taking in consideration when the conclusions and recommendations are presented.

Firstly, since PWS program in currently in its pilot phase, improvements and alterations will probably be implemented on a short term basis. Since the field research was conducted at the same time as the social – economic assessment and hydrological assessment of the PWS program, CARE and WWF staff has been hesitant to provide clear opinions due to the fact that they were waiting for the results and knowing that the pilot scheme was just in its test phase. For this reason, the socio- economic aspects of the program have only been addressed on a superficial level. Moreover, the importance of capacity building of the WRUA's and the provision of ES – buyers have been mentioned as challenges and have been addressed in this research project.

Sending Western researchers to Kenya can provide fresh insights on how programs are executed and designed. On the other hand, the colonial history with Europeans establishing themselves around Lake Naivasha and building large enterprises could create a negative bias towards foreign researchers. However, all interviewees were open to answer the questions and talked freely about their opinions on the proceedings of the PWS program.

Thirdly, the communication between the interviewees and the researcher did not always proceed without difficulties understanding each other. Although, all the interviewees had a good level of English, the different pronunciation and use of words sometimes complicated the interviews. By visiting stakeholders more than once, issues that were not understood fully are verified in later meetings. This also offers the establishment of trust between the interviewee and the researcher. Moreover, the institutional and political situation in the Lake Naivasha basin is complex and demands a thorough understanding. This research project has tried to give an overview of issues that relate to the development of the PWS program. Though, due to the restricted period of field research, some issues might have been overlooked. This might have been avoided by extending the field research period in order to gain sufficient knowledge concerning trust issues between involved organizations.

Lastly, the stakeholders interviewed are well aware that the WWF is providing them with human and financial resources to assist with the socio-economic development of the basin. Without the WWF, the capacity building of the WRUA's would have probably not have happened. Needless to say, the local institutions and people want WWF to continue their work because they do not believe that the government can provide similar assistance. This could have influenced the

answers given in terms of institutional capacity building needed for involved institutions for enlargement and sustainability of the scheme. Although, this might be a totally different research topic in terms of NGO dependency, it should be taken into account.

5.2. Conclusion

This research paper has focused on how to establish and sustain a larger market for watershed services at the Lake Naivasha basin. Designing and implementing a PWS program is time consuming and demands a careful execution.

The PWS pilot program initiated by CARE and WWF in 2009, has not been running for a sufficient length of time, as to be able to establish whether concrete changes in water quality downstream have occurred. In fact, the feasibility study conducted between 2006 and 2007, already showed that results of implementing the PWS scheme would be limited due to other factors involved. Factors such as ineffective water management and climatic factors play a substantial role on the actual quality and quantity of the water flowing downstream.

Nevertheless, the PWS program has provided other side benefits. During the performance of the feasibility study, upstream farmers were trained in sustainable land management. The institutional capacity of the upstream WRUA's was strengthened through negotiations with the downstream WRUA and involved governmental organizations. In addition to this, awareness creation to conserve water quality in order to maintain the ecosystems of the basin, have had a positive influence on the enhancement of overall water management. Overall partnerships between the WRUA's, governmental institutions, private actors and NGO's have also been improved.

Important prerequisites for both enlarging and sustaining the PWS scheme, is the existence of a favorable institutional and regulatory environment. The WRUA's involved in the PWS program are relatively young organizations and have limited institutional and financial capacity. Only the LANAWRUA has developed a sub- catchment management plan, and only recently was the plan approved by the WRMA. The plan includes the PWS principles, which constitute the commitment and aspiration of the LANAWRUA members to continue the PWS scheme in the future. This development is expected to strengthen further legal and policymaking support for PWS on the local level. The other two upstream WRUA's are in the process of formulating the plan but are obscured by financial constraints. Current policy developments show that the Kenyan government is keen to give community-based organizations powers to improve water management within their jurisdictions. However, bureaucratic constraints delay the process of the allocation of funds and approval of the WRUA's sub-catchment management plans.

The context in where the PWS program has been implemented is one that is complicated. The existence of corruption, high levels of poverty, an increasing population growth, slow and ineffective governmental administration, and high turnover levels in governmental institutions restrain the development of a strong foundation for further development of the PWS scheme. The risk of the PWS program to become overshadowed by other issues is undoubtedly present. The question is: will the development of the PWS program become one of the priorities of the involved stakeholders?

Currently the PWS program is heavily dependent on the (financial) support of CARE and the WWF. In respect to the WWF ending their 'Linking Futures' program by 2011, the lack of institutional and financial capacity of the involved WRUA's to run the PWS scheme independently without the financial and human resources of the WWF and CARE, is limited. There is a critical need to attract more ES- buyers to the program. The program costs are simply too high in comparison with the current ES – payments provided by the LNGG and LNRA.

Furthermore, the current ES – buyers seem critical toward continuing their financial support in the future. These organizations feel that semi- and governmental organizations e.g. KenGen and NARUWASCO and other private actors who are not a member of the LNGG or LNRA, are now free riding off the benefits of improved water management in the basin. These organizations need to be targeted in the next phase of the program in order to avoid frustration and conflict among water users downstream. The LANAWRUA suggested the increase the water fee of all water users in the catchment to raise funds. This solution is supported by majority of the involved actors but comprises a major institutional challenge.

Potential ES - buyers that were interviewed seemed reluctant to participate in the PWS scheme. A large number of the large-scale water users are in most cases already involved in CSR programs which limit their financial ability to corporate in the program. Willingness to pay depends heavily on the clear added value in comparison with previous established baselines. Due to the lack of environmental indicators, 'selling' the product of improved water quality downstream, is one that is challenging. In addition, the efforts to create a demand for watershed services in an institutional context that is weak and ineffective proves a major investment risk for ES - buyers and also for intermediaries. Since environmental evidence might be weak, other indicators such as poverty alleviation of upstream landowners need to be developed in order to show the importance of the continuation of the program.

Moreover, according to a number of PES economists, in order to establish an efficient and effective PES scheme, clear environmental evidence is required to establish a real market value for the scheme. One must pose the question, if the conditions to set up a successful PES program that meet the economic criteria are actual present.

Putting aside the challenges ahead, more efforts by all involved stakeholders are needed to secure the sustainability of the program. More ES – buyers should be targeted before the actual enlargement of the scheme in order to avoid disappointments when payments cannot be transferred to upstream landowners.

With the future prospect of WWF leaving the Lake Naivasha basin, a challenging task lies ahead. In the following section recommendations will be presented in order to create a sustainable PWS program.

5.3. Recommendations

1) Create a clear business strategy e.g. roadmap with priorities how to establish an self – sufficient PWS program

Currently, there is no real strategy on how to continue the PWS program in the near future. There needs to be a focus on who and which organizations are going be the intermediaries, buyers and providers when CARE and WWF leave the Lake Naivasha basin. The WWF and CARE should provide training to the WRUA's on how to conduct monitoring and coordinating activities. In particular, the involved WRUA's need to be trained in how to persuade more ES buyers to join the program. By involving local stakeholders in the current design discussions, they can be trained in how to manage the PWS themselves. A management structure should be developed through negotiation with involved parties.

2) Further development of performance indicators to show accurate results for increase of livelihoods of PWS recipients

In order to 'sell' the program to other potential ES buyers, performance indicators on how PWS has assisted in livelihood improvement and enhancement of relations or partnerships between private and public actors need to be further developed. These could be based on the interests of the potential ES – buyers by conducting a small survey in order secure the willingness to pay.

3) Explore the use of new technologies to decrease transaction costs

There are a number of new technologies available that could reduce transactions costs such as the use of Internet to facilitate better and cheaper communication between ES providers and sellers. Furthermore, other technologies such as Mpesa[11] can be applied to improve the transparency of payments and reduce the risk of corruption.

4) Develop a business strategic plan to target new ES – buyers in the lower catchment

There has not been a strategic targeting plan to attract downstream water users. In order to attract these water users, sensitization is needed on a regular basis. By targeting individual private actors, tourist operators, governmental institutions, water providers and other water users instead of using indirect communication e.g. through LNGG and LNRA, a larger and more diverse number of water users can be committed to the scheme. Nevertheless, the timing to target individual water users is crucial. When timing these visits at the end of the financial year, budgets may already have been formulated.

5) Develop a communication / marketing plan to promote PWS on national and international level

On a higher governmental level, the WWF as a well respected organisation, should continue to enhance the promotion of the PES concept on a wider scale by using the results of the PWS program at Lake Naivasha as a showcase. This could enhance regional and national awareness for the importance that conserving natural resources and alleviating poverty that demand an integrated approach for the sustainable development of Kenya. Furthermore, by promoting the PWS program nationally and internationally, the return of investment of ES buyers can be provided by non – financial benefits such as positive media attention. In this way, good environmental behaviour is rewarded and can hopefully attract other direct but also indirect ES buyers to the scheme. Other marketing strategies could be developed to attract other international companies, NGO's, governments and individuals. By assigning a well – respected public figure or opinion leader as an ambassador for the PWS program, could assist in pressuring politicians or private actors to provide political and financial support.

6) Conduct advocacy at the regional and national level to improve availability of funds for community based organizations

In order to integrate the PES concept in the sub- catchment management plans of the upstream WRUA's, governmental funds are needed for the development and execution of these plans. WWF could perform advocacy activities on higher governmental levels to supply funds for community based organisations to develop their plans.

7) Cooperate with other NGO's that have implemented PES programs to establish a stronger lobby group to convince governmental officials to give their (political and financial) support

A number of PES programs have been implemented in Kenya. The WWF could play an important role to encourage NGO's that have implemented PES programs to share their information and experiences on how to set up and sustain PES programs in Kenya. In addition, a stronger partnership can be set- up in order to put more pressure on governmental officials to support the implementation of PES programs.

8) Further investigate the possibilities to increase the water tariff in order to create funds to sustain the PWS program

[11] Mpesa is mobile telephone service that allows mobile telephone users to make individual money transfer to other mobile phones in Kenya.

Since the LANAWRUA, LNGG and a number of flower farmers have indicated to support an increase of the water tariff to sustain the PWS program; policy requirements need to be further investigated. This also includes the development of a transparent payment mechanism. The WWF can play an important role as a lobbyist on the national level to pressure governmental officials to give the LANAWRUA the authority to increase the water tariff.

9) Investigate the feasibility of integrating other environmental services such as carbon sequestration into the current PWS scheme or in a separate PES scheme

More companies and governments have shown interest in compensating their CO2 emissions by investing in reforestation and in the conservation of forests, in order to receive carbon credits. With the establishment of CFA's, a market for carbon sequestration could be set up with a similar approach used with the implementation of the PWS program.

10) Conduct advocacy activities at the international level to integrate PWS program in existing environmental certification schemes

Many flower farmers at Lake Naivasha are certified under international certification schemes. This could prove to be an opportunity to secure long term ES –payments when PWS can be integrated into these certification schemes. In this way, the premium paid by Western customers can be transferred directly to participating PWS farmers. Although, the WWF and CARE have been sceptical towards this approach, it can offer opportunities to strengthen the reputation of Lake Naivasha's industries. By doing so, goodwill among water users downstream to support the PWS scheme can be generated.

References

Adams et al. (2004). Biodiversity conservation and the eradication of poverty. *Science* 306: 1146-1149.

Becht et al. (2006, February 27). Lake Naivasha Experiences and Lesson Learned. Retrieved June 20, 2010, from http://www.ilec.or.jp/eg/lbmi/pdf/17_Lake_Naivasha_27February2006.pdf

Barton et al. (2009). Assessing the role of economic instruments in a policy mix for biodiversity conservation and ecosystem services provision. Prepared for the BIOECON conference on " Economic instruments to enhance the conservation and sustainable use of biodiversity".

CARE & WWF. (2008, March). CARE –WWF Lake Naivasha Basin Payment for Environmental Service (PES) Collaboration and Strategic Implementation Position Paper.

CARE; WWF; IIED. (2005, November). Project Proposal - Equitable Payments for Watershed Services: Phase 1, Making the Business Case.

CARE.(2009). Conservation Area Data and PES Marking Data.

Center for Clean Air Policy. (2009, May). Utilizing Payments for Environmental for Reducing Emissions from Deforestation and Forest Degradation in Developing Countries:Challenges and Policy Options.

CIFOR. (2008). Payments for Environmental Services: fading fad or firm future? Retrieved July 20, 2010, from http://www.cifor.cgiar.org/Highlights/pes-fading-fad.htm

Coase, R.H. (1960). The Problem of Social Cost. *Journal of Law and Economics* 3: 1-44

Contanza et al. (1997). The value of the world's ecosystem services and natural capital. *Nature* 387: 253 - 260.

Corbera et al.(2007). Equity implications of marketing ecosystem services in protected areas and rural communities: Case Studies from Mesa America. *Global Environmental Change* 17: 365-380.

Daily, G. (1997). Ecosystem services: benefits supplied to human societies by natural ecosystems. *Issues in Ecology* 2: 1-18. Retrieved June 20th, 2010 from:http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/ForestEconomics/Economics-Daily97.pdf

Dalhuisen et al. (1999). The economics of water - a survey of issues. *International Journal of Development Planning Literature*.

Daly, H. (1997). Beyond Growth: The Economics of Sustainable Development. USA: Beacon Press

Ellis-Jones, M. (2009, March). Contracting for Environmental Service Supply.

Ellis-Jones, M. (2007). Naivasha - Malewa Payments for Environmental / Watershed Services Feasibility Study Overview.

Engel, S., Pagiola, S., & Wunder, S. (2008). Designing payments for environmental services in theory and practise: An overview of the issues. *Ecological Economics* 65: 663-674.

Food and Agricultural Organisation (FAO). (2007). Payment for Environmental Service from Agricultural Landscapes: Ecosystem Service Markets. Retrieved July 10, 2010 from http://www.fao.org/es/esa/pesal/ESmarkets5.html

Ferraro, P. J. (2009). Regional Review of Payments for Watershed Services: Sub-Saharan Africa. *Journal of Sustainable Forestry* 28: 525-550.

Forest Trends and Ecosystems Marketplace (2008, May). Payment for Environmental Service: Market Profiles. Retrieved August 12, 2010 from http://ecosystemmarketplace.com/documents/acrobat/PES_Matrix_Profiles_PROFOR.pdf

Ecosystems Marketplace (2010, June). Building Bridges, State of the Voluntary Carbon Markets 2010. Retrieved August 15, 2010 from http://moderncms.ecosystemmarketplace.com/repository/moderncms_documents/vcarbon_2010.2.pdf

Githaiga, J. M. (2008). Naivasha Landscape Land Use Planning Guidelines Development.

Gutman, P. (2003). From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries. WWF–Macroeconomics Program Office.

Harper, D. & Mavuti, K.M. (2005). Lake Naivasha, Kenya: Ecohydrology to guide the management of a tropical. *Ecohydrology & Hydrobiology* 4: 287-305.

Intergovernmental Panel on Climate Change (IPCC). (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the IPCC. United Kingdom: Cambridge University Press.

Kahn, J. R. (2003). *The Economic Approach to Environmental and Natural Resources.* Australia: Thomson South Western.

Katoomba Group. (2006). Inventory for Ecosystem Service Payment in Kenya. Retrieved June 15th, 2010 from http://www.katoombagroup.org/regions/africa/documents/Kenya_Inventory.pdf

LANAWRUA & WRUA Wanjoni (2010). Payments for Environmental Services Supply Agreement.

Landell-Mills, N. & Porras, I. (2002). Silver Bullet or Fools' Gold? A Global Review of Markets for Forest Environmental Services and their Impact on the Poor. London: International Institute for Environment and Development.

Lake Naivasha's Growers Group (LNGG).(2007). The Lake Naivasha's Growers Group. Retrieved May 20, 2010, from http: //www.lngg.org/

Lake Naivasha Riperian Organisation (LNRA). (2008). Lake Naivasha Riperian Organisation . Retrieved May 12, 2010, from http://web.ncf.ca/es202/naivasha/

Millennium Ecosystem Assessment. (2005). Millennium Ecosystem Assessment, Ecosystems and Human Well-being: Synthesis. Washington DC: Island Press.

Ministry of Agriculture. (2009). Strategic Plan 2008-2012. Government of Kenya

Ministry of Environment and Mineral Resources. (2009). The National Climate Change Response Strategy. Government of Kenya

Ministry of Water and Irrigation. (2010, May 29). Legal Notice - The Lake Naivasha Catchment Area Protection and Groundwater Conservation Area Rules.

Ministry of Water and Irrigation, Kenya. (2007, September 28). The Water Act.

Mireri, C. (2005). Challenges Facing the Conservation of Lake Naivasha,Kenya. Retrieved July 20, 2010, from: http://www.unisiegen.de/fb10/fwu/ww/publikationen/volume0305/pdf/mireri.pdf

Mitchell, R,C. and Carson,R.T.,1989. Using surveys to value public goods: the contingent valuation method. USA, Washington, DC: Resource for the Future.Mwangi, S. (2008). Payment for Ecoystems Services (PES) in East and Southern Africa: Assessing Prospects & Pathways Forward. Katoomba Group. Retrieved June 15th, 2010 from http://www.katoombagroup.org/regions/africa/documents/2008_Kenya_Inventory.pdf

Pagiola, S. & Platais, G. (2007). Payment for Environmental Services: From Theory to Practice. Washington DC: World Bank.

Pagiola, S. & Platais, G. (2003). Implementing Systems of Payments for Environmental Services: Initial Lessons of Experience. Paper presented at the Workshop on Ecosystem Services in the Tropics Challenges to Marketing Forest Function at Yale University.

Pagiola et al. (2004). Paying for Biodiversity Conservation Services in Agricultural Landscapes. Food and Agricultural Organisation (FAO).

Rozakis, L. (2007). *Writing Great Research Papers.* USA, New York: McGraw Hill.

Saunders et al. (2003). *Research Methods for Buisness Students* (third ed.). Essex: Pearson Education Limited

Schilt, W. (2009). Community Forestry Management: A framework of analysis for the long term self- sufficientcy of CFM projects. Amsterdam: Institute for Environmental Studies.

Szirmai, A. (2003). *The Dynamics of Socio-Economic Development*. USA, New York: Cambrigde University Press.

The Government of Kenya. (2007). Vision 2030 - A Globally Competitive and Prosperous Kenya. Retrieved July 15, 2010 from http://www.safaricomfoundation.org/fileadmin/template/main/downloads/Kenya_VISION_2030-final_report-October_2007.pdf

The Water Trust Fund. (2010). The Water Trust Fund. Retrieved June 1, 2010, from http://www.wstfkenya.org/

Tinbergen, J. (1952). *On the theory of Economic Policy*. Amsterdam: North-Holland.

Turpie et al. (2008). The working for water programme: Evolution of a payments for ecosystem services mechanism that adresses both poverty and ecosystem service deilivery in South Africa. *Ecological Economics* 65:788-798.

United Nations (UN) World Water Assessment Program. (2009). Water in an changing world. Retrieved June 29th, 2010 from http://www.unesco.org/water/wwap/wwdr/wwdr3/pdf/WWDR3_Water_in_a_Changing_World.pdf

United Nations Environmental Program (UNEP). (2007, April). Revisiting the relationship between equity and efficientcy in Payments for Environmental Services.

United Nations Environmental Program (UNEP). (2009). The use of economic instruments for environmental and natural resource management.

Water Resource Management Authority (WRMA). (2007). Development of a water allocation plan (WAP) for the Naivasha Basin.

Wunder, S. & Santiage C. (2010, June 10). Payments for Ecosystem Services: Scaling Up..and Down. Retrieved July 15, 2010, from Ecosystems Market Place : http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7582&section=news_articles&eod=1

Wunder, S. & Alban, M. (2008). Decentralised payments for environmental services: The cases of Pimampir and PROFAFOR in Ecuador. *Ecological Economics* 4 65: 685-698.

Wunscher, T. (2008). Spatial targeting of payments for environmental services: a tool for boosting conservation benefits. *Ecological Economics* 4 (65): 822- 833.

World Wide Fund for Nature East African Regional Program Office (WWF – EARPO). (2009). Policy Brief - Payments for Water Shade Services: Focusing in Socio- Economic Linkages in Lake Naivasha Landscape.

World Wide Fund for Nature (WWF).(2006a). Payments for Environmental Services; an equitable approach for reducing poverty and conserving nature.

World Wide Fund for Nature (WWF). (2006b). 'Linking Futures – Economic growth, Poverty Reduction and Environmental Sustainability – Part 3: program.

World Wide Fund for Nature (WWF).(2008, June). Payment for Environmental Services (PES) in the Lake Naivasha River Basin - Engaging all stakeholders at basin level for sustainable natural resources management and improved livelihoods

World Wide Fund for Nature (WWF).(2009a, May). Payment for Environmental Service (PES-Malewa) Project write – up & progress.

World Wide Fund for Nature (WWF).(2009b). Lake Naivasha basin Water Security Fact sheet.

World Wide Fund for Nature (WWF).(2009c). Map of Lake Naivasha Landscape Intervention Sites.

World Wide Fund for Nature (WWF).(2009d). WWF – EARPO Policy Brief. Payment for Watershed Services: Focusing on Socio- Economic Linkages in Lake Naivasha Landscape.

World Wide Fund for Nature (WWF).(2010a). Scoping Paper of Shared Risk in Lake Naivasha.

World Wide Fund for Nature (WWF).(2010b). Map of Lake Naivasha WRUA's.

World Wide Fund for Nature (WWF). (2010c). Spearheading conservation of Lake Naivasha catchment. Challenges and Opportunitis

Appendix A PES projects in Kenya

Based on the assessment "Payments for Ecosystem Services in East and Southern Africa: Assessing Prospects & Pathways Forward of the Katoomba Group" (Mwangi, S. 2006)

Name Project	**ES targeted**	**Implementing organization (supplier of start- up, operational costs PES)**	**Buyer** **N.B. These feature also symbolic buyers as funds to make the payments are sometimes supplied through aid or developments organizations)**	**Seller**
Bamburi – Lafarge Fuel Conversion	Carbon	Lafarge International Bamburi Cement Company Ltd.	Lafarge International Bamburi Cement Company Ltd.	Manufacturing Plant, local communities
Arabuko Sokoke Forest Management and Conservation Project	Biodiversity	Consortium of organizations: Museums of Kenya, CFS, Kenya Forestry Research Centre (KFRC) and local community groups supported by buyer organizations	Birdlife Germany (KNH – NABU), United States Aid organization (US-aid), Birdlife International, WWF, Nature Kenya	Local communities that live close by the forests, local authorities
Kwale Forestry Project	Carbon, Biodiversity	Not available	Not available	Not available
Machakos & Kitui Local Community Forest	Carbon	Bureau of Environmental Analysis International, Kenya		

Initiative		(NGO)		
Amboseli Project	Biodiversity	UNEP / UNDP are the project facilitators. FAO is the implementing organization	UNEP / UNDP, FAO	Amboseli Park, Group Ranches, Local community
Narok Conservation and Drought Recovery Program (NCDRP)	Water	Partnership between Arid Lands Office Narok, District Forest Office N.B. Not mentioned in assessment but most likely funds are supplied CWS since these include $480.000	Church World Services (CWS)	28 women self – help groups and 10 youth group
Kikuyian Water Project	Water	National Arid Lands Resource Program Funds supplied by World Bank	The World Bank through National Arid Lands Resource Program, Kenya	Local community based organisations
Narasha Iseneto Water Pipeline Project	Water	National Arid Lands Resource Program, Funds supplied by World Bank	KenGen supplied in – kind payments (construction materials)	Narasha Iseneto Water Pipeline Project
Ewasso Nyrio South Development Authority	Biodiversity	Partnership of GreenBelt Movement, Kenya Forest	GreenBelt Movement, Kenya Forest Working Group, Narok	Local communities

(ENSDA)/ Mau Forests Projects (COMEFOM)		Working Group, Narok County Council, ENSDA Funds supplied by: Spanish Government and UNEP	County Council, ENSDA	
Shompole Ecotourism Development Project	Biodiversity	Shompole Community Trust, Kenya Wildlife Services, African Conservation Centre, Art of Ventures	Joint cooperation between buying organizations	Shompole Community Trust board of Trustees, Shompole Group Ranch and the general community, Maa Oleng ltd (private actor)
Reto – Reto or Kitengela Wildlife Lease Program	Biodiversity	International Livestock Institute (ILRA), The Wildlife Foundation, Friends of Nairobi National Park, African Wildlife Fund, Global Environmental Facility (GEF), USAID, Belgium government	Buyers organizations under the umbrella of the Wildlife Foundations	Kitengela Landowners Association (KILA), Kenya Wildlife Services, Olkejuado Country Council
Mount Kenya & Tana Basin Payments for Water Services (not yet implemented)	Water	Unknown	Green Water Credits	Local Communities, downstream users, local institutions
Lake Naivasha Watershed Management Project	Water	WWF / CARE	Private downstream water users	Upstream farmers
Sasumua Water Treatment Plant Project	Water	Partnership between ICRAF, Athi River and Nairobi Water Services Companies, National	Nairobi Water Services and Sewage Company, Athi River	Local communities

		Water Services Boards. Funds provided by World Bank	Water Services Board	
Kinangop Grassland Project	Biodiversity	Nature Kenya, Darwin Foundation, Community Development Trust Fund (CDTF)	Buyers support selling organizations by providing funds for capacity building, sheep buying, marketing trainings. Darwin Foundation provides funds through national Biodiversity Conservation Program and Community Development Trust Fund and supplies funds for monitoring activities to Nature Kenya	Friends of Kinangop (NGO), local communities
Kikopey Water and Conservation Project	Water			
Il Ngwesi Group Ranch in Partnership with Lewa Wildlife Conservancy	Biodiversity	Partnership between Il Negewsi and Lewa Wildlife conservancy Funds supplied by Equator Initiative through partnership funds of UNEP, BrasilConnect, Government of Canada, International Development Research Center (IDRC), Television Trust for Environment (TTE) and United	Kenya Wildlife Service (KWS), Lewa Downs conservancy, group ranch (community), Equator Initiative	Il Ngewsi group ranch and partners

		Nations Foundation (UNF)		
Lake Bogoria Catchments Management Program	Water	WWF provide funds for capacity building to County Council Koibatek, local Lake Bogoria Water Users Associations (WRUA)	WWF	Lake Bagoria Environmental Committee (CBO), local residents
Western Kenya Integrated Ecosystem Project	Water	Kenya Government, ICRAF, Kenya Agricultural Research Institute (KARI)	ICRAF and KARI are direct implementers (funds supplied by World Bank) Other governmental bodies are involved with implementing	Local communities

Appendix B Interviewee list

Stakeholders	Type of institution	Person (s) and positions interviewed
WRMA **(Water Resource Management Authority)**	Governmental	Domique Kwamba- Local Officer Masau – Sub Regional Director Naivasha
CARE	NGO	Obadiah Ngigi - Field Officer 0724210477 Njoroge Maina - Project Manager 0721668244
NEMA **(National Environmental Management Authority)**	Governmental	Nancy Muui – Sub regional director
Ministry of Agriculture	Governmental	Richard Vonza – District Agricultural Officer David Muchuru – Environmental and Land Development Officer North Kinagop Andrew K. Ndatho – District Environment and Land Development Officer Dorothy Lemein - Sub regional Officer
Water Resource Users Association (WRUA)	Civil Society Organization	Chairman WRUA's Paul Ruaya (Tuluga) Hansen Ngugi (Wanjohni) John ole Kamia (Mariba)
MARECOF	Community based organization	David
PRESA (Pro-poor Rewards for Environmental Services in Africa) / ICRAF (International Centre for	NGO	Thomas Yatich – senior researcher*

Research in Agro Forestry		
LNRA	Private	Marc Kariuki – Chairman Mbogo Kamau – Environmental Monitoring Officer
LANAWRUA	Community – based organization	Richard Fox – Chairman of LANAWRUA – Chairman Umbrella WRUA – Chairman LNGG – Managing director Flamingo / Homegrown Eugene Riksteen – Vice President Enock Kiminta – Secretary
LNGG	Private	Joseph Kariuki
SNV	NGO	Nancy Ndirangu – Senior Advicer Water, Sanitation & Hygiene
Independent researcher (s)	Researcher	Mark Ellis- Jones* Philip Cooks – Lecturer at Michigan University*
NWC (Nakuru Wildlife Conservancy)	NGO	Ambrose N. Njagi – Executive Officer
KENGEN Geothermal	Private	Geoffrey Muchemi- Development Manager Elizabeth Mwengi- Environmental Officer
NARUWASCO	Private	Job Thomno - Managing Director
Maridadi Flowers	Private	Jack Kneppers - Co-owner
Nini	Private	Billy Coulson – Managing Director
Longonot Horticulture (VegPro group)	Private	Harry Milbank – General Manager
Wildfire Flowers	Private	Peter Szapary – Managing Director
Flamigo Holding	Private	Richard Fox

Osarian	Private	Linda Munyao

* Did not respond after sending a number of emails.

* These researchers have provided me with comments during the field research and writing process of this thesis.

Appendix C Questionnaire

Questionnaire*

Facts about the organization

Please state your name and organization

- What is your function within the organization?
- What kind of role does your organization play in the development of PES at Lake Naivasha?

If they are not familiar with PES, explain.

Situation Analysis

- What are your experiences so far with PES?
- What kind of results has your organization been monitored?
- Are they positive or negative?
- What kinds of issues/challenges have arisen when implementing PES and in which part of the process?

Design elements

- Length of contracts – Are there sufficient according to conservation results?
- Monitoring - The design of PES has been focused on conservation measures and improves livelihoods of farmers in the upper catchment. To reduce the transaction costs of PES, the organizers of PES are planning to make farmers responsible for monitoring of the performance of environmental services. What kind of monitoring systems would you think are reliable?
- Are there any conflicts between earlier taken conservation measures and conservation measures that are introduced by the PES scheme?
- What kind of weather conditions could have an influence on effectiveness of PES? Are there taking in consideration when designing PES?
- How are buyers been identified in the current PES scheme and approached? Could this process be improved?
- What kind of capacity building is needed to increase the number of buyers?

Enlargement of PES and continuation

- What kind of institutional capacity is needed for enlargement of PES?
- What kind of support in terms of legislation is needed from the national level?
- Are there any laws conflicting with the development of PES?
- What steps has the government been taken to increase support for PES?
- What kind of support in terms is needed from the regional level?
- What kind of institutional capacity will be needed from the local level?
- Will there be enough institutional capacity for the continuation of PES when WWF and CARE leave?

External factors

- What kind of external factors could play a role in the development and performance of PES schemes such as demographic movements and changing market opportunities for buyers and sellers?
- What kind of governmental support is needed to enlarge PES schemes?

* The questions posed were dependent on the interviewee and his/her position and experience / involvement in the PWS program.

Appendix D Interview Results

Interviewee (s) **WRMA officials**	Domique Kwamba- Local Officer Masau – Sub Regional Director Naivasha

Summary meetings

- Challenges to sustain program: lack of institutional capacity of WRMA and WRUA. WRMA understaffed (almost 50%) and is underfinanced. Tasks of WRMA difficult to execute – regulatory monitoring of water abstraction not performed for a long time. Presently, in cooperation with WWF, SNV, LANAWRUA water abstraction data of all water users in the Lake Naivasha Basin is collected.

- The process of approval of sub – catch management plans by WRMA (only LANAWRUA was able to formulate plan – other WRUA's have not yet submitted plans due to financial constraints) is slow due to red tape problem and slow adaption of governmental officials to transform powers to community – based organisations. Local politicians want to be kept involved. Political will important for the integration of PES principles in policies.

- If plans are submitted and approved – WRUA's are able to get funding through the Water Trust Services Trust Funds (max. 55 million shilling to perform activities).

- WRMA supports PWS program – it helps them to reach conservation goals under the WRMA mandate. WRMA involved with the verification of results of the program.

-Capacity building of involved organisations should be enhanced – NGO's (WWF and CARE) are too much in charge – though they are financing the scheme and it is a pilot – capacity building should be enhanced and should be focused on the WRUA's. Both WRUA and WRMA are still young organizations and institutional capacity is lacking to be operating effectively.

- Trust issues exist between WRMA and WRUA's. Especially between LANAWRUA and WRMA. Currently, the LANAWRUA is facilitating the revision of the water permits, is financing transport and human resources costs. LANAWRUA believes that the WRMA is ineffective and is not that committed to conserve water resources in the lake. Due to the fact that the WRMA has not yet approved their sub-catchment management plan frustrates LANAWRUA because had to be altered already 5 times.

- Water permits are being revised at the moment – though many water users overuse water which is something that has to be dealt with and is of crucial importance for the protection of the lake and other water resources in the basin. If Water Act is enforced – costs could rise for these users which could have an influence on the financial capability and willingness to pay of downstream users to the PWS program.
- Conservation downstream is little enforced or implemented. Farming in the riparian land downstream still takes place and nothing is done by the government to stop this.

- Impact of the implemented conservation measures upstream have little effect on the turbidity of the water. Results are difficult to monitor – almost impossible.
Challenge – convincing buyers to continue support even if results cannot be clearly identified.
Buyers are too little involved in the design of PWS program.
Sustaining PWS – WRMA in favour of increasing water fee – (currently 0, 50 /m3) with 0,1 shilling to create funds and decrease dependence on CARE and WWF.

- Slow process of implementing PES into the Water Act, can take years. PWS program not known at higher governmental levels – lack of knowledge of principles and proceedings: obstacle to integrate PES principles in WRMA policies.
More training and capacity building needed to strengthen institutional capacity of WRMA and WRUA's. More involvement of local politicians needed.
External factors – climatic changes, decreasing water levels of the Lake, high poverty levels, water pollution, poor land – practices.

Interviewee (s) **CARE**	Obadiah Ngigi - Field Officer Njoroge Maina - Project Manager

Summary meetings
CARE is content with results of PWS program. Many farmers are trained to implement sustainable land – practises. Already 548 farmers participate in the PWS program, willingness of upstream farmers to be integrated in PWS program high – even to high, not enough funds and resources available to integrate all willing farmers into the scheme.

A number of upstream farmers who are not participating, have copied conservation measures on their lands due the realisation that it is better for sustaining their lands and derive (financial) benefits from it e.g. higher productivity of land, the production of animal folder (to be used for feeding cattle or as product that they can sell).

Socio – economic assessment is currently performed – results to be expected end of June – beginning July. Results will be presented to involved actors. Already a number of farmers experienced an increase of income by taking conservation measures.

PWS program is in its pilot phase – design will be altered after assessments and in cooperation with CARE staff and WWF staff.
Issues of gender and transparency of payments (use of Mpesa), training of farmers to store animal folder, and differentiating payments (farm sizes differ – some large scale farmers indicated an unfair allocation of payments in comparison with the percentage of their land put under conservation) will be integrated in the next phase.
Current challenge – not enough ES buyers to include more ES supplier into the scheme. No concrete strategic actions to target potential downstream water users planned yet.
NARUWASCO has been targeted – commitment low. LNRA not able to pay its part due to financial constraints. Support needed from government though willingness might be present – the ability to supply funds is limited.

Hydrological evidence limited – other indicators needed to commit new buyers.

Follow up of targeted water users e.g. KenGen, Barclays Bank, NARUWASCO needed. They have shown interest but have not yet committed. Timing important in relation with the yearly budget of companies. Customers of NARUWASO could be targeted directly e.g. Flamingo Bottles, Rift Valley Bakeries.

Desire to enlarge PWS scheme though recognises the importance of building a strong group of actors (strong foundation) needed to secure sustainability of the program on the long run. For the next phase, the program will not be enlarged.

External factors – climatic changes, high poverty levels, water pollution, ineffective enforcement of water and other environmental policies, high deforestation levels, droughts rapid population growth, illegal and over- abstraction of water resources.

No signs of perverse incentives by upstream to suit the criteria for PWS. Though, some upstream farmers have expressed feelings that farmers in the middle and downstream catchment are free-riding on the PWS benefits.

CARE is aware of lack of institutional capacity of WRUA's and WRMA to run PWS program independently. More training needed.
Support of community based organizations and local farmers need to be enhanced to avoid conflicts between ES supplier and buyers.
Policy advocacy on local and higher governmental levels needed – is task for WWF, CARE is stronger in the field.
Possible integration of other environmental service is carbon – link can be established with CFA.

Interviewee NEMA	Nancy Muui – Sub regional director

Summary
- Not familiar with PWS program, not aware of implementation. Compares it with Adopt a Catchment Plan initiated by Ministry of Environment and Mineral Resources.

- Challenge for small scale farmers – not willing to participate since percentage of land needed to put under conservation is too big in comparison with the benefits they will arrive. Understanding of PWS principles difficult for low educated upstream farmers – sensitization is of crucial importance.

- Supports the increase of water fee with 1 shilling to generate funds. Transparency of payments important – should be publicly available.

- PWS program needed to be integrated into local policies and plan in order to sustain itself. Voluntary payments are 'too free' and the interest of ES buyers will decrease after a while. Goodwill is not enough. The level of payment should be based on the polluter pays principle – large commercial water users should be paying more.

- Timing of pilot program is right – awareness present due to the drought last year.

- Involvement of local and regional politicians important.

- Ownership of the PWS program important for involved WRUA's

Interviewee (s) **Ministry of Agriculture**	Dorothy Lemein Function: District Officer Naivasha

Summary
- No real knowledge concerning PWS – project, not diluted to district level – though Dorothy has just filled the function.

- Mandate concerning river bank protection / energy conservation / conservation / capacity building of WRUA / training farmers
From the national level – NEMA subscribes performance indicators – PES support their conservation targets – support will be given unconditionally. NGO's could provide training facilitation – for capacity building

- Land environmental officers – promote sustainable farming practices

- Dependency syndrome of NGO's is mentioned as threat.

No payment in advance – it helps to internalize the change of behaviour. Division of district could interfere in PES project concerning the approach to buyers
Agricultural Act prescribes, 10% of farms have to be agro-forested. Possible conflict with undertaken conservation measures by PWS farmers.

External factors
- Climate change – rain patterns are erratic. This development is negative for the harvesting of agricultural produce though it helps in sensitizing farmers to take conservation measures.
- Governmental constraints – financial capacity – manpower – no effective law enforcement
- Prices of agricultural products can fluctuate overtime which could discourage the conservation measures taken by farmers (opportunity costs decrease)
- Timing of targeting ES buyers important
- Decreasing wildlife
- Deforestation
- High poverty levels

Interviewee (s) **Upstream WRUA's chairmen**	Paul Ruaya (Tuluga) Hansen Ngugi (Wanjohni)

Summary
Facts about the organizations
In charge of registration PWS farmers
Facilitation of PES scheme – informing / training farmers through the agricultural officers
Providing trees for agro-forestry
Analyzing monitory results

Situation Analysis
Mainly positive. The PWS program has given farmers the incentive to implement conservation measures. The grass stripes have been planted on the selected PWS farms. The Napia grass is growing fast and is used to feed the animals or sold to other farmers that need food supply for their cattle. Also the farmers have been planting trees on their land. The issues / challenges mentioned are communication between farmers and the intermediaries. In the rainy season it is difficult to access the road, also there is a limited budget to finance transport costs for WRUA personnel. Paul suggests that the Napia grass now supplied partly by CARE, could be supplied by the WRUA since they have a tree nursery themselves. This could reduce transportation costs and supply a sort of income for the WRUA.

- Sustaining PWS - Transaction can be lowered by making farmers themselves responsible for monitoring of results
- More capacity building needed – institutional capacity and financial capacity of WRUA low. There are both young organizations. PES program is highly dependent on the support of WWF and CARE. The WRUA's have difficulties with getting enough funds to operate effectively. The upstream have not yet submitted a sub catchment management plan due the high costs related to the formulation of the plan. They need to hire consultants, which are expensive, to write these plans. Without this plans, the government will not give them funds (one million shilling).

- Changing rain – patterns and decreasing water levels complicate farmers to predict their source of income throughout the year. This could make the PWS vulnerable. If the farmers' income declines, farmers are more likely to use their lands that were put under conservation, for agricultural purposes. However, WRUA chairmen also believe that it can have a positive effect on the awareness creation. If the farmers are informed well concerning the change of climate, they are more likely to act upon it when confronted.

- PES should be integrated into national laws to increase governmental support and support from private actors. The PES concept should also be integrated in the sub- catch management plans (SCMP).

- More cooperation with other ministries and organizations needed to create enough (governmental) support.

- Both chairman stated that integrating carbon sequestration as an environmental service would be an interesting option to widen the PES program since trees are already being planted by different NGO's and farmers themselves.

- Poverty, lack of institutional capacity, ineffective law enforcement, health issues, inadequate, waste management policies, corruption, are factors that have an influential (negative) role on the further development of the PES program. NGO's are extremely important for the facilitation and supply of funds for the development of the PES program.

General observations: large amounts of plastic waste on the streets, blocked sewages, inadequate sanitation and commercial car washing in the vicinity of rivers.

Interviewee (s) **Upstream WRUA's Chairman**	John ole Kamia (Mariba)

Summary meeting
- This WRUA is not yet part of the pilot scheme. It has showed interest in the scheme and would like implement it in the WRUA. There has already been interaction with CARE and WWF in how to organize this.

- Wishes – The WRUA would to address gender issues in the scheme. At the moment the farmers (mostly men) are receiving the payment. Scientific knowledge needed to begin with the first phases. Masai have cultural values and like to have large quantities of cattle – this is difficult to change – taking conservation measures could conflict with their way of life. PES not totally understood among member of this WRUA and need to trained. The perception of the name Payment for Environmental Service sounds appealing though can be misinterpreted. It might be interesting to look for another name, such an incentive for environmental services. At the practical level – monitoring activities, the WRUA is still weak.

- Challenges: High levels of poverty, unsustainable land – practises take place on a large scale. Example: overgrazing. Masai farmers have lack of knowledge to understand that conservation is important. A number of Masai are transforming from cattle ranchers to farmers. Though, the understanding that land is common good does conflict with the grazing methods of Masai ranchers.

- Linking organizations important for the sustainability of the scheme – CFA's, NGO's, WRUA's, Chiefs.

- Awareness meetings should be held and needs to be facilitated by NGO's. The foundation of the scheme and its partners is crucial for the development. Challenge: gathering of people – and gathering of the right people.

- Role umbrella of WRUA important for awareness creation
External factors
- Changes of rain patterns, political dynamics – lack of political good will, politicians want to see direct benefits when supporting the scheme.
- Conflicts between CFA and WRUA's concerning water allocation could arise since they both have been given power to decide how to conserve water resources.

Interviewee **MARECOF**	David Mbugua - vice- president

Summary meeting
Scaling up PES Opportunities
1) Receptive Communities suitable sites to implement PWS – willingness of upstream farmers high

2) Available land for enterprises development
3) Will enable commercialization of nature-based enterprises
4) Presence of existing legislation to guide land use e.g. Agricultural Act – prohibits cultivation along riverbanks makes PWS attractive option

Challenges
1) Low institutional capacity of WRUA's to maintain PES program – Program is highly dependent on CARE and WWF
2) Funding needed to sustain programs – sceptical about commitment of ES buyers
3) Enterprises competition between PES nature –based enterprises and other farm enterprises
4) High community expectation of economic returns from PES programs – PWS farmers already indicated that they desire a higher payment in the next phase.

Interviewee (s) **LNRA**	Marc Kariuki – Chairman Mbogo Kamau – Environmental Monitoring Officer

Tasks of LNRA exist of conservation of the lake and its riparian zone:
- environment awareness creation among members and surrounding communities and CFA's;
- involve members in conservation activities;
- conduct monitoring activities of different parameters – takes action when necessary that involves facilitation of the intervention (technical capacity)
- bringing partners together to take measures;
- create funds for conservation activities – lobby activities among members and outside Kenya;
- establishment of tree nurseries;
- organize alternative income generation activities in poor communities.

The association was established in 1929 and was mainly functioning as an organization that mediated in issues concerning landownership, land use and practices. In this period, that land around Naivasha was mainly used for ranching – there was little agricultural activity and thus little irrigation issues. This remained until the 80's, when flower farms were established and grown to be big multinationals. At the moment, the organization has about 126 members that consist of individual private actors and governmental representatives.

PES involvement
Together with the LNGG, LNRA is involved in PWS as ES – buyer. Some members of the LNRA are also members of the LNGG. At the start of the project when the feasibility studies were conducted, the LNRA was involved in the project design and had a consulting /instrumental role. LNRA is well informed and receives regular updates. Also enacts with CARE staff and is present in the annual meetings that were held so far.

Challenges
- Too little buyers involved. Government should be involved as buyer. Awareness creating among LNGG members and LNRA and LANAWRUA should be enhanced. There is little awareness for environmental issues in the tourist sector – there were targeted but remained outside of the current scheme. There is no real strategy to target other buyers.
- lack of institutional and financial capacity of WRUA's
- lack of understanding among of water users (ES – buyers) that conservation is needed now
- Existence of trust issues between LNGG and LNRA since LNRA not able to fulfil its payment

Possible buyers
- KenGen
- Municipal Council Naivasha
- Rift Valley Service Board

- Small users groups like hoteliers, fishermen (pay only 100 shilling per month to the fisheries department)

Arising issue – how can buyers be targeted?
- Buyers only committed when financial situation allows it and recognize direct benefits. Buyers should be engaged directly. Though downstream water users can be arrogant and resist participation if they don't see the benefit. It is very important to create a stronger awareness concerning the inter linkage between upper and downstream catchment.

External factors
- The dynamics of politics around Lake Naivasha. Power games are played. If something bad happens – someone is to blame. There is a lack of understanding / and willingness to accept that environmental issues have a cause and effect and that many water users are responsible for the degradation of the environment
Lack of interlinkage between governmental departments – they are failing to have a common approach on conservation issues

Project situation
- Highly dependent on support of CARE and WWF. LNRA believes that there should be an independent trust fund to mobilize, ensure resources to run the project. The LNRA official clearly states that LANAWRUA should not have the coordination role of PWS scheme. This has mainly to do with equity issues – LNRA is afraid that political preferences could influence the effectiveness of the scheme. In the following years, it is important to ensure that everyone involved has equal importance. The business community is dictating the scheme right now – there should be a hybrid system.
- Capacity building of WRUA's needed
- Addressing other environmental issues should be integrated in project design
- Lobby activities on higher governmental levels should take place to create PWS funds
- Synergy between involved organizations / institutions important for success

Interviewee (s) **LANAWRUA**	Enock Kiminta (secretary) Eugene Riksteen (vice – president)

Summary
LANAWRUA is representing all water users at the downstream of Lake Naivasha. It includes large scale farmers e.g. ranching horticulture etc. Experiences with PES so far positive.
LANAWRUA has taken upon a coordinating role to organize ES buyers. The organization is of crucial importance because they represent the key linkage between upstream and downstream farmers.
Membership – 500 members (only the ones that have a water permit given by WRMA), a change in the constitution is proposed to also include non- permit members. 100 % committed.

- Mainly positive about PWS program. Increased institutional capacity of WRUA's and overall management of water management. Supports enlargement.

- LANAWRUA believes that they should have the coordinating role. Payments should be allocated through the LANAWRUA. WRMA lacks institutional capacity to coordinate PES program.
- LANAWRUA in favour of increasing water fee to generate funds for PES program

- PWS payment is too low to continue willingness of PWS farmers to participate. LANAWRUA supports the idea of making in kind payment to whole communities in order to reach permanent appreciation.
- Communication flow crucial – good relations between WRUA's and other involved parties important

Design issues
- WWF – CARE should get a more observing role (are they on the same strategy – exit wise)
- Advocacy activities needed to gain support for the program and to sustain it. PES is integrated in the Sub Catchment Plan of LANAWRUA but plan has not yet been approved.
- Little trust in the LNGG to supply large funds if PES is enlarged. More (governmental) buyers needed.

Tensions
WRMA has little financial capacity to monitor results – NGO support needed which makes the program weak – project too dependent on CARE and WWF
LANAWRUA mentions that WRMA could feel threatened when powers are transformed to LANAWRUA e.g. task of collection of water fees. Dialogue between the two parties is of crucial importance to maintain good relations

- Capacity building of LANAWRUA needed. Facilitation should be managed by WWF – CARE which can offer professional advice and input.

External factors
- Use of fertilizers by farmers, this could influence the water quality and harm the cooperation between the two WRUA's.
- Other environmental issues – Drought has caused major damage to the pararus trees at the Lake Naivascha – lake's ability to purify polluted water from upstream decreased.
- Climate change – unpredictable weather conditions could harm the businesses downstream lowering their ability to pay to PWS program.
- Ability to pay influence by competition of other CSR projects – most large scale farmers are already involved in other CSR projects

Interviewee (s) **Ministry of Agriculture**	Name: Richard Vonza (District Agricultural Officer) Nyandararua South Environment and land development Officers North Kinangop: David Mucharu and Andre K. Ndatho

Summary
Background
Kenya has 8 provinces – each province has 4 departments. PES program falls under the department of crops – environment and conservation.
The officers in this district were involved in the initial stages of the scheme and had an advising role for the implementation strategy. Also there were involved when the identification of the hot spot farms. Farms that had a 5% slope and had a significant water run were analyzed. Officers were involved in training activities and capacity building of the WRUA's. The officers have given advice concerning sustainable land practices that were developed. Conservation measures: Preventing run-off by Planting grass strips and tree planting.

In the district, 7 groups have developed business plans for alternative income generation activities such as ecotourism – beekeeping – change to a more sustainable crop. These are also farmers that have been participation in the PES scheme. Farmers are content with the scheme. Napiagrass, folder has lead to an increase in milk production. CARE Kenya has detailed figures concerning these developments. Data collection is fully done by CARE. Benefits for farmers clear – livestock increases and thereby their incomes.

Challenge:
Farmers were resistant at the beginning of the scheme, because they were afraid that the Ministry was going to take their land. Although according to the law, farming on steep hill is forbidden –

this law is not really enforced by the Ministry. There is still a little resistance though the larger part of the group is willing to participate.
- Leased lands – owners often difficult to find and not really interested in conservation issues.
- Understanding – most of the poorer people are not interested in the environment.
- Integration in the agricultural act – PES should be integrated to gain support on the higher level. Reports (per 3 months) are communicated to the higher provincial level although knowledge concerning PES has not been diluted to the higher levels yet. PES program receives support of the Ministry, conservation targets are met, officer's benefit from PES program. Officers are happy with the results that PES has brought and will keep supporting it with goodwill. Financial resources are limited.

- Command and control regulations are not favoured – persuasion methods like PES are supported more and believed to be more effective. In the past, laws were implemented with force, still farmers are scared. This is a more friendly way of introducing the need for taking conservation measures.

- Tree planting is conducted on the large scale – CARE has supplied tree seedlings as has the Ministry of Agriculture through the Elimination of Hunger program.

- Enlargement of the scheme – Capacity building needed. Stakeholder forum, already organized by CARE and WWF is not enough, more training needed.

- WWF and CARE should attract more buyers to be able to enlarge scheme.

- Structure of the scheme should be rigid and transparent. Ministry is content with the structure has laid down in the pilot scheme. Payment should be higher or other alternative livelihood projects should be integrated.

- Conflicting policy - New agricultural policy – 10% of farming land should be covered by forests. - Conservation measures could limit land use for production of crops. Ministry promotes increase of productivity in regards to general shortage of food in Kenya.

External factors:
- Rapid population growth
- Ineffective enforcement of environmental policies
- Climatic factors e.g. changing rain patterns

Interviewee (s) **LNGG**	Joseph Kariuki (executive officer)

Background

Represents of the farmers in the downstream catchment. The association of growers focuses primarily on horticultural growers that are established around Lake Naivasha. The organization is committed to efficient-use of water and other natural resources from the Lake Naivasha. Promotion of long-term future of the lake's catchment. Mandate: promote agricultural practices; efficient water-use; lobby activities; improvement of labor force – represents interests of growers. The organization was founded in 1997.

Mainly positive about PWS program. LNGG has close contact with LANAWRUA. Not every member is ready to participate in the scheme due to lack of information and understanding. Due to the fact that water fee is collected by WRMA which also needs to used for conservation measures upstream, there is discussion whether it is fair for water users that are already member of LNGG (implement environmental production methods) should be the ones to pay. LNGG should not only be one targeted as ES buyer. Currently, funds are allocated through CSR budget. Also not all members could participate due to annual budget restraints. Timing of initiation of project important.

- CARE and WWF inform LNGG concerning results of PWS program.
- Length of contracts long enough – on a yearly basic LNGG decides which CSR projects receive funding.

- Monitoring activities performed by farmers themselves is approved – though verification needed from independent party
- PWS program now too depended on good will of water users downstream, hydrological evidence weak – no real market value created
- CARE and WWF focus too much on poverty alleviation in the upstream instead of targeting of potential ES buyers, which is needed to sustain program on the long term

- Government not effective in taking conservation measures or supporting policies. LNGG very skeptical in regards of the support for PWS. Private sector not always willing to pay the heavier load as in contributing to these efforts. LANAWRUA has applied for funds to implement Sub Catchment Management Plan though did not yet receive funding. (4 times!) There is a RED Tape problem due to the number of stakeholders involved in the approval of the report. There is a lack of willingness to provide funds if other parties are not involved as well.
- PWS program too dependent on CARE and WWF

- LANAWRUA is still a young organization. Not capable of coordinating program but who is? No aware of strategy of WWF and CARE how to sustain program. Need for more capacity building of involved WRUA's. Who responsibility for this? CARE,WWF or the government?

Potential buyers that could be targeted
- Banks (CSR)
- KenGen
- Safaricom

- In favor of increasing water fee to create funds – though process of increasing water fee is lengthy due to institutional constraints
- Land use Act could be conflicting with development of PWS program.
- Carbon sequestration could be an environmental service targeted as an additional ES. Downstream companies have shown interest in carbon sequestration projects.

Interviewee (s) **SNV**	Nancy Ndirangu – Senior Advicer

Summary

SNV have provided the WRMA with funds for the formation of the WRUA's and umbrella WRUA and capacity building of WRMA and the financed the formulation of the strategic plan 2009-2012. SNV helped with the prioritizing of conservation measures that need to be taken (something like a roadmap for conservation). SNV gives advice on the following subjects that to increase agricultural productivity in Kenya; dairy, horticulture, waste, education, livestock and tourism.

SNV also has an advising role in term of local capacity building for the long term and how partnership between organizations have to be set up and implemented. An example is the support for PES that is focuses on the inter linkage of the up and down stream users. The PES program has potential to set up inter linkages between water users. They also helped establish the CSO forum that was set up by the WWF.
SNV supports the program – it strengthens the roles and responsibilities of water users – especially on assignment agreements. Water allocation plan is now in place – intern stationed at WRMA for data control and collection.

CFA's and WRUA's working on similar local levels which can conflict at times when tasks are overlapping. Issues arising: CFA or CFS is charging water fees. This needs to resolve at the ministerial level. Overlapping policies need to clarify and policy needs to be amended. There is a magnitude of overlapping issues.
Up – scaling possible through the use of the umbrella WRUA. The way forward is to mobilize resources, create awareness among large water users, , use of buy- in agreements. Learning curve important.

In terms of support – government should support the program and have enough good will to help with the implementation and up scaling. Issues: transparency, bureaucracy (red tape).
- There should be a good well managed information flow to continue support.
- Kenyan government is focused on increasing water supply, priorities not so much on water conservation.

Interviewee (s) **NWC**	Ambrose N. Njagi – Executive Officer

Summary
Organisation is mainly focusing on wildlife conservancy issues in the lower catchment. Focus on: big ranches with wildlife – members of NWC involved in conservation of wildlife on their farms.

- Not really involved in PES but support the project;

- Challenges for PES: WRMA not yet working effectively according to the members of NWC. Wildlife excess is for the own costs of the farmers that have wildlife on their farms. Although the farmers are paying for water that is used by the wildlife for survival – farmers do not receive any compensation for the water use. This could influence the support of downstream farmers to participate.

- Selling points for attracting new ES buyers: Increase of profit, direct benefits as improved water quality – indicators needed. PES should be sold as a corporate social responsibility project.

- Institutional: PES should be managed by a PES Trust Fund. With the implementation of this fund – ownership of the program can be encouraged and has potential to create linkages between up and downstream WRUA's.

- Strategic ideas: Empower both CFA and WRUA to create more awareness among water users to take conservation measures and to strengthen the effectiveness of both PES and REDD. There should be more emphasis on advocacy for the revision of existing policies.

Report PES event 18th of May, 2010
Event

Songs by schoolchildren that focused on the importance of water and conservation issues
Headmaster states the urgent needs of the school

Present: All relevant stakeholders namely: CARE, national, regional WRMA representatives, WRUA chairmen, ICRAF, LNGG, agricultural officers, independent researchers, PES farmers, families and schoolchildren.
Press coverage by different journalists from national newspapers and TV stations.

Not present: LNRA

WRUA recognizes the important of linking WRUA's and creating ownership of the project. PES is called unique because it facilitates the inter linkage between WRUA's. Win – win situation.

Monitoring plan is expected to show increase of incomes of the participating farmers and water quality. Awareness creation important from different ministries concerned with environment, forestry issues and water and irrigation.

LANAWRUA – enthusiastic to enlarge and continue to scheme and spreading to other WRUA's

CARE – issues climate change, rapid population growth, deforestation mentioned as challenges – emphasized importance of interlinkage between up and downstream for the improvement of overall water management in the catchment

WRMA – Issues climate change – droughts, unpredictability – 54 out of 312 WRUA have received funding to implement sub – catchment management plans. Support the project with creating good will and support. Allocation of financial resources not mentioned.
WRMA officials promised to fund roof catchment on top of the school.

The following call reports are written by Philip Cook. The interviews that were conducted jointly include comments of Marijke Boonstra.

CALL REPORT : OSERIAN 22nd June 2010
WWF reps Philip Cook
OSERIAN Linda Munyao Environmental and Audit Manager

DESCRIPTION
Oserian is a Kenyan company owned by its chairman Hans Zwagger but now run by his son Peter. Linda works for Ruly Tsakiris the administrative director.
Linda is responsible for audits and maintaining certifiactons. Oserian holds the following certs: Fairtrade- more of a social and ethical standard involving workers welfare. Max Havelaar audits for fair trade practices and is a an independently recognized label.

KFC –silver is more rigorous on the environmental side and is benchmarked to Global GAP (general agriculture practices)
LEAF – is UK standard that links the environment and farmers and is quite rigorous
BOPP is a British Ornamental Plant Producers standard which emphasizes quality systems but also contains chapters on environmental practices and social ethics.

MPS- class A certified for chemical management.
Oserian is happy with PES scheme. Ownership will need to be assumed by another party to permit the departure of CRA-WWF. Linda believes the PES scheme will have to take root before any specific certification would be possible. LNGG would be the appropriate initiator in her view since KFC is too diverse. Linda had advised Ian Finlayson of World Flowers Oserian's UK – based marketing arm of our meeting and he was encouraging. In the UK they sell to Sainsburys,Tesco and Waitrose among others. Significant sales in Holland and Germany.

CALL REPORT : Flamingo Holdings 23rd June 2010

WWF reps Philip Cook
Flamingo Holdings Richard H Fox Sustainable Business Manager

DESCRIPTION
This discussion was to obtain more information on Homegrown's marketing experience.
Homegrown (and other sellers) have moved away from the auctions partly due to processing costs (including middle man's commissions) versus selling directly through supermarkets. Last year the Dutch auctions lost money for the first time. In the UK Homegrown sell through Flamingo Holdings (John Hackett is the flower man). They sell to M&S, Tescos, Sainsbury's, Morrisons and ASDA. Those sales not made through a contract as fair trade, are sold without the label but are still FT accredited e.g Tesco.
They also sell through the Coopernic system (Omniflora).
FT flowers command a premium but he is not sure it is 10%. FT and non-FT flowers are not sold at same outlet. Richard is going to look at the question as to whether FT flowers are sold at the auction as others have indicated and particularly whether, in the absence of a contract with a buyer, a third party can affix the FT label.

Although he has reservations at this time about a LN watershed label, he believes that FLO International, the certifying arm of Fairtrade, does allow 15-20% of premiums to be allocated to environmental programmes and these may include catchment conservation measures. Richard Believes FT certification , with its resulting expenditures on social programs, makes more of a difference to small-scale farmers or outgrowers since multi-farms or estates are already engaged.
- HG also have the first FT vegetable.
- Union Fleur in Europe represents interests of flower growers and sellers through KFC

CALL REPORT : Maridadi Flowers June 17th 2010

WWF rep Philip Cook
Maridadi Flowers – Jack Kneppers co-owner

DESCRIPTION
Jack co-owns Maridadi with his brother who runs the commercial side in the Netherlands. They originally worked in their father's flower business. They grow flowers on the Flower Business Park which supplies the infrastructure (including borehole water) for tenants. It was fully owned by Panda but some of the tenants have bought their properties.

Jack is blunt and may be seen as one of the anti-establishment growers. Some of his reflections:
Companies like Veg-Pro (Longonot) using central pivots use twice as much water than flower growers even without hydroponics
Maridadi is well within "the water allocation plan" using 41m3/ha vs 60m3/ha max.
Will not join LNGG. Gave excuse of cavalier treatment re membership but probable reason is social.
Is of opinion that his groundwater comes from the Karagita which is somehow different from the Malewa system. Igal at Panda is the influence here on "private water". Max Havelaar is nice but maybe by cutting out the middlemen thye have cut in their organization

Not KFC certified. One reason is that while he had 75% under integrated pest management he lost control of fungi and had to use more chemicals. It is 3-4 tines more expensive than MPS . He was MPS approved class A but is now B but hopes to get back. MPS requires annual audits and reporting data on consumption of various inputs over 4 week periods. Maridadi sells 70% on the Dutch auctions mostly Rijnsburg and Naaldwijk. The auction is Glock style rather like a reverse auction. The other 70% is sold directly to wholesalers Holland Flowers. He confirmed there is little advantage in selling Fairtrade flowers on the auction but it is necessary to sell to many supermarkets. There is an attempt to combine certifications on one label FFP or fair flowers/fair plants for supermarkets (in Sweden for example).

CALL REPORT : Flamingo Holdings 9th June 2010

WWF reps Marijke Boonstra Philip Cook
Flamingo Richard H Fox Sustainable Business Manager

DESCRIPTION
Homegrown was bought by Flamingo Holdings which is part of the privately held Swire Group and owns Finlays, the tea and flower growing company based in Kericho and Mt Kenya. Richard is chairman of LANARA and LNGG. I questioned the level of contribution The flower industry is not what it was a few years ago. Prices increase are difficult and costs are rising. However 380 million shillings came back to Naivasha in fair trade premiums. $3,200 works out to about $200.00 each. Generally he is happy with the progress of PES and thinks well of the upper catchment land use changes. Sees a weak WRMA because of underesourced and thinks that the RUA could collect a surcharge for PES. But this is unlikely . LNGG and LANARUA have been heavily engaged in the abstraction survey and Dr. Becht from ITC will be engaged in the next project to examine the stability of the aquifers to the north of the lake. Richard has a real interest in management of the catchment and Lake. He would like me to carry the message to Rao Karuturi of Karuturi flowers…the largest flower farmer in Naivasha and one who is active in Ethiopia and he kindly provided me his mobile number. Also Lord Enniskillen former chairman of LNRA or Mark Kariuki the current one. I pressented the idea of a Lake Naivasha eco-label to capture the uniqueness of the Lake and the off farm support of PES scheme. It would also put them in the vanguard and at a competitive advantage among their non-member peers as well as companies setting up shop in Ethiopia and other places with less environmental oversight. Richard was not discouraging but thought it was a bit early and the eco-labelling in the UK is a bit saturated. Tesco, while not participating in Homegrown's fairtrade flowers is making

contribution to social programs at the Lake. Supermarkets anyway tend to like to do their own thing with labels.

CALL REPORT : LANAWRUA 11th June 2010

WWF reps Marijke Boonstra
Philip Cook
LANAWRUA Eugene Riksteen VP

DESCRIPTION

Eugene has been at forefront in working with WRMA on behalf of LANARUA on the surface water abstraction . Complains that much, probably more than 70%, of the surface abstraction in the upper catchment is not permitted. Groundwater was not included in survey but Becht of ITC is trying to secure funding for a study of the hydrogeology of northern aquifers. On this, there have been indications of drawdown of 25 meters at Marula Farms and other boreholes, particularly those supporting central pivots, and some have inferred that this has reversed aquifer flow from the lake northwards. Eugene however is of the opinion that this drawdown is from a temporarily high water table (or perched aquifer). The multiple deeper aquifers, separated from the lake flows by an impervious barrier, have not been affected by borehole water use. No conclusions should be made in the absence of the Becht study but this reasoning is at the heart of the overriding issue in the north Lake region---the non-willingness of Marula, Panda Flowers etc. to acknowledge their role in Lake Naivasha water use and hence in upper catchment conservation/PES schemes. They are positioning themselves to be independent of any lake water allocation plan. They declined to participate in the cost of Becht's study which is still short $5,000.00. Yet Marula uses 25,000 m3/day and Panda 12,000 m3/day. Borehole water in comprises 40% of irrigation use water north of the lake. The fact is whatever the stratigraphy of the aquifers, sub-surface flow from the Malewa/Gilgil probably feeds these "private aquifers". In Eugene's view the PES scheme did not generate favourable publicity for LNGG and this was big mistake. He suggested I talk to Flower Business Park farms (Maridadi- Jack Kneppers, Bigot flowers – Jean Philippe) as well as Panda –Igal Elfezouty the owner

Based in Memphis US.

CALL REPORT : Flamingo Holdings 15th June 2010

WWF rep Philip Cook
Longonot Horticulture (VegPro group) Harry Milbank, General Manager

DESCRIPTION

Harry is supportive of PES but points out that downstream growers are making PES payments for the increasing concentration of nutrients and sediment load in lake water caused, in part, by upstream abstractors. The growers are also paying the water tariff while illegal abstractors upstream are free-riding. Like other LANARUA/LNGG members prefers any water tariff increase to pay for upland conservation to through LANAWRUA or NGO to upper catchment LANARUAs- not WRMA. Doesn't think LANAWRUA would have capacity to do the work CARE/WWF are doing in upper catchment and certainly not WRMA. Veg-Pro is a Kenyan company with flower and vegetable sales in the UK. Most of the production is in the Lake Naivasha area. They sell to Sainsbury's, Tesco etc through an agent Flamingo Holdings (the owner of Homegrown). Harry gave me Nairobi contacts (see below) for more accurate marketing detail. He had a suspicion that the supermarkets paid the fair-trade premium rather than the customer (i.e. supermarkets pay the premium in order to keep fair-trade flowers competitive with non-fair trade flowers—do supermarkets view consumer demand as elastic with respect to price?). This would contradict the results of the Mark Ellis-Jones survey in 2007 which showed a WTP of a 20% premium by UK consumers.

About 20% of Longonots flowers are fair-trade about 5-10% auction. Tesco does not have Longonot's fair-trade flowers but Sainsbury's has both. Germany is almost all fair-trade. Flowers sold at auction are generally non-FT since there is no premium. They sell to a Coop in Germany, Omniflora part of the Coopernic system. Andrew Kestin of a Swiss coop arranged a workshop in Naivasha a few months ago for Coopernic members and growers. Harry described some of the uses of the fair-trade premiums that are paid to the committee. Some of the money must be spent by the committee (management and employees) on environmental projects "that don't benefit directly" –that includes certification costs. Therefore some money has been spent on seedlings for Kabeta township and the Rhino-Arc fencing as well as seedlings in the Aberdares, The expenditures of this committee are auditable but the offsite environmental allocation must only be "balanced".

CALL REPORT : LANAWRUA 15th June 2010

WWF reps Philip Cook
WILDFIRE FLOWERS Peter Szapary M.D.

DESCRIPTION
Wildfire grow flowers on 40 hectares and employ 600 people. Peter repeated the flower grower's mantra about the best mechanism for upland conservation would be through the water tariff and based on usage but repeated the complaint that the larger upper catchment users must be counted and brought in. Its one thing for poor farmers to abstract for free but NARUASCO is an outside of catchment abstractor paying a low price. Should the flower farmers on the south shore have to turn to reverse osmosis from saline boreholes to preserve an important source of employment and foreign exchange which may be considered under severe conditions? He believes the flower industry missed a golden branding opportunity when they did not take advantage of the RAMSAR designation. A premium would have been a return for wetlands conservation. Harry had told me that Wildfire sell mostly at auction but according to Peter they sell mostly directly through their own marketing company the "Flower Hub" to European countries directly as well as Russia and Japan. He mentioned Carrafour, Acrophilis and Rewe (Germ.) as supermarket buyers. Wildfire is KFC silver and is looking into Fairtrade certification but it adds 10% to cost according to Peter. Since the Fairtrade premium is 10%, which comes back to the growers committees, the flower outlets price flowers at a higher price than non-fair trade (a contrary understanding than Harry's at Longonot). He feels that there is more demand than supply for fair-trade flowers. He mentioned he gets audited by reps of Sainsbury, Waitrose and Tesco. Like Longonot Wildfire would like to grow seedlings for the upper catchment and offer "in kind" services.

CALL REPORT : KenGen 10th June 2010

WWF reps Marijke Boonstra
Philip Cook
KENGEN Geoffrey Muchemi- Geothermal Development Manager
Elizabeth Mwengi- Environmental Officer

DESCRIPTION
Elizabeth who had been given a PES presentation (concept document) by Maina had passed the paperwork onto Muchema who had sent it on to Adrian Mogo (?) his boss in charge of Business Strategy and Development with no reaction. We discussed sub-surface water. Initially Muchema maintained that lake water doesn't find its way very much to the steam/hot water reservoir citing the isotopic evidence that Peter Omenda had used. There are cases where hydrothermal altered rock caps above the hot water zone would create hydrostatic pressure conditions preventing shallower water recharging these deeper aquifers but he also said that faulting and fracturing allows interconnection in other places. I also showed him one of the two articles that used mixing ratios for isotopes which demonstrated 40-50% of the hot water/ steam was derived from the lake. He would not dispute that finding. In fact some of the production wells are cased at 500-700 foot indicating a much shallower resource than 3000 m. We reviewed their lake water use. KenGen is making efforts to reduce their water footprint by not only re-injecting both drilling and production water but considering using borehole water high in salts for drilling. Before they can do though the effects of salt on the cement/casing have to be demonstrated. Muchemi agrees with the principles with PES even if a bit cynical about other actor's intention. The issue is that there are other competing social programs including social afforestation where they provide seedlings to communities in the upper catchment (they have provided over 100,000 seedlings to villages) and "adopt a cathcment (he has some reservations about this because KenGen cannot be see adopting "one" catchment". The social afforestaion is close to Geoffrey's heart I think as he can control it and he is from the Wanjohi area. I made the point that the social program may not be as effective as PES with the structuring, monitoring and evaluation practices in place, as well as the contractual relationship. He also expressed some interest in the location of the farms and what they were doing.

Philip also made the point that Naivasha PES was only the most advanced of several similar initiatives in Kenya one of which, at least, involves the Tana catchment with its Kengen owned hydroelectrical stations so Ol Karia's participation could be a test case for the company's future involvement. He advised going to the director of Reg. Affairs at Kengen, Simon Nguri but maybe also Mike Njeru the Corporate Affairs Manager in charge of CSR.

CALL REPORT : LNGG 4th June 2010

WWF reps Marijke Boonstra, Phil Cook
LNGG Joseph Kariuki

DESCRIPTION
Discussed PES progress and the need to secure more funding share from buyers. Generally LNGG are satisfied with the progress but feel LANARUA should have had the direct recognition in the publicity leading up to the contract signing rather than WRMA. LNGG feel that they have done their part for this year and the onus is on LNRA who failed to pay their share due to lack of capitalization. Joseph mentioned that LNGG has encouraged CARE-WWF to look for other pockets e.g. Barclays, Coppernic (?) in Germany, the local brewery Keroche. We discussed avenues to strengthen funding from direct beneficiaries. (1) The current 20% fair-trade mark premiums comes back to those participating growers for spending on social programs. Further efforts in flower certification are still possible particularly since existing fair-trade labelling schemes do not address off farm conservation. (2) Stating that water use fees are currently low, LNGG would like a scheme whereby water tariffs are say doubled to 1 shilling/m3 and LANARUA receives part of them (perhaps as an agent for WRMA) to fund PES. (3) they would like more participation of Government in PES.

CALL REPORT : NARUWASCO 3rd June 2010

WWF reps Marijke Boonstra, Philip Cook
NARUWASCO Job Thomno Managing Director

DESCRIPTION
Discussed PES progress and the need to secure initial funding share from buyers.
NARUWASCO were approached about a year ago with follow up more recently but have been delaying decision on funding even though the board accepts the concept and their operating mandates support conservation measures. We reiterated the savings on chemicals at the Gilgil water treatment plant (1200 kg. wet season Aluminium sulphate application vs.200 kg. dry season) and emphasized the volume effect of Turesha dam siltation (Thomno agreed that there is a loss of up to 50% capacity in the dam). Furthermore he noted that while Turesha dam supplies have fallen to Nawasco because of silting and only constitute 25-30% of their supplies, the water is important because it dilutes borehole and other water that has higher salinity.
We agreed that NAWASCO (NARUASCO's major custom) has a considerable interest in the increased volumes that may be obtained from lower silt build up and it also has a more direct interest in the health of the catchment through its own river intake on the Eastern Rift, and therefore should be brought into the picture as soon as possible through a presentation on PES .
We agreed that this would be part of a process of preparing them for a tariff increase down the road. Although Coca –Cola has closed its local bottling plant there are other large industrial and commercial users of water, maybe with their own willingness to pay.
The board's reluctance seems to stem from two factors:
the situation that they are paying fees to WRMA some of which should be going via the trust fund to upper catchment conservation. They appear to want some recognition from WRMA that they are also contributing to PES.
2) The feeling that the figure of 1 million shillings/year which was floated may be too high and might be "scaled down" because of the existing support to WRMA.
We emphasized strongly the need to get the PES contribution on the agenda for the June quarterly board meeting since 2010-2011 budget approval is already on the agenda.