

#### **PUBLIC FORESTS**

- Experience over grazing due to hundreds of livestock dependent on forests for grazing therefore hindering regeneration of palatable species
- Illegal harvesting of valuable timber species create openings and alter forest structure •
- Encroachment and illegal settlements reduce forest cover, enhances cultivation and soil erosion

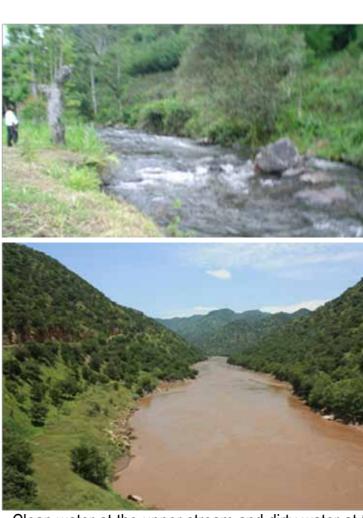
#### **SOCIOECONOMIC FINDINGS**

- High opportunity cost for conservation of natural forests on farms and along river banks hence conversion into farms
- Key downstream water users can be potentially levied to compensate upstream actors to enhance conservation efforts
- In 2012-2013 Eldowas generated KES 280 million from sale of water hence a potential business case scenario
- ELdowas pays 1% of its revenue to WARMA to support conservation activities hence recognition of the compensation efforts
- There are some trusted institutions that can act as intermediaries between upstream and downstream actors: World Vision a local NGO operating in the area among others
- Payment based on standard conservation measures undertaken per unit area is highly preferred by stakeholders
- Eldoret residents were aware of the degradation process in the water catchments and were willing to be levied to pay for conservation of the water catchment if appropriate delivery mechanisms are in place to ensure their efforts achieve desired results.



### WAY FORWARD TO ENHANCE **MOIBEN RIVER ECOSYSTEM CONSERVATION**

- The study established the need to engage the upstream conservation and downstream beneficiaries actors to foster sustainable conservation of water towers
- There is need to create awareness on the linkage between the adoption of conservation land use practices and improved flow of water in terms of quantity and quality
- The study established a potential business case for piloting of PES compensation scheme for enhanced ecosystem conservation and improved flow of ecosystem services.



Clean water at the upper stream and dirty water at the lower stream of River Muruny



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# **DEVELOPMENT OF FRAMEWORK FOR PAYMENT OF ECOSYSEM SERVICES:MOIBEN RIVER IN CHERANGANY WATERSHED**

## Introduction

arakwet Sub County is one of the most heavily forested sub counties in the country where forests and trees are estimated to occupy 40% of the total land that include the CheranganyForests and trees on farms. The forests are important water catchment for rivers that flow to Lake Victoria and drylands of northwestern Kenya. The rivers include; Moiben, Muruny, and Embobut that supply drinking water to millions of people/livestock, industrial and irrigation activities in western Kenya and northern drylands of Kenya. However, the forests are undergoing rapid degradation thereby threatening the flow of ecosystems goods and services to wider region of western and northwestern Kenya.

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#### WHAT IS PES ?

Payment for ecosystems services (PES) is one of the innovative tools that have been accepted globally for motivation of upstream land owners to conserve forests and practice sustainable land uses that improves flow of quantity and quality ecosystem goods and services. In Kenya few PES schemes are being piloted to facilitate engagement of upstream actors with lower stream beneficiaries with the aim of development of mutual partnerships on win to win situations. To generate information and data on PES, KEFRI undertook a study to identify important forest ecosystem services, map stakeholders and develop a robust framework for attribution of costs and benefits to the respective actors along the Moiben River catchments. It also undertook surveys on willingness to pay for conservation by Eldoret residents. The study was done between 2011 and 2013.

#### WHY MOIBEN RIVER ?

Moiben River is the main source of water flowing into Chebara Dam which is the largest source of water supplies to Eldoret town and its environs. However, the water quantity and quality is threatened by continued forest degradation in the upstream areas. Thus the need for intervention measures to restore its resilience and capacity for enhanced flow of ecosystem services.

#### **STUDY RESULTS**

Moiben River catchment comprised 95.4% private land and 4.6% public forests(Table 1). Moiben is fed by many tributaries (Figure.1) that originate mostly from large scale and small-scale fams whose owners' livelihoods are dependent on sheep, dairy and crop farming (Figure 2).

#### **STATUS OF THE RIVER MOIBEN CATCHMENTS**

Between 1980s and 1990s the catchment was heavily forested by many indigenous tree species including Juniperus procera, Hagenia abbysinica, Yushania abbysinica (bamboo), Dombeya torrida, and glades dominated by wire-grass. However, as a result of increased human population the area under agriculture and the timber shortage resulting from the ban on harvesting of sawlogs in public forests (2002-2012) led to extensive harvesting of indigenous trees on farms thereby threatening the stability of wetlands and catchment areas. According to local sources, many tributaries have disappeared and the remaining ones experience reduced water in terms of volumes and quality.

Table 1: Land uses in the Moiben River Catchment

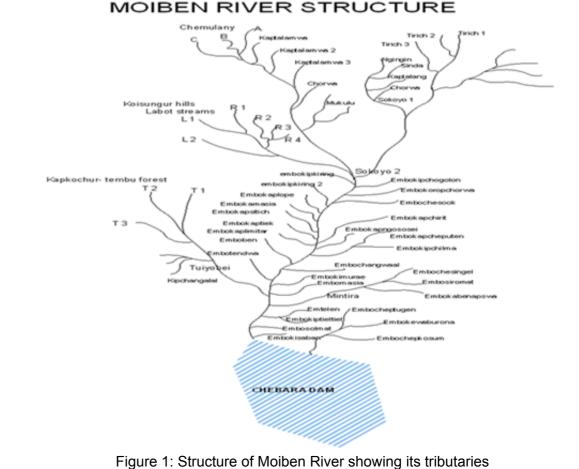
Category	Area (Ha)	Percentage of total
Public forests	5,605	4.6
Intensive agriculture	29,280	24.4
Sparse agricultural	84,225	70.2
Open woodlands	890	0.7
Total catchment	120,000	100

#### Challenges

#### PRIVATE FARMS

- Indiscriminate cutting of trees on private farms due to high opportunity cost of conserving the forests on farms
- Inadequate enforcement of laws on protection of river banks and riverine vegetation on agricultural land
- Increase in land sub-division and farming intensity due to population growth including over-grazing
- High timber prices motivate high harvesting of indigenous trees on farms





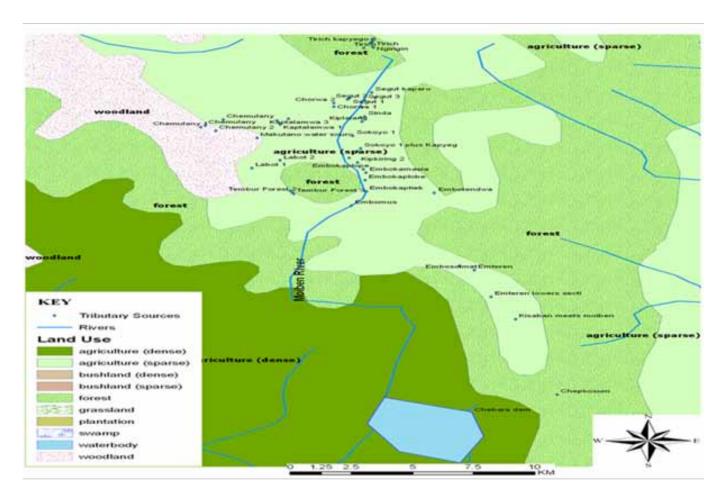


Figure 2: Land uses in Moiben River catchment