

## **Forestry and Biodiversity: Addressing the Challenges of Forest Degradation and enhancing Environment Management in Uganda**

### **Introduction**

As natural features in the landscape, forests and biodiversity provide environmental, social and economic benefits to communities. Their relevance in providing beneficial services is becoming increasingly evident and there is a growing recognition of their importance to human well-being.

Forests represent almost 30% of terrestrial land cover worldwide i.i.3 999 million hectares (Keenan et al., 2015; FAO, 2015). They contain 80% of all terrestrial biomass (Shvidenko et al., 2005) providing extensive benefits from a variety of ecosystem services. Primary (undisturbed natural) forests represent a third of total forests making them significant contributors of ecosystem services (Foley et al. 2007, Gibson et al. 2011).

According to the National Forestry Authority, (2008) forest refers to a type of vegetation dominated by trees most of which, at maturity are more than 5 meters tall with a minimum tree canopy cover of about 30 percent (. Forests include all alpine, tropical high- and medium-altitude forests, woodlands, wetland and riparian forests, plantations and trees, whether on public or private land (MWLE, 2001).

On the other hand, a woodland is an area predominantly covered with woody plants, trees over 4 meters high, shrubs and grasses. Woodlands are part of forests because many forests have extensive woody species coverage.

Forests that are found on public land are referred to as forest reserves. A forest reserve is an area of land that is reserved by law for forestry purposes, including protection of ecologically important areas and production of forest goods and services. Forest reserves also include bushlands and grasslands within the reserved land.

### **Role of Forests in Uganda**

Forests function as major stores of atmospheric carbon contributing to climatic modification and safeguard to climate change effects. Global forest resources with an average storage capacity of

73 tonnes per ha store approximately 292 billion tonnes of carbon (FAO 2015). The storage capacity of primary forests (24% of total) is in the order of 250 tonnes/ha, which is 82% of forest carbon worldwide.

Forests also sequester atmospheric carbon and given the current stock of forests, the global sequestration rate is estimated at 2.4 billion tonnes of carbon per year (Pan et al. 2011). This makes them extremely important natural ecosystem assets in terms of climate modification. The impacts of accelerated atmospheric carbon on global climate patterns has amplified the importance of the carbon sequestration and storage benefits provided by forests.

Forests further play a key role in regulating water quantity, mitigating the effects of high flows in wet periods and low flows in the dry periods (Hodgson and Dixon, 1988; Wiersum, 1984). Increased infiltration regenerates local aquifers and surface streams are maintained providing water resources in drier periods. Through these processes water quality is also improved as it moves through these systems (GEF 2002).

Related to the above, forests contribute to soil and water protection and biodiversity conservation. Soil and water protection services provided by forests include soil stabilization including reduction of soil erosion, maintenance of soil organic matter, increasing water infiltration and storage. Forests also contribute to water supply protection through filtering water pollutants and regulating water yield and flow, enhancing precipitation and moderating floods, reducing surface erosion hence soil nutrient protection, protection against sedimentation and trapping of aerial pollutants.

Uganda's forests are an important and treasured natural asset contributing about 8.7% to the national economy based on conservative estimates (NEMA, 2011). Forests provide multiple benefits and sustainably managed forests give environmental benefits, sustainable economic development and improve the quality of life of people across the country. Forests provide habitats for many native flora and fauna species, renewable products and energy and contribute to the development of a green economy. Forests also provide a wide range of wood and non-wood products, clean water resources, and play a vital role in the mitigation of climate change.

Most people use forest resources as inputs in their production activities or/and as consumption goods which satisfy their various needs. While the importance of the forestry sector to the public

is not in doubt, the degree of its importance in the peoples' livelihood strategies varies among individuals and different communities. Dependence on forest resources, especially Non Wood Forestry Products (NWFPS) like water, fibres, vegetables, wild fruit, mushrooms, medicinal plants, etc. is determined by many socioeconomic factors.

Forests supply well over 90% of Uganda's energy requirements in the form of fuelwood. This is expected to be the major source of energy in Uganda for the foreseeable future. Firewood and charcoal are important sources of energy not only to households (both rural and urban), but also for a majority of institutions (schools, prisons, military barracks, hospitals) and commercial establishments (bakeries, hotels, lime and cement factories, brick making, sugar and oil factories). UBOS, (2008) estimated that the total annual consumption of firewood was about 20 million tones (32.8 million cubic meters) of woody biomass. Although government and civil society organizations are promoting energy efficient technologies, such interventions are still insignificant, and hence have not had much effect on reducing the trend of consumption of wood based energy.

The charcoal industry is a lucrative industry employing an estimated 20,000 people in charcoal production on full time basis, while thousands more are employed along the value chain in transportation, distribution and marketing (Yaron et al., 2003). The increased rates of urbanisation and new markets in the neighbouring countries of South Sudan and Rwanda have led to an increase in demand for charcoal.

### **Governance of Forests in Uganda**

Uganda's forests are governed by an array of policies, plans and institutions. The Uganda forestry sector reforms (1998 – 2003) was aimed at providing more efficient and effective forest administration, management and utilisation of Uganda's forest resources. Those reforms resulted into Forestry Policy, (2001) aimed at ....., the National Forestry Plan, (2002) aimed at....., the National Forestry and Tree Planting Act, (2003) intended to and a new institutional framework for the management of forestry resources in the country. The reforms recognised the multi-stakeholder nature of forest governance and replaced the Forestry Department, which had been the sole institution responsible for managing and regulating forestry resources in the country, with new responsible bodies like the National Forestry Authority (NFA), the Uganda Wildlife Authority

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(UWA), the District Forestry Services (DFS), Private Forest Owners (PFOs), and Community Forest Owners (CFOs). Moreover, the reforms distributed responsibilities between the Central Government (CG), Local Government (LG) agencies, the private sector, Non-Governmental Organisations (NGOs), CBOs and the local communities. It was envisaged that this institutional arrangement would promote multi-stakeholder participation and promote transparency, integrity and professionalism in management of the forestry sector.

However, even in presence of the aforementioned interventions, the forest estate has continued to shrink from 4.9 million hectares in 1990 to currently 2.3 million hectares, NFA, (2015) a loss of over half of the forests in a span of 25 years. The reasons for this decline are mostly attributed to poor forest governance, and particularly problems with forest law enforcement and governance, and associated institutional issues (Nsita, 2010).

### **Forestry and Forest Cover Changes in Uganda**

According to the Ministry of Water and Environment report (2015), forest estate has shrunk from 24% of the total land area in 1990 to 9% in 2015. In terms of acreage, a total of 3.05 million hectares were lost in a span of 25 years. Out of this loss, close to 2.2 million hectares were from the woodlands. Literature also indicates that the forest estate outside PAs reduced from 68% of the total forest land area in 1990 to 61% in 2005 and down to 38% in 2015. This means almost half of the unprotected forests have been cleared within the last 25 years.

It is also reported that in a span of 25 years Uganda has lost forests on 37% of the total land area despite the encouraging tree planting efforts by the both NFA and the private sector between 2005 and 2015. The biggest loss of forest cover is from the privately owned category where 88% of well stocked Tropical High Forests (THFs) have been cleared. 80% of degraded THFs and 79% of woodlands were lost between 1990 and 2015. Although protected forests fared a bit better with only 2% of well stocked THFs lost over the same period and a growth of 20% in previously degraded THFs. However, over this period, 46% of protected woodlands- mostly those under NFA, were lost.

In terms of forest cover loss in form of acreage, Uganda's forest cover reduced from 4.9 million hectares in 1990 to 1.8 million hectares in 2015 translating into a loss of 3.1 million hectares in 25

years or an average annual forest loss of about 122,000 hectares. The biggest average annual forest loss was about 256,000 hectares between 2005 and 2010 during which 1,286,753ha were lost in just 5 years. During the period 2010 to 2015 a total of about 463,000 hectares were lost. This translates into an average annual loss of about 92,600 hectares per year. In terms of acreage, 2.6 million hectares of unprotected forests were lost between 1990 and 2015 while during the same period over 418,000 hectares were also lost from protected areas, (NFA, GIS Database 2016).

### **Major Drivers of Forest Cover Loss in Uganda**

There are many factors that are causing the rapid loss of forest cover and well as degradation of forests. The main causes of deforestation have been mostly the conversion of forest land to other land use types such as agriculture and urbanization, and rampant felling of trees for firewood and charcoal burning. The other important ones are issues relating to governance in the forestry sector, issues associated with illegal and unregulated trade of forest products and the unsecured forest tenure rights. There is a remarkable difference in the degree of deforestation inside protected areas (PAs) as compared to forests on private land.

### **Policy Questions for Discussion**

- **What are the key governance issues in the forestry sector?**
- **How can communities be strengthened to participate in forest recovery programmes in Uganda?**
- **What best forest restoration mechanisms should be adopted to revert the forest destruction trends?**

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