

Some Drivers of Change in Forest Conditions in Africa

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Abstract

Forests in Africa are important to livelihoods of rural communities, as habitats of wildlife, sources of genetic resources and for mitigation to climate change among many other uses. Africa's area under forests is, however, declining at rates faster than those in other continents despite efforts to improve forest management by, for example, devolving ownership and management of some of these forests to local communities. This paper examines some of the root causes of this decline by specifically focusing on the forest-society and agriculture nexus as one of the key drivers of forest depletion on the continent. The paper also examines the influence of urbanisation and related policy shifts in Africa. The paper concludes that the rapid population increase has direct negative impact on forests and this is compounded by increasing poverty in rural areas that has increased reliance on forests as sources of food, medicines, agricultural land, in addition to forests supplying wood and other non-wood forest products for domestic consumption and industrial needs. The paper highlights an apparent link between deforestation and urbanization, and the potentials for African forests to contribute more to social and economic development and to mitigate adverse effects of climate change.

Key words: Africa, deforestation, urbanization, society-forestry nexus, agriculture-forestry nexus, climate change

The Forest Resources

It is estimated that Africa has total forest cover of about 635 million hectares comprising closed forests, open woodlands and other wooded areas (see Figure 1). This is equivalent to 16% of the world total. Most of the forests are found in Western and Central Africa that has about 278 million hectares. Eastern and Southern Africa follows with about 227 million hectares while Northern Africa has about 131 million hectares. In addition, the continent has close to 406 million hectares of other wooded land and about 21 million hectares of land with tree cover. However, of the ten countries with the highest net loss of forest cover in the world in 2000-2005, six are in Africa (Sudan, Zambia, Tanzania, Democratic Republic of Congo, Nigeria, and Zimbabwe) and they make up about 30% of this loss (FAO, 2006).

The forests in Sub-Saharan African (SSA) are renowned for their habitats for wildlife, beekeeping, unique natural ecosystems and genetic resources. They are catchment to many rivers that are cornerstones of economic development in the region. Further, the natural forest resources in SSA

are increasingly receiving global attention because of their share in biological diversity, potential for industrial timber exports, capacity for mitigating adverse effects of global climate, livelihood 'safety nets', and as levers for rural development. Like in other regions, countries in the SSA region face great challenges in addressing some new and emerging issues and opportunities for sustainable forest management and in implementing comprehensive national forest plans. Some of the new issues arise from recent and on-going relevant international negotiations, conventions, protocols as well as those from the sub-regional economic groupings.

The forests and trees supply a variety of products and services for rural and urban communities. They form an integral part of the livelihood strategies of local communities who live within and/or around them. As a result of this, human impacts in the forests have increased mainly due to growing demand for agricultural land as well as increased demand for forest products and services, both of which are partly a consequence of rising human population. The pressure has escalated due to inappropriate land use practices such as shifting cultivation that

has been practiced on progressively short cycles, slash and burn practice of farm clearing, frequent and uncontrolled bush fires, lack of soil conservation measures, uncontrolled livestock grazing, and farming on marginal lands. Other major factors include conversion of forestlands to non-forest uses such as mining, hydropower, urban centres and agricultural plantations.

In an effort to curb and manage these trends, there have been considerable efforts to empower rural communities and to devolve ownership and management of natural resources to them. It is believed that such devolvement will lead to better management and utilization of forests and tree resources. However, this has not been matched with parallel efforts in terms of enhancing human capacities to take on these additional responsibilities and supplying them with additional physical, financial and other resources to manage the forests. This is reflective of the nature of such efforts in Africa where structural changes have been mainly confined at the macro-organisational level and there is very little change and resources at the meso- and micro-levels.

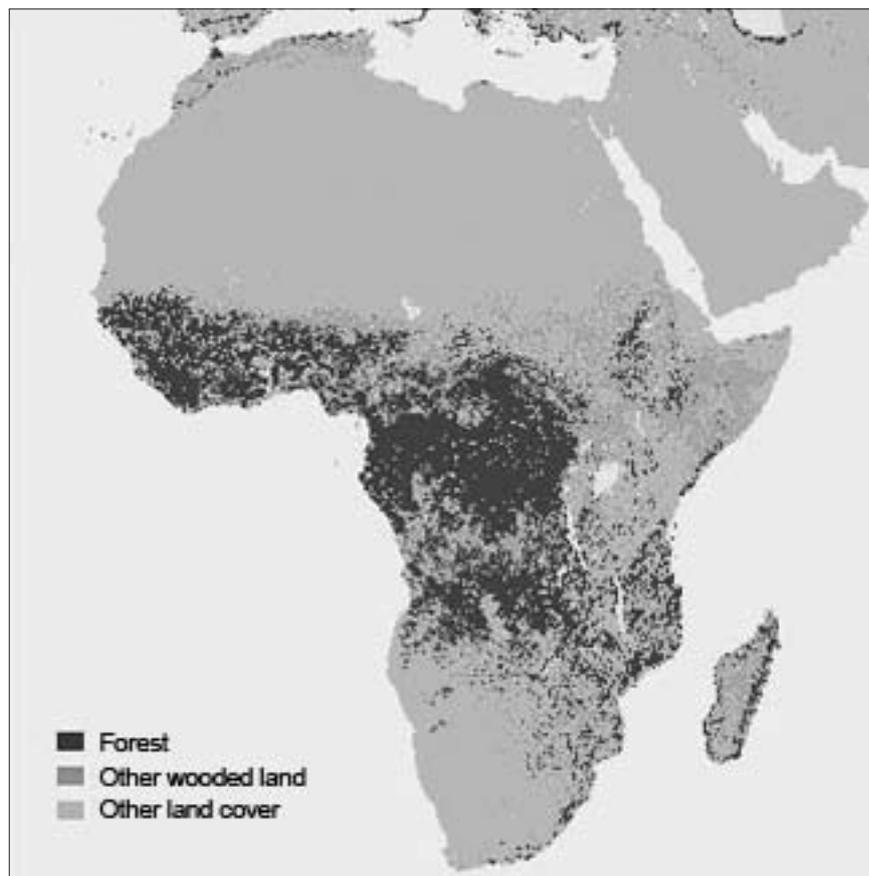
These shortcomings notwithstanding, forestry is presently practised in an environment that is very different from the one prevailing some twenty years ago. The focus in management is less on trees and

forests, but increasingly on the livelihood values of these resources to people and their environment. The recognition, acceptance, and prominence of its linkages with other sectors important in welfare of the people and their environment have increased significantly in the recent years. Thus the way Africa manages its natural resources, primarily land, water and forests, has potential for significant influence on agricultural development, the welfare of the rural poor, and ultimately the condition of the natural resources.

The gross productivity of the tropical rain forests (closed forests) is high. The population density in these forests is low. These forests are mainly exploited, through concessions, by the private sector. The problems in these forests can be contained if there is strong political will to solve them. The dry forests are the dominant vegetation in 63% of the African countries. These forests are more open with much higher population densities. The problems in these forests are more complex and are very much related to the support of livelihoods of the many people who depend on them.

The Society-Forestry Nexus

Throughout the history of human civilisation, people have used forests and trees for a variety of



Source: FAO, 2009. *State of the World's Forests 2009*. FAO, Rome.

Figure 1. Forest cover map for Africa

purposes—economic, social, environmental, cultural and spiritual.

This would imply that what is appropriate at a given point of time may cease to be so as circumstances change. As in the case of other regions, the society—forest relationship in Africa also remains highly dynamic and there is a whole range of interventions resulting in multifarious outcomes with differing consequences on society and forests. The most notable effects on forests and trees include:

- continued loss of forests, which according to available information is highest in Africa as compared with other regions of the world, and its effect on availability of forest products;
- degradation of forests and forest land, thus undermining their economic and ecological functions, and resulting into desertification and decline in watershed values, which in turn affect other economic activities like agriculture; and
- loss of biodiversity, whose many consequences are yet not fully understood.

It is important to understand the broad context in which these effects are taking place, and especially why they are so rapid in Africa as compared to other continents. Understanding the changing role of forests and forestry requires a broader analysis of the state of society as defined by key features like production, consumption and the state technology employed.

Broadly, societies could be grouped into four broad categories (Figure 2) namely: forest dependent communities, agrarian societies, industrial societies and post-industrial societies. As indicated in Figure 2, the principle uses of forests and the production and consumption characteristics of these societies differ considerably. Every country or region has differing proportions of people in each category. In general forest-dependent and agrarian societies characterise most SSA countries, while the proportion of industrial and post-industrial segment is low. This is in sharp contrast to most of the developed countries, where post-industrial and industrial societies dominate. Resource use priorities, therefore, differ considerably. Often, some of the conflicts in resource use stem

from application of concepts and approaches to resource use that are not seen as important from the perception of the dominant groups.

Due to the predominance of the agrarian society in most SSA countries, the linkage between agriculture and forestry is rather strong, and what happens to forests is largely determined by what happens to agriculture. And as industrialisation progresses, forests have to cater to another array of needs; for example, to supply wood and non-wood products. On the other hand, the needs of a post-industrial society are somewhat different, with environmental and cultural aspects becoming more important. Depending on the proportion of societies in the different categories, the pressures and conflicts on the use of forests differ.

A change in the proportion of different segments in society and changes in their perception of the use of forests will be most fundamental in determining the future of forests. This is exemplified by the case of the Ogiek community in the Mau forests of Kenya and how the Mau forest changed as a result of the introduction of the “shamba system” which increased the agrarian communities in the area relative to the traditional forest dependent Ogiek. The “shamba system” gives individuals temporary access to forest land for crop production, during forest plantation establishment, through their services in clearing natural forests for tree planting and implementing silvicultural activities like weeding and pruning.

There are several other factors that lead to societal transformation and these may be internal to the society; for example, population growth and technological advancements, or external, like access to markets, external investments and new technologies, as well as influence of macroeconomic policies and politics.

It would appear that many African countries have all these categories, with the industrial category being more pronounced in urban areas. The post-industrial aspects, like those related to international public goods and services, are incorporated in forestry policies and programmes as a result of Africa being linked to the global community through international agreements and

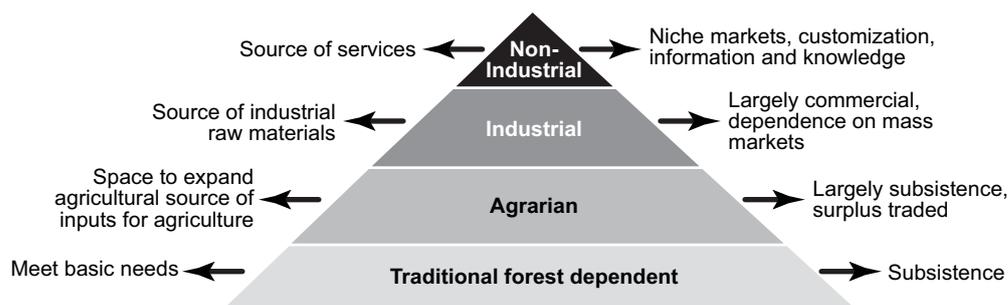


Figure 2. The society-forestry nexus

Box 1. Changes in society and consequent changes in forest utilization

“The Mau forest is the largest moist indigenous forest in East Africa covering 900 square km. The forest was first gazetted in 1932. Prior to this period, the forest was intact under the management of the Ogiek community, which by then numbered about 20000 people. The Ogiek are a hunter-gatherer community of forest dwellers who depended on the forest for subsistence and shelter. Their main livelihood activities were collection of wild fruit, nuts, honey and hunting. The community divided the forest among their clans using natural features like valleys, rivers and hills as boundaries. Each clan then allocated a block to families.

In 1943 however, the government in Kenya introduced the shamba system to facilitate the planting of plantations and growing food. As result of this opening up of the Mau forest, outside people other than the Ogiek were allowed into the forest to cultivate. The Ogiek were forced to settle by the government and to adopt farming. As result of this opening up and expansion of agrarian society into the Mau forest, other activities associated with agrarian societies such as the burning of charcoal for sale as fuel wood to generate surplus incomes, timber harvesting and livestock grazing have led to more of the forest being converted to agricultural farmland”.

(Ngece, 2003)

other arrangements related to forestry. As a result, African countries, with very few resources, have to cater for the demands implicit in all these categories. The developed countries, with a lot of resources, are mainly concerned with demands from the industrial and post-industrial categories.

The Agriculture-Forestry Nexus

The other important relation is the agriculture-forestry nexus. The agricultural sector is the major

contributor to the economy of many SSA countries, averaging 21%, and ranging from 10% to 70% of the GDP (Mendelssohn *et al.*, 2000). It is also the mainstay of most of the rural people. Forests in Africa support agriculture on the sub-continent and the agricultural belt lies within them (Figure 3). They serve as a reservoir of land onto which agriculture expands. Most of the agriculture in Africa is rain-fed and, therefore, very vulnerable to climate variability that is characterized by frequent droughts and occasional floods, that at times destroy crops and livestock. At such times the rural communities increase their reliance on the forests and woodlands for wild foods including fruits, fish and bush meat, edible insects, bees wax and honey, as well as traditional medicines. Further, the dry forests support local industries that produce wood and non-wood products.

Forest land in Sub-Sahara Africa continues to be converted to agricultural uses at alarming speed. It is estimated that, between 1980 and 1990, some 25% of forest cover was lost, through conversion to agriculture (FAO, 2003). However, in the last fifteen years the rate of forest cover loss in Africa has been reported to have slowed down (FAO, 2006)

In addition the dry forests are habitats to a great wealth of wildlife, and have many important game reserves and animal parks. They are, therefore, under immense human and animal pressure for various needs.

Urbanisation and Forestry

Although Africa is still largely rural, with more than 60% of the population living in rural areas, the pace of urbanisation is high, and keeps rising. In 2005, Africa had an urbanization level of 38 per cent (UNFPA, 2007). As population pressure grows in the rural areas and poverty levels rise, rural-urban population migration increases since urban areas provide more prospects for both employment and

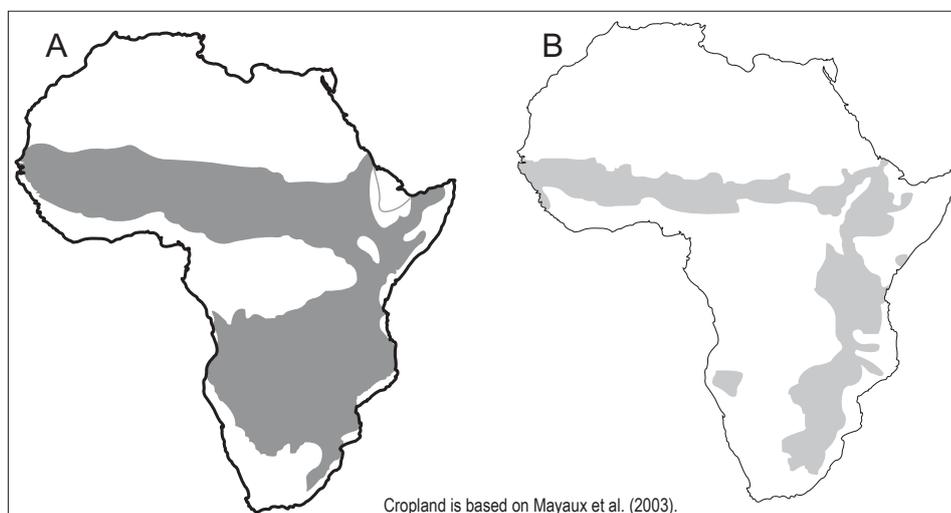


Figure 3. Distribution of dry forests (A) and cropland (B) in Sub-Saharan Africa.

better living. Between 1990 and 2000, the urban population in Africa grew at an annual rate of 4.3%; much higher than the overall population growth (Njuki *et al.*, 2004). The trend is expected to continue with approximately 742 million people living in urban areas by the year 2030 compared to 294 million in the year 2000 (UNFPA, 2007). The percentage of people living in urban areas in 1970 was 20–25%. It grew to 35–40% in 2000. The level of urbanization in SSA varies from region to region: 23% in Eastern Africa, 36% in Central Africa, 39% in Southern Africa and 40% in West Africa (Chidumayo, 2004).

While the impact of urbanization is varied, it has important implications on forests, including:

- Increased demand for wood, especially woodfuel, that could result into over-exploitation of forests and woodlands, initially close to urban centres and progressively those that are further from such centres;
- Increased use of charcoal, which requires higher wood input and thus accelerating forest clearance;
- Increased environmental pollution and forest/tree clearance in urban areas and, thus, the need to improve the urban environment (urban forestry).

One of the characteristic features of urbanization in Africa and in other developing regions is the growth of mega-cities that often strain the infrastructure severely. Chidumayo (2004) reports that there are 43 cities in Africa with populations of over one million people and these are projected to increase to 70 by 2015. A key concern in many countries is the provision of utilities, especially water and electricity. Many African cities are highly dependent on forested watersheds for drinking water supplies as also for power generation. Protecting the watershed values of forests for the urban centres will remain an important concern in many countries.

Unlike Europe, urbanisation in Africa is occurring at rates that are almost three times those experienced by European cities at the height of the industrial revolution (*ibid*). But in SSA, urbanization appears to be growing with low industrialization that is accompanied with high unemployment, increased housing construction using traditional material and increased dependence on traditional energy sources (75% of energy consumed). There is widespread urban poverty that continues to grow. This has made a number of urban households in SSA to grow crops or raise livestock in urban environments to supplement their livelihoods.

Many urban dwellers use charcoal and firewood. For example, for every 1% increase in urbanisation in Tanzania there is a reported 14% increase in charcoal consumption (Hosier *et al.*, 1993). Charcoal is becoming profitable business even when transported over long distances. For example, the city of Lusaka

in Zambia obtains charcoal from some 300–400 km north of the city (Chidumayo, 2004). Similar distances have been observed for cities like Maputo (Mozambique), Dar es Salaam (Tanzania), Khartoum (Sudan) and Dakar (Senegal). In some cases charcoal contributes 60–80% of rural household income and is, therefore, key to poverty reduction (*ibid*).

Urbanisation is creating an exponential increase in the demand and markets for forest products and services. It should not be viewed as a threat to forests but an opportunity for the forestry sector to professionally supply the growing markets with the forest products and services (like water) and on a sustainable basis. For example, woodlands in Tanzania appear to recover relatively well following harvesting for charcoal (Hoseier *et al.*, 1993) with the recovery periods ranging from 8 to 23 years (Malimbwi *et al.*, 2001), while in Zambia it ranges from 20 to 30 years (Chidumayo *et al.*, 2001). In Mali, Niger and Burkina Faso, charcoal makers return to harvest the same area after 9 to 12 years (Nygård *et al.*, 2004; Ribot, 1999). Such information could facilitate planning sustainable supplies of charcoal to markets.

Urbanization has serious implications for the dry forests in terms of space for habitation and supporting infrastructure, supply of forest products and services to urban areas, as well as on the long-term well-being of local communities that live close to these forests. From a policy perspective, there is a need to integrate these forest issues in urban development policies and planning, in order to secure sustainable supplies of forest products and services, improve the livelihoods of the people who depend on them, and protect the forests and the environment.

Climate Change and African Forestry

According to the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report by Working Group II (2007), Africa is one of the most vulnerable continents to climate variability and change. The report predicts that by 2020, between 75 and 250 million people are likely to experience increased water stress that would largely be attributed to climate variability and change. Further, agricultural production and overall access to food in many African countries could be severely compromised by climate variability and change, largely because cropland area, cropping seasons and crop productivity, especially in already marginal lands, in semi-arid and arid areas, are expected to decrease.

Africa has 14% of the world population and has relatively few consumers of fossil fuels. Further, Africa's emission of climate-change inducing carbon dioxide is low, estimated at 3.5% of world's total. The vast African forests are a significant sink for carbon dioxide emissions. They play an important

role in alleviating and balancing emissions from industrialised countries.

However, the African forestry sector is a very late comer to the climate change debate. There is no African response to climate change from the forestry sector. Much as the potential to sequester carbon exists in the African forests and trees, the sector has yet to seriously look at other potential implications of climate variability and change on its resources. It is in this context that Chidumayo (2004) raises the following issues, specific to the dry forests but could as well be extended to other forest conditions:

- (a) That the responses of dry forests and trees to climate change are complex and as yet not fully studied, documented, and understood. The little that is known suggests that the sensitivity of dry forests tree species is both species-specific and possibly varies among different growth phases: seed, seedling, sapling and adult phases.
- (b) That different phenological processes in dry forest trees are differentially affected by climate variables and that the threshold at which these processes shift beyond normal variance may be different, and therefore require assessment to aid in the formulation of realistic adaptation and mitigation strategies.
- (c) That little is known about the effects of short-term and medium-term climate variations on dry forests growth and productivity in southern Africa. However, far less is known about the effects of interactions between climate variations and anthropogenic fire in dry forests of Sub-Saharan Africa. The effects of such interactions on dry forest behaviour can usefully be studied through long-term (>5 years) studies that involve monitoring forest and tree growth under variable fire regimes and weather conditions.
- (d) That dry forest management needs to take into account the potential effects of climate variability and climate change on forest growth and productivity because it is becoming increasingly obvious that returns on investment in forest management, including plantation forestry, can be drastically affected by both short-term and long-term climate variations and change.

While addressing these and other relevant issues, the African forestry sector could also take advantage of the expanding carbon trade and other incentives related to reduction of carbon dioxide emissions.

Development policies and forestry

While it is recognized that many development policies and other factors, outside the forest sector (donor fatigue, politics, conflicts and wars, international agreements and conventions, etc), will influence developments in forestry, this section

focuses on economic reforms and globalization, democratization and good governance, and the informal forestry sub-sector, with full cognizance that the others are also important.

Influence of economic reforms and globalisation

Many Sub-Saharan African countries are implementing economic reforms that seek, among other things, to promote market approaches to resource allocation and increased involvement of private sector in production, distribution and services.

In the African forestry sector, apart from industrial timber and pulp/paper products, many of the forest products in many countries have no established big markets, and where markets exist, they are small and products traded are largely of low value and are mainly traded among poor people in many rural and sub-urban areas. The markets being small imply that not many people are involved. The result is that the market exchanges are of small financial value, and accrue to a few households.

In this regard the economic reforms should address at least three key issues or challenges. Firstly, to provide conditions for the small business sector to rise above small-scale petty production and engage in larger-scale trade and manufacturing that requires attraction of investment at a scale beyond the capacity of many African countries. Secondly, the reforms should facilitate the identification of appropriate mechanisms for benefit sharing between industrial concerns (including logging companies) and rural communities so that the communities close to industrial forests can benefit from such exploitation, thereby raising their share of benefits from the forests. A third challenge for the reforms is to create conditions and mechanisms to add value to timber and non-wood forest products produced by local communities, small and medium scale forest enterprises as well as linking both to many and larger markets.

Globalisation and economic reforms favour private sector initiatives. However, the modern private sector in forestry is very small and is hardly growing in many African countries, especially those in Sub-Sahara, with the exception of a few in countries like South Africa. The two employ a market approach to resource allocation. The entrenchment of the private sector through globalisation and economic reforms, if not tempered with other measures, would most likely concentrate resources such as capital, land, access to information and technology in the hands of a few, who are already largely confined to industrial forestry. It is, therefore, necessary to evaluate how compliance to economic reforms and globalisation can be maintained while at the same time promoting the value of forest resources, their

sustainable management, as well as their capacity to improve the welfare of rural communities.

On the other hand, globalisation has also attracted new capital flows from outside Africa. The market growth in telecommunications networks coupled with external investments by multinational corporations are good examples. Such an influx of capital and technology provides a stepping-stone to knowledge and service industries that the forestry sector should take advantage of.

Influence of democratisation and good governance

Many African countries have embraced democratisation and good governance as a style of governance, not only at state level but at sectoral levels as well. For example, there is increased participation of local communities and other stakeholders in decision making as well as in the governance of natural forest resources. Kowero *et al.* (2001), notes "While this is a potentially favourable development in that governments are devolving both ownership and management functions, caution should be exercised in order that governments do not default on responsibilities they have potential to execute better than the private sector and local communities. The danger comes from dogmatic application of decentralisation in circumstances where local level government or community institutions still lack capacity to manage resources and to add value to them. A common scenario is that governments delegate or devolve tasks without accompanying the process with resources to execute those tasks or without creating the necessary wealth-generating base at local level. This is especially true now that economic reforms require that governments cut down on size and expenditure. While the private sector might raise resources in the market place to execute these tasks, local communities may not have that capacity.

Democratisation processes are a common trend in many African countries; they represent opportunities for enhancing good governance, albeit with high levels of uncertainty with respect to the desired outcome. Democratisation and good governance initiatives are, however, very indirect means by which to actually promote the welfare of rural communities."

The dominance of the informal sector in forestry

Most forestry business in many African countries is transacted in the informal sector. This is a sector that operates at the interface of the monetised and traditional economies. The types of activities that characterise the sector include subsistence collection

of forest products, processing and trade in firewood, charcoal, forest foods and handicrafts. There is increasing commercialisation of forest products, both within countries and across countries. It is assumed that this may contribute more to rural livelihoods than the formal forestry sector enterprises in some countries.

The informal sector has no institutional visibility, lacks supportive or enabling policies, plans, development strategies and a champion for its causes. Further, the sector is very amorphous in terms of size, entry and exit, and has players that are largely unknown to national governments and therefore escaping national statistics (Kowero *et al.*, 2001).

The economic reforms implemented by many African governments should ideally pay greater attention to the informal forestry sector, especially on how the sector functions and how to foster its better performance in the future.

Concluding remarks

Africa is facing a number of challenges in the forestry sector, but some of the more serious ones include:

- The rapid deforestation of natural forests and slow growth in plantation forests. These could combine to create serious industrial wood shortages. Already some countries that were net exporters of timber products are now net importers of the same;
- Many policies hold potential for better forest management as well as threats to these resources;
- The forestry sector is undergoing rapid changes in line with national economic reforms with the peculiarities of the sector and its demands not adequately addressed;
- Constrained recruitment of forestry staff due to economic reforms and loss of the same through natural attrition, HIV/AIDS and other serious diseases like malaria; and
- Lack of adequate capacity (human, financial and otherwise) to bear on these challenges.

It is noteworthy that the African forest landscape and policy scene is changing. The way forests are viewed and managed is also changing. The challenge is how to manage these changes. These challenges are not insurmountable.

On the other hand, there are many opportunities to the sector. The key ones include:

- The many opportunities, largely in form of markets, resulting from rapid urbanisation, requirements for carbon sequestration, and satisfying needs of a rapidly growing African population;
- There are also exponentially growing markets in

Asia for products from otherwise under-utilised or even unused tree species from African forests. These markets had better not be seen as threats to African forests, but rather as opportunities that the forest sector should position itself to take advantage of and in a very professional and ethical manner;

- Many trees are coming up on farms. Many household needs of forest/tree nature are met this way;
- Many African economies are growing; democracy and good governance are becoming a way of life in many countries;
- Increased global recognition and support to sustained supply of international public goods and services from forests; and
- The African forestry stakeholders are gradually coming together and speaking with one voice on many issues.

All these combine to create a favourable environment for forestry business. There is, therefore, a potentially favourable future for African forestry.

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