

TRANSFORMING TANZANIA'S CHARCOAL SECTOR PROJECT

**“TOWARDS AN EFFECTIVE NATIONAL FOREST POLICY
DEVELOPMENT: PROMOTING VALUES OF NATURAL
FORESTS AND DIVERSIFIED SUSTAINABLE RURAL
LIVELIHOODS IN TANZANIA”.**

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BACKGROUND

Forest resources

- **NAFORMA established the forested area to be 48.2 million hectares, (equivalent to 54.6% of the land area)**
- **Tanzania is one of the countries in the world with a huge forest resource, wood estimated at about 3.3 billion m³ of wood volume out of which 97% is from natural forests and the rest is from planted trees.**

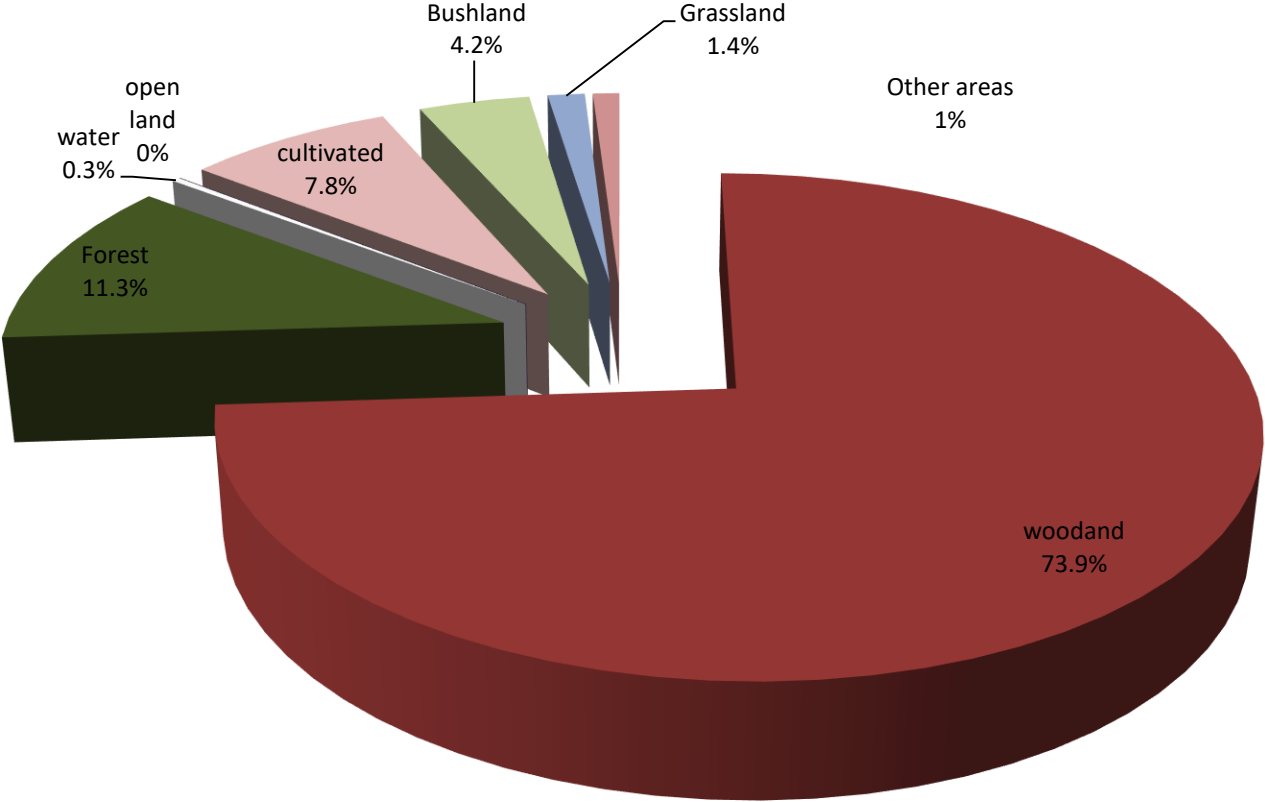


- **About 27 million hectares of forests falls under conservation (i.e. wildlife reserves and water catchment protection forests) that are legally inaccessible for wood extraction.**
- **It is therefore estimated that production forests where harvesting can be conducted legally cover an area of approximately only 21 million hectares,**
- **Most of the forest area (about 90%) is occupied by woodland. Also most of the growing stock is in woodlands**
- **However, woodlands are of low productivity, having mean annual increments ranging from 0.58 m³ per ha for open woodlands to 2 m³ per ha for closed woodlands.**

Area and distribution of growing stock by main vegetation types

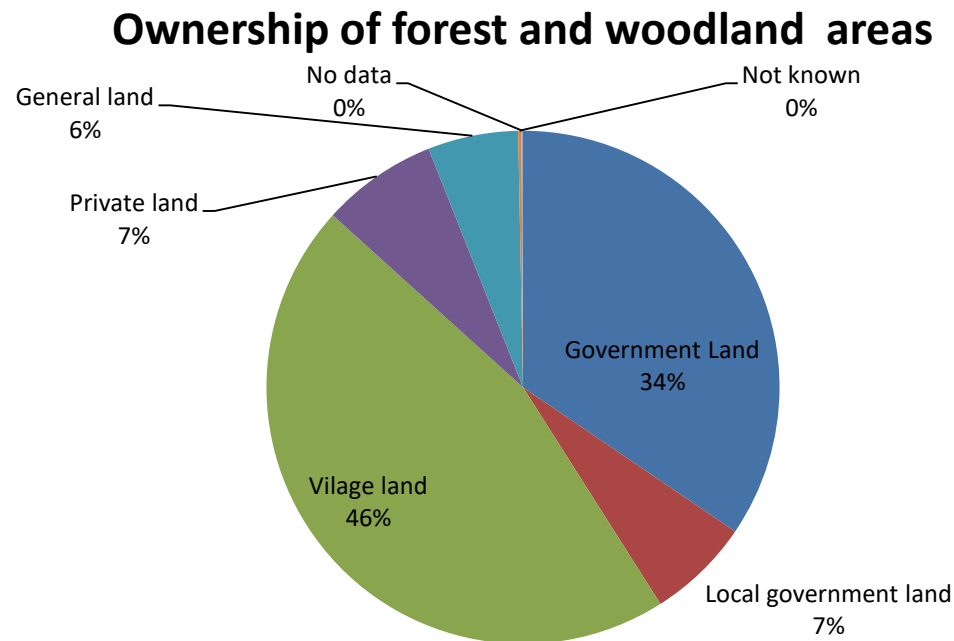
Primary Vegetation type	Area ha	Volume 1000 m3	Volume m3/ha	No. of trees/ha	Basal Area m2/ha
Forest	3,364,457	374,962	111.8	2031	14.8
Woodland	44,726,246	2,456,252	55.1	1053	8.3
Bushland	6,445,471	140,324	21.8	2009	5.0
Grassland	8,242,245	46,838	5.7	227	1.2
Cultivated land	22,248,092	260,661	11.8	354	2.0
Open land	252,516	1,439	5.7	608	1.4
Water	1,162,552	10,647	9.2	117	1.5
Other areas	1,892,720	31,669	16.8	298	2.8
Total/mean	88,334,300	3,322,791	37.7	877	5.8

Growing stock by main vegetation types



- **Forest ownership**

Almost half of total forested lands, are on village land, with limited or no properly defined management regime; and this is where deforestation and degradation is the most severe (URT, 2012a).



Biodiversity

- **The forests have high biodiversity ranking. Tanzania is among top 12 countries with high biodiversity. The country hosts six out of the 25 globally known biodiversity hotspots (Rogers 1994).**
- **These are: the Eastern Arc Mountain Forests, the Coastal forests, the Great Lake for Cichlid fishes, the Marine coral reef ecosystems; the ecosystem of alkaline Rift valley Lakes; and the grassland savanna for large mammals.**
- **The country has extensive diversity of species with at least 14,500 known and confirmed species and is among 15 countries globally with the highest number of endemic as well as threatened species.**
- **Tanzania accounts for more than one-third of total plant species in Africa.**
- **Declining trends and loss of biodiversity is an issue of profound concern and utmost priority (URT, 2014).**

- **Tourism which is an important revenue source for the country depends heavily on the biodiversity resources available in the globally recognized hot spots.**
- **These are protected in 16 National Parks, 3 Biosphere Reserves(East Usambara, Lake Manyara, and the Ngorongoro – Serengeti), 4 World Heritage Sites(Selous Game Reserve, Ngorongoro Conservation Area, Serengeti National Park, Kilimanjaro National Park), 28 Game Reserves, 42 Game Controlled Areas, 38 Wildlife Management Areas, 109 Forest Reserves, 4 Marine Parks, 17 Marine reserves and 4 Ramsar Sites**
- **Every 22nd of May is [International Day for Biological Diversity](#) whose motto in 2017 was **Biodiversity and Sustainable Tourism****

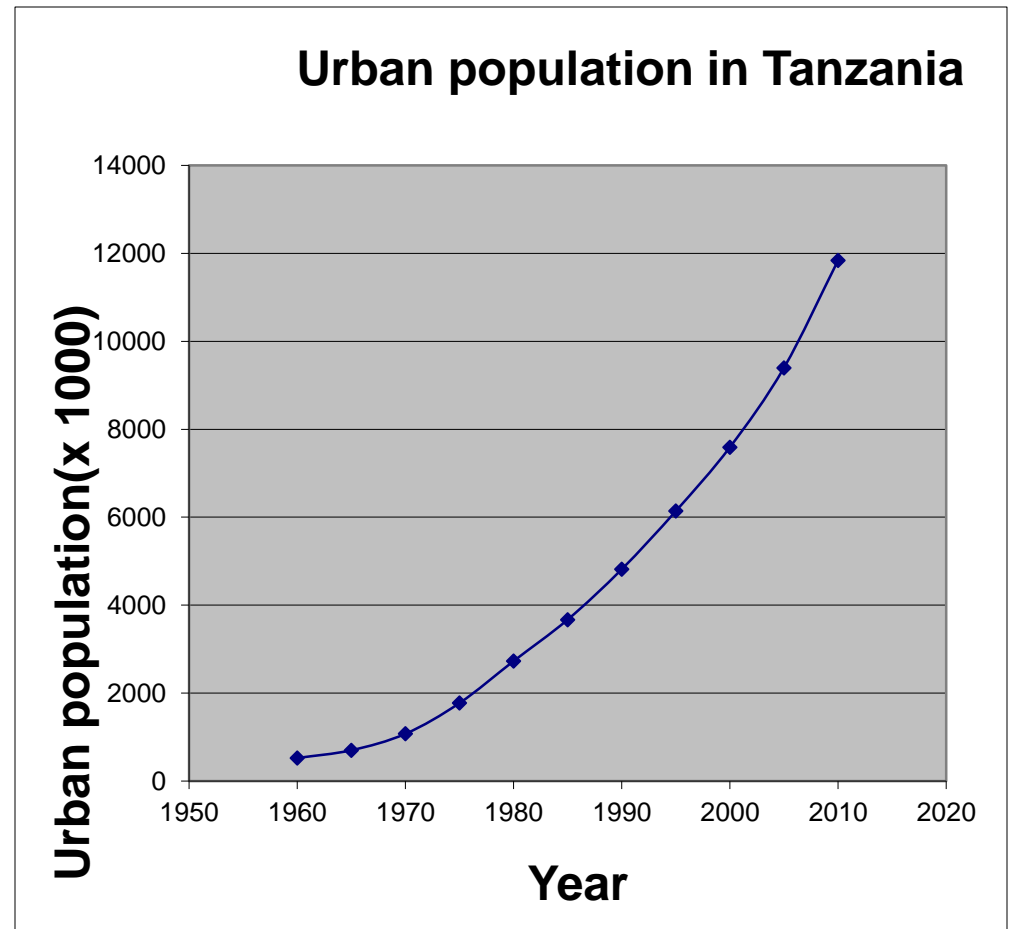
- **Tanzania is among 15 countries globally registering the highest number of threatened species, with at least 900 threatened species under the IUCN Red List of 2013 including tree species such as *Pterocarpus angolensis* (Mninga), *Dalbergia melanoxylon* (Mpingo)**
- **It is estimated that Tanzania has lost at least one-third of its important ecosystems and biodiversity hosted within, over the past few decades due to agriculture expansion and urban growth**
- **Tanzania is a Party to the Convention on Biological Diversity (CBD) of 1992 having ratified it in 1996, expected to adhere to its international obligation to protect and conserve our biodiversity as a global resource.**

National Biodiversity Strategy (2015)

- **TARGET 7: By 2020, biodiversity and agriculture related policies, laws and strategies promote sustainable management of forest, agricultural and aquaculture ecosystems are reviewed and implemented**
- **TARGET 14: By 2020, ecosystems that provide essential services, related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded,.....**
- **TARGET 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks enhanced, through conservation and restoration, thereby contributing to climate change mitigation and adaptation and to combating desertification**

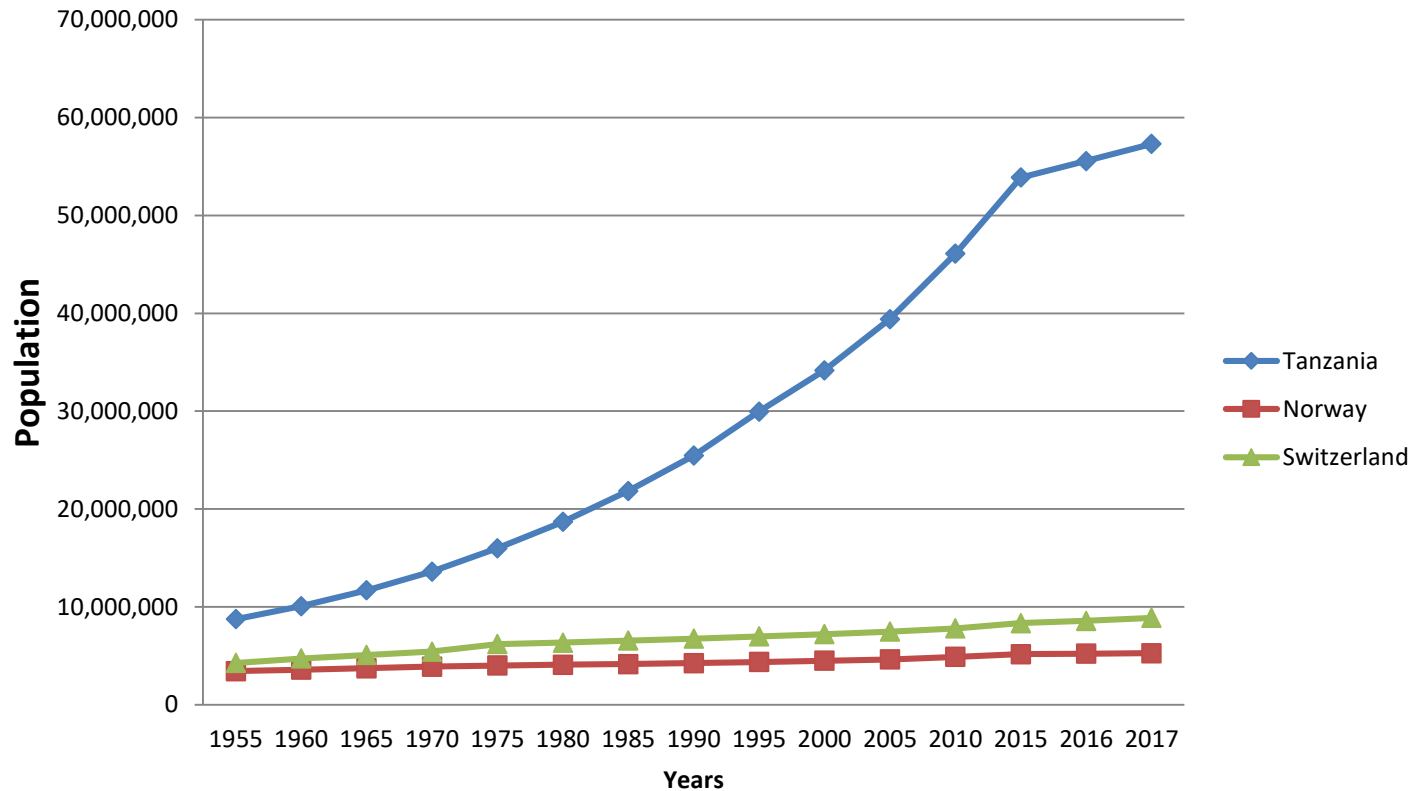
Population trends

- The demand for forest products and services is increasing with increasing population
- For example charcoal is the main source of energy in urban areas. The urban population and therefore demand for charcoal is increasing annually

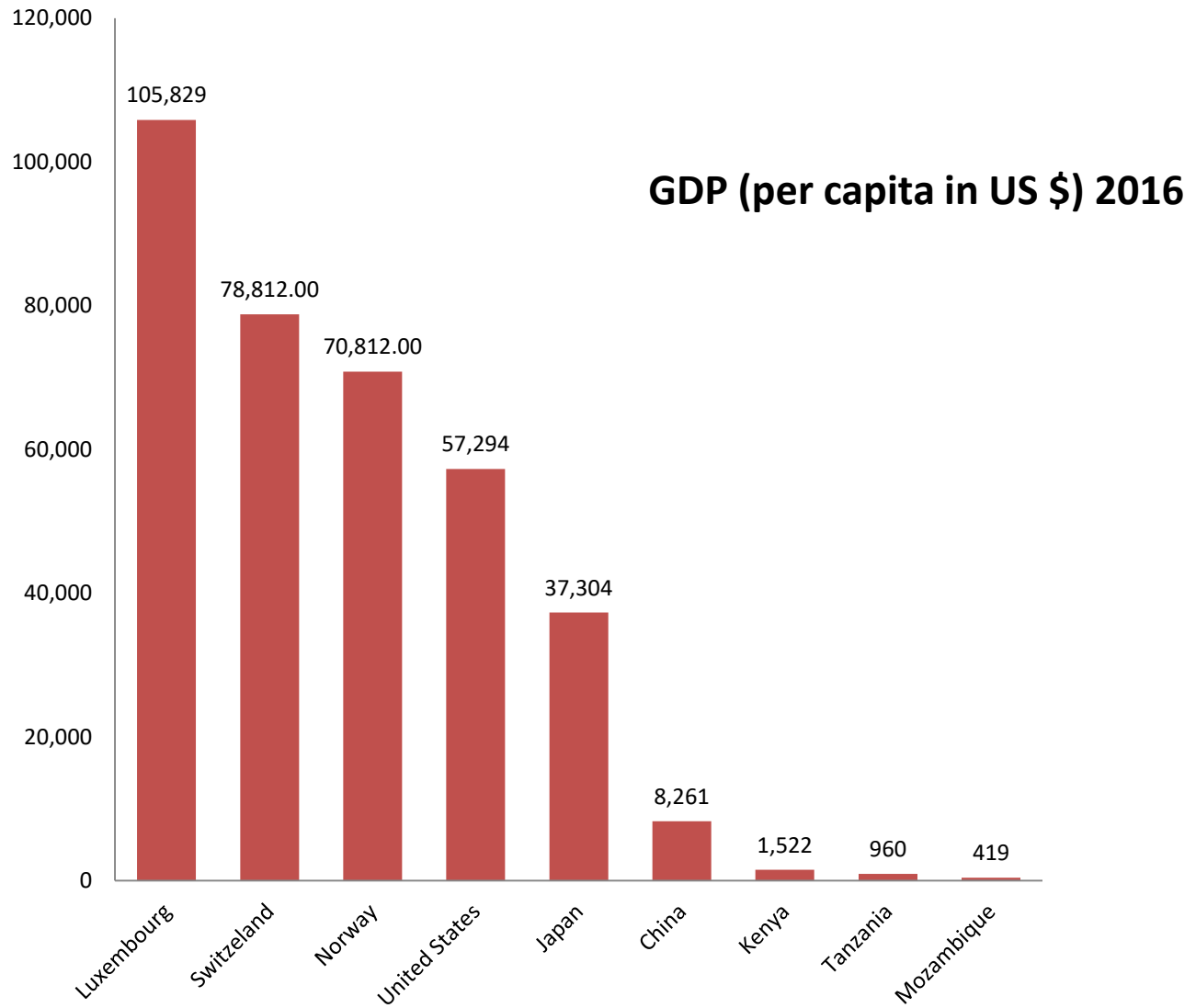


Total population trend

Comparing populations of Tanzania, Norway and Switzerland over years



Economic status



PRODUCTS AND SERVICES

Timber

- In natural forests, various tree species are used for the purpose of producing timber, planks, poles for sales or building of local structures.
- Raw material for carpentry and furniture industry
- Potential to replace expensive imported furniture timber as we move towards industrialization



- Outdated technology (pit sawing) used in natural forests
- The recovery rate for pit sawing is very low (25% to 45%)
- Small trees are usually cut at each pit sawing site to support the operation e.g. to make a platforms.



Makonde carvings

- Traditionally created wood carvings in Southern Tanzania and Mozambique
- Mainly produced from the African blackwood (mpingo) trees, found all over East Africa and Mozambique.
- Mpingo can be carved to an incredible level of details, polished, eventually producing a wonderful shining sculpture.
- Linked to tourism
- Mpingo is a threatened species
- Policy?



Non-wood forest products

- **Natural habitats such as forests have long been providing local people with the means for survival.**
- **Including non-wood forest products that are harvested or collected, consumed and and in some cases traded include thatch, fruits, mushrooms, meat, nuts, vegetables, fodder, construction materials, medicinal plants and wild genes for domestic plants and animals.**
- **Considering that about 74% of Tanzanians populations are found in rural areas it is obvious that dependence on natural forests resources is immense.**
- **Research on climate change adaptation indicated the importance of forest products as a safety net for rural communities during times of climate change-related stress**
- **Trade in non-timber forest products (NTFPs) and timber is to a large extent informal and therefore it is difficult to estimate its real value.**
- **The contribution of the forest sector to the national economy has been identified as an information gap for the National REDD+ Strategy (URT, 2012a).**

Forest ecosystem services

- **Forests provide important ecological services such as maintaining hydrological cycle, springs, streams, contributing to the processes of soil formation and maturation, storing and cycling essential nutrients, absorbing and breaking down pollutants and providing sites for tourism, recreation and research. It also provides for aesthetic and cultural values – worshipping, burial sites, shelters for youths initiation, etc.**
- **The role of forests for biodiversity protection, carbon sequestration (carbon sinks), water catchment areas that provides water for irrigation , domestic use, and for electricity production must be recognized**
- **However, estimated contribution to the national economy is low (about 4.6% of the nation’s GDP NBS, 2014). Its contribution in other sectors through earnings from water, electricity, and other services is yet to be captured**
- **Forest ecosystem services currently not fully reflected in GDP**
- **Natural forests must be managed for sustained multiple products and services.**

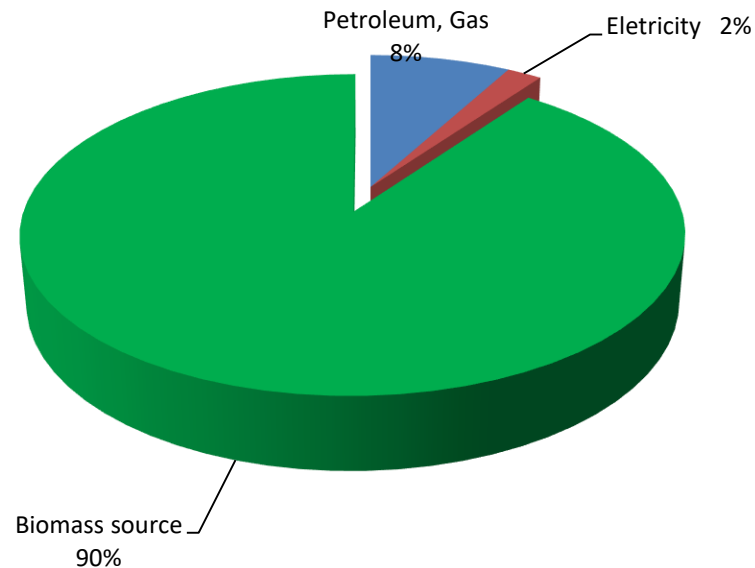
Woodfuel

Energy and development

- **Energy is needed to fuel economic growth and development.**
- **Many sources (wind, hydro, nuclear, fossil, etc) but need to be developed before use (therefore need investments (financial, technological, time, etc))**
- **Poverty has a bearing to the type(s) and quantities of energy consumed.**
- **Developed economies consume more energy per capita and have capacity to develop new sources or secure imports.**
- **Poor countries have limited capacity.**

Energy Situation In Tanzania

- In Tanzania like most developing countries, wood fuel (fuel wood & charcoal) dominates as a source of energy
- Wood fuel accounted for about 90% of the total national energy consumption with 2% from electricity and 8% from petroleum products.



Charcoal

- **Over 2.3 million tonnes of charcoal were consumed annually predicted to double by 2030 (URT, 2015b).**
- **Charcoal is taken for granted because there are so many producers, can be purchased everywhere in urban areas, it is always there (unlike kerosene, LPG and electricity), because everyone has the appliances to use it**
- **Used by majority (households, policy makers, from local restaurants to expatriate development partners)**
- **Is a massive industry, providing livelihoods for thousands of people eg charcoal producers, transporters, traders along the supply chain (generates at least US\$ 1 billion per annum)**
- **Over 300,000 rural families (over 1 million rural people) depend on charcoal production.**

Charcoal production

- Rural earnings from charcoal are greater than those from coffee, tea, cotton, sugar, cashews, etc
- To produce one ton of charcoal in the traditional kiln, 10 - 12 tons of wood are used
- Unfortunately charcoal producers are not organized
- Also, charcoal is inefficiently produced & used but also unsustainably managed







Charcoal transportation

- Thousands of people engage in transporting charcoal from rural producers to urban users
- Bicycles, motorcycles, trucks, private , STK vehicles , tractors, etc are used







Wholesaling and retailing ...

- Produced in rural areas and consumed in cities & towns.
- There are many charcoal wholesalers and retailers in urban Tanzania (including home delivery)





Zanzibar relies on Tanzania mainland for charcoal and fuelwood

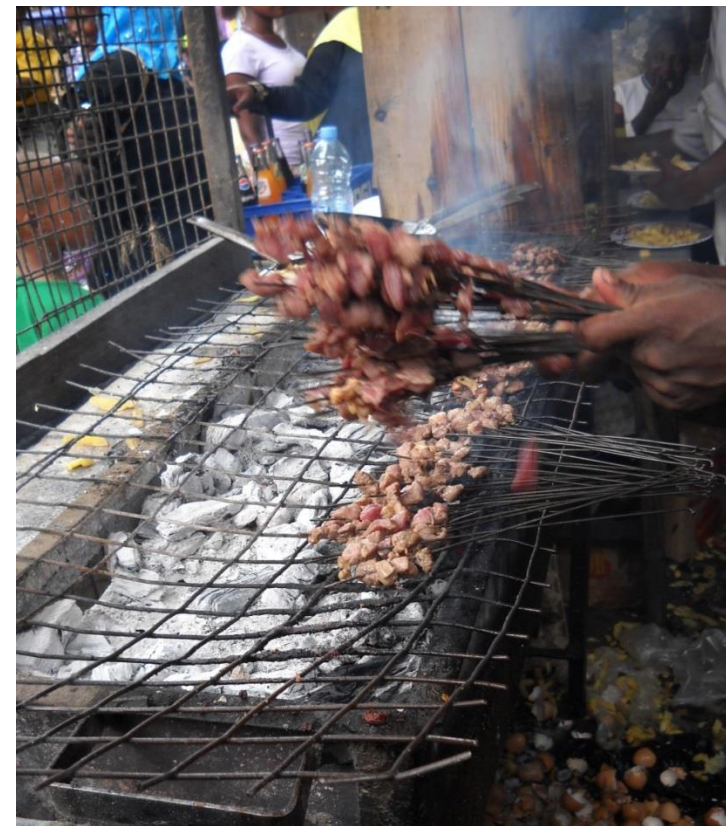


Charcoal is also imported into Tanzania priced at 5 times per kg when compared to locally produced charcoal



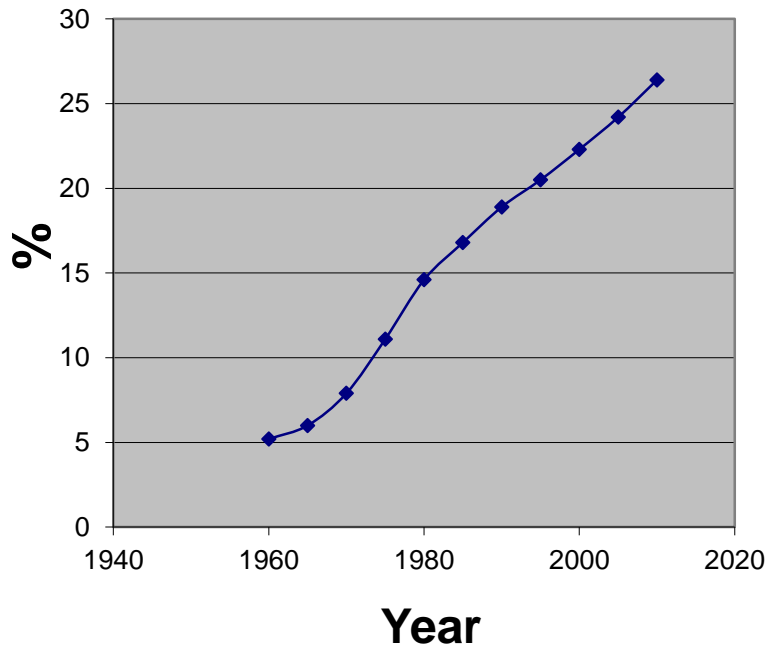
Many end users



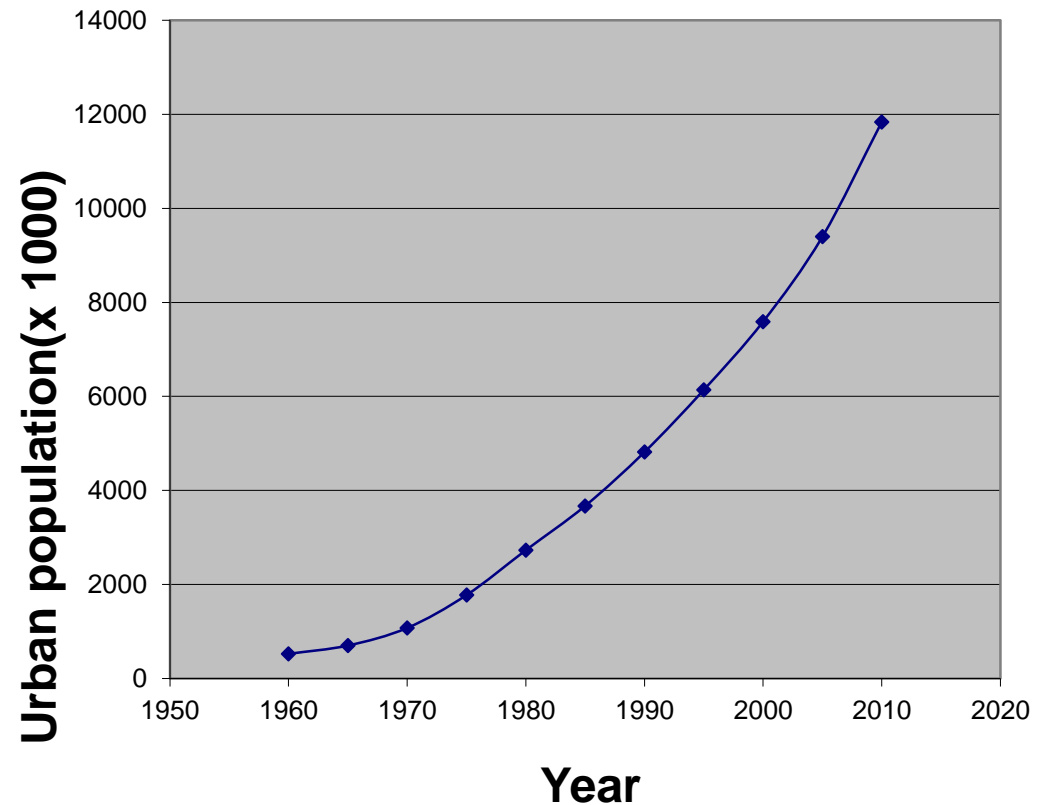


- Charcoal is mainly used in urban areas, primarily by urban households, restaurants, hotels.
- The urban population and demand is increasing annually

% of Urban population in Tanzania



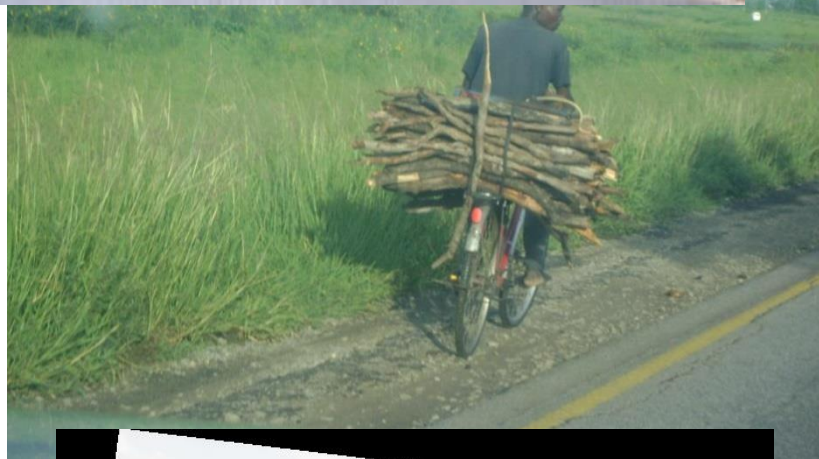
Urban population in Tanzania



Fuelwood

- Major source of domestic energy in rural areas (more than 70% of the Tanzanians)
- Also used in peri-urban areas
- Respiratory diseases
- Low thermal efficiency of 10% (3 stones)
- Efficiency can be improved to 20% or more







- **Fuelwood**
- **Also is important source of energy for, fish drying, brick burning, tobacco curing, tea drying local brewing, schools, bakeries, hospitals, prisons, etc. This situation will not change abruptly**

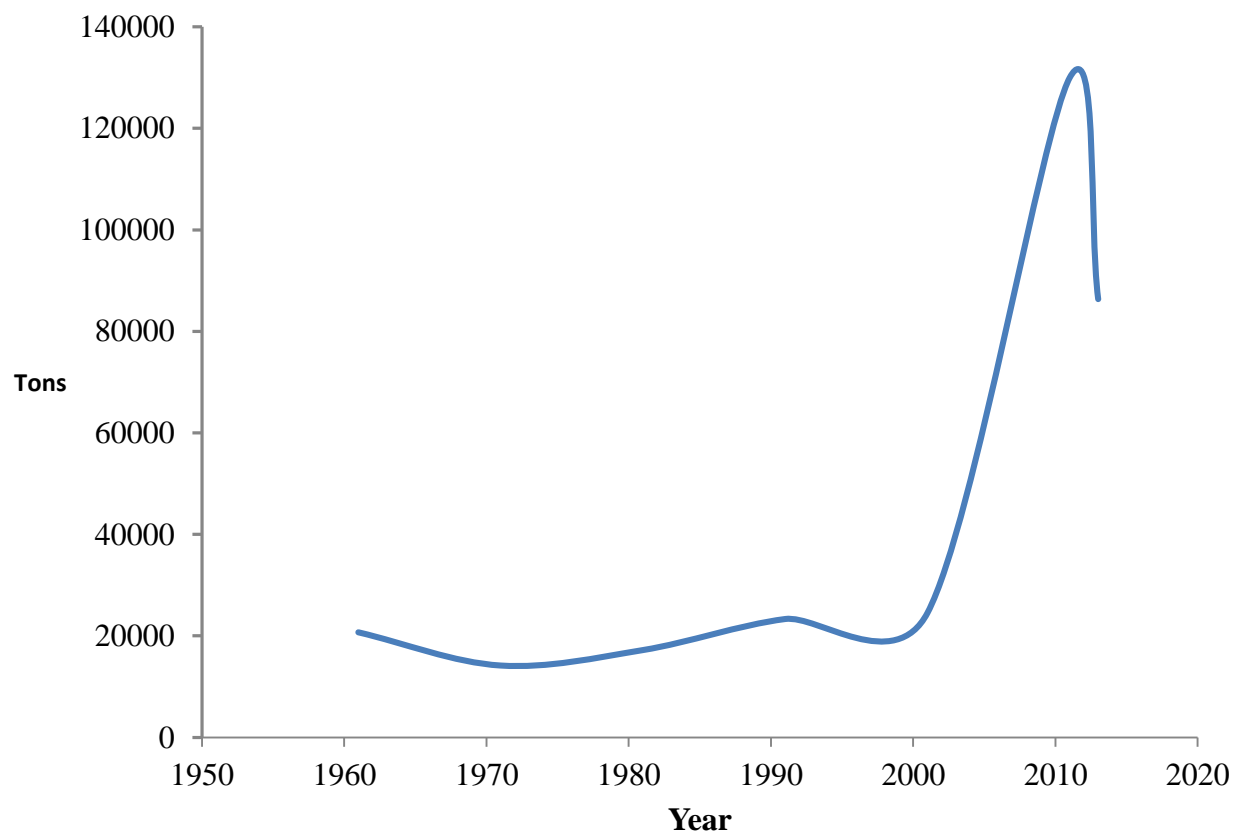


Tobacco production in Tanzania steadily expanded annually from 2,701 tons in 1961 to 130,000 tons of tobacco produced in 2012.

To cure one tonne of tobacco 42 m³ of solid fuel-wood is used(MEM, 2005).

For a production of 130,000 tons of flue-cured tobacco produced in 2012, it is estimated that 5,460,000 m³ of wood were used equivalent to wood in 109,200 ha of forest. However, wood consumption for tobacco curing can be reduced by 50%, if improved barns are used.

Tanzania Tobacco production, Tons



Wood fuel challenges

- **Characterized by very weak governance and weak law enforcement. It is almost a free access to wood resources. Rules for harvesting of firewood, poles, timber and charcoal, are only being enforced to a very limited extent**
 - **Generally, illegally and unsustainably harvested mainly from miombo woodlands without payments being made for the raw material (wood), and licenses and levies largely evaded**
 - **Inefficient production & utilization technologies**
 - **A perception that it is a poor man's business, considered 'dirty' and economically unattractive**
 - **The sector is informal, almost totally unregulated, and open to any and all who wish to participate in it.**
 - **Significant changes need to be introduced to regularize and legalize this sector**

- It is wrongly viewed as a “traditional”, “inferior”, as retrogressive and environmentally destructive, tolerated rather than encouraged energy source that will grow less important, as economic development occurs and “modern” energy sources become more widely available
- There is a view of Tanzania transitioning from woodfuels to “modern fuels”.
- However, nothing that will change that quickly.
- At current prices, most Tanzanians cannot afford fuel-switching since the modern sources of energy are expensive and the prices are always increasing.
- On the other hand, Tanzania has a unique opportunity to convert its large forest resource base potential into a sustainable and renewable energy asset

The sector is characterized by;

- a multitude of commercial players,**
 - a large number of institutional and policy players**
 - no comprehensive, unified national, regional or local vision, policy for the sector.**
 - various laws, regulations and administrative policies touch on wood fuels.**
 - hardly feature in national or local policy and planning**
- Wood fuel not considered a “commercial energy source” like petroleum, electricity, gas and coal.**
 - Probably because of these challenges, natural forests are threatened by deforestation**

DEFORESTATION: THE BIGGEST CHALLENGE

Deforestation

- **Deforestation** involves a permanent decrease in the area covered by forests. There is a permanent change of forest area to another land use



- **Between 1990 and 2005 an estimated 412,000 ha per annum were cleared, (about 1.1% of the total forest area) mainly for agricultural expansion**
- **Other factors contributing to deforestation include overgrazing, wildfires, charcoal making, reliance on wood fuel for energy, over-exploitation of wood resources , lack of land use planning, new settlements and impacts of refugees.**
- **NAFORMA reports deforestation of about 372,000 ha annually.**
- **On a different forest definition, (Forest Reference Emission Level for Tanzania 2016) estimated deforestation at 580,000 ha annually**
- **Along the coast, 18% of the mangrove forest cover has been lost over a period of 25 years**
- **Fact: Deforestation rates in Tanzania are quite high**

- **Currently, agriculture contributes most of the ongoing deforestation in Tanzania.**
- **Also, due to the rapid increase in population, projections show that food demand will increase twice or thrice by 2050.**
- **Agriculture is the largest employer engaging approximately 70% of the total population contributing 24.5% of the GDP (NBS, 2014).**
- **At the current rate of deforestation, unprotected forests could disappear in about 50 years, if the GoT will not intervene strategically**

Wood balance analysis for Tanzania mainland

Supply and losses	Unit	2013
Supply		
Gross increment of all trees in Tanzania mainland	million m ³ /yr	83.7
Legally available wood (AAC plus recoverable deadwood)	million m ³ / yr	42.8
Losses:		
Household wood demand (0.96 m ³ /capita) ie woodfuel	million m ³ / yr	-43.0
Industrial and household wood demand (0.05 m ³ /capita. FAOSTAT 2014)	million m ³ / yr	-2.3
LULC change analysis on FW: (-372,816 ha/a * 40 m ³ /ha; 0.33 m ³ /capita) ie deforestation	million m ³ / yr	-14.9
Import-export balance (charcoal, lumber and logs; 0.00 m ³ /capita)	million m ³ / yr	-0.1
Illegal felling for charcoal/lumber mfg, trading (0.05 m ³ /capita)	million m ³ / yr	-2.0
Total losses	million m ³ / yr	-62.3
Wood Balance	million m ³ / yr	-19.5

Source: NAFORMA



What can we do?
FOREST PLANTATIONS VS
NATURAL REGENERATION

Plantation forestry

- **Plantation forestry in Tanzania started during the German rule in the early 1900s (about 80 ha). To date more than 700,000 ha**
- **The government efforts towards tree planting is commendable**
- **There is a strong focus on private led forestry plantations as a tool for poverty alleviation mainly in Southern Highland**



- **Various stakeholders including Tree Growers Associations (TGA), Green Resources Ltd (GRL), Forest Development Trust, New Forest Plantation, and many others are supporting / assisting farmers to establish Pine and Eucalyptus woodlots /plantations on their own land**
- **Consequently, there have been a rapid expansion of small-scale plantation forestry resulting to significant shifts in land use**
- **Recent study showed that tree growers on average dedicate about 51% in Mufindi and 49% in Kilolo of their land to plantation forestry.**
- **Although this is potential for poverty reduction, it poses challenges not only to biodiversity through conversion of natural ecosystems to monoculture plantations, but also to food security.**
- **On the other hand, the MAI of 15.0m³ per ha per year in forest plantations is very tempting, therefore a strategic balance is required**

- **Current national policies favor the cultivation of exotics over investing in the management of diverse woodlands and natural forests.**
- **For example, forestry-related targets in the National 5 Year Development Plan do not include targets to reduce deforestation in natural forests or enhance forest-based ecosystem services. Instead the targets are about the number of trees / hectares planted.**

Natural regeneration

- Natural regeneration is mainly through seed or coppicing
- Most tree species in miombo woodland are able to coppice.
- Coppicing in miombo is a well known practice and extensively documented.
- The Kilosa Sustainable Charcoal model has demonstrated that through natural regeneration mainly by coppicing approach, harvesting of trees for sustainable charcoal production is possible.
- Policy to promote best practices from such projects



NATIONAL FOREST POLICY REVIEW

Preamble

- **The National Forest Policy of 1998 has been under review from 2006.**
- **Currently, a consultative process(with stakeholders) is underway to finalize the new National Forest Policy. Both the 1998 and the draft policies support sustainable forest management (SFM) which is still most important.**
- **The forest sector is key to the development and existence of other sectors and has a direct positive contribution to such sectors that depend on natural forests ecosystems.**
- **It is important to enhance policy changes in the forest sector which will curb deforestation in natural forests and enhance the forestry sector's contribution to achieving Tanzania's development vision.**
- **Key messages (not exhaustive) follows**

Message1: The current NFP has not been able to prevent deforestation.

We need to reflect on why, as we develop the new policy.

Reasons might include:

- A weak analysis and interpretation of what is driving deforestation**
- Current policy (and her tools) is ineffective in preventing conversion of forests to agriculture.**
- Also policy tools have failed to provide sufficient incentives to communities and private land owners to retain their forests.**



Message 2. Tanzania will be better off, if it keeps its natural forests

- There are economic, social and ecological values of natural forests including the critical role of biomass energy in the national energy mix (wood energy dependence).**
- Unfortunately, economic value of natural forests has not been fully captured in national accounts, planning processes and therefore, minimal resources are invested in their management.**
- Natural forest must be managed for sustained multiple products**

- **Natural forests may be better than plantations because of all the additional benefits that they provide.**
- **Most plantations are established for timber, not biomass energy, so plantations are not a solution to the demand for wood energy.**
- **Have capacity for natural regeneration (miombo), if left undisturbed. It is much cheaper and lower risk to manage than plantations.**
- **A strategic balance is required**

Message 3: Tanzania is rapidly losing its forests, and the window of opportunity to do something is closing



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Source: NAFORMA

- **NAFORMA reported a forest cover loss of 372,816 ha/year. A deficit of 19.5 million m³ / year between the supply and demand is also reported.**
- **NAFORMA LULC change analysis shows a loss of 14.9 million m³ / yr. This figure indicates deforestation, a permanent loss resulting mainly from agricultural expansion**
- **In the absence of deforestation**
 - **The available increment is 42.8 million m³/ year**
 - **Household, industrial demand etc is 47.4 m³ / yr.**
 - **The shortfall would be 4.6 million m³ / yr. and not 19.5 m³**
- **Emphasis be put on stopping the conversion of forests to non-forest land uses, in addition to addressing the shortfall between demand and annual increment.**

Message 4. Adequate coordination / harmonization of policies is needed .

- Inter-sectoral coordination is needed, between MNRT and several ministries (responsible for Agriculture, Lands, Energy, LGs etc). For example, most of the forest land is within the boundaries of village land together with agriculture. The new NFP need to put in place a mechanism to address deforestation primarily driven by agriculture, especially the role of the Agricultural policy instruments promoting conversion of natural forests to cropland (Mashamba pori?). Hopefully, this could be achieved through coordination / harmonization with other ministries**
- Roles and mandates of District Councils, Villages & Local Communities and NGOs to be clearly defined and properly followed.**
- Need to support local government and communities to sustainably manage natural forests on village land.**
- The Ministry of Lands to recognize sustainable natural forest management as a valid land use**

This presentation is intended to stimulate or provoke a discussion on the new National Forest Policy



Asante Sana

