



TREE PLANTING A PANACEA FOR SUSTAINABLE ECOSYSTEM AND LIVELIHOOD

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ABSTRACT

The exploitation of the resources of the semi-arid ecosystems by human beings, especially in recent times of severe and persistent drought brought about by ecological damages in the region, and also the increase in human population appears to be stressing the natural resources, consequently in many areas sustainable-yield threshold of the vegetation and soils are being breached over. It is now obvious that the problem of desertification needs to be addressed in a holistic manner in order to ensure that the semi-arid zone continues to support sustainable living. The most rapid responsive approach would be achieved through planting and protection of trees for the numerous services derived from them (Sadio, 1990). Trees can be extremely useful for the important role they play to achieve sustainable rural development and to restore the health of the planet's environment, and are also one of the most valuable tools available to help transform unhealthy cities into healthier ones, and improve low productivity agricultural land into high yielding and profitable agriculture land. It is generally agreed that increasing agricultural productivity is central to growth and poverty alleviation in rural areas (Chivaura-Mususa et al, 2000; Sánchez et al, 1998).

Keywords: As a Panacea, Livelihood, Sustainable Ecosystem, And Tree Planting.

INTRODUCTION

Agricultural mechanization and urban expansion has been occurring at the expense of native ecosystems and the landscape made up of forests, woodlands, croplands, and grasslands. The cumulative effects of this expansion have produced serious global environmental and social problems, including loss of biodiversity and extreme poverty of people living in the more vulnerable areas (FAO, 2001^a; Van der Linde, 1962). The conservation and sustainable use of ecosystem remains a major challenge of sustainable livelihood in Nigeria today. The semi-arid zone which by its nature and characteristics is susceptible to desertification process, at the same time, constitutes the largest grain and livestock producing area of the country. This explains why this zone is regarded, as the locus of human's greatest gamble with nature (FAO, 2001; Van der Linde, 1962). One solution to these problems is to plant and manage trees. Trees provide a range of benefits, including the potential to restore degraded ecosystems, provide wood, other non-woody products such as food and medicines, and to render environmental and socio-economic services. The importance of trees in addressing these problems is clearly demonstrated in traditional tree-based agricultural farming and land use systems, such as shifting cultivation in the humid tropics, fallow systems and grazing in the semi-arid savannah areas. Research during the 1970s and 1980s has shown the important role of trees in structuring landscapes and improving land productivity (Mando, 1997; Manu et al., 1995; Sadio, 1990).



Statement of Research Problem

The exploitation of the resources of the semi-arid ecosystems by human beings, especially in recent times of severe and persistent drought brought about by ecological damages in the region, and also the increase in human population appears to be stressing the natural resources, consequently in many areas sustainable-yield threshold of the vegetation and soils are being breached over. It is now obvious that the problem of desertification needs to be addressed in a holistic manner in order to ensure that the semi-arid zone continues to support sustainable living. The most rapid responsive approach would be achieved through planting and protection of trees for the numerous services derived from them (Sadio, 1990). Trees play important role in the sustainability and improving livelihood and the environment in general, they play key role in food supply, carbon cycle through absorption of harmful atmospheric carbon dioxide to produce the oxygen required for human use. Tree serve as bioremediations in preventing soil erosion as roots bind soil particles together. Therefore, socio-cultural importance as well as economic benefits of planting trees cannot be quantified, hence the need to do so a means of mitigating the effects of drought, desertification and climate change (Manu et al., 1995).

Planting of Trees

Trees have supported and sustained life throughout the history of human existence on earth, our motivation to plant trees may be economically, socially and or environmentally induced. No matter what reasons we have in mind, the most important information to pass across is that planting of trees at home instead of on our farms, institutions, roadsides, public places etc. is an investment within the community as well as forging a green legacy for the future generation (Anatoly, 2005). Trees have supported many far reaching economic, healths, environmental and social **benefits**, which include but not limited to the following:

Food and other Essential Goods as a Source of Livelihood

This is particularly true for many poor and landless people who obtain essential products from them (Manu and Halavatau, 1995). Many trees species found in African and Asian agro-forestry systems (eg. *Borassus aethiopum*, *Balanites aegyptiaca*, *Ziziphus mauritiana*, etc.) Are planted for their ability of producing large quantities of food and other non-wood forest products.

Sustainability of Agricultural Production

One of the most universally recognized roles of trees in agricultural systems is the way it replenish the soil fertility (Chivaura-Mususa et al 2000; Sánchez et al 1998). In many parts of the world, improved tree-based systems, e.g. shelterbelts, windbreaks, alley cropping, hedgerows, home gardens, tree cover crops (coffee, cacao, coconut, olive trees, orange, citrus, etc.), have been adopted to protect lands and improve agricultural crop production. For instance, in semi-arid and sub-humid countries integrated tree-crop-livestock management systems using agro-silvipasture, alley cropping, conservation agriculture and using nitrogen fixing, woody species such as *Acacia*, *Prosopis* and *Glyricidia* species have restored soil fertility and physical properties, and decreased



erosion and desertification (Huaxin, 2001, Ruis 2001). Multi-storey tree-crop systems have been developed for desert and oasis areas of the near East countries and are likely to both check wind erosion and improving food production (FAO^a, 1993).

Wood and Wood Fuel Products

In developing countries 80% of harvested wood is used for energy and wood fuel is the most widely used source of fuel in rural and peri-urban areas. For instance, in the Asia-Pacific area, trees outside forests supply over two-thirds of the energy demand, as firewood and charcoal for two billion people. Wood fuel supplies 50% of energy used in Thailand, 75-85% used in Vietnam, Pakistan, Sri Lanka, the Philippines, Java and Indonesia, and 83% used in Kerala (FAO^b, 2001; Jensen, 1995). In Africa, Asia and Latin America many valuable trees species are also planted by local people for timber production and as means of saving for the future, a kind of piggybank (FAO^b, 2001b, Negreros-Castillo and Mize, 2002).

Fodder Suppliers

Tropical pastoralists that derive their livelihoods primarily from animal husbandry are dependent on grasses, forbes, and fodder trees. In temperate countries, trees in coppiced hedges traditionally supplied winter fodder for goats. Trees play a major feed role in arid zones, such as the Near East and the Sahel and Sudano-Sahelian zones. In arid areas grassland do not provide adequate feed year round and tree fodder can take up much of the slack. Recent case studies from Latin America have highlighted the important role that trees play in feed for livestock production (Sanchez et al, 1999). In the Soudano-Sahelian Africa, three-quarters of the 10,000 woody species that grow in silvi pastoral systems are thought to be used as fodder and they supply up to 50% of livestock feed (FAO^a, 2001).

Environmental Services and Socio-Cultural Values (Externalities)

Trees outside forests improve air quality and micro climate; provide water protection, wildlife habitat, recreation and increased carbon sequestration and biodiversity. They are also imbued with symbolic cultural value being important parts of language, history, art, religion, medicine, politics, and so forth. They are sometimes called "trees of wonder" due to their longevity or their impressive size (FAO^a, 2001).

Challenges Facing Tree Planting

At national and international levels, the importance of Trees as a resource often is overlooked. Only limited initiatives existed prior to 1993, when the Kotka meeting analysed their role in the context of the world forest resources assessment. Since then, many case studies, conducted at national and regional levels, have identified serious challenges facing the successful promotion of trees outside forests as a tool for rural sustainable livelihoods and sustainable development (FAO, 2014).

Population Pressures on Lands and Forest Resources

High population pressures on limited lands and forest resources have led to the breakdown of traditional tree-based systems practices that allow regeneration of



vegetation cover. Systems such as shifting cultivation, and nomadic grazing in the semi-arid areas, that had become well proven by centuries of use, have often broken down leading to land and soil degradation, adverse environmental impacts and increased poverty (FAO, 2014).

Improved National Forestry Programmes

The government decision makers and planners needs to include Trees planting in their national policies and tree planting programmes so as to clearly demonstrate the benefits and important roles of trees for sustainable development. Another important challenge is how to give Trees planting more prominence as a route toward more sustainable livelihoods for the rural poor. A good solution would be to integrate Tree planting into national agriculture and forestry development plans, by focussing on the needs for the local people to create their own woodlots, protect their environment and improve their livelihoods (NRC, 2014).

Limited Incentives Measures to Promote Tree Planting

Trees are commonly found in rural farms, but not at a level needed to achieve desired environmental services and economic benefits (Alvarez et al 2001). Many case studies (FAO, 2001) pointed out that few farmers can afford to plant at the necessary scale and that investment is only encouraged when there are policy incentives and prospects of a worthwhile return on their investment. Legal and market barriers are amongst the biggest challenges undermining Tree planting promotion, particularly at the farm level, for instance, National Forestry Laws are frequently not particularly favourable to small on-farm tree planting and private investment in forestry, often due to land tenure systems and restrictions on forest product harvesting. Legal changes to land and tree tenure are often critical for Trees planting promotion, because they secure the stakeholders' benefits (Alvarez et al 2001).

Wood the Environmentally Friendly Raw Material

The increasing needs of the poor people for fuel wood, wood consumption will increase at an alarming rate, beyond the potential of current forest resources. A major challenge to forestry is to convince people that are using wood and wood fuel to know that is not environmentally friendly. Wood from well-managed trees is a low energy, sustainable alternative to steel, concrete, aluminium and plastic (RIRDC, 2000).

METHODOLOGY

A highly structured search was conducted to identify publications in the form of textbooks, Journal papers, Conference papers, Essays and models in an effort to draw approaches from relevant disciplines such as: Botany; Environmental Management; Horticulture and Landscaping Technology respectively in order to develop a sound understanding of Ecosystem management as a source of Livelihood for sustainable development (Adamu et al, 2018).



DISCUSSION OF RESULT

On the basis of their biological characteristics and the wide range of resource types, Trees can be extremely useful for helping achieve sustainable rural development and to restore the health of the planet's environment, and is one of the most valuable tool available to help transform unhealthy cities into healthy ones, and improve low productivity agricultural land into high yielding and profitable agriculture land. It is generally agreed that increasing agricultural productivity is central to growth and poverty alleviation in rural areas, and this also corroborate the findings of Chivaura-Mususa et al, (2000); Sánchez et al, (1998) whose work discovered that the most universally recognized roles of trees in agricultural systems is the way it replenish the soil fertility and provide source of livelihood.

CONCLUSION AND RECOMMENDATIONS

A Research to assess how Tree planting can be used as a panacea for sustainable ecosystem and livelihood was carried out which culminated into making the following recommendations:

Capacity building

The past two decades have witnessed the development of techniques to design landscape based on tree-crop integration and environmental protection. These techniques present large and small farmers in developing countries with wide varieties of choice of tree species and management systems. Therefore, this research recommends the need for further research to enhance their proper utilization in landscapes to better achieve environmental sustainability and economic viability.

Involvement of Foresters in Ecosystem Management

The research also recommends that foresters who are conversant with trees and ecosystem functioning, need to be given more active role to play in ecosystem management for sustainable forest resource management and enhanced livelihood of the citizenry.

Bridging the Gap between Citizens Needs and Policy Making

Millions of vulnerable people living in rural and peri-urban areas rely heavily on forest resources for their livelihoods, but government is not given special consideration to their voice and rights, as such the research further recommends the need to address the rural dwellers local needs and rights for the attainment of sustainable development.

Legislation for Incentivization of Tree Planting

It was further recommended by the research the need for enactment of Laws for Tree planting to be incentivized so that Farmers will be encouraged to plant more trees.

Gender Mainstreaming in Forestry Management

A study showed that 60% of a family's food comes from home gardens in which trees are prominent and those gardens are mostly managed by women (FAO, 2001). Therefore, this



important skill should be taken into consideration and seen as reason enough to strengthen the role of women in the management of Trees for sustainable development.

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