

# Critical Analysis of Synergies between *Kilimo Kwanza* Resolution and Sustainable Forest Management in Tanzania

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## Abstract

*Like other agricultural development efforts in Tanzania, Kilimo Kwanza which was launched in 2009 that is literally translated as “agriculture first;” recognizes that the role of agriculture is to bring about social and economic development. Pillar number three of this resolution highlights in general terms, mainstreaming environmental conservation in Kilimo Kwanza activities. However, the term ‘environment’ is used broadly. Hence, there is no guarantee that forest conservation, a key component of environmental conservation, is being given due consideration when implementing Kilimo Kwanza activities. Besides, the Ministry of Natural Resources and Tourism, which is responsible for forest conservation is not included in the core team for Kilimo Kwanza implementation. It is therefore rational to anticipate possible negative consequences to forests in the operationalisation of the Kilimo Kwanza resolution. Agricultural development and sustainable forest management can hardly be separated, for successful achievement of objectives within the two sectors successfully, which calls for a holistic Kilimo Kwanza. This entails addressing soil and water conservation while adopting intensification and landscape conservation approaches including ecoagriculture. If this is not done, agricultural transformation through Kilimo Kwanza will not be sustainable. Using an intensive review of literature, this paper critically analyzed the synergies between objectives of agricultural transformation, using Kilimo Kwanza as a case study, and those of sustainable forestry management, in order to inform an integrated agricultural policy development in the country.*

**Keywords:** Agricultural transformation, *Kilimo Kwanza* resolution, Sustainable Forest Management, Tanzania

## Introduction

*Kilimo Kwanza* resolution expresses the political will of government of Tanzania to transform and promote agricultural productivity in the country (Dadzie *et al.*, 2009). It is understood as Tanzania’s green revolution policy framework, when implemented together with other sector

policies, collectively aiming at transforming agriculture into a modern and commercial sector (Lwoga *et al.*, 2010). *Kilimo Kwanza* was launched during a two day meeting organized by The Tanzania National Business Council (TNBC) in June 2009, under the chairmanship of His Excellency, Jakaya Mrisho Kikwete, President of the United Republic of Tanzania. It is argued that *Kilimo Kwanza* brings together and promotes private and public partnership (PPP) in providing agricultural and related services to farmers. While the private sector is growing gradually, it is undisputable that its contribution to agricultural transformation is still low (Thornton *et al.*, 2011). As such, implementation of *Kilimo Kwanza* resolution envisages enhancing and promoting the significant role of the private sector in the agricultural transformation.

*Kilimo Kwanza* resolution was driven by various factors, including: the availability of abundant land - 44 million hectares (ha) - suitable for agricultural production but underutilized because only 10.2 million ha (23%) are being used for agricultural production; availability of 29.4 million ha of land suitable for irrigation but only one percent is under irrigation; and the existence of underutilized 62,000 km<sup>2</sup> of freshwater. Other factors are; (i) the global economic and food crises in recent years, (ii) the willingness of ministries, departments and agencies at all levels to engage the private sector in the transformation of agriculture to alleviate poverty, (iii) the unique power of agriculture in promoting economic growth, reducing poverty and enhancing food security in an agriculture dependent economy, (iv) support from the Tanzanians themselves based on their commitment to eradicate poverty by transforming the agricultural sector, (v) active involvement of private sector players in agricultural investment, which can facilitate farmers to have better access to and use of agricultural knowledge, (vi) technologies and market infrastructure that can enhance productivity, profitability and income at the farmers' and national levels (JGDPG, 2009).

*Kilimo Kwanza*, like other agricultural development initiatives recognises that the role of agriculture is to bring about social and economic development in Tanzania. Much has been said in favour of the resolution. Proponents of *Kilimo Kwanza* argue that the initiative is different from previous agricultural policies formulated in Tanzania because it employs a holistic approach, defining ten pillars for stimulating agricultural transformation, and that the

resolution is largely driven by the private sector. *Kilimo Kwanza* is also purported to be a tool for operationalising the Agricultural Sector Development Programme (ASDP) and a catalyst for hastening the implementation and achievement of the targets set by the Millennium Development Goals (MDGs) as well as the National Strategy for Growth and Reduction of Poverty (JGDGP, 2009). *Kilimo Kwanza* is also regarded as an appropriate approach for bringing about successful agricultural transformation because it envisages active engagement of the private sector as a crucial agent in fostering such transformation.

However, the idea of involving the private sector in agricultural transformation is not new. Previous efforts have also recognized the importance of involving the private sector in agricultural investment. The ASDP of 2001 and the Rural Development Strategy (RDS) of 2001, for example, have underscored the need of engaging private investments not only in research and extension delivery but also in developing technologies such as those supporting large scale and small scale mechanisation (Kessy, 2006).

The stated ten pillars of *Kilimo Kwanza* resolution (TNBC, 2009) are: (i) the political will to push agricultural transformation; (ii) enhanced financing for agriculture; (iii) institutional reorganization and management of agriculture; (iv) paradigm shift to strategic agricultural production; (v) land availability for agriculture; (vi) incentives to stimulate investments in agriculture; (vii) industrialization for agricultural transformation; (viii) science, technology and human resources to support agricultural transformation; (ix) infrastructure development to support agricultural transformation; (x) mobilization of Tanzanians to support and participate in its implementation. For each pillar, there are a number of tasks to be implemented. Task three of pillar number three of the resolution dwells on mainstreaming environmental factors in *Kilimo Kwanza* activities, a responsibility that has been assigned the Vice President's Office under the implementation framework for *Kilimo Kwanza*.

The term environment is broad and ambiguous. Hence, there is no guarantee that forestry issues, which are key components of environmental conservation, will be given due consideration while implementing *Kilimo Kwanza*. Besides, the Ministry of Natural Resources and Tourism, which is responsible for coordinating activities within the forestry sector, is not

included among institutions and ministries responsible for implementing the ASDP - a critical complement of *Kilimo Kwanza*. It is therefore rational to anticipate possible negative consequences to forest resources in the course of operationalising *Kilimo Kwanza*. Agricultural development and sustainable forest management cannot be treated as independent entities if the goals and targets of the two sectors are to be successfully achieved (Novacek and Cleland, 2001).

Based on an intensive review of literature, this paper critically analyses the synergy between objectives of agricultural transformation, using *Kilimo Kwanza* as a case study, and those of forest management so as to provide recommendations for promoting sustainable agricultural transformation in Tanzania. However, before doing that, a brief review of previous agricultural development strategies and their implication on the forestry sector is presented. This is done to derive lessons for *Kilimo Kwanza* so that similar past mistakes are avoided potential and adverse consequences on forestry sector are minimized.

### **Previous Agricultural Development efforts**

Tanzania has undergone various eras of formulating and implementing agricultural programmes and projects, guided by policies and directives, in order to attain societal development and improve food security. The current efforts to transform agriculture therefore are not new but have a long-standing history in Tanzania. During the first five years of independence (1961-1966), agricultural transformation and improvement strategies were adopted. The focus was on heavy capitalisation in terms of mechanised agriculture for transforming traditional farming systems. The strategy was combined with expanded agricultural extension services. All this was done to improve production of smallholder agricultural farmers. However, these efforts were not successful as they enhanced inequality in income distribution among rural people (Mhando, 2011).

Eleven years after independence (in 1972), a ruling party directive called *Siasa ni Kilimo*, literally translated as ‘politics is agriculture’ was issued. This effort was initiated to address soil erosion, which was experienced then in many parts of the country, thereby threatening food security. Rehabilitation of the degraded land by adopting improved agronomic practices and

enforcing the use of improved seed varieties was emphasized (Kessy, 2006). However, the initiative was not successful and was silent on the causes of land degradation (Mlambiti and Isinika, 1999). Several other initiatives followed, but they did not have sustainable impact. *Kilimo cha Kufa na Kupona*, translated literally as ‘agriculture as matter of life and death’ was launched in 1974, with the of promoting food sufficiency. Consequently, it led to agricultural expansion in urban and peri-urban areas throughout the country, but there is no documented evidence of improved productivity and production as a result of the policy. In due course, environmental conservation was ignored by the three directives as the focus was put on agricultural expansion and increased production of food crops. These directives therefore had negative implications on forests and the environment as a whole. For example, during that time, there was a resettlement directive known as villagilization (*Ujamaa* villages) which also resulted into degradation of forest resources (McCall, 1985).

Other efforts implemented in Tanzania with aim of transforming agricultural sector include *Azimio la Arusha* (Arusha Declaration), Tanzania Vision of 2025, and Strategy for Growth and Reduction of Poverty (NSGRP), which have been unsuccessful (TNBC, 2009; Mlambiti and Isinika, 1999). While these efforts have emphasised on agricultural transformation through improvement of water resources for irrigation, forest resources that conserve water sources have been neglected,, which may have partly contributed to unsuccessful and/or unsustainable agricultural transformation. The argument in this paper is consistent with evidence reported from elsewhere around the world where exclusion of the forestry perspective in agricultural development initiatives resulted into adverse consequences not only on the forestry sector but also on the agricultural sector (Rasaily, 2006). In the next section, the global experiences on adverse effects of agriculture on forestry are briefly presented.

### **Adverse Effects of Agriculture on Forests**

The most immediate and obvious adverse effect of agricultural expansion is that of clearing forests to accommodate expanding crop and production. This has been regarded as an economic opportunity, utilizing the soil-nutrient building function of forests for agricultural production to benefit from high productivity in virgin soils, thereby improving food security and contributing to poverty reduction. However, such an interpretation is shallow since

agricultural practices may have a negative impact on other key components of the environment and forest ecosystems in particular (Gonsalves, 2005). These negative effects include soil erosion, landslides, and diminished biodiversity. As population continues to increase around the world, conversion of forests to agricultural land has the potential to accelerate (Sunderlin *et al.*, 2003). Several studies have shown that forest reduction has been driven by agricultural expansion into the forest land, which coincides with degradation of the forest from cutting timber, building poles and firewood to meet the needs of an expanding population (Frontier-Tanzania, 2005; Madoffe and Munishi, 2005, 2010; Mbilinyi *et al.*, 2006).

According to Rudel (2007) and Angelsen (2009), agricultural expansion contribute to deforestation in developing countries. Studies done in Asia and Pacific regions show that between 1961 and 1985, these regions increased the use of agricultural technologies including high yield varieties, mechanization, use of industrial fertilizers, and irrigation. These technological investments resulted in increased cereals production (rice and wheat) that kept pace with the growing population. However, these agricultural transformations had negative consequences on forest resources and the environment in general. Large areas of cropland, grassland, woodland and forest including water catchment areas were seriously degraded (FAO, 1995). Another consequence of clearing forests for agricultural production is the loss of safety nets and income generating option, which could only be obtained from forests, especially for ethnic groups that depend on hunting and gathering but also applies to the rural populations in general.

The safety net function of biodiversity and provision of wild foods is widely acknowledged, particularly during times of low agricultural production (Angelson and Wunder, 2003; Karjalainen *et al.*, 2010), during seasonal or cyclical food gaps (Arnold, 2008; Vinceti *et al.*, 2008) or during periods of climate induced vulnerability (Cotter and Tirado, 2008). In Niger for example, majority of local people rely on wild foods during drought (Humphry *et al.*, 1993). In Tanzania, wild foods comprise a significant percentage of food that is consumed during periods of food insecurity (Powell *et al.*, 2013). Clearing forests may also affect soil quality, resulting into land degradation. Research based evidence has showed that soils in

cleared forests land are of low quality and for some cases the cleared areas were marginal and therefore prone to soil erosion (Sunderlin *et al.*, 2003).

Based on the review, it is clear that clearing forests to expand agricultural production has negative environmental consequences, which in turn affects agricultural development. This directs to the need for mainstreaming forestry initiatives into policies and strategies such as *Kilimo Kwanza*, which aim at transforming agricultural production in order to avoid forest degradation in the course of implementation. The next section shows the synergies between agriculture and forestry which may be optimized in the implementation of *Kilimo Kwanza* in order to bring sustainable private-sector based agricultural transformation in Tanzania.

### **Synergies between Forestry and Agriculture**

In Tanzania, forests are important for agriculture as a source of water for irrigation, livestock, fisheries, industrial use, and hydropower generation among others (FAO, 1995). For example, catchment forests in the slopes of Kilimanjaro, Meru, Pare and Usambara mountains supply water to Pangani river, which is used for hydro-electricity generation at Nyumba ya Mungu and Hale. The water is also used for irrigating rice, sugar cane and other crops along the flood plains of Pangani basin. Similarly, the Eastern Arc Mountains forests provide water for similar activities. Within the Great Ruaha and the Kilombero Sub-basins large irrigation schemes have been established for the production of rice, sugarcane, maize, tomatoes, onions, vegetables, bananas and beans in Mbeya, Iringa and Morogoro Regions (EAMCEF, 2009). Equally important, the Eastern Arc Mountains forests form important catchment areas which provide water for several regions in the country, including Dar-es-Salaam, Tanga, Iringa, Pwani, Dodoma, and Morogoro. About 60% of Tanzania's electricity is generated at Kidatu, Mtera, Hale, Nyumba ya Mungu and Kihansi hydropower stations using water from these mountains forests (EAMCEF, 2009).

A marked decline in water flow during the dry season has been recorded over the past 53 years in the Ruvu River at the offtake for the Dar es Salaam water supply. Over the same time period (1933–2004), there has not been appreciable change in dry season rainfall (Lopa *et al.*, 2011). Analysis of forest cover in the Uluguru Mountains (Mbilinyi *et al.*, 2006; Hall *et al.*, 2009)

suggests that the decrease in water flow is probably a result of forest reduction from 338 to 279 km<sup>2</sup> (17.5%) over the a 45 year interval (1955–2000), representing about 0.4% annual decline in forest cover during the interval, to accommodate agricultural expansion and urban use (Lopa *et al.*, 2011).

Forests also support other income generating and food diversifying activities such as fishing (practiced in almost all rivers), gathering of non-wood forest products including fruits, vegetables, medicinal plants, honey and bees wax, and collection of wood-based products such as fuel wood, charcoal, timber products and many other forest products (Kasthala *et al.*, 2008). Moreover, forests play a biological function that sustains agricultural production. Insects from forests pollinate crops hence ensuring quality, quantity and viability of crop seeds and thus sustaining long-term productivity of agricultural production systems.

Research experiences in many parts of the world have proven that forestry and agriculture are interdependent as the main sources of livelihoods including food security for the rural poor people (Daily and Matson, 2008; Pagiola *et al.*, 2005). Forests provide various services, which can enhance food production (Sunderland *et al.*, 2013). In Asia for example, the existence of forests close to paddy farms led to the reduced use of externally-acquired fertilizers. Farmers reported increased flow of nutrients from the forests to their lower-lying paddy farms, and hence increased paddy yields when forests regenerated (Maharjan, 2005). In addition, relying on both forestry and agriculture for food ensured not only nutritional benefits but also income diversification. Other research findings show that forestry can enhance on-farm production of multiple benefits including fodder, water, fuel wood, food, energy and shelter (Brortley and Mitchell, 1985). Forests also minimize runoff losses and strengthen anchorage of soil hence reducing erosion losses. As such, water use efficiency of agricultural sector is enhanced. Forests therefore provide multiple direct and indirect benefits required for sustainable livelihood (Maharjan, 2005).

The *Kilimo kwanza* resolution could use the concept of “Ecoagriculture” as defined by Buck *et al.* (2006). Ecoagriculture is a vision for improving human management of land and the natural resource base so that it simultaneously meets three goals, which are (a) conserving a



full complement of biodiversity and ecosystem services (b) providing agricultural products and services on a sustainable basis, and (c) supporting viable livelihoods for local people. The concept provides an approach for managing natural areas and agricultural landscapes in complementary ways. Empirically, ecoagriculture is based on a growing body of evidence indicating that tradeoffs between conservation, food production and livelihoods are not always mutually exclusive. Instead, significant synergies are achievable using existing and emerging management techniques. Some of the main strategies used in ecoagriculture include:

- Creating biodiversity reserves that benefit local farming communities by choosing areas for protection which will provide immediate benefits including environmental services, livelihood support, farmland protection for unique agricultural habitats and enhancing benefits obtainable from protected areas through market and compensation mechanisms;
- Reducing large lands to be converted to agriculture by increasing farm productivity by enhancing productivity in high potential areas;
- Modifying management of soil, water and vegetation resources by using conservation agriculture, agroforestry and other techniques, and
- Modifying farming systems to mimic natural ecosystems by increasing the use of perennial crops in farmlands.

The ecoagriculture concept emerged during the mid 1980s in response to the decline in the natural resource base associated with capital and technology intensive modern agriculture (Altieri 2002, Stroud 2004). In contrast to modern agriculture, ecoagriculture is developed with minimum dependence on high input of agro-chemical and energy; emphasizing instead diverse agricultural systems (agrobiodiversity) in which ecological interactions and synergisms between biological components provide mechanisms for the systems to sponsor their own soil fertility, productivity and crop protection (Altieri 2002).

Ecoagriculture is being practiced in hundreds of locations worldwide. In a review of 36 case studies all over the world on the subject, Scherr and McNeely (2003) showed that all 36 cases had positive biodiversity impacts, measured in terms of habitat quality, species numbers or species diversity. In 24 cases, agricultural supply in terms of crops and livestock increased; in

10 cases impacts on production were neutral, and in two cases there was some decline. In 28 cases, farm incomes increased (in some cases significantly), in 5 cases income was unaffected and in 3 cases incomes declined. Of the 36 ecoagriculture practices, 25 were adopted by poor, small scale producers in developing countries and 11 by middle or high income farmers in both developed and developing countries. Catacutan and Cramb (2004) drew lessons from two of these case studies in the Philippines and Australia where a landscape approach (a form of ecoagriculture) is used to mobilize collective action by local communities to deal with land degradation and natural resource management issues. Similar interventions have also taken place in Tanzania. In Lushoto, (Tanga region), a Soil Erosion Control and Agroforestry Project (SECAP) initiated in 1980 used perennial grasses along contours to reduce soil erosion and promote soil regeneration. The project also used contour strips of trees, shrubs and creeping legumes. Using integrated methods enabled farmers to reduce soil erosion by 25% and improved soil health.

Implementation of *Kilimo Kwanza* resolution could also make use of an intensification approach. Since farm intensification requires less land to achieve any level of production, it could spare land for biodiversity (Phalan et al., 2011). As crop productivity per unit of land is increased, less land will be required to supply a given level of harvest. According to Sunderland *et al.* (2013), this idea is supported by the observation that global agricultural output has increased by 140% since the 1960s corresponding to only 11% increase in cropland area. Moreover, countries with higher agricultural yields have lower deforestation rates Sunderland *et al.* (2013). Some studies show reduced expansion of agricultural areas as crop yield increases (Altieri, 2002). Conversely, agro forestry, trees that are scattered on farm plots and plantations of tree crops contribute towards reducing poverty since they provide food and cash income to farmers, while conserving the soil thus enabling a win-win situation whereby both the environment and socio-economic interests are promoted.

The discussion above provides lessons for guiding *Kilimo Kwanza* implementation. It is important for those responsible for *Kilimo Kwanza* coordination to reflect on these lessons and ensure harmonious planning so that implementation does not jeopardize the forest productivity in terms of goods and services derived from there. Rasaily (2006) argues that common pool

resource systems such as forest, land, rangeland and water are critical because they permit viability of farm units. Hence, forestry-agricultural systems interrelationships are important, providing various incentives to farmers (Sangeda *et al.*, 2012).

In Tanzania and elsewhere around the world, previous agricultural transformation efforts had adverse effects on sustainable forest management. *Kilimo Kwanza* therefore has some important lessons to learn in order to avoid repeating the practices which will result into similar adverse effects. Planners and implementers of *Kilimo Kwanza* resolution at various decision making and operational levels need to make informed decisions based on previous, contemporary and emerging experiences that influence the sustainability of forest ecosystems. A holistic approach needs to be advocated, for long-lasting and productive agricultural transformation in Tanzania. For this to happen, coordinators and implementers of different components of *Kilimo Kwanza* should prioritize key issues from all sectors that are affected activities that are implemented and provide room for harmonization where conflict or inconsistency arises. These considerations are important for avoiding prospective adverse consequences on forestry and agriculture.

### **Conclusion and Recommendations**

*Kilimo Kwanza* seems to present a unique initiative for transforming agriculture in Tanzania since it is a private-sector-led strategy. However, at this stage we cannot assert undoubtedly that this resolution will result into new outcomes vis-à-vis similar efforts in Tanzania, especially in terms of ensuring that benefits and services from sustainable forest management continue to flow towards agriculture. Based on the previous adverse consequences of directives such as *Kilimo cha Kufa na Kuponu*, and *Siasa ni Kilimo*, *Kilimo Kwanza* has lessons to learn. So far, experience indicates that forestry sector is not involved in planning and implementation of the directive, something that likely revolves previous inadequacies. To avoid such a situation, it is therefore important to integrate and fully involve the Forestry sector in planning and implementing agricultural development programmes. For *Kilimo Kwanza* to become holistic and inclusive, it needs to address soil and water conservation through preservation of forest resource base so that the aspiration of attaining agricultural transformation and subsequent poverty reduction within the next ten years is realized.

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