Farm Land Use Consolidation- a Home Grown Solution for Food Security in Rwanda
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1. Background

Rwanda’s economy is largely agrarian. More than 80% of the Rwanda’s projected population of 10.5 million\(^1\) depends on farming. The total land area of the country measures 24,700 square kilometers. Although about 79% of the country’s land is classified as agricultural, only 11% of the land represents permanent crop land\(^2\). The remaining agricultural lands are covered with forests, marshlands and marginal lands in the hillsides where permanent and routine cultivation of crops are not tenable. Of the total arable land of 2,294,380 ha, 1,735,025 ha is cultivated with food and cash crops\(^3\) and the remaining represents pastures and bushes.

Over 80% of the population live in rural areas and subsist on smallholder farming. With an average of 407 persons per square Km, Rwanda represents the most densely populated nation in the continent. Hence the land distribution is highly fragmented and skewed in Rwanda. Land in Rwanda is the most valuable, productive and contested asset. Proper management of land is therefore a must. However, most of the laws governing land administration and management in the country had been formulated by the colonialist and have remained the same till 90’s. Several reforms and policies are under implementation in Rwanda, among these, the Land Use Consolidation policy is key for agricultural transformation.

The overarching strategies of economic development and poverty reduction in Rwanda that envisions social transformation through agriculture require shifting from such subsistence farming to commercial oriented agriculture. In Rwanda, the growing demographic pressure on land and continued fragmentation of households plots by inheritance forced the land use patterns to be inevitably re-organised. Volume of food crop production is a function of physical land area and the productivity of land under cultivation. Crop productivity, often measured as the ratio of farm outputs to inputs, reflects the efficiency of usage of inputs. However the efficiency of the inputs depends on the size of the farm land. Land fragmentation thus affects productivity and competitiveness of smallholder farms. Furthermore, the inherent difficulties in mechanizing farm chores in small farms also impede public and private investments\(^4\).

The Land Use Consolidation Policy was enunciated in 2004 by the Government after the presidential visit in Malawi where real benefits of consolidated lands were seen.

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\(^2\) USAID (2010) Country Profile: Rwanda
\(^3\) Rwanda Statistical Year Book (2011), National Institute of Statistics of Rwanda
The process of land consolidation, “the method of reversing the action of land fragmentation”, is not new in the World countries. In Britain land consolidation took place so long ago, that many writers and even experts tend to forget that it took place at all (Simpson, 1976). Some of the earliest attempts at land consolidation, as a method of land reform, took place in Scandinavia, particularly in Finland (FAO, 2003), Sweden (Osterberg and Pettersson, 1992) and Denmark (Binns, 1950) in the 18th and 19th centuries. According to Clout (1987), at least half of Western Europe’s farmland was considered to need consolidation in the 1950s, a time when Europe had pressing needs of reconstruction after the Second World War.

Land use consolidation had been also implemented in Central and Western European countries since 1989 as part of an overall strategy of transition from centrally planned agriculture to privatization and market development in order to increase farmers revenues. It was also implemented in Latin America, Asia and Southern Africa to mitigate land fragmentation. In Kenya, the customary land tenure failed to meet the needs of an expanding population which then resulted in low subsistence levels and influenced land reforms needing land consolidation to stop further fragmentation in Kikuyu, Kiambu and Maranga Districts (Mackenzie, 1993).

2. LUC as a driving component of the Crop Intensification Program

LUC policy was implemented for the first time in 2008 by the Government of Rwanda, through the Ministry of Agriculture, as part of the Crop Intensification Program (CIP). The CIP was initiated by the same Ministry in September 2007 with a goal to increase agricultural productivity of high-potential food crops and to provide Rwanda with greater food security and self-sufficiency. The implementation of this program involves various components, including Land Use Consolidation as the main pillar, the proximity advisory services to farmers, inputs (seeds and fertilisers) distribution and post-harvest technologies (e.g. driers and storage facilities). The program is also supported by other initiatives like land-husbandry, irrigation and mechanization infrastructure development to bring more land under production, avoid dependency on rainfed farming system and use of farm power in the context of a market-oriented agriculture.

The LUC policy is in line with Rwandan Government efforts to mitigate hunger and poverty. It correlates not only with CIP but also with the “Villagisation” known as new resettlement

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6 FAO (2003), The design of land consolidation pilot projects in Central and Eastern Europe, FAO Land tenure Series 6, Food and Agricultural Organisation of the United nations, Rome, Italy.
10 MINAGRI (2008). Ministerial decree appointing the conditions on agricultural land use consolidation in Rwanda. Kigali, Rwanda
program “Imidugudu” which started earlier in 2004. Therefore, its implementation process involves various stakeholders (e.g. Ministries, NGOS, Civil Society Organisations and the Private Sector).

3. Implementation process of LUC Policy in Rwanda

Land use consolidation is a multi sector process. Although the technical plan for land use is drawn by MINAGRI (through its implementing agency- Rwanda Agriculture Board), it is implemented in conjunction with local administration authorities. Based on the agro ecological potential and the land area available in each district, the CIP estimates the consolidated area that can be grown with priority crops in each district. Through negotiations with district authorities, target figures are agreed and captured in the performance contracts of the respective districts. The district- and sector agronomists, IDPs in cells and Farmer Promoters (abajyanama bubuhinzi) in villages then mobilize the farmers for growing the priority crops in a consolidated fashion. At national level, stakeholders under the IDP steering committee framework include MINAGRI, MINALOC, MINIRENA, MININFRA, NGOs, Private Sector, Province and District authorities (RGB, 2012).11

The following figure highlights the participatory approach of LUC under CIP implementation.

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11 Rwanda Governance Board (2012), Rwanda’s rational land use through the implementation of land use consolidation policy, crop intensification and rural settlement “IMIDUGUDU” programs, a citizen perception survey, final report, Kigali, Rwanda.
4. Priority Food Crops under LUC

Eight priority crops (Irish potato, cassava, beans, maize, wheat, rice, banana and soybean) have been selected for promotion under land use consolidation policy. The rotation system is based on comparative advantage, crop suitability in a specific agro-ecological zone and its contribution to the overall food security. Crops like Irish potato, cassava, beans and maize have shown a competitive advantage with a positive trade balance, according to the recent cross-border trade study (MINAGRI, 2010). In an effort to address both marketing and post-harvest challenges, the Government of Rwanda (GOR) has decided to establish driers and food storages facilities where land has been consolidated.

Consolidated use of lands allows farmers to benefit from the various services under CIP such as: (i) efficient delivery of inputs (improved seeds, fertilizers), (ii) proximity extension services, (iii) post harvest handling and storage facilities, (iv) irrigation and mechanization by public- and private stakeholders, and (v) concentrated markets for inputs and outputs.

4. Impact of Farm LUC on Food Production and Food Security

Since its introduction in 2008, the total area under land use consolidation has increased by 18-fold from 28,016 ha in 2008 to 602,000 ha in 2012. The figure below illustrates the increment in LUC under priority crops over years, the target being to reach over 700,000 ha fully consolidated by 2017.

![Figure 2. Increase in LUC under priority crops (2008-2012)]
The consolidated production of priority crops under CIP has also brought significant increases in food production – maize by 5-fold; wheat and cassava by about 3-fold; Irish potato, soybean and beans by about 2-fold; rice by 30%. Interestingly, the productivity in consolidated land areas has consistently been higher for maize and wheat. This has caused a paradigm shift from producing enough to producing surplus thus placing the country’s vision for market oriented agriculture on track.

The drive for consolidation of land use has a spiraling effect on the cultivation of priority crops as it indirectly promotes the use of inputs and extension services to farmers. The expansion of land area under cultivation of priority crops and the increase in production and yields are highly correlated. The figures below illustrate recent trends in area under cultivation, production and yields for maize and Irish potato.

Figure 3. Increase in cultivated area and productivity for maize (Kathiresan, 2012)\(^\text{12}\)

\(^{12}\) Kathiresan A. (2012), Farm Land Use consolidation in Rwanda, Assessment from the perspectives of Agriculture Sector, MINAGRI, Kigali, Rwanda.
Figure 4. Increase in cultivated area and productivity for Irish Potato (Kathyrsan, 2012)

The overall implementation of CIP has significantly improved the food security status of the Country. LUC has been a major driving factor to this achievement. In terms of daily energy availability, 21 districts out of 30 where qualified vulnerable to food insecurity in 2007 while in 2011, all districts were judged food secure on basis of this criteria. Results from the crop assessment for the season 2013A tend to show a much more increase of per capita production and availability of energy, proteins and lipids.

13 Kathiresan A. (2012), Farm Land Use consolidation in Rwanda, Assessment from the perspectives of Agriculture Sector, MINAGRI, Kigali, Rwanda.
According to the last household survey, LUC and associated production increase has significantly contributed to the poverty reduction in Rwanda for the past five years (NISR, 2012). However, for most of food priority crops, there is still a significant gap between the crop potential and the current attained yields; thus a room for production increase even without area expansion.

5. Way-forward on land use consolidation

The lessons learned from the implementation of land use consolidation policy to date provide the basis for way-forward for further improvement of processes and procedures of implementation and for avoidance of recurrence of any significant adverse effects/trends. Attention needs to be paid on how to use the strengths of current consolidation efforts to take advantage of opportunities and minimize the threats that are external to the system. The colossal production of priority food crops has reiterated the need for sustenance of land use consolidation. The ecological sustainability of land use consolidation needs to be improved by promoting crop rotation, usage of organic manures, soil and water conservation measures and farmers’ innovation. The economic sustainability of land use consolidation requires strengthening of value chain. As the demand for inputs has increased, the government shall gradually withdraw and hand over to the supply chain management to the private sector, but remain as a catalyst in enhancing marketability of farm outputs and raising public- and private investments in consolidated land areas. The current land use consolidation policy in Rwanda encourages crop specialization to realize economies of scale and to orient the agricultural sector more towards the commercial market. Despite the consolidation however, a large number of farmers continue to maintain

smallholdings. And therefore some of the old problems still persist and some new challenges have emerged. Policy instruments should therefore enhance smallholders’ productivity and competitiveness in order to ensure the socioeconomic benefits of land use consolidation. It is therefore crucial to consider the views from bottom in order to determine the effectiveness of land use consolidation.