

# **A Tale of Two Countries: Assessing Land Consolidation in Germany & Land Use Consolidation in Rwanda and their contribution to Rural Development.**

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**Key words:** Rural Development, Land Consolidation, Land use Consolidation, Sustainable development

## **SUMMARY**

Land consolidation has been used to support several objectives over the past 500 years, including food security, as well as land tenure security, and more recently, rural development. However, though land consolidation in Sub-Saharan Africa, in several forms, has been used to support food security in the past decade, little is known about its use in the region to support integrated rural development goals. This paper presents the results of a comparative study, assessing two land consolidation approaches – the Rwandan Land Use Consolidation and the German Land Consolidation, to identify the factors that need to be considered when developing land consolidation as a rural development tool.

The results drawn from the German State of Rhineland Palatinate and the Rwandan District of Rubavu, were identified via a SWOT and PESTLE analysis. It was found that Germany's success in the practice of Land consolidation over the years is attributed to the multidimensional perspectives with comprehensive developmental initiatives coupled with the land consolidation act across the 16 states with minor nuances. In Rwanda, the sustainable design of land use consolidation that hinges on inter-regional dialogue to enhance prevailing challenges buttresses its success.

The agriculture focused approach of rural development was dispelled in this research, which revealed that the implementation of an applicable land management instrument is a monumental impact factor. The contributions of land consolidation and land use consolidation to rural development are on different scales, thus an indication for a learning opportunity with the focus of Scalability, Efficiency and Monitoring of both land management instruments.

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## **INTRODUCTION**

The post-World War 2 era saw an expansion of the scope of rural development to encompass other aspects of the rural landscape which further saw the expansion of land consolidation objectives to include other aspects of the rural space beyond agriculture. This era was also the advent of reconstruction and reliance on economic interdependencies. This gave rise to monumental development in member countries and this wave trickled down with time to the Global South. While the conventional approaches of land consolidation have evolved over time to contribute to rural development, food security and land tenure security. However, with its key objective being food security, little is known about how land use consolidation can contribute to rural development. This research seeks to show how land consolidation as a land management instrument can serve as a response to the corresponding global challenge in two countries already practicing land consolidation or even some form of it. I expect that after this research I will be able to develop an evaluation criterion for land consolidation practice based on my research objectives and methodology.

Over the past 20 years, several approaches to land consolidation have been developed in response to the Global Agenda towards No Poverty, No Hunger, and Sustainable Communities. This has especially been prominent in Central and Eastern Europe, Asia, and Sub-Saharan Africa. However, these land consolidation approaches, especially those in Sub-Saharan Africa, have mostly been developed with a focus on achieving food security and land tenure security. The development trajectory and current state of land consolidation in Western Europe has shown that though at its initial stages in the pre-WW2 era, land consolidation was developed with the goal of food security, the post-WW2 era saw the expansion of the goals of land consolidation to encompass other aspects of the rural landscape towards a total rural transformation. A similar trend can be recognized in the land consolidation's development in Sub-Saharan Africa, where Rwanda has developed the land use consolidation, a form of land consolidation different from its Western European counterpart, and the voluntary land consolidation in Ethiopia. While the Western European approaches of land consolidation have evolved over time to contribute to rural development, food security and land tenure security, the current approaches developed in Sub-Saharan Africa are aimed at land tenure and food security.

This study aims at comparing and assessing the two land consolidation approaches, the conventional Western European approach and SSA's land use consolidation to identify the factors needed to develop land consolidation as a rural development tool

## 1. THE LAND MANAGEMENT-RURAL DEVELOPMENT NEXUS

Though ambiguous, the term “rural” is clearly recognizable, where human settlements and infrastructure occupy small patches of landscape usually dominated by fields and pasture. Rural definitions could also be founded on administrative, land use or economic concepts that exhibit varied characteristics including demographics and socioeconomic considerations. This affords rural families to construct a diverse range of activities and social support abilities to improve their standards of living (Ashley & Maxwell, 2002; Cromartie & Bucholtz, 2008; Ellis, 1998). Sustainable rural development is considered as an umbrella term or blueprint to achieve a better and more sustainable future for all, is targeted at addressing global challenges but local efforts through rural development is key to its overall success. The sustainable development of the rural space, the scope, and the scale has evolved a lot during the past century.

Land consolidation is a land management instrument which focuses on integration of segmented land parcels to form and afford users with efficient land utilization since land consolidation has many objectives (van Dijk, 2007). Yan et al. (2015) indicated that “land consolidation enlists the idea of the trinity of quantity control, quality management as well as ecological management and protection to improve land utilization efficiency”. Land consolidation could also include planning and implementation of water and road construction projects and also the establishment of recreational areas as well as landscape protection sites (Hiironen et al., 2010). Quality management as well as ecological management and protection to improve land utilization efficiency” Land consolidation could also be seen as a means to improve farm productivity as the result of easier mechanization and reduced work and transport cost (Coelho, 2019; Thomas, 2006b).

Land Use consolidation is coined from land consolidation and focuses on the use of land for specific purposes and not necessarily consolidating their rights. This land use consolidation addresses the improvement of rural livelihoods through the improvement of agricultural production (Chigbu et al., 2019). In Rwanda, land use consolidation is practiced as a land management tool to enhance food security in the country. Rural development can only be achieved when the standard of living of village inhabitants is enhanced. There is a similarity between village development and rural development, but the only constant factor is the enhancement of infrastructure and land tenure security of inhabitants to engage in any meaningful venture.

The advocates of land consolidation since the 14<sup>th</sup> century emphasized the need to practice, however this practice trickled down to parts of the world at different paces and scales. The conventional land consolidation was later popularized by the Dutch and Germans who based their practice on a legal framework drawn into acts to guide the practice. The organic land law and the land consolidation regulations in sub-Saharan Africa for instance is a bottom up process where grass root stakeholders (farmers) are primary beneficiaries in theory but however in practice land use consolidation practice is rather practiced with a more top-down approach (dictates from government). The clear example in the case of Rwanda, in 2005 the government introduced the Organic land law, which requires that while each land holder retains individual

rights to the land they must ensure that procedures for land use consolidation shall respect the order of the Ministry of Agriculture and Animal resources ,responsible for land use consolidation (Ministry of agriculture and animal resources, 2012)

## 2. RESEARCH APPROACH

The research approach employed in this thesis was the case study. In the case study, the focus is on answering research questions concerning “How” and “why” a particular phenomenon or practice is observed. According to Yin (2017), an exploratory case study entails testing the differentiating importance of a practice from two similar scenarios with different occurrence periods. The uniqueness of a case study is the ability to synchronize an array of evidence ranging from journals, interviews, and observations. The conceptual base of this thesis is land consolidation and this being a complex and multifaceted land management instrument spans the scope of environmental, social, economic and policy(political) considerations. The practice of land consolidation is unique to every context across the globe thus a case study approach is the most appropriate for this study.



Figure 1:Map of Germany (Rhineland Palatinate)

The research approach was based on case study considerations, highlighting the main issues on rural development and its relation to land consolidation in Germany and Rwanda. In the case

of Germany, consideration will be on the land consolidation act, peer reviewed articles. The case study area in Germany will be the federal state of Rhineland Palatinate .

The case on Rwanda will consider publications on the Government interventions (Ministry of agriculture and animal resources, among others), journals and peer reviewed articles. Semi-structured interviews with a snowballing approach will also be considered. The case study in Rwanda will be based on the Rubavu District. The case study approach will show the benefits and drawbacks of implementation of Land consolidation and Land Use consolidation in both countries.

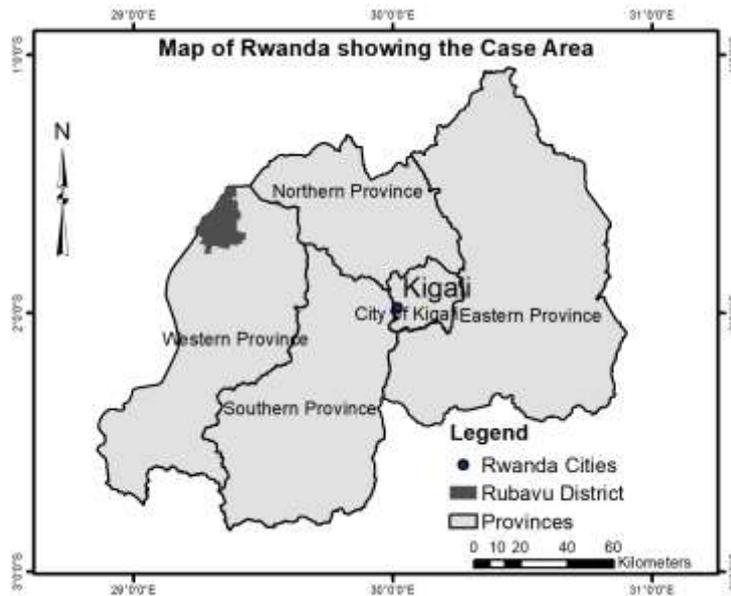


Figure 2:Map of Rwanda (Rubavu District)

### 3. ASSESSMENT FRAMEWORK

The measure of progress considers scalability, sustainability, and measurability. The assessment framework developed in this paper represents the structured conceptual map of learning outcomes that border on the practice of an effective land consolidation (which should include land-use consolidation).An assessment framework details how an assessment is to be operationalized, combing practice and theory to explain both the “what” and “how” of any study (Pearce, J., et al. 2015).This Assessment framework considered the perspectives and contributions of Political, Economic, Social. Technological, Environment and Legal (PESTEL) foundations of the practice of land consolidation. According to (Baldock et al.,2001),they assessed rural development with the background of underling driving factors that fuel the engine of rural development using the PESTEL approach, where they concluded that the policy framework for rural areas had become Europeanized in the past decade owing to serious concerns in Europe and the responsibility of member countries practicing rural development should tailor their approaches to best suit their specific situations than forced by policy to

follow an imperfect EU model. Gedefaw et al. (2019) in their research on voluntary land consolidation in Ethiopia, highlighted the Social, Economic, Environmental, Political/Legal justifications why policies are needed to counter land fragmentation and why land consolidation is a basis for sustainable development. This research adds the dimension of not only the PESTEL but also the assessment framework generally, which later considers the perspectives of two countries. The relevance in terms current practices and considerations adds to the novelty of this research. The consideration of literature guided the consideration of the following perspectives to be considered in this research. A brief view of the assessment framework is shown in Figure 3.

#### **4.1 Sustainable Land Consolidation and Land use Consolidation**

The focus of sustainability is the basis on which every development agenda should start. The considerations of land consolidation and land use consolidation as land management tools for rural development should not be left out of the sustainability focus. The scalability and monitoring of land management tools will only achieve desired success when future generations are considered where their interests are not compromised.

#### **4.2 Thematic concerns**

The concerns of rural development identified in the scope of this research involved but not limited to village renewal, where villages in the rural communities are given a facelift in all spheres under which the stakeholders deem critical. Agriculture being the most dominant identified practice in rural areas could not be over emphasized. Ecological and Irrigation considerations must be carefully implemented to cater for identified challenges including climate change and loss of endangered flora or fauna species. Network and access are vital to every establishment that involves human engagements; thus road/rail construction (or other available options) must be explored.

#### **4.3 The Top-Down/Bottom-up consideration & Strategic levels**

This aspect of the assessment framework looks at how directives are channeled either from the Government and its allied agencies (Top) to the very grassroots or beneficiaries (Bottom). The two-way approach will facilitate inclusiveness and to an extent transparency in the practice of land consolidation or land use consolidation. The Top-Down or Bottom-up approach can only be carried out via strategic levels including, National- Province-Municipal-County levels. However, these strategic levels can be tailored to fit other available governance levels.

#### **4.4 The Internal and International Consideration**

The relevance and practicality of the developed assessment Framework must be based on the internal or local perspectives of the country under consideration regardless of best practices of from other countries. However, regional affiliations and funding requirements would prescribe certain measures which should also be accommodated.

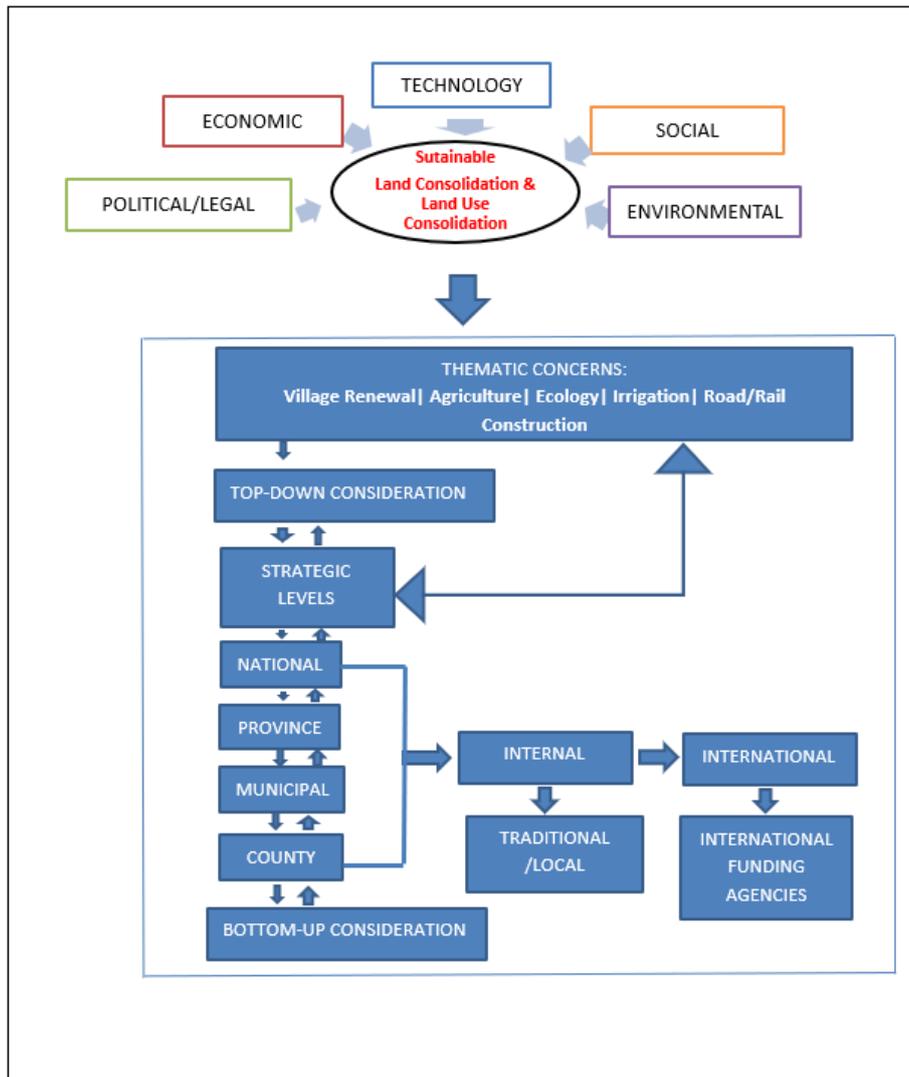


Figure 3: Assessment framework

#### 4. COMPARISON WITH CASE STUDY AREAS (GERMANY-RHINELAND PALATINATE & RWANDA-RUBAVU DISTRICT)

This section will present the results and analysis of the comparative case study between land consolidation in the Rhineland Palatinate (Germany) and land use consolidation in the Kabavu District Rwanda. The comparison has been summarised in Table 1.

## **5.1 Political & Legal Considerations**

The role of government agencies when it comes to Land consolidation projects in Germany is very dominant. In any land consolidation project, the property of landowners is considered and protected by the Basic Law in Germany (Article 13) where authorities are independent and impartial in the process. During the land consolidation process, there are always different opinions thus only the designated authorities can make objective decisions. Decision making for instance in Rhineland Palatinate is based on a process where, the municipalities usually submit an application to DLR (Dienstleistungszentrum ländlicher Raum), then project related studies are carried out and finally decision on which project to be executed. (The authorities involved decide, just as provided for in section 4 of the land consolidation act). The land consolidation decision is an administrative act, which can be objected to (regulated by the Administrative Procedure Act). There are still some special regulations in the land consolidation Act which allows the owner to object to all important decisions. These contradictions may also be decided by the courts whereas in Rwanda, the role of government agencies when it comes to land use consolidation necessitates that government puts in place rules and guidelines to implement and follow up on how implementation is done. They also mobilize and sensitize locals to help with cooperatives to support the process. (E.g., Store houses for cooperatives to store harvest for onward distribution to markets. Government also determines the specific crops to be grown in a season and offers the platform for discussions within or among stakeholders. The provision of advisory services to local communities to settle disputes or solve challenges is also a key role by government. Decision making is in the form of Macro descending and Micro ascending approach where farmers on the bottom level through their cooperatives are included partially in decision making and government with its allied agencies from the Top also decide. The Strategic levels or channels for decision making is from the Province to District then Sector to Cell and finally Village level. The extent of legal provision is based on the agricultural land policy at national level. Strategic plan for agricultural transformation adopted in 2018. At district level, the district development strategy division on land use consolidation specifies how many hectares of land will be consolidated as well as estimated yield. The rights of the stakeholders are catered for mainly through land titles, where land titles are issued and intended land purpose is stated. Thus, a form of security for landowners and specific land use must be adhered to.

## **5.2 Economic considerations**

The community of participants in the land consolidation procedure must bear the execution costs. They submit an application for funding where the DLR helps with the process. The Directorate of Supervision and Services, together with the Ministry manages the funds and disburses funds. The funds are rescheduled for each year in a budget of the state of Rhineland-Palatinate. The percentage of funding that comes from the government ranges from 65% to 90%. A land consolidation process in a region with viticulture usually gets 90%, and an area for just village renewal gets 65%. In Rwanda, the Rwanda Agriculture Board is mainly in charge of disbursing funds. Funds are channeled from the government through the ministry of agriculture then to various districts based on set budgets. This is usually in July when the

financial year starts. Support from International agencies are also considered but usually on government agreements and supervised by responsible agencies.

### **5.3 Social considerations**

The importance of the Land consolidation process for the cultural landscape is essential. Cultural landscape is an important term in Rhineland-Palatinate. All landowners are checked or legitimized by the DLR which is an expensive exercise. Mostly current owners are found but if that is not the case, a representative can be appointed (This could be a mayor who assumes the position of landowner). Social needs are usually not encouraged but mostly infrastructure measures, like paths, roads, cycle paths, bridges, nature conservation measures. The process of migrating landowners to new parcels because of the land consolidation process is very demanding thus a lot of patience is required. For instance, currently at the DLR there are approximately 40,000 landowners in the land consolidation procedure. There are usually few cases with long disputes. The case of absentee landowners in Rwanda is usually not existent because of land title registers and family inheritance. Government also engages key stakeholders to appreciate the importance of participating in land use consolidation. This is an attempt to solicit their indulgence and involvement. The Social needs of rural places affected by land use consolidation are usually compensated through the establishment of local markets through government interventions in partnership with private sector to facilitate inter district trade. The main challenges as regards crop types and soil type are managed through the engagement of professionals and technicians to advice on alternatives (crops) that will do well in a specific area.

### **5.4 Environmental considerations**

The ecological consideration made to compensate for the damage caused by Land consolidation projects are very extensive and include audits, and planning. This includes Environmental Impact Assessment and Species Protection Assessment. Compensation is planned for expected damages and ecological plans must be approved. In the event of displacement or relocation of farmland owners, the landowners must be compensated for the same value (Section 44 FlurbG). The ecological consideration made to compensate for the damage that will or might be caused by land use consolidation results in decisions where areas that are not suitable under the land use consolidation are conserved for their protection rather than compensation. There is usually no instance of relocation or displace of farmers because of land use consolidation.

### **5.5 Technological considerations**

The technological inputs employed or considered in land consolidation project is reflective on the fact that everything is semi-automated. The property registers and the land register are decisive for the property. This data is used in the land consolidation process and always updated. The property owner is always the owner and he or she can always have access to his property. However, there is no automatic land allocation. A successful technologically advanced (SMART E-Solutions) can contribute to land consolidation but must take into account

emotions, laws or even history. The emotions of the landowners are difficult to interpret thus personal discussions between the authorities and the landowners cannot yet be replaced by technology. Rwanda uses a digital land database where every land has registered coordinates as well as intended land use. (Land administration information system-LAIS) and the most practical way to engage the farmers and give them a sense of entitlement via the use of technology is with the use of mobile phones where users (dial a short code \*651#) with the unique personal identifier to access details on their land parcels. To achieve a successful technologically advanced (SMART E-Solutions) for Land use consolidation to achieve total rural development today, National land use Masterplan via web GIS regarding demarcations must be implemented to consider not only merging of plots but facilitate effective planning.

Indicators	Germany	Rwanda
<u>Political &amp; Legal</u> -Role of government -Decision making process -Dispute Resolution	-High -Bottom-up -Through Court	-High -Top-Down -Through government sponsored advisory services.
<u>Economic</u> -Funding Sources  -Employment Opportunity -Infrastructure Investment	-Government & Community of participants -High -High	-Government  -Low -Low
<u>Social</u> -Standard of living -Cultural Perspectives	-Enhanced -High	-Semi-Enhanced -High
<u>Environment</u> -Climate change considerations -Ecological compensation	-High - Critical	-High -Critical
<u>Technological</u> -Access to land Data -Use of appropriate technology	-Automated -High	-Automated -High

Table 1:Country Comparison

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## 5. DISCUSSION

This section discusses the results of the study's impact on sustainable rural development, land consolidation and land use consolidation, and food and land tenure security.

### 6.1 Sustainable Rural development

Sustainability is a fundamental consideration in every sphere of development which cannot be ignored. The definition of sustainable development which hinges on the principles to conserve, satisfy social and economic needs of man as well as the management to guide the required changes in institutions and technology as described by (Garcia,2000) coupled with the definition by the FAO which states that “sustainable development is seen as the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generations” is clearly addressed by the practice of land consolidation and land use consolidation according to scope of results based on the designed assessment framework and the case study considerations. In Rwanda as Sustainable land use consolidation provides for rural development dependent on policies in place. For instance, because of the national land use Master plan till 2050 (from 2020 for next 30 years). This consideration highlights the careful consideration of future generations and the need to safeguard their ability to benefit from and utilize land as well as caution to present generation to carefully manage their use of land. The current concerns of the effects of climate change and corresponding mitigation plans identified in the practice of land consolidation in Germany also lends concerns to sustainability for instance in the case of considering sustainable water management and nature conservation measures as key aspects of the land consolidation process. The environmental impact assessment face of consideration of land consolidation and land use consolidation projects makes provision for sustainability concerns to be achieved.

As described by Chien-zer,(2001), rural development is a part of territorial planning , which includes all plans and measures to protect and improve the economic, living and recreational conditions in rural areas to foster long-term standards and quality of living. These aims are clearly in line with what Land consolidation and land use consolidation seek to achieve with the scope of development. For instance, in the case of Rwanda, through the Rwanda agriculture board they help in the creation of cooperatives to facilitate market networks for the rural communities which caters for the economic and living conditions of the rural dwellers. The reconfiguration of rural resources including land, flora and fauna affords the opportunity for a certain level of modernization paradigm to contribute to the value addition agenda sort by many rural development agency as well as agents. Ploeg et al.,(2000) also postulated that rural development should be considered at a multi-level, multi-actor and multi-faceted process that reflects and represents the networks and practices embodied in rural development. In the case of Germany with the results showed in chapter five, clearly Land consolidation is a critical contributor to achieving rural development considering the holistic development consideration and the implementation of integrated plans which also includes village renewal as well as rural road construction which does not only benefit immediate beneficiaries but serves to facilitate a

network of participants. In Rwanda, development in agriculture translates into developing rural communities because rural dwellers benefit directly from impacts that arise. The agriculture only focus of rural development is also dispelled by impacts of land use consolidation through the boosting of small enterprises in transforming and marketing crops and an avenue to attract investors (to partner with local communities to increase yields per parcel) thus translating into job creation and enhanced living conditions. Forward looking land management in conjunction with sustainable development measures form the basis for sustainable and land saving land use. This clearly indicates a contribution to sustainable rural development.

## **6.2 Land consolidation and Land Use consolidation**

Land consolidation is an essential tool amongst other instruments in the land management tool box and an integrated part of a broader rural development package (Hartvigsen,2018).This assertion made by Hartvigsen in his publication in 2018 still holds based on results of this thesis which reveals for instance in the Germany, a nationwide consistent policy implementation for the practice of land consolidation entails but not restricted to agricultural projects, village development projects, water protection purposes , projects aim at protecting nature and environment at large( this extends to also include forest consolidation projects). The monumental contributions to rural development highlight its extensive advantage and relevance today. There are several other land management instruments which facilitate development including land fragmentation, Land Banking, land readjustment, among others. However, land consolidation which hinges on social, economic, and ecological functions proves to be a sophisticated and applicable tool which when carefully practiced will yield desired goals. Results from this research revealed that land consolidation caters for emigration and population decline in rural areas, securing services and the general interest of people. In the case of Rheinland Pfalz in Germany, Land consolidation is deemed a multipurpose instrument of land development to protect natural resources and implement plans for nature conservation. Land as a precious natural capital can be preserved through civic participation processes, common concepts, and action plans through several stages of engagement with key stakeholders. This will ensure appropriate land allocations and investment measures for land development.

Land use consolidation as identified by (Ntihinyurwa et al.,2019) on their research in Rwanda postulated the process entails a system where farmers grow the same priority crop (maize, beans, Irish potato among others) in a synchronized way based on agroecological zones chosen for them by the government under requirements of the crop intensification program to boost national agricultural productivity. Their results and findings were specific and precise, giving an opportunity for this research(thesis) which revealed based on results found to highlight the fact that land use consolidation also contributes to the safeguarding of social cohesion, volunteering and commitment of stakeholders through the structured participation of cooperatives even at the village level to facilitate market networks for the rural communities and inter district trade. This fosters a stakeholder participation to achieve a common goal. This thesis also reveals that land use consolidation considers strategies to adapt to climate change and its negative impacts in the context of environmental degradation (for instance in erosion and drought). The implementation of the conservation law which caters for wetlands as well as

forest areas. also “areas that are not suitable under the land use consolidation project or scheme are conserved for their protection rather than compensation”. The adoption of the “Zero grazing” intensive system of cattle rearing supports the ecological consideration under land use consolidation. The “agriculture and food security” tag of land use consolidation was investigated in this thesis and revelations proved that; the practice supports the transformation processes in the agri-food industry which translates to small enterprises to serve economic needs through job creation and enhanced living conditions of farmers engaged under a specific land use consolidation project.

The approach of this thesis as regards the developed assessment framework considered the practice of land consolidation in Germany and land use consolidation in Rwanda which revealed perspectives under PESTEL (political/legal, economic, social, technological and ecological) considerations revealing the relevance and essential aspects of both practices as land management instruments.

### **6.3 Food Security and Land tenure Security**

Dekker(2001) opined that, food security is defined as assured and sustained access by social groups and individuals to food adequate in quantity and quality to meet their nutritional needs. As distinctly highlighted as the second sustainable development goal by United Nations “End hunger, achieve food security and improve nutrition and promote sustainable agriculture”, there is an ever-growing need to put food security at the heart of development. This thesis buttressed this need by uncovering the contributions of land consolidation and land use consolidation to achieve this goal. The crop intensification program introduced in Rwanda to boost agricultural productivity, which was under the land use consolidation agenda, pursues the fulfillment of the food security goal for sustainable development. This achievement is highlighted in the consideration of essential crops in carefully identified agro-ecological zones. Land consolidation in Germany considers land management in coupled with sustainable development measures to form the basis for sustainable land use which contributes to the agenda to promote sustainable agriculture.

Land tenure security is multidimensional and reflects a person’s relationship to land. Tenure security is an important factor in stimulating long term investments, thus the need to distinguish between legal( de jure), actual (de facto) and perceived tenure security according to (Gelder,2010; Guangcheng et al.,2019; Reerink & Gelder,2010; Simbizi et al.,2013). This thesis emphasized their assertion in the consideration of the political and legal considerations of the designed assessment framework. For instance, in the case of Germany as revealed by this research any form of land consolidation is executed by the guiding principles of the land consolidation Act, which clearly makes provisions for the protection of the rights of stakeholders. A land consolidation will only take place when majority of stakeholders are in acceptance of it. (in Rheinland Pfalz for instance). The land title registration system in Rwanda for instance caters for the rights of the individual landowners assuring them of a secured land parcel. Even though under the practice of land use consolidation landowners still maintain the

rights to their land parcels only the land use is consolidated or changed under the land use consolidation scheme.

## 6. Conclusion

A glaring revelation of this analysis coupled with responses from the case study considerations asserts that, land use consolidation and land consolidation operate on different scales thus an indication for a learning opportunity from both practices. Land use consolidation based on its main aim of Food security and increase of productivity to cater for land fragmentation concerns, the factors identified by the developed framework (Political/Legal, Economic, Social, Environmental and Technological). When critically considered the contribution of land use consolidation as a tool to rural development will be clearly established. However, there are huge financial commitments and investments without which success might be eluded. Although land use consolidation could be considered as a unique form of land consolidation the two are different in terms of activities involved.

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