Meeting the 2030 Agenda: Responsible Consolidation of Ghana's Customary Lands

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Key words: Land Consolidation, Food Security, Land Tenure Security, Rural Development

SUMMARY

Land Consolidation on Sub-Saharan Africa's customary lands have generally failed for various reasons. However, with the prevalence of land fragmentation as a problem in the past two decades, there has been a new wave of land consolidation activities in the region. Land fragmentation on customary lands has two main causes—the nature of the customary land tenure system, and the somewhat linked agricultural system. Since attempts to increase food productivity on customary lands have involved fertilisation and mechanisation on the small and scattered farmlands, these approaches have fallen short of increasing food productivity. Land tenure security is further low on these lands. This study examines how a responsible land consolidation measure can be developed for customary lands to contribute to food security and land tenure security. A design research approach is used to develop a land consolidation measure for customary lands and reported here. This study concludes that though the land consolidation strategy developed is significantly able to reduce land fragmentation, both physical and land tenure, the local customs are an obstruction to the technical processes to achieve the best form of farmland structures. Hence the developed approach can contribute to land tenure and food security.

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1. INTRODUCTION

Land consolidation has been attempted on many occasions in the Sub-Saharan African region, despite perceptions that the region's vast agricultural potential has lacked centrally organized land management initiatives. However, the land consolidation attempts have largely been a failure (Abubakari, 2015; Asiama et al., 2017c; Blarel et al., 1992). These abortive attempts either failed to be self-sustaining as expected or did not fit with the local land tenure system. However, in the past two decades, African governments have taken up land consolidation as a land management tool with the express aim of supporting the country's programmes towards reaching the global development goals within their territories (Byamugisha, 2013; Makana, 2009; Musahara et al., 2014). This first road on the back of the Millennium Development Goals (MDGs) at the turn of the millennium, which focussed on the Global South, towards the Post-2015 Development Agenda embodied in the Sustainable Development Goals (SDGs). The SDGs which seek, among others, for an end to poverty in all its forms everywhere, to end hunger, to increase sustainable agriculture, to achieve gender equality, to ensure clean water and sanitation, to create sustainable cities and settlements, and to support combat climate change and mitigate its impact – clearly are imbued with a significant land component.

The link between land and societal problems has been expressed in many contexts, showing that the 2030 Global Agenda centres to a large degree on the people to land relationship, as well as how this relationship is leveraged to land management in development programmes towards the development goals. Though much has been written on land consolidation recently, those studies focussed on specific pilots and cases, and are thus limited to those countries. This study, using a systematic approach, undertakes an in-depth comparison of the three land consolidation practices to link these to the Global Agenda 2030. This study aims to examine how contemporary land consolidation instruments can aid Ghana in the achievement of the SDGs relating to ending poverty, ending hunger, and developing sustainable cities and settlements through land tenure security, food security, and rural development programmes.

2. METHODOLOGY AND RESEARCH APPROACH

The choice of the research methodology is largely driven by the nature of the research problem, the objectives, as well as the questions asked to reach the objectives. When the research seeks a method that emphasizes the solving of problems through the combination of methods from different paradigms that allow for the generalizable and quantifiable results by answering questions related to how much? (qualitative methods), and those that allow for the rich and deep

understanding of the situation, answering questions related to the who, what, and how (qualitative method) related to information systems, the design research is found to be most appropriate (Mingers, 2001). Design research is preferable because it allows for the use of diverse research strategies needed when the research seeks to deal with real world complexities. The design research is operationalized in five steps. First step is the problem identification; second is understanding and agreement about the problem is generated; thirdly, the options for the development of the system is explored and the system is developed; fourth, the designed system is then implemented, and finally the implemented system is evaluated.

The first step requires the exploration of how land consolidation's factors need to be addressed on customary lands, encompassing the first two steps of the design research. A comparative case study approach is adopted. In this vein, an analytical framework for understanding the reasons different land consolidation strategies is developed and adopted or adapted in different contexts, from existing literature, to form a scientific basis for the comparison. Using Van Dijk's (2002) model of comparative analysis for cross-country exporting of knowledge, three countries with existing land consolidation strategies are selected, observed, and compared to Ghana's rural customary lands. This model is grounded in the reasoning that in transferring development and planning approaches across international borders, it is necessary to understand how and why the approach was developed in the original context. The goal of using this model is to first understand the local contexts, and then to examine land consolidation factors and how they influenced the selection of the land consolidation strategy. The selected countries included the Netherlands, Lithuania, and Rwanda. Data from the Netherlands, Lithuania, Rwanda and Ghana was collected through a document review – scientific literature, government policies, laws, and technical reports; and supplemented with interviews with land and agricultural sector officials, and farmers. In Ghana, further interviews were conducted with the traditional authorities and local government leaders.

The second step used the experimental case study with a Living Lab approach. A Living Lab is based on two main concepts—first is the involvement of users early in the innovative process, and the second is experimentation in real-world settings, aimed at integrating the social structure and governance, as well as user participation in the innovative process (Almirall & Wareham, 2011; Liedtke et al., 2012; Pallot et al., 2011). The stakeholders of the experiment were identified, and the process of mapping and recording the land rights was developed with the assistance of the Traditional Authority (the Nanton-Na and the family heads in the area), the leaders of the Farmers' Association of the area and the Lands Commission. Two technologies were adopted for the experiment—a smartphone app and satellite imagery. The smartphone app used was Esri's Collector for ArcGIS. The satellite image was a February 2016 GeoEye-1 satellite image of the area of interest was freely acquired from DigitalGlobe Foundation, and printed at a scale of 1:4000, which is within the range of scales recommended by Byamugisha et al., (2012) for mapping rural agricultural land parcels with medium density.

The third step developed a valuation approach for land consolidation. Here the Multiple Attribute Decision-Making (MADM) method is used based on the general land valuation approach. MADM methods are flexible and can be adapted with ease to the development of

indices being represented by a set of parameters, where the aim is to evaluate an object compared to a standard for which the application is concerned. In the case of this study, the standard is the most appropriate land parcel for farming. This approach is used because it is about to achieve quid pro quo values that can be used for land consolidation.

The fourth step is achieved using the process modelling method that details the steps of the approach taking into consideration the social, economic, cultural, technical, and political considerations on customary lands. The process model developed in this paper is a meso-micro-level procedural model. The meso-micro-level procedural model conveys best practices intended to guide real-world situations by providing prescriptive guidelines for a design and/or problem-solving activity with a focus on individual steps as well as end to end flows of the activity, where each step establishes objectives, and constraints for the next, with feedback loops between the steps for the possibility to re-work undesirable outcomes.

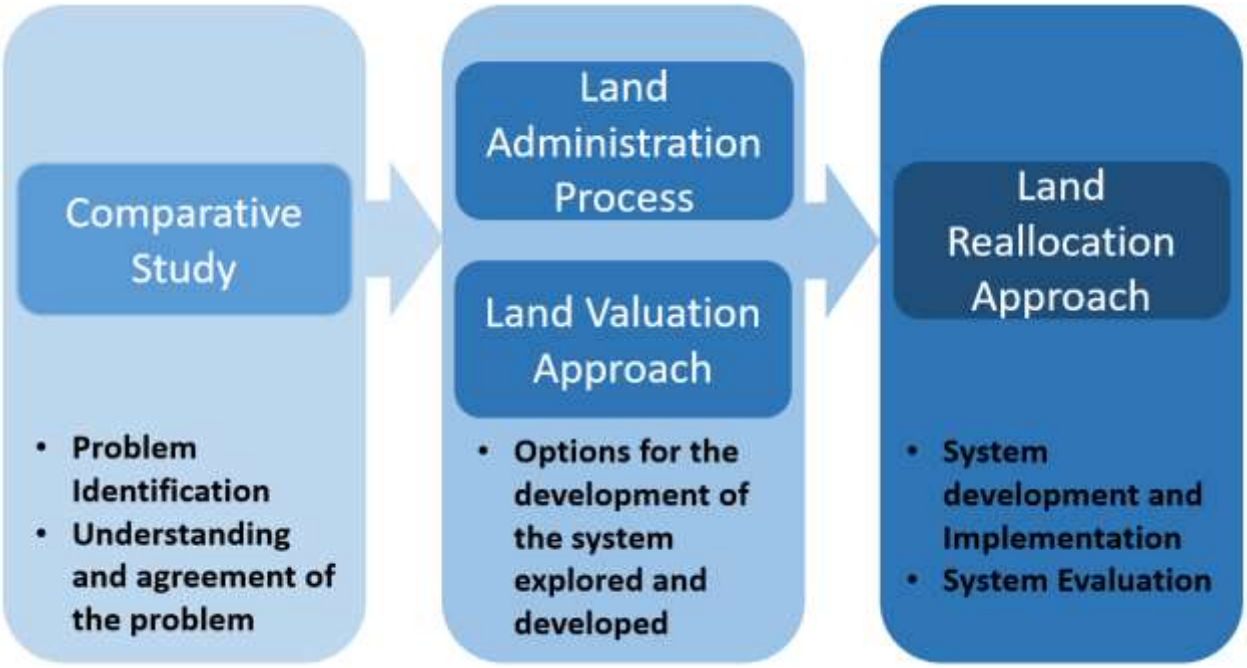

Figure 1: Research Approach

3. RESULTS

This section outlines the main results of the project, according to the research objectives. The results have been summarised in Figure 2 with respect to the gaps in relationships between the concepts shown in Section **Fejl! Henvisningskilde ikke fundet.**. The results presented in this section are displayed in the box "Responsible Approaches to Land Consolidation".

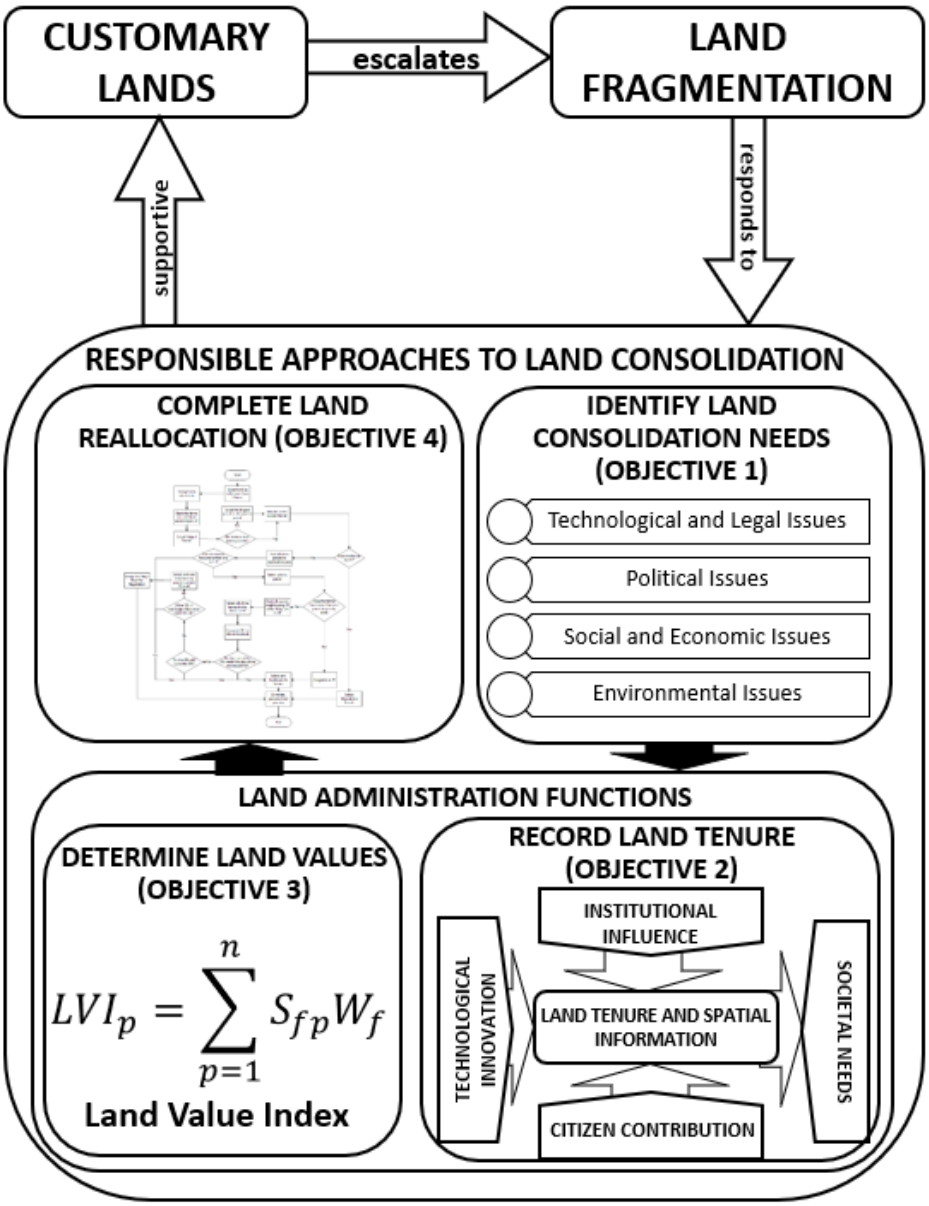

Figure 2: Summary of the Results and Components of Responsible Land Consolidation

3.1 Factors that Influence the Selection and Development of a Responsible Land Consolidation Approach

To identify how local factors, affect the selection of a land consolidation approach, three countries with contemporary land consolidation approaches were identified – the Netherlands, Lithuania, and Rwanda. The Netherlands was found to have land consolidation approaches that have evolved over five centuries, from Voluntary Land Exchange to Land consolidation by agreement and Land Development. Lithuania has developed the Voluntary and Simple Land Consolidation over the past fifteen years, and Rwanda developed its own form of land

consolidation, the land use consolidation in 2008. A harmonisation of the land consolidation approaches in these three countries shows that generalising the development of land consolidation approaches in a continuum from simple and voluntary approaches to comprehensive and compulsory approaches, as is done in certain studies, based on the development level of the locality, does not result in development of a responsible land consolidation strategy, but the local needs and societal makeup is key in the selection of the land consolidation approach. The results showed five key areas around which the development of the land consolidation approaches centre – the government support for and role in land management activities; the land market and land mobility; land tenure, land fragmentation and farming technology; the coverage of a land information system, as well as environmental and ecological considerations.

Comparing these influences, it was found that the state of the economy, the type of land fragmentation, ecological considerations, and the level of farming technology in Ghana was like at least one of the countries with an existing land consolidation approach. The conditions that did not bear any similarities with existing land consolidation strategies were the low influence of the government in land management activities, the absence of a land market, the inadequate coverage of a supportive land information system, and the customary land tenure. However, it was found that the conditions that did not adequately match the countries with existing land consolidation approaches require a substantial change to the social, economic, and cultural structure of the communities, in order to align them with the existing approaches. These conditions therefore require innovative and responsible interventions to enable response to the requirements of land consolidation. The detailed results of this objective may found in Asiama et al. (2017a)

3.2 Participatory Land Administration: An Approach to Collecting Land Information

Land administration processes in Ghana have been found to be slow and expensive in relation to the urgency of the results, and out of reach of most of the citizens. Furthermore, they have failed to integrate all forms of land tenure arrangements especially secondary and customary land rights. It was found that the innovative approaches to land administration on customary lands in Ghana which include the systematic titling by the Millennium Development Authority, the Paralegal Titling Project and the Community-based Land Survey Tool, all had the same problem of being slow, expensive, and concentrated in urban areas and on large-scale farms. Here, Participatory Land Administration (PLA) that sits at the nexus of the drivers of technological innovation and approaches to development studies; where traditional land administration approaches, deeply rooted in western views, together with bottom-up emerging approaches that challenge traditional approaches, as well as technological advances that drive these approaches together with the growing societal needs.

The experiment into PLA in Nanton, Ghana was assessed in terms of reliability, affordability, local participation, and attainability. In terms of reliability, it was found that both technologies, the smartphone app and satellite image were easy for the farmers to use, as majority of them

were users of smartphones. The accuracy of the mobile app was ranged between one and three metres, which even though it is not adequate for the land title registration in Ghana, is enough for the recording of land rights in rural areas. No boundary disputes were encountered. The mobile app was further able to capture all 230 farmland parcels in the area, though the identification on the satellite yielded 143 parcels. The former was further able to identify and collect information on all the customary land rights that are related to farming. In terms of affordability, the two technologies used together are found to be cheaper to use than the current approaches on customary lands. Whereas the current conventional and innovative approaches in Ghana cost at least GH¢ 500 (EUR 125) and GH¢ 200 (EUR 20) per parcel, this approach is estimated to cost GH¢ 36.83 (EUR 9.24) per parcel. This cost will reduce with scaling up. In terms of local participation, it was found that the local people were involved in every step of the approach. This according to them gave them a sense of ownership of the data and the process. The involvement of the Trusted Intermediaries further created a layer of check for the information collected. In terms of attainability, the experiment took 10 working days, roughly 20 minutes per parcel. This would however reduce when the interviews and focus group discussions for the assessment of the process is excluded. The process is therefore fast. The use of locally acquired and accessible materials further boosted the ability of the local people to replicate the process.

Even though the experiment did not set out to undertake a full land consolidation, it is found capable of capturing all customary land rights as well as other information relevant to land consolidation. The detailed results of this objective may found in Asiama et al. (2017b)

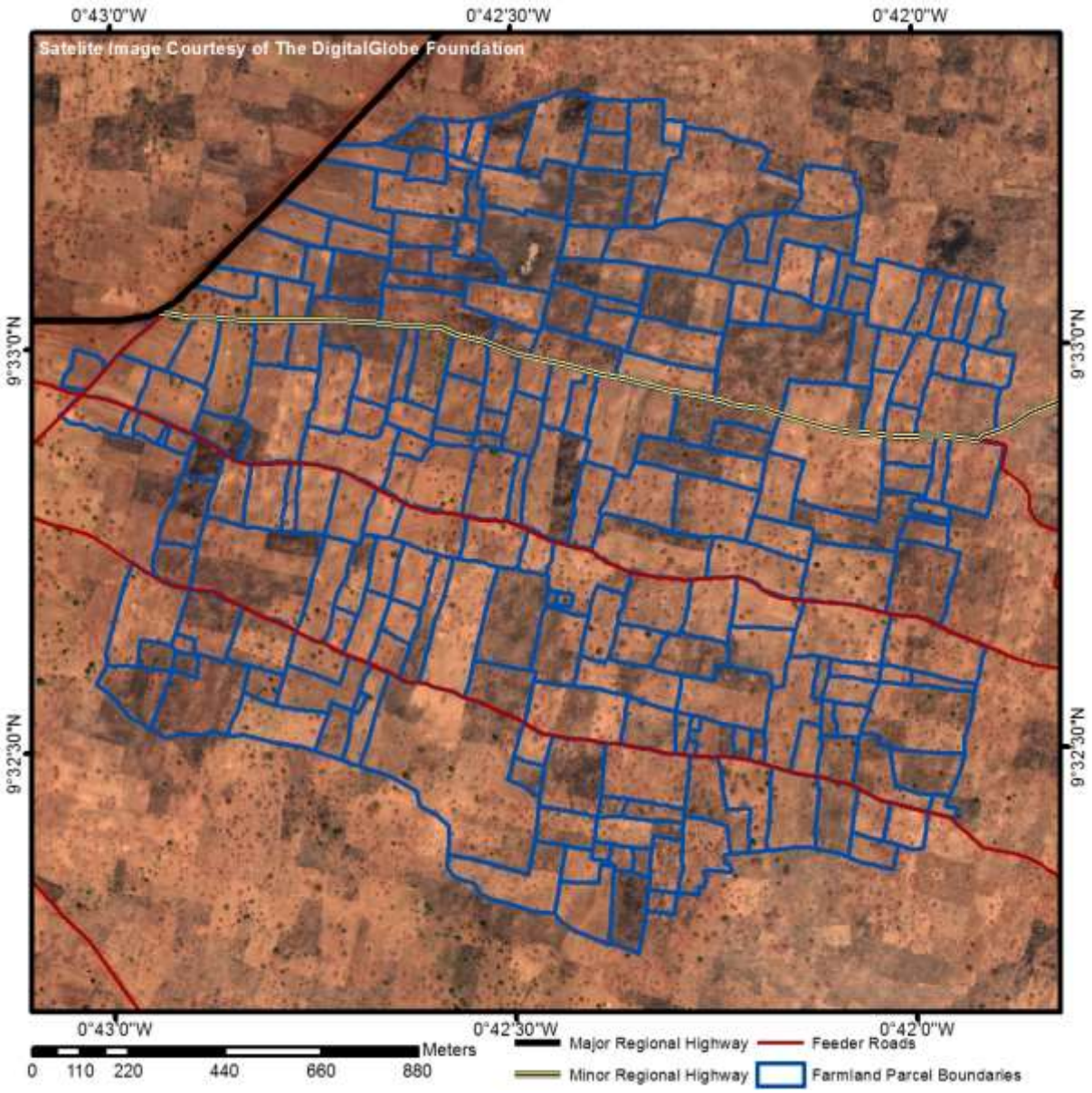

Figure 3: Parcel Arrangement in the Area of Interest - Nanton collected by PLA

3.3 Valuation of Farmlands for Land Consolidation

Land value is not explicit on rural customary lands, mostly because the social, cultural, and spiritual bonds with land inhibit the free operation of a land market. Land reallocation in land consolidation relies on land valuation to describe and assign a value to the farmlands that will be reflective of the farmers' perception of their farmland values. The traditional valuation approaches, including the cost, investment, and comparative methods, are used to value customary lands. However, in rural areas, it is found that even though the sales of land are very

uncommon and unlikely, where land is rented out, the money that exchanges hands is a flat rate that is charged regardless of the nature of the farmland parcel.

There are two approaches to land valuation in land consolidation – the agronomic value, with its basis being the soil productivity and quality, and the market value. Alternatively, market value has been touted as the better approach with studies pointing out the deficiencies in the agronomic value approach. However, the market value approach cannot be used in Sub-Saharan Africa's customary lands due to the limited land market. Here, a framework was developed for an approach for assigning values to customary rural farmland parcels that reflects the local people's view of land value. It was found in the case study of Nanton that key land value factors that determine land values relate to the physical attributes, legal conditions, agricultural productivity, locational factors, and the planning scheme of the farmland parcels. These factors were weighted by the local community according to their perception of what affected their choice of farmland parcels. The weights were integrated into the framework that produced the Land Value Index (LVI) for each land parcel in the area of study. The results showed that in a scenario analysis, a change in weights affected the land value indices at a scale that could change the comparative basis of the land parcels. The sensitivity analysis however showed that the LVIs were not significantly sensitive to the changes in the weight of the factors. However, a prime weakness of this framework is that it is more expensive to use than automatic valuation models. The results demonstrate that it is possible to place relative quid pro quo values on rural agricultural farmlands that are not part of a land market. These quid pro quo values will serve as a basis for the reallocation of the farmland parcels. The detailed results of this objective may found in Asiama et al. (2018)

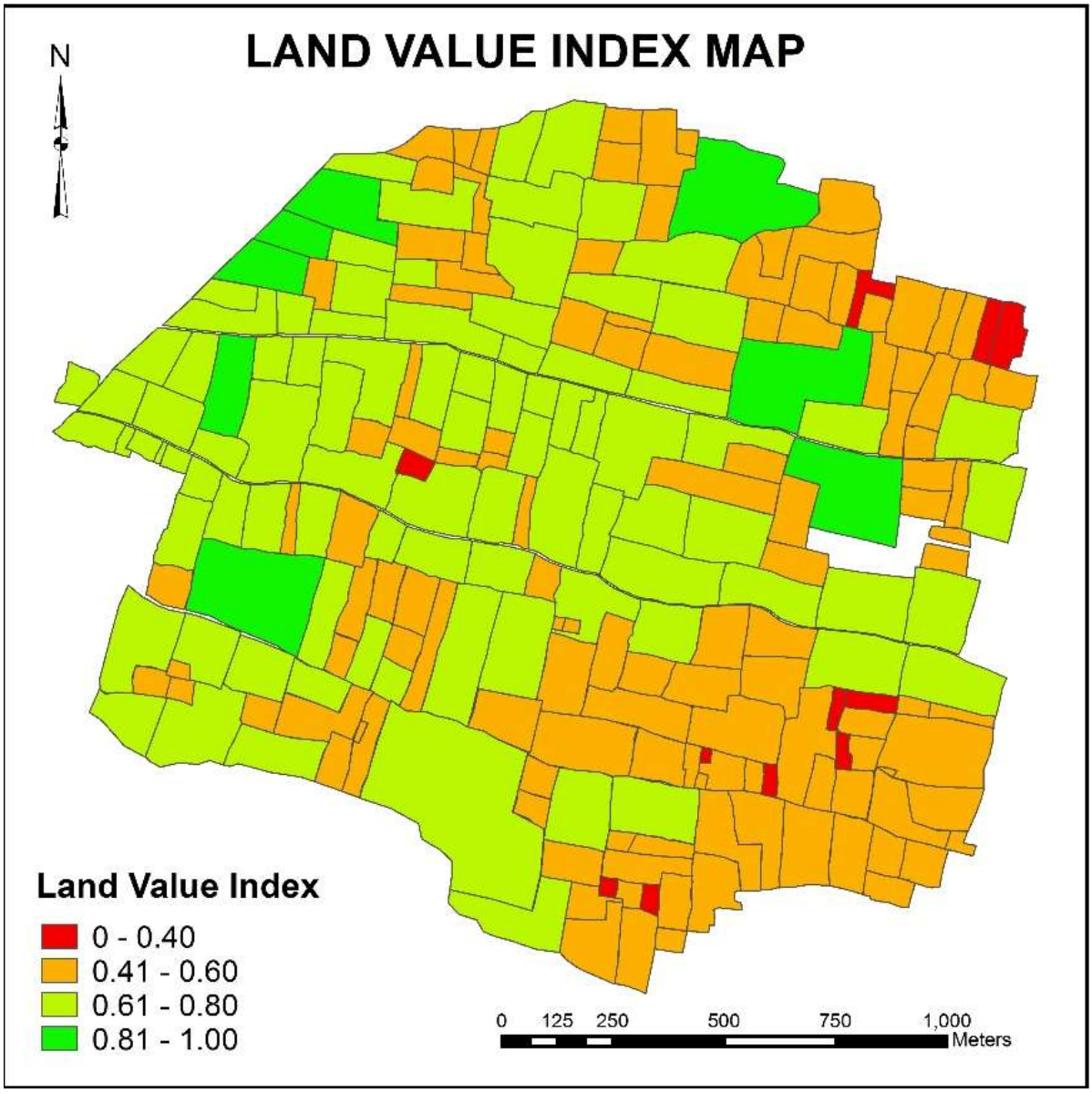

Figure 4: Land Value Index Map of the Area of Interest

3.4 Land Reallocation for Customary Lands

The results of the previous two sections were synthesised to develop the framework of a land reallocation model. Land reallocation is seen as the most important stage in the land consolidation process, where property rights are exchanged, and farmland parcels are redistributed and reorganised. A model of land reallocation should therefore consider all related land information (spatial, rights, and value) and the wishes of the involved land holders. The framework for the model is developed using a process model taking into consideration the

social, economic, cultural, technical, and political considerations on customary lands, through the steps of analysis, synthesis, and evaluation.

The undertaking of land reallocation generally has three key requirements and considerations. Politically, land reallocation requires a mediating authority to act as an arbitrating force during the planning and implementation, because of the disputes that land reallocation may spark. Like land consolidation in general, land reallocation also requires a level of land mobility that will allow for the exchange of farmland parcels, in this case related to social land mobility, i.e. land mobility based on the social and cultural norms in the community. The development of a land reallocation model further requires a consideration for the land tenure system and the land fragmentation situation. Customary lands characteristics that are relevant to land reallocation relate to the rules that relate to the transfer of land between two parties. Here, even though it is generally accepted that customary lands cannot be transferred, it is found that customary land tenure rules do indeed allow for the transfer of land, but with strict restrictions. The framework of the land reallocation model is built around the legal and technical aspects of land reallocation, taking into consideration the levels of landholding (individual, family/clan, village etc.). The framework for the land reallocation is focused on the family level as Section 0 shows that transfer of lands within families involves only the individuals concerned. However, where land is transferred outside the family, it requires the consent of the two families.

When the model framework was applied to the area of interest, it was found that physical land fragmentation was significantly reduced, with a reduction in the number of farmland parcels, an increase in the parcel sizes, a reduction in the land tenure fragmentation, an increased accessibility to key lines of transportation, and slight improvement in the parcel shapes in the area, even though this was not a goal of the approach. The most appropriate central mediating authority in the area was found to be the traditional authority in the area, much different from the other areas in the world where land re-allocation has been done.

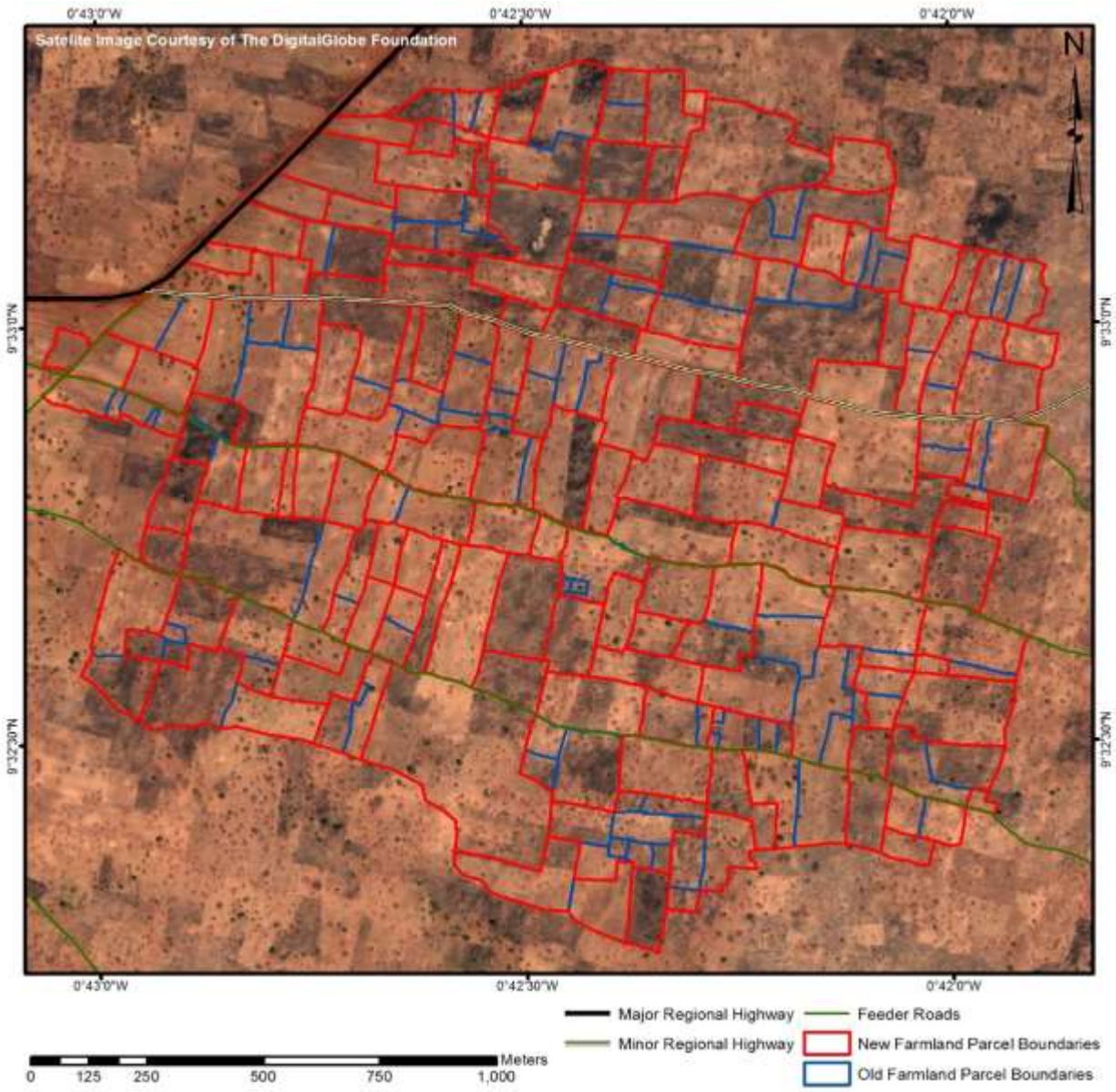

Figure 5: Parcel Arrangements before and after land reallocation

In terms of the land tenure system, local customs, and land mobility, the study found the relationship between the tenant and the usufruct to be a key cause of land tenure fragmentation. However, the study further showed that land tenure fragmentation would be reduced with the application of the approach. With regards to the land reallocation between families, it was found that the developed approach could not handle this as the local people were vehemently against families parting with their sub-allodial interests in land, even when it is swapped for a similar parcel of land. The only seeming solution was to rent out the family land to serve the purposes of re-allocation. However, although this would reduce the physical land fragmentation, the land

tenure fragmentation would worsen. The detailed results of this objective may found in (Asiama et al. (2019).

4. Synthesis and Discussion of the Results

This section syntheses the results from the four standalone research results summarised in the previous section and discusses the implication of the results to current land consolidation strategies, to land and food policy formulation and implementation, meeting other societal challenges and needs, and to the study area of Ghana.

4.1 To Current Land Consolidation Strategies

As shown in the different sections, land management activities are very much dependent on the local context in which they are being applied. However, there is very little literature on the considerations for the transfer of land management activities into other areas. This work, using land consolidation as a land management activity, explores the factors that must be considered and how to achieve those factors when transferring the processes to Ghana's rural customary lands. This is important because even though the problems in two areas may be similar, the response to those problems may differ, as shown in Section 0, and therefore need comparative analysis. The results in this work further contribute to the literature and scientific knowledge on how land management activities could be transferred from one part of the world to another, in this case from western countries to sub-Saharan Africa. Thus building upon the works of Masser & Williams (1986) and Van Dijk (2002), where the later explored the transfer of land consolidation knowledge from Western Europe to Eastern and Central Europe.

This work further builds upon other works in land consolidation such as Hartvigsen (2015c) and Van Dijk (2003a) that looked at the land consolidation approaches and policies in Central and Eastern Europe viz-a-viz Western Europe at a macro-level, and Demetriou (2014) who looks at the development of systems to support the undertaking of the individual stages of land consolidation at a micro level. These three studies however dwell on areas with already existing and functioning land administration systems. Hence a lot of core and key steps of land administration functions in land consolidation are not considered. This study is developed in three steps – a land administration process, a land valuation approach, and a land reallocation model, contributing to the scientific knowledge of land consolidation at a micro-level (Figure 1). All these three steps exist in literature, the difficulty in using them elsewhere stems from the inadequacy of a general framework for all of them that can be adapted to a local context. This is because each of these three processes are developed to fit a particular local and legal context. In this work, the general requirements and processes for each approach were explored and defined, before the case specific adjustments were developed. This means that some processes had to be deconstructed as they assume certain minimum characteristics in the conventional approaches such as land mobility and a land market which did not exist. In this regard, the processes developed in this work can be applied to any area, with consideration for the local context. This work therefore contributed the knowledge of developing general processes for land administration processes that are needed to support land consolidation.

4.2 To Land and Food Policy Formulation and Implementation

Policies form one of the bases for land management (the other two being Land Information Infrastructures and country context) (Enemark, 2005). The results in Section 3.2 demonstrated the inability of the collected land information to support land management activities for sustainable development. The need for land policies to consider the gap between land information collection or the building of a cadastre on the one hand and sustainable development on the other, is shown in that section. The results show that merely collecting land information is not enough, but the land information should be meant for a particular purpose. Such an approach as collecting land information is not immediately obvious when looking at western countries, however, it is more obvious with SSA countries. Therefore, this work can help with the formulation and improvement of land policies to re-orient them towards gearing land information to land management activities to support sustainable development.

The formulation of food and agricultural policy can also be influenced by the results of this work. As shown in Section **Fejl! Henvisningskilde ikke fundet.**, policies on increasing food productivity focused mostly on mechanisation and fertilisation, rather than looking at land availability, the size of farmland parcels, and the land tenure security of farmers. The result in Section 3.4, describes the framework for the land reallocation model and its application in a case area, shows how the application of the approach can be applied to increase the size of the farmland parcels and reduce the fragmentation of land tenure. This research therefore enriches the need for a stronger link between food policy and land, especially in terms of food productivity.

4.3 To Rural Development

With land consolidation being long held as an approach to reduce land fragmentation in order to increase farm productivity, the strong link between the agricultural sector and rural space caused agricultural development to be equated to rural development. However, the broadening meaning of rural development beyond agricultural improvements has led rural development to encompass not just agricultural improvements, but the wider environmental and other non-agricultural considerations. Rural development as a goal of land consolidation has the capacity to improve the rural space, apart from improving farm structures at the micro level, at the meso (regional) and macro (national) levels. Unlike land tenure and food security, there are very few land consolidation strategies in SSA that explicitly support rural development. Examples are the Ethiopian Voluntary Land Consolidation and the Rwandan Land Use Consolidation. Here it is seen that all the strategies, including the results from this study, concentrate on the exchange of the farmland parcels, without a change of the boundaries, mostly due to the level of land mobility and the social, cultural and psychic attachment to land (Asiama et al., 2021).

4.4 To Other Societal Challenges and Needs

Societal challenges such as climate change adaptation, poverty alleviation, food security, post conflict nation building, and tenure security have a land footprint. Land has been viewed as a

key driver for sustainable development. Therefore, its effective management will contribute to meet the aforementioned challenges and needs towards sustainable development. Though the focus of this research is on food security, and more specifically food productivity, the findings can further impact on the other societal challenges and needs.

The results show the development of innovative land administration processes that may assist in land management activities that are geared towards meeting the identified societal needs and challenges. In Section 3.2, the Participatory Land Administration (PLA) approach developed can be used to collect land information to support other activities, such as large-scale land acquisitions, disaster risk management, and post conflict nation building, with the goal of land tenure security. PLA may also aid with economic and infrastructure development and increasing investments in property by providing land documents to aid in the procurement of loans for property investments within the legal framework. This further contributes to food security, as farmers are more likely to invest in their farms when they are more tenure secure. In Section 3.3, the land valuation approach developed does not only apply to rural customary lands and land consolidation. This land valuation approach is applicable for large-scale land acquisitions, by the government or by private entities, especially in areas without land markets. This will ensure that the values arrived at bear close resemblance to the market value. Furthermore, the land valuation approach may be used by the government for the fair assessment of taxes and the payment of fair and adequate compensation for compulsory land acquisition.

4.5 To the Study Area of Ghana

The three areas of interest selected in Ghana were based on the agro-ecological characteristics, the types of crops grown, and the land tenure system. The first two bases of selection were chosen because of their commonalities in the three areas of interest; however, the land tenure system was chosen because of its variety in the three areas. The findings in Section 0 demonstrate that all three tenure types have common underlying basic principles, therefore, one area of interest was adequate for the remainder of the work. Nanton was the area of interest chosen for the remainder of the work, because, with its skin lands, it has the most complex land tenure structure among the three (**Fejl! Henvisningskilde ikke fundet.**). This implies that the results of this work can be directly applied in Nanton. In the remaining two areas of interest the results need to be adjusted according to the complexity of the land tenure system. The results of this work can be further extrapolated to other areas of Ghana with skin, family, or Tindana lands. However, this work did not cover stool lands as they have similar land tenure characteristics as skin lands. Therefore, minimum adjustments would be expected to be made to apply the results on stool lands.

Furthermore, cases from the Netherlands, Lithuania, and Rwanda are useful for the areas of interest and Ghana as a whole, especially regarding the evolution of land consolidation approaches overtime and land management activities in general.

5. Conclusion

This study aimed at developing a responsible approach to land consolidation on customary lands, using Ghana as a case. The study found that in a comparison between countries with a responsible land consolidation (Rwanda, Lithuania and the Netherlands) on one hand and a country with customary lands but without a land consolidation (Ghana) on the other hand, there were three areas that needed attention to develop a responsible land consolidation – the land administration processes, the land valuation approach, and the land reallocation approach. The Participatory Land Administration (PLA) was developed to bring together traditional land administration approaches, deeply rooted in western views, together with bottom-up emerging approaches that challenge traditional approaches, as well as technological advances that drive these approaches together with the growing societal needs. A valuation approach was then developed to enable the comparison of the farmlands in rural areas that are without land markets. And finally, a land reallocation approach was developed based on the political, economic and social, as well as technical and legal characteristics of rural customary farmlands. This study finds that though the land consolidation strategy developed is significantly able to reduce land fragmentation, both physical and land tenure, the local customs are an obstruction to the technical processes to achieve the best form of farm structures. However, the consideration of all aspects of the society and technology being a basic tenet of responsible approaches, the changes to the local customs is beyond the scope of this study.

A further comparative study can be undertaken on other SSA countries' rural customary lands to further understand the differences, in terms of the requirements of land consolidation. In addition, future work should focus on further developing land valuation and land reallocation approaches by automating them using Computer Assisted Mass Appraisal (CAMA) systems with GIS, and Spatial Decision Support Systems (SDSS) respectively. This is because the processes developed in this study were generalised processes that exist in other regions of the world. The valuation approach was developed in the rural farming context, it can therefore also be developed further looking at urban land to put it in a broader context. This will further deepen and enrich the use of market information in the valuation of urban lands, especially for slum areas for non-market values. Furthermore, as shown in section 0, customary lands are independently managed in each community, save for the national legal framework that tries to harmonise their management. This means that a single land consolidation approach will not fit the whole country. Further research should therefore be conducted into the legal framework of Ghana, vis á vis land consolidation in order to develop an integrated, flexible, and inclusive framework for customary lands towards land consolidation. Further research also needs to be done in the implementation, through active research in the conduct of a pilot land consolidation process in the customary areas, to further ascertain the limitations that the approaches have in other areas. This, in tandem with the scaling up the approach by further establishing workflows, will enable the testing of the approach with a wider coverage.

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