



COST-BENEFIT ANALYSIS OF LAND TITLE

REFORMS IN GHANA : AN ORDER OF

MAGNITUDE ESTIMATE

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Cost-Benefit Analysis of Land Title Reforms in Ghana: an Order of Magnitude Estimate

Ghana Priorities

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Academic Abstract

This short note provides a ‘back-of-the-envelope’ cost-benefit analysis of a program to formally title about 75% of land across Ghana, equivalent to roughly 170,000 km². The analysis indicates that the cost of such a program would likely be around GHS 1,658 million. If the program is successfully implemented then the largest expense is surveying, which is estimated to comprise 64% of the total cost. For a program that is not implemented successfully, survey costs are assumed to be capped and comprise only 15% of the total costs. The intervention is expected to improve a range of economic and social outcomes including security of tenure, availability of credit, investment certainty, agricultural productivity, gender empowerment, transaction frictions as well as land administration. The value of these benefits is assumed to be fully embedded in increased land prices, which our literature review suggests would be in the order of 25% of current land values, an estimate slightly on the conservative side. Using some imprecise, yet plausible assumptions including a 25% probability of successful implementation, the magnitude of expected benefits is around GHS 86,123 million, equivalent to about 30% of one year’s GDP, resulting in a benefit-cost ratio of approximately 100. There is a large amount of uncertainty around this central estimate because land reform is a challenging arena, with multiple competing interests and sensitivities. Previous interventions in Ghana and other countries have demonstrated mixed success. We explore the impacts of these uncertainties and note large variations in BCR ranging from a low end value close to 5 to a high end value as large as 219. The key policy recommendation arising from this paper is that land reform has the potential to generate impressive impacts relative to costs, if sufficient political will is devoted to increase the probability of successful implementation.

Key Words: cost benefit, land, title, poverty

Policy Abstract

The Problem

- Poverty remains a problem in Ghana. There is overall reduction in national poverty over the last 3 decades, but this masks the persistent spatial concentration of poverty and high inequality. Efficient access to land for formal economic activity can help reduce poverty drastically. However, access to land in Ghana remains a challenge to the poor and investors as well as local authorities for development. Ghana faces a particularly huge challenge with land tenure databases especially as land titling is also very low.
- It is estimated that the majority of land held in Ghana (about 80%) is held under customary tenure system. Most land parcels are largely undocumented, unregistered formally and consequently untitled. In addition, there is also a limited or poor and outdated national database on land.
- Land for economic use is therefore a structural challenge and an impediment to economic development and poverty reduction.

Intervention - Land Titling

Overview:

The program involves surveying and documentation of 170,657 square kilometers of land representing the parcel of customary lands in Ghana and building a comprehensive and automated national base land map. The intervention has six segments:

1. Updating and modernizing the national base map
2. Rehabilitating the Continuously Operating Referencing Station (CORS) network
3. Mapping, survey and demarcation of customary land ownership
4. Digitization of documents, and automation of the registration process
5. Sensitization
6. Legal framework for adjudication

Implementation Considerations

- The program will be implemented by the Lands Commission of Ghana, Office of the Administrator of Stool Lands, Geological Survey Department all under the Ministry of Lands and Natural Resources and private land surveyors.
- The implementation also includes sensitization workshops to be held nationwide as well as comprehensive legal systems for adjudication.

Costs and Benefits

Costs

- If the project is implemented successfully the total cost is estimated at GHS 1,658 million of which 64% accounts for the survey cost. However due to the challenges in successful implementation of land title reforms, there is a non-trivial risk of implementation failure. If the project is not implemented successfully, then we estimate the cost would be GHS 700 million – lower than for a successful implementation, but with no benefits.

Benefits

- The total benefits are estimated to be GHS 344,492 million if the project is implemented successfully. These benefits represent a number of outcomes including improved access to credit, reduced land transaction costs, reduced social upheavals and conflicts, and increased investment certainty. These benefits manifest as a 25% increase in value of rural customary owned land as a result of the reforms and titling. The expected benefits, assuming a 25% probability of success is GHS 86,123 million.

BCR Table

	75% probability of success	50% probability of success	25% probability of success	10% probability of success	1% probability of success
Benefits	258,369	172,246	86,123	34,449	3,445
Costs	1,419	1,181	942	799	713
BCR	182	146	91	43	5

Note: All costs and benefits in GHS millions. Costs and benefits reported in this table represent weighted values of success and failure scenarios, where benefits = GHS 344,492 million if successful and = GHS 0 if not, while costs = GHS 1,658 million if successful and GHS = 703 million if not.

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1. Introduction

Ghana's economy and poverty reduction have been underpinned by robust economic growth, with GDP per capita increasing 88% in real terms since 2000 (World Bank, 2019). Nonetheless poverty remains a challenge. A majority of the rural population are still poor and in the period between 2012/2013 and 2016/2017 extreme poverty levels barely changed, dropping only 0.2 percentage points. For a rural based economy like Ghana, land plays a crucial role in economic development and poverty reduction. This is primarily so in developing countries which are largely reliant on agriculture and mineral resource mining. However, access to land for economic development is a challenge in Ghana due to the absence of titling and proper documentation. This generates problems of land disputes and inadequate utilization of land. Proper titling and security to land is essential for economic agents and development. It is argued for instance by Feder and Nishio (1999) that proper title and registration can unlock the development potentials of economic agents by enhancing land transactions and value and generally increase the economic wellbeing of agents in such economies. Further, appropriate land title can enhance access to credit via its collateral benefit (Antwi-Agyei, Dougill, and Stringer 2015).

However, the nature and complexity of land tenure systems and poor land databases can reduce security of title and land. Ghana is a case of a typical developing country with complex land tenure systems and a limited land registration database. Land in Ghana can be categorized under two: customary land and public land. Customary land (close to 80% of land in Ghana) is primarily land under traditional customary authority (consisting of monarch based (stool and skin) lands) and clan and family lands. In this system, land is held in trust for communities, clans and families and ownership is intergenerational. Land in this category is largely undocumented and unregistered formally. Consequently, reliable data on land parcels in Ghana is scanty. Public land (the remaining 20%) consists of state land and vested land. The former is land acquired by the state and the latter land managed by the state on behalf of customary landowners.

Land for economic activity and development is clearly a significant problem given that the biggest proportion of land in Ghana is largely untitled nor registered formally. The limited access to land titling has adverse consequences for economic activity and thus poverty

reduction strategies. This is especially so in the case of an agricultural based economy like Ghana. An intervention that frees up access to land with proper title increases the value of land and its consequent economic activity associated with it. This intervention can therefore promote efficient access to the land market, raise the value of economic activity, reduce transaction cost and may also reduce poverty especially amongst the rural regions where poverty is widespread. This paper evaluates the cost-benefit analysis of programmes designed to appropriately survey, demarcate, and provide appropriate title to majority of land in Ghana within an updated and automated land database system. The scope of this analysis is only on rural land in Ghana, which makes up the vast majority of land area in Ghana, and is the least likely to be titled.

The results of our analysis show the benefits exceed the costs by a significant margin with a plausible benefit-cost ratio of around 100. This is based on data from the Lands Commission of Ghana - the foremost government institution responsible for land survey, titling and management in Ghana. The costs of a one-off intervention to title land in Ghana are estimated at GHS 1,658 million with most of the cost associated with surveying. If successful, the intervention is expected to improve a range of economic and social outcomes including availability of credit, investment certainty, agricultural productivity, less social and communal tension, gender empowerment and transaction frictions. The value of these benefits is assumed to be fully embedded in increased land prices, which our literature review suggests would be in the order of 25% of current land values, an estimate slightly on the conservative side. Using some imprecise, yet plausible assumptions, including a 25% probability of implementation success, the magnitude of expected benefits is GHS 86,123 million, equivalent to about 30% of one year's GDP, for a benefit-cost ratio of approximately 100.

There is significant uncertainty around this estimate. The probability of implementation success plays a large role in the BCR calculation. Experience from around the world including Ghana indicates that land titling programs do not always lead to large-scale formalization (Deininger and Feder, 2009; Aristazabal and Ortiz, 2004). Political sensitivities and operational challenges are key determinants in the success or failure of titling reform.

We explore this uncertainty by undertaking sensitivity analysis of key parameters. The analysis indicates incredible uncertainty with a range of BCRs from 5 to around 200. Our results suggest that even under pessimistic scenarios (such as the cost of legal proceedings and sensitization being 100 times what we estimate, or the probability of success being 1% instead of 25%), the

expected value of land reform still exceeds the expected costs. The key policy recommendation arising from this paper is that land reform has the potential to generate impressive impacts relative to costs, if sufficient political will is devoted to increasing the probability of successful implementation.

2. Intervention and Literature

2.1 Description of intervention

The program involves surveying and documentation of 170,657 square kilometers of land representing the parcel of customary lands in Ghana and building a comprehensive and automated national base land map. This would increase the land in Ghana under title from an estimated 10% to 85%. This would provide Ghana with a modern land records database that would be the basis for smoother land transactions and economic growth.

Information from the Lands Commission of Ghana indicate that the intervention has six segments as listed below:

- **Updating and modernizing the national base map.** The base map, a system of record of land maps, was last conducted in 1974 and needs to be updated. The update would be based on creating modern, digital orthophoto maps with elevations using aerial surveys.
- **Rehabilitating the Continuously Operating Referencing Station (CORS) network.** The CORS is a system of stations that is required for surveying and about 200 of these including active and passive stations need to be established across Ghana.
- **Mapping, survey and demarcation of customary land ownership.** This requires basically mapping all of the land in Ghana. This will require community engagement to prepare people for the surveying and actual surveying and demarcation of land. The task would require approximately 3 man-hours per acre.
- **Digitization of documents, and automation of the registration process.** This involves the storage and automation of registration processes in a digital format. The automation requires hardware, software and process re-engineering. Some digitization databases already exist in Ghana, and this step involves adding newly surveyed land to the existing database.

- **Sensitization.** This is a national awareness campaign to sensitize citizenry, traditional rulers and families about the intervention. Discussions with representatives at the Lands Commission noted that one of the primary reasons for the failure of some customary boundary land demarcation under Land Administration Project II (LAP II) was the reluctance of some customary boundary owners and leaders of adjoining community or boundary owners to allow surveyors to enter their lands to carry on boundary surveys.
- **Legal and arbitration framework.** This may involve engagement with National and Regional House of Chiefs and a committee of eminent judges and statespersons and land administrators to resolve disputes as well as review previous court judgements.

The cost estimates per segment are obtained from the engagements with land administration experts within and outside the Lands Commission. In the case of the legal framework, and digitization costs, these are estimated to be three times the cost of similar processes under the second Lands Administration Project (LAP II) implemented in Ghana and also verified by Lands Commission officials. The intervention should increase the value of land under customary ownership.

2.2 Relevant literature

Land reform can be defined as the process and associated actions of enactment, enforcement, and evaluation of land policies and pieces of legislation by which land right relations between people are restructured or reorganized. It is a process of elimination of barriers to increase land sustainability in a given context and includes a consideration of outcomes for social, economic, and political development. (Manji, 2006). There has been growing interest in land reform programs in developing economies and land titling is undoubtedly a crucial step in securing investments, sanitizing and providing some assurance for ownership in the land sector (Beyers et al., 2015). The main thrust of land reforms is land tenure reorganization, restitution, and redistribution of property rights and access to land, and a creation of land markets for social and economic development. This formalization of land rights through titling has shown positive implications for investments in land, higher land productivity, and socioeconomic development in general (Narh et al., 2016).

Studies show that land registration leads to increased land and property investments (World Bank, 2008; Chirwa, 2008; Chilundo et al., 2006); access to credit (Lawry et al, 2014;

Deininger et, 2007; Domeher and Abdulai, 2012), improved security of tenure; household incomes (Deininger and Jin, 2008), gender empowerment and agricultural productivity (Aikaeli and Marussen, 2017; Deutsch, 2006) among other effects. It is difficult to monetize all these effects discussed, most of which are partially but not completely mutually exclusive. However, one impact which would encompass all of these taking into account the double counting of benefits to some extent would be the increase in land values as a result of land titling and registration.

In a study on land titling projects and programmes in urban and peri-urban areas of developing countries to assess the impact of titling on property values it was found that formal land tenure does increase the market value of land, usually by at least 20 to 60 percent (Durand-Lasserve and Payne, 2006). Aikaeli and Markussen (2017) used household survey data to investigate the effects of formal, private property rights to agricultural land on agricultural investment, land valuation and access to credit in Tanzania. The study shows a sizeable and statistically significant effect of land ownership documents on land sales values. Plots held with ownership documents are on average 26.9 per cent more valuable than plots without such documents. One reason appears to be that well-documented private property rights facilitate the use of land as collateral for loans and therefore eases access to credit.

Deininger et al (2011) assessed the impacts of land registration in Ethiopia using a four-period panel which allowed use of a pipeline and difference-in-differences approach. The study found that the program increased tenure security, land-related investment, and rental market participation and yielded benefits significantly above the cost of implementation, with the propensity to rent land increases by 9-13 percent. In an earlier study, Deininger and Chamorro (2005) used data from Nicaragua to examine the impact of award of registered and non-registered title on land values and changes in land-attached investment. Registration, acquisition through purchase, and agrarian reform title all are associated with significant increases in the value of plots. Receipt of registered title is found to increase land values by 30 percent and at the same time greatly increase the propensity to invest, bringing such investment closer to the optimum.

An empirical test in Ecuador noted that the unconditional effect of title and property registration was to raise properties' value by 23.5 percent (Lanjouw and Levy, 2002). In earlier studies conducted in South East Asia, it was found that landownership titles induced higher investment in farming capital (attached investments and other capital), and titled land had significantly

higher market values and higher productivity per unit (Feder et al; 1988). A comparison of housing prices between non-squatter, formal residential areas and the informal areas of the city of Davao in the Philippines revealed that prices were 58 percent higher in the formal area than in the informal one and that rents were 18 percent higher; in Jakarta, registered land was up to 73 percent more valuable than similar land held by a weak claim (Friedman, Jimenez, and Mayo 1998).

However, Jacoby and Minten (2007) studied a large sample of plots from an intensively titled rice-growing area of Madagascar and compared land-specific investments, land productivity, and land values for titled and untitled plots cultivated by the same household. Having a title had no significant effect on plot-specific investment and correspondingly little effect on land productivity and land values.

A broad assumption for the increase in property value in Ghana due to land titling and registration based on the review presented above would be 25 percent, towards the lower end of the observed range. Discussions with sector experts in the land, also suggest this may be on the conservative side in the Ghanaian context.

2.3 Overview of land titling reform in Ghana and around the world

If conditions are right, well- implemented land registration programs can help improve governance and administrative efficiency, reduce the need to expend resources to enforce land rights and enhance gender equality, increase land-related investment, and enhance operation of land markets as well as credit access (Deininger and Feder, 2009). The introduction of land titling programs into a country however requires the preparation and endorsement of an appropriate legal framework. This itself takes time and may delay the formulation and implementation of land titling programs (Aristazabal and Ortiz, 2004). Further, state monopolies over land management in some African countries have resulted in high levels of mismanagement and corruption (Durand-Lasserve and Royston 2002).

Land titling programs place a heavy burden on administrative agencies charged with surveying, registering, issuing titles and maintaining records of transfers and tax payments. Studies from Tanzania report that valuation, planning, surveying and titling procedures could take 8 years and in Zanzibar 9 years while transferring and registering property could take just over a year (De Soto, 2006). Lunnay (2005) cites the case of the Philippines where, as a result of

complicated institutional arrangements, survey and map records have been lost or destroyed and there are many overlapping and duplicate titles in the registry of deeds. The land registry is not easily accessible and there is a high transaction cost which discourages registration and is a disincentive to investment.

Burns (2006) also notes that programmes to strengthen land administration can take many decades to complete. A phased approach is commonly adopted, often with an initial emphasis on developing efficient and effective procedures through a series of pilots". In Australia for example, the entire process of conversion from deeds to title registration took over 100 years.

A national consensus on land policy is crucial, along with strong government commitment, pilot programs to identify and resolve problems and measures to ensure the active participation of all stakeholders, including communities, NGOs and the private sector. A cautious approach of piloting land titling was adopted by the World Bank in Ghana where it was recognized that titling may risk altering or abolishing customary interests in land, thus creating new problems (Deininger, 2003). A study in Sri Lanka showed how the failure to put in place the legal, regulatory, and institutional framework for systematic adjudication of land parcels accomplished only a very limited surveying and titling of parcels without conflict, and with only limited economic benefits (Perera, 2010)

Key attributes of successful land titling implementation can be seen in Thailand who can attribute its accomplishment to strong high level government commitment; specially formed and trained systematic adjudicating teams which involved the local communities concerned; a graduated increase in cost recovery for land titling/registration services; and its use of efficient new technologies. (Burns, 2004)

In Ghana, the LAP program was more an administrative reform than an actual land reform. First and foremost, it sought to bring the six different public sector land agencies under one roof, making the official titling procedure smoother. It ended by bringing four different public sector land agencies together as the Lands Commission. Secondly, it aimed to resolve the more than 60.000 land cases pending in the Ghanaian courts. Thirdly it wished to pilot community based land administration, setting up local customary land secretariats, and resolve local land conflicts outside of the formal juridical system in cooperation with the district assemblies, area councils and unit committees (Millar et al, 2017).

Policies to formalize the title and register of lands in Ghana date to colonial days with the Registration of deeds that started in 1843 and later the Land Registry Ordinance of 1895. Five years after independence the first major law: The State Lands Act, 1962 (Act 125) was passed which amongst other objectives gave the government authority to also acquire land in the public interest. By the 1980s, it was evidently clear that none of these laws had adequately addressed the major issue of title and deeds. This ushered in a second major law the Land Title Registration Law, 1986 (PNDCL 152) during the Ghana's Economic Recovery Programme. The law was enacted to primarily address land titling and registration in Ghana, particularly with regards to customary land. The focused attention to title and registration unearthed the severity of the challenges in registration and titling as well as the challenges arising from the proper coordination and efficiency amongst the different government agencies responsible for land administration.

By 2003 the Lands Administration Project (LAP) was implemented with support from the World Bank and other development partners. According to the World Bank (2018) the First Phase of LAP project (LAP I) was instrumental in decentralizing deeds registry, establishment of Customary Land Secretariats (CLSs) and codifying customary land rights as well as the establishment of six land courts in Greater Accra. It also helped with structuring of the administration, culminating in the enactment of the Lands Commission Act, 2008 (Act 767) to reorganize the Survey Department, Land Valuation Board, Land Title Registry, and old Lands Commission under the responsibilities of the new Land Commission. LAP II increased the achievements of LAP I by establishing additional CLSs and continued the digitization of processes and procedures as well as the establishment of additional land courts. It also enhanced the policy, legal and regulatory framework for land administration. LAP II also updated maps and built systems for capturing spatial data for land administration. A further major act enacted was the Land Use and Spatial Planning Act, 2016 (Act 925).

A number of challenges with LAP II generated delays and affected implementation and success of the project and are worth noting. These challenges were largely issues of funding, poor foresight of environmental issues, poor appreciation of socioeconomic cultural and poor planning, monitoring, coordination and slow response to troubleshooting coupled with a lack of expertise. To start with there were two major challenges with funding. First the Canadian Government's initial commitment of US\$15 million was cut to US\$2.5 million and second, the Government of Ghana provided less than US\$1 million of the US\$5 million counterpart funding

it had committed itself to. This significantly affected the implementation of various sections of the project.

Then there were issues of poor foresight of some environmental consequences. For instance although environmental issues (biodiversity challenges, pollution) were taken into account, they did not include all construction. Such that the building of some structures for court systems among others created substantial environmental challenges, which resulted in excessive construction delays. There was a lack of adequate appreciation of existing historical and traditional issues relating to customary land. This resulted in the resurgence of previously inactive boundary conflicts, which delayed the demarcation process and made it more costly.

Some of the challenges also related to poor planning and inadequate response to troubleshooting in the implementation of the Information and Technology (IT) systems. From the initial stages of implementing the IT systems, it was clear that the resource requirement, planning and timing had been grossly underestimated. There was a mismatch between project timelines and the IT system timelines. Yet the decision to take corrective measures was rather slow. There were also a related issue within the title registry backlog and integration into the IT system. It was difficult to differentiate between first registration and subsequent transactions in the backlog of title registry. This problem could also have been dealt with if there as a land specialist in the project leadership team and persons with skills to dealing with the registry problem and integration into the IT system.

Finally, although there was a detailed Monitoring and Evaluation (M&E) structure, the ICR shows that there were lapses in general project management and monitoring. For instance, proposed amendments within the mid-term review were not taken into account in subsequent implementation and adjustments. These lapses could also be due to the absence of M&E experts. The project also experienced coordination challenges particularly because the project coordination unit operated like a separate unit. In addition, the coordination with the Lands Commission and the Ministry of Lands and Natural Resource appeared as one with two different institutions.

Clearly, some major reforms, policies and laws have been implemented in the last three decades both in Ghana and globally. However due to the magnitude of the gaps and challenges in title and registration of land in Ghana, a lot remains to be done to bring the majority of land under title and duly registered. There is also need to enhance the effectiveness of the system and efficiency in land transactions for value. International experience demonstrates that land reform

is likely to be a lengthy process and the probability of success is dependent on establishing the appropriate legal structures, adequate appreciation of the customary issues related to land and the extent of political support behind the intervention.

3. Analysis and Discussion

3.1 Cost-benefit analysis

There are six elements of the land intervention programme and the cost breakdown is made up of the following:

- i. Cost to update the base maps and network of CORS towers was obtained from the land administration experts within and outside the Lands Commission.
- ii. The cost of legal framework and digitization is based on a scaled up conversion of the cost in LAP II. LAP II legal framework covered 25% of land. The current cost is therefore scaled up to cover 75% of land. The conversion is based on the assumption that the cost will be three times that of LAP II.
- iii. The nationwide sensitization is assumed to cost GHS 5 per person via mass media (radio) and also in line with assumptions from Lands Commission.
- iv. The survey cost is estimated based on km per boundary of customary land areas. There are 1800 estimated customary land areas and the perimeter of each customary land area is on the average 47km in perimeter. This gives a total of 84,860 km of customary land to be surveyed at a unit cost of GHS 12,500 per km for a total cost of GHS 1061 million.

The cost of the six segments of the land reforms programme is GHS 1658 million. The bulk proportion (64%) of the cost is made up of the survey cost. This is also an indication of the large amount of un-surveyed and un-demarcated customary land in Ghana. It also depicts the severity of the problem of un-documented and untitled land.

Table 1 Cost of Land Title Reform (assuming complete implementation)

Parameters	Cost Millions GHS
Base map	100
Continuously Operating Referencing Station (CORS) network	100
Survey costs	1061
Legal framework	52
Digitization	195
Sensitization	150
Total Cost	1658

As discussed above, there are many benefits associated with land titling including increasing access to credit, investment certainty and smoothing land transactions. These benefits are assumed to be embedded in the value of land and the literature review above suggests 25% as a plausible estimate.

We obtain average values of land per plot in the rural areas of each region of the country, and to obtain the national rural average estimate, the values are weighted by the share of rural land in each region (see appendix for breakdown of estimated values). Average land values are estimated at just under GHS 33,000 per acre. From this estimate, the total benefits amount to a colossal GHS 344,492 million assuming implementation is successful at titling all target land.

Table 2 Benefits of Land Title Reform (assuming complete implementation)

Benefits	Value
Boost to land value from titling	25%
Value of land GHS per acre (GHS)	32,673
Value per sq km (GHS, million)	8.07
Total Benefits (GHS millions)	344,492

However, as the review above demonstrates, land-titling reform is not a simple endeavor, and there have been examples of failures and successes across the world. Unfortunately, to the best of our knowledge there is no systematic overview of all such implementations and so the probability of success ex-ante appears to be unknown. Therefore, we estimate a range of BCRs, using the above costs and benefits and assess results at different levels of success probability. In this calculation we assume that if implementation is successful, benefits and costs are as above. If implementation is unsuccessful (i.e. the project is unable to title land) we assume all

costs would be incurred (as fixed costs) except survey costs, where the assumption is 10% of survey costs are incurred.

The BCRs under various success probabilities are depicted below. The BCRs range from 5 to 182. We take 25% success probability as the central estimate, and note a BCR of around 100. Importantly, even if the probability of success is assumed to be 1%, the BCR is still above 1.

Table 3 Benefit Cost Ratio of Land Title

	75% probability of success	50% probability of success	25% probability of success	10% probability of success	1% probability of success
Benefits	258,369	172,246	86,123	34,449	3,445
Costs	1,419	1,181	942	799	713
BCR	182	146	91	43	5

Note: All costs and benefits in GHS millions

3.2 Sensitivity Analysis

In the analysis above, there is substantial uncertainty around the primary parameters. Here we modify several key assumptions: i) the costs of the legal proceedings and digitization ii) the number of customary land areas requiring titling iii) the boost to land values following implementation. Due to uncertainty around these figures, we deliberately choose large ranges over which to vary the parameters.

The costs of the interventions are based on estimates provided by land administration experts within and outside the Lands Commission in Ghana. However, it is possible costs have been underestimated, with the two most volatile costs being legal proceedings (framework) and sensitization. In this analysis, the legal framework cost is assumed to represent all the costs of legal disputes arising from the intervention. However, the amount of land under dispute is unknown. Additionally, given the nature of the intervention, there is the risk of opportunistic claims on land leading to disputes. Regarding sensitization, the current cost is only for mass media. However, if more involved sensitization is required, such as village meetings, then costs would increase. To test the sensitivity of results to these uncertainties, BCRs are calculated over a range of values where these two cost categories are increased 2 to 100, times while benefits are assumed to be from the central estimate (25% probability of success). Results are presented below with a range between approximately 5 and 50.

Table 4 Sensitivity analysis with respect to legal and sensitization costs

	Legal and sensitization costs are 100x more than estimated	Legal and sensitization costs are 50x more than estimated	Legal and sensitization costs are 25x more than estimated	Legal and sensitization costs are 10x more than estimated	Legal and sensitization costs are 2x more than estimated
Benefits	86,123	86,123	86,123	86,123	86,123
Costs	21,676	11,566	6,511	3,478	1,860
BCR	4	7	13	25	46

Note: All costs and benefits in GHS millions

For the second sensitivity analysis we adjust the number of customary land areas to be surveyed from 1800 upwards. The number of lands is unknown and a higher number of lands would increase the length of borders between customary areas and thus survey costs. The analysis indicates that even if the number of lands to be surveyed is larger by a factor of 10, the BCR is still quite favorable, at around 50.

Table 5 Sensitivity analysis with respect to number of lands to be surveyed

	20,000 land areas to survey	10,000 land areas to survey	5,000 land areas to survey	3,000 land areas to survey	2,000 land areas to survey
Benefits	86,123	86,123	86,123	86,123	86,123
Costs	1,561	1,302	1,119	1,019	956
BCR	55	66	77	85	90

Lastly, we vary the boost to land values associated with titling varying the range from 5% to 60% approximately following the end points of the ranges noted in the literature review above. The BCRs are presented below with a range between approximately 20 and 200.

Table 6 Sensitivity analysis with respect to number of lands to be surveyed

	60% increase in land value	40% increase in land value	30% increase in land value	10% increase in land value	5% increase in land value
Benefits	206,695	137,797	103,348	34,449	17,225
Costs	942	942	942	942	942
BCR	219	146	110	37	18

3.3 Discussion

The results indicate that the land titling and reforms program can have an impact on the value of land as well as productivity. This has implications for the welfare benefits of customary land reforms. The evidence for costs and benefits are based on estimates from the Lands Commission as well as the LAP II project. We assess this evidence as medium to limited. The quality of evidence depends on more accurate database on land parcels and / or rigorous impact study in Ghana. Both of these are absent in the case of Ghana. Nonetheless, the estimates provide a good measure or benchmark in assessing the impact of land title and reforms in the land systems in Ghana.

4. Conclusion

Poverty reduction in Ghana can be done through a myriad of interventions, which unlock the economic potential, and benefits of households. As a country largely dependent on agriculture, access to land will form a crucial part of poverty reduction strategies. The land structure in Ghana is however complicated with majority of land holdings in customary ownership, untitled, and undocumented. There is also little or no comprehensive database on land parcels in Ghana. Subsequently there is limited efficient access to land for economic use. This also reduces the potential value and productivity of land. This paper conducted an order of magnitude cost-benefit analysis of land title reforms and database development across majority of the land parcels in Ghana. The reforms also include digitization, the update of mapping and monitoring systems and base stations, survey and demarcation of customary land and the establishment of legal reform systems.

The results indicate a substantial benefit-cost ratio (BCR) of around 100 under plausible parameters including a 25% probability of success. Sensitivity analyses on other parameters note a wide range of BCRs, with values landing between approximately 5 and 220. The sensitivity analysis indicates that if legal and sensitization costs are very large, then the BCR is likely to be closer to 10 than 100. However, if the value of the boost to land is approximately correct then the BCR is likely to be closer to 100 than 10. Very pessimistic assumptions need to be made to bring the costs less than benefits. A land titling program is therefore likely to be welfare enhancing in the Ghanaian context. The key policy recommendation arising from this paper is that land reform has the potential to generate impressive impacts relative to costs, if sufficient political will is devoted to increasing the probability of successful implementation.

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6. Appendix – Land values by (former) regions

	REGION	RURAL AREAS GHS/PLOT
1	Western	10,000 – 15,000
2	Eastern	7,000 – 8,000
3	Ashanti	5,000 – 15,000
4	Upper East	5,000 – 10,000
5	Brong Ahafo	4,000 – 5,000
6	Northern	5,000 – 10,000
7	Central	5,000 – 7,000
8	Upper West	3,000 – 5,000
9	Volta	10,000 – 13,000
10	Accra	25, 000 - 50,000

Source: Lands Commission. Note 1 plot = 0.23 acres



The Ghanaian economy has been growing swiftly, with remarkable GDP growth higher than five per cent for two years running. This robust growth means added pressure from special interest groups who demand more public spending on certain projects. But like every country, Ghana lacks the money to do everything that citizens would like. It has to prioritise between many worthy opportunities. What if economic science and data could cut through the noise from interest groups, and help the allocation of additional money, to improve the budgeting process and ensure that each cedi can do even more for Ghana? With limited resources and time, it is crucial that focus is informed by what will do the most good for each cedi spent. The Ghana Priorities project will work with stakeholders across the country to find, analyze, rank and disseminate the best solutions for the country.

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