



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



LAND MANAGEMENT AND POLICY ON SUSTAINABLE USE OF LAND RESOURCES: THE CASE OF BURKINA FASO

Rodrigue Bazame

Department of Real Estate Development and Management, Faculty of Applied Sciences, Ankara
University, Ankara, Turkey; Email: bazame14@gmail.com

Harun Tanrivermiş

Department of Real Estate Development and Management, Faculty of Applied Sciences, Ankara
University, Ankara, Turkey; Email: tanrivermis@ankara.edu.tr

Yunus Emre Kapusuz

Department of Real Estate Development and Management, Faculty of Applied Sciences, Ankara
University, Ankara, Turkey; Email: yekapusuz@ankara.edu.tr

**Paper prepared for presentation at the
“2017 WORLD BANK CONFERENCE ON LAND AND POVERTY”
The World Bank - Washington DC, March 20-24, 2017**

Copyright 2017 by author(s). All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Abstract

In Burkina Faso, agricultural lands cover 44.22% of the total area; rural population constitutes 77% of the total population, the annual population growth rate is 2.91% and the urbanization rate is fairly high at 5.84%. Investments in infrastructure and construction progress at a slow rate in urban areas, which lead to serious urbanization problems with 4/5 of the housing supply without title deeds. Despite the establishment of many agencies and commissions to improve land tenure system, land ownership and land use in the rural areas, customary land management systems still appear to be common. Between 1960 and 2014, the share of agricultural lands in the total area of the country increased at a significant rate of 49% and the econometric estimation shows that the change in arable land is affected by social factors such as population, economic ones such as agricultural exports, and spatial factors such as the share of forest lands and other lands. The decrease of per capita fertile land, due to reasons such as the growing population, the continuous migration and the largely limited land reclamation and development activities, has recently leading to more severe land disputes in rural areas. Since the first Agrarian and Land Reform Act in 1984, land development policies have always been on the agenda in Burkina Faso. However, the success of public administrations in developing and implementing a sustainable land management model and policy tools regarding access to land resources, land development, land market structure development, and investments in infrastructure remained very limited. The existing legal regulations are not efficiently implemented and most of regulations remain on paper, degradation of land resources is persistent, natural resource protection policies are insufficient. At the end of 2016, only 3.11% of total land assets are registered in the land registry. There is an urgent need to restructure the current institutional disposition related to land management and this can be done through international cooperation and financed with internal and external resources.

Keywords: Land resources, land management, legal and institutional regulations, factors affecting land and arable land use, and sustainability.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



1. Introduction

Land can be defined as a natural and scarce resource, by which people sustain their lives. People must use a particular piece of land to meet their daily needs. The premise that land is a limited natural resource was elaborated by Adam Smith (1723-1790) in his famous work *The Wealth of Nations* (1776) which had a significant effect on the progress of economic thought. Although countries have different approaches to land resources and differing ownership and management systems, land resources are considered as a substantial capital in almost all countries. It should be particularly highlighted that countries' land management systems vary according to their development levels and land resources constitute a fundamental factor in countries' development (De Soto 2000, Gerstter et al. 2011).

Following the 1970s world drought, land resources have become crucially insufficient in the world and especially in Africa. Since this period, the United Nations (UN) and other international organizations have initiated actions to improve land management by supporting many countries in their land policies. However, even today, significant deficiencies are noteworthy in land use and management systems especially in developing countries. Despite the recurrent debates on the relationship between economic development and land ownership and land use in the Asia and Africa continents (FAO, 2002; WB, 2002; Deininger, 2003; Bonfiglioli, 2004; FAO, 2008a; FAO 2008b; Nkonya et al., 2008; Lipton, 2009; Liniger et al., 2011; Byamugisha, 2013), country-based scientific researches using macro data and field studies remained highly limited in terms of their quality and their quantity.

Moreover, the issue becomes more vital when addressed with regard to African countries in term of poverty alleviation. Sub-Saharan Africa region possess a lot of fertile farmlands; however, the high rate of poverty in this region of the world constitutes a paradox. In fact, this paradox is due to the mismatches between the modern management system and the traditional system in the general sense. The mentioned discrepancies are mainly experienced in land ownership, tenure systems, and land management. Literature related to land issues in developing countries, particularly in Sub-Saharan Africa, generally denounces the weakness of land administration, land management and unsuitability of land legislation, limiting then the contribution of land as the motor development of this region of the world (Durand-Lasserre ve Le Roy 2012; Byamugisha 2013).



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Burkina Faso is a land-locked West African country located in two climatic zones: the Sahel zone, a transition zone between the Sahara Desert in the North, where nomadic pastoralism evolves towards agro-pastoralism, and the tropical Savannah in the South, which holds 35% of cultivable land (35 percent) (USAID 2010). Agricultural lands constitute 44 percent of the total area of the country and are neither sufficiently nor intensively used. Due to lack of sufficient and suitable technology use in rural areas by farmers, the climate change effects, thousands of hectares of agricultural land are being degraded every year, which leads to constant destruction of forest and pasture lands in a country where 50 percent of land resources are already erosion threat. In another hand, zoning and infrastructure investments progress are at a very slow rate in urban areas, which leads to serious urban development and housing problems. In 2009, almost 4/5 of the existing housing supply (which is provided for 90 percent by households themselves) does not have a legal proof of title deeds (INSD 2015).

Since the first implementation of the RAF in 1984, land policy has been regularly in the country's economic development agenda. However, relevant public institutions are still struggling to provide and apply a sustainable model and policy for equitable land accessibility, land development, infrastructure investments and to develop a clear land market. The increasing population density and the decrease of the amount of prime farmland per capita, the increasing migration from rural to urban and also rural to rural, land grabbing and development of formal and/or informal mining activities have recently led to more severe land disputes in rural areas. A structure as such constitutes a significant threat for social peace for the country's economic development and stability. Yet, beyond anecdotal accounts, few studies aim to assess the land management system and provide long term suggestions to improve the land use system at the country level. In these circumstances, this paper aims to assess the sustainability of land management system in Burkina Faso. To achieve this objective, first, through a chronological and econometrical methods, the change in land use in general and especially factors affecting the change in arable land use have been analyzed. Secondly, the land management issues and the institutional framework have been assessed based on interviews of managers representing some of institutions involving in land issues in Burkina Faso.

The paper is structured as follows: Section 2 discusses some of the salient features of Burkina Faso's experiment in land management, and introduces analytical methodology and data sources. Section 3



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



presents chronological and econometrical analysis of land assets and arable land use change in Burkina Faso. Section 4 discusses challenges of land policies and related institutional structures in the country. Section 5 discusses the opportunities and feasibility of conducting a countrywide cadastral implementation. Section 6 concludes.

2. Motivation and Methodological Considerations

2.1 The context of land issues in Burkina Faso

Discrepancies are experienced in land ownership, tenure systems, and land management in Africa Continent. In Sub-Saharan Africa (SSA) in particular, modern land management systems have been adopted during the colonial times, however, traditional management systems are still maintained or non-significant radical change has been achieved in the current structure. Although this region holds half of the world's unused agricultural land assets (about 202 million ha), only 10% of the rural land resources have been subjected to cadastral and deed registration procedures (Byamugisha 2013). This situation can be potentially considered as one of the major constraints to the economic development of the African Continent by using efficiently its land resources. SSA is generally characterized by: a high rate of population growth, rapid destruction of natural resources, high rate of rural households among total households varying between 65 and 70%, annual fluctuations of agricultural production due to the uncertain annual rain fall and extensive production systems, low efficiency and income due to factors such as insufficient technologies use in agriculture, land disputes, high rates of land degradation, climate change effects, high fluctuations of annual incomes, and slow pace of structural development due to low or no capital formation etc.

As a land-locked West African country, Burkina Faso, with a total area of 274,220 sq. km, has many challenges in terms of climate effects, natural resources management and especially land resources management. In 2014, the country's total population was an estimated 17.6 million people and the physical population density was 64 persons/km² while the physical population density in Africa was 42.4 persons per sq km. With an estimated GDP per capita of 697 USD for the same year, 40 percent of the population is declared poor. The annual population and urban population growth rates are respectively estimated at 2.91% and 5.84%. Despite this population structure and its high growth rate,



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



70.3% of total population of the country lives rural areas where they involve in agricultural activities as an economic back born (due to the lack of educational prospects and job opportunities) and which (agriculture activities) constitute the main source of income among the majority and contribute around 36% of the GDP creation (Table 1).

Table 1. Selected Macro Indicators for Burkina Faso

Indicators	Years			
	1960	1990	2000	2014
GDP (Million \$)	330.44	3101.30	2628.92	12257.14
GDP per capita (current US\$)	68.42	351.98	226.48	696.86
GDP per capita growth (annual %)	..	-3.21	-0.96	1.05
Agricultural Sector (% of GDP)	39.81	29.14	32.81	35.67
Industrial Sector (% of GDP)	20.60	21.24	21.53	19.98
Services Sector (% of GDP)	39.59	49.62	45.67	44.35
Total Population (1000 persons)	4,829.29	8,811.03	11,607.94	17,589.20
Total Population growth (annual %)	1.36	2.66	2.84	2.91
Rural Population (% of the Total Population)	95.29	86.19	82.16	70.29
Arable lands (% of land area)	..	12.81	13.52	21.93
Population density (people per sq. km of land area)	..	32.20	42.43	64.29
Population growth (annual %)	1.36	2.66	2.84	2.91
Rural population growth (annual %)	1.26	2.37	2.02	1.74
Urban population growth (annual %)	3.38	4.50	6.71	5.84

Land policy has gradually gained an important place in the general development policies of the country, especially with the adaption of the RAF in 1984. The period following the first implementation of this reform has been characterized by the increase of land disputes and their violence due to land resources' scarcity and the duality of customary law and modern law in land use (Ouédraogo 2002). To deal with the difficult anchorage of this law in rural communities which are deeply attached to their traditional beliefs and practices and the duality of customary and modern systems which is often reinforced by political leaders (Korbéogo 2006; Chauveau and Delville 2006), a participative land management system policy has been introduced by allowing local and traditional authorities to be part of the local land management institutions through villages commissions for Terroirs management and villages' development commissions and rural land conciliation commissions (PNSFMR 2007). However, the operationalization of these institutions has been often affected by politicization and seems to be superposed to each other creating some coordination problems (Sanou 2008). Literature on Burkina Faso land management experience also recognizes generally the sufficient progress in terms of legal disposition related to land. However, non-sufficient implementation of



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



regulations is denoted (Hochet et al. 2014; World Bank LGAF report 2014). Considering the fact that land is a corner stone of a country development strategy, and Burkina Faso as a developing country with around 34 percent of its GDP provided by the agriculture sector and 77 percent of total population living in rural areas, land management constitutes a crucial challenge that needs to be analyzed through a careful methodology and in the framework of a long term perspective.

2.2 Methodology

This research is based on three significant sources of data. First of all, previous researches on land management, particularly related to African countries and reports of relevant institutions, were analysed. Secondly, by using data set and reports of Burkina Faso Statistics and Demography Institute (INSD), World Bank (WB), and Food and Agriculture Organization of the United Nations (FAO) a dataset was developed based on Burkina Faso land use categories (total and by type), agricultural and value added productivity, population and migration data, and income and export data for the period 1961-2014. Finally, in July and August 2015, interviews were conducted with experts and managers from organizations responsible for land management in Burkina Faso. The aim of this focus group work was to identify the outlines and main problems of the country's general land management model and discuss about the possibilities of success in the light of problems such as rapid growth of population, food supply deficiencies and urban development problems.

Although the relationship between land and population growth is a recurrent topic of discussion in the literature, there is no consensus on the methodology to use and the purposes (Jolly and Torrey, 1993; Hubacek and Van den Bergh, 2002; Johnston and Swallow, 2006). Nevertheless, in 2012, statistical models were suggested to be the most convenient for analysis land use change in "Sustainable Land Use for the 21st Century" Agenda, which statistical models are based on geography, economy and environmental sciences (UN 2012), where each model has different data requirements and intended purposes.

Change in land use generally results from various and complex biophysical and socio-economic factors. Tuner et al. (1995) suggested modelling method in order to simplify and better understand this complex relationship. Briassoulis (2000), recognizing that there is no consensus between different scientific disciplines and researchers regarding the analysis of



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



change in land use, emphasised eight different models based on the scale and scope of the analysis. In the literature statistical modelling and particularly multiple regression analysis are preferred in the analysis of the relationship between socioeconomic and biophysical variables and the change in land use. Land use change analysis can be conducted at two levels. At the first level, agricultural lands, forestlands, pasturelands, settlements (residences, commercial areas, industrial areas, etc.) and other lands are grouped and the change in each type of land use is analysed in consideration of the time and/or region. The second level of analysis consists on taking all land use types together and assess their changes at the same time in the same locality. This method of help to define which type of land use is the most dominant and for this method Probit (logit) models are the most suitable. However, due to lack of sufficient data sources, only the change in farmland, arable land or other single category of land use can be analysed in practice. In previous studies, linear multiple regression models helped to achieve more accurate results analysis of change in land use (Turner et al. 1995, Tanrıvermiş 2003, Kroll and Hasse 2010, Moghaddam 2015).

This study examines the change in land use, particularly the change in arable land resources and the factors affecting them in the case of Burkina Faso. Applicable variables were identified based on data from various resources, the effects of variables on land use were analysed within the framework of a cause-effect relationship. For the statistical model (linear or log-linear) used in the analysis of change in land use, national data from 1961 to 2014 from the FAO and WB databases were used. Since agricultural activities occupy a significant place in the national economy (the share of agriculture in GDP is 34%) and agricultural land resources share a great part in total land resources of the country, arable agricultural land assets were preferred as a topic of analysis in light of the available data. In the literature, factors affecting the change in land use are divided into three groups: (i) spatial factors, (ii) biophysical factors and (iii) socioeconomic factors. In the framework of this study only data of spatial and socioeconomic factors have been accessed. These data are such as, (i) forestlands (1000 ha), (ii) other lands (1000 ha), (iii) total annual population increase (%), (iv) physical population intensity (person/km²), (v) Share of active population in total population (%), (vi)



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Share of rural population in total population (%), (vii) Cultivated agricultural lands per capita (ha), (viii) GDP per capita (USD), (ix) agricultural GDP (USD/hectare), (x) agricultural exports (1000 USD) and (xi) number of tractors (no.). The abbreviations and expected impact signs of variables that are expected to explain change in arable agricultural land assets are summarized below (Table 2).

Table 2. Definitions and data sources of variables used for econometric estimations

Variables	Abbreviation	Expected impact sign	Data source
Arable agricultural lands (1000 ha)	ITA		FAO stat
Forest lands (1000 ha)	OA	-	FAO stat
Other lands (1000 ha)	DA	-	FAO stat
Total annual population growth (%)	YNA	+	The World Bank
Physical population density (persons/km ²)	FNY	+	The World Bank
Share of active population (%)	ANP	+	The World Bank
Share of rural population (%)	KNP	+	The World Bank
Cultivated agricultural lands per capita (ha)	KBITA	+	FAO stat
GDP per capita (USD)	KBGSMH	-	The World Bank
Agricultural GDP (USD/Ha)	TGSMH	+/-	The World Bank-FAO
Agricultural exports (1000 USD)	TID	+/-	FAO stat
The number of tractors (units)	TS	+	FAO stat

In order to analyze the factors affecting change in land use, all possible functions were tried and the following function was selected as the best option for the purpose of the analysis:

$$AL_t = \alpha + \beta_{1t} X_{1t} + \beta_{2t} X_{2t} + \dots + \beta_{nt} X_{nt} + \varepsilon t$$

Where AL_t : Arable land area in year t (1000 ha); X_1, X_2, \dots, X_n : explanatory variables, $\beta_1, \beta_2, \dots, \beta_n$: coefficients of explanatory variables, and ε : error term of the model. Since the data set is a temporal set, all variables were subjected to stationarity analysis by using the Augmented Dickey Fuller (ADF) test. Then, in order to confirm that the estimated models are subject to linear regression conditions, heteroscedasticity and auto-correlation tests were applied using the Breusch-Pagan / Cook-Weisberg and Breush-Godfrey LM tests, respectively. The econometric analysis of the changes in total agricultural land and arable agricultural land uses was done with the STATA software package. In order to assess the estimated model, the significance level was taken as 0.05, and the model or the relevant variables were considered significant if the p-value<0.05 and not significant if the p-value>0.05. The current situation of the land management system, basic problems, and policy



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



recommendations for improvement of the current situation were determined by combined interpretation of mathematical model estimations, analysis, results of macro evaluation and focus group studies.

Moreover, in 2015, 60 days were allocated for interviews with senior managers and experts working in institutions of land management in Burkina Faso. In the framework of the focus group discussion, although the plan was to interview 2 or 3 persons from each institution for a total of 20 to 35 interviewees, the interviews could only be conducted with people from 9 institutions totalling 20 interviewees. The interview was managed by the researcher, who used a questionnaire elaborated in the aim to assess the current situation of land management. Hence, the managers and experts were asked in one hand to describe and evaluate their relevant institutions by considering human resources quality and quantity, and financial issues. In the other hand they were asked to express their opinions on national policy on land and their suggestion for an improvement in this area. The views of the managers and experts who participated in the focus group discussion were evaluated together with the reports of the relevant institutions, the data of international institutions, and the results of previous research.

3. The Characteristics of Land Resources and Land Use System in Burkina Faso

3.1 Cadastre, Deed Registry and Parcel Information System Activities

An analysis of the data on cadastre survey and land registry systems in Burkina Faso shows that there is a significant gap in this area. In the country, the number of land titles delivered according land registry was 22,450 by the end of 2016. The number was 15,753 at the end of 2013, and 5,753 of them were identified and registered within the framework of the special land registration operation that started in December 2006 (WB 2014). In another hand, from 1984 to 2011; 6,151 title deeds requested have been received in rural settlements and 3,876 of them have been approved, 93% of which were issued as temporary title deeds. The total of title deeds covered 8,530,000 sq m. by the end of 2016, which corresponds to 3.11% of the total surface area of the country. The deficiencies in cadastre and deed registry procedures pose one of the fundamental problems impeding the improvement of land management.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



The slow pace of investments in infrastructure and construction in urban areas in Burkina Faso has led to significant housing problems in urban areas. According to World Bank estimation, the urban population of the country was 29.86% and 30.70% in 2015 and 2016 respectively. Actually this rate hides a reality: there is a high of the population living in squatters that have been taken into account. In Africa, 61.7% of the urban population is living in slums or unregistered building areas and in Burkina Faso, this rate is 65.8% according to 2015 UN-Habitat data. According to the results of the INSD (2015) research carried out in 2009 on the living conditions of households in Burkina Faso, 67.5% of households were found to live in houses without title deeds and only 14.7% of them live in houses with title deeds. These figures are a fundamental indicator of how the real estate sector and land registry system is insecure and demonstrates that the real estate market in the country is very difficult to improve under the current circumstances. In urban areas, there were no significant policies implemented until 2006. The new Urbanization and Construction law enforced in 2006, gives pace to the new land management era in urban areas going with hand with the implementation of a national housing and urban area development policy of 2008 (MHUBF 2008; UN-Habitat 2015).

According to the Ministry of Settlement and Urbanization's 2016 data, the total surface of the urban areas is 55,711 ha constitutes by 716,960 plots. Among these plots, 693,862 are residential plots and it is shown that there are 57,000 surplus of residential plots in the country level while in cities like Ouagadougou the Capital city there is a deficit of 20,2014 units. In almost every city, land regulations and housing development practices are subjected to complaints and criticism due to shortage of plots. At the national level, while the average size of housing plots is 507sq.m, the average area of plot for other purposes (industrial, commercial, etc.) is 18,500 sq.m. This indicates that the surface area of plots allocated for others purposes is 36.5 times bigger than the surface area of those allocated for residential purposes. The primary purpose of urban land policy is to establish a direct relation between the area of parcels and their intended use. Furthermore, according to the report of plots production and management in 15 cities published by the National Assembly of Burkina Faso, 105,408 plots were illicitly supplied during the period 1995-2015. The report also underlines that political pressure and bribery which is common to urban land management in the country due to its inefficiency (ANBF 2016); on the other hand the number of plots that surveyed and are taken illegally is 14.70% of total number of surveyed. The rate is expected to be at least twice as high when all cities (49 Cities) could



be taken into consideration. This situation highlights the weakness of the urban land development and management in Burkina Faso.

3.2 A Chronological Analysis of Land Resources and Use

According to FAOSTAT (2016) data, the country’s land resources shares are as follows: 44.2% is allocated to agricultural lands, 20% is allocated to forestlands, and the remaining part consists of allocations for other purposes (settlements, deserted areas, etc.). An analysis of the annual distribution of lands according to their use shows that the amount of agricultural lands increased by approximately 49% in the period between 1961 and 2014. Contrastingly, forestlands and other land resources decreased by 40% and 3%, respectively, and there was almost no change in water surfaces in this period (Table 3). According to the results of the macro evaluation, forestlands and other land resources have been converted to agricultural lands during the last 50 years.

Table 3. Change in land use in Burkina Faso between 1961 and 2014 (1000 ha)

Years	Agricultural Lands	Forest Lands	Other Lands	Water Surfaces
1961	8,139	9,063.6	10,157.4	62
2014	12,100	5,409.8	9,850.2	62
Change (%)	48.67	-40.31	-3.02	0.00

It should be noted that the change in land use differs from one period to another. Particularly during the period of 1990 up to 2014, agricultural land assets increased yearly on average by 0.47%, whereas in the last 24 years, agricultural land assets increased by 26.37 percent. The increase in agricultural land assets was 23.63% between 2000 and 2010, which indicates the share of land for agricultural use in the surface area of the country increased rapidly (Table 4). The share of agricultural land in the total land holdings that was 29.7% in 1961 rose to 44.2% in 2014, which indicates a significant increase in the share of agricultural lands in the total surface area of the country (Table 3). The de facto increase in agricultural lands is considered as a threat to the sustainability of land resources. In general, land use in Burkina Faso is characterized by desertification as well as recurrent pressure on forest and pastures for redevelopment as agricultural land due to continuous population growth.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Table 4. Historical development of land resources use (1990-2014)

Indicators (1000 Ha)	Years							Mean
	1990	2000	2010	2011	2012	2013	2014	
Agricultural lands	9575	9770	12080	11790	12100	12300	12100	0.4706
Change (%)	2.036		23.64	-2.40	2.63	1.65	-1.62	
Annual change (%)	0.20		2.36	-2.40	2.62	1.65	-1.62	
Arable lands	3480	3700	6000	5700	6000	6200	6000	1.20
Change (%)	6.32		62.16	-5	5.26	3.33	-3.22	
Annual change (%)	0.63		6.21	-5	5.26	3.33	-3.22	
Forest Lands	6727.2	6248	5649	5589.2	5529.4	5469.6	5409.8	-0.9957
Change (%)	-7.12		-9.58	-1.05	-1.07	-1.08	-1.09	
Annual change (%)	-0.71		-0.95	-1.05	-1.06	-1.08	-1.09	
Other Lands	11192.7	11342	9631	9980.8	9730.6	9590	9850.2	0.17
Change (%)	1.33		-15.1	3.63	-2.51	-1.45	2.71	
Annual change (%)	0.13		-1.50	3.63	-2.50	-1.44	2.71	
Constantly processed lands	70	70	80	90	100	100	100	4.17
Change (%)	0		14.28	12.5	11.11	0	0	
Annual change (%)	0		1.42	12.5	11.11	0	0	
Afforestation Areas	22.11	58.3	163.3	178.41	193.53	208.64	223.76	11.19
Change (%)	163.68		180.1	9.25	8.47	7.80	7.24	
Annual change (%)	16.36		18.01	9.25	8.47	7.80	7.24	
Irrigated Lands	24	25	50	54.3	55	55	55	3.3843
Change (%)	4.16		100	8.6	1.28	0	0	
Annual change (%)	0.41		10	8.6	1.28	0	0	

Agricultural lands also include pasturelands and in the period analyzed, the pasturelands remained constant, which is also confirmed by the reports of international organizations. Thus, the increase in agricultural lands results from the change in arable land, constantly processed land, and irrigated land assets. Arable lands increased by 28.8% from 1990 to 2014. Nevertheless, the increase is not constant, it rather fluctuates. Especially during the periods 2010-2011 and 2013-2014, the arable land assets decreased by 5% and 3.22%, respectively. Forestlands; have seen a decrease of 24.76% within the last 24 years. In the years 2010 to 2014, the annual rate of decrease in forestlands was 0.95%, 1.05%, 1.08%, and 1.09%, respectively. In order to combat deforestation, reforestation programs were implemented to create forestlands and these areas increased by an annual average of 11.19% from 1990 to 2014. However, the annual deforestation rate was 0.99% in the same period. The area of planted forests reached 223.76 ha in 2014, i.e 0.8% of the country's total land resources, which is however a low rate. Reforestation efforts have not been able to compensate the destruction of forestland for agricultural lands, and this situation constitutes a threat for forestland resources in the new future.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Although non-agricultural and non-forest land assets increased by 4.08% from 1990 to 2014, these lands decreased by 15.08% in the period 2000-2010 (Table 4).

One of the major reasons of the change in land use in Burkina Faso may be the acquisition at large scale of land by foreigners investors and those agro-business men so called “new actors” for different purposes. It is reported that during the last ten years, foreign countries or companies have started to acquire and lease lands on the Africa continent. In the mid-1990s, the total area of arable land in Africa was 1 billion ha, 800 million ha of which were appropriate for conversion to agricultural land. Among the arable land, only 25%, 200 million ha, was subject to agricultural activities, which were generally based on rudimental technologies (Havnevik 2011). According to the Coalition for the Protection of African Genetic Heritage (Coalition pour la Protection du Patrimoine Génétique Africain - COPAGEN) report in December 2012, evaluating the impacts of land grabbing on the food security of local populations in West Africa, foreign states and foreign investors acquired 5,747,602 ha of land in Burkina Faso, which corresponds to 20.98% of the total land and 63% of the arable land of the country. Among these lands, 95.75% were acquired for mining activities. Related to the acquisition conditions and process; 57.9% of the land were acquired by foreigners and 97.4% were acquired through improper procedures (COPAGEN 2012). It has been observed that foreign investors who are interested in land resources that are located near city centres and those with high productivity levels, rather than land assets that are in need of rehabilitation. Such tendencies constitute the source of conflict between the local population and foreign investors. Actually, the reaction of the local population against foreign investors can be decreased and integrated with the foreign investors by giving them those polluted areas, salted, arid, or even deserted lands for them to invest through long-term leasing or establishment of servitude in order to ensure that investment is made in the devoted lands and develop agricultural production.

3.3 Analysis of the Change in Arable Land Use

This section aims to determine which factors affect the change in arable land use and at which degree. There has been a constant increase of arable lands in the country (Figure 1). While agricultural land assets area was almost constant from 1961 to 1970, there has been an irreversible increase since that period. In this study, the factors affecting the change in total agricultural land asset were analysed in



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



the first place. These agricultural lands also include lands that are practically cultivated, desolated lands, fallowed lands, and pasturelands. In this regard, the analysis of factors affecting the change in land assets that are practically cultivated is considered more significant. Similarly, the change in settlement areas or non-agricultural and non-forest land assets was also analysed, and the validity of the factors affecting change in agricultural land assets was confirmed indirectly. In model selection, all possible forms of functions were tried separately, and the most appropriate function, in terms of error terms and the general validity of the model, is reported in this study.

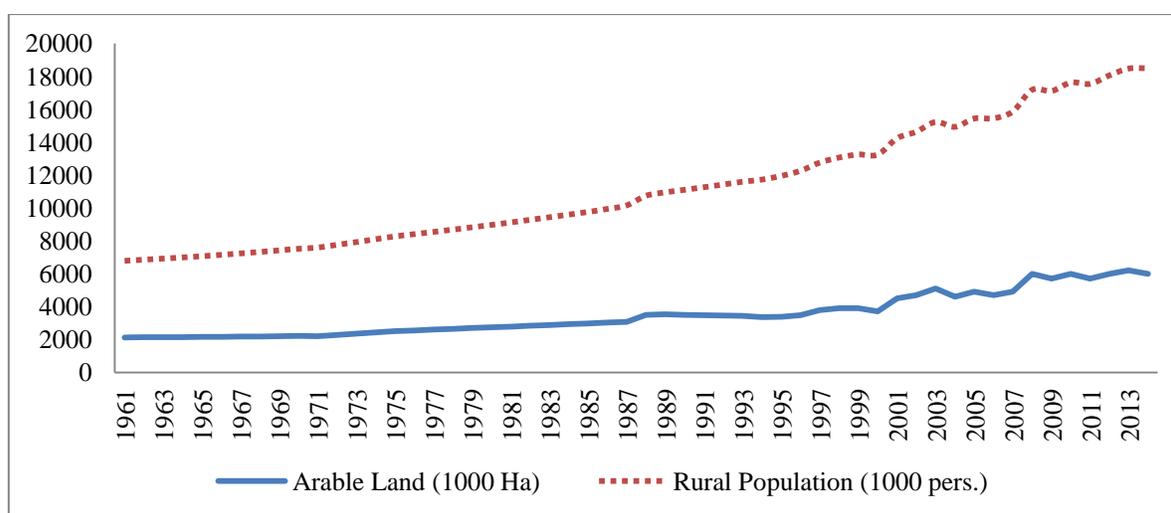


Figure 1. Change in arable agricultural land assets (1961-2013)

According to the results of the estimated model the significant variables explaining the change in arable land are: Forestlands, Other lands, population Annual growth rate, Active population rate and Agricultural exportation value (Table 5). However, although the effect of agricultural exportation value on the change in arable land is significant, the effect is very small. In Burkina Faso, since agricultural activities are generally intended for family consumption and non-commercial purposes constitute the huge majority of the total production volume, it is easy to understand the fact that agricultural exports value has a limited effect on the change in arable land assets.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Table 5. Arable agricultural lands regression analysis

Arable agricultural lands (1000ha)	Coefficients	St. error	t	P> t
(constant)	119,0568	27,64269	4,31	0,000
Forestlands (1000 ha)	0,0108165	0,0025645	4,22	0,000
Surface are of land assets other than agricultural and forest lands (1000 ha)	-0,9902084	0,0101105	-97,94	0,000
Total annual population growth (%)	14,2207	7,042981	2,02	0,05
Active population rate (%)	-3,550805	0,9409505	-3,77	0,001
Rural population rate (%)	-5,216032	5,725792	-0,91	0,368
Arable land per capita (ha)	117,5295	127,4204	0,92	0,362
GNP per capita (USD/person)	-0,6062234	0,451559	-1,34	0,187
Value added of agriculture to GDP (USD/Ha)	0,0262707	0,0145936	1,80	0,079
Agricultural exports value (1000 USD)	-7,72e-06	2,92e-06	-2,64	0,012
Number of tractors (No.)	0,0028484	0,006659	0,43	0,671

According to econometric estimation, change in arable and assets in Burkina Faso is affected by factors such as forestlands and lands that are used for purposes other than agricultural and forestry activities, average annual population growth rate, rate of economically active population in total population, and agricultural exports value. Due to the very low level of per capita income, the insufficient level of irrigation and the technology in use and the low level of agricultural productivity there is no significant correlation between value added of agricultural sector, income per capita and change in land assets. As a result, the study shows that the change in land assets in the country has a close correlation with social variables such as population, economic variables such as exports, and environmental or spatial variables such as the rate of forest lands and lands allocated for other sectors. A joint analysis of the results of a general assessment of data on land assets and land use in Burkina Faso and the results of the econometric analysis shows that the increase in arable land assets in the country is rather affected by social variables such as population increase, whereas the effects of economic variables such as per capita income and productivity in agricultural production are not significant.

Although services sector shows a constant increase in share of GDP, it is noted that the agricultural sector has a significant role in the national economy and employment. It has also been observed that the rural population has a significant share of the total population and that the agricultural sector has significant employment potential, whereas there is a problem of visible or invisible unemployment. In the rural sector, generally the education level is low and poverty rate is fairly high. This structure poses a limitation on the use of technology in agricultural production and the learning of new technologies



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



and disclosure of their utilization. According to the results of the model, agricultural land assets are increasing along with an increase in population. However, the fact that the increase in agricultural production and productivity is not in the same direction and at the same level suggest that extensive and primitive technologies are used in agricultural activities. This is also confirmed by World Bank and FAO data on the number of tractors used and the amount of agricultural credits in the country (less than 1% in GDP).

Estimated model results confirm that in Burkina Faso, agricultural activities are extensive and intended for family consumption (85% of the country's arable land is intended for family consumption). However, the unreliability and deficiency of data used in the model limits the analysis of change in the land assets. If detailed and sound data on biophysical indicators (total annual rain, the rate of rain in vegetation period in total rain, vegetation time period, average annual temperature, etc.), the annual distribution of land by alternative use areas (land use in sectors such as real estate, industry and commerce), and socio-economic indicators (agricultural land per capita, number of farmers or agricultural enterprises, characteristics of agricultural enterprises, age of farmers, education level of farmers, value added per capita, income per capita, etc.) are obtained at the national and regional levels, it will be possible to analyse the direction and rate of change in land use at the macro and regional levels in a rational and comprehensive way.

Literature review reveals that change in agricultural land use is affected by variables such as annual precipitation, population change, physical population density, agricultural production value, and gross production level. Turner et al. (1995) note that the human factor is the most significant variable with respect to change in land use. Krol and Hasse (2010) advocate that demographic change is the most significant factor with respect to change in land use in Europe. Tanrıvermiş (2002) retains that change in agricultural land use in the Mediterranean Region in Turkey is affected by socio-economic factors such as productivity in agricultural production (intensification or productivity) and physical population density. The results of the study conducted by Thirapong et al. (2012) in Kanchanaburi Province of Thailand showed that change in land use is affected by input use level in highlands while it is affected by agricultural income level in lowlands. Moghaddam (2015) examined the causes of change in land use in rural areas of the Rasht Region and suggested that economic factors were the most significant. Consequently, the results of studies on different countries and regions are largely in line with the



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



results of this study. However, it should be underlined that the relation between the change in agricultural land and arable land use and the land asset allocated for non-agricultural and non-forestry use has not been studied in previous research, which is the significant and original contribution of this study.

4. Land Management Issues and Institutional Structure

Since the first implementation of the RAF in 1984, land development policies have always been on the agenda in the country. However, the success of related public institutions in identification and implementation of sustainable management models and policy tools for issues such as access to land resources, land development, creating a land market, and investment in infrastructure has remained very limited. Significant legislative arrangements related to land ownership and land use as well as rural and urban development have been enacted in the country and multiple organizations conduct activities at the central, regional, and local levels. However, many problems are encountered in the implementation of the established legal and institutional arrangements, planning activities envisaged by legal regulations are not conducted, and conducted work is controversial in terms of fairness. The country rather than to have a national land policy, has (02) two policies related to land issues: (1) The National Policy for rural land securitization (PNSFMR) started in 2007 and is envisaged to end in 2017 and (2) the Housing and Urban Development Policy (PHDU) for the period 2008-2018. At the end of these policies' application, many forecasted actions and strategies remained uncompleted or insufficient in terms of implementation.

The main positive result of the PNSFMR is the adaption of 034-2009/AN rural land securitization law in 2009. However, land management institutions and related tools have not been sufficiently established. An assessment of Hochet et al. (2014) (2014) highlighted that out of a total of 351 municipalities, only 48 have Rural Land Securitization Service (Service Foncier Rural-SFR) and in those municipalities 1 127 CFV's, 995 CCFV's have been created. Also, the planned Rural Land National Agency (Agence Nationale des Terres Rurales-ANTR) and Land Securitization Fund (Fond se Sécurité Foncière Rurale-FSF) are not yet established. In terms of titles delivered and land management tools till March 2014, no land loan agreement, development authorization or farm lease certificate has been delivered; 19 municipalities had their land charter validated by the municipal



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



council, for 8,879 request for Attestation de Possession Foncière Rurale (APFR-a kind of rural land ownership certificate but different from formal land title), 1,463 PVs had been established and only 140 APFR had been delivered. An assessment of projects related to law 034-2009 by using Kiviat diagram indicated a very low level of accomplishment of the objectives (Figure 2).

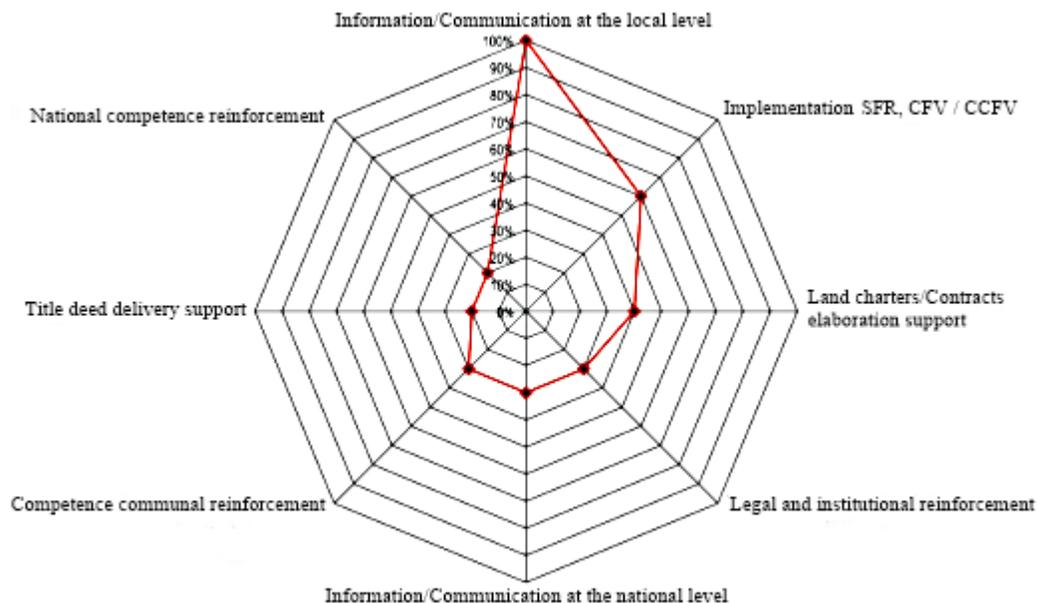


Figure 2. Configuration of projects implementation in the framework of 034-2009 law (Hochet et al. 2014)

In urban settlements, priority is given to land management, zoning plans establishments, and housing production. In many cities, there is a surplus of parcels and there are many technical and legal problems in implementation of zoning plans. According to the UN Habitat 2015 report, only 12 SDAUs (Schéma Directeur d'Aménagement Urbain - Master Plan for Urban Development) had been approved and 2 POSs (Plan d'Occupation des Sols – Soil Occupancy Plan) were pending approval in cities. Up to 2018 only one year remains for the end of implementation period of this policy but the adoption and implementation rate of those plans is very low. Among the country's urbanization problems, the following are frequently listed: failures in subdivision plans, widespread land speculation, uncontrolled extension of urban areas, deficiencies in urban infrastructure and services. It should be emphasised that such problems impede effective land management.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Failure to effectively implement the legal and institutional arrangements constitutes an obstacle to achieve goals of sustainable use of land resources, poverty alleviation, food security, combating bribery, and gender equality. The country is experiencing a significant change in land use, which is associated with both land use patterns and land cover and the distribution of cultivated lands based on production activities. Rural areas are witnessing a transformation in use of land from agricultural production, forests, pastures, and protected areas to settlement-oriented uses along with transformations in forms of land use. The irreversible consequences of this situation are destruction of fertile lands and the increasing forestland depletion.

A general description of the land management system shows that there are relatively enough legal dispositions regulating both rural and urban land property and land use; also, the system is based on decentralization principles and is organized into local, regional and national levels that are interrelated. Despite this apparent good structure, many legal regulations and institutional dispositions failed in their application due to low- or non-participation by local populations during the elaboration process, feeding the persistence of the dualism in the land management system. The failures in this area lead to the increase of land conflicts in rural areas and corruption in urban land development, land speculation and uncontrolled urban areas extension. In terms of institutional structure and organization, there are many institutions related to 9 different ministries; some coordination problems regularly arise between them. Additionally, the country's cadastral structure is poorly managed and ineffective. Only the capital, Ouagadougou, and Bobo-Dioulasso, the country's second more developed city, have a relatively effective directory of cadastre. Eight other regions have formal but not effectively functioning directories, while three others regions are still in wait of theirs. At the available institutions there is an obvious and crucial lack of qualified and sufficient human and financial resources.

In order to understand more the land management system in Burkina Faso, interviews were conducted with experts and managers from institutions in charge of land management, and opinions and assessments collected were analysed. In the questionnaire, questions were put under four main subjects: (i) the scope of duty, (ii) quality and quantity of human resources, (iii) opinions on national land policy, and (v) suggestions. The results of the focus group discussion revealed that human resources in the relevant public institutions were neither qualified, nor quantitatively sufficient. Beyond the crucial lack of instruments and materials for land surveys, the available equipment is mostly old,



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



and this explains why cadastral survey works are not conducted throughout the country; hence, it is evident that the country has many challenges in this field. It was observed that cadastral works were carried out at a relatively high level in Ougadougou and Bobo-Dioulasso cities rather than other regions and provinces. Considering the country's area and the requirement of cadastral survey works, it is evident that 8 cadastre inspectors, 9 survey engineers (two of whom are about to retire), 16 technicians, 5 topographers and 2 GIS technicians are very insufficient. A similar situation can be observed at the General Directorate of Urbanization and Topography. Since only 7 architects and 14 urban planners are currently employed in this directorate general, it is possible to affirm that the available human resources and qualifications are crucially insufficient in view of the scope of the country's urbanization policies challenges and current problems. The current lack of qualified human resources especially real estate development specialists, urban planning specialists, engineers and architects in those institutions is due to that qualified employees prefer to work in private sector or in other countries where salaries and positions are better.

Besides coordination issues caused by the multitude of institutions in charge of land management, there are frequent conflicts in their duties and authorities due to differences of opinions, approaches and practices, particularly between institutions taking part in land management at local and central levels. Moreover, as institutions dealing with land management are affiliated to different ministries, rather than a single ministry as in many other countries, this leads to redundant practices, which in turn may cause ineffective use of scarce resources.

Coordination and communication problems as well as inadequacies in information sharing between institutions frequently drive each institution to formulate plans and practices based on their own policies regardless of other institutions' work, and such approaches render the efficient use of the country's scant social capital impossible. Coordination problems between institutions and widespread corruption adversely affect service quality. Since property rights and registration services are not delivered properly by public institutions and a reliable ownership system is not yet established, neither developing a rational land management model, nor promoting domestic or foreign investments is possible.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



The fact that the ownership system in the country is mostly based on customary rules rather than modern registration constitutes an impediment in providing fixed capital to boost agricultural production and improving agricultural structure. Even though statutory arrangements regarding land management instruments appear to be satisfactory, due to the aforementioned fundamental structural problems and furthermore technological and financial deficits, land surveys, surveying and mapping studies, as well as planning and application procedures remain mostly at an unsatisfactory level.

It should also be emphasised that a suitable environment required for developing a rational system to improve the current situation of urban and rural land markets cannot be safeguarded satisfactorily as cadastral activities in Burkina Faso have not yet been completed, the proportion of registered plots to total produced plots is very low, planning and land development work is inadequate, the prevalence of land invasions or illegal occupancy and conflicts are very high and have been rapidly increasing. In Burkina Faso and other African countries, due to the un-development of property right base on its vertical and horizontal scope, cadastre, the unsecure land registry, the fail to establish planning and appraisal (valuation) systems and to develop a suitable land management system that can boost the economic development still remains relatively difficult.

Conversely, it has been observed that a considerable change in land use has occurred in the country, in terms of both modes of land use and the distribution of land cover and cultivated areas for productive activities. Land sizes and population distribution in the countryside have changed rapidly due to natural population growth and interregional migration, and the inability to control this process has led to over-exploitation of land resources and destruction of natural heritage sites. It should be noted that, besides the transformation of the types of land use in the countryside, a transformation from uses such as agricultural production, forestry, pasture land and protected areas to uses for settlement purposes is also in progress, which in turn leads to the fact that rapid destruction of fertile land and desertification. Since the need for agricultural land constantly increases as a result of population growth and if agricultural technologies remain stagnant, it can be argued easily that destruction and degradation of land resources will accelerate in the near future. In addition to the need for agricultural land, the overlapping demands of land owners underlie land conflicts which frequently occur. Another crucial issue is the allocation of water resources for irrigation, and utility of water for human and animal consumption. Indeed, public institutions are faced with significant financial constraints that hinder the



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



development and effective implementation of rural infrastructure planning projects and improvement of physical and social infrastructure for irrigation and drinking water supply throughout the country in a short time.

Furthermore, several instruments are employed in land management system in Burkina Faso. However, some of them seem not to be elaborated or structured in a complementary way. For instance, there is no clear connection between local land charters (Charte Foncière Local) provided by the Law 034-2009 and land planning and sustainable development plans within the scope of Law no. 034-2012. However, implementation may lead to confusions especially in rural municipalities. In these cases only if these instruments are applied in a complementary manner, inconsistencies related to property rights and land use at the local level can be minimized. Besides the scarcity of financial resources and qualified human resources for land management, multiplicity of instrument and/or the incapability to develop and implement instruments in a complementary manner may also be considered as a threat in terms of providing a sustainable management rural and urban land resources of the country.

Even though zoning plans implementations can be executed rapidly in Burkina Faso's cities, it is clear that problems prevail in infrastructure investments and housing production for different sectors of society, government support to housing production is inadequate and local and for long time central governments fail to be engaged in housing production in cooperation with private sector. Despite allotment for housing production has been completed in cities, usually investments in relevant infrastructure are utterly insufficient. Furthermore, construction and housing finance systems, especially mortgage, are relatively quasi-inexistent in the country; around 90% of houses are built by the owners without using mortgage system. There is an urgent need for improving land development and strong cooperation between public and private institutions in the aim of increasing the number of households with their own home. In this framework the current government is on the right way with new housing policy which to build 40,000 units of houses through public-private partnership. In another hand, it has been observed that neither the country's central government nor its local administrations provide the necessary support or convenience for increasing the number or promoting the successful practices of private real estate development companies, which in turn results in the reluctance of the country's private entrepreneurs to undertake large projects development and implementation.



5. General Assessment and Suggestions for a Sustainable Land Management

5.1 General Assessment

In Burkina Faso significant law and regulations have been adopted related to land ownership and land use development in rural and urban areas, and a multiplicity of institutions have been established and are functioning at the central, regional and local levels. However, there are problems in the implementation of these laws and institutional regulations; the works of institutions which are assigned to the tasks of land management are utterly inadequate due to various problems, planning works envisaged in legislative, regulations and policies are not executed and at the same time those one which have been applied does not bring the expected results. It should be noted that, unlike developed countries especially those where land markets are well-developed, in Burkina Faso customary land tenure is still predominant especially in rural areas.

Land conflicts concerning land ownership and land use are not sufficiently prevented, cadastral survey is not yet completed and also the relevant services or local directories are not effectively organized throughout the country, on the other hand between 9 different ministries and the multiplicity of affiliated institutions assigned in land management authority are not well coordinated, significant conflicts of duty or power between institutions have been experienced, as a result the policies defined couldn't be applied effectively at the national level (Table 6).

Table 6. Public institutions responsible for land management in Burkina Faso

No	Ministry	Authorized Institutions	Jurisdiction area
1	Ministry of Economy, Finance and Development	Directorate General of Legislation and Public Lands	Urban-Rural
		Directorates of Land Registry and Cadastre	
		Directorate General of Regional Planning and Local Development (DGAT/DL)	
2	Ministry of Local Government and Security	Directorate General of Local Government	Urban-Rural
3	Ministry of Agriculture and Water	National Committee for Property Security in Rural Areas (CONA-SFR)* Directorate General of Lands, Rural Population Organization and Formation (DGF MOR)	Rural
4	Ministry of Environment	Directorate General of Legislation and Disputed	



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



	and Sustainable Development	Procedures (DAJC) Directorate General of Pasture Planning and Management	Forests
5	Ministry of Livestock and Fishery	Directorate General of Fauna and Forestry (DFF)	Protected Areas
6	Ministry of Settlement and Urbanization	Directorate General of Legislation and Disputed Procedures (DAJC)	Rural-Pasture Lands
		Directorate General of Urban Planning and Public Works (DGUTF)	
		Directorate General of Settlement and Construction (DGUTF)	Urban
		State Economic Enterprises (SONATUR and CEGECi)	
7	Ministry of Infrastructure		Urban-Rural
8	Ministry of Energy and Mining	Directorates of Mining, Cadastre, and Geology	Urban-Rural, Mining Areas
9	Ministry of Justice	Local High Courts	All Lands

(*) CONA-SFR is an inter-ministry council for implementation of the property security policy and rural land laws in rural areas.

5.2 Cost of Financing and Setting the Cadastral and Title Deed Infrastructure

Among the major reasons of the failure of cadastral survey works and implementation countrywide in Burkina Faso, are such as the multiplicity of institutions assigned to and/or authority in land management at the national scale, the lack of sufficient (quantitative and qualified) human resources, and the inadequacy and insufficiency of current technical equipment.

The land ownership system must be regulated in the rural and urban areas which will help to minimize land disputes and conflicts problems. In this framework cadastral survey works must be defined primarily in the aim of effective use of land resources and through the establishment of a clear land ownership and land registry system. It is often argued that the establishment cost of cadastre is extremely high in Africa, which renders unlikely the implementation of cadastral survey work in the short and medium terms by the available domestic capital and human resources. Under these circumstances, there is a need to develop cooperation with other countries, such as Turkey which has completed about 99.5% of its cadastral survey work; this opportunity should not be neglected.

An investigation of the cost elements of cadastre establishment and renovation carried out within the scope of the Land Registration and Cadastre Modernization Project (LRCMP) financed through an agreement between Turkey and the World Bank revealed that average costs over 4,760,683 plots were



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



between US\$15 and US\$20 per unit (renovation survey) and between US\$20 and US\$25 per unit (initial survey) Examinations of the costs of the establishment and renovation of cadastre in the world and in Turkey reveals that there is a relative cost advantage (Table 7).

Table 7. The estimated costs for the project in selected countries

County	Funds	Estimated Costs	Time Period	No. of parcels
Madagascar	GOV (20%) FI (80%)	10 USD/hectare	-	-
Morocco	GOV (30%) FI (70%)	8 USD/hectare 20 USD/hectare	-	650.000 of 1.600.000/ha
Swaziland	GOV (100%)	15 USD/pp	1993 - 1996	20.000
Tanzania (Zanzibar)	GOV (15%) FINNIDA	2 M/USD	1991 - 1995	200.000
Bangladesh	GOV (20%) ADB (80%)	-	-	25.000.000
China (BaoDing, Hebei)	GOV (20%) USERS (80%)	50 USD/pp	1987 - 1990 1991 - 1995	21.000
China (Xinji, Hebei)	GOV (40%) SAO (60%)	53.67 USD/pp 89.44 USD/pt	1987 - 1990 1991 - 1995	5.000
Burkina Faso	-	-	-	716.960

Note 1: Costs should be re-evaluated in consideration of conditions of the country and the exchange rate of dollar. Note 2: GOV: Government, FI: Financial Institutes, ADB: Asian Development Bank, SAO: Swedish Aid Organisation, pp: per parcel, pt: per title. Source: Osterberg (1997).

Assuming that the cost elements of the Turkish example will be considerably similar to the costs of the current work in Burkina Faso, it is estimated that the approximate cost of the cadastral survey work of 716,960 plots will be approximately to US\$18 million (calculated over US\$25/per unit), and the cost of establishing the technical infrastructure of land management estimated by including the costs of planning works from upper to lower scales will be around US\$25 to US\$30 million. Despite the cost of providing technical infrastructure, the social cost-benefit ratios of this work will certainly be greater in the medium and long-run. The establishment of the technical infrastructure of land management, allocation of resources for the acceleration of investments in urban and rural infrastructure, and intensification of the World Bank and other international financial organizations efforts in this field may enable the boosting economic development, rendering the struggle against starvation and poverty more successful in African countries, and most importantly preventing immigration from African countries to Europe.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



5.3 Suggestions for Sustainable Land Management in Burkina Faso

Based on the issues mentioned above, it appears clearly that there is a need to develop and implement an effectively sustainable land management (SLM) system in Burkina Faso. According to focus group discussion, reports of relevant institutions and on-site observations, it appears that the country's land resources are not used rationally and the main factors restricting the use of land resources in rural and urban areas may be listed as follows: (1) the failure to implement legislative, regulations and policies effectively and the coordination between responsible institutions, (2) the ineffectiveness of cadastral survey works at national level and the weakness of land ownership and land registry system (3) the inability and inadequacy of financial resources, technical and qualified human resources for institutions related to land management (4) the uncontrolled migration (rural to urban and rural to rural) of the population and the high growth rate of population and (5) climate change effects. Also, the results of the econometric model indicated that the change in land use depends mostly on demographic characteristics and economic factors, and without any control of these factors it is appeared that there will be difficulties in ensuring the sustainability of land market without a clear land ownership, tenure and registry systems.

In order to reduce the problem of continuous miss coordination between institutions involving under various ministries in land issues, these institutions should work under the same umbrella of a single ministry. The ministry established will be in charge with the land management, land planning and protection of land resources, policy development and its implementation. The PNSFMR and PHDU policies implementation were expected to end in 2017 and 2018 respectively and the new development agenda adopted by the country i.e. the National Policy of Economic and Social Development (Politique Nationale de Développement Economique et Sociale-PNDES) seem to be a suitable environment to build such organisation. Considering this fact and the importance of land resources and the potential mining resources for the country development, it should be highlighted that long-term policies and strategies for land management are required.

Despite the fact that cadastral and land registry system acts as the cornerstone to land management, in Burkina Faso these two elements are poorly developed. In the country cadastral surveys are applied mostly only in cities like Ouagadougou, Bobo-Dioulasso and also to the other central business units of



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



others cities and regions which appeared also to be unsatisfactory level. Considering the financial advantage for the government through land taxation, there is an urgent need to make an inventory of all land resources at the national level as well as by region and smaller settlements through an effective cadastral system implementation. Although cadastral surveying and land registry were considered to be expensive and time consuming in the past, nowadays, they can be completed by using least-cost and advanced technological tools (such as using remote sensing, drones and geographical information systems tools). In view of both accessibility to land data, and economic benefits which can be reaped from land resources after identification and registration, it is evident that such implementation would bring social advantages. Considering the unit costs in countries like Turkey, which has recently completed cadastre establishment, it is possible through the technical cooperation and financial assistance of various international financial institutions, particularly the World Bank, to achieve this end. In fact, completing cadastral survey work may even be possible in the short-run through the cooperation with the Turkish General Directorate of Land Registry and Cadastre, the private sector and Turkish universities.

The use of land resources, property rights and the reliability of property rights infrastructure are weak in Sub-Saharan countries in general and in particular in Burkina Faso, and such of structure leads to severe land use disputes especially in the rural areas. Even if property rights are defined according to the modern law based on the liberal economic view, legislative and regulations are poorly implemented and customary rules which are still prevailing in land ownership, land management and land allocation decisions in many localities. A clear system of property rights on land is one of the main conditions for efficiency in land-based investment and production decisions. Providing cadastral survey and upper scale planning will bring benefit in term of land disputes minimization in the country especially in rural areas. Since the majority of the country's population income below poverty line, during the survey it would be better to identify beneficiaries at the lowest cost as much as possible, by exempting them from any tax, fees or charge, and allow them to obtain the title deeds of their land.

After completing cadastral survey work, it will be necessary to finalize planning activities by starting at the national level and subsequently at the regional, provincial and smaller settlement levels. Since the lack of physical infrastructure in the country, spatial plans should be established on the basis of the functionality principle accordingly. Land should be allocated according to uses and the most rational



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



choice among alternative uses, and misuse and destruction of fertile land should be prevented. Similarly, protection and conservation of natural reserves such as pasturelands, grasslands and forests should be taken under participatory approach. Additionally, in order to prevent and to be more efficient against desertification, cooperation and synergy with numerous non-governmental organizations which are involving in natural resource protection should be considered with effective participation of local populations in areas under threat of desertification.

Land management policies in Burkina Faso are mainly planned according to conjuncture. Problems associated with land ownership are still persisting as in the past, and have even been aggravated particularly in rural areas. With the organizational structure proposed above all policies and strategies related to land will be planned and implemented by a single centre. Beside the fact that coordination problems will be ended, it will be possible to build long term policy and strategies to ensure effective and rational use of land resources. Academic units, local administrations and central government agencies as well as real estate development companies and non-governmental organizations should be assured in the specification and implementation of all policies through a participatory approach.

Agricultural sector in Burkina Faso is the second most important activity among the country's main sources of employment and income. However farming system is mostly extensive and based on obsolete and spent technology; the average cultivated land size is between 5 and 6 hectares; the feature of agricultural households are mainly small family business; the irrigated farming is at unsatisfactory level, and the agricultural production is dependent on yearly precipitation in general; most of production is generally for household consumption, and the land used for commercial production is comparatively limited. The fact that 85% of the total cultivated land is allocated for cereal production is a major indicator of a limited diversification in agricultural production. Under these circumstances, the increase of output, employment and income through technology improvement, product diversification and promotion of large scale market production and hence improving the structure of agricultural production and accelerating rural development, it is a necessity in order to safeguard food security and the success of rural development policies in the country.

In the country there is an inadequacy of physical infrastructure (facilities such as irrigation, drainage, roads, drinking water and water for others purposes, sewer systems, product processing and storage



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



plants etc.) problem in all rural settlements, and even in many urban settlements. While policies against desertification should be intensified in the North of country, there is a need to improve investments in irrigation in the Southern parts of the country, and it is necessary also to improve investments in road and other infrastructures in all settlements. In the country there is also a need to find sustainable solutions in the short and medium term to reduce food security risk. In this framework, cadastral survey in the rural area, land consolidation, rearrangement of rural settlements, supply of drinking water and irrigation infrastructures with domestic resources would take many years, medium-term, and long-term loans that can be provided by the World Bank and other international financial institutions should be used efficiently as much as possible in order to boost rural physical infrastructure services and provide these services throughout the country.

Since there is a scarcity of available fertile lands in the country and land resources are not distributed equitably between households in all the country, policies for rational land use must be developed. However, review of policies concerning the conservation of protected areas, forestlands and pasturelands, and prevention of land destruction in these fields should be targeted. It would be possible to protect natural (forest) resources and to improve the participation and responsibility of local populations in the management of these common resources in the framework of the agro-forestry system (agro-sylvo-pastoral), which is a popularly applied in region with forests. Nevertheless, to avoid confusions that can rise from the delimitation of forests, pasturelands and the areas for agricultural use and exploitations, there is a need to reinforce the juridical regulations related to this system. Introducing regulations that would fill the gap which is existing in practices of agroforestry and multi-purpose land use within a short span of time, and providing cooperation between local administrations and central institutions in order to ensure effective implementation of all these legislative and regulations in all regions.

The number of qualified technical staff and specialists in institutions involving in land management insufficient and reform of academic institutions curricula will help to overcome this deficiency. In the current curricula of high education institutions, departments and/or faculties related to land management and real estate are not yet established. A large number of students in the country study law and economics, however after being graduated, employment opportunities are very restrictive. They could not gotten (or just a few number of them) employed in public institutions.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



Furthermore, in institutions operating in urban land management, housing and commercial real estate development, even those rendering rural land management services, there is insufficient number of real estate development and management experts. This may act as an encouragement to students to take an opportunity to study in real estate development departments accredited by international institutions, and they can work to their countries, this will bring up a key contribution to the development of a land management model. In every African country similar to Burkina Faso, in order to establish and/ or improve land management system there is a need to open curricula related land management, appraisal, housing and real estate markets in universities. Since the country's economic and social development is largely depending on the management and effective use of land resources, it is evident that the promotion of education and specialization in real estate is necessary.

6. Conclusion and Recommendations

In Burkina Faso, there is a rapid land use change; however it is not possible to undertake a comprehensive and healthy analysis of the change because of lack of safe environmental and socio-economic data and also deficiencies in cadastral survey and land registry system, which constitute the technical infrastructure of land management, and which can furnish regional statistics. According to data from different institutions for the period from 1961 to 2014, there has been a rapid increase in agricultural lands and a decrease in forestlands and other lands. It should be highlighted that there is not equitable land distribution in term of form of land use, also desertification, continuation of natural resource depletion, thus sustainable land management will be a goal which happen to be difficult to achieve.

In the country, 44.2% of the total area is used as agricultural land, which also includes arable lands and pasturelands. Considering agricultural forestry practices and agricultural activities carried out in forestry zones, agricultural activities are practised in almost half of the total country's area. However, food and fibre supply is less comparatively to demand, this leads to the high rate of hunger and poverty relatively low rate of agriculture contribution in GDP and exportation and this is the consequence of low level of productivity and technology used in agriculture, which is mostly subsistence agriculture. Although the service sector's share in GDP is constantly increasing, the agricultural sector still has a significant place in the national economy and employment. It should be noted that in rural settlements,



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



the land assets and the population distribution has rapidly changed because of natural population growth and interregional migration, and the lack of control of these factors has led to an excessive use of land resources and destruction of natural areas. The results of the econometric estimation show that the change in the country's arable agricultural lands is mostly affected by social variables such as population, economic variables such as agriculture exportation, and spatial variables such as the rate of forestlands and lands allocated to other purposes. In addition, structural characteristics such as deficiencies in rural infrastructure and land consolidation and lack of technology in agricultural indicate the rate of land deterioration will increase in the near future.

It has been observed that there is a significant change in land use in the country, and the change is both in terms of the forms of land use and the distribution of production activities in arable lands. In rural areas, there is a transformation of forms of land use where the transformation is of forestlands, pasturelands and protected areas to agriculture and settlement areas. In rural settlements, the land resources and the population distribution has been rapidly changed because of natural population growth and interregional migration, and the lack of control of these factors. Following the increasing need of agricultural land, conflicts between farmers and breeders are recurrent in the use control of water resources for irrigation, and water for humans and animals. Furthermore, land leasing and land acquisition by foreign companies for mining and agricultural production has also negatively impacted the local economy, which constitutes another source of conflicts.

The period following the introduction RAF act has been characterised by a successive modifications this act and the conception of land policies at rural and urban areas. However, the relevant public institutions have failed to provide and implement a sustainable management model and policy for an equitable access to land resources, land development, land market, and investment in infrastructure. Persisting problems due to lack of qualified human resources and bribery in legal and institutional structures hamper the capacity of these institutions to implement a sustainable land management thus can provide an efficient use of land resources for food security, poverty alleviation through a clear and simplified land ownership statutes based on gender equality.

Most of the required activities in the legal and regulations have not been completed and those which have been already implemented are decried in term of equity and fairness. Regarding urban



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



development and practices, it is observed that building and construction decisions are not following spatial or urban master plans, and urban development or extension is generally led by land speculation and squatting proliferation. By the end of 2016, among the 716,960 plots that were produced in urban areas, the rate of plots that are in violation of legislation is high at 14.7%. It should be noted that this rate covers 15 cities only; the rate is expected to be at least as twice as high if all 49 cities of the country will be taken into account. This situation and the squatting proliferation constitute a significant indicator of the weakness of urban land management and housing policy in the country.

Burkina Faso's cadastral survey activities are definitively insufficient; as a result, only 3.11% of the total land resources are registered in the land registry, land ownership protection is unsatisfactory and land use conflicts are on the rise due to the unclear ownership statutes and sometimes the non-recognition of ownership or use of land use principles especially by rural populations. The organization of cadastral services is not effective in all the country, and the cadastral survey and land registry services are not delivered efficiently. In the country just only for mining survey and some big scale agricultural exploitations cadastral survey have been undertaken in the aim to facilitate land acquisition by investors (local and foreign companies). Currently, nine different ministries and many institutions affiliated with these ministries are involving in land management. In all these public institutions, human resources are insufficient and also there are significant conflicts of task and/or authority between relevant institutions and recurrent coordination which leads to inefficient implementation of national policies.

In the current institutional structure of land management, directorates of land registry and cadastre exist only in regions such as Centre and Haut-Bassins especially cities such as Ouagadougou (the capital city) and Bobo-Dioulasso in which are relatively more functional than the others regions of the country. Among the total regions (13), only 10 have cadastral directories. These directories do not have qualified human resources nor sufficient equipment even software programs for cadastral survey. Since there is a need to improve the land management system urgently in Burkina Faso, the cadastral survey and land registry can be completed in the medium term with financial aid and loans from international financial institutions and technical assistance from countries such as Turkey, which have completed their cadastral survey work. In consideration of the fact that the average cost of a plot survey was between US\$ 20-25 in the Land Registration and Cadastre Modernization Project (LRCMP), it is



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



obvious that cadastre establishment can be completed in the short term with foreign loans and technical assistance.

Failure to implement effectively legal and institutional regulations and policies, or the unsatisfactory level of those implemented is related to the low level and/or effective participation of stakeholders especially local populations during the elaboration and/or implementation process. Significant steps are taken in land management through the adoption of fundamental laws and complementary regulations which are generally comprehensive and integrated with the modern world. However, due to the persistence customary land rights usually the existing legal regulations cannot be enforced efficiently and most regulations remain on paper. These legal regulations on land are mainly intended to provide solutions related to various problems in cadastre, planning, land ownership and land use.

In order to improve ensure effective implementation of a sustainable land management, the following elements should be taken into consideration:

- Cadastral survey is the cornerstone of land management and through it, it can help the taxation system to function especially in land rent, property tax collection which is very important for the government in term of internal fund-raising. Cadastral survey and land registration should be completed countrywide and this is possible by using the latest technologies at relatively least-cost (remote sensing, unmanned aerial vehicles, geographical information systems, etc.).
- As econometric model results show, the change in land use is mainly affected by demographic and economic factors. It will be difficult to ensure sustainable land use in the long term, if these factors are not regularly controlled and also if the land registry system is not improved.
- In rural areas, there is a need for land consolidation, clean water and irrigation water supply, irrigation systems, struggle with desertification, road construction, protection of sensitive areas, establishment of clear land ownership rights, and minimization of conflicts for natural resources. In urban areas, there is an urgent need for road construction, clean water infrastructure investments. Lack or insufficiency of investments in physical infrastructure leads to constant waves of migration and conflicts with local populations. The government have to improve its policy of contracting loans with



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



financial institutions and through public-private partnership in the aim of providing physical infrastructure in the short term.

- There is a need to reinforce cooperation with non-governmental organizations and international institutions with the aim of limiting the rate of desertification. In this framework, there is also a need of an active participation of local populations in land protection and development activities.
- Long-term policies and strategies should be developed in the agricultural sector, which has a significant role in country's economic development. Agricultural assistance and structural change should be managed through public support programs and the contribution of agriculture to the national economy should be increased by supporting market-oriented production systems.
- Agriculture production diversification and market-oriented with high scale production system should be encouraged to increase agriculture productivity and production, employment and income and thus will improve food security and ensure rural development.
- Since the general income level is low and most of households are living below poverty line in rural areas, the government should support them by delivering title deeds free of charge and reducing the taxes and fees during land registration process.
- Land management policies should be developed based on effective participation principle (academic units, local governments and units of the central government, real estate development companies, non-governmental organizations, community based organizations etc.) and efficient implementation.
- In rural areas, urban development and construction processes should be transparent and land speculation and corruption should be minimized in the aim of building transparency in land management and administration. In cities, plots should be developed in consideration of the master plans, the current need of population and population growth projections for the next 50 years. Thus the homelessness problem should be minimized, and public support to social housing projects (Which have been relatively absent until now) should be increased.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



- A valuation system should be developed for the aim of reinforcing clarity of land and real estate market and improving the taxation system especially in real property; furthermore a clearly functioning real estate market, will improve mortgage system and also real estate owners will be able to present their assets as guarantees for loans facilities.
- In Africa generally in Burkina Faso in particular, regulations should be implemented regarding the wide scale land acquisition by foreigners for agricultural and mining activities. Instead of export-oriented activities, foreigners who acquire lands should be encouraged to increase employment in the country by processing products domestically, which will help to increase the value, and facilitate the integration with local populations in the country.
- Since national economic and social development depends primarily on effective land management and use of land resources, education and specialization in land administration and/or real estate sciences should be encouraged.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



References

- Assemblée Nationale du Burkina Faso (ANBF). (2016). Rapport de Synthèse. Commission d'Enquête Parlementaire sur le Foncier Urbain au Burkina Faso. Assemblée Nationale, IV^e République, Septième Législature, Ouagadougou, Burkina Faso.
- Bazame, R. (2017). Arazi Yönetimi ve Arazi Kaynaklarının Sürdürülebilir Kullanım Politikası: Burkina Faso Örneği (Land Management and Sustainable Use of Land Resources Policy: The Case of Burkina Faso), Ankara Üniversitesi Fen Bilimleri Enstitüsü Gayrimenkul Geliştirme ve Yönetimi Anabilim Dalı Yüksek Lisans Tezi, Ankara.
- Bonfiglioli, A. (2004). Lands of the Poor. UNCDF. New York, USA.
- Briassoulis, H. (2000). Analysis of Land Use Change: Theoretical and Modeling Approaches. The Web Book of Regional Science, Scoot Loveridge, Ed. Regional Research Institute, West Virginia University, USA. Web Sitesi: www.rrri.wvu.edu/webbook/briassoulis/contents.htm, 20.11.2016
- Byamugisha, F.F.K. (2013). Securing Africa's Land for Shared Prosperity. The World Bank, Washinton DC, USA.
- Coalition pour la Protection du Patrimoine Génétique Africain (COPAGEN). (2012). Web sitesi: terres-copagen.inadesfo.net/IMG/pdf/rapport_burkina.pdf, 25.10.2016.
- De Soto, H. (2000). The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else. Bantam Press Edition, UK.
- Deininger, K. (2003). Land Policies for Growth and Poverty Reduction, The World Bank and Oxford University Press, Washington D.C., USA
- Durand-Lasserve, A., and Le Roy, E. (2012). La Situation foncière en Afrique à l'Horizon 2050. p.155. Agence Française de Développement. Imprimerie de Montligeon, Fance.
- FAO. (2002). Land Tenure and Rural Development, FAO, Rome, Italy.
- FAO. (2008a). TerrAfrica-A vision paper for Sustainable Land Management in Sub-Saharan Africa, FAO, Rome, Italy.
- FAO. (2008b). Water and rural poor: interventions for improving livelihoods in Sub-Saharan Africa. FAO, Rome, Italy.
- FAOSTAT (2016). Web Sitesi: <http://faostat3.fao.org/download/R/RL/E>, 08.08.2016.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



- Gerstter, C., Kaphengst, T., Knoblauch, D. and Timeus, K. (2011). An Assessment of the effects of Land Ownership and Land Grab on Development-With a Particular Focus on Small Holdings and Rural Areas. European Parliament (Ed). 28 p., Brussels, Belgium.
- Havnevik, K. (2011). Grabbing of African Lands for Energy and Food: Implications for Land Rights, Food Security and Smallholders, In: Biofuels, Land Grabbing and Food Security in Africa, P.B.Matondi, K.Havnevik and A.Beyene (Eds), Zed Books, London & New York, pp: 20-43; 106-133.
- Hochet, P., di Balme, L. A., Jacob, J-P. and Sanou, S. (2014). Burkina Faso: Vers la Reconnaissance des Droits Fonciers Locaux. GRET et Laboratoire Citoyennetés, Ouagadougou, Burkina Faso.
- Institut National de la Statistique et de la Démographie (INSD). (2015). Annuaire Statistique du Burkina 2014. Web Site:
www.insd.bf/n/contenu/pub_periodiques/annuaires.../Annuaire_stat_2014.pdf, 23.04.2016
- Ministère de l'Habitat et de l'Urbanisme du Burkina Faso (MHUBF). (2008). Politique Nationale de l'Habitat et du Développement Urbain. Ouagadougou, Burkina Faso.
- Moghaddam, K.Zh. (2015). An Investigation of the Factors Affecting Land Use Changing of Agricultural Lands (Case Study: Rural Areas of Rasht Town- Iran). Journal of Research & Rural Planning, Vol:4(9):113-133.
- Kitamura, Y. (1997). Empirical Likelihood Methods with Weakly Dependent Processes. The Annals of Statistics, Vol. 25 (5): 2084-2102.
- Korbéogo, G. (2006). Les logiques de la Compétition Foncière au Burkina Faso: le Foncier entre Justification Identitaire et Stratégies d'Accumulation dans le Gourma. Colloque international "Les frontières de la question foncière – At the frontier of land issues", Montpellier, France.
- Kroll, F. and Hasse, D. (2010). Does Demographic Change Affect Land Use Patterns? A case study from Germany. Land Use Policy, Vol.27: 726–737.
- Liniger, H., Studer, R.M., Hauert, C. and Gurtner, M. (2011). Sustainable Land Management in Practice, Guidelines and best practices in Sub-Saharan Africa. FAO, Rome, Italy.
- Lipton, M. (2009). Land Reform in Developing Countries. Routledge. 456 p., UK.
- Nkonya, E., Pender, J., Kaizzi, K. C., Kato, E., Mugarura, S., Ssali, H. and Muwonge, J. (2008). Linkages between Land Management, Land degradation, poverty in Sub-Saharan Africa-the case of Uganda, USA.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



- Moghaddam, Z. K. (2015). An Investigation of the Factors Affecting Land Use Changing of Agricultural Lands (Case Study: Rural Areas of Rasht Town- Iran). *Journal of Research and Rural Planning* Vol.4 (1)-S.N.9.
- Morita, S., Kaminaka, H., Yokoi, H., Masumura, T. and Tanaka, K. (1997). Cloning and Characterization of Cytosolic Ascorbate Peroxidase DNA from Rice (Accession No. D45423). *Plant Physiol.* Vol.113: 306.
- Osterberg, T. (1997). Questionnaire Regarding Cadastral Projects in Developing Countries, Working Group 7.2 on Cadastral Systems in Developing Countries, FIG, <https://www.fig.net/organisation/comm/7/activities/reports/events/penang97/penang975.htm>
- Ouédraogo, M. (2002). *Le Foncier dans les Politiques de Développement au Burkina Faso: Enjeux et Strategies.* IIED, UK.
- Ouédraogo, H.M.G. (2005). *Etude Comparative de la Mise en Oeuvre des Plans Fonciers Ruraux en Afrique de l'Ouest: Benin, Burkina Faso, Cote D'Ivoire.* FAO, GTZ. Rome, Italie.
- Sanou, S. (2008). *La Construction d'Institutions Locales Légitimes de Gestion Foncière en Milieu Rural au Burkina Faso: assiste-t-on à une esquivé des enjeux de pouvoirs et une méprise du jeu des acteurs?*
http://www.hubrural.org/IMG/pdf/institutions_foncieres_rurales_au_BKF.pdf, 08.05.2016.
- Tanrıvermiş, H. (2003). Agricultural Land Use Change and Sustainable Use of Land Resources in the Mediterranean Region of Turkey. *Journal of Arid Environments* Vol.54: 553–564.
- Tanrıvermiş, H. (2006). *Doğu Karadeniz Bölgesi'nde Fındık Çay ve Kivi Tarımının Karşılaştırmalı Ekonomik Analizi ve Monokültürün Ekonomik ve Çevresel Etkilerini Azaltabilme Olanakları,* Ankara Üniversitesi Basımevi, Ankara.
- The World Bank. (2002). *Linking Poverty Reduction and Environmental Management – Policy Challenges and Opportunities.* The World Bank, Washington D.C., USA.
- The World Bank. (2015). Web Site: http://www.statistiques-mondiales.com/burkina_faso.htm, 08.08.2016.
- Turner, B. L., II, Skole, D., Sanderson, S., Fischer, G., Fresco, L. and Leemans, R. (1995). *Land-Use and Land-Cover Change: Science/Research Plan.* IGBP Report 35. Royal Swedish Academy of Sciences, Stockholm, Sweden.



Responsible Land Governance: Towards an Evidence Based Approach

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
WASHINGTON DC, MARCH 20-24, 2017



United Nations (UN). (2012). Sustainable Land Use for the 21st Century. United Nations, New York, USA.

United Nations-Habitat III. (2015). Elaboration du Rapport National Habitat III du Burkina Faso. Rapport Final. Onu-Habitat, Burkina Faso.

United States Agency for International Development (USAID). (2010). Property Rights and Resource Governance-Country Profile-Burkina Faso. USAID, Washington, D.C., USA.