Conference on Land Policy in Africa, CLPA-2019

"Winning the fight against Corruption in the Land Sector: Sustainable Pathway for Africa's Transformation"

November 25 - 29, 2019 | Abidjan, Cote d'Ivoire

LAND ACCESS AND HOUSEHOLDS WELLBEING IN CAMEROON: DOES GENDER MATTER?

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ABSTRACT

The aim of this paper is to examine the relationship between land access and household wellbeing in Cameroon. We use the multiple component analysis to capture land access determinants and a bivariate probit model to put on evidence effect on wellbeing. With our sample size of 11,391 household's heads obtained from data of living conditions surveys, our main results show that land access is easier in rural area (72.86%) for female household head than in urban area (29.85%). They are mostly widowed (49.03%), married women in polygamy regime (12.77%) and divorced or separated (10.62%). Those women are uneducated (50.03%) or have fulfilled only primary school (33.66%). They are engaged in informal activities or in the primary sector. They are aged 40-49 years old, have access to financial services and most of them in rural area have poor characteristics of housing. Only about 23.03% of male household heads do not have access to land in rural area with 65.67% of them owning land with no have land certificate and as far as education is concerned, they have just completed primary education (39.66%). They have poor housing characteristics and difficult access to drinkable water and electricity. In urban area, 32.107% of male household head have access to land. They achieved more than secondary school. Regarding their marital status, they are married monogamy or just living together. The latter achieved higher education. Land owner without land certificate (62.45%) are mostly those working as self-employed or low scale workers. Only 7.53% of male household heads have a land certificate in urban area. In addition, land access has a positive effect on the household wellbeing. In fact, owning land for a household head increases up to 1.86 the probability to be non-poor, than for household where the head does not have access to land. Possessing land in rural area is not a significant guarantee to escape from poverty and give only about 20% of chance to the household head to be non-poor, than a one having access to land in urban area. Households headed by women owning land, regardless the type of document for the ownership, have 13.9% of chance to be non-poor than those headed by a man. Land possession by female-headed households have a relevant impact on the wellbeing of the household as a whole in term of income and consumption. And being landless increases the probability of being poor and vulnerable. Land tenure security and full and equal access of women to property rights and land titles stand like an asset and also as an engine for economic growth that can be engaged in development agenda UN-2030 and AU 2063.

Keys Words: Land, gender, poverty, Cameroon.

JEL Classification: C2, H, I, Q15.

RESUME

L'objectif de cet article est d'examiner la relation entre l'accès à la terre et le bien-être des ménages au Cameroun. Nous procédons par une analyse en correspondances multiples pour identifier les déterminants de l'accès à la terre, et nous utilisons un modèle probit bivarié pour capter les effets de l'accès à la terre sur le bien-être. Avec un échantillon de 11 391 chefs de ménages provenant des données d'enquêtes sur les conditions de vie, nos principaux résultats montrent que l'accès à la terre est plus facile pour les femmes chefs de ménages en zone rurale (72,86%) qu'en zone urbaine (29,85%). Elles sont pour la plupart veuves (49,03%), mariées sous régime polygamique (12,77%) et divorcées/séparées (10,62%). Ces femmes n'ont pas fait des études (50.03%) ou ont achevé juste le cycle primaire (33,66%). Elles sont engagées dans des activités informelles ou le secteur primaire. Elles sont âgées de 40 à 49 ans, ont accès aux services financiers et la plupart d'entre elles ont, en zone rurale, un habitat insalubre et de moindre qualité. Seulement 23,03% des chefs de ménages de sexe masculin ont accès à la terre en milieu rural dont 65,67% ne disposant pas de titre foncier avec un niveau d'éducation primaire (39,63%). Ils possèdent des habitats peu viables et ont difficilement accès à l'eau potable et à l'électricité. En milieu urbain, 32,107% des hommes chefs de ménage ont accès à la terre et ont un niveau d'étude au moins secondaire. Ils sont soit mariés monogames soit en union libre. Ces derniers ont un niveau d'éducation supérieur. Les propriétaires terriens sans titre foncier (62,45%) sont majoritairement ceux qui s'auto-emploient ou des manœuvres. Seulement 7,53% des chefs de ménage de sexe masculin possèdent un titre foncier en zone urbaine. De plus, l'accès à la terre a un effet positif sur le bien-être du ménage. En effet, posséder la terre pour un chef de ménage accroit de 1,86 la probabilité qu'il soit non-pauvre, qu'un ménage où le chef n'a pas accès à la terre. La possession de terre en zone rurale n'est pas une garantie significative pour se prémunir de la pauvreté et donne juste 20% de chance au chef de ménage d'être non pauvre, par rapport à un chef de ménage ayant accès à la terre en milieu urbain. Les ménages dirigés par des femmes possédant la terre, quelque-soit son mode d'acquisition, ont 1,39 fois plus de chance d'être non-pauvres que ceux dirigés par les hommes. La possession de terre par les femmes chefs de ménages a un impact significatif sur le bien-être du ménage en termes de revenu et consommation. Et n'avoir pas accès à la terre accroît la probabilité d'être pauvre et vulnérable. Une politique foncière équitable pour les femmes permettrait de voir la terre comme un élément de patrimoine et un moteur de croissance économique dans le cadre des agendas de développement ONU-2030 et UA- 2063.

Mots Clés: Terre, genre, pauvreté, Cameroun.

Classification JEL: C2, H, I, Q15.

I. INTRODUCTION

I.1 Background

Up till today, Africa remains a net food importing region spending more than USD[1] 35 billion annually on food imports, although this continent has about 65% of the uncultivated arable land left in the world to feed 9 billion people by 2050 (AfDB, 2016). Land tenure remains a major challenge across the continent and only about 10% of Africa's rural land is registered. In most of African countries, we notice an inefficient land administration leading to transferring land title deeds costs twice the price and takes twice as long as it does. Most of those countries have basic land tenure laws that are incomplete and poorly enforced, deterring private investment. Applicable legislation remains voluntary and non-binding, as well as weak policy and institutional frameworks that are the leading cause of corruption in the land administration. Meanwhile, women and young's access to land is on average less than half that of men. Generally, title and inheritance rights across Africa countries are bestowed to male family members. Yet women remain the primary users of agricultural land in most African communities. In those countries, there is a growing threat to local peoples' land tenure security which directly affects their social, cultural and economic development. This situation is mostly due to the fast growing large-scale land acquisitions by foreign investors and some locals companies, national governments, rich and also powerful individuals. Such a situation is harmful for local populations, both in rural and urban area. Since, securing tenure rights over lands and natural resources is very important for poverty alleviation, employment, cultural survival, social cohesion, intergenerational connection, ecosystem sustainability and a dignified life for communities that depend on land

Land access in vital to generate income to move out of poverty, to produce food in order to address food security concern. Land is also a factor of social exclusion or inclusion and an economic growth driver. In Cameroon, concern with inclusive growth has been nurtured by the recent 2000s international crisis implications. They are the food, climate, financial and economic crisis. It is noteworthy that those crisis occurred against a somewhat paradoxical background of a period where Cameroonian authorities in 2006, just from the completion point of the Heavily Indebted Poor Countries Initiative (HIPC) of the International Monetary Fund (IMF) and the World Bank (WB) were struggling to improve on economic performances in the country. And in the meantime in order to achieve the Millennium Development Goals (MDGs). Finally, Cameroon didn't achieved the MDGs by the 2015 deadline. In September 2015,

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[1] United States Dollar (USD).

Cameroonian authorities moved forward to the 2030 United Nations (UN) development agenda with Sustainable Development Goals (SDGs)[2] and the 2063 development agenda of the African Union (AU)[3], with an emphasis on an inclusive approach of economic growth in order to address wellbeing concern. One of the main driver of inclusive growth in developing countries stands to be agriculture. But an agricultural-based structural economic transformation needs some inputs among which land stands to be one of the major one.

In Cameroon, land as an asset, an input or an income source is not equally possessed by any individual or household with respect to gender and place of living. This is as a result of some land law, cultural norms and behavior that as in many countries are gender-related and extended beyond biological differences. They are namely the family role of men and women, their social responsibility, their allocation of work time and risk management, their right and access to reproductive resource such as land. In view of this, land tenure are more secured for men than for women in Cameroon (figure 8).

As far as customary land tenure is concerned, it is self-administering in the sense that it depends upon local consensus in the ten regions of Cameroon to be upheld and retained, even where traditional rulers or local chiefs are endowed with day-to-day administration powers. These customary land tenure regimes that are flexible regime and respondent to changing local conditions from a region to another, are not always equitable and at time the rights of women and very poor client families are generally weak and easy to exclude from land access. In addition, most of the customary estate is purposely held for non-permanent cultivation and is owned collectively, the greater part of the citizen's land resource is especially vulnerable to allocation to grantees or buyers of government's choice.

Regarding the legal framework in Cameroon, the land law that dates from 1974s[4] and emerged from the colonial law[5] that distinguished registered and unregistered land. That law underlines the fact that unregistered land is the de facto property of the State in the form of national lands. Cameroonian law fails to acknowledge customary land-holding as amounting to real property interests, and therefore according the protection of private property, including paying customary owners the market value for lands which government appropriates for public purpose. If even national law provides some security of occupancy for unregistered house plots

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[2] SDG 15, SDG5, SDG 2 and SDG1 emphasis on land, gender and wellbeing issues.

[3] Aspiration 6 focus on an Africa whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children. In the same line, the African woman should be fully empowered in all spheres, with equal social, political and economic rights, including the rights to own and inherit property sign contracts, register and manage businesses. Rural women will then have access to productive assets like land, credit, inputs and financial services.

[4] Ordinance No. 74-1 / 74-2 of 6th July 1974, to establish rules governing land tenure and government -owned landed property of Cameroon and Decree No. 76-165 of April 27 1976 to establish the conditions for obtaining land title.

[5] The Order of 15th September 1921 relating to the organization of conservation of private property and land rights in the territory of Cameroon; The Decree of 21rst July 1932 instituting the land registration system in Cameroon; and the Decree of 12th January 1938 and its Order of Application of 31rst October 1938 on land matters; and Law No. 59-47 of 17th June 1959 concerning the organization of private and national property.

and farms, but only to the limited extent that compensation is payable for loss of permanent crops or infrastructure when the government requires the land for other purposes, rural Cameroonians are deeply insecured in their land tenure. It seems also important to highlight the fact that, Cameroonian law or practice does not make it easy for customary landowners to formally register their holdings to secure their property. Land registration in Cameroon is a remote, complex and expensive process. It also converts customary lands into individualized parcels without social conditions, impacting negatively upon family and community interests. Registration process is even limited to lands which have been cleared or cultivated or physically settled with houses.

Land market and land access in Cameroon seem then to be complex to easily or explicitly address the special needs of disadvantaged groups such as women, orphans, newcomers, pastoralists, hunter-gatherers and others, in an inclusive framework. If even those disadvantaged groups because of some labour market failures and imperfections are more involved in agricultural and others pastoral activities that need land as the main input, without special or target policies their rights and land tenure can be easily defeated by stronger interests that can be harmful for economic growth, households social and economic wellbeing and their social inclusion.

In fact and according to OECD[6] (2014), as quality jobs creation is a necessary step towards inclusive growth in developing countries like Cameroon, fast growth of Gross Domestic Product (GDP) in those countries has helped lifting hundreds of millions of people out of acute poverty. However, that fast growth has also widened income gaps between the better-off and those who have been left behind with no or bad jobs. Then for countries to facilitate a structural transformation that fosters both employment and growth through policies that keep demand high while boosting productivity in low productivity sectors and facilitate movement of labour to high-productivity sector, they need a significant development of the potential of agricultural productivity. That is for instance through mechanization and improving investment practices or by providing credit support and land tenure security to smallholders. In manufacturing-based economies, productivity improvements and upgrading can be better fostered by supporting small and medium-sized enterprises involved in agriculture to facilitate access to finance coupled to land tenure security to sustain food production. IFPRI[7](2017) shows that global food prices fell for the fifth straight year in 2016 due to increasing supply. But in Africa and according to FAO[8](2016) crop prospects and food situation report, dry-weather-reduced outputs in North and Southern Africa more than outweighed production gains in East and West Africa,

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[6] OECD is the Organization for Economic Cooperation and Development.
[7] IFPRI is the International Food Policy Research Institute.
[8] FAO is the Food and Agriculture Organization of the United Nations.

resulting in an overall reduced aggregate cereal production in 2016 for example. Moreover, the low harvests in Southern Africa severely stressed food security conditions, while conflicts, notably in Nigeria and in South Sudan, continued to severely erode productive capacities and acutely intensified food insecurity in the affected areas and neighbouring countries. In Cameroon that share a large border with Central African Republic and Nigeria, influx of refugees is putting strain on host communities within the various regions of the countries. The number of refugees from the Central African Republic, who mainly entered East, Adamawa and North regions, was estimated in October 2017 at 274, 000 (UNHCR). In addition, about 86, 000 refugees from Nigeria have entered the Far north and North regions since May 2013. Insecurity along the borders with Nigeria also led to the internal displacement of more than 200, 000 individuals. The number of food insecure people is currently estimated at 2.6 million, more than twice the level in June 2015. Such situation leads to reinforcing pressure on land demand to feed people.

Innovative approaches to land management, tenure policy, housing provision and food security are more and more presented like challenge for policy-makers and others stakeholders as far as agricultural policy is concerned both in international (UN 2030 and AU 2063) and national development agenda. In fact, Cameroonian authorities are on the same path with the Rural Sector Development Strategy Paper (RSDSP) on implementation since 2005 and the Growth and Employment Strategy Paper (GESP) of 2009. Securing land rights can then be a tool of improving household's wellbeing through agriculture and others pastoral activities.

Therefore, we assume that land rights from a gender perspective could be more useful in developing country like Cameroon that need agricultural structural transformation to address social inclusion concern.

I.2   Problem and Objective

From the best of our knowledge, there are very little evidence on how land policies impact on wellbeing in Cameroon. At the time of writing this paper, UN 2030 and AU 2063 development agenda have just been adopted with an emphasis on land, gender and wellbeing issues (SDG 15, SDG5, SDG 2 and SDG1). Cameroonian authorities are on the same path with the RSDSP and GESP on implementation. The main research question of this study is: What is the effect of land access on household's wellbeing in Cameroon? Specific questions are: (Q1) What are the characteristics of land owners in Cameroon? (Q2) To which extent a gender-based land access can impact on households living conditions?

The main objective of this study is to examine the effect of land access on household's wellbeing in Cameroon. Specific objectives are: (O1) to highlight the characteristics of land

owners in Cameroon (O2) to evaluate the extent to which gender-based land access can affect household living conditions. The main hypothesis of our study is that land access better improve household's living conditions when it is headed by a woman.

I.3   Relevance of the study

Land plays a fundamental role for the development and social inclusion in a country. Land possession by individuals or households can have a relevant impact on their living conditions through its various use. And being landless increases the probability of being poor and vulnerable. Evaluating the implications of land access on wellbeing is a part of the design of development policies in a context of sustainable development strategies. This study is important for academic discussion and stakeholders since, among other things, if even attention to gender and land governance is not new. So that land tenure security and full and equal access of everybody to ownership, property rights and land titles in Cameroon could be seen not only as an asset as others but also as an engine for an agricultural based-inclusive economic growth that can be engaged for the post-2015 development agenda. The paper also contributes to this discussion and the findings could encourage further research in this field.

The rest of the paper is structured as follows. In section 2, we present the Cameroonian socio-economic context of the study and illustrate how land governance and poverty analysis are actually a policy concern for local authorities and others stakes-holders looking for better anti-poverty policy tool. Section 3 summarizes related theoretical and empirical literature. Section 4 presents recent trends on land tenure. Section 5 outlines the procedure of determinants the characteristics of people owning land, explains how incorporating land and wellbeing in the same analysis and presents the database. In section 6 we present empirical findings that are discussed in section 7. Section 8 highlights some evidence-based policies advices and suggests elements for further research.

II.   CAMEROONIAN ECONOMIC PROFILE

Cameroon is a lower-middle-income country with a population of 24, 277 inhabitants (NIS, 2015) sharing its borders with Nigeria, Chad, the Central African Republic, Equatorial Guinea, and Gabon. Cameroon is endowed with significant natural resources, including oil and gas, high value timber species, minerals, and agricultural products, such as coffee, cotton, cocoa, maize, and cassava. It is the largest economy in the Central African Economic and Monetary Union (CEMAC), with a growing population rate of about 2.9% per year. The number of poor increased by 12 percent to 8.1 million people between 1996 and 2014. Poverty is increasingly

concentrated in Cameroon's northern regions, with an estimated 56 percent of the poor living in the north and far north regions alone. This poverty trend is reinforced due to labor market failure and imperfections and land access and land tenure that remain a huge challenge, mostly for poor. In 2017, Cameroon is still suffering from shocks caused by the crisis of early 2000s and a slump in oil prices and increased security threats that started early in 2014. Oil revenue declined and security and humanitarian spending increased, while needed infrastructure programs continued, leading to widening fiscal and current account deficits as well as a rapid accumulation of external debt. According to IMF (2017), after showing initial resilience to the shocks, growth weakened to 4.7% in 2016, from 5.8 % in 2015 and 5.9 % in 2014. Nevertheless inflation declined to 0.3 % at end 2016 and remained low at around 0.7 % in october 2017. According to the World Economic Outlook (WEO) of the IMF (IMF, 2017a), it is expected to stay below the CEMAC convergence criterion of 3 % in the medium-term. In addition, the fiscal deficit rose to 6.5 % in 2016, from 2 % of GDP in 2015, largely driven by a surge in capital spending and a decline in revenues

Figure 1: Real GDP growth (Annual percent change)
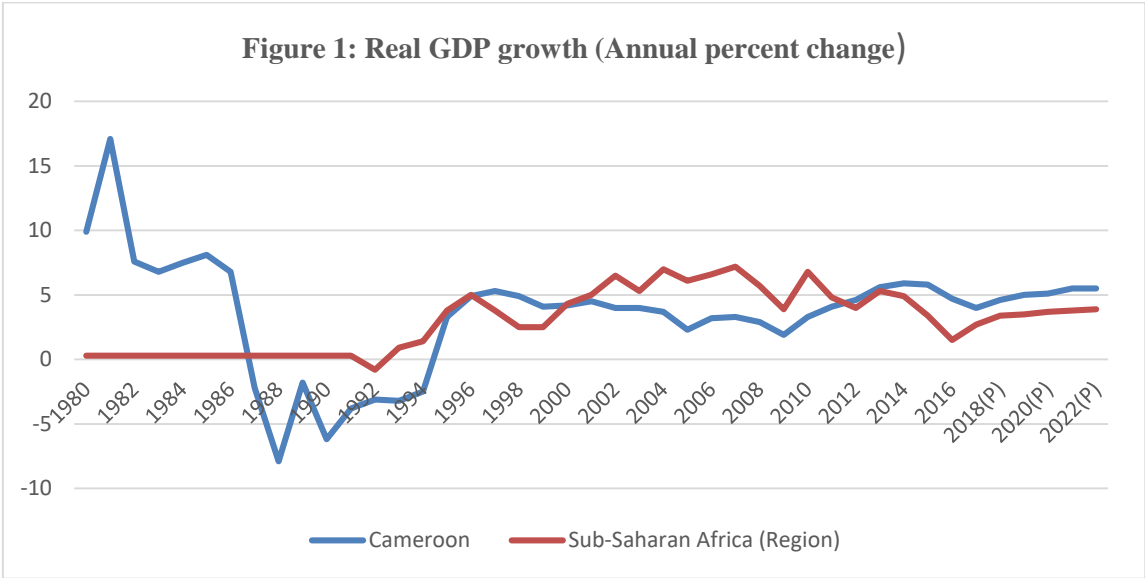
Source: Author's plot from and IMF WEO (2017).

However, continued implementation of the government's ambitious infrastructure plan and interventions to boost the agriculture and forestry sectors have significantly contributed to sustaining strong growth in public works and construction and services. IMF (2017b) add that growth-oriented policies such as fiscal reforms (tax policy measures, higher public infrastructure investment), financial sector reforms, and reforms to the agricultural sector can have important distributional consequences in Low Income Developing Countries (LIDCs) like Cameroon. For this second concern, land should be available for everybody regardless the gender. Obstfeld (2017) as cited in IMF (2017:14) emphasis that, «Gender equality is more than a moral issue; it is a vital economic issue. For the global economy to reach its potential, we

need to create conditions in which all women can reach their potential ». Following the same line, we assume that a gender responsive land governance could be useful in Cameroon.

III.   LITERATURE

II.1   Theoretical review

In a simplest view, the goal of economic development is to create material wealth in a country, with impact on wellbeing indicators such as health care, education, housing, sanitation. In fact, since its theoretical conception objective of economic development is complex and multidimensional, and have resulted in the development of a number of theories, explanations, arguments and assertions from various scholars. These theories describe tools and strategies for making development goals achievable in a given context. Nevertheless and from a classical approach, there are some of the most prominent theories of economic development that can be highlighted. There are four main clusters of classical theories of economic development. They are, the linear stages of growth models (Rostow, 1960), the structural change models (Lewis, 1954; Chenery, 1960; Kuznets; 1971); the international dependence models (Cohen, 1973; Kuhnen, 1986; Todaro and al., 2003) and the neoclassical counter-revolution models (Lucas, 1976; Bauer, 1984). With the industrial revolution coupled to the growth in modern industry, those development theories experienced some market coordination failures coupled with an unclear role of the government. Apart from new growth theory of 1990s, structural transformation of the economic is taking place as an alternative approach of development. Therefore, concern like land, social inclusion, governance of local resource for development are more and more highlighted by policy makers and development agencies. Our study then follow this paradigm and is focused on land access and ownership implications. Secure rights to land have multiple benefits for the poor and provide a readily available means for people to rise out of poverty, especially for women. In rural, urban and peri-urban areas where population density is high and land markets can be very competitive, even very small plots of land can provide these benefits. Land access provides a supplementary source of income and food to the poor, as part of diversified livelihood strategies that also include work as wage labourers, trade or cottage industries and remittances. Small plots can also function as sources of credit, social status and security in times of crisis. In fact, the stronger their land security the easier it is for households to invest in the land, improve production and escape from poverty. However, some scholars focused their research on the topic of land.

Binswanger and Elgin (1998) on land reform and farm size showed that, rural poor have limited access to land even when rural factor markets are competitive and operate efficiently. In fact

and as early argued by Carter et al. (1993), one of the outcome of the competitive market is that poor people whose income are at the subsistence margin are unable to purchase land at a competitive price. Since they cannot reduce their consumption below the subsistence margin in order to finance land purchases, even if the land would be useful for them to generate new and higher income. Ducan et al. (2001) argues that a gradual increase in tenure security leads to agricultural growth and poverty reduction in rural china. Many other authors highlight the value of small household plots for the poor in South Asia. Hanstad et al. (2004) show that the distribution of land plots to land-poor households in India has had a positive impact on livelihood opportunities. In Pakistan and Bangladesh (Gazdar et al., 2004), ownership of even relatively small plots of land is associated with supplying enough vegetables, fruit and milk to meet agricultural laboring households own needs and generate incomes from commercial sales. For women, house and garden plots are readily accessible and easily tended with fresh produce available directly, resulting in improved welfare for children and for families as a whole. However, let us mention that land as a production factor or a social asset is not accessible for all in Cameroon and all over the world. The 2008 UN-Habitat reports show some innovation and good practices in providing secure land rights for all such as low-cost registration and formalization of customary rights, temporary occupation licenses, certificates of comfort, and specific measures for pastoralist peoples, and so one and so forth. More recently, the ever-rising demand for food and natural resources has caused a dramatic increase in land based investments in the 2000s. This increase has raised a number of issues and challenges for governments, international agencies and Civil Society Organizations (CSO) to explore and address the most burning of which being how to ensure that land investments are transparent, sustainable and responsible. As global demand for food and natural resources grows, land-based investments in developing countries like Cameroon have increased dramatically (Feubi P. et al., 2014). To create economic opportunities these investments face challenges of engaging responsibly with local communities and creating links with regional economies without undermining the livelihoods, access to resources and established rights of those who have lived off the land for generations. Foreign investors are usually aware of local tenure rights, however most large land investments fail to take these into account, and consequently the livelihoods impacts that projects will have.

II.2   Empirical review

In the economic literature, numerous studies always seek to explain observed land-use decisions in terms of profit-maximizing behavior, either from the demand or supply side. Then

many tools, either qualitative or quantitative-based approaches have been used to highly various socio-economics implications of land related issue. Qualitative studies mostly used Focus Group Discussion (FGD) approach from a simple stratified sampling framework and others used qualitative econometrics models. As far as quantitative studies are concerned, they used quantitative or qualitative variables. For example, from a times series study on data from Latin America, De Janvry and Sadoulet (2000) found that agrarian growth is associated with sharply increasing rural inequality. To empirically test the economic relationship between access to land and rural poverty in Nepal, Adhikari B. et al. (2014) employ a non-parametric technique on a Generalized Additive Model (GAM). Such a model does not make the usual assumption of the linearity of the shape of the relationship between variables and also allows comparisons with result from Ordinary Least Squared (OLS) estimations on linear econometric model. They found that a greater access to land increases income and consumption of the household and thereby reduces poverty. Keswel and Carter (2014), paid attention to the South Africa's Land Redistribution for Agricultural Development (LRAD) program and capture its effects on poverty. They use a propensity score methods to identify the observable characteristics of beneficiaries of land transfer. Since the implications of land transfer as others asset transfer program is not instantaneous, in order to appreciate its impacts on wellbeing, Keswel and Carter (2014) estimate a duration response function by following the Hirano et al. (2004) approach of mapping the generalized propensity score into outcomes and then averaging outcomes by duration. These estimates show that, the living standard of land transfer beneficiaries initially drop for households with less than 1 year under the LRAD and then, after 3 or 4 years their living standard rise to about 150% of their pre-transfer level. Due to the imperfections of land market, econometric-based landscape simulation models have also been developed to understand the nature and extent of land market failure problem and to identify and quantify the effects of corrective land-use policies. Plantinga A. J. et al. (2014) discussed landscape simulations based on econometric land-use models in a context of landscapes dominated by private ownership with four basic challenges, namely:- variation in the private economic return to land at the same scale at which land use varies, -modeling the private information that landowners possess about the returns to their land, -the best account for land-use intensity and, -the probabilistic nature of the land-use transition rules derived from econometric analysis as shown by Bokstael (1996). Plantinga A. J. et al. (2014) highly an application of their method based on Lewis et al. (2009) and Lewis (2010) to modeling shoreline development along 140 lakes in northern Wisconsin in United States of America (USA). Their model represents both the decision to develop and the development intensity where the unit of observation is a parcel of land. This model is used in a landscape simulation and coupled with a previously published

regression model on green frog population expressed as a function of lake's development density in the sense of Woodford et al. (2003). Among others things, they found that, elimination of the zoning policy increase the likelihood of a larger number of lots being built, and relaxing the zoning constraint along the lakes translates in a greater probability of extinction for green frog populations. At the best of our knowledge, very few or none authors paid attention to the probit model to empirically test effects of land access on wellbeing in Cameroon. In this paper, we make use of a probit regression approach. We assume that more land access for women and used for agriculture could be more useful in improving income and consumption for households.

IV. RECENT TRENDS ON LAND TENURE CONCERN
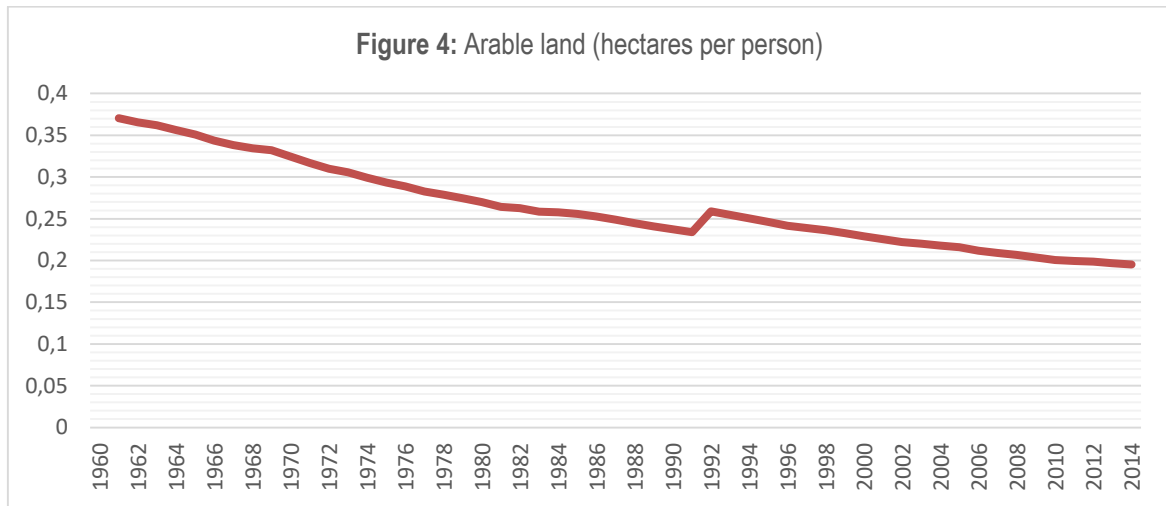
III.1 Lessons from other countries

Land stands like a basic building block for a social and economic development of human communities. Furthermore, it is a decisive social and economic asset which is the gateway to cultural identity, political power and decision making. It is of paramount importance to such an extent that traditional societies have had, since the days of yore, a corpus of customary rules that govern the relationship between mankind and land as well as other natural resources. In every country, a modern, efficient and transparent land administration system is an important tool of addressing poverty and promoting growth and sustainable development. Security of property rights is central to preserving livelihoods, maintaining social stability, and increasing incentives for investment and for sustainable, productive land use. Making land rights transferable allows the landless to access land through sales and rental markets or through public transfers, and further increases investment incentives. The land tenure challenge is reinforced by an increasing demand of agricultural land in various regions of the world (figure 3). Let us also mention that up-till today ownership of the world's agricultural lands is a major source of contestation around the globe, affecting prospects for rural economic development, human rights and dignity, cultural survival, environmental conservation, and efforts to combat climate change. Nevertheless, uncertainty remains about land ownership and occupancy rights. This situation not only complicates development planning for governments, it also increases vulnerability, especially of poor (figure 5) and marginalized groups.

Figure 3: Agricultural land around the world (sq.km)
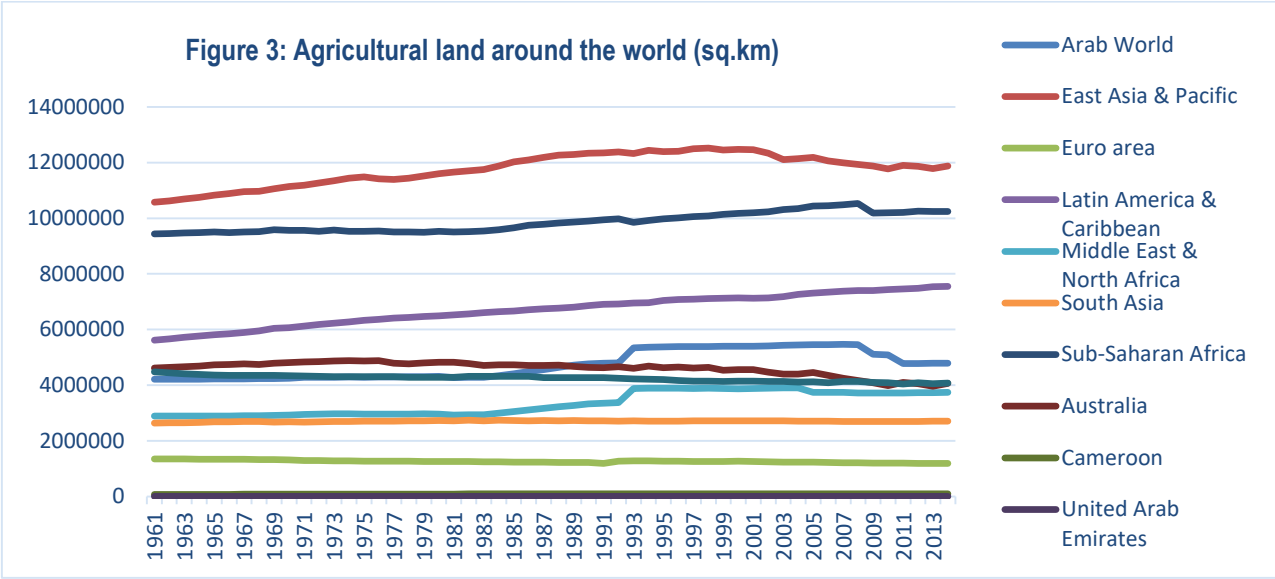
Source: Author

Under international law and various constituencies throughout the world, women and men have equal rights, including tenure rights. This is clearly shown in the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW)[9]. This is the most known binding international instrument for protecting women's rights, empowering them and promoting gender equality. It explicitly refers to the right to have access to land. This recognition has often not yet trickled down to others national legislation, policies and programmes related to land, housing and marital property and is often not acknowledged in customs and practice. Furthermore, the practice and perception of a woman's position in the household, family and community affects to what extent women can exercise their land rights. Thus inequalities in land tenure and housing rights between men and women continue to exist, and the average quantity of arable land per individual in the world is even decreasing as shown below (figure 4) with a steady state of the share of total land between rural and urban areas (figure 5).

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[9] See Wehrmann Babette (2015) for more details.

Figure 4: Arable land (hectares per person)

Source: Author

Figure 5: Share of land area in the world (sq.km)

- Land area (sq. km)
- Rural land area (sq. km)
- Urban land area (sq. km)
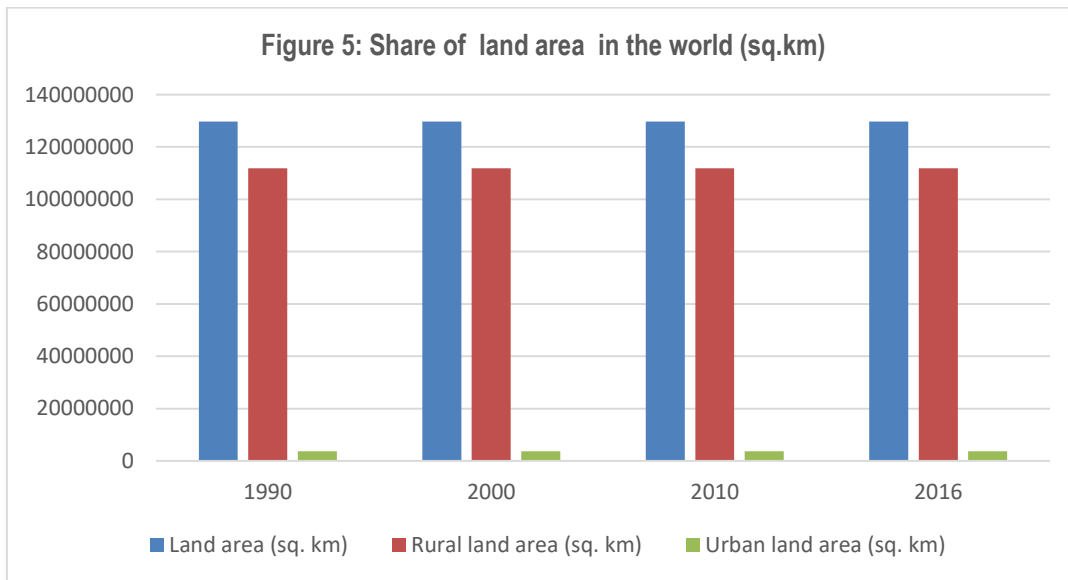
Source: Author

In some Asian countries like India, Pakistan and Nepal, women's legal land rights are rarely implemented in letter and in spirit. Socio-cultural and customary practices play an important role in depriving women from their land rights. These practices over-ride law and are highly patriarchal in nature. Wehrmann (2015) shows that in these countries, the most common source of acquiring property for women is inheritance from the natal family, followed by purchasing.

Figure 6: World population and the number of poor (millions)

[Chart showing Population, total and Number of poor at $1.90 a day (2011 PPP) from 1981 to 2017(P)]

Legend: — Population, total — Number of poor at $1.90 a day (2011 PPP)
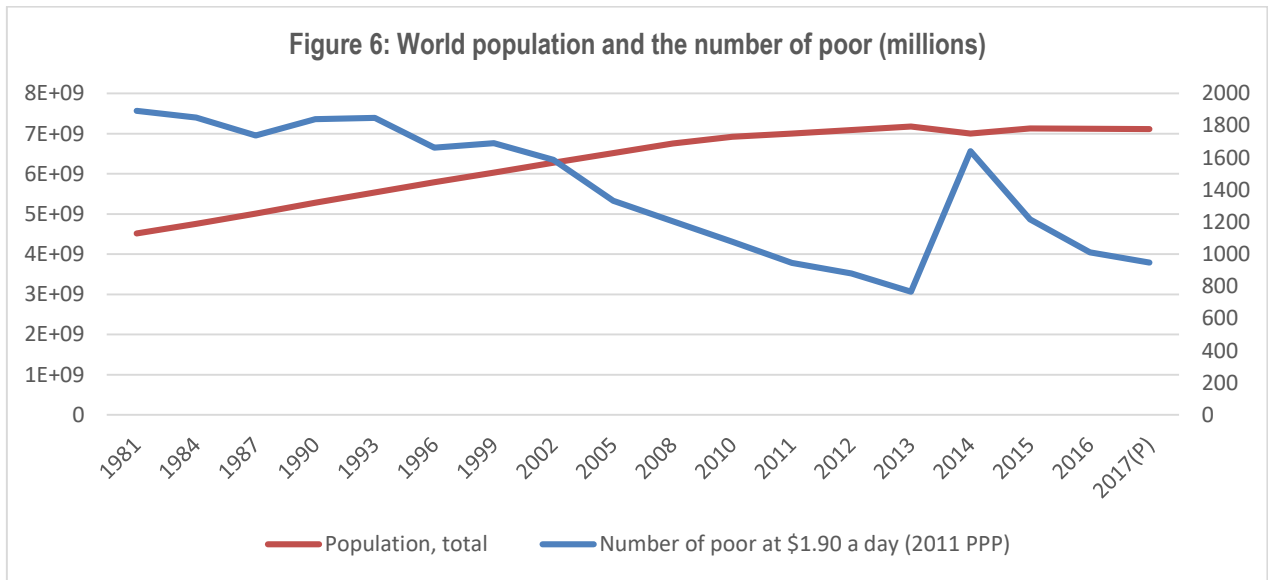
Source: Author's calculation

It is also important to noticed that, the growing world population coupled with an increasing number of poor as shown on figure 4 above, is another factor explaining the highly land demand for agriculture (figures 6 and 7).

Figure 7: Share of agricultural land in the world

[Chart showing Agricultural land (% of land area) and Arable land (% of land area) from 1960 to 2016]

Legend: — Agricultural land (% of land area) — Arable land (% of land area)

Source: Author

Figure 8: Land area in the world (sq. km)

[Chart showing land area in sq. km from 1960 to 2016]
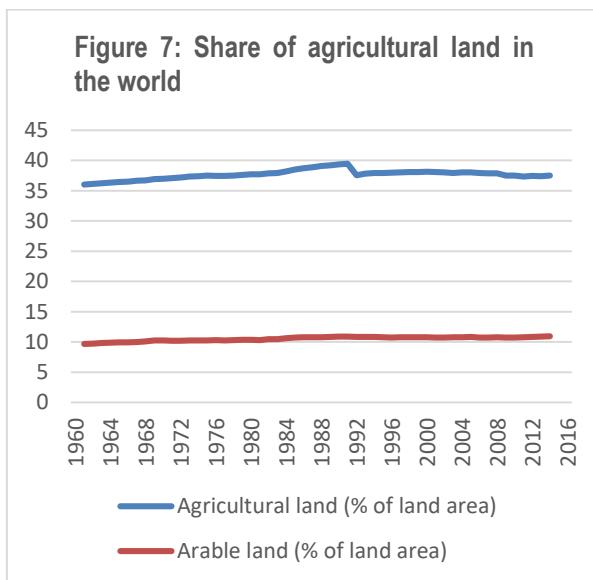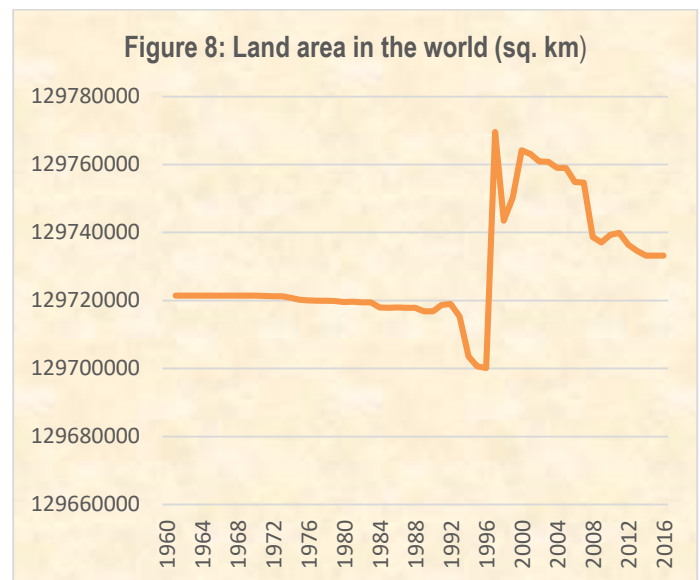
Source: Author

As far as Africa is concerned, laws of land tenure date on average to 1970s and some reforms on land tenure in most countries dated to 1980s with two distinct processes, social development and states policies and practices to promoting pro-poor economic growth. In both approaches, decisions driving land use and tenured systems are taken by men as household-heads, women being considered mostly as wives with secondary role to the changes that landholding systems undergo. Consequently, in many African countries formal legislation has been minimally

effective in dealing with women's rights to land. While some laws may guarantee gender equality with regard to land rights (for example, a land law), other laws, such as family law, may be based on patriarchal norms and undermine or directly contradict the concept of equal land rights by not giving wives equal rights to marital property or daughters equal inheritance rights. Even where legislation is generally positive towards women's land rights, in many countries the state and its institutions, including the judiciary, have a weak presence beyond major urban areas. The state, therefore, does not have the resources, or is unwilling to commit resources, to advocating, promoting, enforcing, and protecting women's formal legal rights to land and property. In the absence of state institutions to enforce equal rights for women as well as other laws such as land use, customary and local norms and practices predominate. While continued gender inequality in African local customs and institutions affect women's ownership and control of land and natural resources, some gains have been in made in specific countries

In Liberia for example, the government has enacted laws and adopted policies intended to advance the equality of women to men in terms of acquisition of property including land. These include the Domestic Relations and Inheritance Act of 1998 that specifically highlights equal rights in marriage and inheritance under Customary and Statutory Laws, the 2003 Act to Govern the Devolution of estates and establish Rights of Inheritance for spouses of Statutory and Customary Marriages also called the Equal Rights of the Customary Marriage Law of 1998. Other policies include the Liberian National Gender Policy (LNGP), the National Gender-Based Violence Plan of Action (NGBVPA) and the National Action Plan to implement UN Security Council Resolution 1325.

In Mali, after political changes in 1991, government authorities begun a process of decentralization passing authority down to local governments for the management of land, natural resources and public services. That was done in a progressive, consultative and participatory approach including the creation of local councils. That are local governments established by the voluntary affiliation of neighboring villages, and the demarcation of boundaries. Through decentralization, the national government aimed to empowering local government, encourage development, protect the environment, and foster political stability. Nevertheless, we can notice some difficulties with this decentralization approach of land governance in Mali. In fact he laws governing decentralization are dense, complex and overlap with other laws concerning land and natural resources. The local councils negotiate conventions, which establish rules for the private use of village lands, for grazing and fishing rights, and for other uses of natural resources. Enforcement is difficult, however, because local conventions are not legally binding. Rather, their purpose is for communities to commit to a way of working together and be involved in natural resource management. In addition, few

local councils have demarcated their land, further complicating their ability to enforce local agreements relating to the use of land and other resources. Local councils have the power to appropriate land held under customary tenure, subdivide it, and then lease or sell the land for residential use. This process, known as "*lotissement*", is much abused, fueling land speculation and benefitting the elite. However, it is one of the few available means by which communes can finance themselves. Despite its imperfections, decentralization in Mali has proven to be an important avenue for communities to gain greater control over land-use decisions and over the natural resources on which they depend. The situation is Cameroon differs from various points of views.

III.2   The Cameroonian experience

In 2017 the challenge about land in Cameroon remains too large through countless land disputes and land restitution requests, farming and housing by vulnerable people chiefly made of women and children who are displaced for various reasons. The situation varies for both women and men. The right to have access to land and property ensures a production security which offers a choice of livelihood and gives room to life autonomy. Nevertheless, there are shortcomings in the gender's rate integration into the access rules and security of land law in Cameroon which impact women's living conditions and make them more vulnerable. Moreover, scan attention is paid to the gender regarding land issue in Cameroon. The overwhelming power of the custom and socio anthropological considerations in rural areas are brought to being by a patrilineal management of land and access right to natural resources to the detriment of women.

In Cameroon and by customary law, land belongs to the government. In addition and by statutory law, most forests are the property of the government. If even forests are a major common property resource of rural communities, both settled and mobile. Access and the share of land in Cameroon, is not the same for men, women and young people, regardless the area or the place of living (figure 9). Men remain with about 83.6% of the total land and women with only 16.4%.

Figure9: Land ownership in Cameroon

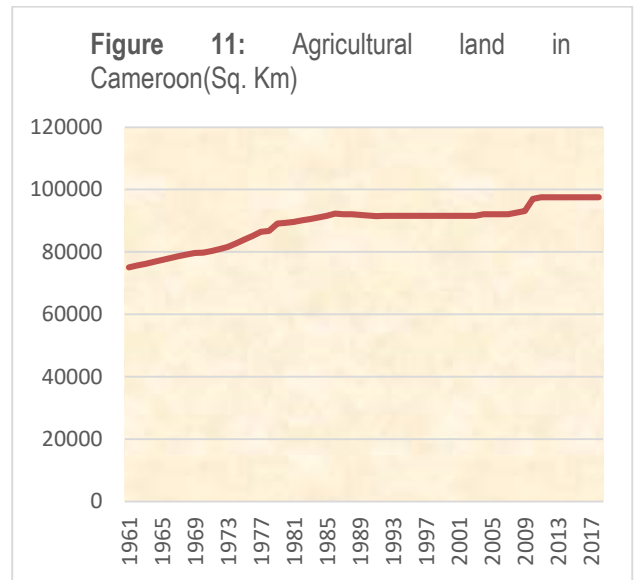| Value	Category
16,4	Women who own land alone (% of women age 15-49)
31,2	Women who own land both alone and jointly (% of women age 15-49)
49,1	Women who own land jointly (% of women age 15-49)
83,6	Men who own land alone (% of men)
68,8	Men who own land both alone and jointly (% of men)
50,9	Men who own land jointly (% of men)
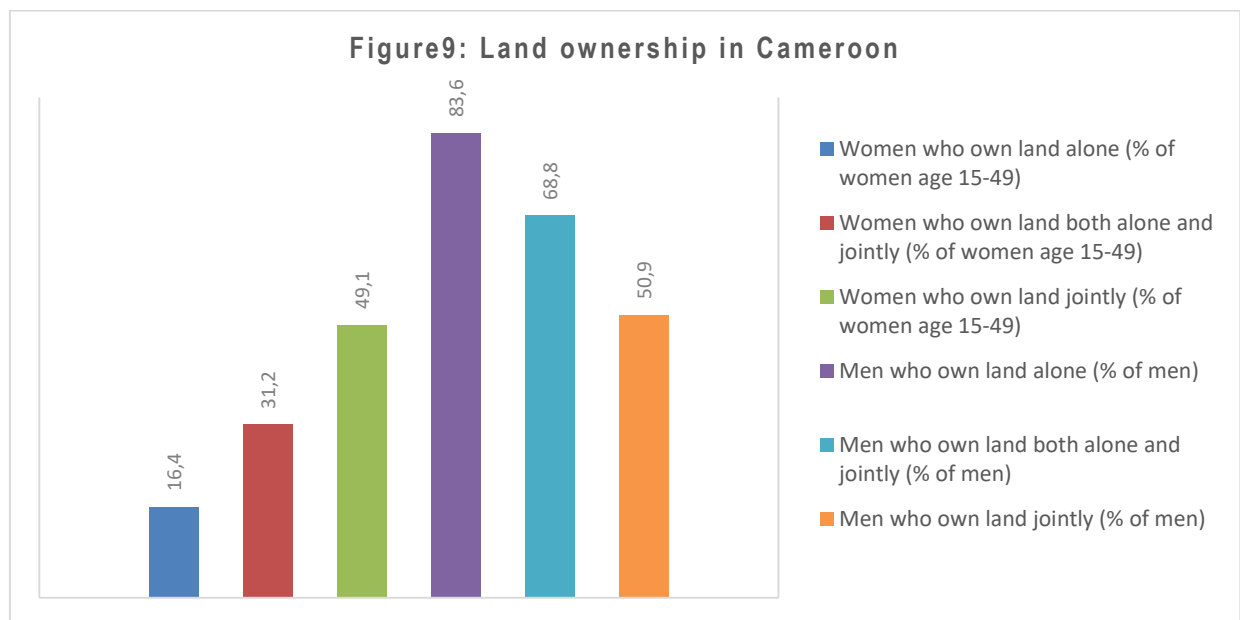
Source: Author

In fact, women's land ownership is limited in Cameroon. In most parts of the country, women have traditionally accessed land through their natal families and husbands. When they are married, most wives farm their husband's lands. Wives are often considered the owners of crops and often control crop production and any income generated form the production but in most cases do not own the land. Cameroon's legal system on land tenure incorporates French-oriented civil law, English common law, and customary law (which in some regions incorporate Islamic law). The 1996 Cameroonian's constitution states that all persons have a right to own property and mandates equality of the sexes and principles of non-discrimination. Citizens also have the right to own property in association with others. That same law states that no one can be deprived of property unless it is taken in the public interest, and is subject to payment of compensation. However, Cameroon's laws of succession and marital property allow for patrilineal control of property. Family law governing marriage and marital property provides that, ownership of marital property depends on the marriage contract, which can allow for either separate ownership in which each person manages separately the property each brings into the marriage, or common ownership but with the husband holding the rights to manage the property, including right to transfer it without consent of the wife (GOC Constitution, Ebi, 2008, Cheka 1996; Lo 2010).

The increasing population in Cameroon (figure 10) that doubled during the last two decades from about 12 million in 1990 to more than 23 million since 2015 is an explanation of the increasing land demand for agriculture (figure 11).

Figure 10: Total population in Cameroon(million)

$y = 8E+06e^{0.027x}$

Source: Authors calculation.

Figure 11: Agricultural land in Cameroon(Sq. Km)
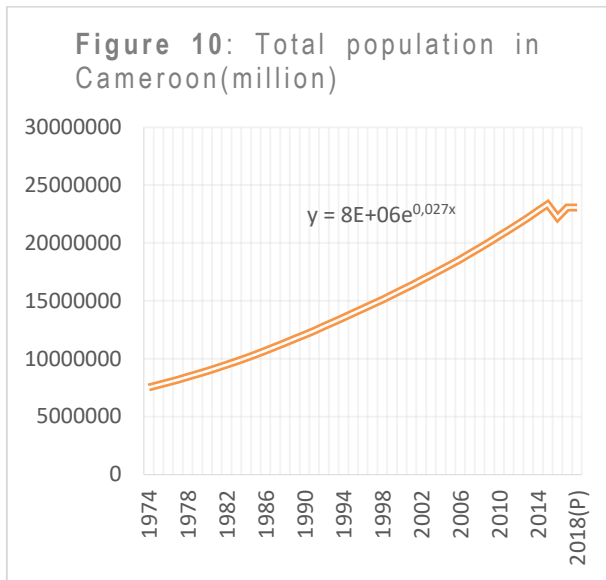
Source: Authors calculation

In the meantime, the number of people involved in agriculture is still increasing (figure 12) while poverty rate is just slightly decreasing (figure 13) from 39.9% in 2007 (5.55 million of poor) to 37.5% in 2014 (5.46million of poor).

Figure12: Agricultural population in Cameroon

■ Agriculture Population   ■ Non-agriculture Population
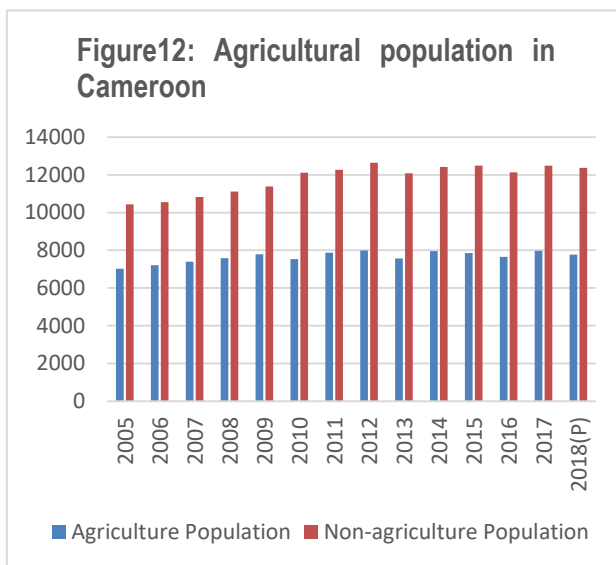
Source: FAO (2017) and author calculation

Figure13: Poverty trend inCameroon

14317191
16349364
19078100
22773014
6885056
378012
5584716
5460246

1996   2001   2007   2014

■ Population, total
■ Number of poor at $1.90 a day (2011 PPP)
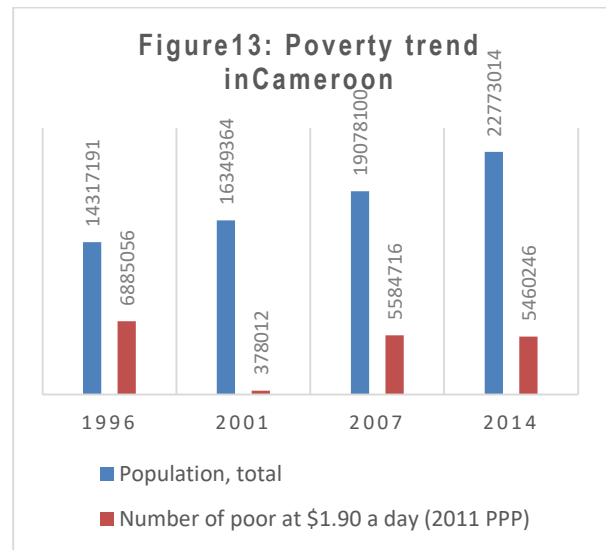
Source: National Institute of Statistics, Cameroon (2015)

Regarding the above-mentioned stylized facts, is it is important to have a real idea about what determine land access both for men and women in Cameroon and how it impact on wellbeing.

V.   METHOD

III.1   Analytical framework

The analytical framework of this study consists of using in one hand the Multiple Component Analysis (MCA) [Asselin (2002 and 2005), Sahn and Stifel (2003)] to identify the determinants of land access in Cameroon. In the second hand, to capture the incorporation of gender and land into wellbeing analysis that may lead to a better understanding of the link between the two phenomena, we use a bivariate probit model that allows for correlated unobserved heterogeneity (Armagan T., 2015). Our study is at the household level and we focus on household heads as they are representative of the amount of information available in the household.

MCA derives from inertia approach in the domain of multivariate statistics. In data analysis inertia approach provides many techniques such as the Principal Component Analysis (PCA), the MCA, the Factorial Multiple Analysis (FMA), the Generalized Canonical Analysis (GCA), and so one and so forth. MCA is commonly used in studying poverty and help generating poverty index to identify determinants of poverty or characteristics of poor or deprived people. From a very large set of qualitative and quantitative variables, MCA aims to analyze patterns of relationships between them through a data reduction process using standard correspondence on an indicators matrix. In this view, this multivariate statistical technique also accommodates with quantitative variables that are recoded into nominal or categorical ones, in order to avoid losing information. The objective is to extract the factorial axis remaining with the maximum quantity of information contained in the matrix. This approach is based on some axioms such as the monotonicity also called the First Axis Ordering Consistency (FAOC), measures of discrimination, spreading on the first factorial axis, and the high frequency of non-response and very low frequency of certain modalities. Among this theses criteria, the most important one is the FAOC. MCA also takes into account weight of variables, score derived from it, and variance of the factorial axis. They help to measuring the intensity with which a given variable explains the considered factorial axis.

As per regard with using MCA to identify the main characteristics of people having access to land in Cameroon, we start with a set of $H = 11,391\ households$ that is the total population in which we focus on household's heads, and a set of $V = 430$ variables either qualitative or quantitative that characterize them from various points of view regarding living conditions.

Among those households, we focus on households head (i) having access to land and on what characterize them. The variables of interest are for example the education level, the place of living, the gender, the employment and the marital status, religion, the place of living; age, etc… All the variables are recoded into nominal one and each of them has J_v levels or modalities. The indicators matrix is of rank $H \times V$ and is denoted IM. After successive data reduction into the complete data table (the Burt table) and IM, and performing correspondence analysis on IM, we obtain a smaller set U $(U < V)$ of variables that provide us one factor (f_1) scores for rows (households head) and another (f_2) for columns (variables). These two factors scores are assumed to be scaled so that their variance are equal to their corresponding eigenvalues $(e_1 \ and \ e_2)$. Those factors are the one with the maximum amount of information contained in IM. It seems important to precise that this extraction of factors is done after the diagonalization of the Burt matrix denoted $BM = IM^t IM$. All this is done basing on one of the main criteria of the MCA's technique that is the FAOC.

In addition, since some discrete variables can violate the Gaussian distributional assumption of inertia approach [Ritchie-Scott (1918), Pearson (1922) and Olsson (1979)] and thus bias the analysis, where necessary we use Polychoric MCA based on the Polychoric coefficients. Conceptually, the Polychoric MCA work as follows: let $v_1 \ and \ v_2$ be two ordinal variables with $c_1 \ and \ c_2$ respective categories each derived by discretizing the latent continuous variable v_1^* and v_2^* according to a set of threshold $b_{j,1}, \ \ldots \ b_{j,c-1} \ for \ j = 1,2$:

$$v_j = \begin{cases} q & if \ b_{j,q-1} < y_j^* < b_{j,q_j} \ for \ q = 1, \ldots, c_{j-1} \\ 0 & otherwise \end{cases}$$

The polychoric correlation is the correlation for the latent continuous variables $v_1^* \ and \ v_2^*$ implied by the observed ordinal variables $v_1 \ and \ v_2$. Assuming a distribution for the latent variables $v_1^* \ and \ v_2^*$ gives the likelihood function for the polychoric correlation coefficients, which can then be estimated using the observed $v_1 \ and \ v_2$.

Typically a bivariate normal distribution is used, assuming means of zero (0) and standard deviations of one (1) for the latent variables (Olsson, 1979). If one of the observed variables is discrete and the other is continuous, then the polyserial correlation is calculated, which assumes only the discrete variable has an underlying latent variable. Combining pairwise estimates of the polychoric or polyserial correlations gives the overall correlation matrix for the observed data, which can then be used to conduct the final MCA (Kolenikov and Angeles, 2009).

Let us recall that, given a set of variables $v_1, \ldots, v_p$, the MCA seeks to find the linear combinations of those variables with maximum variance: Standard MCA commonly implies both positive and negative weights when calculating principal factors. However, the underlying

interpretation of the data and analysis may require that the weights all be positive as both positive and negative weights that are used to calculate principal factors in linear combination of variables may partly cancel each other.

At the end, two main interpretations are done on results obtained from the MCA:

(a) Each modality of a selected variable has a coordinate on each of the extracted factors (also called axis). That coordinate represent the factorial score (α) equivalent to the weight $\left(w_{j_v}^{\beta}\right)$ of the variable in that axis. For example, the score of a modality j of a variable V on the first factor is computed as $\alpha_{1j} = \sqrt{\frac{Hj}{j_v}} e_1 w_{j_v}^1$.

(b) While performing the MCA, a discrimination value is calculated for each ordinal value on each factorial axes. That is the variance of the factorial score of all the modalities of the considered variable on the axis. It measures the intensity with which that variable explains the axis.

To capture the incorporation of gender responsive land access into wellbeing analysis that may lead to a better understanding of the link between these two main variables, we use a bivariate probit model that allows for correlated unobserved heterogeneity (Armagan T., 2015). In this paper, we are interested in household head owning land; both land under exploitation or not are taken into consideration. Since in wellbeing or poverty studies, land is usually seen like an asset, a good subject to any exchange on the market; or like an input that can be used to produce and generate additional earnings for the household of individual owning the land. Let us recall that, empirical studies on the measurement of poverty or wellbeing level generally use income or total expenditure per capita or per equivalent adult (or children when it applies), or a wellbeing composite index from selected indicators. Once a household head owning land is identified among the 11,391 households of the total sample size, we compute the probability of having access to land conditional to his living standards characteristics or wellbeing status. Since this study aims at simultaneously analyzes the relationship between land access and wellbeing, we use a bivariate probit model that allows for correlated unobserved heterogeneity. Our model is then specified in the following:

$$\begin{cases} Y_h^{ls} = X_h^{ls}\gamma_h^{ls} + \tau_h^{ls} \\ Y_h^{ws} = X_h^{ws}\gamma_h^{ws} + \tau_h^{ws} \end{cases}$$

Y_h^{ls} is the variable indicating the land status (ls) of the household's head. It takes the value zero (0) if the household head owns land and one (1) in the contrary. Y_h^{ws} indicates the wellbeing status (ws) of the household's head. X_h^{ls} and X_h^{ws} are the vector of socio-demographic characteristics (detailed in the tables below) of the household's head with regard

to land and wellbeing status. And γ_h^{ls} and γ_h^{ws} are vectors of coefficients, τ_h^{ls} and τ_h^{ws} represent residual terms.

In this study we consider four sub-groups of the main population (H), with the respect to the place of living (urban or rural) and the household head gender (male or female). We then have female-headed households living in rural area $(FHHR,\ H_1 = 1,393\ people\ observed\ on\ 112\ variables\ )$, female-headed households living in urban area $(FHHU,\ H_2 = 1,648\ people\ observed\ on\ 161\ variables)$, male-headed households leaving in rural area $(MHHR, H_3 = 3,633\ people\ observed\ on\ 158\ variables\ )$ and male-headed households living in urban area $(MHHU, H_4 = 4,717\ people\ observed\ on\ 163\ variables\ )$. For a total sample size of 11,391 people.

III.2 Data

In this study Statistics on households living conditions are from cross-sectional microeconomic data from Cameroonian Households Consumption Surveys (CHCS). They are official surveys namely CHCS 1 in 1996, CHCS 2 in2001, CHCS 3 in 2007 and CHCS 4 in 2014 conducted by the National Institute of Statistics of Cameroon. The aim of those surveys covering all the ten regions of Cameroon stratified into urban, semi-urban and rural strata is to investigate on household living standards and conditions, so that to help updating the poverty profile and served in preparing benchmark indicators to monitor progress in reducing poverty. We also use time series data of the 2017 World Development Indicators (WDI) from the World Bank for land statistics in the world. Statistics on gender are from the World Bank gender portal (2017). Some of those on agricultural are from the Food and Agricultural Organization (FAO). The software used for computation are Excel; SPAD, SPSS and STATA.

VI. EMPIRICAL FINDINGS

In this section we presents main results regarding characteristics of household's head owning and those on living conditions.

IV.1 LAND ACCESS DETERMINANTS

We have a sample size of 1,393 rural female household's head observed on total of 112 variables. Our final MCA shows that 72.86% of them own land. They are mostly widowed (49.03%), follow by married women in polygamy regime (12.77%) and divorced or separated (10.62%). Those women are uneducated (50.03%) or have fulfilled only primary school (33.66%). Regarding labour market, they are engaged in informal activities or in the primary

sector. Those women are all aged above 40, can have access to financial service (from credit union of social group) to fund agro-pastoral activities, and poor characteristics of housing.

Figure 14: Cloud of variables for rural women household's head
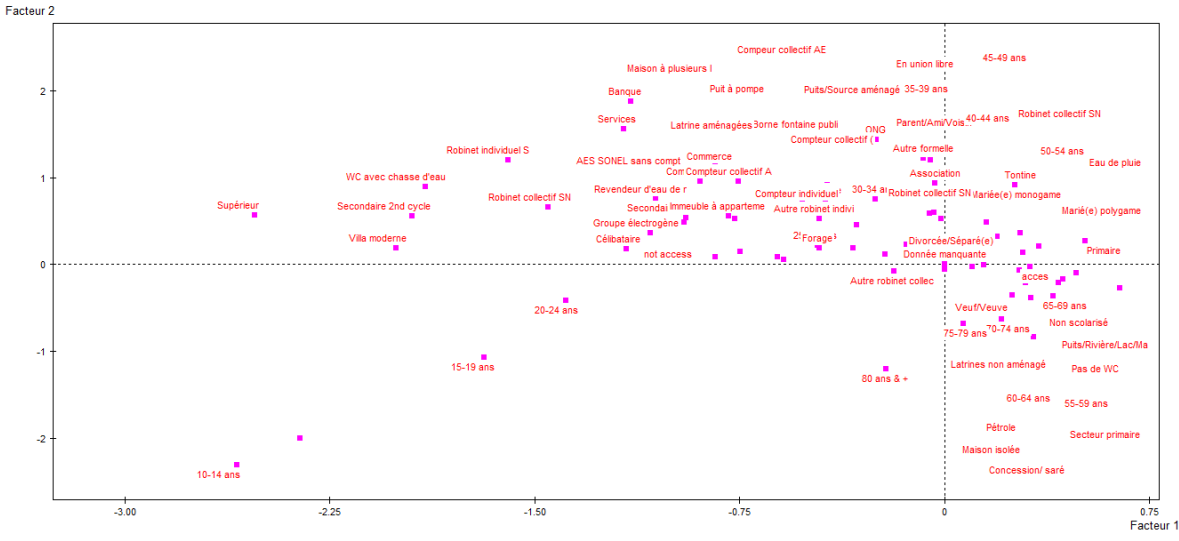
Source: Author with SPAD 6.

In urban area, only 492 of the 1,648 female household's head, that is 29.85%, have access to land and most of them are widowed (33.79%). Some others are married monogamy (14.62%), divorced/separated (11.77%). As far as education is concerned, land owner achieved only primary school (29.55%) or are uneducated (21.17%) and are aged 40-49 years (24%) with access to credit or others financial services.

Figure 15: Cloud of variables for urban women household's head
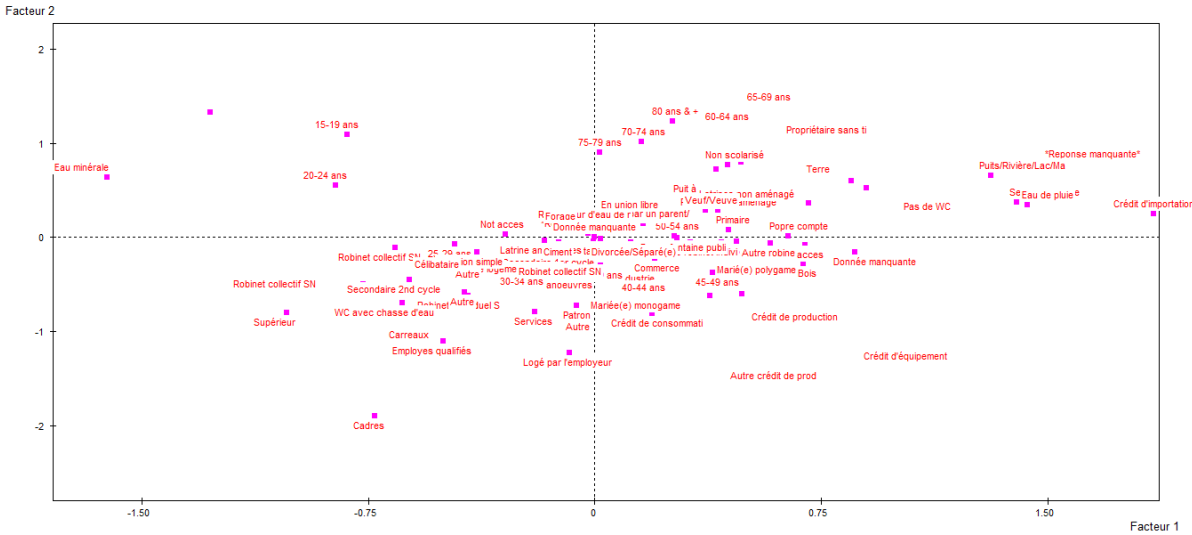
Source: Author with SPAD 6.

In rural area, only about 23.03% of male household head do not have access to land. They are mostly single and are aged less than 25 years old. 65.67% of those owning land do not have land certificate and as far education is concerned, they have just completed primary education

(39.66%). They have poor housing characteristics and difficult access to some basics needs such as water and energy.

Figure 16: Cloud of variables for rural men household's head
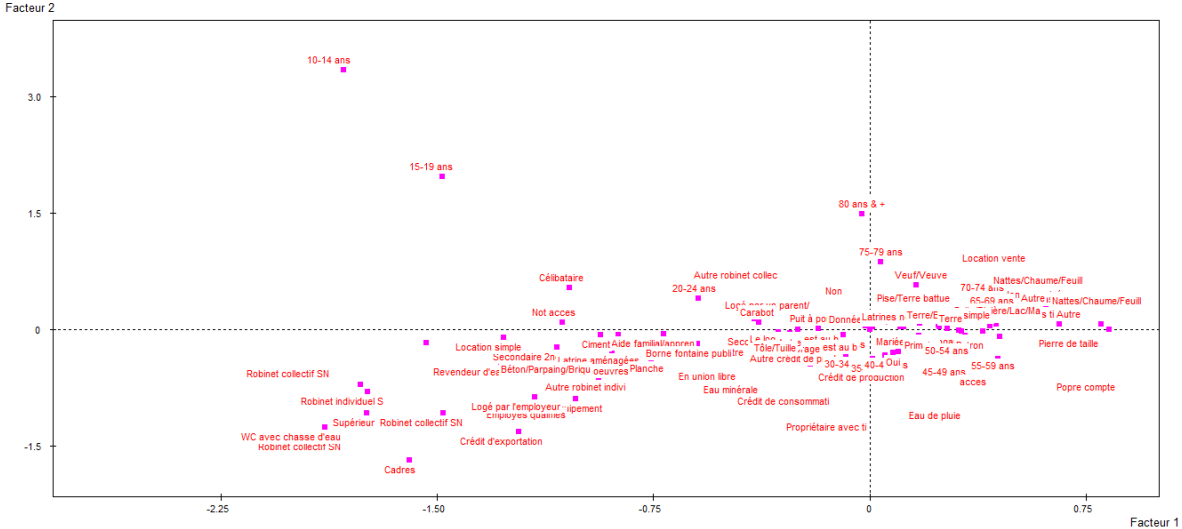
Source: Author with SPAD 6.

Only 32.107% of male household head in urban area have access to land as shown in table 16. They achieved more than secondary school. Regarding their marital status, they are married monogamy or just living together. The latter achieved higher education. Land owner without land certificate (62.45%) are mostly those working as self-employer or low scale workers. Only 7.53% of male household head has a land certificate in urban area.

Figure 17: Cloud of variables for urban men household's head
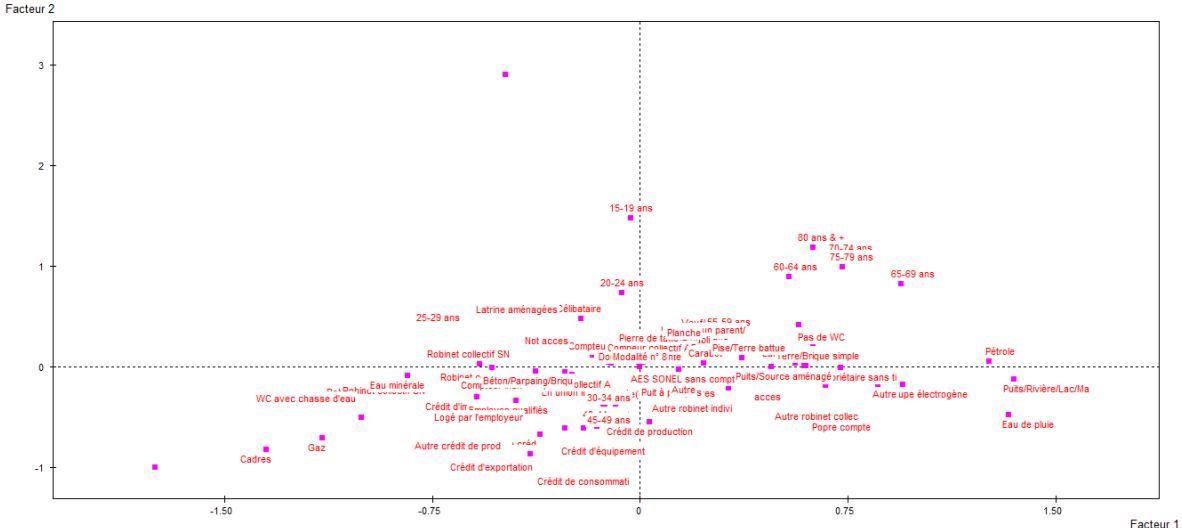
Source: Author with SPAD 6.

IV.2   IMPLICATIONS ON WELLBEING

Our empirical findings (tables 21 and 22) show that, land access has a positive effect on the household wellbeing. In fact, owning land for a household's head increases up to 1.86 the probability to be non-poor, than for household where the head does not have access to land. Living in rural area with access to land is not a significant guarantee to escape from poverty. In others words, having access to land in rural area give only 20% of chance to the household's head to be non-poor, than a household's head having access to land in urban area. Households headed by women owning land, regardless the type of document for the ownership, have 139% of chance to be non-poor than those head by men.

VII.   CONCLUSION

Land possession by female-headed households have a relevant impact on the wellbeing of the household as a whole in term of income and consumption. And being landless increases the probability of being poor (low income and consumption) and vulnerable.

This study is important for stakeholders since, among other things, if even attention to gender and land governance is not new. So that land tenure security and full and equal access of women to ownership, property rights and land titles in Cameroon could be seen not only as an assets as others but also as an engine for economic growth that can be engaged in the UN-2030 and the AU-2063 development agenda.

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APPENDICES

In this section, we present some selected detailed socio-demographics statistics regarding respondents.

Appendix 1: Summary statistics for rural female household head

Table 1 : Access to land of rural female household's head		
Modality	**Number of people**	**Frequency(%)**
Access	1015	72.8643216
No access	378	27.1356784
Total	**1393**	100

Source: Author using SPAD 6.

Table 2 : Marital status of rural female household's head		
Modality	**Number of people**	**Frequency(%)**
Single	231	16.5829146
Married (monogamy)	142	10.1938263
Married (polygamy)	178	12.7781766
Widowed	683	49.0308686
Divorced/Separated	148	10.6245513
Living together	11	0.7896626
Total	**1393**	**100**

Source: Author using SPAD 6.

Table 3 : Education of rural female household's head		
Modality	**Number of people**	**Frequency(%)**
Uneducated	697	50.0358938
Primary school	469	33.6683417
Secondary school, 1rst cycle	144	10.3374013
Secondary school, 2nd cycle	62	4.4508256
Higher education	21	1.5075377
Total	**1393**	**100**

Source: Author using SPAD 6.

Table 4 : Professional status of rural female household's head		
Modality	**Number of people**	**Frequency(%)**
Senior executive	22	1.5793252
Employes qualifiés	28	2.0100503
Manoeuvres	11	0.7896626
Patron/ Employeur	11	0.7896626
Self-employed	1202	86.2885858
Aide familial/appren	10	0.7178751
n/a	109	7.8248385
Total	**1393**	**100**

Source: Author using SPAD 6.

Table 5 : Housing status of rural female household's head		
Modality	**Number of people**	**Frequency(%)**
Owner with land certificate	105	7.537688
Owner without land certificate	870	62.455133
Rental/Buying	1	00.071788
Rental	176	12.634602
Logé par l'employeur	8	0.5743
Logé par un parent	232	16.654702
n/a	1	0.071788
Total	**1393**	**100**

Source: Author using SPAD 6.

Appendix 2: Summary statistics for urban female household head

Table 6 : Access to land of urban female household's head		
Modality	**Number of people**	**Frequency(%)**
Access	492	29.8543689
No access	1,156	70.1456311
Total	1,648	100

Source: Author using SPAD 6.

Table 7 : Marital status of urban female household's head		
Modality	**Number of people**	**Frequency(%)**
Single	534	32.402913
Married (monogamy)	241	14.623786
Married (polygamy)	103	6.25
Widowed	557	33.798544
Divorced/Separated	194	11.771845
Living together	19	1.152913
Total	**1648**	**100**

Source: Author using SPAD 6.

Table 8 : Education of urban female household's head		
Modality	**Number of people**	**Frequency(%)**
Uneducated	349	21.177184
Primary school	487	29.550971
Secondary school, 1rst cycle	401	24.332524
Secondary school, 2nd cycle	265	16.080097
Higher education	146	8.859223
Total	**1648**	**100**

Source: Author using SPAD 6.

Table 9 : Professional status of urban female household's head		
Modality	**Number of people**	**Frequency(%)**
Senior executive	95	5.764563
Employes qualifiés	181	10.98301
Manoeuvres	70	4.247573
Patron/ Employeur	32	1.941748
Self-employed	916	55.582524
Aide familial/appren	31	1.881068
n/a	323	19.599515
Total	**1648**	**100**

Source: Author using SPAD 6.

Table 10 : Housing status of urban female household's head		
Modality	**Number of people**	**Frequency(%)**
Owner with land certificate	331	20.084951
Owner without land certificate	378	22.936893
Rental/Buying	0	0
Rental	749	45.449029
Logé par l'employeur	23	1.395631
Logé par un parent	166	10.072816
n/a	1	0.06068
Total	**1648**	**100**

Source: Author using SPAD 6.

Appendix 3: Summary statistics for rural male household head

Table 11: Access to land of rural male household's head		
Modality	**Number of people**	**Frequency(%)**
Access	2,795	76.933664
No access	837	23.038811
n/a	1	0.027525
Total	3,633	100

Source: Author using SPAD 6.

Table 12 : Marital status of rural male household's head		
Modality	**Number of people**	**Frequency(%)**
Single	533	14.671071
Married (monogamy)	2165	59.592623
Married (polygamy)	527	14.505918
Widowed	83	2.284613
Divorced/Separated	114	3.137903
Living together	211	5.807872
Total	**3,633**	**100**

Source: Author using SPAD 6.

Table 13 : Education of rural male household's head		
Modality	**Number of people**	**Frequency(%)**
Uneducated	1075	29.589871
Primary school	1441	39.664189
Secondary school, 1rst cycle	634	17.451142
Secondary school, 2nd cycle	372	10.239472
Higher education	111	3.055326
Total	**3,633**	**100**

Source: Author using SPAD 6.

Table 14 : Professional status of rural male household's head		
Modality	**Number of people**	**Frequency(%)**
Senior executive	129	3.550784
Employes qualifiés	299	8.230113
Manoeuvres	168	4.624277
Patron/ Employeur	155	4.266446
Self-employed	2,647	72.859895
Aide familial/appren	43	1.183595
n/a	192	5.284889
Total	**3,633**	**100**

Source: Author using SPAD 6.

Table 15 : Housing status of rural male household's head		
Modality	**Number of people**	**Frequency (%)**
Owner with land certificate	204	5.615194
Owner without land certificate	2,386	65.67575
Rental/Buying	7	0.192678
Rental	607	16.707955
Logé par l'employeur	87	2.394715
Logé par un parent	342	9.413708
Total	**3,633**	**100**

Source: Author using SPAD 6.

Appendix 4: Summary statistics for urban male household head

Table 16 : Access to land of urban male household's head

Modality	Number of people	Frequency(%)
Access	1,656	35.10706
No access	3,061	64.89294
Total	4,717	100

Source: Author using SPAD 6.

Table 17 : Marital status of urban male household's head

Modality	Number of people	Frequency(%)
Single	1,056	22.38711
Married (monogamy)	2,813	59.635361
Married (polygamy)	297	0,06296375
Widowed	80	0,01695993
Divorced/Separated	101	0,02141191
Living together	370	0,07843969
Total	**4,717**	**100**

Source: Author using SPAD 6.

Table 18 : Education of urban male household's head

Modality	Number of people	Frequency(%)
Uneducated	587	12.44435
Primary school	1,386	29.383082
Secondary school, 1rst cycle	1,075	22.789909
Secondary school, 2nd cycle	1,040	22.047912
Higher education	629	13.334747
Total	**4,717**	**100**

Source: Author using SPAD 6.

Table 19 : Professional status of urban male household's head

Modality	Number of people	Frequency(%)
Senior executive	491	0,10409158
Employes qualifiés	1142	0,24210303
Manoeuvres	328	0,06953572
Patron/ Employeur	214	0,04536782
Self-employed	2005	0,4250583
Aide familial/appren	91	0,01929192
n/a	446	0,09455162
Total	**4,717**	**100**

Source: Author using SPAD 6.

Table 20 : Housing status of urban male household's head

Modality	Number of people	Frequency(%)
Owner with land certificate	791	16.769133
Owner without land certificate	946	20.05512
Rental/Buying	11	0.233199
Rental	2515	53.317787
Logé par l'employeur	86	1.823193
Logé par un parent	365	7.737969
n/a	3	0.0636
Total	4717	**100**

Source: Author using SPAD 6.

Appendix 5: Regression results

Table 21: Sign of elasticity coefficients

nonpauvres	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
urbain#SEXCM#acces						
0#Féminin#0	-.0245784	.1452114	-0.17	0.866	-.3091875	.2600306
0#Féminin#1	.3316798	.0752294	4.41	0.000	.1842328	.4791269
1#Féminin#0	.0024552	.120616	0.02	0.984	-.2339477	.2388581
1#Féminin#1	.0019297	.1469588	0.01	0.990	-.2861043	.2899637
urbain#acces						
0 1	-1.604385	.0799101	-20.08	0.000	-1.761006	-1.447764
1 0	1.138401	.1029333	11.06	0.000	.9366555	1.340147
1 1	0	(omitted)				
acces	.6213792	.1074919	5.78	0.000	.4106989	.8320595
_cons	1.173201	.0813204	14.43	0.000	1.013816	1.332586

Source: Author using STATA 13.

Table 22: Odds ratio

nonpauvres	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
urbain#SEXCM#acces						
0#Féminin#0	.9757212	.1416858	-0.17	0.866	.7340432	1.29697
0#Féminin#1	1.393307	.1048177	4.41	0.000	1.202296	1.614664
1#Féminin#0	1.002458	.1209125	0.02	0.984	.7914032	1.269798
1#Féminin#1	1.001932	.1472427	0.01	0.990	.7511843	1.336379
urbain#acces						
0 1	.2010132	.016063	-20.08	0.000	.1718719	.2350954
1 0	3.121773	.3213343	11.06	0.000	2.551434	3.819603
1 1	1	(omitted)				
acces	1.861494	.2000956	5.78	0.000	1.507871	2.298047
_cons	3.232323	.2628538	14.43	0.000	2.756099	3.790834

Source: Author using STATA 13.