Evaluating Women's Empowerment in Rural Cameroon through the Abbreviated – Women's Empowerment in Agriculture Index

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Abstract — Amartya Sen a Nobel laureate stressed the fact that empowering women and girls with more choices and more freedom is crucial to achieving a better future for all. This study evaluates the level of women's empowerment in agriculture by assessing the empowerment gaps between male and female decision makers; and by comparing the level of women's empowerment in agriculture across household types. Empowerment is assessed through the Five Domains of Empowerment (5DE) of the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI). Using data collected from 600 rural households in the West region of Cameroon, the outcomes from the 5DE show that empowerment gaps between men and women exist in all domains of empowerment. The empowerment gaps between men and women are more severe in the resource and income domains. Also, group membership, excessive workload and access to and decision about credit contribute the most to disempowerment for both men and women. The study shows more women in dual headed household (DHHs) achieve adequacy in terms of input in productive decisions, access to and decision about credit, group membership and workload as compared to other household types. Also, women's empowerment in the production, resource and income domains depend on the household type. The results of the study highlight the need for the creation of governmental and non-governmental organisations that will promote women's empowerment in agriculture and other aspects life.

Index Terms — Agriculture; Cameroon; Domains of empowerment; Women's Empowerment.

I. INTRODUCTION

Women's empowerment has been a very important issue of the contemporary world [1]. Women's empowerment is an important goal in achieving sustainable development worldwide [2]. Several researchers and international organisations [3]-[6] have identified gender equality and women's empowerment as a potential pathways through which communities and nations can strengthen their food systems to fight hunger and malnutrition, and improve the lives and livelihoods of rural populations.

Women comprise approximately 43 % of the agricultural labour force in developing countries (varying by country and by region) [7] and on average, have less access to and control over productive resources such as land, education, labour, livestock, technology, financial and extension services than men [7]-[9]. Hence, being marginal and powerless does not depend on a population's numerical weight in the society

[10].

Women in developing countries produce 80-90% of household food [8] and play a key role in household food security [11]. Yet, women have less access to productive resources, capital, and fewer opportunities to apply their skills and knowledge [12], [13]. In Sub-Saharan Africa (SSA), for instance, the bulk of the production processes are carried out by women, but they have the least access to and use of those resources that lead to the final output [14].

Women face serious constraints in agriculture and food systems among which limited access to productive resources (land, water, inputs, technology) and information, limited access to extension services and credit, limited participation in rural institutions and decision making, (lack of voice) and limited access to decent rural employment opportunities. Added to these, rural women have specific constraints which are the triple work burden in the productive, reproductive, and social spheres and the lack of recognition [8], [15], [14].

Women are the predominant group of agricultural labourers, but deep-rooted social and structural inequalities prevent female farmers from gaining equal rights to access land and resources to gain economic independence [16]. Furthermore, women often have less access to services and agricultural inputs [8], [17], [18], [13]. Therefore, gender differences in productivity are significant and limit not only how lucrative farming is for women, but also the amount of food produced, which has implications for food and nutrition security [11].

An analysis of the current trends in political governance and agriculture reveals persistent gender gaps in political representation, in agricultural research and innovation systems, and in other positions of influence in many African countries [19]. In Cameroon, the gender gaps are present almost all aspects for instance, in 2013, 31% of parliamentarians were women; in 2015, 30.5% of small and medium size enterprises (SMEs) existing in the country were owned by women; in 2014, the adult literacy rate was 69% for women against 81% for men, gross enrolment rate in tertiary education was 10% for women and 14% for men and the Gender Inequality Index (GII) stood at 0.587 [20].

Rural women in Cameroon, like in other African countries, are confronted with several obstacles in their role as the major economic and social force in the development of the agricultural sector [8]. The FAO [7] posits that women's empowerment in agriculture is vital because women are

central to family food security and nutrition being responsible for food selection and preparation and care for the health of children and family members; women are often the custodians of biodiversity. Based on the above assertion, this study aims at assessing the level of women's empowerment in agriculture in rural Cameroon with particular focus on the West region of the country.

II. LITERATURE REVIEW

All over the world, men relative to women have greater access to the use of force, greater access to resource control, less social obligations to uphold, and more advantageous cultural ideologies [2]. In many countries, women have less schooling than men, control fewer resources, have less decision-making power over household income, and face time constraints because of their triple burden of productive, domestic, and community responsibilities [21].

In SSA, women own less land than men, regardless of their age and of how ownership is conceptualized [22], [9] mainly because inheritance laws generally favour men over women [23]. Young rural women are half as likely as young men to own land by themselves [23] and this puts women at a disadvantage. Similarly, in Cameroon although legally men and women are equally entitled to land ownership, the general custom is that men, not women, inherit lands [20]. Also, women do not necessarily enjoy the benefits of their labour or have control over income earned [24].

In Cameroon, women farmers and women in the rural areas face several challenges: it is difficult for women to obtain means of production (land, funding, equipment, information, training, capital); it is difficult to improve productivity as women do not have appropriate equipment or skills; women do not have sufficient farming lands; there are no social security systems available for rural women; women farmers do not have sufficient capacity to form groups; it is difficult for rural women to obtain necessary information and to know about their rights because of illiteracy; and farmers tend to lack knowledge about gender, and do not know how to take legal actions to protect women's rights [20]. [25] also believe that traditional social and gender norms limit women's participation in decision-making over basic production choices in several as such decisions regarding questions as which crops to grow; when; what kind; how many inputs to purchase; who and how many labourers to employ and quantities to sell or keep for household consumption.

The constraints faced by young rural women result in occupational choices that generate lower returns, and this pattern is often accentuated in less connected areas [23]. The Women's Empowerment in Agriculture Index (WEAI) provides a means to measure and track changes in women's empowerment over time and across countries, regions, and population subgroups. In all ten African countries for which data is available, women are more disempowered than men [19]. However, there is some variability across regions and across countries within regions, reflecting differences in country conditions and gender norms. Rwanda has the highest score (0.91) followed by Uganda (0.86) and Malawi (0.84) whereas Senegal has the lowest score (0.69). Excessive workload emerges as an important contributor to disempowerment for men and women alike, with women

more constrained in this indicator than men. Limited access to and control of credit likewise is a constraint for both women and men, and the extent of disempowerment with respect to this indicator is also greater for women [19].

A comparative analysis conducted in seven African countries based on the WEAI indicate that input in productive decisions and autonomy in production figure among the top three causes of disempowerment in Liberia only purchase, sale, or transfer of assets as well as group membership form part of the top three causes of disempowerment in Ghana and Rwanda respectively. On the other hand, leisure and asset ownership are not part of the top three causes of disempowerment in any of the studied countries. Workload appears as one of the top three causes of disempowerment in four of the seven countries (Kenya, Uganda, Malawi, and Zambia) and stands as the main cause of disempowerment in three countries (Uganda, Malawi and Zambia). Similarly, Control over use of income forms part of the top three drivers of disempowerment in Kenya, Uganda, Rwanda, and Ghana and is the main cause of disempowerment in Ghana. Access to and decisions on credit on the other hand form part of the three main causes of disempowerment in all the seven countries and are the main driver of disempowerment in Kenya, Rwanda, and Ghana [26].

[27] through a study in Honduras show that resources and income domains contribute the most to women's disempowerment in agriculture. However, adequacy in terms of resource ownership is larger in single female headed households as compared to dual headed households. Also, the finding of [27] indicate that with nearly half of households receiving credit in the prior twelve months, just more than a quarter of women are involved in the decisions about how to use the money borrowed and the statistic for single female headed household is higher than that of dual headed households. [27] also show that in Honduras show that when considering the income domain, 88.3% of women are adequately empowered (92.6% in female-headed households and 86.5% in Dual-headed households).

[28] through the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) have shown that in Columbia there is no significant difference between the levels of Women's Empowerment in Agriculture across regions. The overall A-WEAI score is close to 0.91 but approximately 32.9% of women are disempowered in at least one of the six indicators. The domains that contribute most to the disempowerment of women are leadership measured through group membership and resources captured through ownership of resources and access to and decision about credit. Since approximately half of women from the sample do not belong to any group; 22.2% are not owners of assets; and 19.4% do not have access to credits nor participate in decisions on how to use them.

[29] also reveal that women empowerment in agriculture scores vary by country as well as the main drivers of disempowerment. For instance, in Bangladesh, the indicators that contribute the most to disempowerment are group membership, control over use of income and workload whereas autonomy in production and ownership of assets are the indicators that contributing the most to women's empowerment. In Ghana, access to and decision about credit, control over use of income and ownership of assets are the

major constraints to women empowerment whereas the indicators that contribute least to women disempowerment are leisure and autonomy in production. On the other hand, in Kenya the main drivers of disempowerment include access to and decisions on credit, workload, and control over use of income meanwhile the indicators that contribute the least to female disempowerment are autonomy in production, ownership of assets, and leisure.

Closing the gender gap in agriculture with particular attention to improving rural women's access to assets, resources, technologies, services and opportunities, and the promotion of gender-sensitive policy frameworks could generate significant gains in terms of agricultural productivity and rural peoples' livelihoods [5]. However, in order to design and implement effective policies suitable to close the gender gap in agriculture and improve on women's empowerment, it is important to determine the extent of the gap the current level of women's empowerment. It is on this basis the above that this study attempt to measure the level of women's empowerment in agriculture and to identify the main drivers of women's empowerment in agriculture.

III. METHODS

A. Area of Study

The study was carried out in the West Region (5°30'0"N, 10°30'0"E) which is one of the ten regions that constitute the Republic of Cameroon. It covers a surface area of 13,892 km² and is located in the central-western portion of the Republic of Cameroon [30], [31]. The region whose headquarter is Bafoussam is divided into eight (08) divisions namely Bamboutos, Haut-Nkam, Hauts-Plateaux, Koung-Khi, Menoua, Mifi, Ndé and Noun. It is the smallest of Cameroon's ten regions in area, yet it has one of the highest population densities [31]. The region has a total population of close to 1.8 million inhabitants and a population density of about 128.5 inhabitants/km².

According to the Third General Population and Housing Census (3rdGPHC), the west region is made up of approximately 348 981 households of which close to 147 422 are found in the rural area [32]. The same source indicates that the average age for household heads is 48.5 years which is above the national average (43.6 years) and 59.8% of rural households are male-headed meanwhile 40.2% are female-headed in the West region. The region is one of the Cameroon's richest economic areas due primarily to its agricultural prosperity and the enterprising traditions of the Bamileke people [30]. In the West region, about 71% of the population are farmers and One quarter of households are involved in livestock production. The average cultivated surface is 1.3 ha and the main crops produced are maize (about 98% of HHs engaged in such crop production); beans (74%); groundnut (40%) whereas, millet, yam, sorghum is negligible [33].

Fig. 1. Map of the West region of Cameroon.

B. Data Collection process

The data were collected from selected rural households involved in agricultural activities with the help of a well-structured questionnaire. The study focused on rural households found in the West region of Cameroon. The West region of Cameroon was chosen as the area of study because agriculture is the main source of income for the rural population of this region and because of the divergent roles played by women in the various communities in the region. A multi-stage sampling method was used as follows: at the first stage, four divisions were randomly selected out of the eight in the region; at the second stage, three sub-divisions were randomly selected per division giving a total of twelve subdivisions that were selected for the study; and at the fourth stage, a random selection of two (02) villages per sub-division was conducted; and at the fifth stage, 25 households was purposely chosen.

Based on the above process, 600 households were selected for the purpose of the study. In this study a household is considered as any group of people living together and who take food from the same pot [34] and within each household, both the male and female decision makers were interviewed as the A-WEAI stipulates.

C. Methods of Data Analysis

Women's empowerment in agriculture is measured using the Five domains of empowerment (5DE) of the Abbreviated Women Empowerment in Agriculture Index (A-WEAI) developed by a team of researchers from the International Food Policy Research Institute (IFPRI). The A-WEAI is an improved version of the Women's Empowerment in Agriculture Index (WEAI), a survey-based tool co-developed by the International Food Policy Research Institute (IFPRI), the Oxford Poverty and Human Development Initiative, and the U.S. Agency for International Development (USAID) [35] and initially used by the monitoring and evaluation tool for the U.S. government's Feed the Future initiative to directly capture women's empowerment and inclusion levels in the agricultural sector [36].

This indicator is suitable for this study because it captures the multidimensional nature of empowerment in rural agrarian settings; it facilitates measurement of constraints related to women's roles in agriculture; and it gives room for a direct assessment of the impact of women's empowerment itself and a variety outcome such as agriculture production, household and women's own wellbeing, household food and nutrition security [37].

The A-WEAI officially launched in September 2015 [36] is made up of two sub-indexes: The Five Domains of Empowerment (5DE) and the Gender Parity Index (GPI) [34; 28]. The 5DE are production, resources, income, leadership and time and the 5DE are measured using 6 indicators with their corresponding weights. Each indicator is designed to measure whether each individual has adequate achievement with respect to each indicator. [34]. In other words, the 5DE reflects the percentage of women or men that are empowered in the five domains, and for those who are not empowered; it reflects the indicators and/or domains in which they are empowered. A person is defined as empowered in 5DE if she/he has adequate successes in four of the five domains or if she/he has reached adequacy in 80 % or more of the indicators in total [28]. Table I presents the 5DE, the corresponding indicators and the empowerment adequacy criteria.

TABLE I: DESCRIPTION OF THE ADEQUACY CRITERIA FOR THE EMPOWERMENT INDICATORS IN THE 5DE

Domain	Indicator	Definition of adequacy (empowerment)
Production	Input in productive decisions	Adequate if there is AT LEAST TWO agricultural activities in which the individual has some input in decisions, or makes the decision, or feels she could make it if she wanted
Resources	Ownership of assets	Adequate if there is self or joint ownership of AT LEAST two small assets (chicken, farming equipment non-mechanized, and small consumer durables) OR ONE large asset (all the other). *Inadequate if individual lives in a household that owns no assets
	Access to and decisions about credit	Adequate if there is self or joint decision making regarding AT LEAST ONE source of credit AND has at least one source of credit
Income	Control over use of income	Adequate if there is AT LEAST ONE domain in which individual has some input in income decisions or feels she can make decisions regarding wage, employment and minor household expenditures as long the only domain in which the individual feels that she makes decisions IS NOT minor household expenditures
Leadership	Group membership	Adequate if the individual is part of AT LEAST ONE group
Time	Workload	Adequate if the individual spent less than or equal to 10.5 hours on paid and unpaid work during the previous day

After computing the 5DE scores for both male and female household decision makers, a comparative analysis of men and women's empowerment was carried out through the 5DE indicators then a chi2 test was used to determine whether the level of women's empowerment in each domain depends on the household type.

IV. RESULTS AND DISCUSSIONS

A. Socio-economic Profile of Surveyed Households

The socio-economic profile of the surveyed households is presented in Table II. The results related to household type show that 67.67% of households are dual-headed implying that these households are headed by a male and female parent.

On the other hand, 19.67% of households are single female-headed against 12.67% that are single male-headed. The statistics further show that a large majority of households (77.33%) have a man as household head whereas only 22.67% have a woman as household head. The household structure as well as sex of household head may have an incidence on the level of women's empowerment in agriculture because in a single female-headed household as well as in a household headed by a woman, the woman may have more room to exercise her freedom with respect to decision making.

The majority of households are of practice Christianity as religion that is, 59.83%, followed by the traditionalist or traditional Africans who constitute 29.83% of surveyed households then comes the Muslim with 06% and the free thinkers and animists with 04.33%. The religious affiliation is important because some religious beliefs impose restrictions on the role women can play within the household. The average age for the household heads is about 45 years and about 80% of household heads are aged between 30 and 60 years. A majority of household heads 26.67%, 51% and 24% have received primary, secondary and tertiary education hence are literate enough to understand the challenges and importance of strengthening women's empowerment. About 60% of households have between 5 and 10 members and the average household size is approximately 6 persons. Also, the main economic activity for the household head is agriculture for 56% of households and crop production is the main agricultural activity for 81.67% of households.

TABLE II: DESCRIPTION OF RESPONDENTS AND THEIR HOUSEHOLDS (N=600)

Characteristic	Definition	Percentage
Household type	Dual-headed	67.67
	Single-Female headed	19.67
	Single-male headed	12.67
Sex of household head	Male	77.33
	Female	22.67
Religious affiliation	Christian	59.83
	Muslim	06.00
	Traditionalist	29.83
	Others (free thinkers or animists)	04.33
Age of household head	Below 30 years	09.83
	30 to 40 years	23.17
	41 to 50 years	38.83
	51 to 60 years	19.00
	Above 60 years	09.17
Education level	No formal	04.33
	Primary	20.67
	Secondary	51.00
	University	24.00
	Household size	
	Below 5 persons	35.33
	5 to 10 persons	60.83
	Above 10 persons	03.83
Main economic activity	Agriculture	56.00
	Trade	16.50
	Civil servant	15.50
	Others (driving, tailoring etc)	12.00
	Main agricultural activity	
	Crop production	81.67
	Livestock production	18.33

B. Empowerment Status for Male and Female Decision Makers

Table III presents the level of men and women's empowerment in agriculture in the various indicators of the 5DE. The level of empowerment for the male and female decision maker within each surveyed household was estimated using the A-WEAI methodology as prescribed by [34].

TABLE III: COMPARATIVE ANALYSIS OF MEN'S AND WOMEN'S EMPOWERMENT IN AGRICULTURE

Empowerment domain	Empowerment indicator	Empowerment status	Male decision maker (%)	Female decision maker (%)
Production	Input in productive decisions	Empowered	97.00	95.00
		Disempowered	03.00	05.00
Resources	Ownership of assets	Empowered	97.83	79.50
		Disempowered	02.17	20.50
Income	Access to and decisions about credit	Empowered	84.50	61.83
		Disempowered	15.50	38.17
Leadership	Control over use of income	Empowered	98.83	81.83
		Disempowered	01.17	18.17
Time	Group membership	Empowered	63.00	55.33
		Disempowered	37.00	44.67
	Workload	Empowered	66.50	62.50
		Disempowered	33.50	37.50

The results presented in Table III show that empowerment gaps exist between men and women in all domains empowerment through the various indicators. In the production domain, assessed through *input in productive decisions* shows there is an empowerment gap between the male and female decision maker given that 97% of men are empowered in this domain against 95% for women. Similarly, in the resource domain, men are more empowered than women since 97.83% of men are empowered in terms of asset ownership against 79.5% of women; and 84.5% of men and 79.5% of women are empowered in terms of access to and decision about credit. This infers that women face more constraints in terms of acquiring and ownership of assets as land and other equipment for several reasons such as inheritance laws that generally favour men over women as stated by IFAD (2019).

Empowerment gaps also exist in the income, leadership, and time domains where 98.83, 63% and 66.5% of men are empowered against 81.83%, 55.33% and 62.5% of women respectively. The existence of empowerment gaps in favour of men in all domains of the A-WEAI confirms the assertion made by [2] who held that men relative to women have greater access to the use of force, greater access to resource control, less social obligations to uphold, and more advantageous cultural ideologies.

Table III shows the existence of severe empowerment gaps between men and women in terms of ownership of assets, access to and decision about credit and control over use of income. This corroborates the assertion of [24] who believe that women do not necessarily enjoy the benefits of their labour or have control over income earned. However, the empowerment gaps in terms of input in productive decision, workload and group membership are less severe.

The indicator that contributes the most to women's empowerment is input in productive decisions whereas control over use of income contributes the most to men's empowerment. On the other hand, group membership, excessive workload, and access to and decision about credit contribute the most to disempowerment for both men and women. However, women are more constrained in these indicators than men and these results align with those of previous researchers such as [19]; and [28] who revealed that excessive workload, limited access to and control of credit and ownership of resources contribute the most to disempowerment.

C. Women's Empowerment across Household Types

The level of both men and women's empowerment were estimated and compared in the first step. The level of women's empowerment in all indicators are analysed across household types and a chi2 test is used to ascertain the dependence of empowerment on household type. The level of empowerment in terms of input in productive decisions is highest in dual-headed households (DHHs) followed by Single male-headed households (SMHHs) and single female-headed households (SFHHs) with 96.8%, 93.42% and 89.83% of women who are empowered. The Chi2 test results reveal that empowerment in terms of input in productive decisions depend on household type.

TABLE IV: WOMEN'S EMPOWERMENT IN AGRICULTURE AND HOUSEHOLD TYPE

Empowerment domain	Empowerment indicator	Empowerment status	Dual-headed household (%)	Single female headed household (%)	Single male-headed household (%)	Chi2 test
Production	Input in productive decisions	Empowered	96.80	89.83	93.42	9.8009
		Disempowered	03.20	10.17	06.58	(0.007)
Resources	Ownership of assets	Empowered	81.03	82.20	67.11	8.2799
		Disempowered	18.97	17.80	32.89	(0.016)
Income	Access to and decisions about credit	Empowered	65.76	54.24	52.63	8.2692
		Disempowered	34.24	45.76	47.47	(0.016)
Leadership	Control over use of income	Empowered	81.77	86.44	73.68	5.0338
		Disempowered	18.23	13.56	26.32	(0.081)
Time	Group membership	Empowered	57.14	52.54	51.32	1.4004
		Disempowered	42.86	47.46	48.68	(0.496)
	Workload	Empowered	63.55	58.47	63.16	1.0197
		Disempowered	36.45	41.53	36.84	(0.601)

Moreover, in the leadership domain, empowerment level varies depending on the household type. In terms of asset ownership, empowerment is highest for SFHHs with 82.2% of women who are empowered. This could be due to the fact that in SFHHs, women face fewer constraints with respect to income management since they are the main decision makers. Empowerment with respect to access to and decisions about credit is highest for DHHs where 65.76% of women are empowered in this indicator probably as a result of the fact that married women in Africa in general and in the rural milieu in particular are considered to be more responsible and creditworthy due to the marital status. The findings corroborate those of [27] who showed that in Honduras adequacy in terms of resource ownership and access to decision about credit is larger in SFHHs as compared to DHHs. The level of empowerment in the resource domain also depends on the household type as revealed by the Chi2 test.

In the income domain, results show that adequacy is highest for women in SFHHs where 84.44% are empowered, followed by DHHs (81.77%) and SMHHs (73.68%). This implies that primary female decision makers in SFHHs have more control over the use of income and this is related to the fact that the women in such households do not have a male spouse within the household and therefore have more autonomy as far as decision making is concerned. The Chi2 test statistic also shows that empowerment in the income domain depends on the household type. The results align with those of [27] whose study in Honduras showed that in the income domain, 88.3% of women are empowered and the proportion in female-headed households is above that of DHHs.

In the leadership domain, the results show that empowerment is highest for women in DHHs (57.14%) followed by women in SFHHs (52.54%) and SMHHs (51.32%). However, the level of empowerment in this domain does not depend on household type. On the other hand, empowerment in time domain is least adequate for women in SFHHs where 58.47% of women are empowered against 63.18% in SMHHs and 63.55% in DHHs. The low proportion of women from SFHHs empowered in this domain infers that such women have a heavy workload. In SFHHs, women are the main decision makers and main bread winners; they therefore face a triple burden with their various responsibilities in the productive, domestic, and community spheres as indicated by [21].

Based on the results obtained from the study, it is obvious that women are adequately empowered in terms of input in productive decisions and a considerable proportion of women have an adequate control over use of income. However, disempowerment for most rural women appears to be alarming when it comes to group membership, workload and access to and decision about credit implying that policy makers and international development partners need to put in more efforts so as to help reduce the existing empowerment gap between men and women. The study has also shown that the level of empowerment in several domains and indicators depends on the household structure. More women achieve adequacy with respect to some indicators ownership of assets and use of income) when they are in single female headed households. However, women found in dual-headed

households enjoy more adequacies in a larger number of domains. Hence, promoting the adoption of dual-headed household structures could help promote women's empowerment in agriculture.

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