Policy, Innovation Systems and Impact Assessment Program

Transforming Agrifood Systems in West and Central Africa Initiative (TAFS-WCA)



Baseline report of the TAFS-WCA

Africa Rice Center

Acknowledgements

This report presents the methodology for and results from the baseline survey of Transforming Agrifood Systems in West and Central Africa Initiative (TAFS-WCA) in two target countries: Cote d'Ivoire and Ghana.

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Citation

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Abstract

This report presents the baseline survey of the Transforming Agrifood Systems in West and Central Africa initiative (TAFS-WCA) in Cote d'Ivoire and Ghana. Five areas in Cote d'Ivoire and four areas in Ghana were surveyed. Data was collected using a smart tablet with the CSPro application. A total of 1207 and 1200 actors were surveyed during the baseline data collection in Cote d'Ivoire and Ghana, respectively. Actors involved in the baseline data collection are producers of rice, maize, beans, yams, cassava, banana, cocoa, African vegetables, inputs dealer, traders, processors and service providers. All analyses in this paper were carried out using the STATA 16 statistical software.

Among the population of producers, 27.05% (651) are rice producers, 11.97% (288) are maize producers, 4.86% (117) are beans producers, 9.89% (238) are yams producers, 10.93% (263) are cassava producers, 2.49% (60) are sweet potatoes producers, 4.11% (99) are banana producers, 9.18% (221) are cocoa producers, 4.15% (100) are African vegetables producers, 1.04% (25) inputs dealer, 7.23% (174) are traders, 2.16% (52) are processors and 4.61% (111) are service providers. The average age of rice farmers is 46 years old and ranges from 18 to 85 years old, and the average household size is 8 people. About 65.50% of actors are male and 84.34% are married. In addition, 52% of the actors have received formal education and 83.42% have crop production has main activity. Moreover, 53 % of producers produce during the rainy season, 13% during the dry season and 34% during both seasons.

It should also be noted that in the face of climate change, 26% of producers have access to information on weather forecasts (for today, 24 hours and/or next 2-3 days), 20% to forecasts of extreme events (drought, flood, strong wind, etc.), and 19% to information on seasonal forecasts (weather for the following 2-3 months).

In relation to food security and the poverty index, preliminary results showed that the vast majority of farmers households in both countries have an acceptable level of dietary diversity, meal frequency and nutritional importance of the food groups consumed; and the poverty index of the population remains was 48%.

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Major abbreviations and acronyms

AfricaRice	:	Africa Rice Center
CGIAR	:	Consortium of International Agricultural Research Centres
FAOSTAT	:	Food and Agriculture Organization Corporate Statistical Database
GDP	:	Gross domestic product
IPCC	:	Intergovernmental Panel on Climate Change
SDG	:	Sustainable Development Goals
WFP	:	World Food Program

1. Introduction

1.1. Context

Agriculture contributes 30-50% to GDP and provides income and livelihoods to 70-80% of the population. Out of the 65% of the labor force in the rural areas, 42% of the women practice smallholder farming. Agriculture can contribute towards major continental priorities, such as eradicating poverty and hunger, boosting intra-Africa trade and investments, rapid industrialization and economic diversification, jobs creation and shared prosperity. It provides employment for about two-thirds of the African working population and for each country contributes an average of 30 to 60% of gross domestic product and about 30% of the value of exports (World Bank, 2020). Agriculture, food and nutrition security, and the livelihoods of millions of people are affected by climate change (Yadav *et al.,* 2015). Climate Change is likely to trigger food insecurity, human migration, economic, and social depression, environmental and political crisis, thereby affecting development (IPCC 2007; World Bank 2010). Innovations, practices, or services that i) increase or sustain productivity over time, ii) boost farmers' climate resilience, and iii) reduce greenhouse gas emissions are considered climate-smart (Andrieu *et al.*, 2017). About 552 million people live in West and Central Africa (WCA), the majority in rural areas, but with some of the highest growth rates of urbanization in the world (>4% annually). Economic activity in 2020 contracted by 2.1%, due to a weaker external environment and measures to contain the COVID-19 pandemic and the climate crisis resulting in, high unemployment rates.

To reduce the importation bills and to achieve Sustainable Development Goals (SDG) in West and Central Africa, improved technologies including high yielding and climate smart varieties, good agronomic and postharvest practices were developed and disseminated by CGIAR centers and others research and development center. The objective of the One CGIAR focused mainly on three action areas, namely: (i) Genetic Innovation, (ii) Resilient Agri-Food Systems, and (iii) Systems Transformation. Each of these houses a number of global theme-based Initiatives. There are six regional integrated initiatives, which are affiliated with the Resilient Agri-Food Systems action area. Among the six initiatives, we have the One CGIAR Regional Integrated Initiative for West and Central Africa (WCA). By focusing primarily on food and nutrition security and making agrifood systems more climate adapted, the Initiative will make contributions to the five Impact Areas of the One CGIAR. Access to quality, nutrient-dense

seed and climate-smart good agricultural practices (GAP) and reduced post-harvest losses will have a positive impact on food and nutrition and health security.

The aims of the TAFS-WCA[1] initiatives are: to develop a sustainable agro-food system; to overcome social barriers to accessing innovations; and to scaling of innovations. The five axes of the program were: (i) Making food systems more nutritious, safe and resilient to climate change; (ii) Promoting digitalized information systems in bundling innovations at landscape level; (iii) Participatory toolset for inclusive landscape management and citizen science for one health; (iv) Addressing social barriers to create equality for women and youth doing business in value chains; (v) Taking to scale Innovations with proven impact in the region. The TAFS-WCA initiative is regional and aims to eventually benefit the 22 countries of the region. The start-up phase includes six countries, three of which are from Central Africa (DRC, Rwanda and Burundi) and three others from West Africa (Côte d'Ivoire, Ghana and Nigeria). Before the implementation of projects in West and Central Africa, a baseline survey is important in all target countries. Indeed, after the stakeholder's engagement and launch workshop in Abidjan (21-22 June, 2022), the baseline survey will aim to collect reference values on the impact indicators of the project. This proposal presents the methodology of the baseline survey of the TAFS-WCA initiative that will be conducted in Cote d'Ivoire and Ghana.

1.2.Objectives of baseline survey

The baseline survey aims to collect reliable, accurate and sufficient reference values on the impact indicators that can be drawn upon to undertake impact studies with the view to evaluating the changes induced by the one CGIAR regional integrated. Specifically, the baseline survey aims:

1. To collect robust socio-economic and geographic data on producers and post-harvest actors in Cote d'Ivoire and Ghana;
2. To estimate the baseline values of outcomes and impact indicators;
3. To contribute to the monitoring and evaluation of the outcome, and
4. To contribute to ex-post impact assessment of the TAFS-WCA initiative.

[1] Transforming AgriFood Systems in West and Central Africa (TAFS-WCA)

2. Methodology

2.1. Study area and sample size

The survey was conducted in two countries in West Africa: Cote d'Ivoire and Ghana. In two countries, the TASF-WCA initiative baseline survey has been conducted during the month of November and December 2022. The baseline data collection was collected in Savane, Vallée du Bandama, Montagne, Sassandra-Marouhe and Goh-Djiboua regions in Cote d'Ivoire; and in Ashanti, Brong Ahafo, and Northern regions in Ghana (Figure 1).

Prior to the data collection, design and automation of the questionnaire on tablets were done. A total of 45 enumerators (12 women and 33 men) were trained in the two countries.

The e-registration in Cote d'Ivoire mainly focuses on six crops: rice, maize, cassava, sweet potato, yams, and Soybean. While in Ghana, the e-registration mainly focuses on ten crops: rice, maize, cassava, sweet potato, yams, banana, cocoa, Soybean, bean & Traditional African vegetables.

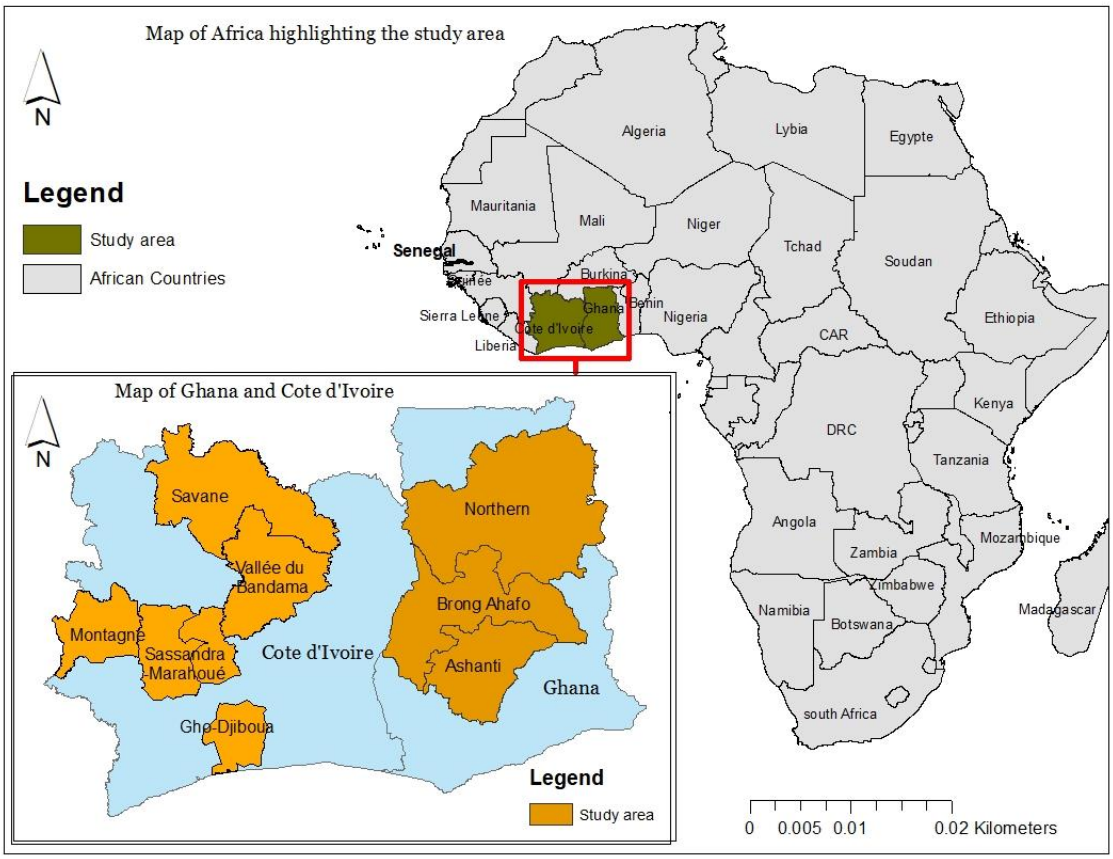

Figure 1: Map of survey countries

To carry out the baseline survey, the e-registration of farmers was done and farmers registered were used as sampling frame for the baseline study. In the first step, a total of 5,041and 5,037 actors were registered during the e-registration in Cote d'Ivoire and Ghana, respectively. Then, in each country, 1,200 actors were randomly selected to be interviewed including 20 farmers and 4 postharvest actors per village.

Table 1 presents the actors surveyed by country.

Table 1: Sample

Regions	Producers	Postharvest	Overall
Cote d'Ivoire	1,011 (83.76)	196 (16.14)	1,207
Ghana	1,026 (85.50)	174 (14.50)	1,200
Total	**2,037 (84.63)**	**370 (15.37)**	**2,407**

() percentage

2.2.Data collection and quality assurance procedure

Data was collected from sampled households using android tablets with the help of tablets using the application CSPro. The data collected for this study include: (i) socio-economic and household characteristics; (ii) plots information; (iii) variety information; (iv) information on agricultural equipment and methods; (v) household food security and welfare information, and (vi) climate change information.

To ensure the quality of the data, a supervision team, closely monitored field data collection and provided support to enumerators in the field. Supervisors could therefore quickly address any challenge faced by enumerators. Any mistakes were reported to enumerators for immediate action and correction while still on the field. The field arrangement, in addition to different "filter and skip" rules implemented in the questionnaire, have helped ensure a high degree of quality for the primary data collected. The data used were collected from farmer's households during 2023.

2.3.Data analysis

Both descriptive statistics and econometric methods were used for data analysis. The statistical tools used in the analysis of the collected data were descriptive statistics. Descriptive statistics (i.e. average, minimum, maximum and standard deviation) were calculated for socioeconomic characteristics of producer in the hubs.

The knowledge rates of agricultural technologies and methods were estimated as the percentage of the sample who reported being aware of the technologies, while the use or adoption rates are the percentage of those who access the technologies among those total sample.

The food-security analysis was performed by using food consumption score (FCS) developed by the World Food Programme (WFP, 2009). It is an indicator reflecting food availability, access to food and food consumption at the household level. The FCS is therefore a good indicator to evaluate the food security situation for household. According to World Food Programme (WFP, 2009), household have acceptable, middle and poor levels of consumption if FCS>35, 21<FCS<35 and FCS<21 respectively.

3. Results

The TASF-WCA baseline data collection were collected from 1,207 actors in Bouaké, Daloa, Gagnoa, Korhogo and Man regions in Cote d'Ivoire, and from 1,200 actors in Ashanti, Ahafo, Bono and Bono East regions in Ghana. Actors involved in the baseline data collection are producers of rice, maize, beans, yams, cassava, banana, cocoa, African vegetables, inputs dealer, traders, processors and service providers.

Among the population of producers, 27.05% (651) are rice producers, 11.97% (288) are maize producers, 4.86% (117) are beans producers, 9.89% (238) are yams producers, 10.93% (263) are cassava producers, 2.49% (60) are sweet potatoes producers, 4.11% (99) are banana producers, 9.18% (221) are cocoa producers, 4.15% (100) are African vegetables producers, 1.04% (25) inputs dealer, 7.23% (174) are traders, 2.16% (52) are processors and 4.61% (111) are service providers.

Table 2: Distribution of actors by country

	Actors	Cote d'Ivoire	Ghana	Overall
Producers	Rice	383 (31.73)	268 (22.33)	651 (27.05)
	Maize	144 (11.93)	144 (12)	288 (11.97)
	Bean	-	117 (9.75)	117 (4.86)
	Yam	141 (11.68)	97 (8.08)	238 (9.89)
	Cassava	161 (13.34)	102 (8.5)	263 (10.93)
	Sweet potato	60 (4.97)	-	60 (2.49)
	Banana	-	99 (8.25)	99 (4.11)
	Cocoa	122 (10.11)	99 (8.25)	221 (9.18)
	Vegetable	-	100 (8.33)	100 (4.15)
Postharvest actors	Input dealer	9 (0.75)	16 (1.33)	25 (1.04)
	Trader	108 (8.95)	66 (5.5)	174 (7.23)

	Processors	32 (2.65)	20 (1.67)	52 (2.16)
	Service provider	47 (3.89)	64 (5.33)	111 (4.61)
	Other	0 (0)	8 (0.67)	8 (0.33)
Total		**1,207**	**1,200**	**2,407**

3.1. Socio-economic characteristics of producers

3.1.1. Gender, marital status, educational level, household size and age of farmers

Majority of respondents are men (with 555 women and 1037 men). The average age of farmers was 46 years and the difference between the average age of male and female farmer was not statistically significant (Table 2). The distribution of the average age of farmers per country and gender is presented in Table 2, which shows that it ranges from 44 in Cote d'Ivoire to 46 in Ghana for female and from 45 in Cote d'Ivoire to 46 in Ghana for male. This shows that the household's heads were relatively young. The average household size is 8 members and the difference between the household size of male and female farmer was statistically significant. The number of years of experience in production is 14 years in the population as a whole and there is a statistical difference of approximately 3 years between men and women.

Table 3: Age, number of years of experience in activity and household size of farmers by country and gender

Variables		Cote d'Ivoire (1011)			Ghana (1026)			Overall (2037)		
		Female (n=200)	Male (n=811)	Overall (n= 1011)	Female (n=355)	Male (n=671)	Overall (n=1026)	Female (n=555)	Male (n=1482)	Overall (n= 2037)
Age	Mean	44.44	45.22	45.06	46.42	46.56	46.51	45.70	45.83	45.79
	Median	43.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
	Std. Dev	11.77	10.74	10.95	12.03	11.94	11.97	11.96	11.32	11.49
Number of years of experience (year)	Mean	15.59	17.38	17.03	11.19	13.53	12.72	12.78	15.64	14.86
	Median	15.00	15.00	15.00	8.00	10.00	10.00	10.00	13.00	12.00
	Std. Dev	10.22	11.48	11.26	11.78	12.67	12.41	11.43	12.18	12.05
Household size	Mean	8.19	9.18	8.98	6.40	6.81	6.67	7.05	8.11	7.82
	Median	7.00	8.00	8.00	6.00	6.00	6.00	6.00	7.00	7.00
	Std. Dev	4.13	5.54	5.30	2.59	3.22	3.02	3.34	4.78	4.46

The distribution of the educational status of the respondents showed that the majority of farmers (61.52%) have formal education, up to around 1% have university education, around 7.9% have senior secondary school, 24.45% have junior secondary school and 27.84% have primary education level (Table 3). The vast majority of male farmers are married (91.36%), but only 75.14% of female farmers are married (Table 3). The majority of farmers (98.04% of male and 97.30% of female) of these producing households have agriculture as their main activity.

Table 4: Educational level, marital status, main activity and experience in activity of farmers by country and gender

Variables		Cote d'Ivoire (1011)			Ghana (1026)			Overall (2037)		
		Female (n=200)	Male (n=811)	Overall (n=1011)	Female (n=200)	Male (n=811)	Overall (n=1011)	Female (n=200)	Male (n=811)	Overall (n=1011)
Formal education (%)	None	65.00	46.73	50.35	39.72	19.52	26.51	48.83	34.41	38.34
	Primary	29.50	36.62	35.21	21.97	19.82	20.57	24.68	29.01	27.84
	Junior high school	4.00	12.08	10.48	32.68	41.13	38.21	22.34	25.24	24.45
	Senior high school	1.00	3.95	3.36	5.07	16.24	12.38	3.60	9.51	7.90
	University	0.50	0.25	0.30	0.56	3.28	2.34	0.54	1.62	1.33
	Other	0.00	0.37	0.30				0.00	0.20	0.15
Marital status (%)	Married	69.50	91.25	86.94	78.31	91.51	86.94	75.14	91.36	86.94
	Single	10.00	6.91	7.52	4.51	6.41	5.75	6.49	6.68	6.63
	Widow	18.50	1.36	4.75	11.55	0.60	4.39	14.05	1.01	4.57
	Divorced	2.00	0.49	0.79	5.63	1.49	2.92	4.32	0.94	1.87
Agriculture is main activity (%)		100.00	99.01	99.21	95.77	96.87	96.49	97.30	98.04	97.84
Growing season (%)	Rainy season	65.00	67.08	66.67	43.66	38.30	40.16	51.35	54.05	53.31
	Dry season	15.00	10.36	11.28	14.37	13.41	13.74	14.59	11.74	12.52
	Both season	20.00	22.56	22.06	41.97	48.29	46.10	34.05	34.21	34.17

3.1.2. Institutional characteristics of farmers in Cote d'Ivoire and Ghana

- **Access to credit, extension service and market information**

Table 4 showed a majority of the farmers have access to the selling price of crop on the market (75.32% for female and 77.80% of Male). The results also showed that a low proportion (12.43% of Female and 11.81% of Male) of farmers had has access to production credit. In addition, less than half of farmers access to extension services. Only 25.48% (Table 4) had access to extension services with the lowest in Cote d'Ivoire (15.73%) and the highest in Ghana (35.09%). This can be explained by the fact that the villages surveyed in Ghana are closer to extension services (on average 7.96km) compared to villages in Côte d'Ivoire (on average 8.84km) (Table 5). It should also be noted that a small proportion of farmers have the news information's about the technologies developed (26.46%). However, the majority of them (54.73%) participate in training on these new technologies developed to increase the production. On the other hand, barely 41.58% of the farmers have information on new rice varieties.

Table 5: Access to credit and market information of farmers by country and gender

	Cote d'Ivoire (1011)			Ghana (1026)			Overall (2037)		
	Female (n=200)	Male (n=811)	Overall (n= 1011)	Female (n=200)	Male (n=811)	Overall (n= 1011)	Female (n=200)	Male (n=811)	Overall (n= 1011)
Access to credit for production (%)	5.50	10.85	9.79	16.34	12.97	14.13	12.43	11.81	11.98
Information on new crop varieties (%)	37.00	41.43	40.55	39.72	44.11	42.59	38.74	42.65	41.58
Information on new technologies developed (%)	22.50	27.87	26.81	20.56	29.06	26.12	21.26	28.41	26.46
Participation in training on new technologies developed (%)	60.00	39.38	42.80	54.79	71.28	66.79	56.78	54.16	54.73
Access to the selling price of crops on the market (%)	73.50	78.79	77.74	76.34	76.60	76.51	75.32	77.80	77.12
Contact with structure or organization (%)	18.50	29.22	27.10	37.18	43.07	41.03	30.45	35.49	34.12
Contact with extension service (%)	14.00	16.15	15.73	30.99	37.26	35.09	24.86	25.71	25.48

Evidence from Table 5 shows that surveyed villages in Ghana are closer to the agro-dealer (on average 5.6km) compared to villages in Côte d'Ivoire (on average 6.42km). By contrast, in relation to the distance to the nearest periodic market, villages in Ghana are further away than those in Côte d'Ivoire.

Table 6: Distance from village to institutions by country

Variables	Cote d'Ivoire (1011)			Ghana (1026)			Overall (2037)		
	Mean	Median	Std. Dev	Mean	Median	Std. Dev	Mean	Median	Std. Dev
Distance between the village and the extension service (Km)	8.837	7	8.51	7.96	5	8.306	8.395	6	8.417
Distance between the village and the nearest input dealer (Km)	6.418	4	7.795	5.655	1.6	7.161	6.034	3	7.491
Distance between the village and the nearest mechanical service provider (Km)	6.492	4	8.59	6.464	2	12.153	6.478	3	10.534
Distance between the village and the nearest periodical market (Km)	5.042	3	6.317	10.642	8.1	9.067	7.863	5	8.308

3.1.3. Gender and decision-making in the household

In terms of decision-making in the household, Figure 2 shows that decisions in the household rest with the husband. Indeed, 58% of decisions in the household are taken jointly but the husband dominates the decision-making. This shows that women don't have a great deal of responsibility in decision-making within the household.

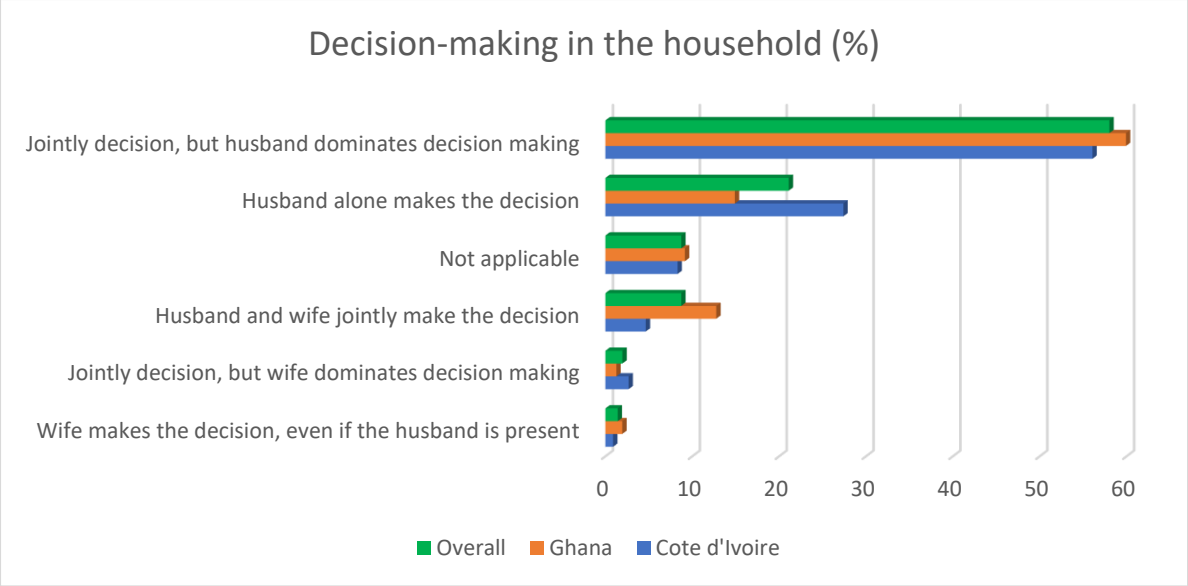

Figure 2: Decision-making in the household

3.2. Knowledge, use of agricultural equipment and methods

3.2.1. Knowledge and use of agricultural equipment

This subsection presents information on agricultural equipment and methods. The information covers knowledge and use of equipment and methods in production systems. In Cote d'Ivoire, the best-known equipment is the Power tiller (87.64%) but only 29.12% of producers use it for production (Table 6). On the other hand, in Ghana the most known and used equipment is the tractor (Table 7). Indeed, 77.97% of the producers know about the tractor and 41.50% use it for production.

Table 7: Knowledge and use of agricultural equipment for production activities by gender in Cote d'Ivoire

Equipment	Knowledge (%)			Use at least once (%)		
	Female	Male	Overall	Female	Male	Overall
Tractor	61.00	79.78	76.06	6.56	19.01	17.04
Power tiller	82.50	88.90	87.64	17.58	31.76	29.12
Mechanical transplant	0.50	0.99	0.89	0.00	0.00	0.00
Mechanical weeders	0.50	3.82	3.17	0.00	0.00	0.00
Mechanical seeders	0.50	1.23	1.09	0.00	0.00	0.00
Mechanical Salmer (Circular Binette)	0.00	0.37	0.30	0.00	0.00	0.00
Filet (bird struggle)	16.50	22.69	21.46	27.27	13.59	15.67
Mini combine harvester	16.00	32.68	29.38	28.13	40.38	39.06
ASI thresher	24.00	23.30	23.44	39.58	27.51	29.96
RiceAdvice	0.00	0.00	0.00	0.00	0.00	0.00
GEM equipment	0.50	1.85	1.58	0.00	0.00	0.00
Video on the control of the striga	0.00	0.12	0.10	0.00	0.00	0.00
Rice-other crop integration system	9.54	10.06	9.94	37.04	53.76	50.00
Improved storage bag (double) seeds	3.50	2.34	2.57	0.00	5.26	3.85

Table 8: Knowledge and use of agricultural equipment for production activities by gender in Ghana

Equipment	Knowledge (%)			Use at least once (%)		
	Female	Male	Overall	Female	Male	Overall
Tractor	69.86	82.27	77.97	37.90	43.12	41.50
Motorcycle	22.54	24.29	23.68	21.25	28.22	25.93
Mechanical transplant	3.66	5.22	4.68	38.46	14.29	20.83
Mechanical weeders	2.54	4.17	3.61	11.11	3.57	5.41
Mechanical seeders	3.94	5.96	5.26	50.00	37.50	40.74
Mechanical Salmer (Circular Binette)	0.00	0.00	0.00	0.00	0.00	0.00
Filet (bird struggle)	25.07	23.55	24.07	65.17	80.38	74.90
Mini combine harvester	7.89	10.43	9.55	10.71	15.71	14.29
ASI thresher	8.73	11.62	10.62	51.61	58.97	56.88
RiceAdvice	0.00	0.30	0.19	0.00	0.00	0.00
GEM equipment	0.00	0.00	0.00	0.00	0.00	0.00
Video on the control of the striga	0.56	0.75	0.68	100.00	80.00	85.71
Rice-other crop integration system	99.52	98.73	99.00	50.00	30.00	33.33
Improved storage bag (double) seeds	1.13	3.13	2.44	0.00	28.57	24.00

3.2.2. Knowledge and use of agricultural methods

In terms of knowledge and use of agricultural methods, the main method known and used in Côte d'Ivoire is line sowing, with 81.80% and 93.11% respectively for knowledge and use (Table 8). The other methods observed are the use of fertilizers (91%) and line transplanting (86%) in Côte d'Ivoire. In addition, in Ghana, the same methods are observed in the use of fertilizers (77%) and row sowing (60%) (Table 9).

Table 9: Knowledge and use of agricultural methods for production activities by gender in Cote d'Ivoire

Equipment	Knowledge (%)			Use at least once (%)		
	Female	Male	Overall	Female	Male	Overall
Cropping calendar construction	24.50	23.43	23.64	91.84	81.58	83.68
Alternate wetting and drying	3.00	7.03	6.23	50.00	56.14	55.56
Mulching in the field	18.00	28.48	26.41	75.00	64.94	66.29
Smart Valley / Sawah (Small and Great Dams)	42.00	46.12	45.30	54.76	67.91	65.50
Alternation of dry and wet irrigation phases	5.50	10.23	9.30	72.73	80.72	79.79
Drip irrigation	3.50	8.63	7.62	28.57	22.86	23.38
Mechanical levelling	0.00	1.60	1.29	0.00	69.23	69.23
Row sowing	87.50	80.39	81.80	94.29	92.79	93.11
Transplant	61.00	69.79	68.05	86.07	87.81	87.50
Use of fertilizers	60.00	76.45	73.19	86.67	92.42	91.49
System of Rice Intensification	12.50	7.27	8.31	84.00	50.85	60.71
Livestock diversity	1.00	1.36	1.29	0.00	54.55	46.15
Agroforestry	1.00	4.32	3.66	0.00	57.14	54.05
Cover crop	6.00	9.99	9.20	91.67	67.90	70.97
Crop rotation	30.00	32.06	31.65	85.00	80.77	81.56
Other improved method	0.00	0.25	0.20	0.00	100.00	100.00

Table 10: Knowledge and use of agricultural methods for production activities by gender in Ghana

Equipment	Knowledge (%)			Use at least once (%)		
	Female	Male	Overall	Female	Male	Overall
Cropping calendar construction	22.25	28.91	26.61	77.22	82.47	80.95
Alternate wetting and drying	1.69	4.32	3.41	66.67	75.86	74.29
Mulching in the field	38.31	44.26	42.20	78.68	81.14	80.37
Smart Valley / Sawah (Small and Great Dams)	6.20	8.64	7.80	9.09	20.69	17.50
Alternation of dry and wet irrigation phases	0.28	1.64	1.17	0.00	81.82	75.00
Drip irrigation	3.38	8.20	6.53	8.33	7.27	7.46
Mechanical levelling	3.66	6.86	5.75	15.38	15.22	15.25
Seedling	43.10	51.86	48.83	79.08	78.45	78.64
Transplant	56.62	60.66	59.26	92.04	92.87	92.60
Use of fertilizers	77.75	77.65	77.68	84.06	93.47	90.21
System of Rice Intensification	0.28	1.34	0.97	0.00	22.22	20.00
Livestock diversity	15.49	18.33	17.35	52.73	72.36	66.29
Agroforestry	16.34	23.85	21.25	41.38	51.88	49.08
Cover crop	31.83	35.32	34.11	67.26	67.93	67.71
Crop rotation	51.27	48.88	49.71	71.43	77.74	75.49
Other improved method	0.00	0.15	0.10	0.00	100.00	100.00

3.3. Perception of climate change

This section presents producers' perceptions of climate change. With respect to access to climate information services, Figure 3 shows that about 26% of producers have access to information on weather forecasts (for today, 24 hours and/or next 2-3 days), 20% to forecasts of extreme events (drought, flood, strong wind, etc.), and 19% to information on seasonal forecasts (weather for the following 2-3 months). The figure also shows that producers in Cote d'Ivoire have less access to climate information.

Les results also showed that the producers perceive the indicators on climate change (Figure 4). The main known indicators are: late rains (51%), early rains (36%) and lower yields (34%).

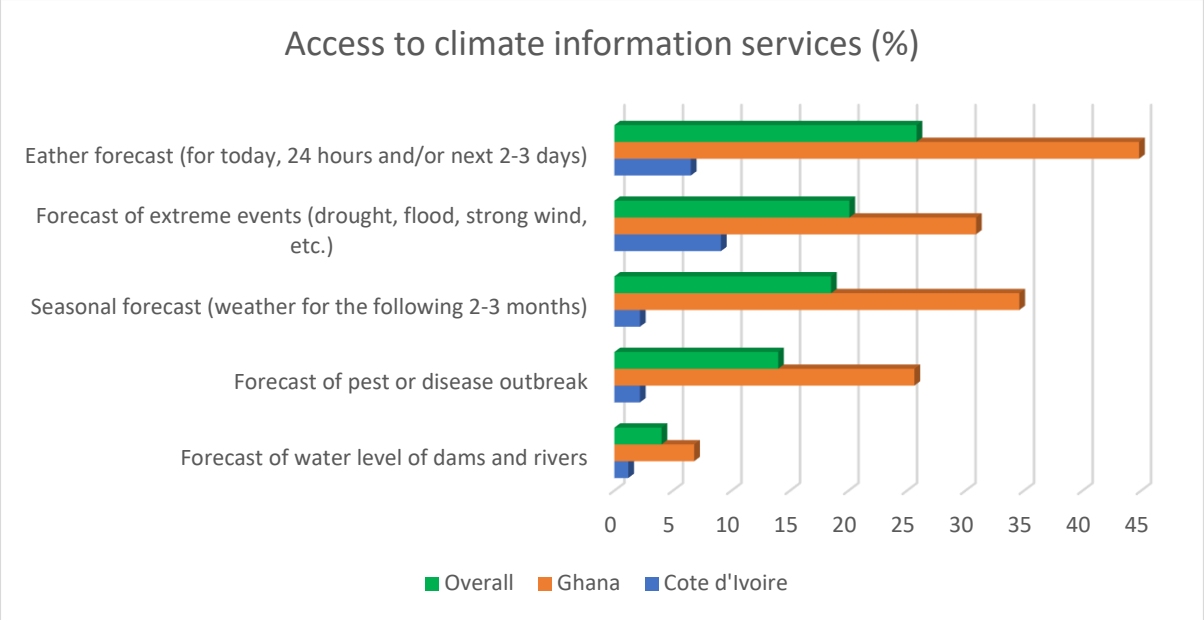

Figure 3: Access of producers to climate information services

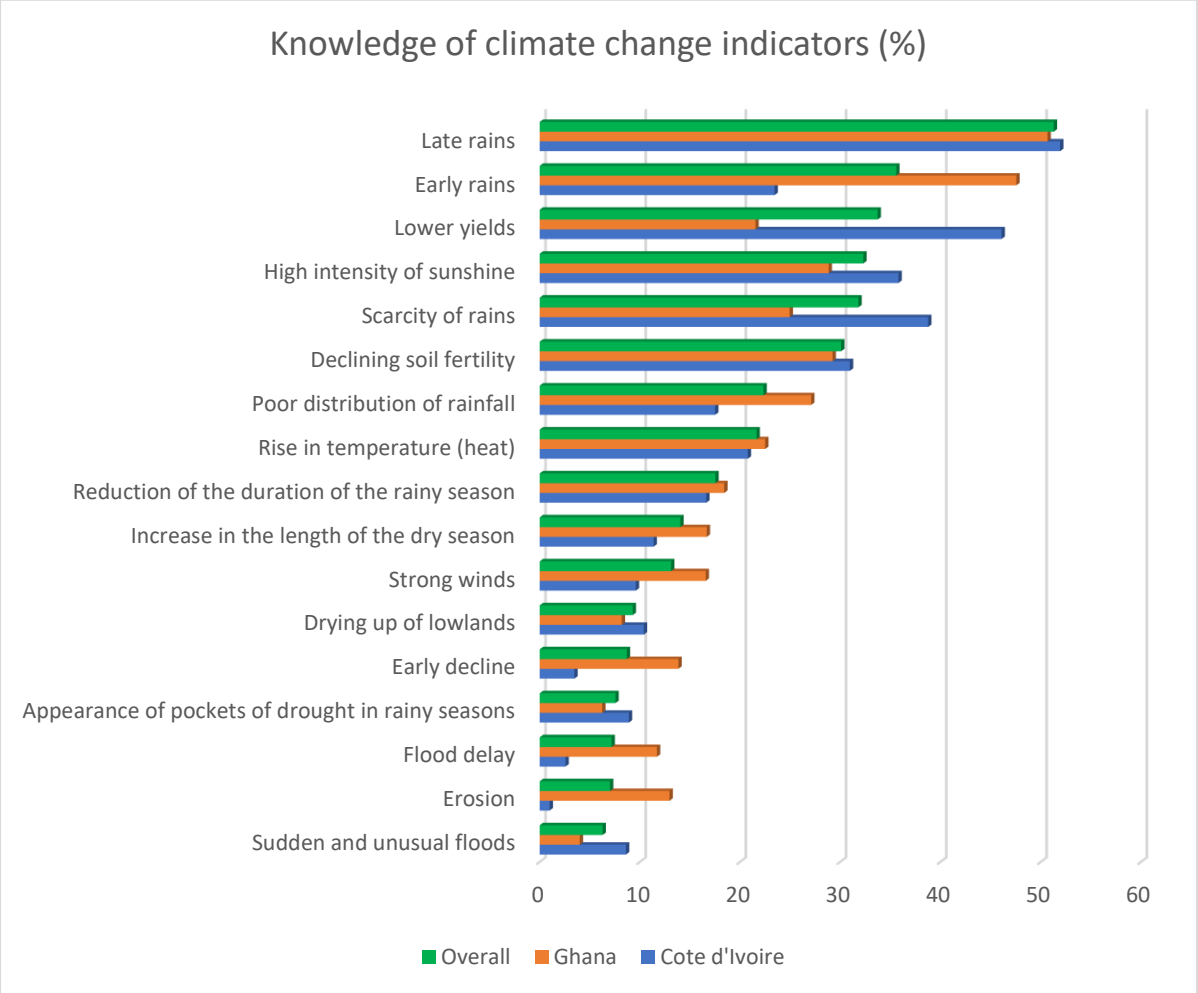

Figure 4: Knowledge of producers on climate change indicators

3.4. Income, expenses, food consumption and poverty ratio

This section presents income and expenditure estimates for the farming households surveyed.

In terms of income, the analysis shows that men's annual agricultural income is higher than women's in the two countries (Table 10). Indeed, women earn around US$ 2147 less than men; and this difference is statistically significant. (Table 10).

In terms of total expenditure per capita, we also find that men spend more than women in both countries (Table 12). The difference is around US$ 48 for men in two countries. However, there is no significant difference between women and men in Côte d'Ivoire in terms of total household expenditure per capita.

Table 11: Income and expenses by country and gender

Variables		Cote d'Ivoire (1011)			Ghana (1026)			Overall (2037)		
		Female (n=200)	Male (n=811)	Overall (n= 1011)	Female (n=200)	Male (n=811)	Overall (n= 1011)	Female (n=200)	Male (n=811)	Overall (n= 1011)
Agricultural income ($US)	Mean	1679.73	3495.44	3136.25	7104.58	11838.67	10200.66	5149.68	7272.98	6694.46
	Median	614.48	2287.09	1813.23	2939.76	4755.02	4016.06	1692.35	3062.34	2795.18
	Std. Dev	3908.78	4450.63	4406.78	17626.93	27076.16	24322.70	14519.75	18967.16	17887.04
Non-agricultural income ($US)	Mean	108.79	118.53	116.60	83.32	113.99	103.38	92.50	116.47	109.94
	Median	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	697.22	464.72	518.65	242.74	499.09	428.23	460.89	480.42	475.19
Total income ($US)	Mean	1788.52	3613.97	3252.85	7187.90	11952.66	10304.03	5242.18	7389.45	6804.40
	Median	676.94	2417.64	1934.11	3012.05	4819.28	4095.58	1847.39	3181.97	2852.81
	Std. Dev	3963.03	4475.51	4437.07	17626.34	27121.00	24356.54	14522.39	18998.81	17912.61
Per capita food expenditure ($US)	Mean	147.34	153.16	152.01	114.77	148.23	136.65	126.51	150.93	144.28
	Median	92.99	99.49	98.34	80.32	100.40	91.80	85.73	99.65	95.61
	Std. Dev	251.95	291.24	283.79	118.18	173.99	157.69	178.81	245.14	229.19
Per capita non-food Expenditure ($US)	Mean	186.34	181.38	182.36	86.35	102.47	96.89	122.38	145.65	139.31
	Median	95.77	115.85	111.58	56.40	67.91	63.85	70.70	93.92	87.30
	Std. Dev	656.07	408.48	467.57	101.14	131.64	122.14	404.30	317.24	343.21
Per capita total expenditure ($US)	Mean	333.68	334.54	334.37	201.12	250.70	233.55	248.89	296.58	283.59
	Median	217.54	239.12	232.81	148.92	190.30	174.79	173.18	212.74	201.89
	Std. Dev	721.25	528.40	571.33	184.40	245.39	227.29	461.14	426.25	436.43

In terms of food security Table 11 shows that the food consumption score is relatively high in the two countries as a whole. The average score is 65.63 and 67.80 respectively for female and male, which could mean that households are in acceptable food situation (>35 acceptable level). This means that the vast majority of farmers households in both countries have an acceptable

level of dietary diversity, meal frequency and nutritional importance of the food groups consumed.

In terms of poverty rate, we note that the poverty index of the population remains relatively low (48%). According to gender, 54.23% of women are poor and 45.56% of men are poor. The same trend can be observed in each country where the poverty rate for women is higher than the average.

Table 12: Food consumption and poverty ratio by country and gender

Variables		Cote d'Ivoire (1011)			Ghana (1026)			Overall (2037)		
		Female (n=200)	**Male (n=811)**	**Overall (n= 1011)**	**Female (n=200)**	**Male (n=811)**	**Overall (n= 1011)**	**Female (n=200)**	**Male (n=811)**	**Overall (n= 1011)**
Food consomption score	Mean	67.80	66.81	67.01	64.41	69.00	67.41	65.63	67.80	67.21
	Median	64.25	65.50	65.00	63.00	67.50	66.00	63.50	66.50	65.50
	Std. Dev	22.06	20.03	20.44	20.97	19.76	20.29	21.41	19.93	20.36
Poverty headcount ratio (%)		44.17	40.69	41.51	61.11	51.27	54.67	54.23	45.56	48.07

4. Conclusion

The purpose of the Transforming Agrifood Systems in West and Central Africa initiative (TAFS-WCA) baseline survey is to collect reliable, accurate and sufficient reference values on the impact indicators that can be drawn upon to undertake impact studies with the view to evaluating the changes induced by the One CGIAR regional integrated initiative in target countries.

Preliminary analysis showed that the majority of respondents were men. The data showed that the vast majority of respondents had received a formal education and the survey population was relatively young. However, access to credit for production is very low in both countries

In terms of food security, the result shows that the vast majority of farmers households in both countries have an acceptable level of dietary diversity, meal frequency and nutritional importance of the food groups consumed. The scientific report will analyze the data with more details.

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