



Regional Agency for Agriculture and Food
Agence Régionale pour l'Agriculture et l'Alimentation
Agência Regional da Agricultura e Alimentação



TERMES DE REFERENCE

"SELECTION OF CONSULTANTS (FIRMS) FOR THE SUPERVISION OF THE CONSTRUCTION WORKS OF THE RUNOFF WATER COLLECTION BASINS AND BOREHOLES IN THE AREAS OF INTERVENTION OF THE AIC PROJECT IN GHANA: UPPER EAST; NORTHERN; UPPER WEST AND SAVANNAH »

Market Reference°:	ARAA/AIC-BOAD/2025/AMI/017
Contracting Authority:	ECOWAS Regional Agency for Agriculture and Food (ARAA)
Project:	Regional project to promote climate-smart agriculture (CSA) in West Africa
Financing:	Adaptation Fund
Implementing Agency	West African Development Bank (BOAD)
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I. BACKGROUND AND RATIONALE

West Africa, which emits less than 1% of global greenhouse gases, is nevertheless highly vulnerable to climate change and is already suffering its negative impacts (food and nutrition insecurity, increased vulnerability of agricultural production systems). Due to the decline in yields due to climate impacts, it is estimated that by 2100 West Africa will suffer the highest agricultural losses in the world, between 2 and 4% of its GDP and 75% of the African population could be exposed to hunger (CILSS, 2015).

As part of its agricultural policy (ECOWAP/CAADP) adopted in 2005, complemented by its strategic programme on vulnerability reduction and adaptation to climate change, ECOWAS launched a West African Climate Smart Agriculture (CSA) Alliance in June 2015. This alliance contributes to the implementation of the continental alliance, which aims to have CSA practices adopted by 25 million households by 2025. Several initiatives are being implemented in the ECOWAS region, in particular within the framework of the 11th EDF, which provides for a strengthening of the existing technical and financial system. In the context of West Africa's agro-ecological zones, the promotion of CSA and ecologically intensive agriculture techniques will: i) improve soil carbon levels, ii) water retention to mitigate short-term climatic stresses affecting agrosilvopastoral production.

It is in this context that this initiative is part of this initiative, whose overall objective is to contribute to the development of climate-smart agriculture and to support the agro-ecological transition in West Africa, in order to strengthen the resilience of vulnerable populations. The specific objective is to promote climate-smart agriculture, and to foster the emergence and implementation of ecologically intensive agricultural practices, enabling food and nutrition security, adaptation to climate change (including desertification) and mitigation (e.g. carbon sequestration).

Regional mobilization to promote the exchange of experiences, the strengthening of human, technical and institutional capacities, and to support the development of agro-ecological systems must be encouraged and supported. Thus, the mobilizing and ambitious initiative presented in this note aims to give new directions to West African agriculture with the objective of combining economic, social and environmental performance.

The actions, broken down into different areas, concern all areas of intervention: i) agricultural education and training, ii) support for agricultural and zootechnical research, iii) support for farmers, iv) reorientation of public investments, v) development and strengthening of public-private partnerships, etc.

This initiative is co-constructed in partnership between the ECOWAS Commission and all key actors and stakeholders involved in the West African sub-region.

1- Geographical area and beneficiary of the project

The project "Promoting Climate-Smart Agriculture (CSA) in West Africa" is planned to be implemented in BURKINA FASO in the Eastern, Centre-East and Centre-South regions; in NIGER in the southern zones of the Tillabéry and Dosso regions; in BENIN in the Alibori and Atacora regions, in TOGO in the Savannah and Kara regions and in GHANA in the North-East, North-West and North regions, covering an area of 355,158^{km2} for a total population of about 15,658,772 inhabitants. The project will be implemented in a geographical area covering the sub-humid agro-ecological zones in the south, the sub-humid/semi-arid transition zone and the semi-arid zone in the north.

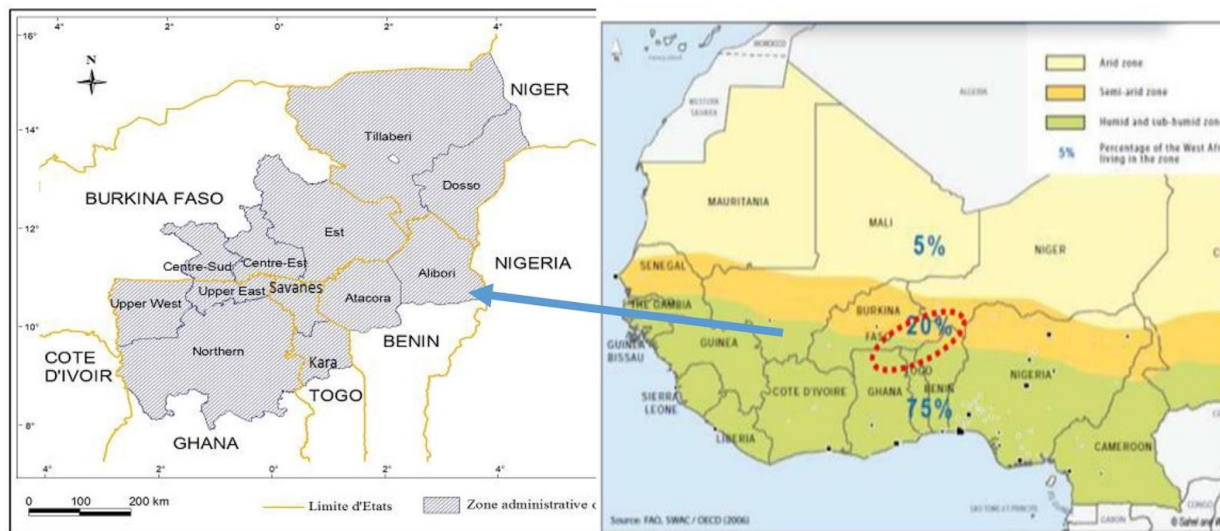


Figure 1: Administrative regions concerned by the project intervention area and main climatic zones in West Africa and percentage of the population living in these zones. The red circle illustrates the project intervention area.

2- General objective of the project

The regional project entitled "Promoting Climate-Smart Agriculture in West Africa" aims to reduce the vulnerability of farmers and herders to increased climate risks. These risks are a barrier to food security, income generation and the provision of ecosystem services in poor communities.

3- Specific objectives of the project

- (i) strengthen knowledge and technical capacity through regional and local interactions for the promotion of climate-resilient agricultural practices;
- (ii) scaling up best practices related to climate change adaptation in agriculture and pastoralism at the local and regional level;
- (iii) share knowledge and disseminate lessons learned on resilient agricultural best practices related to climate-smart agriculture.

4- Project components:

Component 1: Improved knowledge and technical capacity building through regional and local interactions to promote agricultural practices that are resilient to the adverse effects of climate change.

Component 2: Strengthening best practices related to climate change adaptation in agriculture and pastoralism at local and regional level.

Component 3: Knowledge management on climate-resilient best agricultural practices, including climate-smart agriculture.

II. OBJECTIVES

1- General objective of the mission

The general objective of the mission is to control and monitor the execution of water mobilization infrastructure works in the Upper East regions; Northern; Upper West and Savannah in Ghana according to the missions composing the market as follows:

1. **Mission 1:** control of the execution of construction works of runoff water collection basins and boreholes in the **Northern regions; Upper West and Savannah in Ghana.**
2. **Mission 2:** Control of the execution of the construction of runoff water collection basins and boreholes in the **Upper East region of Ghana.**

2- Specific objectives of the mission

Specifically, the mission will consist of:

- a) analyse the technical and organisational performance of the companies carrying out the work and make technical and organisational recommendations to the ARAA, so that the work is carried out in accordance with the contractual provisions;
- b) ensure the monitoring and technical control of water mobilization infrastructure works on the various sites in the Upper East regions; Northern; Upper West and Savannah in Ghana in accordance with the stipulations contained in the Technical Clauses , Plans and in the rules of the art;
- c) monitor compliance with the deadlines for the execution of the work in accordance with the established schedule;
- d) ensure compliance with safety rules on construction sites;
- e) ensure a good flow of information between the various actors, in particular the ARAA and the companies carrying out the works;
- f) assist the ARAA in the operations of provisional and final acceptance of the works.

3- Scope of the engagement

The consultant will carry out, among other things, a check of the following works to be carried out:

- solar-powered boreholes and sites to be developed for market gardening with solar irrigation and a Californian grid;
- functional runoff water collection basins and the acquisition of motor pumps;
- runoff water collection basins along transhumance corridors;
- human-powered drilling along transhumance corridors.

The consultant will carry out the following checks:

a) Quality control:

The consultant will be expected to perform the following minimum tasks:

- Control materials on site. The materials must be sufficient, in good condition and adapted to the nature of the work to be carried out;
- To monitor working conditions and to evaluate in particular the internal safety measures taken by the companies carrying out the work;
- Take all measures to ensure compliance with environmental protection measures, in accordance with the relevant provisions;
- Ensure that the infrastructure built complies with the specifications of the technical clauses provided by the company.

b) Quantitative control:

For the consultant, it will be a question of determining and verifying the quantities of infrastructure to be built or actually completed. This control consists of making a regular and periodic assessment of the consistency of the work on each phase of the work as provided for in the clauses of the contract, in connection with the work schedule.

Any changes to the quantities must be the subject of a service order after a relevant assessment by the consultant and the prior agreement of the ARAA. The estimates will be updated as well as the adjusted quantities.

c) Administrative and financial:

• **Preparation and transmission of service orders**

The written service orders, signed and numbered by the consultant are sent to the contractor within two calendar days under the conditions provided for by the CCAG. Under no circumstances may the control consultant notify service orders relating to:

- the notification of the start date of the work;
- the transition to the execution of a conditional tranche;
- the time limit for the execution of the work;
- d) the notification of new prices to the contractor for unforeseen works or works , or the modification of the prices appearing in the contract (quantities and unit prices).

Service orders following a decision by the project owner must be notified within 8 days.

• **Verification of situations and statements**

This service will include the preparation and preparation of regulatory expenditure documents such as:

- site attachments (advance, supply, work completed or not, verification of quantities submitted by companies, etc.);
- financial attachments (interest on arrears, penalties, price revisions, etc.), periodic statements in accordance with the CCAG or the CCAP, on the basis of the draft invoices submitted by the companies;
- certificates for payments or disbursement requests signed by the project owner ;
- the establishment of the general and final statement according to the same process on the basis of the draft final statement drawn up by the companies.

In particular, the firm will ensure that this final statement is presented in the same functional form as the estimated detail. He will establish the balance statement from the final statement and the last corresponding monthly statements.

The general statement must include:

- the final statement considered;
- the statement of pay in question;
- the summary of the monthly instalments and the balance;
- the study of the new asking prices;
- verification of the sub-details of the company's prices;
- documents concerning the guarantee and the pledge of the contract with regard to releases or other formalities and their presentation for signature by the contracting authority .

III. EXPECTED RESULTS

In line with the objectives of the mission, the main expected results are as follows:

- Observations and recommendations are made in the company's diary and site book;
- Detailed plans provided by the companies (execution plans), of the work actually carried out validated;
- Monthly reports are produced;
- The provisional acceptance of the work is made and the minutes submitted to the ARAA;
- All the assembly plans sent to ARAA;
- The final acceptance of the work by site made and the minutes submitted to the ARAA.

IV. AVAILABLE

Deliverables will need to be validated by UNGP Ghana and ARAA.

Elements	Month 1				Month 2				Month 3				Month 4				5 Months				6 Months			
	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4
Step 1: Start and scoping of the mission																								
Mission scoping meeting																								
Deliverable 1: Report of the scoping meeting																								
Step 2: Site visit,																								
Visit to the sites housing the works.																								
Deliverable 2: Report of site visits and monitoring and control plan																								
Step 3: Drafting (formulation) of recommendations																								
Control of the work on the various sites																								
Deliverable 3: Work control reports on the various sites.																								
Step 4: Report of provisional acceptances																								

Elements	Month 1				Month 2				Month 3				Month 4				5 Months				6 Months							
	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4	S1	S2	S3	S4				
Deliverable 4: Preparation and transmission of a provisional acceptance report for each site where the work is carried out																												
Step 5: Verification report																												
Deliverable 5: Preparation and transmission of an as-built report by type of work and by country																												
Step 6: Final acceptance report																												
Deliverable 6: Preparation and transmission of work acceptance reports by site																												

The final deliverables will be sent in file format (PDF, Word) and in physical version.

V. ORGANIZATION AND DURATION OF THE MISSION

1) Organization of the mission

The consultant recruited will have to provide these services on the sites of the infrastructures to be carried out in the Upper East regions; Northern; Upper West and Savannah in Ghana under the supervision of the National Project Management Unit (UNGP)-AIC of Ghana.

2) Mission Duration

The expected duration for the execution of the water mobilization infrastructure works is estimated at **six (06) months**.

VI. CONSULTANT PROFILE AND COMPOSITION OF THE ENGAGEMENT TEAM

The consultant must be an office, a consortium of offices legally established for at least five (05) years in the field of monitoring and control of infrastructure works and/or water mobilization, have carried out at least two (02) infrastructure control missions, in this case water mobilization infrastructure, over the last five (05) years (2020 – 2021 – 2022 – 2023 – 2024) and the current year.

The consultant will have knowledge of environmental and social standards in the implementation of infrastructure projects.

The Consultant must provide a qualified and experienced team composed of at least a Hydraulic Engineer, a Civil Engineer, an Expert in Environment and Risk Management and a Senior Technician in Hydraulic or Rural Engineering with the following profiles:

Mission Experts	Qualifications	Number of experts	Experiences
1. Hydraulic Engineer (Head of Mission)	Engineering degree (BAC + 5) in hydraulics, water engineering, or a related discipline.	01	- Ten (10) years of professional experience, including seven (07) years of experience in similar assignments. - Have led at least one mission as head of mission, hydraulic infrastructure projects, with expertise in the control of works financed by donors, in particular, ECOWAS, BOAD, Adaptation Fund, the World Bank, the EU, the AfDB, the GIZ.
2. Civil Engineer,	Engineering degree (Bac + 5) in civil engineering or equivalent.	01	- Have at least eight (08) years of professional experience, including five (05) years for similar missions; - Have carried out a mission on the works of runoff water collection basins, boreholes, reservoirs, canals, etc., financed by donors including ECOWAS, BOAD, Adaptation Fund, World Bank, EU, AFDB, GIZ.

Mission Experts	Qualifications	Number of experts	Experiences
3. Expert in Environment and Risk Management	Diploma (Bac +5) in environmental management, environmental engineering or a related field.	01	<ul style="list-style-type: none"> - Have at least eight (08) years of professional experience, including five (05) years for similar assignments. - Have carried out at least one (01) environmental management mission as part of the works of the runoff water collection basin, boreholes, reservoirs, canals, etc., financed by donors including ECOWAS, BOAD, Adaptation Fund, World Bank, EU, AfDB, GIZ.
4. Senior technician in hydraulic or rural engineering, permanent controller	Diploma (Bac +2) in hydraulics, water engineering, or a related discipline.	01	<ul style="list-style-type: none"> - Eight Five (05) years of professional experience, including at least two (02) years in water infrastructure project management, with expertise in work control. - Have led at least one mission as site manager, hydraulic infrastructure projects, with expertise in the control of works financed by donors, in particular, ECOWAS, BOAD, Adaptation Fund, World Bank, EU, AfDB, GIZ.

NB: the required staff is required per mission.

VII. PROCEDURES DE SELECTION DU CONSULTANT

The procedure for this contract will be conducted in accordance with the "Guidelines for the Procurement of Consultancy Services Financed by a Loan or a Cash Advance from the West African Development Bank".

The consultant/control office will be selected using the Quality and Cost Based Selection (**QCS**) methodology.

Appendix 1: The situation of the works to be carried out

#	NATURE DE L'OUVRAGE/ REGION	NORTHEN	UPPER WEST	SAVANAH	UPPER EAST	TOTAL
1	BCER	10	15	12	34	71
2	BCER TRANSHUMANCE	1	4	2	3	10
3	FORAGE A ENERGIE SOLAIRE	2	2	2	6	12
4	FORAGE A MOTRICITE HUMAINE	-	1	1	2	4
	TOTAL	13	22	17	45	97

- Regions: Northern, Upper West and Savannah

Table 1 : Geolocation of BCERs in the North

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	BCER	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Northern Region									
Sub-project to promote climate-smart agriculture in Fooshegu, Pagazaa, Zoborgu, Juni and Changnaayili, Ghana	Tamale Metropolitan	Fooshegu	10	2	9°37'10.92"N 0°50'8.02"W	9°37'20.13"N 0°50'19.47"W	9°37'18.45"N 0°50'40.27"W	9°37'14.64"N 0°50'38.16"W	25
		Pagazaa	10	2	10°19'3.51"N 0°55'1.21"W	10°18'55.85"N 0°54'59.18"W	10°18'38.00"N 0°55'7.20"W	10°18'45.42"N 0°55'12.75"W	25
		Zoborgu	10	2	10°35'0.04"N 0°25'58.55"W	10°34'58.49"N 0°25'45.44"W	10°35'11.83"N 0°25'44.86"W	10°35'12.95"N 0°25'53.19"W	25
		Juni	10	2	9°13'1.45"N 0°22'56.03"W	9°12'50.40"N 0°22'56.50"W	9°13'6.43"N 0°23'11.57"W	9°13'10.30"N 0°23'8.76"W	25
		Changnaayili	10	2	9°32'5.04"N 0°57'54.06"W	9°32'2.33"N 0°57'50.51"W	9°31'46.62"N 0°58'3.49"W	9°31'50.42"N 0°58'8.17"W	25
Total area Sub-Project 3:			50	10					125

Table 2 : Geolocation of transhumance RECBs in the Northern region

Sub-projects	Commune	Name of Village/Field	Number of BCERs Transhumance	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart agriculture in Fooshegu, Pagazaa, Zoborgu, Juni and Changnaayili, Ghana	Tamale Metropolitan	Zoborg	1	10°35'0.04"N 0°25'58.55"W	10°34'58.49"N 0°25'45.44"W	10°35'11.83"N 0°25'44.86"W	10°35'12.95"N 0°25'53.19"W
Total area Sub-Project 3:			1				

Table 3 : Geolocation of solar-powered drilling in the Northern region

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Northen Region									
Sub-project to promote climate-smart agriculture in Fooshegu, Pagazaa, Zoborgu, Juni and Changnaayili, Ghana	Tamale Metropolitan	Fooshegu	3,4	1	9°37'10.92"N 0°50'8.02"W	9°37'20.13"N 0°50'19.47"W	9°37'18.45"N 0°50'40.27"W	9°37'14.64"N 0°50'38.16"W	9
		Changnaayili	3,4	1	9°32'5.04"N 0°57'54.06"W	9°32'2.33"N 0°57'50.51"W	9°31'46.62"N 0°58'3.49"W	9°31'50.42"N 0°58'8.17"W	9
Total area Sub-Project 3:			6,8	2					18

Table 4 : Geolocation of BCERs in the Upper-West region

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	BCER	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Upper West Region									
Sub-project to promote climate-smart agriculture	Wa Municipal	Sharia	5	1	10°6'37.88"N 2°34'12.50"W	10°6'34.31"N 2°34'5.42"W	10°6'29.13"N 2°34'2.80"W	10°6'25.77"N 2°34'6.26"W	13
		Jonga	5	1	10°55'2.18"N	10°54'58.95"N	10°54'53.65"N	10°54'55.42"N	13

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	BCE R	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
e in Charia, Jonga, Piisi, Boli, Busa, Gbanko, Duong, Sombo, Dambaali, Sankana, Pataal, Domangye, Bu-Kpisin, Monyupelle and Brutu, Ghana					0°50'58.33" W	0°50'56.86" W	0°51'5.64"W	0°51'7.79"W	
		Peaches	5	1	10°12'56.96"N 2°36'35.18" W	10°13'1.11" N 2°36'35.44" W	10°13'8.79" N 2°36'29.78" W	10°13'5.10" N 2°36'27.46" W	13
		Were	5	1	10°17'0.40" N 2°30'57.23" W	10°17'4.61" N 2°31'1.71"W	10°16'48.63" N 2°31'4.10"W	10°16'48.65" N 2°30'59.55" W	13
		Busa	5	1	10°28'4.89" N 2°40'58.79" W	10°28'3.95" N 2°41'2.16"W	10°27'54.50" N 2°41'0.91"W	10°27'54.46" N 2°40'56.88" W	13
	Nadowli Kaleo	Gbanko	5	1	10°25'0.95" N 2°30'3.32"W	10°24'54.61" N 2°29'58.39" W	10°25'3.38" N 2°29'53.40" W	10°25'5.05" N 2°29'57.00" W	13
		Duong	5	1	10°26'0.89" N 2°31'59.04" W	10°26'4.17" N 2°32'4.49"W	10°25'52.52" N 2°32'3.37"W	10°25'58.72" N 2°31'51.91" W	13
		Sombo	5	1	10°24'1.04" N 2°32'56.88" W	10°24'2.97" N 2°33'5.19"W	10°23'57.82" N 2°33'5.95"W	10°23'55.70" N 2°32'56.58" W	13
		Dambaali	5	1	10°22'34.69" N 2°33'55.27" W	10°22'38.47" N 2°33'57.53" W	10°22'35.49" N 2°34'8.41"W	10°22'31.75" N 2°34'6.38"W	13
		Sankana	5	1	10°11'55.43" N 2°34'57.37" W	10°12'2.82" N 2°34'56.99" W	10°12'4.93" N 2°35'3.06"W	10°11'55.08" N 2°35'2.63"W	13
	Nandom	Pataal	5	1	10°10'58.17" N 2°35'56.18" W	10°10'55.01" N 2°36'1.05"W	10°10'59.50" N 2°36'8.49"W	10°11'3.77" N 2°36'2.82"W	13
		Domangye	5	1	10° 5'59.80"N 2°33'59.14" W	10° 6'7.21"N 2°34'0.45"W	10° 6'2.91"N 2°34'11.04" W	10° 5'57.77"N 2°34'8.87"W	13
		Bu-Kpisin	5	1	10° 9'1.16"N 2°37'57.35" W	10° 9'7.80"N 2°38'3.88"W	10° 9'2.11"N 2°38'9.03"W	10° 8'57.22"N 2°38'5.83"W	13
		Monyupelle	5	1	10° 7'59.75"N 2°38'54.22" W	10° 7'56.44"N 2°38'56.14" W	10° 7'57.97"N 2°39'5.73"W	10° 8'4.08"N 2°39'4.39"W	13
		Brutu	5	1	10° 3'7.87"N 2°40'11.31" W	10° 3'2.51"N 2°40'9.47"W	10° 3'5.15"N 2°40'18.97" W	10° 3'9.24"N 2°40'16.68" W	13
	Total area Sub-Project 5:			75	15				195

Table 5: Geolocation of transhumance BCERs in the Upper-West region

Sub-projects	Commune	Name of Village/Field	Number of BCERs Transhumance	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart agriculture in Charia, Jonga, Piisi, Boli, Busa, Gbanko, Duong, Sombo, Dambaali, Sankana, Pataal, Domangye, Bu-Kpisin, Monyupelle and Brutu, Ghana	Wa Municipal	Jonga	1	10°55'2.18"N 0°50'58.33"W	10°54'58.95"N 0°50'56.86"W	10°54'53.65"N 0°51'5.64"W	10°54'55.42"N 0°51'7.79"W
		Busa	1	10°28'4.89"N 2°40'58.79"W	10°28'3.95"N 2°41'2.16"W	10°27'54.50"N 2°41'0.91"W	10°27'54.46"N 2°40'56.88"W
		Dambaali	1	10°22'34.69"N 2°33'55.27"W	10°22'38.47"N 2°33'57.53"W	10°22'35.49"N 2°34'8.41"W	10°22'31.75"N 2°34'6.38"W
		Bu-Kpisin	1	10° 9'1.16"N 2°37'57.35"W	10° 9'7.80"N 2°38'3.88"W	10° 9'2.11"N 2°38'9.03"W	10° 8'57.22"N 2°38'5.83"W
Total area Sub-Project 5:			4				

Table 6: Geolocation of solar-powered boreholes in the Upper-West region

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Northern Region									
Sub-project to promote climate-smart agriculture in Fooshegu, Pagazaa, Zoborgu, Juni and Changnaa yili, Ghana	Tamale Metropolitan	Fooshegu	3,4	1	9°37'10.92"N 0°50'8.02"W	9°37'20.13"N 0°50'19.47"W	9°37'18.45"N 0°50'40.27"W	9°37'14.64"N 0°50'38.16"W	9
		Changnaa yili	3,4	1	9°32'5.04"N 0°57'54.06"W	9°32'2.33"N 0°57'50.51"W	9°31'46.62"N 0°58'3.49"W	9°31'50.42"N 0°58'8.17"W	9
Total area Sub-Project 3:			6,8	2					18

Table 7 : Geolocation of human-powered boreholes in the Upper-West region

Sub-projects	Commune	Name of Village/Field	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart agriculture in Charia, Jonga, Piisi, Boli, Busa, Gbanko, Duong, Sombo, Dambaali, Sankana, Pataal, Domangye, Bu-Kpisin, Monyupelle and Brutu, Ghana	Wa Municipal	Duong	1	10°26'0.89"N 2°31'59.04"W	10°26'4.17"N 2°32'4.49"W	10°25'52.52"N 2°32'3.37"W	10°25'58.72"N 2°31'51.91"W

Table 8: Geolocation of BCERs in the Savannah

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	BCER	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Savannah Region									
Sub-project to promote climate-smart agriculture in Kabilpe, Alipe, Wambong, Yipala, Nyawuripe and Nwampe, Ghana	Central Gonja	Kabilpe	10	2	8°53'16.48"N 1°25'25.47"W	8°53'13.24"N 1°25'28.00"W	8°53'15.58"N 1°25'45.28"W	8°53'25.39"N 1°25'47.51"W	25
		Alipe	10	2	9°11'49.09"N 1°24'2.76"W	9°11'38.91"N 1°23'57.38"W	9°11'40.15"N 1°23'50.74"W	9°11'56.86"N 1°23'45.97"W	25
		Wambong	10	2	9°20'6.20"N 1°2'45.11"W	9°20'18.61"N 1°2'38.80"W	9°20'16.77"N 1°2'52.91"W	9°20'6.67"N 1°2'55.34"W	25
		Yipala	10	2	9°13'49.78"N 1°57'58.04"W	9°13'54.94"N 1°57'54.24"W	9°14'8.86"N 1°57'57.75"W	9°14'11.34"N 1°58'3.91"W	25
		Nyawuripe	10	2	9°24'4.73"N 1°48'1.63"W	9°24'4.94"N 1°47'51.81"W	9°23'48.78"N 1°48'3.17"W	9°23'51.81"N 1°48'7.30"W	25
		Nwampe	10	2	9°18'1.80"N 1°54'7.72"W	9°17'54.81"N 1°54'5.35"W	9°18'0.68"N 1°53'45.19"W	9°18'6.95"N 1°53'47.26"W	25
Total area Sub-project 4:			60	12				150	

Table 9: Geolocation of transhumance BCERs in the Savannah

Sub-projects	Commune	Name of Village/Field	Number of BCERs Transhumance	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart agriculture in Kabilpe, Alipe, Wambong, Yipala, Nyawuripe and Nwampe, Ghana	Central Gonja	Kabilpe	1	8°53'16.48"N 1°25'25.47"W	8°53'13.24"N 1°25'28.00"W	8°53'15.58"N 1°25'45.28"W	8°53'25.39"N 1°25'47.51"W
		Nyawuripe	1	9°24'4.73"N 1°48'1.63"W	9°24'4.94"N 1°47'51.81"W	9°23'48.78"N 1°48'3.17"W	9°23'51.81"N 1°48'7.30"W
Total area Sub-project 4:			2				

Table 10: Geolocation of solar-powered boreholes in the Savannah

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Savannah Region									
Sub-project to promote climate-smart agriculture in Kabilpe, Alipe, Wambong, Yipala, Nyawuripe and Nwampe, Ghana	Central Gonja	Wambong	3,4	1	9°20'6.20"N 1°2'45.11"W	9°20'18.61"N 1°2'38.80"W	9°20'16.77"N 1°2'52.91"W	9°20'6.67"N 1°2'55.34"W	9
		Nwampe	3,4	1	9°18'1.80"N 1°54'7.72"W	9°17'54.81"N 1°54'5.35"W	9°18'0.68"N 1°53'45.19"W	9°18'6.95"N 1°53'47.26"W	9
Total area Sub-project 4:			6,8	2					18

Table 11: Geolocation of human-powered boreholes in the Savannah

Sub-projects	Commune	Name of Village/Field	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart	Central Gonja	Wambong	1	9°20'6.20"N 1°2'45.11"W	9°20'18.61"N 1°2'38.80"W	9°20'16.77"N 1°2'52.91"W	9°20'6.67"N 1°2'55.34"W

agriculture in Kabilpe, Alipe, Wambong, Yipala, Nyawuripe and Nwampe, Ghana								
TOTAL			1					

- **Upper East region**

Table 12: Geolocation of BCERs in the Upper East Region

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	BCER	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Upper East Region									
Sub-project to promote climate-smart agriculture in Amogrebii si, Yipaala, Sherigu, Sokabiisi, Yorogo, Aguusi, Dazongo, Yebongo, Sherigu and Dazongo, Ghana	Bolgatanga Municipal	Amogre song	10	2	10°48'32.47 "N 0°55'43.48" W	10°48'24.58 "N 0°55'36.07" W	10°48'12.55 "N 0°55'42.99" W	10°48'17.14 "N 0°55'47.71" W	25
		Yipaala	10	2	13°45'28.87 "N 2°21'31.88" W	13°45'36.07 "N 2°21'33.82" W	13°45'33.69 "N 2°21'49.02" W	13°45'27.74 "N 2°21'50.92" W	25
		Sherigu	10	2	10°50'18.77 "N 1°0'2.88"W	10°50'26.71 "N 0°59'47.65" W	10°50'20.91 "N 0°59'44.51" W	10°50'16.72 "N 0°59'56.06" W	25
		Sokabiisi	10	2	10°46'58.54 "N 0°53'0.32"W	10°46'54.65 "N 0°52'57.88" W	10°46'42.03 "N 0°53'1.16"W	10°46'32.71 "N 0°53'8.29"W	25
		Yorogo	10	2	10°51'2.46" N 0°49'21.65" W	10°50'59.44 "N 0°49'7.93"W	10°51'3.16" N 0°49'0.65"W	10°51'8.00" N 0°49'17.49" W	25
		Aguusi	10	2	10°28'16.37 "N 0°30'44.45" W	10°28'27.77 "N 0°30'42.62" W	10°28'25.04 "N 0°30'57.17" W	10°28'17.59 "N 0°30'56.23" W	25
		Dazongo	10	2	10°28'20.90 "N 0°30'37.69" W	10°28'15.14 "N 0°30'29.36" W	10°28'5.08" N 0°30'33.81" W	10°28'12.77 "N 0°30'46.01" W	25
		Yebongo	10	2	10°28'27.71 "N 0°30'12.93" W	10°28'22.91 "N 0°29'57.63" W	10°28'29.43 "N 0°29'55.93" W	10°28'33.67 "N 0°30'8.61"W	25
		Sherigu	10	2	10°50'19.57 "N 1°0'13.04"W	10°50'12.04 "N 0°17.57"W	10°50'5.93" N 1°0'8.93"W	10°50'6.75" N 1°0'14.17"W	25
		Dazongo	10	2	10°28'29.93 "N 0°29'41.41" W	10°28'32.89 "N 0°29'34.88" W	10°28'15.69 "N 0°29'24.57" W	0°29'24.57" W 0°29'23.06" W	25

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	BCE R	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Total area Sub-project 1:			100	20					250
Sub-project to promote climate-smart agriculture in Gambibgo, Katanga, Dachio and Kantia, Ghana	Bolgatanga East	Gambibgo	88	7	10°45'17.31"N 0°50'27.72"W	10°45'31.30"N 0°50'37.48"W	10°45'50.09"N 0°51'11.73"W	10°45'28.27"N 0°51'7.65"W	88
		Katanga	63	5	9°15'55.60"N 1°13'38.72"W	9°16'2.55"N 1°13'32.50"W	9°16'28.49"N 1°13'44.05"W	9°16'14.33"N 1°13'50.73"W	63
		Dachio	13	1	10°28'16.37"N 0°30'44.45"W	10°28'27.77"N 0°30'42.62"W	10°28'25.04"N 0°30'57.17"W	10°28'17.59"N 0°30'56.23"W	13
		Kantia	13	1	10°28'20.56"N 0°30'34.78"W	10°28'16.95"N 0°30'27.83"W	10°28'34.96"N 0°30'29.75"W	10°28'39.30"N 0°30'36.39"W	13
Total area Sub-Project 2:			175	14					175
TOTAL				34					

Table 13: Geolocation of transhumance BCERs in the Upper East region

Sub-projects	Commune	Name of Village/Field	Number of BCERs Transhumance	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart agriculture in Amogrebiisi, Yipaala, Sherigu, Sokabiisi, Yorogo, Aguusi, Dazongo, Yebongo, Sherigu and Dazongo, Ghana	Bolgatanga Municipal	Sherigu	1	10°50'18.77"N 1°0'2.88"W	10°50'26.71"N 0°59'47.65"W	10°50'20.91"N 0°59'44.51"W	10°50'16.72"N 0°59'56.06"W
		Yebongo	1	10°28'27.71"N 0°30'12.93"W	10°28'22.91"N 0°29'57.63"W	10°28'29.43"N 0°29'55.93"W	10°28'33.67"N 0°30'8.61"W
Total area Sub-project 1:			2				
Sub-project to promote climate-smart agriculture in Gambibgo,	Bolgatanga East	Dachio	1	10°28'16.37"N 0°30'44.45"W	10°28'27.77"N 0°30'42.62"W	10°28'25.04"N 0°30'57.17"W	10°28'17.59"N 0°30'56.23"W

Sub-projects	Commune	Name of Village/Field	Number of BCERs Transhumance	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Katanga, Dachio and Kantia, Ghana							
Total area Sub-Project 2:			1				
TOTAL			3				

Table 14: Geolocation of solar-powered boreholes in the Upper East region

Sub-projects	Commune	Name of Village/Field	Surface area des Champs(ha)	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)				Number of beneficiaries
					P1	P2	P3	P4	
Upper East Region									
Sub-project to promote climate-smart agriculture in Amogrebiisi, Yipaala, Sherigu, Sokabiisi, Yorogo, Aguusi, Dazongo, Yebongo, Sherigu and Dazongo, Ghana	Bolgatanga Municipal	Aguusi	3,4	1	10°28'16.37 "N 0°30'44.45" W	10°28'27.77 "N 0°30'42.62" W	10°28'25.04 "N 0°30'57.17" W	10°28'17.59 "N 0°30'56.23" W	9
		Dazongo	3,4	1	10°28'29.93 "N 0°29'41.41" W	10°28'32.89 "N 0°29'34.88" W	10°28'15.69 "N 0°29'24.57" W	0°29'24.57" W 0°29'23.06" W	9
Total area Sub-project 1:			6,8	2					18
Sub-project to promote climate-smart agriculture in Gambigbo, Katanga, Dachio and Kantia, Ghana	Bolgatanga East	Gambigbo	3,4	1	10°45'17.31 "N 0°50'27.72" W	10°45'31.30 "N 0°50'37.48" W	10°45'50.09 "N 0°51'11.73" W	10°45'28.27 "N 0°51'7.65" W	9
		Katanga	3,4	1	9°15'55.60" N 1°13'38.72" W	9°16'2.55"N 1°13'32.50" W	9°16'28.49" N 1°13'44.05" W	9°16'14.33" N 1°13'50.73" W	9
		Dachio	3,4	1	10°28'16.37 "N 0°30'44.45" W	10°28'27.77 "N 0°30'42.62" W	10°28'25.04 "N 0°30'57.17" W	10°28'17.59 "N 0°30'56.23" W	9
		Kantia	3,4	1	10°28'20.56 "N 0°30'34.78" W	10°28'16.95 "N 0°30'27.83" W	10°28'34.96 "N 0°30'29.75" W	10°28'39.30 "N 0°30'36.39" W	9
Total area Sub-Project 2:			13,6	4					36
TOTAL				6					

Table 14: Geolocation of Human-Powered Boreholes in the Upper East Region

Sub-projects	Commune	Name of Village/Field	Number of boreholes	GPS Coordinates of Fields (Latitude, Longitude)			
				P1	P2	P3	P4
Sub-project to promote climate-smart agriculture in Amogrebiisi, Yipaala, Sherigu, Sokabiisi, Yorogo, Aguusi, Dazongo, Yebongo, Sherigu and Dazongo, Ghana	Bolgatanga Municipal	Amogre song	1	10°48'32.47"N 0°55'43.48"W	10°48'24.58"N 0°55'36.07"W	10°48'12.55"N 0°55'42.99"W	10°48'17.14"N 0°55'47.71"W
		Katanga	1	9°15'55.60"N 1°13'38.72"W	9°16'2.55"N 1°13'32.50"W	9°16'28.49"N 1°13'44.05"W	9°16'14.33"N 1°13'50.73"W
TOTAL			2				