

WASL Progress and Experiences

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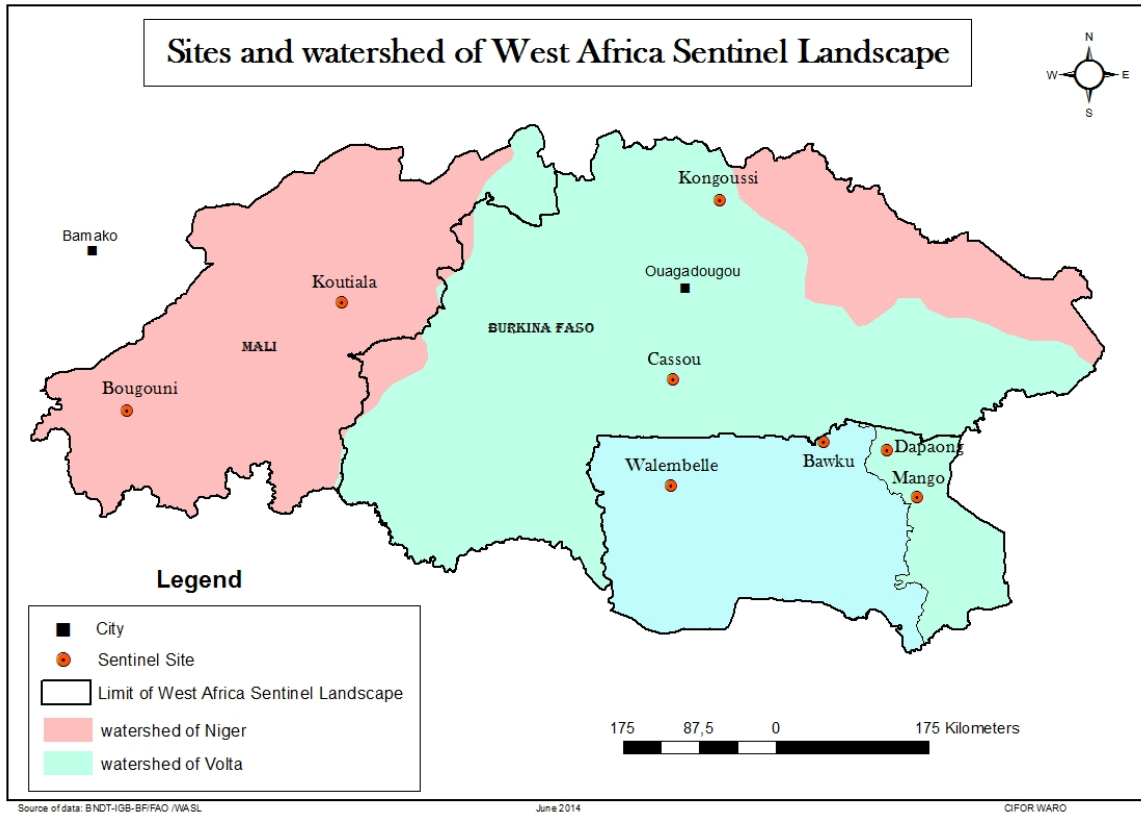


RESEARCH
PROGRAM ON
Forests, Trees and
Agroforestry

Livelihoods, Landscapes and Governance



The West Africa Sentinel Landscape



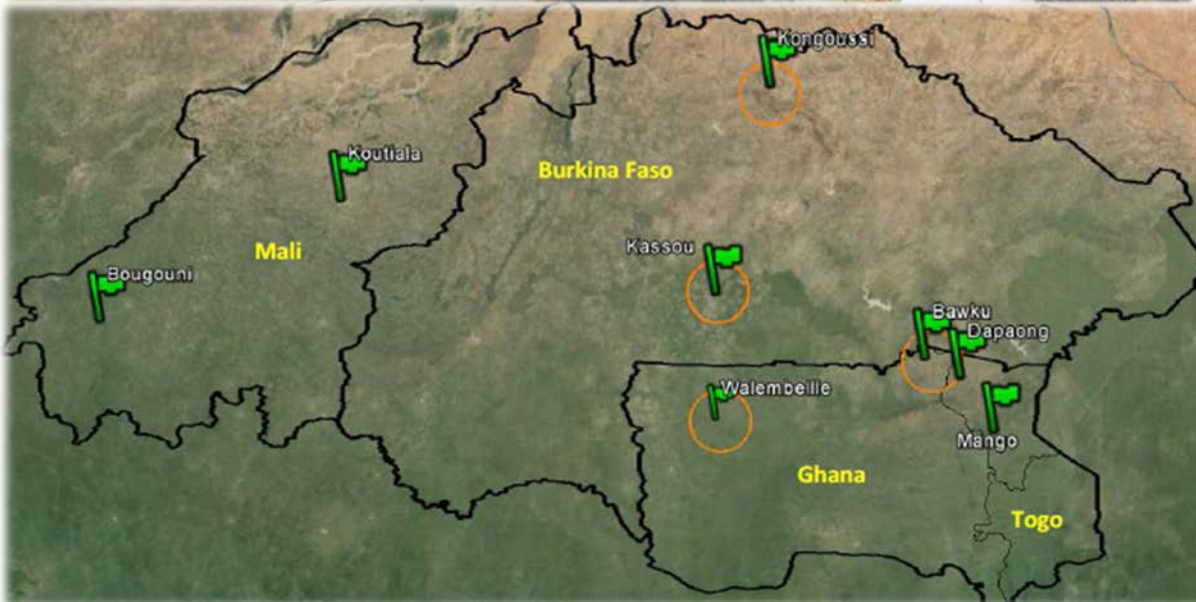
- Spanning the Volta and Niger River Basins.
- South East Mali, most of Burkina Faso, Northern Ghana and Northern Togo
- 350,000Km² including the Lake Bam and Park W in Burkina Faso, the Gbele Game Production Reserve in Ghana and the Fosse aux Lions National Park in Togo.



The West Africa Sentinel Landscape

- “Dry” climate and ecosystems with implications for ecosystem resilience, adaptive capacity of people viz. managing water, energy, trees, crops, and livestock.
- High Climate variability and extremely high poverty levels.
- Livelihood systems based essentially on agriculture, forestry, Livestock, and mining.





WASL Site Selection

- Discussion with local and prospective partners from all 4 countries.
- Drivers of change identified at landscape scale
- Site selection criteria defined:
 - Gradient of change with old change processes and more recent change processes
 - Potential co-location of CGIAR and other partners
 - Accessibility and security
 - Climatic effect control
- 2 “sentinel” sites selected per country, representing extremes in landscape change trajectories
- Burkina Faso and Ghana retained as pilots for baselines due to available resources

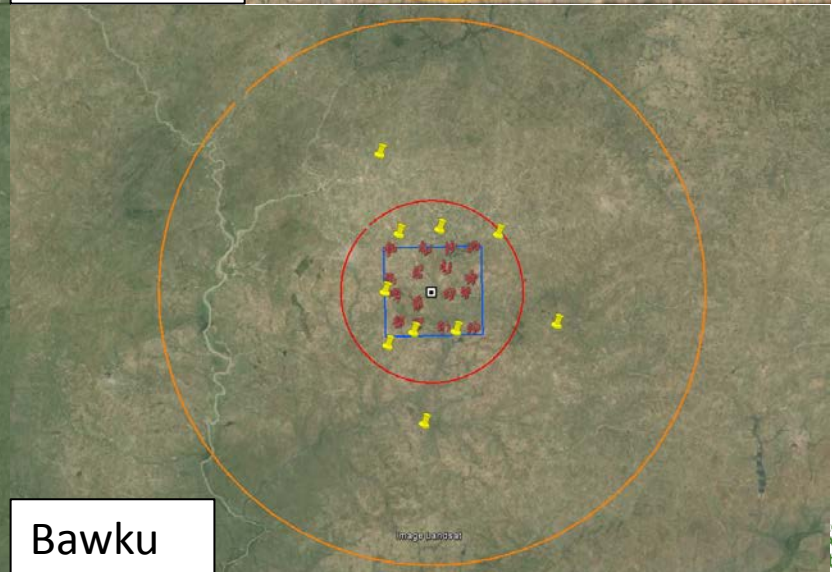
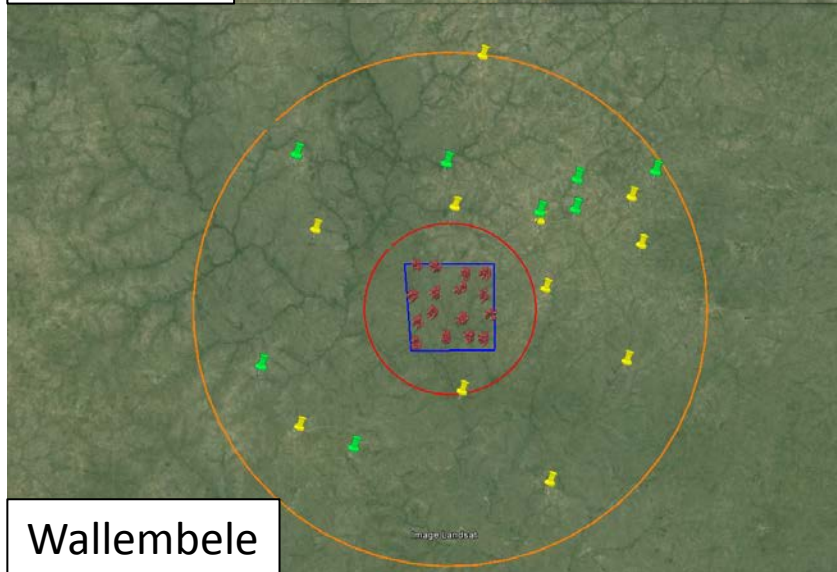
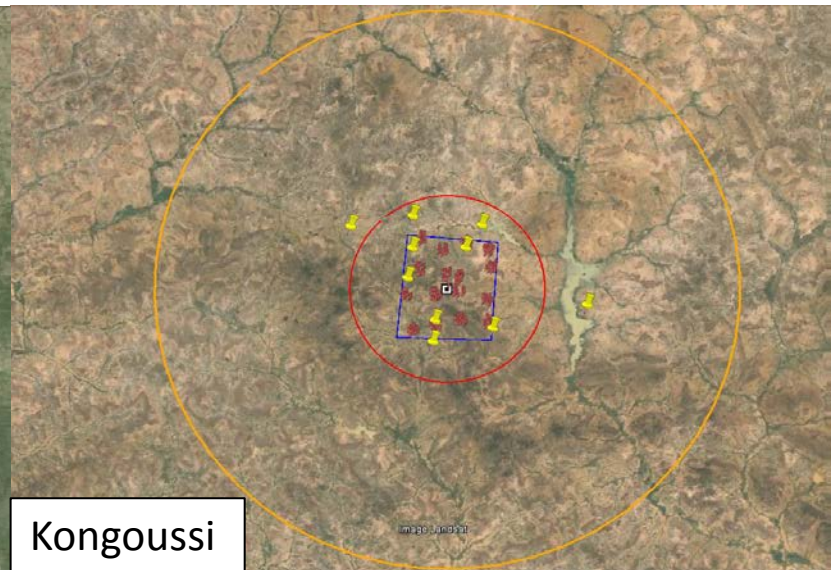
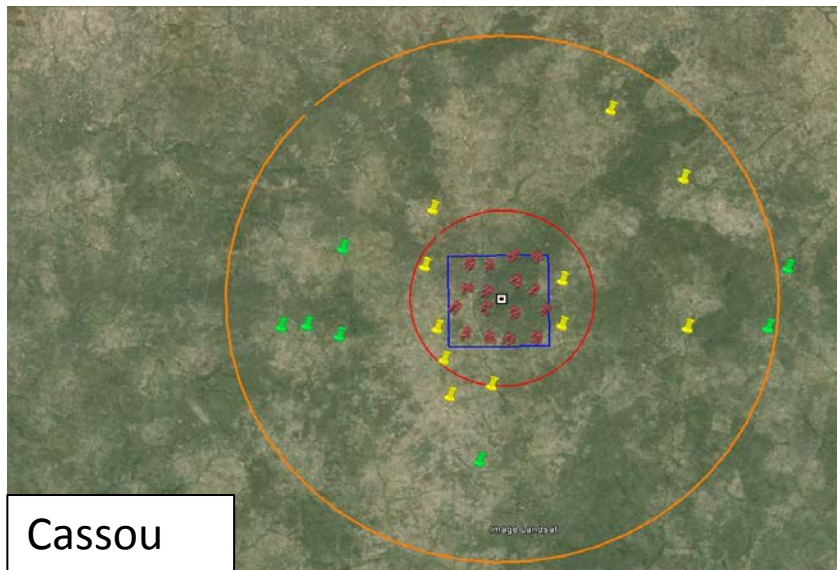
WASL Village Selection

- **Pre-selection**
 - Randomised LDSF points received from Tor
 - Identification of closest alignment with sites selected by country teams
 - Identification of 10km and 30 km radius around centre of LDSF points retained
 - Verification of village distribution within the 30 km radius using Google Earth
- **Randomisation process**
 - Listing of all villages within 30 km radius and allocation of numbered series to each village
 - Generate random numbers and retain the corresponding villages based on their serial numbers
- **Validation**
 - Reconnaissance trip
 - Application of criteria for validation
 - Selection of final 10 villages per site

Household Selection

- **Pre-selection**
 - All Households in ten initial villages / site were eligible for sampling
 - Households determined from Village level survey data
 - Villages considered to be quite homogenous
 - 30 Households / village defined as the minimum target given logistical constraints
 - Actual households selected randomly from list of Households
- **Randomisation process**
 - all households numbered from 1 to x in clockwise direction
 - The numbers were written on scraps of paper
 - Draw then made by a person outside the team.
 - The households selected then sampled

WASL Villages and Landcover



Kongoussi



- Situated in the Center North Region and the Bam Province, Kongoussi is 110Km from Ouagadougou.
- Vast peneplain featuring a few hills and some valleys at an average altitude between 350-400m asl and brown ferrous soils.
- Soudano-sahelian climate comprising 4 months of rainy season and total precipitation of 600-750mm. Temperatures vary from 17°C in December or January to 44°C in April or May.
- Tree savannah in the south and steppes in the north make up the vegetation
- 275,191 inhabitants in 2006 census estimated at 305,859 by 2010 and an urbanisation rate of 9.1%.
- Dispersed households within settlements
- Presence of church, mosque, primary and secondary schools, as well as a departmental road.

Kongoussi



- Agriculture has traditionally been the main economic activity with cereals (maize, millet and sorghum) cultivated during the rainy season and market gardening on the banks of the Bam Lake during the dry season. Unfortunately the cereal production is no longer sufficient to meet the needs of the local population.
- Traditional extensive animal rearing is the second most important activity with cows, goats, sheep, chicken and guinea fowl reared.
- Both artisanal and industrial mining present and increasingly important, but also responsible for much of the migration in the region.

Lake Bam

- Man made dam covering 2,200Ha when full and established for hydro-agricultural purposes
- Normal volume of 41.3 millions m³ and drainage basin of 2,610 Km²

Source : SAWADOGO N. Rodrigue Ulrich

Cassou



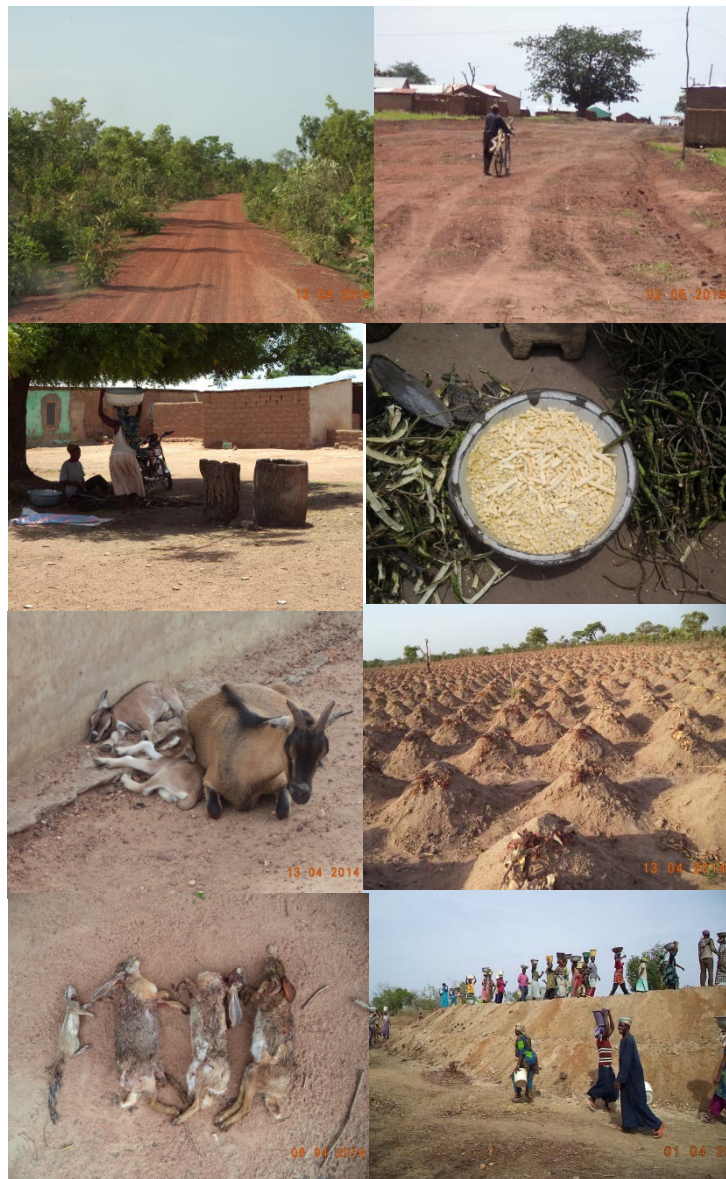
- 100 Km from Ouagadougou, Cassou is within the Ziro Province, which has 4 departments; Bakata, Bougnounou, Cassou and Gao.
- Generally flat relief. South soudanian climate, 800mm to 1,100mm (June to September) of rainfall.
- Shrub and tree savannah, as well as gallery forests (along the Mohoun and Nazinon rivers).
- 175,607 inhabitants of this province (2006 population census figures) estimated at 199,934 by 2010 and spread across 128 villages.
- Four ethnic groups co-habit with native Gourounsi (Nouni) and migrant Mossi, Peulh, and Walla communities.
- Dispersed households within settlements, presence of church, mosque, primary and secondary schools, as well as both Regional and departmental roads.

Cassou



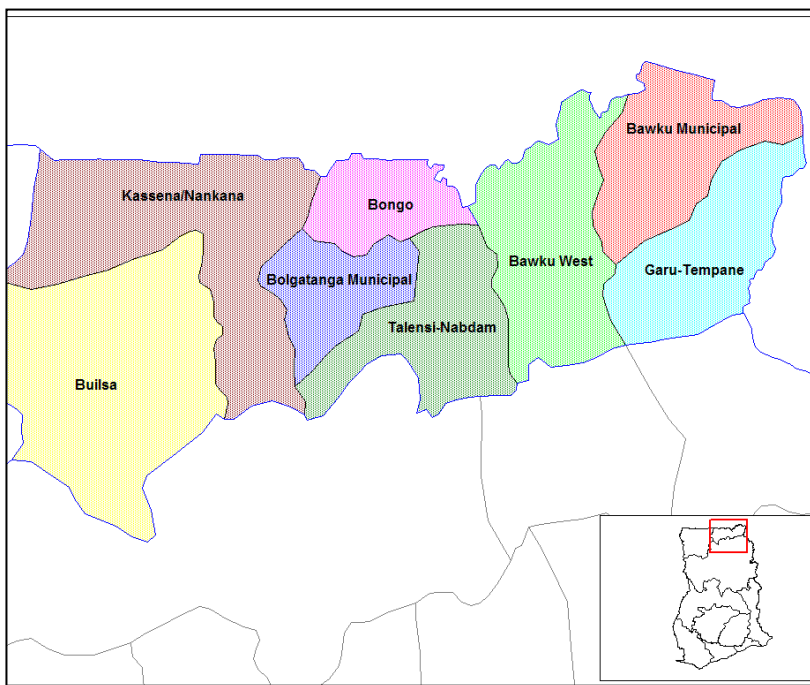
- Agriculture, animal rearing and fuelwood production are the main livelihood activities. Major crops include cotton, red and white sorghum, millet, maize and vegetables. Rearing of chicken, goats and sheep is also common in this area.
- A key feature of Cassou is the presence of the « Chantier d'Aménagement Forestiere » (CAF) of Cassou and Bougnounou.
- Water catchments are determinant for livelihood activities

Walembele



- Sissala East District (7,115km²) is one of nine districts in the Upper West Region of north Ghana and within the Kingdom of Dagbon. It shares a 300km border with Burkina to the North and its capital is Tumu.
- Gently undulating topography between 330 - 365m in the northern to 220m and 290m in the Sissili valley.
- Guinea savannah vegetation belt with grasses, and scattered fire resistant trees.
- Population: 60 992 hab (2014), density: 7,2 hab./km² with high in-migration of Fulani (Peuhls).
- Ethnic groups include Sissala (80%), Fulani, Dagarti and some Akans. The Sissala are further divided into castes: the hanviarahs, kpeviarahs, buviarahs, yebaviarahs, heliviarahs etc.
- Highly dispersed settlements at least 10Km apart, but extremely clustered houses sometimes contiguous. Houses are built with mud bricks and roofed with thatch and zinc.
- Important sources of income among the people are: farming (maize, yam, beans, groundnut, rice, cotton, bambara beans, etc.) , livestock rearing (sheep, goats, pigs, poultry) and trading.
- Domestic firewood, charcoal, construction and fencing material and fodder amongst available ecosystem services.

Bawku



- One of nine districts and municipalities in the Upper East Region of north Ghana, Bawku Municipal District (1,275 km²), has as its capital, the city of Bawku.
- International boundaries with Burkina Faso (North) and Togo (to the East).
- Highest point of the Upper East Region. Generally low (120-150 metres asl.) and slightly undulating relief close to White Volta River basin and plateau surfaces elsewhere with mean altitude of 400metres asl.
- Pronounced dry (late November – early March) and wet seasons (May to October) and average total rainfall of 800m per annum.
- Drained mainly by the White Volta and its tributaries. Other streams include Kulupielega and the Poanaba Kayinchingo. Seasonal flooding is a landscape feature.
- Sahel Savannah type vegetation with fire swept grassland separating deciduous trees among which may be seen a few broad-leaved and fire-leached tree species. Forest reserves include Morago West, Kuka and the White Volta basin.
- Population: 69,527 hab (Kusasis (Kusaal) are th2012), density: 140-170 hab./km²
- e indigenous inhabitant population, cohabiting with Mamprusis, Bissas and Mosis but large immigrant populations from other locations in northern and southern Ghana as well as from Burkina Faso, Ivory Coast, Togo, Niger and Nigeria.
- Heavily agricultural area with millet, sorghum, maize, tomatoes, soya beans and onions amongst the main crops.



Village Types

Kongoussi

- Scattered homesteads, easily accessible
- Church mosque, primary and secondary schools
- Departmental road

Cassou

- Forested environment
- Scattered homesteads
- High in-migration
- Church, mosque, primary and secondary schools
- Departmental and Regional roads

Walembelle

- Forested environment
- Clustered homesteads
- High in-migration
- Church, mosque, primary and secondary schools
- Departmental and Regional roads



BASELINE IMPLEMENTATION

Implementation Team 2013-2014

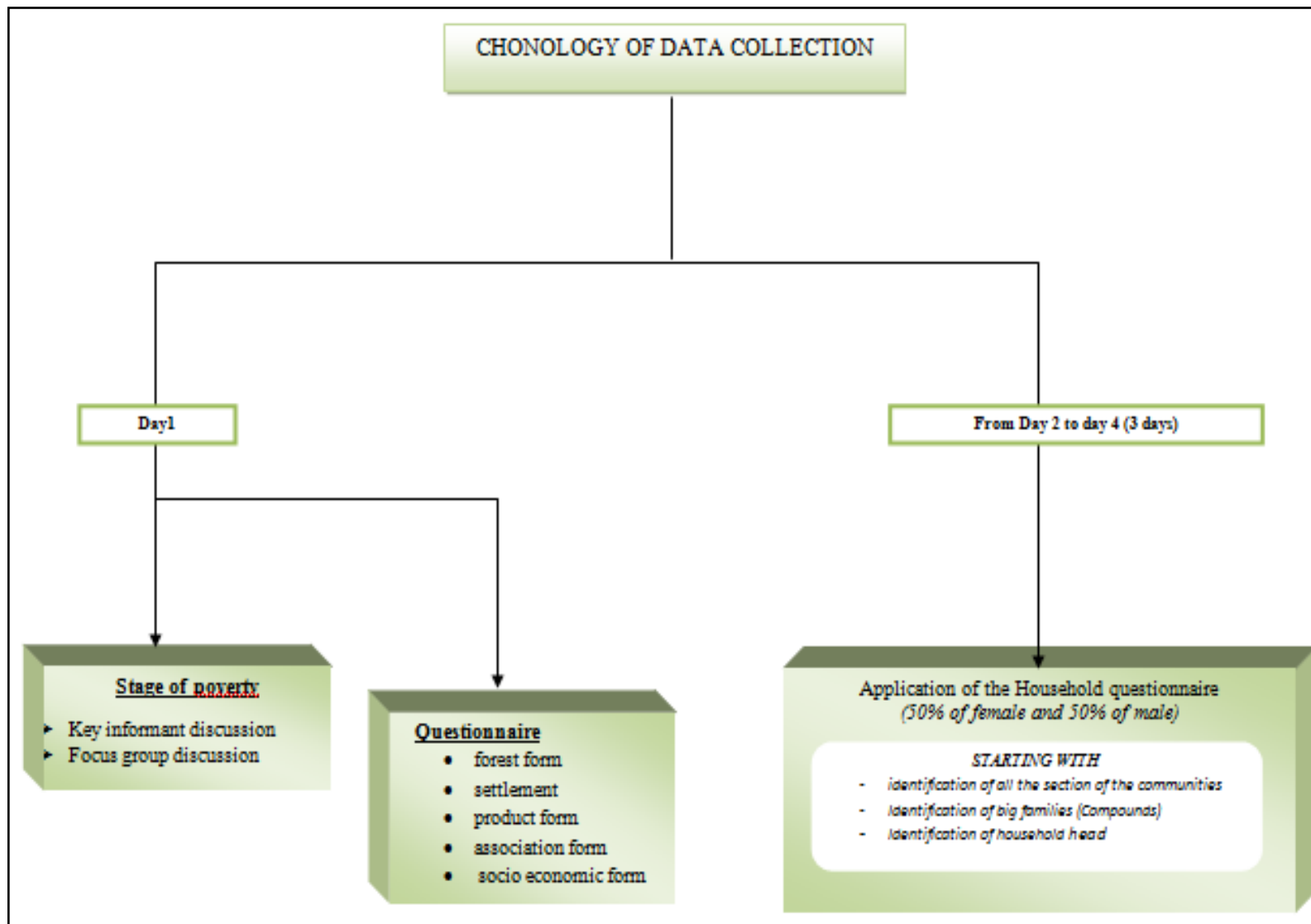
| Component | Resource Person | Role | Institutional Affiliation |
|-----------------------------------|-----------------------|-------------------|---------------------------|
| Coordination | Michael Balinga | Facilitator | CIFOR WARO |
| | Zida Didier | Advisor | INERA- Ouagadougou |
| | Ernest Mensah Abraham | Advisor | UPS Accra |
| Village Socio Economic Surveys | Joachim Binam | Team leader | ICRAF WCA |
| | Rabdo Abdoulaye | Field Coordinator | CIFOR WARO |
| | Kentiga Jean Aime | Field enumerator | Consultant |
| | Birba Sibiri | Field enumerator | INERA- Ouagadougou |
| | Idrissa Sarang | Driver | CIFOR WARO |
| | JOHN A. Akolbila | Field enumerator | TUDRIDEP |
| | ANAFO Edward A. | Field enumerator | TUDRIDEP |
| | VEMIE Sammed | Field enumerator | TUDRIDEP |
| | JUATIE Tornia | Field enumerator | TUDRIDEP |
| Diakité Adama | Field Coordinator | | |

BASELINE IMPLEMENTATION

Implementation Team 2013-2014

| Component | Resource Person | Role | Institutional Affiliation |
|-------------------|-----------------------|---------------------|---------------------------|
| LDSF | Jerome E. Tondoh | Team Leader | ICRAF WCA |
| | Oumar Doumbia | Field coordinator | IER - Bamako |
| | Koura Paulin | Botanist | INERA- Ouagadougou |
| | Haidara Ahmed Moulaye | Technician / Driver | ICRAF WCA |
| Household Surveys | Rabdo Abdoulaye | Team leader | CIFOR WARO |
| | Joachim Binam | Advisor | ICRAF WCA |
| | Kentiga Jean Aime | Field enumerator | Consultant |
| | Idrissa Sarang | Driver | CIFOR WARO |
| | JOHN A. Akolbila | Field enumerator | TUDRIDEP |
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| | VEMIE Sammed | Field enumerator | TUDRIDEP |
| | JUATIE Tornia | Field enumerator | TUDRIDEP |
| | Diakité Adama | Field Coordinator | ICRAF WCA |
| | Karambiri Laota Ella | Field enumerator | Consultant |
| | Norgo Etienne | Driver | Consultant |
| | Ouédraogo Odette | Field enumerator | INSS - Ouagadougou |
| | Sanogo Souleymane | Field enumerator | Consultant |

BASELINE IMPLEMENTATION



Baseline Implementation

Village Survey



Kongoussi (Burkina Faso)

- 10 communities
- 422 participant,
- 392 forms (stage of Poverty, Settlement form, Forest Form, Product form, Association Form)



Cassou (Burkina Faso)

- 18 communities
- 606 participants,
- 718 forms (stage of Poverty, Settlement form, Forest Form, Product form, Association Form)



Walembelle (Ghana)

- 18 communities
- 572 participants,
- 666 forms (stage of Poverty, Settlement form, Forest Form, Product form, Association Form)

Baseline Implementation

Household Survey



Kongoussi (Burkina Faso)

- 10 communities
- 300 households,
- 300 forms (Sentinel landscape household module)



Cassou (Burkina Faso)

- 10 communities
- 300 households,
- 300 forms (Sentinel landscape household module)

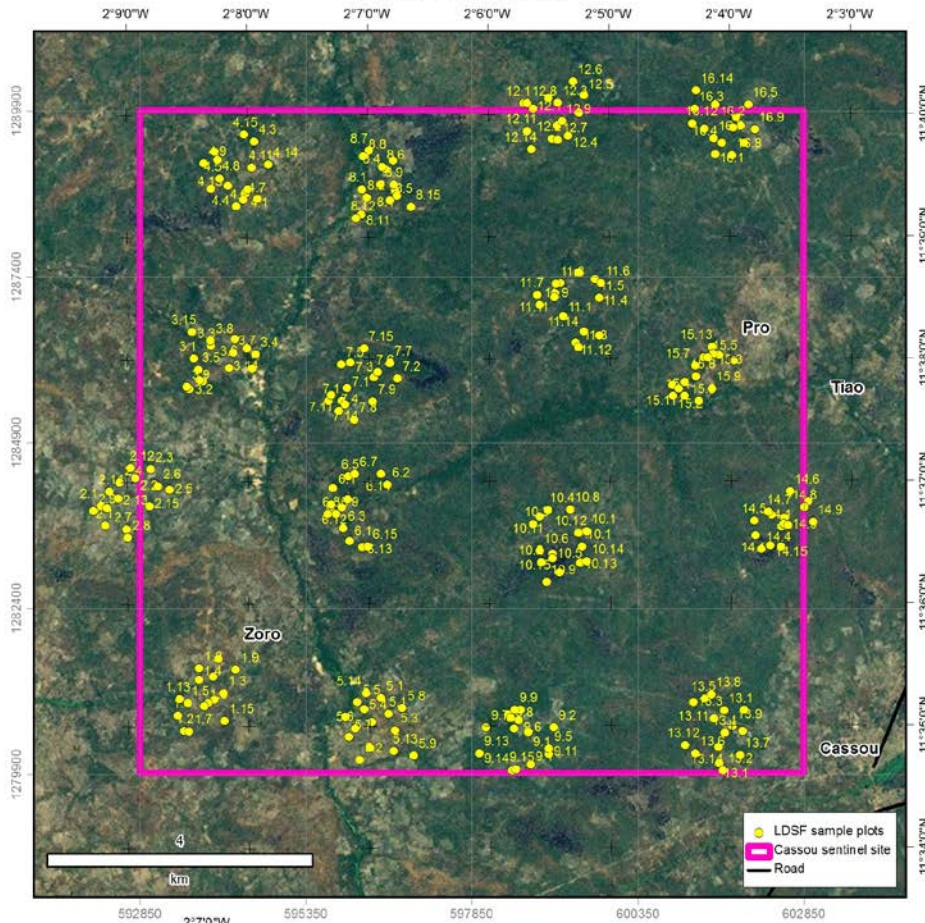


Walembelle (Ghana)

- 10 communities
- 300 households,
- 300 forms (Sentinel landscape household module)

Baseline Implementation

CASSOU SENTINEL SITE



LDSF

Two sites sampled:

- Kongoussi (Burkina Faso)
- Cassou (Burkina Faso)

Two more to be sampled:

- Walembelle (Ghana)
- Bawku (Ghana)



Data sources: administrative areas: CADM database; cities and roads: OpenStreet map; digital elevation model: GLSDEM; satellite image: Bing maps. Coordinate system: CCS WGS 1984 datum: WGS 1984 UTM coordinates: UTM Zone 30 N

Baseline Implementation

| Level | Area (ha) | Number |
|---------------|-----------|----------------------|
| Sentinel site | 10,000 | 4 |
| Cluster | 100 | 16 per sentinel site |
| Plot | 0.1 | 10 per cluster |
| Sub-plot | 0.01 | 4 per plot |



- Land use history and land cover
- Composite soil samples
- Vegetation description
- Biophysical constraints measurement
- Erosion prevalence
- Above-ground biodiversity
- Woody cover and distribution

LDSF ground sampling hierarchy and measurements



Baseline Implementation

Electronic data collection

| | | | | |
|---|---|--|-------------------------------------|-------------------------------------|
| Site: | Date ddmmyy: | Latitude (North): | LDSF Field Form V3 2013 | |
| Cluster: | Photo ID: | Longitude (East): | Country: | |
| Plot: | Elevation (m): | Pos error (m): | Name: | |
| PLOT (1,000 m²) | Slope Up °: | Slope Down °: | | |
| Major landform: | <input type="checkbox"/> Level | <input type="checkbox"/> Sloping | <input type="checkbox"/> Steep | <input type="checkbox"/> Composite |
| Landform designation: | | | | |
| <input type="checkbox"/> Medium gradient mountain | <input type="checkbox"/> Dissected plain | <input type="checkbox"/> Major depression | | |
| <input type="checkbox"/> Medium gradient hill | <input type="checkbox"/> High gradient mountain | <input type="checkbox"/> Narrow plateau | | |
| <input type="checkbox"/> Medium gradient escarpment | <input type="checkbox"/> High gradient hill | <input type="checkbox"/> Plain | | |
| <input type="checkbox"/> Ridges | <input type="checkbox"/> High gradient escarpment | <input type="checkbox"/> Low gradient mountain | | |
| <input type="checkbox"/> Mountainous highland | <input type="checkbox"/> Valley | <input type="checkbox"/> Low gradient hill | | |
| Position on topographic sequence: | | | | |
| <input type="checkbox"/> Upland | <input type="checkbox"/> Ridge/Crest | <input type="checkbox"/> Midslope | <input type="checkbox"/> Footslope | <input type="checkbox"/> Bottomland |
| Vegetation cover < 4% | <input type="checkbox"/> Yes | <input type="checkbox"/> No | | |
| Plot regularly flooded? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | | |
| Plot cultivated | <input type="checkbox"/> Yes | <input type="checkbox"/> No | | |
| | | | Landuse: | |
| | | | Same landuse since 1990: | |
| | | | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | | | <input type="checkbox"/> Private | <input type="checkbox"/> Communal |
| | | | <input type="checkbox"/> Government | <input type="checkbox"/> Don't Know |



Data are
available
at once

TALKING POINTS

- Language:
 - data collection forms & data entry when working across linguistic landscapes.

- Implementation of HH survey
 - Season: agricultural calendar
 - Size of randomised sample
 - Resource implications
 - Technology: GPS, tablets, dictaphones, etc.

- Integrating Gender
 - Village level: split groups? But double time
 - HH level: Sections with Qs to be answered by women only???

TALKING POINTS

- Lengthy tools
 - ⇒ Dwindling interest and dismissive answers
 - ⇒ Increased time and financial cost
- Defining Forests
 - ⇒ Which Forest (reserve / private / parklands)
 - ⇒ What boundary for different communities or interests (mining, agro – bussiness, conservation, migrant)
- Season
 - ⇒ Farming season
 - ⇒ Harvest time
 - ⇒ Rainy season

Difficult to mobilise respondents

TALKING POINTS

- **Methods**
 - ⇒ Village samples and numbers
 - ⇒ Increased time and financial cost for « new » methods
 - ⇒ Accuracy of translated tools
- **Administration**
 - ⇒ Procedures across institutions
- **Technology**
 - ⇒ Familiarity with digital tools (tablet + software)
 - ⇒ Security in the field

TALKING POINTS

- Changes to future initiatives
 - Institutional arrangements: one cost center; similar logistics procedures where possible (vehicle hire, etc.)
 - Training of all teams on methods prior to implementation
 - Data collection: shorter tools/increased resources, improved timing viz. Farming calendars
 - Sharing tools, resources and data with other projects to minimize costs on SL and avoid research fatigue
 - Others stemming from lessons learnt as we proceed



**THANKS FOR
YOUR
ATTENTION**

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