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AFS4Food

Agroforestry for food security

First Interim Narrative Report

April 1st – September 30th, 2012

Didier Snoeck, CIRAD (Tree crop based Systems)

15/10/2012

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Content

AFS4FOOD

First Interim Narrative Report

Period: April 1st – September 30th, 2012

1. Description

1.1. Name of beneficiary of grant contract: Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)

1.2. Name and title of the Contact person: Dr Didier SNOECK

1.3. Name of partners in the Action:

- Institut de Recherche Agricole pour le Développement (IRAD)
- International Centre for Research in Agroforestry (ICRAF)
- Centre Technique Horticole de Tamatave (CTHT)

1.4. Title of the Action: Enhancing food security and well-being of rural African households through improved synergy between Agro-Forestry Systems and Food-crops.
Project designator: **AFS4Food**

1.5. Contract number: AURG/031/2012

1.6. Start date and end date of the reporting period: 04/04/2012 – 30/09/2012

1.7. Target country(ies) or region(s):

- **Cameroon**: Centre Province: Bokito, Talba
- **Kenya**: Central region: Mugamba District
- **Madagascar**: East Fénérive and Sainte Marie Island

1.8. Final beneficiaries & target groups :

- Smallholders in the target regions and in similar agro-ecological, demographic and market conditions.
- Farmers and their organisations in the target cocoa, coffee, and clove dominated landscapes.
- Local research and extension institutions focusing on food-crops and AFS in the target zones.
- Stakeholders and policy makers at local, national and regional levels.

1.9. Countries in which the activities take place (if different from 1.7): -

2. Assessment of implementation of Action activities

2.1. Executive summary of the Action

This progress report covers the first semester of the first year of the project; i.e. from 4th April to 30th September 2012.

During this period, we carried out all activities planned in the timetable (see Annex 1). These activities include the following: 1.1. Identification of target plots, farms and communities surveyed; 1.2. Establishment of committees for monitoring and evaluation; and 1.3. Scientific coordination of the project.

In addition to the scheduled activities, we could start some activities of work packages 2, 3, and 4, although they were not planned before the second semester of the first year of the project. These are: 1) the consultation of bibliographic data, the exchanges conducted with researchers from different fields concerned (Kenya, Madagascar, Cameroon), and 2) the early start of some activities on both Kenya and Madagascar sites. The activities could be started earlier because they benefited from other sources of funding. Therefore, during this semester, they are not always recorded in the financial report. But they are reported here because they will directly impact the project activities, either because the results contribute directly to the development of new activities to be undertaken by the project or because they will be continued in the framework of the project.

Two meetings were organized during the first semester: i) a management and financial progress meeting in June; ii) a scientific progress meeting early July.

A budget management application was developed, with the access on Internet and the main database on Extranet, so as to allow rapid and accurate follow-up of financing of activities. Both applications are maintained by the management unit.

The visibility of the project is guaranteed through a bilingual website that has been created.

The current status of the financial report is provided in annex 5.4 for information. A separate financial report will be provided together with the annual narrative report.

2.2. Activities and results

2.2.1. Scientific coordination of the project

The project is divided into five work packages (WPs), each with activities unevenly distributed into the three countries of the project. To organize the activities and manage the project, we have organized two progress meeting and create a tool for managing the budget online.

A management and financial progress meeting was held in June in Montpellier to organize the repartition of the budget between the various activities managed by the work package leaders in collaboration with the country team leaders. During the meeting, we described the use of the new online budget management tool to the team leaders and accountants. Other administrative and financial details were also discussed and settled.

A scientific progress meeting was held in July in Montpellier to organize the start of scientific activities with both the work package leaders and the country team leaders. On this occasion, the country leaders had to describe the progress of the selection of target areas and communities, as well as the selection of the members for the monitoring and evaluation committees. The timetable was reviewed and the timing of activities was confirmed.

The monitoring of the budget is very complex because the activities are carried out by many management units (12) working in many countries (4), and divided into 5 work packages.
Each of these sub-divisions must contain all budget lines. Therefore, we have decided to provide the partners with a friendly tool enabling them to input their own expenses, so they can easily manage their own budget, which is accessible via the Internet. Altogether, because it is managed online, the country (or WP) leaders can follow the progress of the budget corresponding to the activities for which they are responsible. This tool has a twofold purpose:

- Enable a real-time monitoring of expenditure by budget lines of the project: Budget balance and direct expenditures.
- Prepare the financial reports automatically in the format required by African Union.

This tool did not exist at CIRAD or elsewhere, and we had to create it. Its operation is described in Annex 5.3.

Results of Scientific coordination

- Management meetings were done to launch the activities.
- Website is created: www.afs4food.cirad.fr/en.
- Online budget management is created and operational.

2.2.2. Cameroon

Country leader: Dr Olivier SOUNIGO
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WP1: Management

1.1. Identification of target farms and communities

Two areas are chosen for the study: Bokito (Mbam and Inoubo) and Talba (Mbam and Kim). The selected areas are mapped in annex 5.2.1.

Bokito is an area of forest-savannah transition. Cocoa plots can be found on both vegetation types: savannah or forest. The plantation of cocoa on savannah is an innovation initiated by farmers about sixty years ago. They started it despite the recommendations of extension services, which promoted the exclusive use of gallery forests for cocoa planting. Cocoa plots are traditionally complex agroforestry systems (AFS), rich in fruit and forest species associated with cocoa. Experiments were carried out in this area since 2006 by collaborations between IRAD and CIRAD research teams. They studied, with the help of farmers, new types of plots combining cocoa, food, plantain and other perennials (fruit, oil palm and coconut) developed in order to improve the profitability of AFS.

Close contacts between researchers and farmers already exist in three villages: Bakoa, Kedia and, more recently, Tobagn.

Satellite images of AFS plots around Kedia have already been analysed and data validation will be conducted in 2013.

Several traditional and innovative cocoa-based plots have already been targeted for various activities of WP3 (analysis of agronomic performance) and WP4 (study cocoa quality), starting in November 2012.

A mission was conducted in August 2012, to identify several cocoa-based plots that will be studied in this project.

Talba is a pioneering front area, where cocoa is more recent (about 20 years) and where there are large farms, often run by paid workers, and mainly dedicated to cocoa.

Bibliographic data are already analysed and a field mission (scheduled for October 2012) will enable the implementation of a device for both the surveys and the remote sensing works that are planned in this area, as part of WP2 and WP3.

1.2. Creation of multi-sector Advisory committees and External advisory panels

Contacts have been made with the responsible of the programme Improvement of the Competitiveness of Family-run farms (ACEFA) to invite several people involved in the project to attend the project meeting in October. These people have knowledge on the relative importance of cocoa and food crops in South-Western Cameroon and their experience will be very useful for the monitoring / evaluation of the project.

In addition, the head of a Farmers' Organization in Bokito and a spokesman of food crops producers in this region are also participating in the project monitoring and evaluation committee.

1.3. Scientific coordination of the funded operations and the network

A project launch workshop will be organized in October 2012 in Yaoundé. This workshop will include a one day meeting with the committee members and farmers, and a one-day visit of Bokito farms. Participants in this workshop will be:

- Local project researchers (from CIRAD, IRAD and universities) as well as researchers from CIRAD, ICRAF and CTHT based outside of Cameroon,
- Representatives of cocoa farmers and cultivators of food crops in the region of Bokito,
- Representatives of the Programme Improvement of Competitiveness of Family-run farms (ACEFA).

All participants to the meeting will have a chance to share their experience with the project partners, including those from Kenya and Madagascar.

1.4. Capacity building and capitalization of knowledge

No activity has been done during this semester.

Results of WP1

- Two sites identified: Talba and Bokito.
- Identification of three villages and seven cocoa-based plots on which surveys will start in November 2012.
- A lot of work giving information on major issues of WP2, requiring inventory of the existing actions has to be done before starting. Existing works are not evenly balanced between the two sites: Talba and Bokito.

WP2: Characterisation of farming systems and identification of long term drivers at household and landscape levels

2.1. Spatio-temporal dynamics of farming systems

2.1.1. Understand the dynamics of farming systems on the long term

Previous works in the project have already well informed this part of WP2, for both sites.

Existing bibliography shows that the Cameroonian cocoa is booming. Yields rose from 110,000 tonnes in 1980-90 to around 200,000 tonnes in 2011. This yield increase was mainly due to an increase in planted areas, which has been largely at the expense of forest areas. This was particularly visible in the Talba site as in the entire department of Mbam and Kim over the past twenty years. In the neighbouring department of Mbam and Inoubou we selected the second project site, Bokito, because it differs from Talba which is in the forest-savannah contact area. In this area, the expansion of cocoa is mainly observed on the savannah areas traditionally dedicated to cash crops. On the Bokito site, technical systems implemented by cocoa farmers are well characterized, which is not the case in Talba. In the second year of the project, we will begin a characterization of these systems in Talba directly related with the analysis of farmers' strategies.

2.1.2. Analysis of aerial imagery and Geographic Information System

In Bokito, the area of interest has been focused around Kedia village, and the inventory will be based on existing images produced (two aerial photographs dating from 1950, one SPOT 5 image, one recent high-resolution 2004 image) The processing of these images will be done within the framework of a geomatic student internship in 2013 (first half of year 2 of the project), supported by a remote sensing technician in Montpellier.

In Talba, everything has to be done. This activity will start during the first half of year 2 of the project (target area and purchase of images). Ideally, this operation will require one month of field observation, plus 4 months of treatment.

2.2. Evolution of smallholders' strategies and agricultural activities. Contribution of food crops and AFS to food security and well-being of households

2.2.1. Typology, farmers management and strategies

In **Talba**, the bibliographic consultation shows that the expansion of cocoa areas is carried largely by private investors who develop large cocoa plantations (tens or even hundreds of hectares). These farms, managed by paid workers, are essentially based on the recruitment of significant hired labour.

It seems that investors develop cocoa farms where the presence of fruit and food crops could be much less than in cocoa-based agroforestry systems developed since the beginning of the twentieth century, where farms are small to medium (<6ha). The question that arises is whether the rise of these type farms using paid workers is changing cocoa production or not, and what is their effect on the relationship between the production of cocoa and food crop production. A France-Cameroon mission is scheduled from 8 to 18 October 2012 to identify a representative sample of different types of farmers (small, medium, large and very large planters) around Talba for the realization of future surveys. This identification and exchanges will be carried out with local partners (Talba chiefdom, cocoa cooperative leaders, local agricultural college of Talba ...). During the first half of the year 2 of the project, a pair of French/Cameroon students will be commissioned to conduct semi-structured interviews with this sample of farmers. They will also do field plot observations.

In **Bokito**, the literature shows that there is only one class of cocoa-based farms, of family type. By cons, not all have the same strategy on how to grow cocoa on savannah; but we already have quite a lot of data to be analysed. The important thing is that all farms are based on complex types of cocoa-based agroforestry systems.

2.2.2. Evaluation of production systems and farm activities

This part of the activity will be conducted on both sites, in the 2nd semester of year 2 of the project, or the first half of the year 3.

2.3. Modelling and prospecting at farms and landscape levels

No activity has been done during this semester.

Results of WP2

- Bibliography consulted.
- Sites selected for forthcoming surveys.

WP3: Assessment of the productive and environmental performances of AFS and their synergies with food-crops at plot, farm, and landscape levels

Not yet started.

WP4: Characterization of the AFS main-crop quality for value addition to farmers' incomes

Not yet started.

Reason for modification for the planned activity

None

What is your assessment of the results of the Action so far?

The activity was carried out according to schedule. The choice of study areas was an essential step for the realization of future activities.

Potential risks that may have jeopardized the realisation of some activities and explain how they have been tackled.

So far, no major problem has been encountered in the target zone.

Activities planned but not implemented

None

Updated action plan

Activities	Year 1												Implementing bodies
	1st Semester						2nd Semester						
Months	1 Apr	2 May	3 Jun	4 Jul	5 Aug	6 Sep	7 Oct	8 Nov	9 Dec	10 Jan	11 Feb	12 Mar	
1.1. Identification of study farms and communities			x	x	x								CIRAD, IRAD
1.2. Creating Eval. committees & Ext. adv. panels				x	x								CIRAD, IRAD
1.3. Scientific Coordination	x	x	x	x	x	x	x	x	x	x	x	x	IRAD
1.3. Workshops							c			¢			CIRAD, IRAD
1.4. Capacity Building							x	x	x	x	x	x	CIRAD, IRAD
2.1. Spatio-temporal Dynamics							x	x	x	x	x	x	CIRAD, IRAD
3.1. Assess interactions AFS and food crops							x	x	x	x	x	x	CIRAD, IRAD
3.2. Pathways to improve synergies							x	x	x	x	x	x	CIRAD, IRAD
4.1. Characterization of SAF product quality							x	x	x	x	x	x	CIRAD, IRAD
4.2. Drivers of AFS product quality							x	x	x	x	x	x	CIRAD, IRAD
5. Dissemination of results							x	x	x	x	x	x	CIRAD, IRAD

Reasons of changes

1.2. The identification of the core of the evaluation committees was done, but some changes will occur. In particular, the project needs to invite the French funded ACEFA project team to participate. Also, the CORAF project, which was launched in January 2012, has

not yet started, due to late release of the funds. Similarly, the French C2D project has not yet started for the same reasons. The currently selected members will participate to the October workshop. The next meeting will be organized in May 2013.

1.3. The workshop is organized ahead of schedule because we felt important to have all the partners to meet as soon as possible to know each other and schedule the activities. The workshop will be the occasion of a first field cross-visit between the operators.

1.4 One trainee from University of Dschang will do an internship in Talba site to characterise the farms in the framework of activity 3.1.

4.2 Activities will start on time.

5. Dissemination: Postponed, because there is yet no results available. The first publishable results will come at the end of students' internships (year 2).

2.2.3. Kenya

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WP1: Management

1.1. Identification of target farms and communities

As planned, the AFS4Food team in Kenya has identified, in collaboration with local partners (i.e. CRF & Union of farmers' cooperatives of Muranga), the target farms and community in the district of Muranga.

The selected areas are mapped in annex 5.2.2.

Criteria for selecting this target zone have been: 1) the existence a dynamic union of cooperatives with whom the AFS4Food partners have collaborated in a previous project; 2) an altitudinal range from 1200 to 1800 m asl, that allows to encompass a wide range of the agro-ecological conditions and tree-coffee-food associations; and 3) the extreme importance of coffee AFS and food crops in a landscape under high population pressure.

1.2. Creation of multi-sector Advisory committees and External advisory panels

So far, the local advisory committee is not yet constituted, but farmers as well as representatives of local authorities, extension services and representatives of NGO working with local communities have been identified. It is foreseen that the first meeting of the Kenyan advisory committee will take place in October 2012. An external advisory panel is also supposed to be constituted of representatives of producers, local government and public organizations (extension services and NGOs). Following discussions between partners, we feel that one body (i.e. the advisory committee) appears sufficient to give advices and recommendations to the project and that some external advisors with particular insights on specific issues can join the advisory committee meetings whenever necessary.

1.3. Scientific coordination of the funded operations and the network

For Kenya, a management unit has been constituted between ICRAF & CIRAD to follow up financial, technical, and administrative matters and to strengthen the local research network and communication with the coordinator in Montpellier, France, as well as partners in the 2 other countries.

1.4. Capacity building and capitalization of knowledge

The team in Kenya has helped the project management unit to organize the first international workshop that will take place in Yaoundé in October 2012. It has also facilitated the field work of a graduate student (see details below).

Results of WP 1

- One site identified: Muranga. Existing data and previous work are available, but they were not treated with the objective of inquiring directly the issues of WP2.
- Members of the local advisory committee identified.
- First meeting planned for beginning of October 2012.
- Management unit in place.

WP2: Characterisation of farming systems and identification of long term drivers at household and landscape levels

2.1. Spatio-temporal dynamics of farming systems

2.1.1. Understand the dynamics of farming systems on the long term

Consultation of bibliographic records, and discussions with researchers based in Kenya, helped to redefine the scope of the study to assess the major types of coffee based production systems as well as some of their main characteristics and dynamic evolution.

Kenyan coffee growing has known for twenty years a decline in domestic production (from 90,000 tonnes in 1990 to 50,000 tons in 2005). This decrease was largely due to the fall in coffee price which was particularly low between 1998 and 2004.

The main production area is located North-East of Nairobi, on the slopes of Mount Kenya, between 800 and 1500 m. This densely populated area (650 to 850 inhabitants per km²) concentrated 82% of the coffee area in 1992. The Central region has a wide diversity of forms of production (involving cooperative sector smallholders / estates), of usages of coffee, all being different depending on the types of farm households and coffee based production systems. The great diversity is very instructive to identify the determinants of the dynamics at work and the development of scenarios. Due to the high diversity of situations, we decided to expand our study area. Initially limited to the Muranga District, we propose to extend it to the whole of the Central Region.

Indeed, in the situation of Kenyan coffee growing, the relationships between coffee based agroforestry systems (coffee-AFS) and food security of rural and urban households are more dependent on socio-economic reconstruction, productivity changes (of coffee or food crops) and farming techniques that occur inside the historical coffee zones and expansion of areas planted with coffee (here no pioneer fronts).

These elements have therefore led to propose the realization of a first zoning of the Central based on experts' knowledges to better characterize and locate spatially the main types of coffee based agroforestry systems. The objective will be to identify trends on the long period (one to two generations of farmers) and their impact on the relationships between coffee-based AF plantations and food security. This zoning will be based in large part on the stratification criteria that makes sense to local stakeholders (= "local experts"). But, interview guides might also recall the need to question farmers on the validity of local criteria for stratification of the Central region (altitudinal gradient, distance from Nairobi ...).

A ten days France / Kenya Mission has been scheduled during the 2nd semester of year 1 of the project, to give time to researchers based in France and Kenya to conduct all this first

phase of work. This mission will be preceded by the completion of literature searches and analysis of available statistical data to inform the development of the macro-economic framework, meso-economic (coffee and food sectors), and demographic at the national level and at the level of the Central region. It will also be preceded by a preliminary identification of local actors (= "local experts") to develop semi-directive interview guides. A Kenyan agricultural technician, paid by the AFS4Food project, will participate in the preparation and in the execution of this mission, and will be responsible for continuing the work initiated in this context.

The results of this zoning will help choosing, in a consistent manner, the different types of coffee AFS to be studied, and will give a first estimate of their importance in terms of population, cultivated area and agricultural production (coffee and food crops). These elements are essential to generalise our results to all the Central Region and to support the construction of scenarios (Task 3 of WP2).

2.1.2. Analysis of aerial imagery and Geographic Information System

Regarding this activity, everything needs to be done: Identify the area of interest, the relevant years and type of images. In addition, it is planned to coordinate with other projects to share the acquisition of one high resolution image.

This step of WP2 will be prepared during the first half of year 2 of the project for implementation in year 3.

2.2. Evolution of smallholders' strategies and agricultural activities.

This activity has for objective to assess the contribution of food crops and AFS to food security and well-being of households.

In preparation to the visit of a socio-economic expert (scheduled in December 3rd to 12th), the local team has gathered information on the diversity of farms and cropping systems, and identified the main strategies regarding tree crop management, animal husbandry and food-crops systems at farm level in the target zone.

2.2.1. Typology, farmers management and strategies

The first bibliographic readings and initial discussions with researchers based in Kenya helped providing the first elements on the evolution of strategies of farm households and highlighting the need to define before the start of the investigation, the unit of observation relevant to remember.

Approximately 60% of Kenya coffee is produced by 600,000 smallholders grouped in cooperatives. The relative weight of these smallholders in the Kenyan coffee production is decreasing compared to that of large coffee estates. In 1992, the smallholders represented 65% of the national coffee production. Initial analyses suggest that the decline in coffee production by smallholders is not due to a decrease in their number, but rather to a decrease in the areas under cultivation (coffee is replaced by food crops and livestock) and the decrease in yields per hectare due to less intensive crop management, inputs and labour. Although uprooting of coffee has been forbidden for a long time by the "coffee act", it is now well established among smallholders. They have changed from pure coffee plantations to the establishment of production systems that combine coffee with shade trees, fruit trees, food crops (banana, potato, bean, corn ...) and in some areas cattle for milk production. The coffee areas represent not more than 1,600 m² of the utilized agricultural land in farm of 1-2 ha size.

Nowadays, coffee represents only around 15% of farm income in the household. Another noteworthy fact: the average age of smallholders is 61 in the Central region. Due to the degradation of farm and farm size, the younger generation has largely invested in non-agricultural activities: driver, supermarket employees, tourist guide....

Therefore, the question of the future of the coffee-AFS and their role in Kenyans household food security appears largely based on the life strategies of this new generation. Will the young people replace their old farms fathers? What will be the functions that they will assign to these land areas (heritage identity and family self-sufficiency, source of cash income ...)? The answer to these questions depends on the strength of the scenarios that we will be able to establish.

These considerations suggest that the observation unit to adopt for socio-economic surveys probably cannot be limited to household members now living permanently in family farms and agricultural activities alone.

The second part of the mission France / Kenya, already mentioned, will be used to specify the units of agricultural production, consumption, acquisition and management of cash income (farm and nonfarm) and accumulation capital, households in the Central region. Here also, we will rely on the semi-structured interviews conducted with a first sample of households selected according to the results of earlier zoning and the age of the farmer (young / old). Therefore, this sample will concern different types of smallholders and families or entrepreneurs who own the large coffee estates and operate currently in major coffee production areas (average size of coffee estates = 34 ha / estate). These interviews will also seek to identify the first elements of strategies and outlook of these production units and agricultural characteristics (complexity levels of coffee-AFS, cash-crop association, level of technical intensification ...), and their results (agricultural productions, cash income ...). This second part of the mission will be preceded by some bibliographical synthesis of work already done on the characterization of agricultural farms in the Central Region and in particular on the analysis of the results of surveys already carried out within the framework of the CAFNET project, by the Kenyan partner, among 50 farmers in the Muranga area. These factors should enable us to precisely define the observation units to be used for future surveys and to specify the variables to use. The Kenyan agricultural technician will participate in the preparation and execution of this mission and will be responsible for the implementation of semi-structured interviews to further achieve this early knowledge. A French student will also be hired in 2013 to work with the technician in charge on upcoming surveys (semester 1 of year 2 of the project).

2.2.2. Evaluation of production systems and farm activities

This part of the activity should start in the 2nd semester of year 2 of the project or the 1st semester of year 3.

2.3. Modelling and prospecting at farms and landscape levels

No activity has been done during this semester.

Results of WP 2:

- Sites selected for forthcoming surveys.
- Data set on main features for around 60 households.

WP3: Assessment of the productive and environmental performances of AFS and their synergies with food-crops at plot, farm, and landscape levels

3.1. Productive and environmental interactions between AFS and food crops at plot, farm and landscape levels (characterization)

3.1.1. Characterization of indigenous knowledge related to agronomic or environmental functions and uses of the cultivated species (mainly trees species) in a range of AFS and food crop combinations

The characterization of local knowledge on agroforestry practices and key attributes of trees associated to coffee and, to a lesser extent, associated food crops has already been intensively undertaken in the target zone by a previous project. ICRAF is currently working on a publication (expected end of 2012) in that respect. They are also refining the tool to select trees according to their desirable attributes for a beneficial association with coffee and food crops and in accordance to farmers' needs.

3.1.2. Assessment of productive and environmental performance of agroforestry and food cropping systems and of their synergy

For 5 months, a MSc student from Morocco, has conducted interviews of farmers on their household strategies, collected information on the various cropping systems (coffee and food crops) and their management in a series of 60 farms, registered basic information on the main productions in each farm, and completed an inventory of trees species and their position with respect to cropping systems and farm boundaries.

This will greatly facilitate the remote sensing work, based on very high resolution satellite images, that is planned for late 2012 early 2013.

Furthermore, soil sampling and analyses have been undertaken in all the target farms which will allow the assessment of carbon sequestration in the various cropping systems, as well as providing baseline information on soil fertility.

3.2. Pathways to improve synergies between AFS and food crops at plot level

Farmers' interviews already undertaken (see details above) are the first step in the assessment at plot level of the trade-offs and synergies of AFS containing food crops in terms of productivity and services. Clearly, this particular sub-activity will go on during the full duration of the project.

Results of WP 3:

- Species inventory and measurement of all trees present in around 60 farms.
- Database on soil characteristics of target farms.
- Soil samples collected in all the cropping systems of these farms and soil analysis (carbon & nitrogen) undertaken for 188 soil samples.

WP4: Characterization of the AFS main-crop quality for value addition to farmers' incomes

4.1. Characterization of the quality of AFS products at plot level

In Kenya, project partners have already initiated discussion on the sampling strategies to be implemented over the coming harvesting seasons in order to assess the effects of altitude (along an altitudinal gradient going from 1200-1800 m asl), shade (composition & intensity), soil types and coffee genotypes (traditional cultivars versus improved ones recently released) on coffee quality and some biochemical compounds (mainly chlorogenic acid, caffeine ...).

4.2. Drivers of the quality of AFS products at plot level and at first transformation

In Kenya, the main objective will be to assess the influence of the post-harvest process in determining the best coffee quality. Project partners have already identified their strategy towards this objective, namely to take coffee samples in the different coffee processing units that are located at various altitudes in the coffee landscape.

Reason for modification for the planned activity

None

What is your assessment of the results of the Action so far?

Partners are collaborating fully and farmers' representatives and local authorities are also keen to participate and share their views. Clearly, there is already from a previous project (CAFNET: Connecting, enhancing and sustaining environmental services and market values of coffee agroforestry in Central America, East Africa and India) many valuable information that has allowed the Kenyan team to select and work (see detailed below) on target farms. Information of a previous project (CAFNET) has facilitated the process of farm selection and characterization. Farmers are fully collaborating and providing ample information on their management strategies and constraints during interviews while often helping to take soil samples in their various cropping systems.

Potential risks that may have jeopardized the realisation of some activities and explain how they have been tackled.

So far, no major problem has been encountered in the target zone. However, there is a risk in the near future of possible civilian unrest due to the fact that Kenya will go through general elections, including presidential election, next year (March 2013). We anticipate that fieldworks might be difficult during the first months of 2013. Consequently, intensive field activities were already undertaken in May-August 2012 in terms of farm selection and characterisation (see details below) and socio-economic surveys will take place in November-December 2012 instead of early 2013.

Activities planned but not implemented

None

Updated action plan

Activities	Year 1												Implementing bodies
	1st Semester						2nd Semester						
Months	1 Apr	2 May	3 Jun	4 Jul	5 Aug	6 Sep	7 Oct	8 Nov	9 Dec	10 Jan	11 Feb	12 Mar	
1.1. Identification of study farms and communities			x	x	x								CIRAD, ICRAF
1.2. Creating Eval. committees & Ext. adv. panels				x	x				x	x			CIRAD, ICRAF
1.3. Scientific Coordination	x	x	x	x	x	x	x	x	x	x	x	x	ICRAF
1.3. Workshops													
1.4. Capacity Building							x	x	x	x	x	x	CIRAD, ICRAF
2.1. Spatio-temporal Dynamics							x	x	x	x	x	x	CIRAD, ICRAF
2.2. Evolution of farmers' strategies							x	x	x	x	x	x	All partners
3.1. Assess interactions AFS and food crops							x	x	x	x	x	x	All partners
3.2. Pathways to improve synergies							x	x	x	x	x	x	All partners
4.1. Characterization of SAF product quality							x	x	x	x	x	x	All partners
4.2. Drivers of AFS product quality							x	x	x	x	x	x	All partners
5. Dissemination of results							x	x	x	x	x	x	All partners

Reasons of change

1.2. The core of the evaluation and advisory committees are created, but the members might still change depending on the possible evolutions of the project. A meeting is scheduled for December or January.

1.3. The Kenya team will organize the next workshop of international partners in October 2013.

2.1. The Kenyan technician will start the field observations in October. A French mission is scheduled in January or February to work on the satellite images.

2.2. This activity can be started together with 2.1. It has been added to the first year timetable. A French mission will be done in December to supervise the technician's activity.

3.1. This activity will start after March 2013. It has to start after the mission that will occur in December. So, as the activity cannot start in 2012, it will be postponed until after the presidential elections.

3.2. This activity will start after activity 3.1; i.e. in year 3 (2013).

4.1. This activity will start in December 2012.

5. December (will start with the mission report).

2.2.4. Madagascar

Country leader: Dr Michel JAHIEL
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WP1: Management

1.1. Identification of target farms and communities

Two sites were identified: Fénérive East (main site) and Ile Sainte Marie (limited actions).
Features: A large number of on-going works supported by other funding need to be exploited before starting WP2 activities. In addition, it is important to take into account the dynamic variations between Fénérive and Sainte Marie.

The selected areas are mapped in annex 5.2.3.

1.2. Creation of multi-sector Advisory committees and External advisory panels

The composition is as follows:

- Regional Director of CIRAD in Madagascar,
- President CTHT and Executive Director of CTHT,
- Regional Director of Rural Development for the Province of Toamasina,
- Representative of ESSA conference (University of Antananarivo),
- Exporters of essential oil and nails of clove (SCIM and Wu Chao Ying),
- 1 representative of clove farmers.

1.3. Scientific coordination of the funded operations and the network

The local management is organized and is fully functional.

1.4. Capacity building and capitalization of knowledge

See below.

Results of WP 1

- Members of the local advisory committee identified
- Producers and producer groups of nails and essential oil
- NGOs and support structures
- Exporters and importers

WP2: Characterisation of farming systems and identification of long term drivers at household and landscape levels

Recent and on-going works, directly related with project interests are numerous, even though they are currently supported by other funding. The main ones are as follows:

- A historical study of the evolution of the clove industry was conducted by a Master 2 student from ESSA (École Supérieure des Sciences Agronomiques) based on the analysis of existing documents in Antananarivo. This study gave rise to a dissertation and a paper titled "Historical evolution and Current Status of the clove industry in Madagascar," in July 2012.

- A 2010 study financed by CIFOR in Sainte Marie, allowing a first roughing of the diversity of farms involved, their practices, and giving a first assessment of clove based production systems. The report titled: "Study of forestry and agroforestry systems and associated farming strategies in the Ile Sainte Marie on the east coast of Madagascar", 2010 is available.
- A Supagro / IRC Master 2 student internship is being executed in Sainte Marie. It is supported by a Master 1 student internship (also Supagro / IRC). The objective is to clarify the dynamics of clove based systems in the north and centre of the island. The internship will also help to characterize current clove based systems, define the paths and strategies of farms, and evaluate some of the identified production systems by showing the share of income from cloves, from other spices, from other crops, and from off-farm activities. Thirty clove plots were studied on different East / West transects to characterize associated species and estimated yields. The report will be available in October 2012.
- In Fénérive, surveys and observations by a CTHT technician is under progress in three contrasting sites. It characterizes the current clove systems, and establishes a typology of farms while characterizing them. During this semester, he could perform surveys and field observations. Raw field data are recorded in computer sheets. Analysis of the results will lead to computer-assisted treatment using multivariate analysis tools (R software with ADE4 modules, Cluster analysis...) that will be made during the next semester.
- In Fénérive, a master 2 internship on remote sensing and climate risks has begun with the assistance of the University of La Réunion to assess the dynamics of land use and development of clove species in relation with cyclones. The study will be complemented by a cartographic analysis at different periods from aerial photographs and satellite images. The memorandum will be available end of 2012.

Planned activities in WP2 should complement these studies and articulate the different works altogether.

2-1: Spatio-temporal dynamics of farming systems

2.1.1. Understand the dynamics of farming systems on the long term

The clove was introduced in Madagascar in the nineteenth century, first on Ile Sainte Marie, before reaching the east coast of Madagascar. On all sites, cropping systems observed vary between (1) the pure plantation, (2) the complex agroforestry systems and (3) sparse systems based cloves, derived from old plantations mono-specific, where food crops are grown in association. Cloves resource appears aging and strongly impacted by frequent passage of cyclones in the area, and only a few isolated cases of replantation were noticed. Yet Madagascar has an important place in the international market cloves, because it is one of the leading producers and exporters of nails and essential oil leaves. The historical study of the conditions of implementation is necessary not only to understand how the industry has evolved but also to better discern the breakpoints that led to the current situation. From the work of the archives in Antananarivo, supplemented by fieldwork placements IRC Sainte Marie, clearly illuminate the changes that took place and why. Particular, on Ile Sainte Marie, it highlights a stark contrast between 1) the centre of the island, dominated systems based sparse clove, derived from old colonial plantations poorly maintained, promoted mainly by the production essential oil, 2) north of the island, most landlocked, where clove now fits in well maintained complex agroforestry systems, valued by the sale of nails. Field studies have

highlighted the complexity of the relationship between the owners of different types of rights: land rights, right to the tree and right to use nail or leaves, which are divided differently in different sites, and that impact on technical practices.

This work is now completed through an internship done within the framework of a Master 1 course (SupAgro / IRC funded project), this time analysing the documents available in Aix en Provence library. The report is expected by the end of September 2012. Another field study was also launched at Sainte Marie, including two new villages. The course will begin on September 25 for 5 months and will be conducted by a student at ENSIAA / Nancy, still in the project. Starting from October, these activities will be continued within the framework of the AFS4Food project.

In Fénérive in where the clove resource is concentrated, this analysis of the dynamics in time and in space systems has not been addressed as such, although some survey results show, as at St. Mary, the existence of clove agroforestry systems in remote areas. This dynamic analysis, in conjunction with the resource rights, will take place during the first half of year 2 of the project. Ideally, it should be done by a trainee master level 2 supported by a technician in Madagascar.

The project will implement two internships based on the results of two previous internships funded by ESSA (École Supérieure des Sciences Agronomiques, Université de Antananarivo), ENSIAA (École Nationale Supérieure des Industries Agricoles et Alimentaires, AgroParisTech Montpellier), and SupAgro (Montpellier). It will serve preparing the activities to implement within the framework of this project, first in Sainte Marie, then in Fénérive.

2.1.2. Analysis of aerial imagery and Geographic Information System

This activity has started in Fénérive in the course of a master 2 on remote sensing funded by University of La Réunion. We are expecting the results of this internship to start this project activity. Everything will be done in Sainte Marie, the selection of areas as well as selecting the type of images to be processed. As originally planned, this activity will be carried out by a trainee Master 2 on Remote sensing, which will be launched on the first half of the year 3 of the project (April 2014).

2-2: Evolution of smallholders' strategies and agricultural activities

2.2.1. Typology, farmers management and strategies

In Fénérive a typology of farmers was conducted, showing a dichotomy between youth, the more food-oriented retailer and older, faithful to the clove. This typology of farms and systems clove is digging, linking particular analysis of current dynamics and evolutions over the long term. This work will be realized in a Master 2 course on analysis of agricultural systems dynamics (see WP2.1.).

At Sainte Marie, the first results of the work in progress show more of a dichotomy between planters heirs of large estates initial, and others, and among the latter, between those who work in the vicinity of large plantations, often used as labour, and those, like the north of the island, who are distant. These items are digging, specifications also ENSIAA trainee will start (see WP2-1).

2.2.2. Evaluation of production systems and farm activities

At Sainte Marie, the first results of on-going work show a great diversity of production systems and cropping management. They also highlight the importance in family income associated crops clove, whether of fruit or annual food and activities "off farm" (fishing and other tourism-related activities). All this is to dig, object placement also ENSIAA.

For Fénérive site, this activity must be fully realized in year 2 or 3 of the project.

2.3. Modelling and prospecting at farms and landscape levels

Not yet started.

Results of WP 2:

- Bibliography consulted.
- Sites selected for forthcoming surveys.

WP3: Assessment of the productive and environmental performances of AFS and their synergies with food-crops at plot, farm, and landscape levels

3.1. Productive and environmental interactions between AFS and food crops at plot, farm and landscape levels (characterization)

3.1.1. Database of knowledge of farmers regarding the use and physical characteristics of tree species in each project site

A Preliminary inventory of woody species composing the various clove based agroforestry systems has started in the framework of studies done at St Mary and Fénérive (typology).

3.1.2. Type producers of cloves in relation to the diversity of production systems.

The Typology of the producers of cloves in the region of St Mary and Fénérive was conducted within the framework of two stages:

1. Ste Mary Island: in the context of an internship study by SupAgro from June 15 to September 3, under the supervision of researchers from CIRAD-Innovation
   Topic: east west transect description of the island and description of clove cropping systems for 30 plots representative of the type of farming systems identified in 2010
   Objective: To identify the variability plots: types of cultural associations and estimated outputs
   Deliverables: Two reports description of plots and transects on two selected villages
2. Fénérive Region: A typology of the producers was conducted as part of an engineering internship in Madagascar under the supervision of executives of CTHT.

During this semester, field surveys were performed, the processing of records by entering the raw data was made. Analysis of the results will lead to computer-assisted treatment using multivariate analysis tools (software modules ADE4 R, Cluster ...) that will be made during the next semester.

3.2. Pathways to improve synergies between AFS and food crops at plot level

These activities have not been initiated because they are following the typology of producers and production systems.

Results of WP 3:

- No results yet

WP4: Characterization of the AFS main-crop quality for value addition to farmers' incomes

4.1. Characterization of the quality of AFS products at plot level

4.1.1. Comparison of Malagasy species with other major producing countries (Indonesia, Tanzania)

Following a statistical analysis of various results of the chromatographic analyses of clove oil is obtained from various sources in the literature, or from analytical laboratories, an article entitled: ***Bud, leaf and stem essential oil composition of Syzygium aromaticum from Madagascar, Indonesia and Zanzibar***. This article will review the proposed at the Chemistry and Biodiversity journal.

4.1.2. Determination of quality oils and nail sheet in relation to the complexity of the structure (AFS monoculture agro-forest simple and complex) and seasonality of production.

In this context a first study "To optimize the product quality cloves from Madagascar (nails and essential oils): study of their variability factors" undertaken as part of a post-doc researcher in Madagascar was initiated during this semester.

Objective: The overall objective of this study is to evaluate the sources of variability in the quality of the nails, the chemical composition of HE nails, claws leaves and cloves and understand its origins to optimize the conditions production of clove oil that meets the quality criterion sought on the international market: a content eugenol, β-caryophyllene in acetate and eugenyl highest possible.

The scientific question that this study seeks to answer is "What are the determinants of the variability of the quality of the nails, yields and chemical composition of essential oils of nails, leaves and stems of cloves? This variability may have multiple origins (non exhaustive list):

- Individual (difference between individual trees or age-related),
- Climatic (seasonal effects, rainfall ...),
- Inter-annual and geographical (topographical orientation),
- Environmental (types of farming systems, and agroforestry),
- Crop farming practices (trees collection management),
- Post-harvest treatment (storage durations, distillation methods and durations).

To answer the question and unlike numerous works (the vast majority) addressing the issue of the variability of essential oils, the procedure that we developed in this study was based on two principles innovative and that we believe relevant: (i) develop a traceability nails and oil from the development of the plant material collected on each tree identified until analysis, (ii) take into account both climatic factors and factors modulated by cultural practices sources individual variability of the products of the culture of cloves.

In this study the first half was devoted to the acquisition of distillation equipment for the extraction of essences and the distillation of the first leaf samples from sites monitored.

4.1.3. Influence productivity of the tree on the quality of the final product.
This topic was discussed during the semester by the start of the first study in the context of a DEA (University of Antananarivo) entitled: Development of performance clove Madagascar, the effect of endogenous and environmental factors.

The objective of this work is to provide the first knowledge basis about the factors influencing the flowering of clove, and therefore the development of nail performance. This work will also follow several cycles of nails production to quantify the yields alternation. We are interested in the flowering of a quantitative point of view (yield) and the point of view of its development over time (more or less synchronized within the trees and between the trees: effect on the maturity and quality of the nails, many harvest rounds). Given the current knowledge on the clove and more generally on trees flowering, and field observations done in December 2011, three assumptions are made about the nature of these factors:

- Factors specific to the plant: flowering is related to architectural development in terms of structural and temporal, of the tree;
- Environmental factors (temperature, rainfall, soil type, water supply, ...);
- Farming practices, particularly severe pruning trees for distillation can affect flowering.

This semester has been devoted to the implementation of the monitoring phenology and climate in the area of Tamatave and Fénérive and periodic monitoring of the occurrence of different plant organs (buds, branches, leaves) and reproductive (inflorescences drafts , claws and nails).

4.2. Drivers of the quality of AFS products at plot level and at first transformation
This activity will be initiated during the second semester.

Results of WP 4:
- None

Reason for modification for the planned activity
None

What is your assessment of the results of the Action so far?
Partners are collaborating fully and farmers' representatives and local authorities are also keen to participate and share their views.

Farmers are fully collaborating and providing ample information on their management strategies and constraints during interviews while often helping to take soil samples in their various cropping systems.

Potential risks that may have jeopardized the realisation of some activities and explain how they have been tackled
None

Activities planned but not implemented
None

What is your assessment of the results of the Action so far?

The action has just started. The results are not yet available.

Updated action plan

Activities	Year 1												Implementing bodies
	1st Semester						2nd Semester						
Months	1 Apr	2 May	3 Jun	4 Jul	5 Aug	6 Sep	7 Oct	8 Nov	9 Dec	10 Jan	11 Feb	12 Mar	
1.1. Identification of study farms and communities			x	x	x	x	x	x	x				CIRAD, ICRAF
1.2. Creating Eval. committees & Ext. adv. panels				x	x				x	x			CIRAD, ICRAF
1.3. Scientific Coordination	x	x	x	x	x	x	x	x	x	x	x	x	ICRAF
1.3. Workshops													
1.4. Capacity Building							x	x	x	x	x	x	CIRAD, ICRAF
2.1. Spatio-temporal Dynamics							x	x	x	x	x	x	CIRAD, ICRAF
2.2. Evolution of farmers' strategies							x	x	x	x	x	x	All partners
3.1. Assess interactions AFS and food crops							x	x	x	x	x	x	All partners
3.2. Pathways to improve synergies							x	x	x	x	x	x	All partners
4.1. Characterization of SAF product quality							x	x	x	x	x	x	All partners
4.2. Drivers of AFS product quality							x	x	x	x	x	x	All partners
5. Dissemination of results							x	x	x	x	x	x	All partners

Reasons of change

1.1 Extend until December because of the difficulties to get the farmers' association on board. These types of associations are not common.

1.2 The core members of the committees are selected. But some adjustments must be made, and the setting up of the committees shall be specified in December (or January).

2.1. No change.

2.2. The activity will start earlier than scheduled through an internship with ENSIAA.

3.1. The activity will not start before January. The results of the current studies in Sainte Marie Island must be awaited before starting this activity.

3.2. The activity will start after 3.1, therefore it will not start before year 3.

4.1. and 4.2. No change

5. Student's report in Sainte Marie starting December

Outline any links and synergies you have developed with other actions

No other actions are undergone in the region.

3. Partners and other Co-operation

3.1. Cameroon

3.1.1. How do you assess the relationship between the formal partners of this Action

Links with IRAD are very close as both CIRAD and IRAD researchers based in Cameroon are involved in the project. Moreover, they are already working together for several years on the research station near IRAD Yaoundé.

Partnership with IRAD as regarding the implementation of administrative and financial procedures and scientific programming takes place quite satisfactory.

3.1.2. How would you assess the relationship between your organisation and State authorities in the Action countries?

CIRAD has good relations with the Cameroonian authorities and a framework agreement was signed between CIRAD and the French Ministry of Research (MINRESI).

3.1.3. Describe your relationship with any other organisations involved in implementing the Action

Links with cocoa farmers in the region of Bokito existed for over ten years through various research activities conducted by IRAD and CIRAD.

3.1.4. Outline any links and synergies you have developed with other actions

Contact has been established with the representative of the Improvement Programme Competitiveness family-run farms (ACEFA). At first, this program was conducted in two regions of Cameroon; its activities will soon be developed in the same areas than those of the project.

The project will also be complementary of the CORAF project. The main difference between both projects is that the CORAF project is working on the trade-offs in AFS. They mainly study the agronomic trade-offs, while the AFS4Food project, on top of that, also assesses the socio-economic and technologic aspects.

The project will benefit from the French C2D (Contrat Désengagement de la Dette) project which will develop extension work activities. The project has a small research component.

3.2. Kenya

3.2.1. How do you assess the relationship between the formal partners of this Action

• Partner

ICRAF is clearly collaborating enthusiastically and see this project as a great opportunity to refine the tool aimed at selecting the most suitable tree species and identifying the best composition and management options in AFS plots to enhance farmers' food security and income generation according to the specific context of each study site. Once the development of the toolbox in Kenya is achieved and tested, ICRAF is keen to develop a survey methodology for collecting farmers' knowledge in the 2 other project sites (Cameroon and Madagascar) and train partners in these countries on the use of the toolbox.

• Associate

Partnership with the Coffee Research Foundation (CRF), both in regard to the implementation of administrative procedures and financial programming and conduct scientific research takes place quite satisfactory. Moreover, CRF is fully collaborating on WP4 focusing on coffee quality and has already provided valuable ideas to develop protocols to be implemented during the next coffee harvesting and processing seasons.

3.2.2. How would you assess the relationship between your organisation and State authorities in the Action countries?

Exchange of ideas and experience with other third parties involved (including other donors, other government agencies or local government units, NGOs, etc.) has already taken place between AFS4Food partners and other NGOs promoting indigenous tree planting in farms in neighbouring districts.

3.2.3. Describe your relationship with any other organisations involved in implementing the Action

• Final Beneficiaries and Target groups

Farmers are showing interests for the projects and the Union of Cooperatives of Murang'a is very much impatient to put into practice some of the results of the project (i.e. promotion of selected trees to improve soil fertility and diversify farmers' revenues, improved management of coffee processing unit for coffee quality).

3.2.4. Outline any links and synergies you have developed with other actions

The CAFNET project (Connecting, enhancing and sustaining environmental services and market values of coffee agroforestry in Central America, East Africa and India, financed by EuropeAid/121998/C/G - Programme on Environment in Developing Countries) was undertaken in Kenya from 2007 to 2011. This has greatly helped to identify the target zone, local partners (particularly farmers' cooperatives) as well as key stakeholders to involve in AFS4Food. Furthermore, experience and tool (i.e. the tool aimed at selecting the most suitable tree species and best composition and management options in AFS plots) will benefit not only to Kenya but the 2 others countries as well.

3.3. Madagascar

3.3.1. How do you assess the relationship between the formal partners of this Action

Where applicable, describe your relationship with any other organisations involved in implementing the Action:

CTHT is the body responsible for the implementation of actions in Madagascar. It works closely with the University of Antananarivo (Graduate School of Agricultural Sciences), with private sector (exporters and importers).

Furthermore, in order to facilitate exchanges with the administration and stakeholders in the clove sector, the project has requested the involvement of CIRAD in Madagascar, CTHT, Rural development department, ESSA (University of Tananarive), exporters of clove and essential oil, and farmers associations.

3.3.2. How would you assess the relationship between your organisation and State authorities in the Action countries?

CTHT and CIRAD are working closely with the regional director of rural development in the province of Toamasina.

3.3.3. Describe your relationship with any other organisations involved in implementing the Action

CTHT and CIRAD are doing research activities and surveys in the area with the support of farmers' organisations, and particularly with clove producers. Moreover, farmers are keen to participate with project partners, and we can assess that relations are good, which will help the project.

The relation with university of Tananarivo is also good, and the project partners are already hosting many students from the university.

3.3.4. Outline any links and synergies you have developed with other actions

The project has benefited from previous projects and we were able to build on existing activities, either because they produced results from which we could build our own most recent activities, or because this project will be able to complement the activities that started in the previous project but should be continued in this project to bring significant results that will match our needs.

4. Visibility

To ensure the visibility of the project, we have created a Web site, available at: http://afs4food.cirad.fr/en.

The logo on the main page represents the three agroforestry systems studied within the framework of the project.

The website is divided in three main tabs:

1. The Project description, including its activities per work-packages and per target zones in the three countries, and the context of its creation.
2. The Partners of the project.
3. The results: Meeting reports, technical and activity progress reports, publications, etc.

The last news informs of the project agenda, and information on crops related to the project goals.

In the member zone, we will share documents only available to the partners.

The European Commission may wish to publicise the results of Actions. Do you have any objection to this report being published on EuropeAid Co-operation Office website? If so, please state your objections here.
I have no objections

Name of the contact person for the Action: Didier SNOECK

Signature: 

Location: CIRAD
TA B34 / 02
Avenue Agropolis
34398 Montpellier Cedex 5
FRANCE

Date report due: 20 October 2012

Date report sent: 15 October 2012

5. Annexes

5.1. Timetable

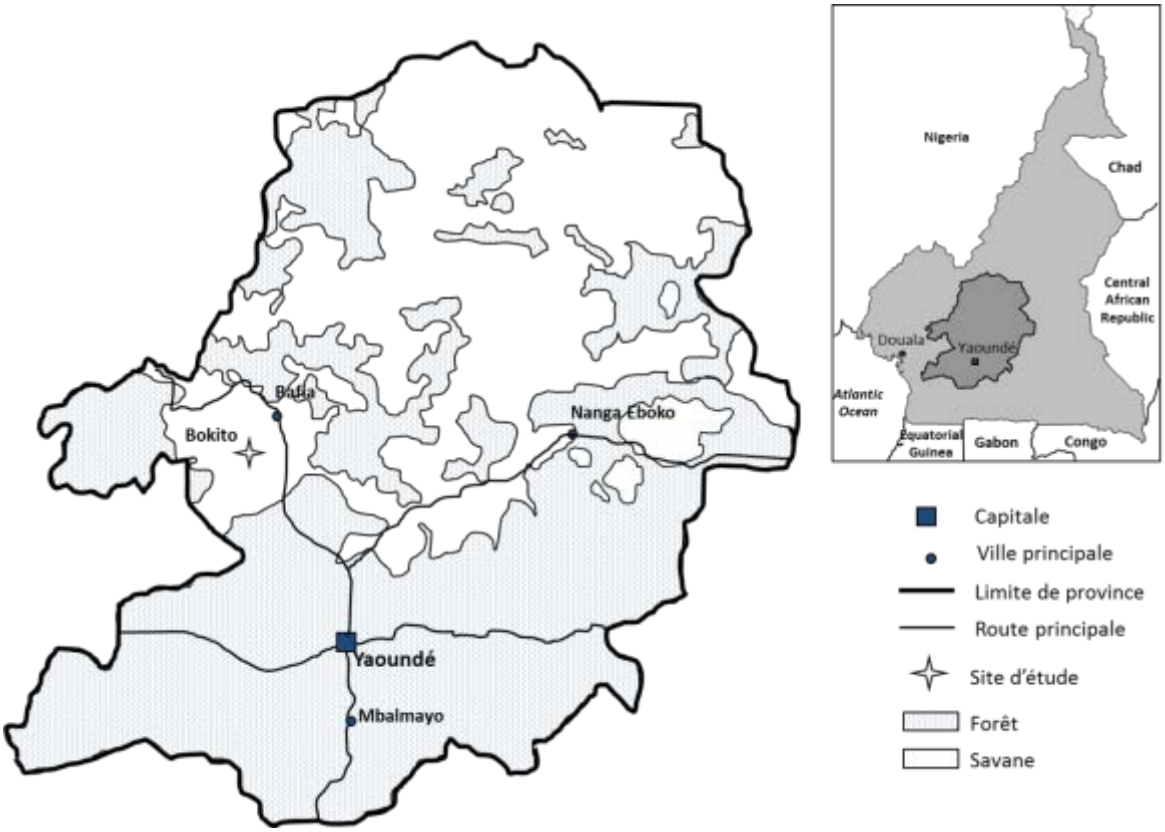
The duration of the action will be **36 months (3 years).** The table shows the duration per activity:

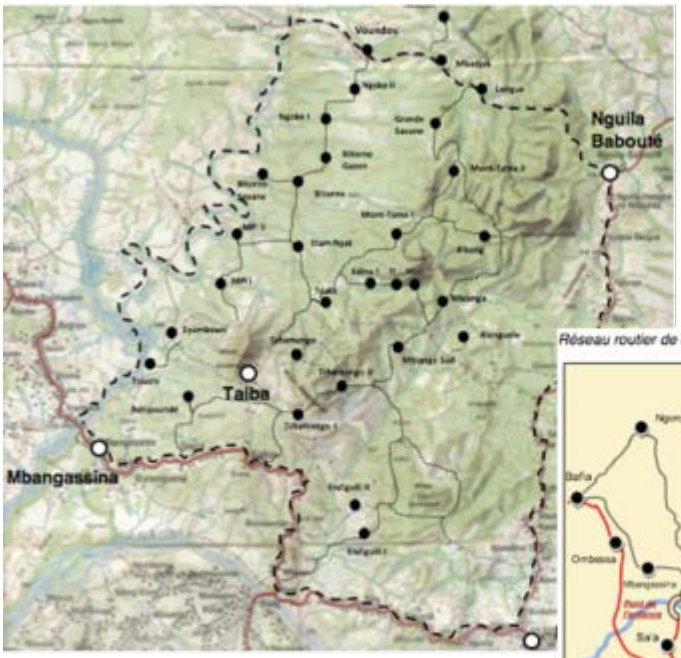
Activity	Year 1												Implementing body
	Semester 1						Semester 2						
Month	1 Apr	2 May	3 Jun	4 Jul	5 Aug	6 Sep	7 Oct	8 Nov	9 Dec	10 Jan	11 Feb	12 Mar	
1.1. Identification of study farms and communities	x	x	x										All partners
1.2. Creating Eval. committees & Extern. advisory panels			x	x									All partners
1.3. Scientific coordination	x	x	x	x	x	x	x	x	x	x	x	x	All partners
Workshops										C			IRAD
1.4. Capacity building							C M	C M	C M	C M	C M	C M	IRAD + CTHT
2.1. Spatio-temporal dynamics							x	x	x	x	x	x	All partners
3.1. Assess interactions AFS and cash crops							x	x	x	x	x	x	All partners
3.2. Assess pathways to improve synergies							K	K	K	K	K	K	Kenya (CRF and ICRAF)
4.1. Characterization of AFS product quality							x	x	x	x	x	x	All partners
4.2. Drivers of AFS product quality							x	x	x	x	x	x	All partners
5. Dissemination of results							x	x	x	x	x	x	All partners

Activity	Following years				Implementing body
	Year 2		Year 3		
Semesters	3 Apr - Sep	4 Oct - Mar	5 Apr - Sep	6 Oct - Mar	
1.3. Scientific coordination	x	x	x	x	All partners
Workshops		Ken		Mad	ICRAF et CTHT
1.4. Capacity building	x	x	x	x	All partners
2.2. Evolution of farmers' strategies	x	x			All partners
2.3. Modelling and forecasting			x	x	All partners
3.1. Assess interactions AFS and cash crops	x	x			All partner
3.2. Assess pathways to improve synergies	x	x	x	x	All partners
4.1. Characterization of AFS product quality	x	X	x	x	All partners
4.2. Drivers of AFS product quality	x	X	x	x	All partners
5. Dissemination of results	x	X	x	x	All partners

5.2. Target zones

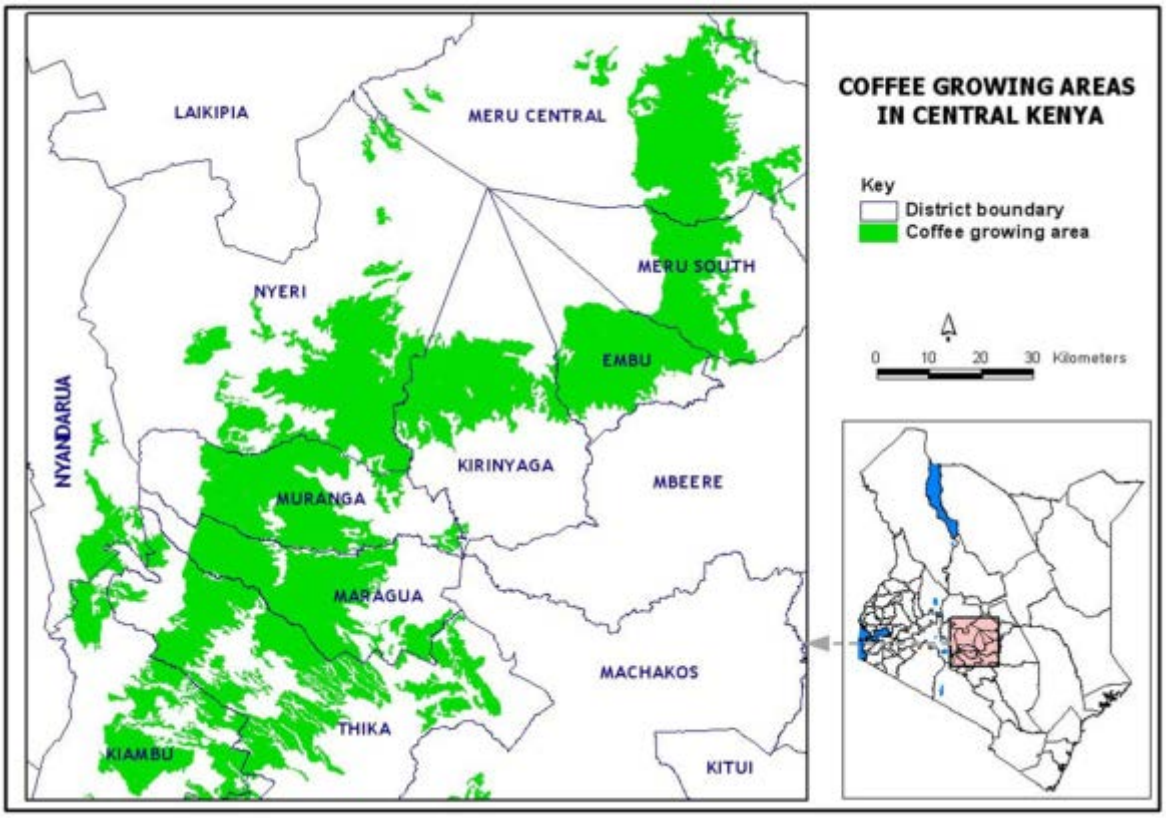
5.2.1. Cameroon



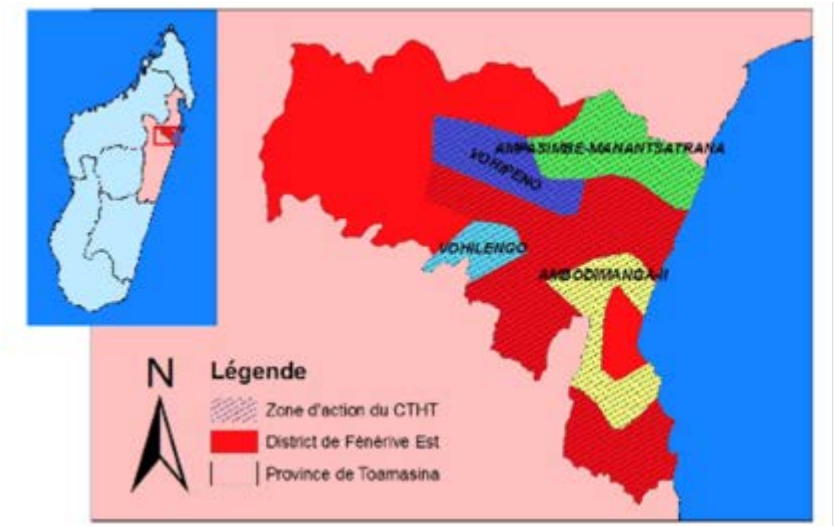


Réseau routier de desserte de la zone de Talba

5.2.2. Kenya



5.2.3. Madagascar



5.3. Presentation of the budget management tool

5.3.1. Objective

The objective of this tool is to ensure effective monitoring and timely follow-up of project expenditures. Indeed, the project activities are divided into 5 WP, which are unevenly distributed across the four countries involved in the project (France, Cameroon, Kenya, and Madagascar). To ensure effective management, it is important that each country (and WP) leader can take decisions based on budget shares allocated to each activity to be carried out in each country. This tool ensures that the budget implementation of the scientific activities that must be performed can be well followed. It is therefore a necessary tool that we realized in the framework of activity 1.3.

This tool did not exist at CIRAD and we had to create it.

5.3.2. Principles

The database is managed budget online. It is located on an extranet server, thus allowing immediate expenditure tracking and reduces the risk of errors. This tool is available to all project partners through an Internet interface. Each partner (or accounting department) enters the expenditure for the part of the budget which he (she) manages. Confidentiality is provided by the partner's username (Login) and password.

5.3.3. Operation

The user accesses the tool directly on the Internet (http://afs4food-bd.cirad.fr). The user must enter his (her) login and password. The different levels of management are linked to the Login. A regular user can view his (her) own budget and can input expenditures for the budget that he (she) manages. User with Country (or WP) level is allowed to view the budgets and expenses of all the partners involved in the country (or WP) activities. An accountant can input or modify the exchange rate(s) of one or more invoices associated with his (her) partner rights, as long as they have not been locked by the chief accountant in charge of the project. The chief accountant can manage the budgets and expenses of all partners. At the end of each accounting period, he (she) will lock the invoices once they are submitted to the AU. The project manager can also create user accounts and manage their access rights.

The tool has four main tabs and two tabs of managing user accounts.

The first tab displays the initial and achieved budget. It is used to monitor the budget.

The second tab displays the list of all expenses. A check mark shows the locked invoices. Details of each invoice include the receipt as attached file.

The third tab contains a menu to input new expenses. Available budget lines for input are filtered according to user's rights.

The fourth tab allows viewing editable invoices. An invoice can be modified as long as it is editable. If an expense is modified, then the corresponding budget line is automatically updated in the budget database.

The fifth tab allows modifying the user's account.

A sixth tab, visible only by the project manager, is used to create users accounts and manage user rights.

The results can be exported in a pivot table so that the realised budget is effortlessly presented in the format required by the African Union.

5.4. Interim financial report

Interim financial report for the period:		Total budget	Expenditures incurred	Balance
From:	04/04/2012	Total budget	Total for the period	
To:	30/09/2012			
	1. Human Resources			
	1.1 Salaries (gross salaries including social security charges and other related costs, local staff)			
	1.1.1. Technical staff Cameroon	11 040	0	11 040
	1.1.1. Technical staff Kenya	21 750	0	21 750
	1.1.1. Technical staff Madagascar	11 254	0	11 254
	1.1.1. Technical staffs France	13 140	0	13 140
	1.1.2. Administrative/ support staff Cameroon	7 200	0	7 200
	1.1.2. Administrative/ support staff Kenya	7 200	0	7 200
	1.1.2. Administrative/ support staff Madagascar	7 200	790	6 410
	1.1.3. Student training Cameroon	1 062	0	1 062
	1.1.3. Student training Kenya	16 620	0	16 620
	1.1.3. Student training Madagascar	14 555	0	14 555
	1.1.4. Researcher Cameroon	34 500	0	34 500
	1.1.4. Researcher Kenya	36 000	0	36 000
	1.1.4. Researcher Madagascar	26 640	6 638	20 002
	1.1.4. Researchers France	396 000	27 335	368 665
	1.2 Salaries (gross salaries including social security charges and other related costs, expat/int. staff)			
	1.2.1. Administrative/ support staff Cirad France	30 000	3 079	26 921
	1.2.2. Student trained in France	17 220	872	16 348
	1.2.3. Researcher Cirad France	183 600	6 319	177 281
	1.2.4. Coordinator Cirad France	48 500	7 818	40 682
	1.3 Per diems for missions/travel			
	1.3.1. Abroad staff assigned to the Action Cameroon	16 941	0	16 941
	1.3.1. Abroad staff assigned to the Action Kenya	22 830	0	22 830
	1.3.1. Abroad staff assigned to the Action Madagascar	20 258	0	20 258
	1.3.1. Abroad staff assigned to the Actions Ethiopia	2 520	0	2 520
	1.3.2. Local staff assigned to the Action Cameroon	41 313	229	41 084
	1.3.2. Local staff assigned to the Action Kenya	7 020	0	7 020
	1.3.2. Local staff assigned to the Action Madagascar	560	183	377
	1.3.3. Seminar/conference participants Cameroon	2 400	0	2 400
	1.3.3. Seminar/conference participants Kenya	2 400	0	2 400
	1.3.3. Seminar/conference participants Madagascar	2 400	0	2 400
	Subtotal Human Resources	***1 002 123***	***53 263***	***948 860***
	2. Travel			
	2.1 International travel			
	2.1.1. International travel Cameroon	16 800	4 042	12 758
	2.1.2. International travel Kenya	16 600	0	16 600
	2.1.3. International travel Madagascar	16 600	0	16 600
	2.1.4. International travel Ethiopia	6 000	0	6 000
	2.1.5. International Travel across Africa	27 000	6 984	20 016
	2.2 Local transportation			
	2.2.1. Local transportation Cameroon	6 480	148	6 332
	2.2.2. Local transportation Kenya	15 250	0	15 250
	2.2.3. Local transportation Madagascar	25 533	44	25 489
	Subtotal Travel	***130 263***	***11 218***	***119 045***

	3. Equipment and supplies			
	3.1. Purchase or rent of vehicles Cameroon	28 000	27 898	102
	3.2. Furniture, computer equipment	4 940	0	4 940
	3.3. Machines, tools	11 930	0	11 930
	3.4. Spare parts/equipment	0	0	0
	3.5. Other (please specify)	9 100	0	9 100
	Subtotal Equipment and supplies	***53 970***	***27 898***	***26 072***
	4. Local office			
	4.1. Vehicle costs	8 480	271	8 209
	4.2. Office rent	0	150	-150
	4.3. Consumables - office supplies	67 280	0	67 280
	4.4. Other services	5 580	0	5 580
	Subtotal Local office	***81 340***	***421***	***80 919***
	5. Other costs, services			
	5.1. Publications	4 320	49	4 271
	5.2. Studies, research	11 575	0	11 575
	5.3. Expenditure verification	20 700	0	20 700
	5.4. Evaluation costs	0	0	0
	5.5. Translation, interpreter	0	0	0
	5.6. Financial services (bank guarantee costs etc.	5 400	0	5 400
	5.7. Costs of conferences/seminars	5 460	0	5 460
	5.8. Visibility actions	260	0	260
	Subtotal Other costs, services	***47 715***	***49***	***47 666***
	6. Other			
	6.1. Material for laboratory trials Cameroon	20 550	0	20 550
	6.1. Material for laboratory trials Kenya	3 000	0	3 000
	6.1. Material for laboratory trials Madagascar	6 000	0	6 000
	6.2. Quality analysis Cameroon	7 500	0	7 500
	6.2. Quality analysis Kenya	13 500	0	13 500
	6.2. Quality analysis Madagascar	33 500	0	33 500
	Subtotal Other	***84 050***	***0***	*84 050*
	7. Subtotal direct eligible costs of the Action (1-6) (excluding taxes	**1 399 461**	**92849**	**1 306 612**
	8. Provision for contingency reserve (maximum 5% of 7, subtotal of direct eligible costs of the Action) (excluding taxes)			
	9. Total direct eligible costs of the Action (7+ 8) (excluding taxes)	**1 399 461**	92849	**1 306 612**
	10. Administrative costs (maximum 7% of 9, total direct eligible costs of the Action) (excluding taxes)	**97 962**	**6 499**	**91 463**
	11. Total eligible costs (9+10) (excluding taxes)	***1 497 423***	***99 348***	**1 398 075**
	12. Taxes[11]			
	13. Total eligible/accepted[12] costs of the Action (11+12)	***1 497 423***	***99 348***	**1 398 075**
	UA FINANCE 50 %	***748 711***	***49 674***	***699 037***