
Report of mission to Kenya from 3 to 12 2012

Project AFS4Food, WP2

Philippe Pédelahore 13.12.2012

1. Context and objective of the mission

This mission is part of the project AFS4Food (Enhancing food security and well-being of rural African Households through Improved Synergy Between food-crops and perennial agroforestry systems), and more precisely in the WP2 of the project, which is responsible for:

- Specify the spatiotemporal dynamics of farming systems zones coffee
- Specify the evolving strategies of farmers, especially contributions of agroforestry systems with coffee and food crops, to improve food security and living conditions of rural populations.
- Contributing scenarios to establish the level of farmers and spatial dynamics of SAF-based coffee.

This first mission is to meet the Country Manager (Philippe Vaast) and local partners (Coffee Research Foundation) project AFS4Food. It also aims to help clarify the realities agrarian economic and social area Central Kenya coffee through the first collection of bibliographic data, statistics, maps and conducting semi-structured interviews with resource persons and farmers.

These elements are intended to clarify the content and timing of research activities to develop in 2013 as part of WP2 AFS4Food project in Kenya.

2. Mission Schedule and people met

The table below shows the schedule of mission and the people we met.

Arrive in Nairobi on 12/02/2012 at 21:30, departure to France 12.12 to 23:40

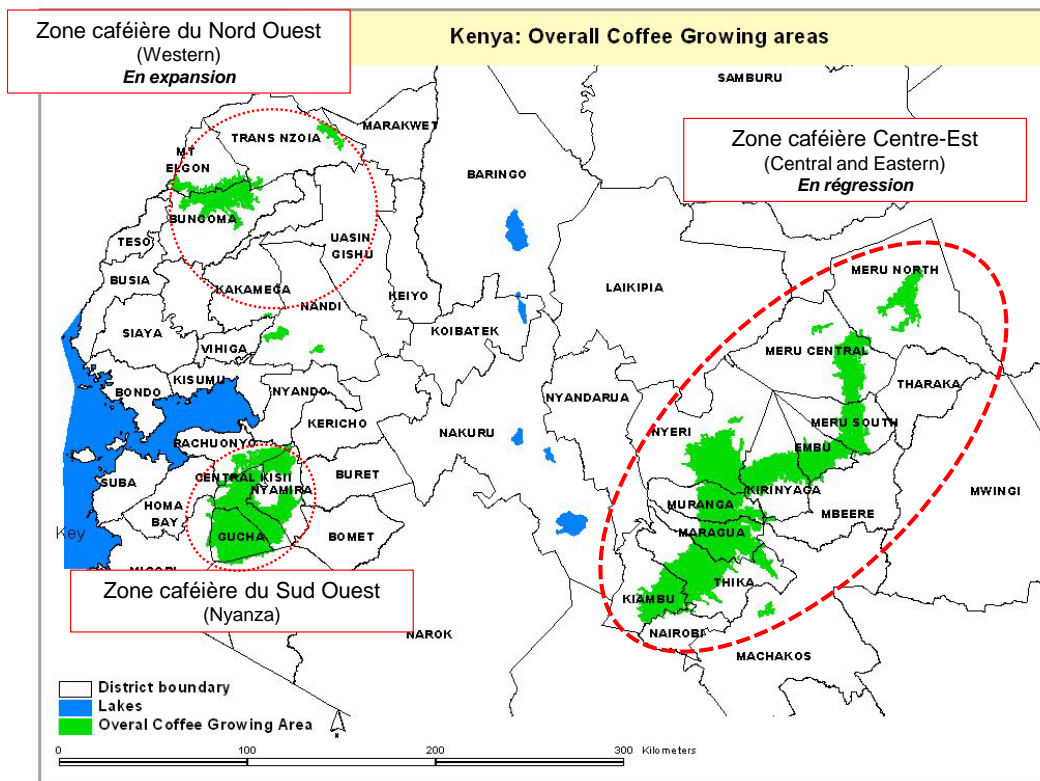
Date	Workplace	Activities	Persons met
3.12 and 4.12	Nairobi.	Meeting with the head "Country" AFS4Food project with partners and resource persons familiar with the study area. Retrieval	* Philippe Vaast, CIRAD * Patrick Mbaturo, Kenyatta University (thesis geographical area Niéry) * Fabrice Pinard, CIRAD * Elijah Gichuru, Deputy Director of CRF, plant pathologist (such 07.23.15.26.55) * Cecilia Kathurina, CRF (tel 07.10.59.10.83) * Consultation documents produced by the project CAFNET (thesis and internship reports)
5.12 to 7.12	Zone Centre coffee	Elements zoning to the actors First approach strategies farmers (2 Estates, 5 smallholder, 1 mill, 1 winery) Test methods and approaches proposed	1 Mickael, a small producer of coffee + food crops (1 ha), 30, area of Thika 2 Eaagads Estate (205 ha/2000 ha), Simon Ongand Morileno, manager, tel 07.25.73.34.59 07.33.84.19.29 or 3 Small tea producer (altitude area, 2.5 ha? ...) elderly (> 60 years), Muranga District (North) 4 Small producer of coffee + food crops (2.5 ha), 78, Muranga District, Kahuhia village Gathirja Sub Location, tel 07.21.29.09.37 5 Visit facility coffee processing, Muranga district. 6 Danson Muchoki, producing small (0.4 ha), having invested in the production of poultry, 50, Muranga District, tel: 07.23.67.76.57 7 Mugama Cooperative, George G. Muhiu, Deputy General Manager, Muranga Town, tel 07.29.44.60.06 8 Ikundu farm (30 ha) owned by Muranga farmers coop. Union Ltd.. Mucheke farm supervisor, Mbombo, along Muranga, Maragua Road, 07.26.86.44.67 9 Peter Gakuo small producer of coffee + food crops, 1.5 ha ha rented property + 1. Thika Northern Muthithi area, tel: 07.27.53.60.80
8.12 and 9.12	Nairobi	First processing of data collected on previous days and proposed activities for 2013 for WP2.	

10.12 to 11.12	Nairobi	Meeting with partners, resource persons and research documents bibliographic, statistical and	Cartographic Keneddy Gitonga, CRF, socio-economist, tel: 07.10.90.37.35 * Kenya National Bureau of Statistics (Ministry of Planning and National Development) * Christian Thiton, Director of IFRA * Library of IFRA
12.12	Nairobi	Definition WP2 activities for 2013 (missions, training ...)	Philippe Vaast

3. Situation general area coffee: coffee production and security

Kenya has three areas of coffee production (Figure 1). The Northwest coffee zone belongs to the "Western Province." The Southwest area covers the province of Nyanza.

Figure 1: Location of the central coffee zone of Kenya. (Source communication P. Vaast 2012)



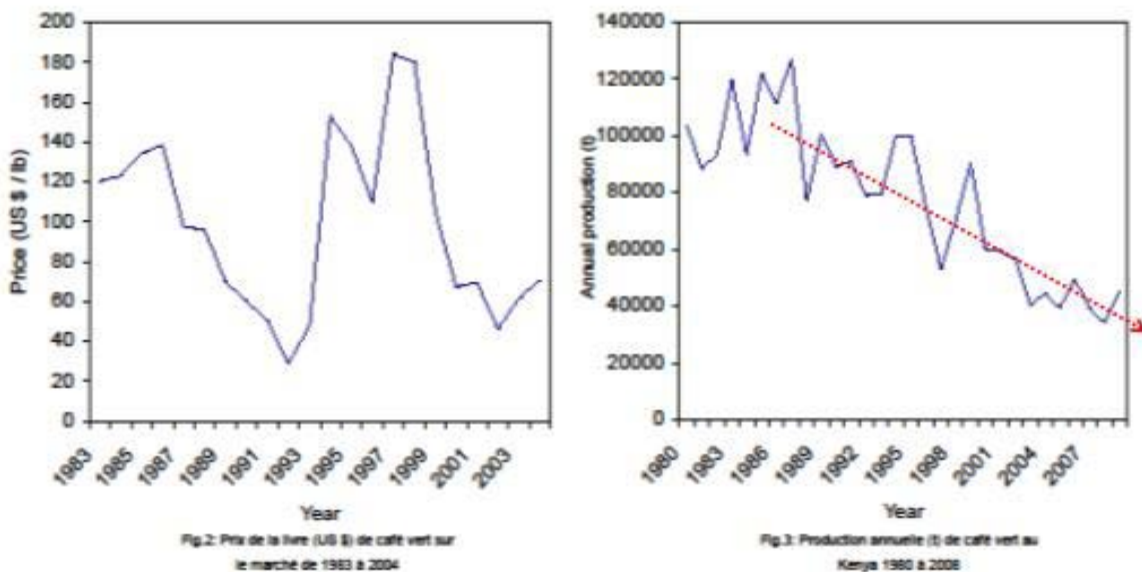
The coffee zone in Central East covers two provinces of Kenya: "Central" and "Eastern". It includes many of the "County" in two provinces: Kiambu, Thika, Maragua, Muranga, etc. It represents 79% of Kenyan coffee surfaces (86,750 ha / 109,711 acres), 90% of Kenyan coffee production (51,076 tons tonnes/56.735) and 76% of small farmers organized into cooperatives

(members / 570.824 434,295 members). These general data (KCTA¹ 2012) are based on the figures of the four crop years (2008-2012). It is in this area that are for the moment most of our analytical work and all field observations made during this mission.

Like all Kenyan coffee production, the central area has seen a significant reduction in its production since 1987. Total output Kenya, about 100,000 tons during the period 80-86, is now around 50,000 tons. She has been halved in 25 years. If lower prices on the international market is generally cited as a major reason for the collapse, the comparison price curves and production (Figure 2 and 3) shows that the improvement in the price level in 1994 , 1998 and 1999 were not enough to stop this trend, and probably sustainable, reduced domestic production.

These changes are related to the fact that most of the decline in coffee prices, other determinants socioeconomic, we can think more structural and sustainable coffee have lost the first place that this culture has spent more than half a century in the Kenyan economy. We will explain in the following chapters the different determinants that can be mentioned to explain the continuing decline in production in the strategies of farmers and in the spaces it occupies.

Figure 2 and 3: Comparative evolution of green coffee prices market and Kenyan coffee production. (Source: Karim Barkoui 2010)



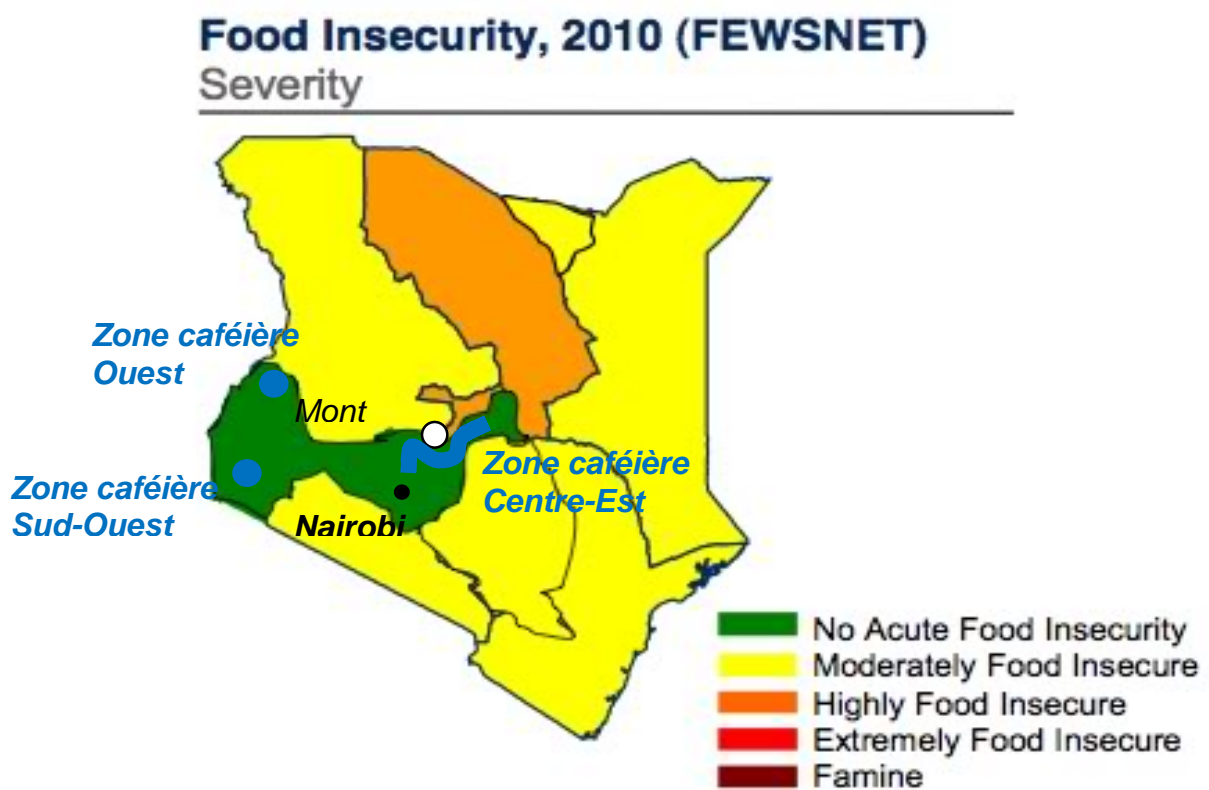
It should be noted however that the overall decline in coffee production Kenyan masks the strong dynamics of plantation knows that the past ten years the coffee zone Northwest (Nyanza). This expansion of coffee surfaces is driven both by smallholders natives of this province and of urban entrepreneurs with capital and major financial investors in this culture (purchase of land and labour). Although representing only a modest moment to share surfaces and coffee production in Kenya, the analysis of the dynamic development of the coffee would

¹ KCTA 2012 : Kenya Coffee Directory 2012. Kenya Coffee Traders Association (KCTA), Nairobi, 150 p.

be quite interesting to conduct with a view to constructing scenarios of relationship between systems with coffee and food security issues and rising incomes. It indeed important to pay special attention to the analysis of "weak signals" that can lead to the emergence of dynamic future may alter the long-term spatial distribution, production forms and types of coffee-AFS (particularly their composition and structure), that is to say, the appearance of the Kenyan coffee production.

On a more general level, we can see that despite the overall decline of the coffee production, and the steady decline in revenues could draw farmers, coffee areas are areas that meet the least problems of food security among rural Kenyan (Figure 4). Is that these coffee zones are in the best watered and most fertile of Kenya the largest area is occupied by arid to semi-arid regions most vulnerable to food safety issues. This is also linked to strategies and diversification of agricultural production activities that have allowed farmers to compensate (in part? ...) Declines in monetary income provided by coffee.

Figure 4: coffee areas little affected by the problems food security? ...



The five interviews during the mission in the coffee zone Central East with smallholder farmers show that while most say they do not encounter severe feeding problems, two of them have any just mentioned that during the lean season (January and February) the quantity and diversity of food is limited. They mention in particular the fact that they have in the absence of corn "fold" on cassava or sweet foods that are available during this period. They also mention that although the main coffee harvest intervenes in November and December, they are paid

by the cooperative in June or July, and that money supply does not help to solve their food problems during wedding.

Such information must first be understood clarified and supplemented by research studies or surveys already conducted on this topic by other institutions or projects and the integration of the supply problems in our own future interviews.

Speeches of growers interviewed during the mission also show that their difficulties are more related to a lack of cash income to meet expenditure priorities they set, such as the payment tuition for their children to feeding problems. Beyond the issue of food security, the question that is asked is that of improving incomes and capacity savings and investment (in education of children, the increase in surface owned in starting a business outside the ground as small livestock, ...) of these small farmers. As noted by the Head of socio-economics of CRF (Coffee Research Foundation) met during the mission, "the first problem is not food insecurity, it is income insecurity!"

4. First elements zoning and diversity of diversification strategies

Analysis evolution of agroforestry systems with coffee requires gathering evidence to establish a first Zoning Central Kenya coffee to specify whether the spatial dynamics and strategies of the operators are the same for all central coffee zone or differences can be identified. These elements are important to clarify the specific study sites will be selected and assess the potential generalizability of the results to be obtained on these sites.

A first map was presented after the launch of the mission carried out in Cameroon AFS4Food October-November 2012 (see Pédelahore mission report in November 2012). Evidence gathered during this mission in Kenya has confirmed most of the first elements of zoning already presented to provide further details, and to map presented below (Figure 5).

The first element of differentiation of the coffee zone is the existence of areas where large plantations, with tens to hundreds of hectares, which have their own processing plant Arabica wet represent the majority of surfaces coffee. This is the case of Kiambu County and Tika (Figure 5) where the "Estates" represent 54% of surfaces and 86% of coffee production coffee. In other County smallholders grouped in cooperatives represent the majority of surfaces and coffee production. At the whole area of the central coffee estates account for 24% of the area but 48% of coffee production as yields they obtain are 1.02 tonnes / ha of commercial coffee against only 0.37 tonnes / ha for smallholders . These estates where coffee is usually planted in full sun and employs the paid labor contrasts with the more complex agroforestry systems of smallholders.

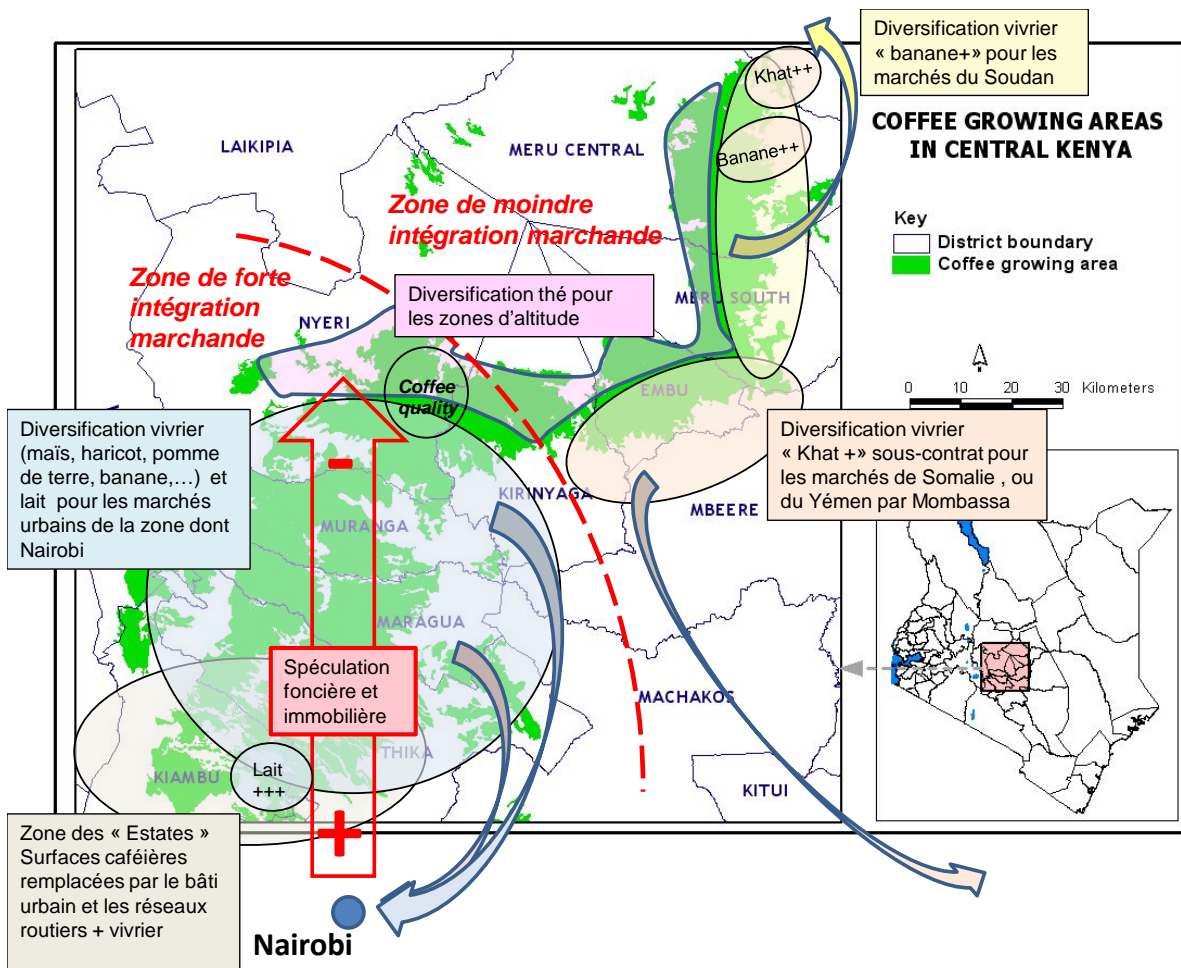
Resource Persons (CRF, Kenyatta University ...) and some cartographic consulted show that the differentiation of territory coffee Central East would be **second** linked to the economic polarization exerted by the Nairobi market. This polarization divide the coffee zone into two zones:

- A zone closer to Nairobi West and boasting a dense road network and good quality. These elements allow farmers to obtain both high prices for their products (many

buyers, low transport costs) and supplement their farm income by farm income off from the city of Nairobi.

- A zone furthest from East Nairobi and outside the main axis Nairobi-Embu-Meru, is poorly served by roads of poor quality. This leads to the presence of a small number of buyers and high transport costs that limit the prices paid to farmers for their agricultural commodities. This scarcity of financial capital confirmed by the work of the World Resources Institute (Figure 6), contrast according to some resource people to the importance of capital held by these rural societies more than in the western zone preserved their traditions of family solidarity and sharing of local natural resources (firewood, ...).

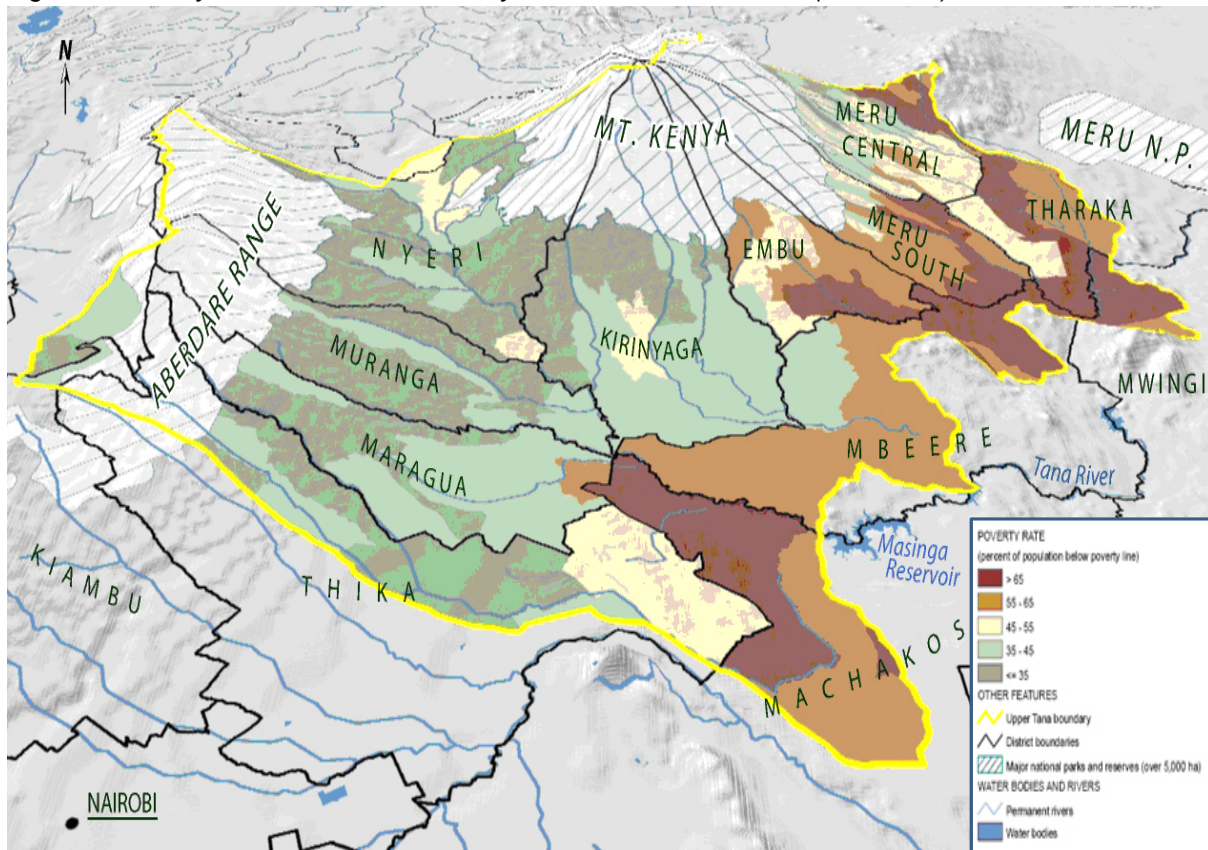
Figure 5: First elements of zoning central coffee and diversification strategies of growers.



Third factor differentiating the dynamics of diversification affects coffee systems is linked to the polarization of the agricultural area in the various sectors and the herdsmen of land and property speculation. The area north of Nairobi is experiencing a major diversification into the production of milk, food production and strong demand for urban land acquisition for the construction of housing. In the East there are always diversify into food crops and to a lesser extent milk, but are also sold agricultural products and markets sometimes especially further north (banana Sudan, and Yemen Khat for Somalia). Some of those resources indicate that

the development of Khat causes tensions between the younger generation and the older fathers of families. They also indicate that there has been advance purchase contracts that cover crops Khat coming that allow the poorest families and get money immediately but for several years alienate their rights to khat plantations. The study of these areas where khat is gradually replacing the coffee would probably valuable lessons about socio-economic changes experienced by these agrarian societies.

Figure 6: Poverty rates for different "county" in the Tana River basin (WRI 2007)



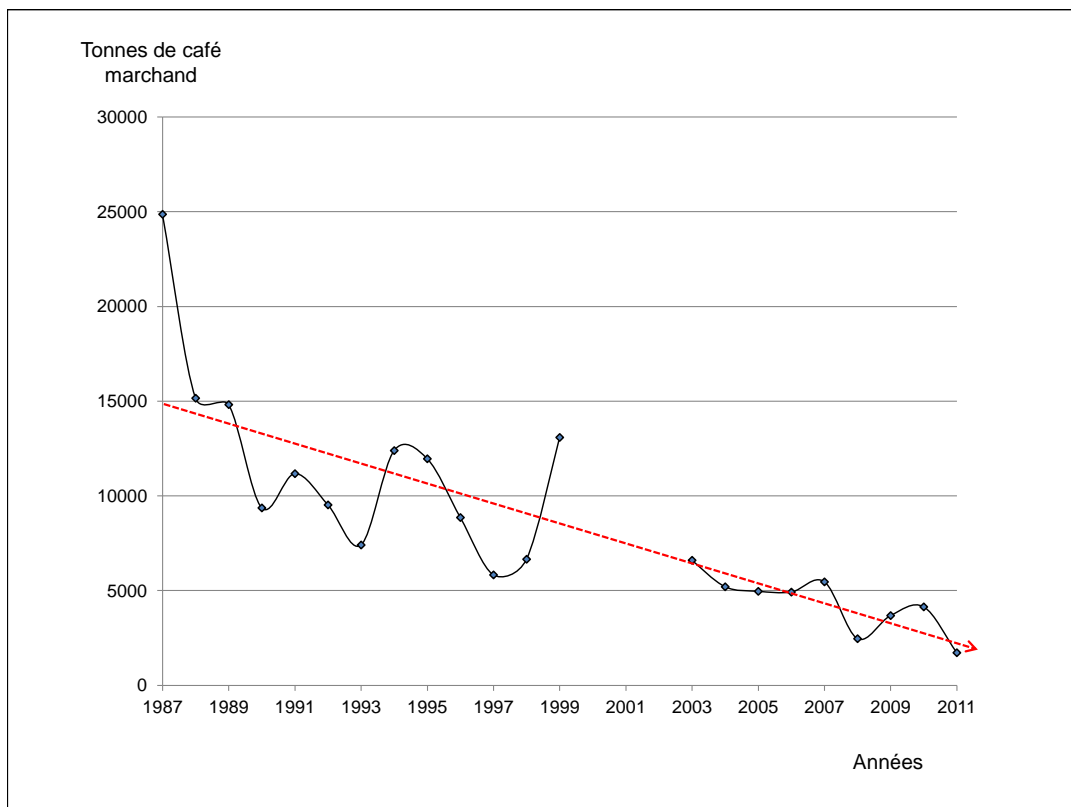
The fourth element of differentiation is related to the altitude. Coffee production and better resist diversification strategies in his favourite floor (1400-1800 m ...). Above this altitude, the tea culture impose as currently the most profitable. It also has the advantage, unlike coffee to provide steady income throughout the year. We met during this mission a small farmer who perfectly illustrated this dynamic which virtually all of its operations was devoted to the production of tea. Good remuneration tea, and low temperatures are not conducive to the production of food crops, seem to encourage these producers do not develop food crops and buy most of their food. In the preferred coffee (1400-1800? ...), And especially below 1400 m (? ...), The dynamics of diversification into food crops are predominant, and lead replacement more or less important surfaces coffee with corn, beans, potato, sweet potato and banana (cassava seems very present in these highland areas), tree planting (greivlea, eucalyptus, ...) for their helpful wood (firewood or lumber) or fruit (avocado, macadamia, mango, ...) and the expansion of the area devoted to food-stall dairy cows ("napier grass" = *Pennisetum purpureum*. Milk production appears for all areas (including the area of tea) one of the main sources of income and activity around this production (sale of food for small farms, motorcycles and pickup transporting feed ...) are present in the landscape and rural life.

This decline in coffee culture seemed particularly strong in the South zone Maragua North Thika where coffee has been largely replaced by food crops and farmers have contacted indicated that they wanted to "hear even more coffee."

Obtaining statistical trend (period 1980-2012) of different agricultural productions. County should allow us to clarify the importance of the dynamics of extinction and coffee dynamic profile of diversifying into food crops and small livestock (chickens, pigs, cows).

Trend data on coffee production collected during this mission to the "Mugama Cooperative", which includes all small planters and Muranga County Maragua well as those of the northern part of Thika, shows the importance dynamics of diversification and income has led to divide by 5 coffee production between 1987 and 2011 (Figure 7). It rose to 15,000 tons of coffee merchant to an average of 3,000 tonnes on four crop years (2008-2011). This decrease is 2.5 times larger than the decline in domestic production Kenyan was divided by two between 1987 and 2011 (from 100,000 to 50,000 tonnes). County Muranga, Thika Northern Maragua and therefore is characterized by a strong dynamic drop in coffee production. This is explained by the decrease in the area planted with coffee and getting very low yields. They are 0.24 tons of coffee merchant / ha, as in the Kiambu area which is also close to Nairobi (KCTA 2012). This level of performance represent half of the average yields obtained by smallholders other "county" in the central zone (0475 tons / ha) and reflects the strong disaffection coffee in the "county" under the influence of Nairobi.

Figure 7 : Evolution of the commercial coffee production of "Cooperative Mugama."



Source: Mugama cooperative, Muranga.

5. Issues and hypothesis

WP2 in Kenya could be structured around **the** following question: What is the current, and how you expect the contribution of agroforestry systems with coffee to food security and to improve the lives of coffee farmers and their **families? Both** hypotheses we could test the following:

- This is currently the largest contribution, and will be more sustainable for complex agroforestry systems for simple agroforestry systems (direct sunlight or coffee with a few shade trees).
- This is currently the largest contribution, and will be more sustainable forms of production for the family and for forms of production employers or capitalists.

6. Choice of study areas and work sites for 2013

The problem and the hypothesis adopted, the zoning elements presented, the objectives of the project WP2 AFS4Food and interdisciplinary objectives lead us to propose the perimeters study and field device following:

Objectives of WP2	Scope of the study	Type data collection
Specify the spatiotemporal dynamics of agrarian systems in coffee areas and their main determinant	National Level Central Province Eastern coffee and coffee Province of Western	Development over the period 1963-2012) of macroeconomic indicators (GDP composition, cost of living, prices of agricultural products, labor compensation, differential Kenyan coffee prices, ...) Collection of statistical data (évol. Surfaces and coffee production, types of planters ...). Expertise mission on the two sites not yet visited: Western Province and District Embu and Meru.
Specify the evolving strategies of farmers , and in particular the contributions of agroforestry systems with coffee and food crops, to improve food security and living conditions	Operators Family: District Muranga (joint site with other disciplines AFS4food) Operators Estate Kiambu and Thika District	1 stage Muranga on 1 stage on Kiambu and Thika
Contributing to establish scenarios the level of farmers and spatial dynamics of SAF-based coffee.	Whole territory Kenyan coffee.	analysis of statistical data and data generated by the two missions expertise and two trainings.

7. Proposals for studies and internships achieve in 2013

7.1) Mission expertise to complete the analysis of the spatio-temporal dynamics

of this mission will add expertise to the continuation of collecting statistical data on the changing macro-economic and demographic that Kenyan production (development of production of various County). It would aim to complete the characterization of the different spatial dynamics and diversification. It would be carried out in close collaboration with Kennedy Gitonga CRF (Mbataru and Mr. Kenyatta University ...).

7.2) Training strategies for farmers: smallholders Muranga.

The outgrower sample surveyed in Muranga area would be based in part on the 62 farms belonging to the network of ICRAF. The choice of these farm families would be based on two criteria:

Criterion 1: altitude	Criterion 2: SAU / Family	Number of units surveyed
Low (1200-1400 m)	0 in 2 acres	7>
	2 acres to	7
Average (1400 - 1600)	0 to 2 acres	7>
	2 acres	7
High (> 1600)	0-2 acres	7>
	2 acres	7
TOTAL		42

The approach and methods are as follows:

- 1 Semi-directive interviews with **10 people resource** for all area of Muranga (local chief responsible of cooperative familiar with the area ...) representing points of view and different functions. The guide talks must be constructed to learn the following:
 - a What changes and dynamics of change experienced, and knows now their area (starting from the time of installation of the coffee in the area) ? Then specify them if they do not spontaneously following:
 - i Evolution of production systems: assessing the relative share of coffee and other agricultural products (including small farms) in% of UAA and farm cash income Family
 - ii Evolution of Practice coffee: complexity of coffee-AFS by adding trees and crops, extensification / intensification...

iii Evolution of families Strategies to feed and live better: assessing the relative share of agricultural labour and employment outside of family labour, provide references quantified the changes in the price of the agricultural MO outdoor assess the importance of off farm activities (migration to the city or circular mobility ...) as % of cash income families, provide points of benchmark figures on total family income, provide quantitative benchmarks on the price of land

- b What is the relative importance (in% of total% of total area) of different types of small farmers in our sample

2 Semi-structured interviews with **30 small** farmers. The guide talks will take account of data already collected by ICRAF and must be constructed so that they can ultimately learn the following:

- a Composition unit residence (age and sex of individuals): discussion to clarify the correspondence (or not) between residential unit, management unit of labor, management unit cash income and accumulation unit.
- b Origin of monetary income of the members of the housing unit: identify from the data already collected by ICRAF relative share (% of total annual income) of different monetary income: coffee, milk, off farm resident members, off the farm family members but non-residents who sends money regularly or for setbacks (illness ...). Give an approximate value of Ksh total annual revenues of the unit of current residence and how they have evolved (in Ksh currents). Inform the evolution of the external MO employee / family labor.
- c Principal expenses of members of the residential unit: relative share (% of total monetary expenditure) devoted to the purchase of food from the hand of work used on the farm employee, payment of tuition fees of children ...
- d Discussion on the level and possible indicators of food insecurity and the level of monetary uncertainty. Evolution in time of the seriousness of these insecurities.
- e Trajectories of accumulation learn about three generations (grandfather, father and son) and their direct relatives (brothers and sisters) become professional (occupation and location of the activity professional), and the path of accumulation of these individuals. Three types of capital are to be filled:
 - i Human capital: education / qualifications and skills (mechanic trained on the job, construction worker
 - ii Capital Land: Evolution of land area owned by each generation of the male line studied (grandfather, father, son), indicating that comes from the legacy and potential purchases.
 - iii Physical non-land capital: motorcycle, vehicle, pick-up, home ...
- f Discussion on the evolution in time strategies investment or a more general strategies for a better life and a better future for her children.

7.3) Training strategies for farmers (Estates) and agricultural workers.

The sample of "Estates" in the surveyed area Kiambu and Thika would be based on two criteria:

Criterion 1: Size Estate	Criterion 2: Status / Nairobi	Number of units surveyed
Low 10 to 50 ha	near (<20 km)	2>
	20 km	2
Average 50to 500 ha	Close (<20 km)	2>
	20 km	2
Important> 500 ha	near (<20 km)	2>
	20 km	2
TOTAL		12

In addition to these 12 Estates, 8 cases of Estate engaged in a process of certification (UTZ, Rainforest, ...) and implementing measures establishing shade trees and agroforestry practices and social measures (school, health, health ...).

Approach and methods would include

- 1 From the bibliographic data, statistics, maps, cadastral and aerial or satellite imagery to locate and quantify the evolution of surfaces originally belonging to coffee and Estates area are transformed into pure crops or agroforestry (trees of shade coffee, food crops) in area real estate or road networks.
- 2 Semi-structured interviews with **responsible financial management and staff of 18** Estates. The guide talks must be constructed to inform the following:
 - a Define the evolution of the share (% and ha) surfaces assigned to the production of coffee and possibly other uses: rentals or sales of land for non-coffee production (crops or agroforestry systems with pure shade trees and food crops), real estate or other uses. Explain the motivations and strategies behind these developments (heritage, financial requirements due to obtaining certification UTZ or Rain Forest).
 - b Specify the types and number of employees (custodians, foreman, technicians ...) and agricultural workers (permanent and temporary) used on the Estate. Specify the type (daily, the task, kg ...) and the level of their remuneration and fringe benefits they receive (housing, transportation, food ...).

- c Specify the turnover of temporary workers (they just two years later they revisit every year ...), the types of individuals involved (age, sex, landowners or not ...), and the relative importance (in %) of different types and their number.
- 3 Semi-directive interviews with different types of employees and agricultural workers Estates (2 individuals / Model / 6 = 36 individuals estates if 3 main types). The guide talks must be constructed to provide the following data :
- a What are the reasons that led the employee or worker to engage in this Estate?
 - b What are the different sources of income and the proportion that the compensation paid to him by the Estate?
 - c What are these projects: he has to work all his life for the Estate (such as temporary or permanent), if not, how does he think "do" to improve its standard of living?
 - d Trajectories of accumulation: learn about two generations (father and son) and their direct relatives (brothers and sisters) become professional (occupation and location of work) , and accumulation of these individuals journey. Three types of capital are to be completed:
 - i Human capital : education / degree and acquired skills level (mechanic trained on the job , construction worker ...)
 - ii Land capital : evolution of land area owned by each generation of the male line studied (grandfather, father, son) stating that comes from inheritance and potential purchases .
 - iii The non-land physical capital : motorcycle, vehicle pick -up, home ...

Discussion on the evolution over time of investment strategies or more broadly strategies for better living and a better future for her children.