

**Analysis of the actions in favour of
the most vulnerable families put into
practice by Inter Aide in the *woreda*
of Hadero (Ethiopia)**

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The vulnerable farmers in Kembata

The Federal Republic of Ethiopia covers a surface of 1,2 million km². Differently by the majority of other African countries, Ethiopia has abundance of water and its soils are generally very fertile due to their geological conformation. Because of this fertility, the rural regions of the country can support a high density of population: with an estimated 90 million of inhabitants, Ethiopia is the second most populous country in Africa, and has one of the highest population growing rate in the world (+3,2%). The great majority of Ethiopians (80%) live in rural areas.



Figure 1: map of Ethiopia highlighting the location of Kembata.

Although the general good conditions for agriculture, food insecurity is still a major problem for a big part of the Ethiopian peasants: famines were common in the past, while currently the poorest rural people still suffer of a chronic undernourishment. In this context, Inter Aide France has been working to enhance the agricultural production of the most vulnerable farmers in the *woreda* of Hadero.

The *woreda* of Hadero is one of the seven *woredas* composing the Kembata zone, a province of the wide Southern Nations and Nationalities People's Region (SNNPR), situated in the south of the country.

Kembata is a small (1.356 km²) mountainous rural region situated between 1.500 and 3.000 meters a.s.l. There are four main seasons in this area: the small rainy season (*Belg*) from February to April, the small dry season, the big rainy season (*Meher*) from June to October, and the big dry season. High precipitations and good soil quality have permitted to the local population to grow to an estimated 700.000 people, mainly composed by small-holder farmers. With an astonishing 500 inhabitants per square kilometer on a rural area, Kembata is one of the most densely populated regions of Ethiopia (that has 75 hab./km² on the national average) and of Africa too. Because of that, Kembata environment has no more natural forests and the land is almost completely occupied by agricultural exploitations.

In this context, human pressure on natural local resources is very strong; this explains the asymmetry between the available resources and the primary needs of the peasant families. The strong demographic growth has caused a high fragmentation of land and currently the average farm in Kembata occupies only half hectare (the most vulnerable farmers possessing even less), while the average peasant family is composed by 6 people to feed. This situation has been causing an overexploitation of land and a decrease in the productive capacity of the soil.



Figure 2: in Kembata there are 4 to 5 children per woman on average; population growth rate and density are very high.

The high demography has engendered also a competition between human and animal food production, and has brought to the diminution of common pastoral lands and fodder production. This has caused a high mortality rate of the livestock, especially during the dry season. Indeed, it is very rare that a vulnerable peasant family arrives to possess an animal because often the necessary resources to feed it are impossible to produce or to buy. The lack of animals in the agroecosystem implies less food security, a lack of labour force for agricultural works, and a lack of manure that is the cause of a further decrease of soil's fertility. If we add to these data the fact that Kembata is a mountainous region suffering high soil erosion because of

deforestation and generalized lack of long-term management of the soil, it is clear why the decline of soil fertility has been constant in this region.

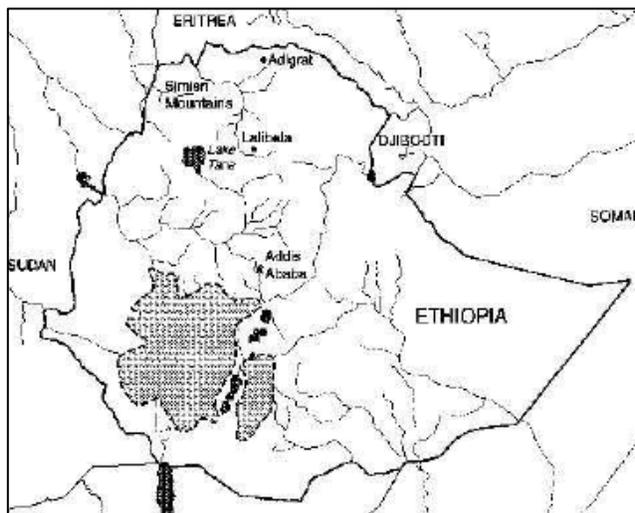


Figure 3: area of enset cultivation

Kembata lies approximately in the middle of the area characterized by the cultivation of the enset (*Ensete ventricosum*), an evergreen perennial herb native of southern Ethiopia and belonging to the family of the *Musaceae*, for this also known as “false banana”. Enset is largely cultivated in the whole Kembata because it shows a very good resistance to the climate hazards (like droughts) and generally represents the most important crop of Kembata people’s farms, as well as the basis of their diet.

Several enset plants can grow on a relatively small surface, giving an estimated harvest of almost 10 tons per hectare. As stated by the FAO: “enset provides more amount of foodstuff per unit area than most cereals. It is estimated that 40 to 60 enset plants occupying 250-375 square meters can provide enough food for a family of 5 to 6 people.”¹

Generally, enses are planted in the area just around the *tukul*, which is the most fertilized part of the farm. The plants get mature during a cycle of 5 to 6 years, during this time they grow very high and tight, and they create a “belt” that protects the home garden from wind and creates a private environment for the peasant family around its home. In Kembata, the quantity and height of enset plants around the *tukul* reflect the socio-economic status of the peasant family, the lack of enset is hence a clear marker of poverty and vulnerability. In fact, the enset is also an economically important crop: part of the plant can be used for the production of a good quality fiber suitable for the creation of ropes, twines and baskets; dry leaf-sheaths can be used as packing material; while the entire plant can be used to feed the livestock.

¹ Country Information Brief, FAO, June 1995

However, being an evergreen perennial plant, the enset is overall a strategic reserve of food for humans, and it can be consumed during the dry season when no food-crops are anymore available. This is especially true in the case of the most vulnerable farmers: because of food shortage and chronic undernourishment, many of these farmers have no other solution but to consume immature ensets during the dry season and, doing so,



Figure 4: enset belt around the home garden

these plants do not have the possibility to reproduce. Hence, these farmers overexploit their enset stock, thereby causing gradual losses and disappearance of this important food reserve: if the number of ensets is not large enough to replace the quantity that has been consumed for food, the most vulnerable farmers can lose all their ensets during the time of two or three seasons, entering thus in a vicious circle of food insecurity and increased vulnerability.

Vulnerability is defined as a high degree of exposure to risk, shocks and stress; and proneness to food insecurity: vulnerable farmers do not normally have food reserves since January (at the end of the dry season) until April, when they begin to consume the first production of the small rainy season (*Belg*); during this period they normally rely only on enset consumption.

Vulnerability has the dual aspect of external threats to livelihood security due to risk factors such as climate change, markets or sudden disaster, and internal coping capability determined by assets, food stores, and support from community. When external threats persist and internal coping capability erodes, vulnerability of the households to livelihood failure or food crisis is high. The most vulnerable households are those that are both highly prone to adverse external events and lacking in the assets or social support systems that could carry them through periods of adversity.

It is estimated that between 10 and 20% of the households in Kembata are in a situation of vulnerability. The farms of these peasants cover a very small portion of land (usually between 0,2 and 0,5 ha), they normally do not possess any livestock, part of their land and yield is shared with better-off farmers and, finally, the area consecrated to the enset production is

usually very small, while the pressure existing on current enset stock is very high (on average, the most vulnerable famers consume almost 90% of their enses every year).

In a context of diffused rural poverty, there are several different causes that can push a poor peasant family into the vicious circle of vulnerability and food insecurity: from the outside there are the increased risks linked to the climate change, that can materialize as a drought destroying part of the yield, or a too long dry period causing the death of the livestock. Market can also be an external threat: if the peasant family is producing only one cash-crop and the price of this item drops suddenly, that family has a high risk to fall into vulnerability. Internal threats can be the death of the livestock, or the loss of a family member provoking the lack of labour in the farm, or the continuing loss of fertility of a parcel that finally can provoke the abandon of that part of land.

When a peasant family finds itself in such situations, its members are obligated to find alternative solutions to survive: the most common is to decapitalize through the sale of some assets (part of the yield or an animal). However, because most of the time there are no livestock to sell and the whole yield is not even enough to feed the family, the most common solution for these peasants is to go work outside their farm as daily workers to harvest or to make other agricultural works on the lands possessed by better-off farmers. The salary that they can earn in this way is generally so little (between 20 and 25 ETB per day²) that is not even enough to buy the necessary food for them and their families. In fact, the food products at the local market are often much more expensive than the agricultural products that the vulnerable farmers can sell, hence confirming the socio-historical rule that the peasants sell cheap and buy expensive.

Another common solution is to join the “Safety Net Program”, a program established by the Federal Government of Ethiopia to support the poorest people of the country. The SNP uses the vulnerable people’s workforce to build roads or to do other construction works. The salary provided by the government is of 95 ETB per family member per month but the program requires the presence of an adult able to work 5 days per week and, normally, the workplace is very far from the farmer’s house. This means that if the farmer begins to work for the SNP, generally he has no more time for taking care of his own land.

When a farmer begins to spend more time working outside rather than inside his farms, his soil will lose even more fertility for the lack of cares, hence the vicious circle of vulnerability begins: if the farmer cannot take care of his own land, the general solution adopted is to rent it to other

² Around 1US\$

farmers called share-croppers. The share-croppers are generally better-off farmers that want to expand their production through this kind of contracts, but sometimes they are also vulnerable farmers that have very little amount of land (less than 0,25 ha) and share the land to have more food. This kind of contracts implies generally that the share-croppers provide all or part of the seeds that will be planted on a determined parcel of the farm and they will then share the yield with the family that has provided the land. The share-croppers have all the interest in choosing the most fertile parcels and in maximizing the short-term yields without caring about the fertility in the long term, for this reason the share-croppers are those who most use chemical fertilizers on the parcels they control. Furthermore, when a share-cropping contract is stipulated, it is difficult for a vulnerable farmer to take back possession of his land because the share-croppers are usually in a better position to negotiate, and because if the vulnerable farmer breaks the contract, he cannot expect anymore the support of that better-off farmer.

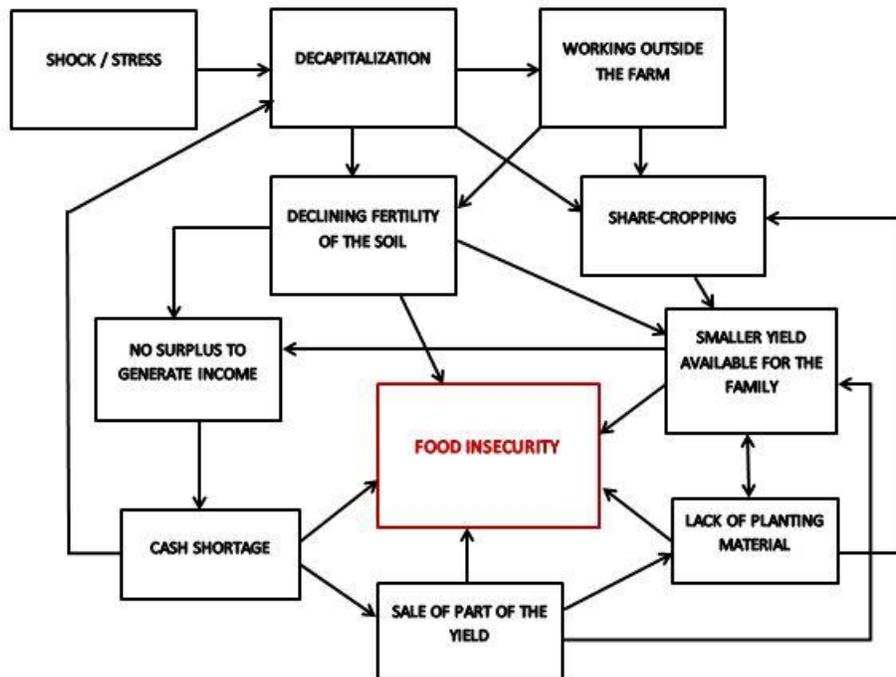


Figure 5: schema of the vicious circle of vulnerability.

In these cases the peasant family has a high exposure to risk because its land does not produce enough food; half of the small yield produced must be given to share-croppers; the time spent on their own land is very little, thus the soil gradually loses fertility; the totality of their income is used to buy food in the local market; and the pressure on onset stock is very high due to chronic food shortage. Under these circumstances, the peasant family is so vulnerable that cannot be able to stand a further external or internal shock.

For all these reasons, it seems clear that an augmentation of total food production is necessary but not sufficient in order to break the vicious circle of vulnerability: it is also important that the vulnerable farmers take back possession of their land, diversify their agricultural production, reconstitute their enset stock, and work to conserve and improve the fertility of their soil.

Inter Aide's approach with vulnerable farmers

In the context of a project for sustainable rural development combining conservation and valorization of local natural resources, Inter Aide France has been working since 2012 with the most vulnerable farmers of the *woreda* of Hadero in order to improve their living conditions. It is estimated that between 10 and 20% of the families of this area are in a situation of harsh insecurity, notably regarding their nourishment. After three years of action, 106 vulnerable peasant families in Kembata have been directly supported by Inter Aide's action, and this number will reach 500 families in the next years.

To improve vulnerable farmers' living conditions it is first of all necessary to break the vicious circle of vulnerability and food insecurity. For doing this, it is important to improve the resilience of these agricultural exploitations, because the external threats due to the climate change are expected to grow in the future and they cannot be eliminated. Resilience refers to the ability of a production system to bounce back from stress and shocks: it is proved scientifically that a higher degree of biodiversity in the agroecosystem is a fundamental factor for agricultural exploitation's resilience, and, in the meantime, biodiversity also contributes to soil fertility, pest management, and improvement of livelihood's food security.³

Furthermore, the diversification of the agricultural production is necessary to face the other important external element that can threaten local farmers' food security: the price volatility of the agricultural products. Before Inter Aide's intervention, the main logic of the local peasants was to produce only one cash-crop (mainly ginger) and then to sell their yield to a little number of buyers, a typical situation of oligopsony in which the few buyers can easily control the price of the crop they want to purchase.



Figure 6: example of diversification of the production in a Kembata farm supported by Inter Aide.

Hence, these farmers had to rely on the uncontrolled fluctuating price of just one crop for their own existence: a situation of high vulnerability. Hence, it appears clear that if the goal is to

³ Many different studies confirm these assumptions, between them "*Biodiversity and pest management in the agroecosystem*" by Miguel Altieri & Clara Nicholls (*Haworth*, 1994) explains the close relationship between resilience and biodiversity. "*Agroecology and the right to food*" by Olivier De Schutter (UNHRC, 2010) clearly links the level of biodiversity with the food security of the peasant families.

improve food security, it is necessary to quit the monoculture for a continual diversification of the agricultural production.

The process of augmentation of biodiversity in the agroecosystem should also be accompanied with an augmentation of the percentage of land dedicated to the production of food-crops rather than cash-crops. Indeed, food-crops are more prone to improve the livelihood's food security because they enhance the availability of food directly on the farm, thus avoiding the risks related to uncontrolled fluctuations of prices in the local market. Finally, a higher availability of food produced directly in the farm means a lower need to consume immature ensets.

Concerning the internal coping capability of the vulnerable livelihoods, it is necessary to protect the peasants' assets, first of all their lands. Land is the most important commodity for a farmer and it seems clear that a strategy that does not take into account the conservation and valorization of the fertility of the soil cannot succeed in improving the vulnerable farmers' food security. Especially in a mountainous region like Kembata where soil erosion is very high, the management of the soil in order to avoid degradation and to restore and conserve fertility is a very important issue for the enhancement of the agricultural production.

However, because it is very difficult to improve quickly soil fertility when there is no livestock in the agroecosystem, it is necessary to find a strategy to support the reintroduction of livestock in the vulnerable farmers' production systems without increasing the competition between human and animal food production.

With the objective to improve vulnerable farmers' living conditions, Inter Aide has been taking into account all these considerations and has been working to enhance the agricultural production of these peasant families while trying to reinforce their resiliency and their food security. Focusing on the fundamental importance of land, the project has been supporting diversification and recapitalization of vulnerable farms while durably protecting the fertility of their soil. The main actions of the project are:

- Capacity building and support to the construction and maintenance of anti-erosive structures.
- Support to the production of fodder.
- Support to the reconstitution of the enset stock.
- Support to the diversification of cultivation systems through the introduction of new planting material for both food consumption and income generation.
- Introduction of perennial crops.

- Comprehensive advice and regular follow-up.

The goal of this project is to improve the living conditions of the vulnerable peasant families through a quick improvement of their food security. Inter Aide's intervention is expected to enhance vulnerable farmers' capacities to boost their agricultural production while durably protecting and optimizing their natural resources. Doing so, it is expected that they will be able to achieve a good degree of self-sufficiency while conserving and improving the fertility



Figure 7: Inter Aide's information panel at the entrance of the town of Hadero.

of their soils and thus adapting to the challenges of the climate change. In other words, it is expected that, through Inter Aide's support, the vicious circle of vulnerability will be over and it will be replaced by a virtuous circle of agricultural growth and sustainable rural development.

Inter Aide has established 4 basic criteria that a vulnerable family must fulfill in order to be a beneficiary of this project. These criteria are the minimum conditions that are necessary in order to reverse a situation of vulnerability:

- The poor family must possess at least 0,25 ha of land (1 *timad*).
- At least one member of the family must be able to engage on agricultural works.
- The family members must be motivated and willing to change their situation by allocating a portion of their time to work on their farm.
- The project's intervention should be the consequence of a direct request of the future beneficiaries.
- The situation of vulnerability must be confirmed by the local *iddir*.

Indeed, the beneficiaries of the project have been identified and chosen through the collaboration with the local *iddir*. The *iddirs* are indigenous mutual help associations that have been originally created to take care of the activities linked to the burial ceremonies and to support their members during the time of funeral. Some of them have progressively expanded their spectrum of activities and can now get involved to help members facing different shocks, acting as a multifunctional institution of self-help and solidarity. Because all the farmers in

Hadero belong to an *iddir*, these associations seem to be the most appropriate to know which are the most vulnerable families and those who need more help.

This is a real organizational innovation in the Ethiopian environment, where the presence of the Federal State is always strong, but the absence of civil society organizations or peasants' representatives complicates the communication between public services and rural communities. The collaboration between Inter Aide and the *iddirs* has thus contributed to reinforce the legitimacy of these social basic organizations working for solidarity purposes.

Hence, the success of this project is also expected to show that the *iddirs* are able to fully represent the peasants' interests and that their role as interlocutors and development partners can grow in the future.

Inter Aide's action in Kembata

The first action put into practice by Inter Aide France in the *woreda* of Hadero has been the organization of formations and trainings for the local farmers about soil conservation and sustainable management of natural resources. However, the most important action for the support of the vulnerable farmers in Kembata has been to provide them with new planting material. Indeed, the lack of planting material is the most common problem registered by these peasants: without planting material it is very difficult to get rid of the share-croppers, it is impossible to diversify the agricultural production and, hence, it is impossible to achieve livelihood's food security.

Thus, once the *iddirs* have selected the most vulnerable families that fulfilled all the minimum conditions for being chosen as beneficiaries, Inter Aide has provided every one of these family with several crop species that can be grouped in 4 different types: ensets, food-crops, cash-crops, and fodder.

1. Ensets

Having a high productivity even from small areas, enset is one of best crops in relation to tackling food security problems in densely populated regions like Kembata. As it has been written before in this document, the quantity and height of ensets around the *tukul* reflect the socio-economic status of the peasant family in our region of study. The enset is hence an economically important crop for the beneficiaries and, if compared to other cereals or annual crops, it has by far the highest added value per hectare. Enset gives high production of biomass even from small plot and, once the crop is well established in the field, it can resist droughts and other kind of stress by far better than other crops. However, due to recurrent irregularity of the climate conditions and subsequent failure of other crops production, enset often remains as the sole reserve of food during the hard periods like the end of the dry season.

For this reason, Inter Aide has provided on average 12 enset corms to each vulnerable family beneficiary of the project: each one of these producing 20 seedlings, that means a production of 240 new enset trees. These corms are expected to be the first step in the reconstitution of an adequate enset stock that must both cover the necessity of mature ensets to consume during the period when no other food-crops are available and, in the meantime, to assure the reproduction of the stock year by year.



Figure 8: comparison of a landscape in the *woreda* of Hadero during the rainy season (left) and the dry season (right).

It has been calculated that, if an average Kembata family must depend solely on ensets for its food necessities 90 days a year (the average duration of the long dry season), at least 270 *ericho* ensets are needed⁴ (*ericho* is the second stage of the enset development, when the plant can be eaten but it is not yet totally mature). Nevertheless, the average consumption of the vulnerable peasant families in the *woreda* of Hadero is of around 150 *ericho* ensets per year.

Taking this data as the minimum number of *ericho* ensets that every family should have in their farm every year, we must add to this number a minimum of 10 more plants that will be needed for the production of the new seedlings (on average 20 seedlings per plant will result in around 200 new *erichos* for the next year), and 40 more *erichos* that will be let grown in order to consume them when they are fully mature and to maintain them as a strategic reserve of food to absorb possible shocks. Hence, we will take into account that an average of 200 *ericho* ensets per family is the first goal in order to restore an adequate enset stock that can satisfy the food necessities of the family and, in the meantime, can allow the ensets to reproduce correctly and to reach physiological maturity in order to provide a reserve of food to resist to possible shocks.

2. Food-crops

The enset stock cannot be maintained or augmented year by year if the need to consume immature ensets does not diminish; hence, it is imperative to boost the total food production of the farms. The most common food-crop cultivated in Kembata is the teff (*Eragrostis tef*): this cereal is endemic of Ethiopia and it often occupies a very big percentage of the local cultivable land; however, food-crops diversification is fundamental in order to boost food production of the

⁴ "Enset Based Support to the Most Vulnerable Families", G. Demeke, Inter Aide, 2012

vulnerable farmers and the augmentation of the number of species cultivated is urgent. This is the reason why Inter Aide has provided different improved varieties of tubers, legumes and other food-crop species drought-resistant and adapted to be introduced in mid-altitude areas like the *woreda* of Hadero.

Following the specialization of this region in the cultivation of ginger (*Zingiber officinale*), the production of tubers was stagnating. Roots and tubers are very important because they are very nutrient-rich and show good resistance and productivity; furthermore, the roots are also “insurance crops” that increase food security because they can be left in the ground until needed for consumption. Inter Aide’s project has been working to reintroduce roots and tubers as the first step in the action of diversification of the agricultural food production; the most important tubers that have been provided to the beneficiaries are the taro, the sweet potato, and the cassava.

The cultivation of taro (*Colocasia esculenta*) is common in Kembata and belongs to its traditional culture; however, the poorest farmers do not generally produce it because they lack planting material. The reintroduction of taro is a very good option for them, because this crop is very adaptable to the local climatic conditions and gives good yields that can cover their food necessity for several months.

The production of sweet potato (*Ipomoea batatas*) was more common in the past but it has been declining in the last years because of the diseases that have developed after the continual production of this tuber on the same parcels. For this reason the vulnerable farmers do not generally produce nor consume this crop and most of them had never tasted it before the intervention of the project. However, the sweet potato diseases can be easily controlled through the rotation of the cultivations, a technique that Inter Aide has been teaching in its trainings for the local farmers. Currently, the sweet potato is very appreciated by the beneficiary families for its good taste and for being one of the few crops that can be cultivated during the dry season. Indeed, the sweet potato is a very resisting tuber that is planted in October (at the end of the *Meher*) and stays in the soil until March (at the beginning of the *Belg*). Besides furnishing food during the dry season, this crop is very useful because during this period its leaves cover entirely the soil and are very useful in protecting it from the direct exposure to the sun, thus helping to conserve the natural fertility of the soil.

The cassava (*Manihot esculenta*) is also a new crop for many beneficiaries. Inter Aide team has selected a variety from Nigeria of this tuber that shows a very high productivity in Kembata. Cassava is very useful because it can be planted around the parcels and its high trunk can work

as a fence or a mechanical barrier against insect pests. Furthermore, in this way some parts of land that are normally not used can also be exploited for an intensive use of land, which is necessary in a high densely populated region like the *woreda* of Hadero. Following its introduction, Inter Aide has trained the local women in preparing cassava wheat, useful to bake *injera* when the teff is lacking. Cassava is the most important of the “insurance crops”, because it can be left in the ground until needed for consumption, and every plant gives on average more than 1 kg of food. Unfortunately, cassava seems to be the favourite food for the local porcupines, and many farmers have experienced problems of losing their yield because of these animals.

The legumes are the second kind of crops provided by Inter Aide to the beneficiary families. Legumes are very important for two main reasons: first of all, they are the only food in Kembata peasants’ diet providing a high percentage of proteins. Indeed, being their diet almost entirely vegetarian, these people are generally lacking of these substances that are fundamental for a correct alimentation. Secondly, the legumes have the faculty to enrich the soil with azote and hence they are very useful as green manure for enhancing the fertility of the soil. The two most important legume crops that have been introduced in the agroecosystems of the vulnerable farmers are the haricot bean and the pigeon pea.

The haricot bean (*Phaseolus vulgaris*) results very important for the management of soil fertility: if its leaves are let on the ground as mulch after harvesting, this crop can improve significantly the biological properties of the soil. Furthermore, thanks to these properties, haricot beans can be successfully intercropped with other species giving a better yield: the best results are achieved when intercropped with maize (*Zea mays*), but this legume can be successfully intercropped also with taro or coffee trees.



Figure 9: pigeon peas planted next to a fodder line on an anti-erosive structure.

The pigeon pea (*Cajanus cajan*) was known but rarely consumed by the beneficiaries before the intervention of the project. Just like cassava, the pigeon pea too can be planted around the fields and function as a mechanical barrier, with the further advantage that it is a perennial crop. For this reason, it is often planted just next to the anti-erosive structure, thus contributing to fight soil erosion with its strong rooting system. Furthermore, the presence of this legume next

to the anti-erosive structures is also very good because it helps the fertility of the fodder (that is planted on the top of the anti-erosive structures as explained in the “Fodder” paragraph) and provides it with a little shadow, just what the fodder needs to grow up well.

Finally, the last food-crops provided by the project are two local home garden species easy to reproduce: the pumpkin (*Cucurbita pepo*) and the cabbage (*Brassica oleracea*), which have proved easy to grow and reproduce in the peasants’ home gardens.

3. Cash-crops

Inter Aide’s approach with the vulnerable farmers has been to try to convince them about the importance of food-crops to achieve livelihood’s food security. Before this project, ginger was the most important cash-crop in Kembata and it occupied on average 33% of the cultivated land in vulnerable farmers’ exploitations. Then, a strong pest has developed in the region and has attacked all the cultivations of ginger just after the beginning of the project. The impossibility for the beneficiaries to plant anymore this crop has undoubtedly helped the work of Inter Aide’s team in Hadero to convince them to diversify their production shifting to the food-crops provided by the project; however, the project’s approach has never denied the importance of cash-crops for the vulnerable households’ food security, but the cash-crop cannot monopolize the agricultural production of a peasant family, because otherwise the risks linked to the market price fluctuations increase dramatically. Also in this case, the best solution is the diversification of the production and in finding a good balance between food-crops and cash-crops production.

As a cash-crop, ginger provided only cash, while the project has provided cash-crops which can be also useful for human and animal food security, and that in the meantime help to fight erosion and to maintain the fertility of the soil. Because Kembata peasants have normally just little parcels of land to exploit, the specialization of the agricultural production does not seem a good solution, while the intensification of the production through the diversification seems to be a much smarter strategy. Inter Aide has provided different cash-crops that can be differentiated in three categories according to the time necessary to sell their production: those available in the short, medium and long term.

For the cash-crops available in the short term, Inter Aide has provided the beneficiaries with fodder, in order to compensate the loss of the ginger and to introduce a new species that was not cultivated before (the introduction of fodder will be discussed in the next paragraph).

The project has then provided the beneficiaries with improved varieties of banana (*Musa paradisiaca*), sugar cane (*Saccharum officinarum*) and pineapple (*Ananas cosmosus*). These plants can be planted around the fields, thus exploiting a space that is generally unused, and can produce different edible products for the humans and the livestock that are easy to commercialize in the medium term (one or two years).

Finally, the project has provided some improved varieties of fruit trees like coffee (*Coffea arabica*), mango (*Mangifera indica*) and avocado (*Persea americana*). The production of coffee is very important in Ethiopia: this plant is endemic from the southern part of the country and, indeed, Kembata peasants have normally a lot of coffee trees in their farms, and even the most vulnerable ones have some coffee trees to cover their domestic consumption. The productivity of this plant changes drastically if the farmer is a better-off or a vulnerable one⁵ but, in any case, it can be improved without big effort with the plantation of some kind of fodder that improve their fertility. Concerning the other fruit trees, the vulnerable farmers do not generally have many of them in their farms; for this, Inter Aide has provided mangoes and avocados to its beneficiaries: in the long term (more than three years) these trees can provide good fruit yields that can help to improve the household's food security, augment the biodiversity of the farm, exploit a space that before was under-utilized, and, if the production exceeds the needs, they can be easily sold in the local market.

4. Fodder

Inter Aide's strategy concerning the introduction of fodder has been to link it strictly with the actions in favour of soil conservation. Indeed, the most important innovation introduced by this project has been to combine the construction of the anti-erosive structures with the production of biomass; this result has been achieved through the plantation of *Pennisetum riparium* on the hedge of the anti-erosive structures. This kind of evergreen grass is native from the southwestern Ethiopian highlands and has proved to be highly adaptive in the climatic conditions of the *woreda* of Hadero: indeed, it normally gives 3 yields a year (two during the rainy season and one during the dry one) and even 4 if it is well fertilized and planted next to pigeon pea. Furthermore, its heavy leaves are very nutritive for the livestock, while its deep roots are very useful to prevent erosion when it is planted on the anti-erosive structures.

⁵ The best farmers can achieve a productivity of 3,5 kg per plant, while some farmers do not arrive to produce 0,5 kg. (Bortzmeyer, 2014)

The introduction of *Pennisetum riparium* has had a strong role in replacing ginger as cash-crop after its collapse. In fact, being the scarcity of animal food a common problem in Kembata, it results very easy for the beneficiaries to sell their fodder in the local market.



Figure 10: parcels of teff delimited with anti-erosive lines of *Pennisetum riparium*.

Besides being an efficient cash-crop in the short term, the *Pennisetum riparium* is also linked with the presence of livestock in the farm: if the production of this fodder

increases substantially, a farmer may realize that he has enough resources to feed a cow or an ox, and may consider the option to get its own animal. Finally, the increased production of animal food should have an impact on the conservation of the enset stock: if the livestock is correctly fed with fodder, there is no need to feed them with the ensets.

In total, all the different planting materials provided by Inter Aide have a commercial value of less than 1000 ETB per beneficiary⁶. This is to demonstrate that it is possible to change quickly and successfully the living conditions and the food security of a vulnerable peasant family, even using a very small amount of money, if this money is invested in good and innovative solutions adapted to face the local problems and environment conditions.

Nevertheless, Inter Aide's action has not just provided planting material to the beneficiaries of its project: knowing that without conservation of the natural resources there cannot be any agricultural advancement or rural development, the beneficiaries have also been trained in soil conservation techniques and in fertility management systems. Finally, the evolution of the beneficiaries' agricultural production and living conditions is regularly followed up by Inter Aide's team in Hadero that visits the local farms almost daily for advices and check-ups.

⁶ The value of 1000 ETB (corresponding about to 50US\$) is calculated on the total amount of planting material received by each beneficiary family:

- 13 enset corms
- 90 cassava cuttings
- 500 sweet potato vines
- 75 kg of taro
- 2 kg of haricot beans
- 1 grafted mango and 1 grafted avocado
- 10 other plants (coffee, bananas and sugar cane)
- 6 clumps of grass

Methodology

The present report is the result of direct observations of the impact of Inter Aide's action on the farms and livelihoods of the beneficiary families: interviews have been conducted to every sample beneficiary in order to know more about the evolution of their agricultural production and living conditions, and every sample farm has been visited more than once.

In the past two years of intervention, the Inter Aide team in Hadero has drawn maps of the farms of some sample beneficiaries before the intervention of the project. For the realization of this document, these maps have been redrawn in order to appreciate the visible changes that Inter Aide's action has caused on the agricultural production of these exploitations.

Through this comparative exercise and through the direct observation of the farms, some specific data concerning food security have been obtained: the evolution of the enset stock; the change in the share-cropping contracts; the presence of the anti-erosive structures; the number of animals living in the farms; the percentage of land occupied with cash crops or with food crops; and the number of crops cultivated in every farm. Crossing these data with other prior studies and inquiries about local market situation, some data about economic impact of Inter Aide's action have also been obtained

20 beneficiary families have been classified to show the evolution of these indicators: 10 families are beneficiaries of Inter Aide's project since 2012, 5 families are beneficiaries since 2013, and 5 families are not beneficiary of the project but are part of the governmental Safety Net Program. Because the beneficiaries of the project are currently distributed on 10 *kebeles* (the smallest local administration in Ethiopia) of the *woreda* of Hadero, 2 sample families per *kebele* have been chosen randomly in order to have a more neutral result of the project's impact.

The goal of this study is to demonstrate that it is possible to improve the food security and the living conditions of a peasant family in Ethiopia quickly and with a relative small amount of resources invested, if these resources are invested in good and innovative solutions adapted to face local problems and environment conditions.

Table of results

The results of this study have been summarized in the Table 1 below: the 20 sample farmers have been listed in alphabetical order following the year in which they became beneficiary of the project; for every one of them their *kebele* is also specified. Six indicators of food security coming from the analysis of the maps of their farms have been registered before the intervention of the project.⁷ These data have been then compared with their current situation: if during this period the result of the indicator has improved, the cell is coloured in green, if it has not changed it is yellow, if it has worsened it is red.

⁷ The data of the farmers that are not beneficiary of Inter Aide's project but are part of the governmental Safety Net Program have been registered in 2012.

Farmer's name	Kebele	Project	Enset stock		% share crop		Anti-erosive str.		Livestock		% food crops		# of crops	
			Before	Now	Before	Now	Before	Now	Before	Now	Before	Now	Before	Now
Alemu Hadero	Mendaye	2012	50mt ²	350mt ²	80%	0%	0mt	90mt	0	71	75%	89%	4	8
Alemu Lonbaiso	1st Tunto	2012	0mt ²	135mt ²	67%	53%	0mt	28mt	0	38.5	43%	95%	4	7
Erkalo Sinebo	Ajora	2012	5mt ²	95mt ²	100%	34%	0mt	101mt	0	0	45%	98%	3	6
Markos Eshete	2nd Tunto	2012	6mt ²	55mt ²	83%	74%	0mt	149mt	0	0	64%	95%	4	9
Markos Mengasha	Ajora	2012*	3mt ²	135mt ²	0%	0%	0mt	40mt	28	50	58%	100%	6	11
Melese Lonsako	1st Tunto	2012	0mt ²	40mt ²	47%	0%	0mt	181mt	0	77	30%	95%	3	11
Mesele Asefaw	Sodicho	2012	0mt ²	20mt ²	69%	43%	0mt	23mt	0	14	53%	93%	3	8
Worke Berhano	Boha Tora	2012	25mt ²	124mt ²	50%	0%	0mt	90mt	0	78	64%	95%	6	8
Achiko Beyena	Gelibe	2013	30mt ²	80mt ²	81%	65%	0mt	125mt	0	0	91%	91%	5	7
Belachew Heraro	Ameleka	2013	35mt ²	230mt ²	40%	0%	0mt	205mt	28	69	48%	58%	6	10
Desta Adane	Boha Tora	2013	148mt ²	155mt ²	56%	24%	20mt	205mt	0	20.5	68%	84%	6	8
Mamush Gima	Sodicho	2013	18mt ²	32mt ²	90%	55%	0mt	99mt	0	0	35%	90%	4	9
Markos Wonchako	Hachacho	2013	40mt ²	153mt ²	80%	24%	0mt	113mt	0	28	53%	84%	6	9
Tadelech Mishamo	Lechacho	2013	102mt ²	150mt ²	78%	0%	0mt	60mt	28	28	88%	50%	5	8
Tsedeke Arficho	Mendaye	2013	0mt ²	18mt ²	71%	27%	20mt	300mt	0	22	34%	100%	7	9
Amarech Anamo	Lechacho	SNP	530mt ²	530mt ²	68%	68%	0mt	60mt	28	28	96%	96%	6	7
Ermiyas Hibagu	Ameleka	SNP	13mt ²	10mt ²	32%	50%	0mt	0mt	28	28	37%	92%	6	7
Felahe Handebo	Hachacho	SNP	70mt ²	20mt ²	13%	58%	0mt	0mt	0	0	33%	100%	5	5
Shamaso Shamalo	Gelibe	SNP	1200mt ²	1100mt ²	65%	100%	0mt	0mt	28	0	100%	100%	6	6
Takele Binchamo	2nd Tunto	SNP	150mt ²	96mt ²	24%	44%	0mt	45mt	0	0	63%	80%	6	7

Table 1: comparison of food security indicators for 20 sample vulnerable families before and after the intervention of Inter Aide's project.

The six indicators chosen to represent the evolution of the food security of these peasant families are:

1) **The enset stock** measured in square meters. As it has been explained before in this document, the enset has a fundamental role in the food security of Kembata farmers: the number and height of ensets is a visible indicator of the socio-economic status of the peasant family and these plants represent a strategic reserve of food during the hardest periods of the year.

2) **The percentage of cultivated land shared with other peasants.** When a vulnerable farmer has not the necessary resources to feed his family or has not enough time to spend on his farm because he works outside, he is obligated to enter in a vicious circle of decapitalization sharing part of his land or his yield with other better-off farmers in order to gain some money that he will reinvest in the food that he is not producing anymore. It is clear that if the farmer has a lower percentage of shared land on his farm, the part of agricultural production for him and his family will be bigger and thus his general food security.

3) **The anti-erosive structures** existing in the farm measured in meters. As mentioned before, erosion is a major problem in Kembata because of the average steepness of the lands, the lack of natural forests, and the high human pressure on natural resources. For this, one of the most important points of Inter Aide's action in Kembata is the conservation of the soils combined with production of biomass. This result is often



Figure 11: *Pennisetum riparium* on the hedge of an anti-erosive structure

achieved through the plantation of *Pennisetum riparium* on the hedge of the anti-erosive structure. This kind of fodder looks very appropriate for this purpose because it has deep roots that prevent erosion and produces lot of leaves useful to feed the livestock. The introduction of fodder is also a very good solution to usefully replace that 6-8% of cultivable land that is lost for the construction of the anti-erosive structures. The presence of this kind

of structure is hence an indicator of food security because they fight soil erosion, thus they help to maintain land's fertility, meaning a better yield and a better nutrition for the peasants. Furthermore, the introduction of fodder production on these structures implies the possibility to produce food for the livestock or to have a cash crop to sell on the local market.

- 4) The number of livestock possessed.** The animals have a great importance in the agroecosystem because they can be used as workforce, they produce edible products, and they are the first source of manure which is necessary to fertilize the soil. Hence, the presence or absence of livestock in the farm is a clear indicator of better or worse food security. Even if the project does not directly provide animals to the farmers, it has introduced fodder, the main source of animal food. The animals are counted according to the cattle formula⁸, which is based on the economical value of the livestock.

- 5) The percentage of land occupied with food crops.** Before the intervention of the project, the main logic followed by the local peasants was to use a big part of their land with just one cash-crop, generally represented by ginger. This cash crop was then sold to buy food in the local market, often to a higher price. As mentioned before, Inter Aide's intervention has been trying to change this logic: the project has been giving capacity and resources to achieve food security through the production of food on the farmers' own land. In this way, their food security will be assured thanks to a better accessibility of food, because the food will be directly produced in the farm and not bought in the market. However, this data should also be compared with the diversification of agricultural production in the farm because if one cash-crop is totally replaced by only one food-crop that is sold in the local market to buy other food, in this case general food security does not improve significantly.

- 6) The number of crops cultivated in the farms** is a representation of the diversification of the agricultural production. As explained before, the degree of biodiversity in the agroecosystem is a fundamental factor for resilience and, in the meantime, it also contributes to soil fertility, pest management, and improvement of livelihood's food security.

⁸ According to this formula, an ox has a value of 100, a cow 56, a horse/donkey 33, a calf 28, a goat/sheep 13, a chicken 2. If the animal is shared the valued is the half.

Evaluating the effects of Inter Aide's action

The results of the present study summarized in the Table 1 show that the six indicators of food security have generally improved for all the beneficiary sample families during the time of Inter Aide's intervention, while the five sample families that are part of the governmental Safety Net Program have not had the same positive results. It is useful to remember that all these 20 peasant families had been classified as vulnerable by their *iddir*, so their starting situation was more or less the same.

Halting the vicious circle of vulnerability

Beginning to analyze the first indicator, the comparison of the enset stock evolution between Inter Aide's beneficiaries and SNP's beneficiaries shows that all the farmers of the first category have considerably augmented the surface of their enset cultivation and the number of plants existing in their farms, while those in the second category have consumed more ensets than what they have produced, with only one sample family that was able to maintain the same quantity.

The diminution of the enset stock is a clear sign of vulnerability, because it means that after the harvesting and the payment to the share-croppers, there is so little food remained for the peasant family that their members have no other choice but to consume their immature ensets, which in this way have no time to achieve the physiological maturity to reproduce. Unfortunately, four out of five sample beneficiaries of the SNP have suffered of this situation during the concerned period. On the contrary, Inter Aide's project beneficiaries not only have augmented their enset stock, but they could maintain it and augment it through several dry seasons: in fact, the relative augmentation of the enset cultivation surface for the 2013 beneficiaries is on average of +419%, while the average augmentation for the 2012 beneficiaries is of +3427%. These data show that, in order to augment the quantity of ensets in their stocks, these families did not consume these plants for food or to feed their animals, and they did not because they had access to other sources of food. In other words, these results show that, since Inter Aide's intervention, the food security of these families has improved, because they were not obligated to consume their enset stock: the existing pressure on the ensets, which is normally very high for the vulnerable farmers, was very low in these two years, and the stocks had the time to expand.

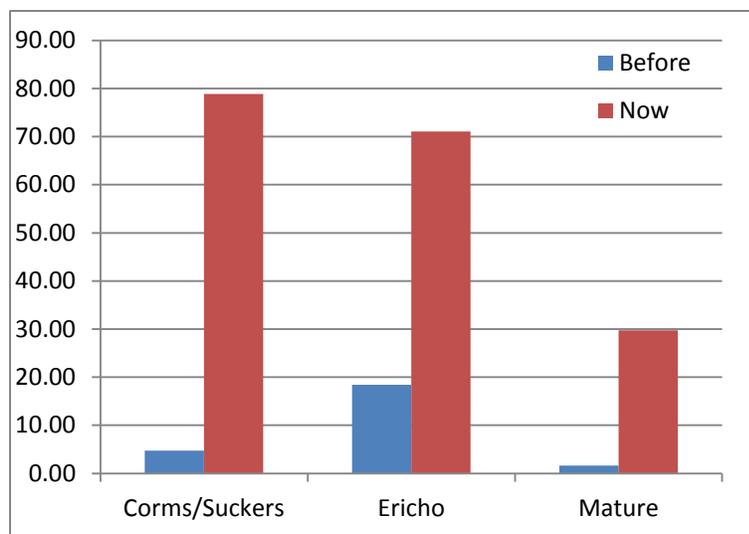


Table 2: average number of ensets according to the different level of maturity before and after Inter Aide's intervention.

As shown in Table 2, with the growth of the surface dedicated to the enset cultivation, also the number of these plants has augmented substantially: the average number of ensets existing in the sample farms has passed from 25 to 180. Taking into account only the *ericho*, before the project there were on average 18 ensets at this stage of maturity, while currently there are 71. If this is undoubtedly a good result, this

number is still far from the 200 *ericho* ensets per family that has been established as the minimum for an adequate enset stock that can satisfy the food necessities of the family and in the meantime can allow the ensets to reproduce correctly.

Nevertheless, all the beneficiaries are working for the augmentation of their enset stock and, for the moment, the evolution of the number of ensets suggests an optimistic view: we know that vulnerable farmers' pressure on enset stock is very high; hence, if the enset stock has been augmenting year by year, this result suggests that the vicious circle vulnerability is currently over. In other words, the food security of these families is not expected to worsen in the next years. Nevertheless, because their situation remains unstable, we cannot be sure that in the future they will be able to face one or more shocks without falling again into vulnerability vicious circle. In this sense, a follow-up of the future evolution of the number of ensets existing in these farms will be very important to understand if these peasants can develop a virtuous circle of agricultural growth and sustainable rural development.

In any case, an optimistic view is also suggested by the data concerning the percentage of shared land: Inter Aide did not intervene directly on the contracts of land tenure of its beneficiaries; however, all the sample families have improved their situation. Also in this case, the comparison between the results of the Inter Aide's beneficiaries and SNP's beneficiaries shows important differences: the best result achieved by one farmer of this second category has been to maintain the same percentage of land under share-cropping, while all the others have

been obligated to decapitalize their most important asset, sharing a growing part of their land and yield.

Because of the generalized lack of planting material and of human and animal workforce, the decapitalization of land is sometimes the only choice for the vulnerable farmers. For example, before Inter Aide's intervention, Markos Wonchako from Hachacho was sharing 80% of his land because he lacked planting material and animal labour. Currently, this farmer is self-sufficient concerning the planting material; however, he is still obligated to share 0,06 ha, representing 24% of his total land, because he



Figure 12: Markos Wonchako and his wife are still sharing part of their land because of the lack of animal labour.

has no oxen to plough and not enough money to rent them. Hence, if he wants to plough his land, he is obligated to share about $\frac{1}{4}$ of it with the farmers that provide the oxen.

In this sense, the lonely women like the widows or the divorced ones are the most vulnerable because they lack the time or the human labour which is necessary to take care of their land, so they are obligated to share it. For example, Shamalo Shamaso's family from Gelibe is highly vulnerable and, even before his death, this family was sharing about 65% of its land. After this farmer died, his wife took his place in the Safety Net Project and had no more time to work in the farm, which is now entirely shared.

Even if the share-croppers take half of the yield, for lonely women their presence is sometimes essential for survival, because these women do not have enough labour to maintain their farms and, without that external support, they would not have even a shared yield. Nevertheless, in most of the cases, sharing the land is just a step ahead towards vulnerability and increased food insecurity. In fact, the share-croppers have all the interest in choosing the most fertile parcels and in maximizing the short-term yields without caring about the fertility in the long term. Furthermore, when a farmer shares his land, he spends much more time working outside as daily-worker than on its own farm, thus causing a gradual loss of fertility that aggravates food insecurity.

In any case, both the beneficiaries of 2012 and of 2013 have all diminished the surface of land shared with better-off farmers. This means that, since the intervention of Inter Aide's project, these families have significantly improved their agricultural production and consequently they

have had enough planting material or money to feel safe enough to break one or more share-cropping contracts. For example, the family of Alemu Hadero from Mendaye was sharing 80% of its land with 3 different share-croppers before the intervention of the project in 2012; currently, this family has taken back possession of the totality of its land, and its agricultural production must not be shared anymore with anyone.

This is clearly a significant improvement of the household's food security that can be noted on different levels for all the beneficiaries of the project: because getting rid of the share-croppers can be a slow and difficult process, the majority of the sample families are still sharing part of their land, while one third of them (5 out of 15) have succeeded in taking back possession of the totality of it. In any way, before the intervention of the project the average percentage of shared land for the beneficiary families was 66%, while currently it is 27% (for the SNP beneficiaries the average data are 40% and 64%). These results show undoubtedly that there is a general tendency towards the re-appropriation of land by the beneficiary families following Inter Aide's intervention.

Farmer	Ginger		Teff		Maize		Other		Total	
	Before	Now	Before	Now	Before	Now	Before	Now	Before	Now
Alemu Hadero	0%	0%	80%	0%	0%	0%	0%	0%	80%	0%
Alemu Lonbaiso	60%	0%	0%	53%	0%	0%	7%	0%	67%	53%
Erkalo Sinebo	70%	0%	0%	34%	30%	0%	0%	0%	100%	34%
Markos Eshete	50%	0%	33%	74%	0%	0%	0%	0%	83%	74%
Markos Mengasha	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Melese Lonsako	47%	0%	0%	0%	0%	0%	0%	0%	47%	0%
Mesele Asefaw	69%	0%	0%	43%	0%	0%	0%	0%	69%	43%
Worke Berhano	30%	0%	0%	0%	0%	0%	20%	0%	50%	0%
Achiko Beyena	0%	0%	33%	65%	48%	0%	0%	0%	81%	65%
Belachew Heraro	19%	0%	12%	0%	0%	0%	9%	0%	40%	0%
Desta Adane	11%	0%	0%	0%	45%	0%	0%	24%	56%	24%
Mamush Gima	45%	0%	6%	55%	0%	0%	39%	0%	90%	55%
Markos Wonchako	38%	0%	0%	14%	15%	5%	27%	5%	80%	24%
Tadelech Mishamo	0%	0%	78%	0%	0%	0%	0%	0%	78%	0%
Tsedeke Arficho	31%	0%	16%	26%	9%	0%	15%	0%	71%	27%
Average	31.3%	0.0%	17.2%	24.3%	9.8%	0.3%	7.8%	1.9%	66.1%	26.6%

Table 3: percentage of land under share-cropping according to the crop cultivated before and after the intervention of the project.

Taking into account the 15 sample beneficiaries, Table 3 shows which crop was shared before and after Inter Aide's intervention: it can be noted that, before the project, the main crop shared was ginger, which occupied on average 31% of the cultivated land: about 94% of the ginger cultivated by these farmers was under share-cropping. Following the collapse of ginger and the process of re-appropriation of land, the share-croppers have planted mainly teff on the parcels

that they still control. Indeed, this is the only crop under share-cropping that occupies a higher percentage of land now rather than before Inter Aide's intervention: teff occupies virtually all the land which is currently under share-cropping and most of the times this crop is not directly consumed by the farmers but it is sold for cash.

Although all the sample families are currently sharing a minor percentage of their land, this positive change is highly unstable and may worsen quickly: if in the next season there will not be enough planting material or not enough money to buy it, sharing the land will be once again the only solution to cultivate and the share-croppers will come back again. For example, thanks to the planting material provided by Inter Aide, Alemu Lonbaiso from Tunto could take back possession of a parcel representing 14% of his total land. After harvesting the teff planted on it, Alemu has currently no planting material for the next *Belg* and he has decided to emigrate to Addis Abeba in order to earn money to buy it. If he will not succeed in coming back on time with the money, he will be obligated to share again that land, and maybe even more.

Nevertheless, there are also some samples that have taken back possession of their land virtually forever: for example, since Inter Aide's intervention, Belachew Heraro from Ameleka has taken back possession of the totality of his land and he is currently self-producing almost the totality of the food that he and his family consume. In the meantime, his 182 coffee trees, occupying about 42% of his land, have produced around 250 kg of coffee, which have been sold for around 7.500 ETB. With this money Belachew could buy the planting material he lacked and currently he is not obligated to share his land anymore, neither needs to work as daily-worker outside his farm. Unless a disastrous shock happens, this farmer and his family are definitely outside the vicious circle of vulnerability and all the six indicators suggest instead that a virtuous circle of agricultural growth and sustainable rural development can be launch in this farm.

In any way, the generalized growth of the number of ensets existing in these farms and the expansion of the surface they occupy suggest that the food security of all the 15 beneficiaries has considerably improved since the intervention of Inter Aide's project. The tendency towards re-appropriation of land suggests the same conclusion. However, these peasant families remain extremely poor in a context of generalized rural poverty; this means that they are not yet in shelter from food insecurity, since future shocks may push them back again into vulnerability. Nevertheless, the current results demonstrate that Inter Aide's project has had undoubtedly a strong impact on the living conditions of these people and that it is possible to halt the vicious circle of vulnerability if good and innovative solutions adapted to face local problems and environment conditions are adopted.

The importance of fodder and the management of fertility

The process of re-appropriation of land goes hand in hand with the evolution of the working time of the peasant family: a vulnerable farmer sharing part of his land does not spend much time working on his farm, because he is usually outside working as daily-worker. This is especially the case for the farmers participating in the Safety Net Program, which requires the presence of an adult able to work five days a week. When the farmer is not working directly in his farm, his land tends to lose fertility much more than when he is there, because the share-croppers that work on it do not care about the fertility in the long term. Hence, the re-appropriation of the land means that these peasants currently work much more on their farms than before. This is due to two main reasons: first of all, there is much more work to do inside the farm because of the diversification of the production; and secondly, there is less need of money because a major quantity of food-crops and cash-crops are produced directly in the farm.

According to the interviews, before the project these farmers spent on average 4 days a week working outside their farms, while currently they spend about 2 days a week. This is also due to the collapse of the ginger production in the area, which required a lot of daily-workers for harvesting; however, the majority of the sample farmers have confirmed that since Inter Aide's intervention they have less need to work outside their farms. In any case, this change is expected to contribute to improve soil's fertility in the long term, because a farmer working on his own land will certainly take much more care of it than the share-croppers would. Furthermore, part of the time spent in the farm is currently spent in preparing and spreading the compost and in building and maintaining the anti-erosive structures.

As it has been written before, the first action of this project has been the construction of the anti-erosive structures, while the main innovation has been to combine soil conservation techniques with production of biomass. Inter Aide's team in Hadero has trained the farmers in the *woreda* in the construction of the anti-erosive structures; then, thanks to the collaboration with the *iddirs*, this technology has spread quickly and these structures have been built in almost every farm of the area. The multiplication of *Pennisetum riparium* has followed the construction of the anti-erosive structures: because this grass is easy to plant and to multiply, it has spread



Figure 13: line of *Pennisetum riparium*

quickly as even the farmers that are not part of the project have planted it on their anti-erosive structures. This explains why these structures can be found in 2 out of 5 sample families that are part of the SNP but are not Inter Aide's beneficiaries: when the peasants notice that an innovation is working well, they will adopt it voluntarily.

The combination of physical and biological means for soil conservation has contributed largely to fight soil erosion in the area and it has even contributed to change the shape of the landscape: currently, thanks to Inter Aide's intervention, anti-erosive structures associated with green lines of grass can be seen almost everywhere in the *woreda* of Hadero. It is the first time that a long-term strategy for the management of soil is ongoing in this area and all the peasants have confirmed that soil erosion in their farms has substantially diminished since the construction of these structures.

Besides contributing to maintain the fertility of the soil, the introduction of fodder cultivation associated with these structures has had a very strong impact on the living conditions of the beneficiaries because fodder is currently perceived as a very important cash-crop. Indeed, the *Pennisetum riparium* has adapted very well to the local climatic conditions and has spread very quickly.

Farmer's name	AES + grass	AES + grass + P.pea	Grass line	Grass m ²	P.pea line
Alemu Hadero	60	30	0	0	52
Alemu Lonbaiso	28	0	108	20	0
Erkalo Sinebo	101	0	16	40	2
Markos Eshete	96	53	0	20	0
Markos Mengasha	40	0	40	0	25
Melese Lonsako	130	51	183	0	178
Mesele Asefaw	23	0	81	0	45
Worke Berhano	0	90	118	150	0
Achiko Beyena	125	0	0	0	0
Belachew Heraro	179	26	0	0	21
Desta Adane	168	37	117	30	0
Mamush Gima	41	58	25	0	0
Markos Wonchako	113	0	83	5	10
Tadelech Mishamo	60	0	81	100	0
Tsedeke Arficho	215	85	55	0	0
Average:	91.9	28.7	60.5	24.3	22.2

Table 4: length of the different lines of grass per sample farms.

As shown in Table 4, there are currently 92 meters of anti-erosive structure associated with fodder production on average on the sample farms, and 29 meters of structures associated both with grass and pigeon pea; furthermore, there are on average 60 meters of simple lines of grass used to delimitate the cultivated parcels, and further 24 m² of land cultivated with grass only. If we consider that 2 lines of *Pennisetum riparium* fit in one square meter, that gives an average of 230 linear meters of this fodder per sample farmer.

The *Pennisetum riparium* gives 3 yields a year (one during the dry season and two during the rainy season) and it can be easily sold in the local market because of the chronic lack of animal food in the area. According to a prior investigation, 100 meters of *Pennisetum riparium* produce on average 390 kg of organic matter per year, which have a commercial annual value comprised between 600 and 1020 ETB⁹. This means that the sample beneficiaries currently produce an average of 900 kg of fodder per year, which has a commercial value comprised between 1380 and 2340 ETB per year.

This generation of income in the short term has been useful to the farmers to compensate the loss of cash provoked by the collapse of ginger; however, the effects of the introduction of this kind of fodder are not limited to this. Indeed, the spread of the *Pennisetum riparium* has had a substantial impact in the number of animals possessed by these farmers: before Inter Aide's intervention, only 3 out of 15 sample beneficiaries possessed a cow; currently, 11 of them have one or more cows/oxen or goats, and the cattle formula has passed from an average of 5,6 to the current 33, which means that, on average, there is at least one shared cow per sample beneficiary family¹⁰. Unfortunately, also in this case, the result is not also positive for the SNP beneficiaries which have maintained the same number of animals in 4 out of 5 cases, while one of them has lost its cow.

To buy livestock is extremely expensive for the poor farmers (one cow can cost up to 4000 ETB), this is why the great majority of the sample beneficiaries have acquired these animals through contracts of sharing: most of the times, it means that a richer farmer has given a calf or a cow/ox to these peasants in order to make it fatten at their own expenses, while the milk, the meat, and the potential offspring are shared equally.

⁹ Fodder's price varies according to the period it is sold (being more expensive during the dry season) and the type of sale (if sold on the field is cheaper than if sold in the market).

¹⁰ One shared cow in the cattle formula counts 28.



Figure 14: a cow fed with banana plant.

Knowing that one calf consumes around 1280 kg of fodder per year, the quantity produced on average by the sample farmer covers around $\frac{3}{4}$ of this necessity; concerning a cow, this production covers less than the half of its food necessity; hence, the remaining part is still covered with fodder bought from outside, or with other plants (like bananas or enset leaves), or through the part of the farm specifically left as grazing land. In any way, the richer farmers that provide the livestock to

share do not want to risk that their animal dies, so they would never entrust it to a farmer that has no means to maintain it. Thus, the general growth in the number of animals living in the beneficiary farms suggests once again that the situation of these peasants has considerably improved and that even the richer farmers could notice it.

Another consequence of the introduction of fodder cultivation is that, as shown in a prior investigations about this matter¹¹, the *Pennisetum riparium* is much more nutritive for the bovines than the ensets and, thus, the animals which are fed with this grass are in better health conditions, fatten more quickly, produce more milk, and have a lower mortality rate than those fed with ensets or bananas.

The reintroduction of the livestock in the agroecosystem of these farms has several positive consequences on the food security of the peasant families because the animals produce edible products like milk and meat, they can be used as labour to plough, and their feces are extremely important to fertilize the soil. Inter Aide's team in Hadero has trained the beneficiary farmers in the preparation of the compost; however, although the availability of animal dung has increased hand in hand with the presence of livestock in the agroecosystem, there are only a few farmers that currently do the compost. The majority of them is spreading all the manure directly and uniquely on the enset cultivation (which is always the most fertilized part of the farm), while the other parcels are usually left unfertilized or they are fertilized with chemical products when those are available.

¹¹ "Access to forage in the mid and highlands of Wolayta and Kembata: An illustrated note on livestock and forage, experiences led by Inter Aide, observed adoption and first effects of the activities, considerations, issues at stake and perspectives.", F. Bourgois & M. Spada, Inter Aide & AFD, May 2012

Fertility management is a very big issue for Inter Aide's team, which is insisting on the importance of the preparation of the compost; hence, it is expected that in the future, with a better understanding of the advantages of the compost technique and the increase in the number of livestock per farms, the number of farmers preparing compost will grow.

Land's fertility has been enhanced also thanks to the introduction of the legumes which are used as green manure to enrich the soil. For example, the combination of pigeon pea and *Pennisetum riparium* on the anti-erosive structures has given very good results for the fodder production in the *woreda* of Hadero and has been adopted by more than the half of the sample beneficiaries.

In any way, it is the first time that these farmers are experiencing a strategy of management of soil fertility in the long term: the multiplication of the anti-erosive structures even in the farms that are not directly beneficiaries of Inter Aide's intervention demonstrates that the local farmers have understood the fundamental importance of these structures in fighting soil erosion. The simultaneous multiplication of *Pennisetum riparium* has provided to these farmers a cash-crop that has succeeded in replacing ginger in the short term and has had a fundamental role in the reintroduction of livestock in their farms. All these results suggest that the fertility of the beneficiary farms will not decrease in the future and, if well managed, there are good chances to see an improvement that could bring to an improved agricultural production and to an increased food availability. In this sense, a follow-up of the agricultural production of these farms in the next years seems necessary to understand more deeply the impact of Inter Aide's project.

The diversification of the agricultural production

After the construction of the anti-erosive structures, the most visible impact produced by Inter Aide's intervention on the farms of the beneficiary families is the diversification of the agricultural production and the generalized growth in the number of crops cultivated in these farms: indeed, before the project, the sample peasant families cultivated on average 4,8 crops and none of them cultivated fodder; currently, they cultivate on average 8,5 crops, and all of them have at least one line of *Pennisetum riparium*. Concerning the Safety Net Program's beneficiaries, 3 of them have augmented this number only thanks to the introduction of the fodder in their farms, while 2 of them have maintained the same number of species cultivated.

As written before, a higher degree of biodiversity in the agroecosystem is a fundamental factor for the resilience of these farms because it contributes to enhance the fertility of the soil, it helps

to manage the pests, and it improves the ability of the livelihoods to resist from external shocks and stress.

The data concerning the percentage of food-crops cultivated in the sample farms are strictly related to the collapse of the ginger production; in fact, this percentage has augmented also for the SNP beneficiaries. Two years ago, only 3 out of 15 sample beneficiaries did not cultivate ginger; at that time, this crop covered on average 0,12 ha per farm, which means that ginger alone covered on average 37% of the cultivable land of these people (47% if we calculate only the farmer who cultivated it). With the average levels of productivity, this amount of land produced around 10 quintals of ginger, which had a commercial value of around 11.000 ETB. This sum had to be shared with the share-croppers that provided the planting material and, after deducting other expenses for the fertilizers and the taxes, finally only about 4000 ETB remained in the farmer's pocket. With this money the peasants had to survive for the remaining part of the year, because ginger gives only one annual yield.



Figure 15: ginger harvesting in Kembata.

Crop	Price for 100kg
Ginger (dry)	ETB 6,500
Coffee	ETB 3,000
Pigeon Pea	ETB 1,300
Teff (white)	ETB 1,200
Ginger (wet)	ETB 1,050
Sorghum	ETB 950
Wheat	ETB 880
Beans	ETB 850
Maize	ETB 450
Kocho (enset)	ETB 380

Table 5: prices of the main crops sold in the Hadero local market.

As shown in Table 5, ginger has a very different commercial value if it is sold wet or dry: of course, the poor farmers sell it wet to the few merchants that control the market, who later sell it dry and keep for them the biggest part of the added value. As it has been written before in this document, this situation of oligopsony is very dangerous for the farmers that are engaged in the cultivation of only one cash-crop, because the few buyers can change easily the price of the crop they want to purchase. Hence, these farmers had to rely on the highly fluctuating price of just one crop for their own existence, a price upon which they do not have any kind of control. This situation has brought many of them into the vicious circle of vulnerability and increased food insecurity.

Currently, no more sample farmer is cultivating ginger and the average percentage of land cultivated with food-crops has augmented to 88%. The end of the dependence to only one cash-

crop for their survival combined with the improved availability of several food-crops directly produced inside their farms should assure a better accessibility of edible products to these peasants; thus, once again, the general livelihood's food security is expected to improve.

In any case, cash-crops also have their importance in assuring the local farmers' food security, because the money earned with the sale of these products can cover those periods like the dry season in which the availability of food-crops is very low. Ginger was useful in this sense, but it only provided money: instead, Inter Aide has been working with cash-crops that not only provide money, but also produce edible products for humans and animals, and contribute to maintain and improve the fertility of the soil. In this sense the introduction of fodder cultivation was of fundamental importance for the beneficiaries, but also the multiplication of the banana plants (the number of bananas existing in the sample farms has tripled since the beginning of the project) planted on the perimeter of the parcels and the plantation of new mango and avocado trees are expected to give good results in the medium term as both food- and cash-crops.

Nevertheless, coffee remains the most important cash-crop still cultivated and it occupies alone that 12% of average land not dedicated to food-crops production. The project has provided new coffee trees to the beneficiaries and, thus, in two years the number of these plants has passed from an average of 49 to 64 per farm. As proved by the example of Belachew Heraro, good coffee yields combined with good food production can be the solution to stop the vicious circle of vulnerability, also because coffee is one of the most expensive crops to sell.

However, coffee is not the only solution, because if a high degree of diversification of the agricultural production is attained, food self-sufficiency can also be achieved, and then every exceeding food-crop can be sold in the local market and can become a cash-crop. In this sense, the example of Melese Lonsako from Tunto is enlightening: as shown in Figure 16, since Inter Aide's intervention, the shape of this peasant's farm has changed substantially and, hand in hand with it, his life has changed too. Before the project this farmer had no anti-erosive structures, no fodder and no livestock; more than the half of his land was cultivated with ginger, which was mostly shared; and his situation of extreme vulnerability was confirmed by the fact that he had consumed all his enset stock. With this kind of organization of the agricultural production, he was not able to feed anymore his 9 children and some of them had to emigrate looking for a job, while some others had been entrusted to better-off farmers in order to feed them. Under these circumstances, it is not surprising that the *iddir* had selected this farmer for being a beneficiary of the project.

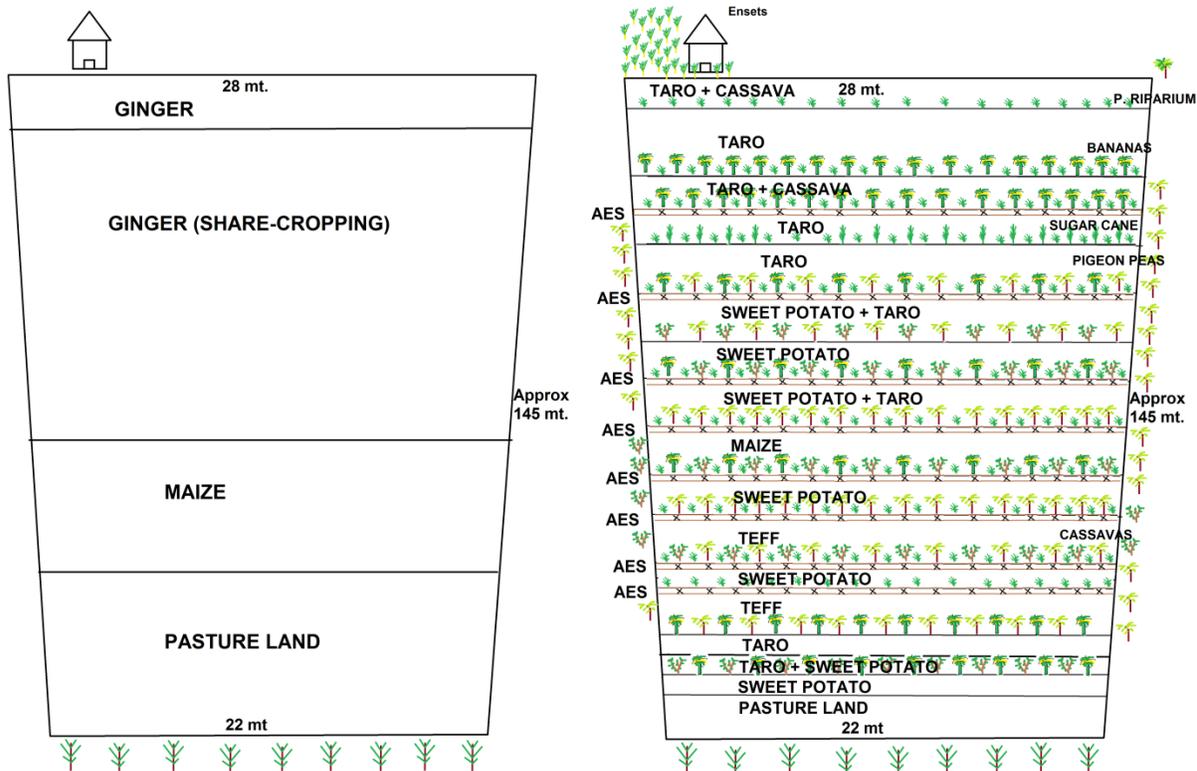


Figure 16: schematic maps of Melese Lonsako's farm before (left) and after (right) the project.

Once Melese has been trained by Inter Aide's team in fighting soil erosion and in applying the agroecological techniques of agroforestry and inter-cropping, he has perceived the importance of maintaining soil fertility in his farm and has worked very hard in order to change his situation: currently, in his farm there are 8 lines of anti-erosive structures measuring around 180 meters, all associated with *Pennisetum riparium* cultivation. These structures, combined with further 183 meters of simple grass lines, are currently contributing substantially in fighting soil erosion and, in the meantime, they are producing an annual average of 1420 kg of fodder per year, which have a commercial value comprised between 2163 and 3670 ETB.

Thanks to this valuable production of fodder, this farmer could get one shared calf and continued expanding his animal stock, which currently comprises two shared calves, three shared goats, and five chickens: currently, the milk and the eggs produced by these animals are certainly contributing in providing a better alimentation for him and his family. Furthermore, Melese has been using the feces produced by his animals for preparing the compost that he is currently spreading in all the parcels of his farm, thus favoring and improving the fertility of his soil.



Figure 17: one parcel in Melese Lonsako's farm; note how the cultivated land is completely surrounded by edible plants.

This farmer has worked very well in the reproduction and multiplication of the planting material that he has received by Inter Aide. Before the project, in his farm there were only 3 crops and it was constituted by only four big parcels, the bigger measuring around 0,17 ha and cultivated only with shared ginger; currently, he has 17 smaller parcels measuring on average 0,02 ha and every one of them is surrounded by bananas, pigeon pea or cassava plants that favor the biodiversity of the

agroecosystem, improve the fertility of the soil, work as mechanical barriers for insect pests, and in the meantime produce edible products in a space that before was under-utilized. In this way, Melese Lonsako has been exploiting in a very smart way the cultivable land available in his farm: currently he is cultivating 11 different crops (maize, teff, taro, sweet potato, cassava, pigeon pea, haricot beans, enset, fodder, coffee and sugar cane) and he has been planting new fruit trees all around his farm.

The substantial growth of his agricultural production combined with a good coffee yield has allowed him to get rid of the share-croppers, and the consequent increased availability of food has permitted him to take back his children that are now living and working with him in his farm. Because the food-crops are currently covering 95% of their farm, the Lonsako family is producing enough food for its needs, even during the dry season, when the sweet potato production covers the needs together with the provisions of teff and cassava.

However, what is doing the actual success of this farm is the pigeon pea: this farmer has largely multiplied this crop almost everywhere in his farm and, consequently, the production of this crop is very high. On an average cultivation of 50 meters of pigeon pea per sample farmer, Melese Lonsako has multiplied this crop for around 230 meters of lines in his farm! This means that he has an average production of 213 kg of edible peas per year¹², which is very high if we consider that they are produced in a tiny strip of land around the parcels, thus deducting a very little space from the total cultivable land.

¹² According to Inter Aide's team investigation in Hadero, every pigeon pea plant produces on average 694 grams of edible material per year. They advised to plant one plant every one meter, but the farmer usually plant more, so we will take into account one plant every 75 cm. This results in an average production of 92,6 kg of edible production per 100 meters of pigeon pea.

This appears to be a very smart way to use intensively the little surface of soil available for these farmers. Indeed, thanks to the intense multiplication of pigeon pea, cassava and bananas around his parcels, Melese has boosted substantially the quantity of food produced in his farm and has not only achieved an almost complete food sufficiency for his family, but he has also produced an agricultural surplus that he can sell for cash. As shown in Table 5, the pigeon pea can be sold to a relative good price in the local market, and that is how a food-crop can be turned into a cash-crop. Finally, this farmer is also distributing pigeon pea seeds and cassavas to his neighbours and friends, thus contributing to the diffusion of these crops. The other farmers, seeing with their eyes the positive changes that Melese has brought in his farm will be willing to reproduce them in their farms, thus contributing to improve the living conditions of other farmers.



Figure 18: Melese Lonsako with part of his pigeon pea surplus.

Thanks to the increased production due to diversification and the soil fertility management, Melese Lonsako has substantially improved his food security and his living conditions: thanks to his hard work and to the adoption of smart solutions adapted to his farm he was able to stop the vicious circle of vulnerability that was corroding his family's food security, and could launch in his farm a virtuous circle on agricultural growth. However, he is perhaps the best achieving farmer between the sample beneficiaries, especially if we consider his difficult situation at the beginning. Of course, not all the beneficiaries have achieved the same good results; anyways, the data and the maps confirm that a general process of diversification of the production is ongoing on all the farms. Some of the peasants could not maintain one or more crops provided by Inter Aide after one or two seasons, but their dependency towards ginger has decreased everywhere and the consciousness of the benefits of a higher degree of biodiversity are currently widespread between the beneficiary peasants.

Conclusions and recommendations

In this document we have analyzed the first effects of Inter Aide's intervention in favour of the most vulnerable farmers in the *woreda* of Hadero. Our results show that the food security of these farmers has improved substantially, because Inter Aide has applied innovative solutions adapted to face local problems and particular environment conditions. Indeed, many of these innovations are strictly related to the "pillars of sustainable management of agroecosystems"¹³ that are:

- Prevention of soil erosion.
- Conservation of the natural resources and improvement of the biodiversity.
- Permanent reduction of the risks and improvement of the resilience.
- Perpetual augmentation of the productivity of the farm.
- Promotion of the economic viability, social equity and cultural diversity.
- Optimization of natural cycles and reduction of the dependency to the non-renewable resources.

These six pillars are present in the majority of agroecosystems that have had success in terms of productivity and resilience, and they are also present in the approach and actions of this project.

It has long been recognized that Africa needs to significantly and sustainably intensify its smallholder agriculture.¹⁴ Low-input, low-productivity farming has failed to keep pace with food demands from a rising population. But achieving sustainable increases in smallholders' productivity is not easy. The growing demand for agricultural products requires either the cultivation of more land or intensified agricultural land use. It would be difficult to increase cropland area, particularly in regions with high population density, sensitive ecosystems, or poor soil quality like Kembata. In such regions, intensifying agricultural land use may be the only option.

As it has been stated by various international organizations, world agriculture is at a crossroad: the augmentation of food production is a necessary but not sufficient condition in order to satisfy the future necessities of a growing population. It is imperative to change the agricultural

¹³ "Agroecologically efficient agricultural systems for smallholder farmers: contributions to food sovereignty", Altieri M., Funes-Monzote F., Petersen P, *Agronomy for Sustainable Development*, INRA, December 2011

¹⁴ "Atlas of African agriculture research & development: Revealing agriculture's place in Africa", IFPRI, 2014

paradigm in order to include also the most vulnerable farmers¹⁵, who are those that most suffer hunger in the world. The agroecological approach followed by Inter Aide in this project seems to be very appropriate in this sense: as demonstrated by the example of Melese Lonsako and other successful beneficiary farmers, it is possible to stop the vicious circle of vulnerability and it is possible to launch a virtuous circle of agricultural growth and sustainable rural development.

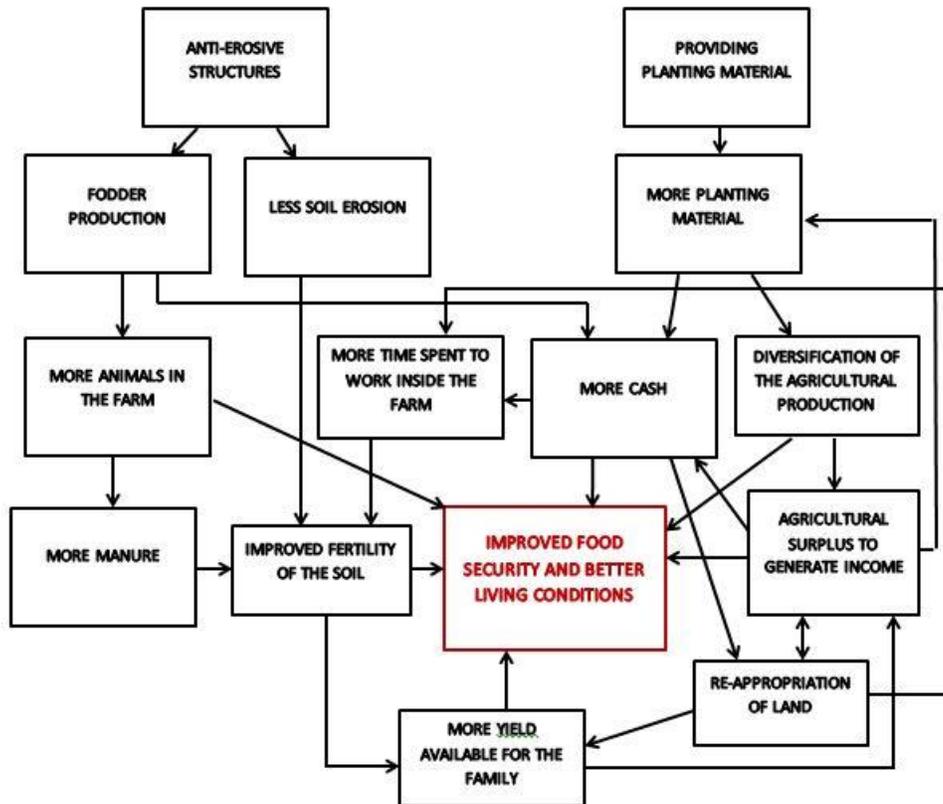


Figure 19: schema of the virtuous circle of sustainable rural development and agricultural growth.

The main problems of the Kembata region are the high demography and population density; the steepness of the lands and the heavy soil erosion; the little amount of land available for cultivation; the lack of livestock and animal food; and the low level of biodiversity. Knowing this, Inter Aide has worked on the specific conditions of the area and has taken into account the main problems of the most vulnerable farmers: the combination of biological and physical means to fight soil erosion has favoured the introduction of fodder cultivation, which in turn has favoured the reintroduction of livestock in the agroecosystems of these people. The distribution of planting materials to the beneficiaries did not mean to be a lonely action of help, but has been thought in order to augment the level of biodiversity and to enjoy all the benefits that a

¹⁵ "Agriculture at a crossroad", Synthesis report, IAASTD, 2009

diversification of the agricultural production means. The results of this document demonstrate that, in this way, it was possible to stop the vicious circle of vulnerability quickly and with a relative small amount of money invested.

Not all the beneficiaries have had the same good achievements, but the results of this study show that there is undoubtedly a general tendency towards a better food security and better living conditions for these families since the intervention of the project. Nevertheless, these peasants remain extremely poor in an environment characterized by generalized poverty. This means that we do not know if in the future they will be able to absorb one or more shock without falling again into the vicious circle of vulnerability. However, the current results suggest to keep an optimistic view, even if further analyses will be needed in the future in order to better understand the impact of Inter Aide's project.

In any case, we can also state that the effects of this project have had much more impact than those of the governmental Safety Net Program. Indeed, the results show that, in the best of the cases, the food security and living conditions of the beneficiaries of this program was the same as before. Even if this program supports thousands of vulnerable families in the entire country, it does not attack the causes of vulnerability, thus it seems very hard that it can be able to stop the vicious circle of food insecurity. Furthermore, this program does not focus on the most important asset that peasant possess: their land. Creating a subsidy mentality, the SNP takes the farmer out of his farm and makes him rely mainly on a very low wage for his own existence. Even the local supervisors of SNP admitted in an interview that they do not have big expectations of changes for their beneficiaries! In my opinion, it could be more useful if this program was related with other NGOs' programs and work complementarily with them, for example providing planting material instead that money to the beneficiaries, in order to maintain and strengthen the link between the peasants and the land.

On the contrary, Inter Aide has focused mainly on the importance of land, and has worked to find innovative solutions to the peasants' problems. This is, in my opinion, the most successful action of this project, and this is why it was possible to stop the vicious circle of vulnerability. Nevertheless, as written before, not all the beneficiaries had the same good achievements and not all of them could launch a virtuous circle of agricultural growth in their farm. This is due mainly to the fact that the agricultural surplus generated by the planting material provided by Inter Aide in most of the cases is not enough in order to improve the food security and provide cash in the meantime. Hence, after one or two seasons, many peasants suffer again of planting material shortage.

To solve this problem, a good solution could be to self-produce the great majority of the food consumed by the family and, in the meantime, to have a good cash-crop to generate income to buy new planting material. Coffee could work in this sense, but the majority of the vulnerable farmers do not produce enough coffee to sell.

Another good solution could be to multiply as much as possible the lines of *Pennisetum riparium* in order to have a growing production of fodder that can be used to improve the availability of cash to buy more planting material. This could be also a good solution to solve the difficult situation of the lonely women: if these women could have a parcel cultivated only with fodder, they may let the hard work of cultivating the farm to the share-croppers (as they mostly do right now) and they could take care of the fodder parcel, a task that does not require hard physical work nor takes much time, and can give good economical results. In any case, the multiplication of *Pennisetum riparium* seems to be a good solution everywhere, because of the chronic shortage of animal food in the area, and also because the majority of the farms have enough room to host a bigger production of this crop.

In this sense, another solution that could work well for the vulnerable farmers would be the introduction of the grass of the species *Desmodium*. Indeed, this plant grows well under the shadow of the trees and, in the meantime, it improves the fertility of the soil: it could be a very good solution to exploit in this way the coffee orchards' land, which occupies on average 12% of the farms of the sample beneficiaries. The introduction of *Desmodium* could mean a further production of fodder to feed the animals using a space that is currently under-utilized, and in the meantime it could improve the production of the coffee trees, meaning a better cash availability.

Following the example of the most successful sample farmer, I wish to recommend the multiplication of pigeon pea, cassavas and bananas all around the parcels. The dimensions of the cultivated parcels should also be reduced in order to favor the biodiversity of the agroecosystem and to allow the edible plants around them to work as mechanical barriers for insect pests, while in the meantime improve the fertility of the soil. In the majority of the farms there is enough room to do this, and overall the pigeon pea should follow the multiplication of the *Pennisetum riparium*, because the first one improves the production of the other, and because the pigeon pea produces a good amount of edible matter from a very little space of land and with a relative little work by the farmer; a edible matter that can be easily sold and generate income.

I wish to recommend also a strategy for supporting the introduction of more animals in these agroecosystems. The poultry for example are almost absent from the farms of the vulnerable

farmers, while they could be a very good solution in order to boost the quantity of proteins consumed by these peasants with a relative little amount of resources invested. Indeed, the chickens can be fed with many farm's subproducts and produce eggs and meat, and eventually can represent an income generator.

This report has shown that Inter Aide's approach is the most adapted to solve vulnerable farmers' main problems and that it is possible to stop the vicious circle of vulnerability quickly and with a relative small amount of resources invested, if innovative solutions adapted to face local problems and conditions are adopted. However, the will of the peasants to work to change their living conditions is also fundamental in order to succeed. Inter Aide's intervention has shown the way to follow, and the good examples like Melese Lonsako will certainly help the diffusion of good agroecological practices that can improve the food security and in the meantime helping to conserve the natural resources of the region. However, the success or the failure for these peasants will be always strictly related with the absence of major shocks that may destroy the good results achieved during the transition period. For this we cannot be sure that these farmers are definitely in shelter from food insecurity, and future inquiries will be needed in order to better understand the impact of this project and the interventions to put into practice in the future. In this sense, this document is expected to help to understand the main issues and to support those future inquiries.