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Madagascar:

Comprehensive Food Security and Vulnerability Analysis (CFSVA)

Conducted in August - September 2005

Strengthening Emergency Needs Assessment Capacity (SENAC)

Madagascar: Comprehensive Food Security and Vulnerability Analysis (CFSVA)

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Executive Summary

The Republic of Madagascar is an island nation in the Indian Ocean, off the eastern coast of Africa. It is the fourth largest island in the world and is home to 5% of the world's plant and animal species, 80% of them are unique to Madagascar. The country has a population of about 18 million people (2005) and an area of about 587,000 square kilometres.

Madagascar is prone to natural disasters, particularly cyclones and droughts. Over the past 35 years, at least 46 natural disasters, including cyclones, droughts, epidemics, floods, famines and locust infestations have been reported, which have cumulatively affected more than 11 million people. In 2004, approximately 72% of the population were living below the poverty line of 1 USD per day (2004 EPM). Eighty five percent of the poor in Madagascar live in rural areas. Labour migration is common everywhere, but is more important in the highlands than in the lowlands.

The country is classified as a low-income food deficit nation - the 2005 UNDP Human Development Report ranked Madagascar 146th of 177 countries. Agriculture (farming, livestock rearing, fishing and forestry) is the mainstay of the economy. Rice is the most important crop, followed by cassava, sweet potato and maize.

Currently, in terms of grade repetition, dropout rates, and other indicators (cited in World Bank, 2002), primary schooling in Madagascar rates poorly both in absolute terms and in comparison to other countries in the region.

Madagascar has a poorly developed transport infrastructure which constitutes a major constraint to strong economic growth which can lead to the reduction of poverty and food insecurity. Road access is a major problem throughout the country - there are about 50,000 kilometres of roadways, of which only about 6000 km are paved (1999 estimates).

Chronic malnutrition in children, resulting in stunting, is an indication of long-term under-nutrition and poor consumption. In Madagascar, 45% of children are stunted at 24 months of age. Stunting is more prevalent in rural areas (46%) than in urban areas (39%).

Background

WFP Madagascar, with support from the Vulnerability Analysis and Mapping (VAM) staff from WFP Johannesburg, Maputo, and Rome, designed and implemented a Comprehensive Food Security and Vulnerability Analysis (CFSVA) in rural Madagascar.

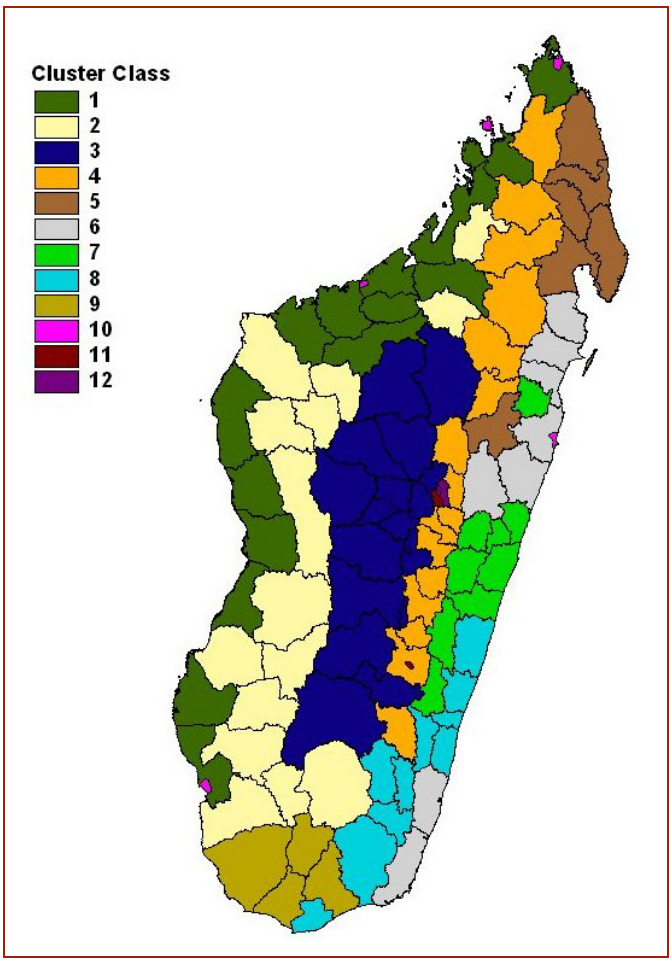
Planning for the survey began in May 2005 with a literature review and secondary data analysis. Survey design and sampling took place in July/August and the training of enumerators and the field-testing of questionnaires was conducted mid-August. Data collection took place in August/September 2005 using Personal Digital Assistants (PDAs) for the household survey, which allowed the enumerators to collect and enter data simultaneously into a database. The data analysis began in October 2005 with the final report submitted in March 2006. The findings will serve as an important knowledge base for establishing a countrywide food security monitoring system. To enhance synergies with other agencies that also collect data on food security, the present database has been shared with the EU-funded Rural Information and Food Security System (*SIRSA – Système d'Information Rurale et de Sécurité Alimentaire*).

The primary objective of the 2,200 household survey was to obtain a better understanding of food insecurity and vulnerability among rural households in a non-emergency setting at sub-regional levels throughout the country. The findings serve as pre-crisis baseline information against which to measure the effects of a future shock such as a cyclone or drought. In particular, the following questions must be answered:

- Who are the hungry poor and vulnerable?
- Where do they live?
- What are the underlying causes of food insecurity and vulnerability?
- How can food aid make a difference?

Coverage and methodology

The Country Office with the support of VAM/HQ and VAM/ODJ wanted to include a health and nutrition component in the household survey. The survey was designed to draw samples of rural households at a sub-regional level. In order to achieve this, spatial analysis and principal component and cluster analyses were used to create clusters of districts that were homogeneous in terms of selected socio-demographic characteristics, risk, elevation, length of growing period, land cover and population density. From each of the 9 rural district clusters, a two-stage probability sampling method was used to select villages and households with a sample size calculated to provide an estimate of food insecurity with 90% confidence.



In total, more than 2,200 households in more than 220 rural communities in 97 districts and 22 regions were surveyed across the country. From this sample, health and nutrition information was collected for nearly 1900 women of reproductive age (15-49 years) and nearly 1,500 children aged 0-59 months. In addition, community interviews were conducted in all sample villages.

Summary findings

Overall, the CFSVA survey has identified food insecure households experiencing a problem of food availability, access and/or utilization. In addition, the analysis also identifies vulnerable households that are ***at risk*** of becoming food insecure. Their vulnerability is dependent upon their exposure to risk factors (such as natural disasters) and their ability to manage or cope with these shocks.

The highest percentage of ***food insecure*** households can be found in *Cluster 9* (South), followed by *Clusters 2* (Western inland area), *6* (South-East / North East littoral area) and *8* (South East). The proportion of ***vulnerable***, but not food insecure households is highest in *Clusters 1* (Western littoral area), *2* (Western inland area), and *8* (South-East), followed by *Clusters 4, 6*, and *7*. Combining food insecure and vulnerable households, *Cluster 9* (South) is in the most precarious situation, followed by *Clusters 2* (Western inland area) and *8* (South-East).

In determining the food security status of the rural population, exposure to natural shocks must be considered. Almost all sample villages have been affected by natural shocks, such as cyclones, floods and drought with the worst off villages being found in *Clusters 2, 6, 8*, and *9*. More than 70% of households in *Clusters 2* and *6* and nearly all in *Cluster 9* experienced at least one shock. The most often reported shock was cyclone in *Clusters 1-5*, floods in *Clusters 6* and *8*, drought in *Clusters 7* and *9* and, additionally, a high level of crop diseases in *Cluster 7*. The most important economic shock was the increase in rice prices that had an especially strong impact on *Clusters 3, 4, 6*, and *7*.

Strategies used to cope with all kinds of shocks consist primarily in reducing the quantity of food and the number of meals consumed per day. In the case of natural shocks, these

two major coping mechanisms are supplemented by an over-reliance on forest products. The latter strategy is especially pronounced in *Clusters 1, 2*, and *9*. The sale of cattle formed part of the coping strategy in *Cluster 9* where many of the rural households rely on livestock rearing as a livelihood activity. Taking up temporary wage labour was available as a coping strategy only to *Cluster 1*.

More than 80% of the households in *Clusters 1,2,6,8*, and *9* had bought food on credit in the previous six months and more than four-fifths of these households were still in debt at the time of the survey. The highest level of current debt was found in *Cluster 1*.

Household food insecurity and individual nutritional outcomes are mainly the result of exposure to recurrent disasters, poor infrastructural development, and a low level of diversity in livelihood strategies. Thus the results of the CFSVA can also be of significance for future strategies of poverty reduction, since they also point to the need for increased engagement in the areas of Education, Health, Infrastructure, and Rural Development. No doubt, there are other challenges as well such as the rising expenses to cover basic needs and the concurrent decline in purchase power or the growing level of perceived public insecurity.

Education

The lowest levels of literacy of household heads were found in *Clusters 7* and *8* (around 55%) and *Cluster 9* (34%) and the highest in *Cluster 4* (90%) households. Literacy among spouses ranges from as low as 22% in *Cluster 9* up to 77% in *Clusters 4* and *5*. Women's educational level was also rather low in *Cluster 2* where nearly 60% of the women had never attended school at all.

Primary school enrolment was lowest in sample villages in *Cluster 6* (46%) and *Cluster 9* (26%), while absenteeism was most common in *Clusters 1* and *2* (in 40% of the sampled households with school-aged children). School enrolment and the quality of education are also constrained by the absenteeism of teachers and a school infrastructure as well as the limited accessibility of villages. Around half of the villages in the sample have a primary school, but there is none in nearly two-thirds of the sampled villages in *Cluster 9* and in half of the villages in *Clusters 6* and *2*. The next primary school is more than one hour's walking distance from 20% of the villages in *Cluster 2* and from 40% of the villages in *Cluster 9*. Overcrowded classes are most common in *Cluster 9* and *1* samples.

Half of the villages reported that school fees restrained school attendance. The main reason cited for leaving school was in most cases the parents' inability to buy the basic school items (*Clusters 3, 6*, and *7*) and the families' need of the labour of the children (*Clusters 2, 3*, and *8*). In half of all sampled villages the lack of school infrastructure, the absence of teachers, and limited levels at school account, to a large extent, for early school leaving. In *Clusters 5* and *6*, parents' lack of interest and thus the need for sensitisation were also mentioned.

Health and nutrition

Despite the fact that treatable health problems such as malaria, diarrhoea, respiratory infections and TB are very common, few villages have a local health centre. There is a dispensary (CSBII) in only 15% of the villages in *Clusters 1* and *4*. One-third of the villages in *Clusters 3, 4, 5,* and *6* rely on a centre that can be reached in less than one hour. The costs of even basic health care are often a limiting factor.

Half of the sampled villages in *Clusters 3, 4*, and *9* had access to a nutritional centre to be reached in less than 3 hours. In *Cluster 1* and *2*, people in most of the villages with no local nutrition centre had either never heard of one or knew of the existence of a nutrition centre that took 6 hours to reach. .

Women in *Clusters 5* and *6* reported an average of three pregnancies and live births as compared to four in the other clusters. Stillbirths were most frequent in *Clusters 5* and *9* (31% of the sample women), while the lowest was found in *Cluster 4* (17%). The highest percentage of children described as being 'very small' or 'smaller than normal' at birth was found in *Clusters 1* and *9* (35%), followed by *Cluster 7* (33%). The likelihood of being low birth weight was lowest in the *Cluster 5* sample (13%). The rate of reported child deaths was highest in *Cluster 8* (44%) and *Cluster 2* (40%) and lowest among women in Clusters *5* (21%) and *4* (23%).

Women in *Clusters 4* and *5* had the highest mean body-mass index (BMI) of the sample while those in *Clusters 8* and *2* had the lowest. Nearly half the women in the *Cluster 7* sample were found to be underweight (< 45 kgs), followed by nearly 40% in *Cluster 8*. Nearly 20% of the women in the *Cluster 7* sample were stunted (< 145 cms). This rate was 15% in the *Cluster 6* sample. Overall, it appears that women in *Cluster 7* are the worst off in terms of nutritional outcomes while those in *Cluster 9* show the lowest prevalence of underweight and stunting (none) in adult women.

By district cluster, the highest two-week-period prevalence of diarrhoea in women was found in *Cluster 1* (21%), followed by *Cluster 7* (16%), while the lowest was found in *Cluster 4* (7%) and *Cluster 3* (8%). However, the prevalence of fever was 31% in *Clusters 7* and *9*, followed by *Cluster 1* (30%) and *Cluster 2* (28%) and lowest in *Cluster 3* (13%). More than 10% of the women in *Cluster 1* and *Cluster 7* reported suffering from both illnesses in the 2 weeks prior to the survey.

The prevalence of **acute child malnutrition** was highest in *Cluster 8* (10.8%), followed by *Cluster 5* (10.6%) and *Cluster 2* (9.9%). Wasting was lowest in *Cluster 1* (4.3%) and *Cluster 9* (5.8%). The highest prevalence of **underweight** in pre-school children was found in *Cluster 7* where more than 45% of the children in the sample had low weight for their age. More than 40% of the children in *Clusters 4* and *8* were also underweight. The prevalence of underweight children was lowest in *Clusters 1, 2, 5*, and *9*. The greatest problems in **chronic child malnutrition** lie along a ridge to the east of the centre of the island. In *Cluster 4*, nearly two-thirds of the sampled children were stunted, followed by half the children in *Cluster 3* and *6* samples. The prevalence of chronic malnutrition was lowest in *Clusters 1* and *2* where only around 30% of the children were malnourished.

The prevalence of **severe underweight** was highest in *Cluster 8* (12%), followed by *Cluster 4* (11%) and lowest in *Clusters 5* and *9* (5%). Around 20% of the children in the sample were **severely stunted** with the highest prevalence found in *Cluster 4* (32%), followed by *Clusters 8* (26%) and *7* (25%).

The highest disease prevalence in young children is found mostly in the western part of the country. More than 30% of the sample children in *Clusters 1*, *2*, and *8* had experienced non-specific fever in the 2 weeks prior to the survey. The prevalence of acute respiratory infection (ARI) was highest in *Clusters 8* (24%) and *1* (20%) and less than 10% in *Clusters 3* and *4*. The 2-week period prevalence of diarrhoea was also highest in the children in *Clusters 1* and *2* (21%), and *7* (20%).

Infrastructure

Most villages in the sample have no direct access to public transportation. Less than one-quarter of the villages is connected to the bus network in Clusters *3, 6, 7,* and *8*, and only 5% of the villages in the *Cluster 9* sample. It takes sometimes as much as 6 hours to reach a bus line from most villages in *Clusters 1, 2, 6, 7*, and *9*, where no bus passes through the village. While bus roads are generally served throughout the year, accessibility is difficult for to 5 months in *Clusters 7, 2*, and *1* and for as many as 7 months on average from the sampled villages in *Cluster 4*.

Less than 30% of the villages in the sample host a market. The walking distance to the nearest market from villages without a marketplace of their own varies between 1 to 3 hours for more than half of the villages in all Clusters. The worst disruptions in market supply have been experienced by the sampled villages in *Clusters 8* and *9*. Only about 10% of the sample households in *Cluster 4* and *9* reported going to a market 4-7 times a week.

Village access to water is dependent on the proximity of rivers or lakes in most Clusters. About half of the villages in all Clusters experience difficulties with the water supply. This percentage is much lower in *Cluster 2* (one-quarter) and highest (two-thirds) in *Clusters 5* and *9*. Households in *Clusters 1, 5, 9* and especially *8* have the least access to drinking water from an improved source.

Rural development

Most villagers' main economic activity at the community level is the marketing of crops, then the sale of cattle (*Cluster 9*) and cash crops. To a lesser extent, handicrafts are of importance in *Clusters 2* and *4*.

Crop diversity is very low in *Cluster 5* (mostly rice) and low in *Clusters 1, 2* (mostly rice), and *Cluster 6* (mostly cassava). The main harvest does not adequately provide food for the majority of households - supply is insufficient for more than 6 months in *Cluster 9*, less so in *Clusters 2, 6, 7*, and *8*.

In terms of assets diversity, sample households *Clusters 7* and *8* were the worst off. In *Clusters 2* and *8*, only 66% of the households owned farming equipment at all. Land ownership was limited in *Cluster 5* where just over 70% of sample households had access to farming land. The average size of owned and/or cultivated plots was the lowest in *Clusters 6* and *5*. Only 19 % of households in *Cluster 1* and 25% in *Cluster 6* cultivated a vegetable garden.

The total monthly expenditure on food by the sampled households was the highest in *Clusters 2* and *6* and relatively high in *Clusters 1, 5, 7*, and *8*. Households in *Clusters 1*, *2*, *5* and *6* were the most reliant on purchases for the food they consume while the least reliant on purchases were households in the *Cluster 4* and *9* samples.

There is no community granary in the majority of the villages and even if there is a community storage facility, very few people make use of them. Mutual mistrust and the lack of leadership skills were cited to account for the lack of associations within the communities.

Villagers were asked which aspects of their lives they thought were most important to develop. In *Clusters 1-4* they mentioned means to improve agricultural production, including seeds, fertilizers and insecticide as their immediate needs from a short-term perspective. Needs related to drinking water were considered crucial in *Clusters 1* and *7-9*. Water management issues related to irrigation and drainage were mainly mentioned in *Clusters 3* and *5*. Needs related to education such as building schools, literacy initiatives, and the recruitment of teachers were seen as of key importance in *Clusters 4, 6*, and *7* and, to a lesser extent, in *Clusters 1, 2,* and *8*. Interestingly, the problem of road infrastructure was seen as a secondary issue in most Clusters.

Role of food aid

The results of the CFSVA point to serious food security and vulnerability problems among households in *Clusters 9, 2, 6* and *8*, indicating the need for a close monitoring of the food security and nutritional situation is these areas. While some data is provided by the SAP (*Système d'Alerte Précoce*) and the SIRSA (*Système d'Information Rurale et de Sécurité Alimentair*) in the South, sentinel sites could be established to extend the coverage of food security monitoring in the country.

Food assistance though school-feeding activities should be continued in the South, given the high level of household food insecurity related to the frequent exposure to shocks and the limited options for livelihood strategies in this area. This could have an impact not only on household food security, but constitute an investment in the future of rural households through improved learning as well. Another rationale supporting school feeding activities in this region is to compensate for the increased caloric intake of children due to the long walking distances to reach school. Nonetheless, the construction of additional schools remains an imperative. In case school feeding activities were to be extended, *Cluster 6, 7* and *8* in the Province of *Fianarantsoa* should benefit, and a special consideration should be given to the Western inland area, given the high proportion of food insecure households combined with a low enrolment rate and a high percentage of absenteeism.

Food for Work/Food for Training programmes are to be continued combined with safety net strategies in areas vulnerable to natural disasters and recurrent drought. The development of a disaster preparedness plan within the national framework, including an efficient early warning system and eventual contingency plan is crucial, giving a special consideration to districts in *Clusters 2, 6* and *9*.In the fight against malnutrition a nationwide monitoring of the nutritional situation is necessary to ensure a timely provision of food aid where necessary. For vulnerable groups, such as women and children less than five years of age, fortified blended food aid can continue to play a significant role in improving their health and nutrition status. In many areas, however, the nutritional situation is an outcome of the poor utilization of food. In these areas sensitization on nutrition (dietary diversity, vitamin A and iron intake), neonatal health care, and the provision of basic care for young children is necessary. Training on crop diversification is another area to be pursued.

Part I - Background and Overview

Section 1.1 – Overview of national context

The **Republic of Madagascar**, or **Madagascar**, is an island nation in the Indian Ocean, off the eastern coast of Africa. It is the fourth largest island in the world and is home to five percent of the world's plant and animal species, 80% of them are unique to Madagascar. Among its most notable examples of biodiversity are the lemur family of primates, three endemic bird families and its baobab trees.

The country has a population of about 18 million people (2005) and an area of about 587,000 square kilometres. Madagascar is divided into six provinces and 22 administrative regions and 111 districts. The country is classified as a low-income food deficit nation - the 2005 UNDP Human Development Report ranked Madagascar 146th of 177 countries. In 2004, approximately 72% of the population were living below the poverty line of 1 USD per day (2004 EPM).

Agriculture (farming, livestock rearing, fishing and forestry) is the mainstay of the economy, involving about 70% of the active population, but accounting for less than 30% of the country GDP (World Factbook, 2005).

Section 1.2 – History

The written history of Madagascar began in the 7th century, when Arabs established trading posts along the northwest coast. European contact began in the 1500s, when a Portuguese sea captain sighted the island after his ship became separated from a fleet going to India. In the late 17th century, the French established trading posts along the east coast and from about 1774 to 1824; it was a favourite haunt for pirates.

Beginning in the 1790s, *Merina* rulers succeeded in establishing political dominance over the major part of the island, including the coast. In 1817, the *Merina* ruler and the British governor of Mauritius agreed on a treaty to abolish the slave trade, which had been important in Madagascar's economy. In return, the island received British military and financial assistance. British influence remained strong for several decades.

In 1885, the British accepted the imposition of a French protectorate over Madagascar in return for eventual control over Zanzibar (now part of Tanzania). Absolute French control over Madagascar was established by military force in 1895-1896, and the *Merina* monarchy was abolished.

During World War II, Malagasy troops fought in France, Morocco, and Syria. After France fell to Germany, the Vichy government administered Madagascar. British troops occupied the strategic island in 1942 to preclude its seizure by the Japanese. The French received the island from the United Kingdom in 1943.

In 1947 a nationalist uprising was suppressed after several months of bitter fighting. The French subsequently established reformed institutions in 1956 and Madagascar moved peacefully toward independence. The Malagasy Republic was proclaimed on October 14, 1958, as an autonomous state within the French Community. A period of provisional government ended with the adoption of a constitution in 1959 and full independence on June 26, 1960.

Section 1.3 – Geography

The island's highly varied landscape is divided generally into three parallel zones running north to south: the low plateaus and plains in the west; the high plateau in the centre, with altitudes ranging from 750m to 3000m; and a narrow coastal plain in the east. The overall climate is tropical with a rainy season stretching from November to March. However, there are significant differences in the microclimates between the regions. Rainfall ranges from around 300 mm annually in the dry south to over 3600 mm annually on some portions of the eastern coast.

Madagascar is prone to natural disasters, particularly cyclones and droughts. Over the past 35 years, at least 46 natural disasters, including cyclones, droughts, epidemics, floods, famines and locust infestations have been reported, which have cumulatively affected more than 11 million people. Thus, natural disasters constitute the major risk factor for the population. The recent intensification in frequency and magnitude of

catastrophic natural events is associated with both global climatic change and environmental degradation, particularly the loss of forest cover.

Section 1.4 – Population and ethnic groups

Madagascar's population is predominantly of mixed Asian and African origin, where research suggests that the island was uninhabited until Malay seafarers arrived between about 2,000 to 1,500 years ago. Recent DNA research shows that the Malagasy are approximately of half Malay and half East African stock. The Malagasy language shares some 90% of its basic vocabulary with a language from a region in southern Borneo.

Subsequent migrations from both the Pacific and Africa further consolidated this original mixture, and 36 separate tribal groups emerged. Asian features are most predominant in the central highlands people, the *Merina* (3 million) and the *Betsileo* (2 million) while the coastal people (called *côtiers*) are mostly of African origin. The largest coastal groups are the *Betsimisaraka* (1.5 million) and the *Tsimihety* and *Sakalava* (700,000 each).

About 45% of the Malagasy are Christian, with many of the Christian churches being influential in politics. In the coastal regions of the provinces of *Mahajanga* and *Antsiranana*, Muslims constitute a significant minority.

Eighty five percent of the poor in Madagascar live in rural areas. Labour migration is common everywhere, but is more important in the highlands than in the lowlands due to availability of work in the sapphire mines. There is considerable permanent migration as well with those who move permanently mostly responding to land availability.

Section 1.5 – Poverty

More than two-thirds of the population is considered to be poor and food insecure - 60% are considered to be extremely poor. More than 40% of the children less than three years of age are stunted with the prevalence being slightly higher in rural areas (DHS 2003-2004, EPM 2004).

Following the 2002 political crisis, which paralyzed the national economy for several months and triggered a 12% drop in the GDP, Madagascar has been working progressively to revive its economy. Poverty reduction and combating corruption have been the central themes of economic policy. Within the last three years, several policy initiatives have been developed and implemented to underpin the Government's Action Plan, with others still under development. These initiatives include the revision of the Poverty Reduction Strategic Document, the promulgation of the National Nutrition Policy, the elaboration of the National Food Security Action Plan, the National Program of Rural Development, and of the National Strategy on Risk Management and Social Protection. These initiatives should have crucial implications for the future food security and vulnerability of the country's residents.

Section 1.6 – Education

The Malagasy language is generally spoken throughout the island while French is spoken among the educated population. English is becoming more widely spoken and in 2003 the Government began a pilot project of introducing the teaching of English into the primary grades of 44 schools, with hopes of taking the project nationwide.

Currently, in terms of grade repetition, dropout rates, and other indicators (cited in World Bank, 2002), primary schooling in Madagascar rates poorly both in absolute terms and in comparison to other countries in the region. However, there appear to be no gender disparities in terms of education.

Following an electoral dispute, the central highlands of the island of Madagascar were subjected to an economic blockade during the first half of 2002. After the blockade ended in June 2002, user fees for health services and school fees were progressively eliminated.

The private sector in education, while still relatively small, has been expanding steadily in response to quality problems in the public system. A characteristic of the private education sector in Madagascar is that it is dominated by church-run (Catholic and Protestant) schools. Only 15% of private primary students and 30% of private secondary students attend secular schools.

Section 1.7 – Infrastructure

Madagascar has a poorly developed transport infrastructure which constitutes a major constraint to strong economic growth which can lead to the reduction of poverty and food insecurity. Road access is a major problem throughout the country - there are about 50,000 kilometres of roadways, of which only about 6000 km are paved (1999 estimates). And even where roads exist, entire regions periodically become inaccessible during the rainy season.

Waterways are of local importance only for small portions of the *Pangalanes* Canal along the Eastern coastline. Ports and harbours are in poor condition and only the port of *Tamatave* is able to accommodate large cargos. Ports in *Antsiranana*, *Mahajanga*, *Toamasina* and *Toliara* are operational but have very limited capacity.

The difficult access to the interior regions implies high transport costs, which exerts strong constraints in the supply of agricultural inputs and the marketing of surpluses.

Section 1.8 – Health

According to UNICEF, the mortality rate for children less than five years of age in Madagascar is 126 per thousand (2003). A Nutrition Profiles analysis (The Linkages Project/USAID, 2005) showed that protein-energy malnutrition is a contributing factor in 54% of those pre-school child deaths.

Another underlying cause of high child mortality rates is the poor nutrition of mothers. Levels of maternal malnutrition are among the highest found in Sub-Saharan Africa, with about 19% of women considered as malnourished using the criteria of low body-mass index (*BMI < 18.5 kg/m*^{2}). Iron deficiency anaemia is also very high, affecting 46% of women of reproductive age (2003-2004 DHS). The maternal mortality rate[1] is 550.

Chronic malnutrition in children, resulting in stunting, is an indication of long-term under-nutrition and poor consumption. In Madagascar, 45% of children are stunted at 24 months of age. Stunting is more prevalent in rural areas (46%) than in urban areas (39%). Acute malnutrition, resulting in wasting, is affecting 14% of children at 24 months of age, with no difference between rural and urban areas. Underweight, illustrating the combined effects of chronic and acute malnutrition, affects 40% of the children under less than three years of age. Underweight is more prevalent in rural areas (41%) than in urban areas (35%) (2003-2004 DHS).

HIV prevalence in Madagascar remains very low compared with other countries in sub-Saharan Africa. According to UNAIDS/WHO epidemiological model estimates, the adult HIV prevalence rate in the country was just 0.3% at the end of 2001, compared to 9% in sub-Saharan Africa. However, there are some important warning signs both that HIV prevalence may be higher than estimated, and that Madagascar is ripe for a rapid increase in HIV infections.

Public health care in Madagascar is organized around approximately 1,900 basic or primary care facilities supported by a network of hospitals that includes 70 first- and second-level referral hospitals, four regional hospitals, two national university hospitals, and seven specialized institutions. There are many types of basic care facilities, including Dispensaire, poste sanitaire, poste d'infirmerie, and Centres de Soins de Santé Primaire (CSSP).

Section 1.9 – Agriculture and land reform

Madagascar has a unique flora and fauna and many of the species found on the island are found nowhere else in the world. The island has given the world such products as clove, vanilla, ylang-ylang and many other less known species.

Agriculture, including livestock rearing, fishing and forestry, is the mainstay of the economy, involving 70% of the active population. Rice is the most important crop, with an annual production of 2.6 million tonnes, followed by cassava (2.4 million tonnes), sweet potato (530,000 tonnes) and maize (175,000 tonnes). Those crops are grown all over the country, with important regional variations in terms of area and total quantities produced.

[1] Annual number of deaths of women from pregnancy-related causes, when pregnant or within 42 days of termination of pregnancy, per 100,000 live births.

Madagascar is a smallholder rice economy *par excellence*. Rice accounts for a majority of the nation's cultivated area and of per capita calorie consumption, yet most Malagasy rice farmers do not produce enough rice to feed their families (Barrett and Dorosh 1996, Minten and Zeller 2000). Forced to sell some rice for cash at harvest time, the poorer farmers struggle to find the means to buy rice at higher prices in the months leading up to the harvest, after their rice stocks run out.

Land holdings and income are closely related in Madagascar beyond the smallest farm sizes, which are typically home plots cultivated by daily wage labourers (Barrett and Dorosh 1996). Malagasy smallholders cultivate rice on valley bottoms and terraced hillsides as well as in freshly cleared uplands using methods and seed varieties that have remained largely unchanged for generations. Because of the importance of rice to rural incomes and employment and to national food security, and because of the significant role upland rice cultivation plays in deforestation in Madagascar, intensification of lowland rice production has been a major focus of development interventions in Madagascar for many years.

For 2005, the production of rice is estimated at around 3.4 million tons of paddy (FAO, 2005). In terms of consumption, rice is the main staple, but cassava is also contributing importantly to the diet (14% of all calories intake), particularly in the South where it accounts for more than 27% of the calories consumed. Maize and sweet potato are not very important *overall* as a food staple, but provide significant caloric requirements in the South. The availability of food is a real problem in some areas due to a combination of insufficient local production, poor access to food markets and lack of quality food in those markets.

Livestock is a significant part of the livelihood and of the farming system in Madagascar, particularly in *Toliara* and *Mahajunga*. It is a key element of food security in the South where it may be the major form of agricultural income. However, its importance is more as an essential form of savings than as food, as even in the South meat consumption is infrequent, being reserved for special occasions and social obligations.

Section 1.10 – WFP assistance

WFP is providing development support, aligned to the Government's poverty reduction strategy through a Country Programme (CP 10340, 2005-2009). Food assistance is provided through 3 activities:

- Activity 1: Support to basic education is geared towards facilitating access to education and reducing gender inequalities;
- Activity 2: Combat chronic food insecurity through Food for Work and Food for Training programs that are directed towards the creation of development assets and the promotion of environmental protection. In order to prevent a loss of assets, a contingency stock of 1150MT is included to mitigate the impacts of small-scale natural disasters;
- Activity 3: Support for the fight against malnutrition, TB, and HIV/AIDS.

Through the PRRO 10442, 2006-2008, WFP programming will focus on activities that address the seasonal and transitory shocks that are an annual occurrence in the country. The PRRO interventions intend to strengthen disaster preparedness, and improved protection for severely affected segments of the population (e.g. displaced groups), as well as the most vulnerable segments of the population (e.g.; female-headed households) in the event of a cyclone, drought, flood and/or socio-economic crisis.

Part II – Objectives and Methodology

WFP Madagascar, with support from the Vulnerability Analysis and Mapping (VAM) staff from WFP Johannesburg, Maputo, and Rome, designed and implemented a Comprehensive Food Security and Vulnerability Analysis (CFSVA) in rural Madagascar.

Planning for the survey began in May 2005 with a literature review and secondary data analysis. Survey design and sampling took place in July/August and the training of enumerators and the field-testing of questionnaires was conducted mid-August. Data collection took place in August/September 2005 using Personal Digital Assistants (PDAs) for the household survey, which allowed the enumerators to collect and enter data simultaneously into a database, eliminating the need for data entry clerks. However, the data of the community interviews was entered by hand and completed by the end of November.

The data analysis began in October 2005 with the final report submitted in March 2006. The preliminary findings of the CFSVA have been used in the design of the new PRRO - "Response to recurrent natural disasters and seasonal food insecurity in Madagascar" which begins in July 2006. They will also serve as an important knowledge base for establishing a countrywide food security monitoring system. To enhance synergies with other agencies that also collect data on food security, the present database has been shared with the EU-funded Rural Information and Food Security System (*SIRSA – Système d'Information Rurale et de Sécurité Alimentaire*).

Section 2.1 – Objectives

The primary objective of the household survey was to obtain a better understanding of food insecurity and vulnerability among rural households in a non-emergency setting at sub-regional levels throughout the country. The findings serve as pre-crisis baseline information against which to measure the effects of a future shock such as a cyclone or drought. In particular, the following questions must be answered:

- Who are the hungry poor and vulnerable?
- Where do they live?
- What are the underlying causes of food insecurity and vulnerability?
- How can food aid make a difference?

In designing the survey, both household food security and the livelihoods approaches were applied. With respect to food security, availability, access and utilization of food were analyzed. In regard of livelihoods and risk management, the analysis covered the interdependent aspects of the availability and diversity of assets, sources of income, vulnerability and exposure to natural, social, political and health risks and the related coping strategies used to manage shocks.

In order to achieve the objectives, the survey was designed to draw samples of rural households at a sub-regional level. In order to achieve this, spatial analysis and principal component and cluster analyses were used to create clusters of districts that were homogeneous in terms of socio-demographic characteristics, risk, elevation, length of growing period, land cover and population density. From each of the 9 district clusters, a two-stage probability sampling method was used to select villages and households with a sample size calculated to provide an estimate of food insecurity with 90% confidence. The clustering and sampling are described in greater detail in Section 2.3 below.

Section 2.2 – Methodology and data collection tools

The survey was designed to collect quantitative information at the household and individual and a mixture of quantitative and qualitative information at the community level. The three instruments used were a household questionnaire with a health and nutrition module (including anthropometry), a community key informant questionnaire and a market prices checklist. All instruments were prepared in English and translated to French and Malagasy. It should be noted that community interviews were valuable for contextualizing household level findings. This questionnaire was addressing 1-5 key informants, usually including the *chef de village.* A combination of open, semi-closed and closed questions was used.

The ***household questionnaire*** included modules on household demography, housing and amenities, household and animal assets, income sources & contribution, agriculture, expenditures; food consumption based on 7-day food frequency, household exposure to risks & shocks, coping strategies, and also women and child health and nutrition.

For the ***anthropometric measurements*** one woman of reproductive age (15-49) age and all or her children between 0 to 59 months in the sampled households were measured. For child anthropometry, height and weight/length were measured for children. This information was used to calculate nutritional indices (z-scores) and then to classify children as being stunted, wasted and/or underweight. Information on antenatal care, birth size, feeding practices, and recent illness were also collected.

The ***community questionnaire*** was designed to collect quantitative and qualitative information on community demography & migration, income generating activities and their changes, roads, electricity and credit, agricultural activities, livestock and pasture, market availability and access, access to education and enrolment, community groups, access and utilization of health care, main health problems, external assistance and community priorities for development.

The ***market questionnaire*** included the current prices of staple foods, and their origin. A minimum of two main markets per district were surveyed.

Section 2.3 – Creating homogeneous district clusters

Madagascar is divided into 6 provinces and 111 districts and, since one of the main goals of the survey was to provide information on household food security and vulnerability in rural areas at a sub-regional level, it was important to develop a strategy that allowed representative results at sub-regional level.

In view of the heterogeneity of the livelihoods and vulnerability within a province, the provinces could not be used for stratifying the sample. District level stratification was impossible due to cost and time constraints. The existing system of agricultural zones divides the country into 16 zones that do not necessarily relate to household food security. It seemed, therefore, more appropriate to stratify the sample by several indicators, which reflect, the socio-economic, risk and geographic factors responsible for food insecurity. These indicators were retrieved from secondary data, from both remote sensing and national statistics. The selection of key indicators relied on a previous secondary data analysis.[2] .

First, districts were described in terms of geographic, socio-economic and risk indictors and then spatial, principal component and non-hierarchical cluster analyses were used to group districts with similar characteristics based on the following 11 variables:

Socio-economic and risk

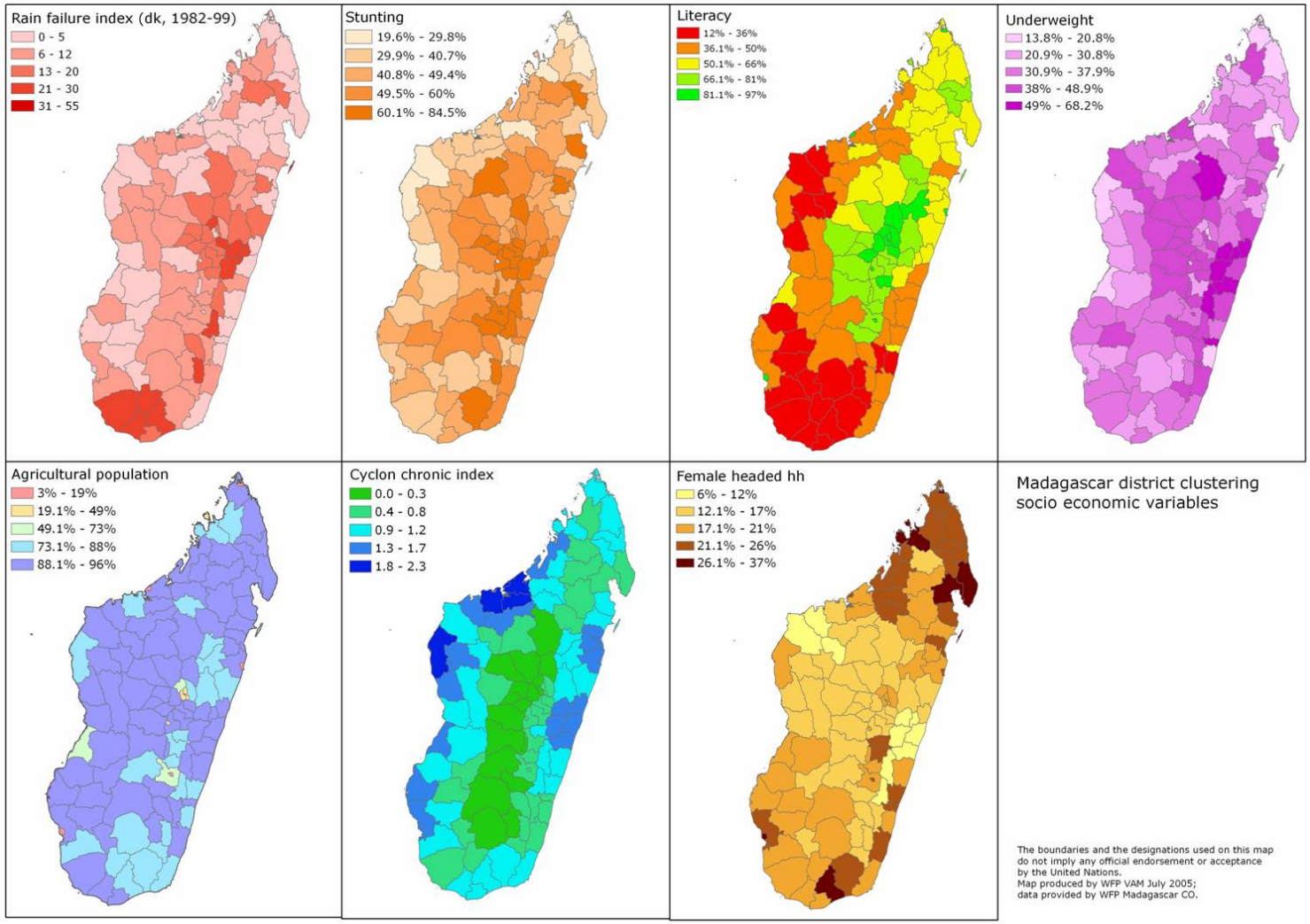
- Insufficient rainfall, RAIN FAILURE INDEX; recorded rainfall data below 75%, *NOAA Satellite, 1982-99*
- Chronic malnutrition, STUNTING, (low height-for-age), percentage of children < 3 years (%), *Seecaline (World Bank / National Institute for Statistics), 2004*
- Literacy; percentage of population literate in Malagasy (%), *National Census 1993*
- Underweight, UNDERWEIGHT: Moderate malnutrition, Weight/Age for under 3-year-olds, *Seecaline (World Bank / National Institute for Statistics), 2004*
- Agricultural population, percentage of population with agriculture (including Fishing/Hunting) as their principal economic activity, *National Census, 1993*
- Chronic cyclone index, CYCLONE CHRONIC INDEX; Impact and velocity, *Meteorological Institute / Ministry of Transportation, 1961-2000*
- Number of female headed households; percentage of female headed households, *National Census, 1993*

Spatial data – GIS variables

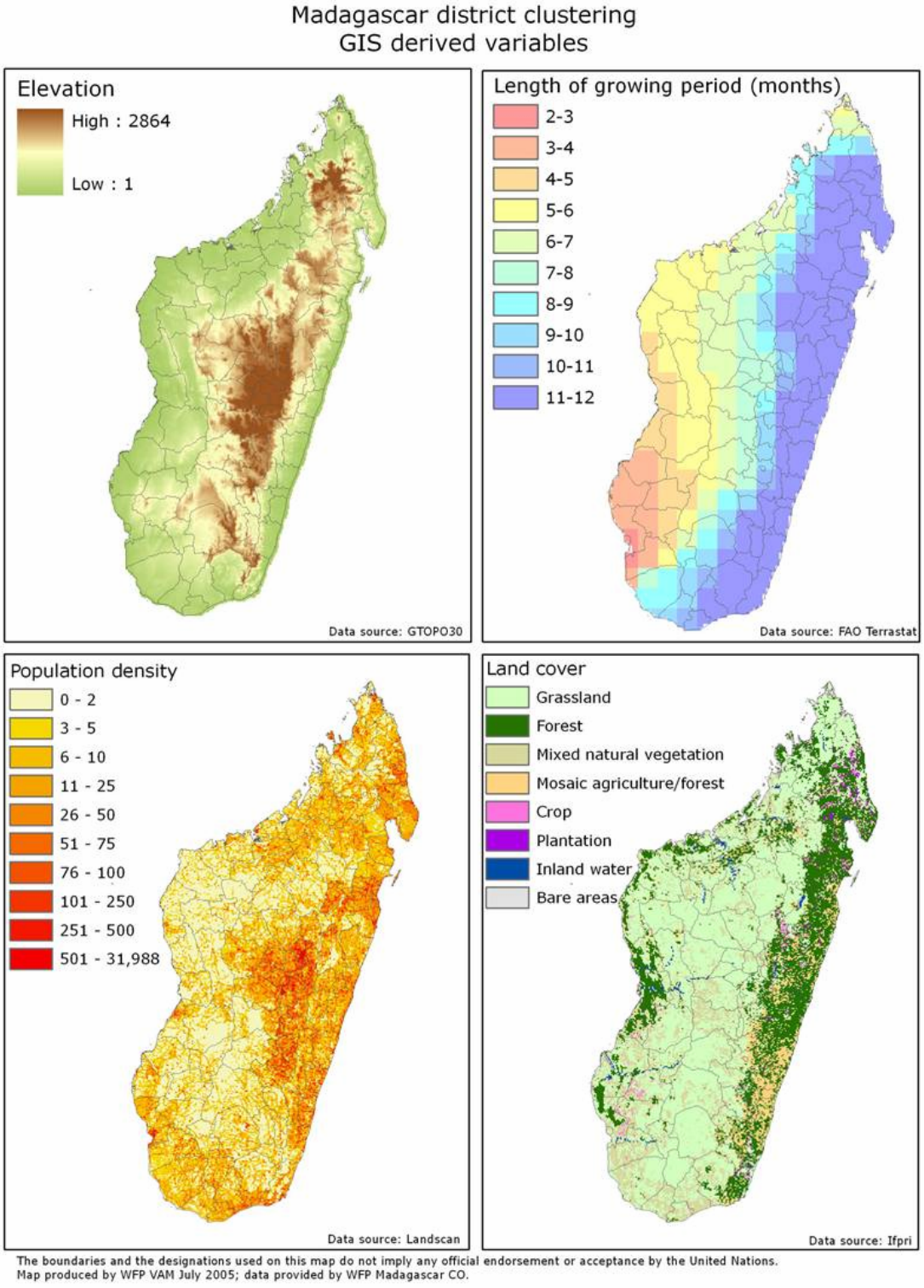
- Elevation *(GTDPO30)*
- Length of growing period *(FAO Terrastat)*
- Population density *(LANDSCAN)*
- Land Cover *(IFPRI)*

[2] Analyse de l'information secondaire, (SDA), WFP, July 2005.

Map 1 – Madagascar district clustering socio economic variables



Map 2 – Madagascar district clustering GIS variables

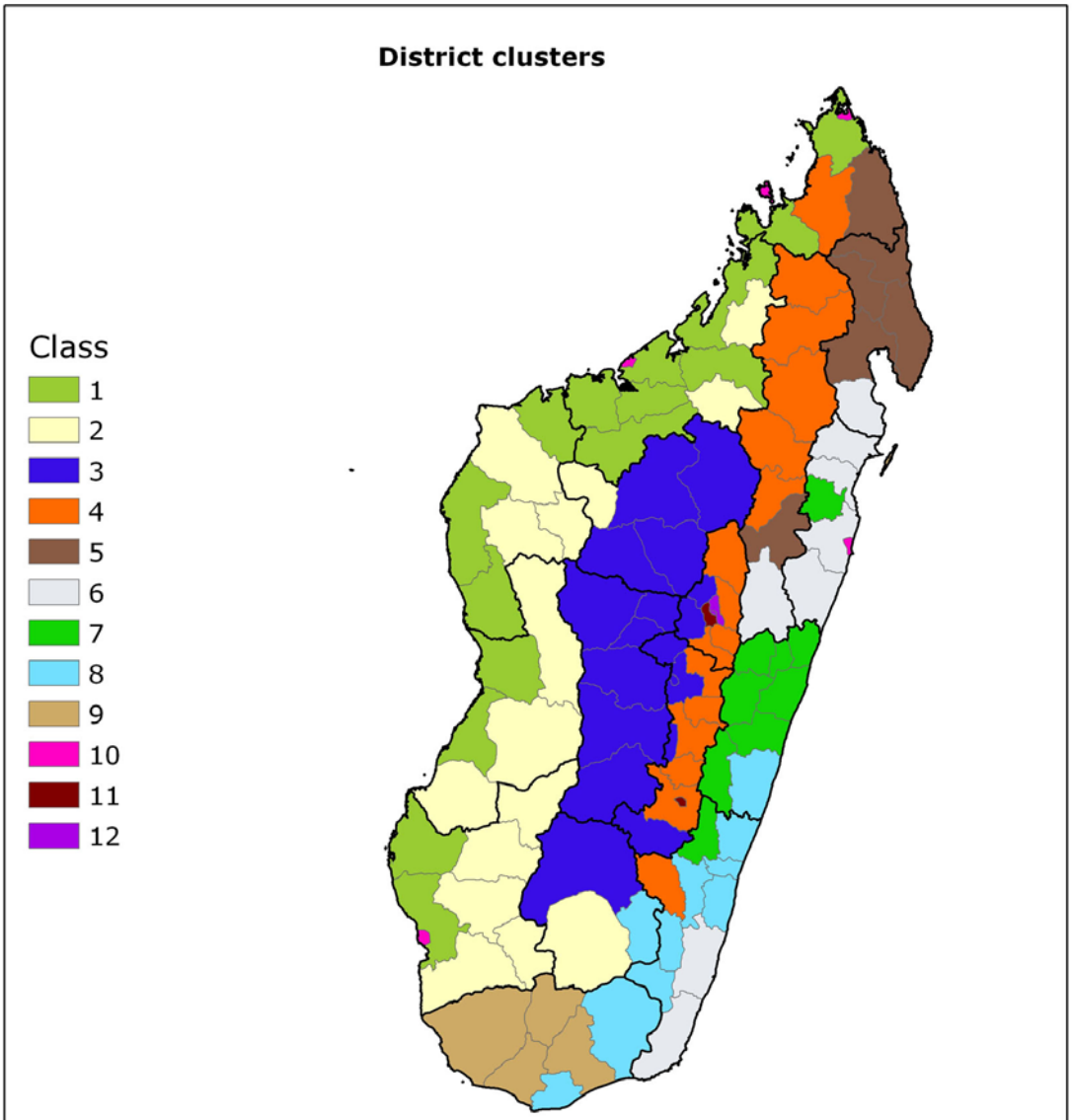


The boundaries and the designations used on this map do not imply any official endorsement or acceptance by the United Nations.
Map produced by WFP VAM July 2005; data provided by WFP Madagascar CO.

Among the 12 clusters thus constructed, three correspond to urban centers that were not included in the survey. Each cluster is described by the values of its defining variables compared to their mean values across all clusters.

The main characteristics of the clusters can be summarized as follows, based on the average values of the zoning variables. ***It is worth remembering that with district clusters, the figures are averages for the entire cluster*** and not percentages for each district included in the cluster.

Map 3 – Madagascar district clusters



CLASS	Number of districts	GRASS LAND	FOREST	MOSAIC NATURAL VEG.	CROP LAND	Elevation	LGP	POP DENSITY	STUNTING 04	UNDERW 04	CYCLON	Rain failure INDEX	AGR POP	% literacy	FEM HHH
1	15	44%	25%	24%	1%	**176.8**	**6.4**	**14.5**	34%	27%	**1.46**	5.0	89%	49%	20%
2	15	68%	5%	24%	1%	399.0	**6.4**	**7.3**	42%	34%	0.84	5.9	**92%**	34%	18%
3	18	**80%**	2%	18%	0%	**1162.6**	8.2	74.9	55%	39%	**0.18**	10.6	88%	73%	16%
4	16	49%	26%	22%	2%	**1189.8**	10.9	54.6	55%	37%	0.60	12.3	88%	72%	19%
5	6	35%	46%	**5%**	**12%**	629.2	11.7	29.6	42%	24%	0.93	5.7	**91%**	67%	26%
6	8	10%	64%	20%	5%	497.2	12.0	30.6	50%	37%	1.04	7.8	89%	55%	20%
7	9	**7%**	**68%**	23%	1%	543.4	11.9	35.1	**62%**	**55%**	**1.34**	16.9	**93%**	54%	11%
8	10	21%	27%	51%	1%	400.1	11.9	30.2	48%	37%	0.72	8.8	88%	35%	19%
9	5	49%	3%	30%	0%	246.6	10.5	32.3	37%	28%	0.88	**32.0**	87%	**27%**	**25%**
urban districts:															
10	5	23%	24%	34%	0%	**104.5**	7.3	**212.6**	**31%**	27%	1.30	**0.0**	**16%**	87%	**27%**
11	2	31%	**0%**	**66%**	0%	**1292.4**	10.0	**353.5**	59%	46%	0.39	**0.0**	**27%**	**94%**	22%
12	2	48%	3%	52%	0%	**1351.4**	10.1	**1923.2**	45%	**19%**	0.33	8.5	**26%**	**96%**	21%
avg	***111***	***45%***	***24%***	***26%***	***2%***	***651.2***	***9.3***	***84.4***	***47%***	***35%***	***0.83***	***9.6***	***84%***	***57%***	***19%***

Color legend:
below the national average
above the national average

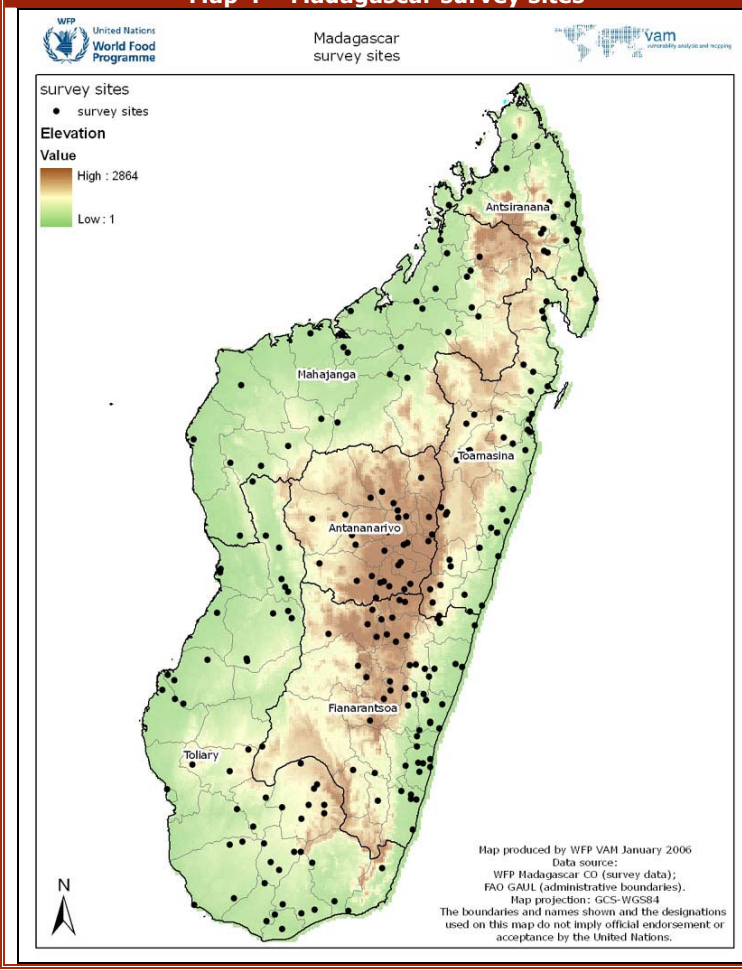
Classes have been ordered geographically, from WEST to EAST
The above order does not imply any vulnerability ranking

Cluster 1: Low altitude, high cyclone index, short growing period, and low population density;
Cluster 2: Low elevation grassland, short growing period, lowest population density, high proportion of agricultural population;
Cluster 3: High altitude mostly covered by grassland, and lowest cyclone index, high population density and high literacy rate;
Cluster 4: High altitude, grassland and forest cover, length of growing period above average, high literacy rate;
Cluster 5: Mixed land cover, with highest value of cultivated surface, high proportion of agricultural population
Cluster 6: High presence of forest cover, highest length of growing period;
Cluster 7:
Highest proportion of forests and lowest of grassland, highest levels of malnutrition;
Cluster 8: Land cover is mainly
mosaic of natural vegetation, low elevation, and low literacy rate;
Cluster 9: Highest rain failure index, lowest literacy rate, and highest proportion of female headed households
Clusters 10–12: Urban areas, mainly characterized by very high population density and lowest proportion of agricultural population.

Section 2.4 – Sampling procedure

A list of all communities and their populations for each for each district (by cluster) was provided by WFP Madagascar. Communities not included in the sampling frame were urban towns and cities or rural town with more than 1500 inhabitants. A two-stage cluster sampling was applied; the first stage was to draw a sample of 20-30 communities per district cluster, depending on the total population. The number of communities chosen within a district was determined by the district's contribution to the total rural population of the district cluster. Therefore 1 to 8 communities were sampled for any given district for a total of 233 communities.

Map 4 – Madagascar survey sites



Households were selected according to random sampling methods: from a list, if such a list was made available by the *chef de village*, or using interval sampling, starting at different points within a village and selecting every *nth* household. A total of 2,200 households were interviewed. Within a household, only one woman aged 15-49 was interviewed and measured for the woman's module. If there were children 0-59 months of age, information on their health and nutrition was collected and they were weighed and measured.

The findings are representative of the average of all villages for each district cluster. They do not differentiate among districts or account for variation within a district or Cluster. They do, however, cover the entire country and also allow for comparison across zones.

Section 2.5 – Data collection

The design of the data collection methodology, data analysis and final reporting were carried out by the Vulnerability Analysis and Mapping (VAM) units of WFP Rome, Johannesburg, and Madagascar. The data collection was organized and carried out by WFP Madagascar with support from the WFP Regional Office for Southern Africa.

Training and number of enumerator teams

A group of 45 enumerators and 15 team leaders with previous experience were selected among the applicants. Most had been regularly conducting assessments for various institutions, such as the National Institute for Statistics, the University of Antananarivo and development NGOs. Training of enumerators on the methodology and scope of the CFSVA took place during the third week of August with support from WFP Regional staff. Questionnaires were field tested at the end of the training and possible sources of misunderstanding were eliminated for the final version.

Enumerators totaling 19 females and 26 males were divided into 15 gender-balanced groups with a head of team assigned to each. During the data collection, the VAM Unit of the Country Office (one national and one international VAM Officer) and two external national consultants supervised the 15 teams.

Dates

Data collection took place from August 22 to September 26, 2005. Each team was assigned a list of 11 to 19 villages, according to the accessibility of the area in question. In addition, two replacement villages had been sampled and were to be used in case of incorrect demographic information of the sample frame, problems of accessibility or security considerations.

Instruments

Three different instruments of data collection were used: a household questionnaire, a community questionnaire and a market price questionnaire.

The household questionnaire was adapted from a standard VAM questionnaire and translated into French. The French version was then digitalized and uploaded onto Personal Digital Assistants (PDAs), which were used for data collection and storage. Technical assistance for programming and use of the PDAs was provided by WFP Johannesburg.

The WFP Regional Bureau for Southern Africa has been using **Personal Digital Assistants** (PDAs) to collect and store data from the Community and Household Surveillance (CHS) activity for 2 years. PDAs save time, reduce errors and save money as no data entry clerks are needed.

The Madagascar CFSVA was the first time PDAs have been used for a large-scale household survey and also the first time they have been programmed in French

The community questionnaire was prepared in French and then translated into Malagasy to avoid misinterpretation. For the actual data collection all questionnaires were distributed in a bilingual paper copy.

The market price questionnaire comprised 12 food items (staple foods, vegetables, fish, meat, sugar and oil) and four non-food items (such as soap, charcoal). It collected origin, price and local unity used on the markets.

Equipment

Equipment for conducting anthropometric measurements was borrowed from the National Institute of Statistics and the Ministry of Health. PDAs were on loan from WFP Johannesburg.

Section 2.6 - Data constraints and limitations

Several aspects were slowing down the procedure of data analysis. Some of them were arising from the closed questions that were used in the household questionnaire. Since answers had to be entered exclusively into the PDA, observations could only be registered in personal notes. During the survey, teams had realized that the existing agricultural diversity of the country was not fully reflected by options listed. In these cases enumerators chose to opt for an alternative answer. After data had been downloaded from the PDAs these modifications had to be crosschecked with the notes of the enumerators.

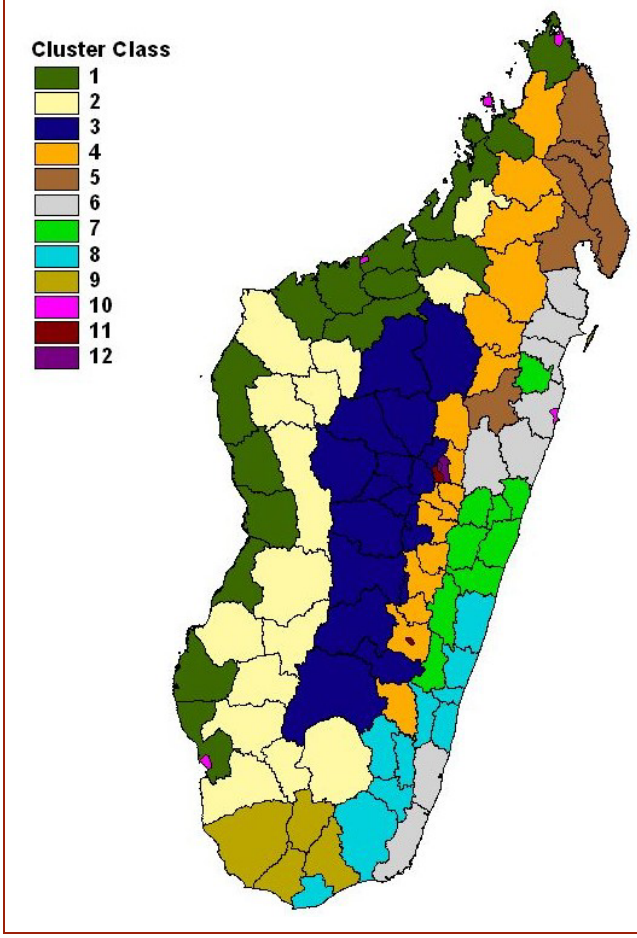
Further problems could be attributed to the open questions included in the community questionnaire. Answers were often registered in Malagasy and time and again a different wording was used to indicate the same issue. An additional effort was needed to clean the dataset before the resulting qualitative data could be interpreted and categorized.

Although enumerators had a chance to discuss the Malagasy interpretation of the questions included in the household questionnaire there were still some minor misunderstandings when using the French version on the PDA. The community questionnaire, on the contrary, was distributed bilingual, and since most enumerators relied on the agreed Malagasy version, possible bias could be reduced.

Limitations of the study are also linked to its geographical representativeness. The findings are representative of the average of the district clusters only. They do not differentiate between districts, nor do they account for variation within the district. They do, however, allow for comparison between zones and cover the entire country. Since problems of food security in Madagascar are very often linked to questions of accessibility, such as the lack of roads resulting in limited commercial opportunities, access to health and other basic services, important variations below the cluster level could not be sufficiently captured.

PART III – Community survey analysis

Section 3.1 - Community demographics



For each sampled village the approximate total population and number of households were estimated, relying on official lists or estimates by village leaders. The highest percentage of large villages (more than 500 inhabitants) was found in *Clusters 5* (45%) and 6 (40%), while more than half of the villages represented in *Clusters 2, 4,* and *8* had less than 200 inhabitants. Average population size in the surveyed villages was 475 inhabitants. Household size is fairly constant throughout the sample, amounting to 5-6 persons per household. Only *Clusters 5* and *9* show a trend toward smaller households.

Section 3.2 - Migration and displacement

No major migration movement could be observed in the sampled villages. While some villages in *Clusters 1, 2, 5*, and *8* reported an increase in newcomers for the last ten years, more than half of the villages in *Clusters 7* and *9* experienced a slight increase in out-migration. This latter trend seems particularly pronounced in *Cluster 9*, where virtually all villages reported a higher rate of departures for the past ten years.

Since the survey was conducted in September, before the onset of the lean season in Madagascar, the data on temporary migration in the preceding six months show the usual low intensity migration that is characteristic of this period. An increase in migration (both in- and out-migration) could be registered only in one-third of the villages in *Clusters 5* and *6*. In all other clusters migration was constant over this period or even slightly below the yearly average.

Household survey results showing that 5% of the sample households from *Cluster 9* rely on remittances while one-third of the households in *Cluster 3, 4* and *7* rely on seasonal or temporary work for income. It also worth mentioning that urban settings are the major source for seasonal employment and this could not be captured in this survey which focuses on rural areas only.

3.2.1 - Out-migration

Single young men are main demographic group reported for small-scale migration, even if they often take their entire family along. Out-migration by single young women was reported only from villages in *Clusters 7* and *9*. Seasonal out-migration was mostly **within** the district in *Cluster 1*, while it extended to the **surrounding districts/regional level** in *Clusters 6* and *7*. Migration out of the region of origin was characteristic only of villages in *Clusters 4, 5, 8*, and *9*. The main reason reported for migration is the decrease in agricultural production. A further factor mentioned in *Clusters 5, 6*, and *9*, was the limited marketability of crops. The lack of labour opportunities was also mentioned among the reasons for leaving one's village in *Cluster 1*.

3.2.2 - Immigration

No significant variation over time could be seen in the in-migration pattern during the 6 months covered by the survey. While there was a slight increase in arrivals to the village in *Clusters 1, 5*, and *6*, where the number of newcomers ranged from 45 to 97, in the rest of the district clusters, no change was reported. The little migration that had taken place mostly involved entire families in all Clusters, although the immigration of single young men could be also observed in *Clusters 1* and *5*. The immigrants to communities in *Clusters 1, 3*, and *5* have mainly come from outside the region. There was a relatively high rate of same district immigrants in *Cluster 5* and of same region immigrants in *Cluster 8*. Few reasons for in-migration were cited, except for the reduction of agricultural production in general, and certain minor Cluster-specific reasons like lack of labour in *Clusters 1* and *5*, insecurity in *Clusters 2* and *3*, and floods in *Cluster 5*. The only factor for in-migration to be mentioned was rice and vanilla cultivation in *Cluster 5*.

Section 3.3 - Infrastructure and access to community services

Most villages in the sample have no direct access to public transportation. The situation was most favourable in *Cluster 5*, where almost half of the villages were connected to the bus network. In *Cluster 1*, about one-third of the communities were connected as compared to one-quarter for *Clusters 2* and *4*. For the rest, the connections were few – only 5% of the sample communities in *Cluster 9* were connected to the bus network.

For communities where no bus passes through the village, the nearest bus line is less than 3 hours walking distance in most villages of *Clusters 3, 4, 5*, and *8*. It takes much longer, sometimes as much as 6 hours to reach a bus line from most villages in *Clusters 1, 2,* and *6* with the worst access to public transport found in *Clusters 7* and *9*.

While bus roads are generally served throughout the year, serious restrictions due to the nature of the road are only to be encountered in *Clusters 7, 2* and *1*. In these clusters, restrictions imply approximately 5 months of accessibility problems, increasing to an average of 7 months in the *Cluster 4* sample villages.

The time needed to reach the district administrative centre varies greatly among the villages in each district cluster. While two and a half hours would suffice in Cluster 2, the required time amounts to 4-5 hours in most Clusters. Some villages in Clusters 2, 7 and 9 are as much as 7 hours or more from the district administrative centre.

The cost of transportation to the centre, where means available, varies between 9.000 and 19.000 *FMG* (1800-3800 *Ariary*) - the lowest prices can be found in *Clusters 7* and *4*, while the highest price is found in *Clusters 1* and *5*. The interpretation of these prices should consider opportunity costs as well, since in many areas hours of walking are required before a person can reach the nearest public transportation line.

In *Clusters 1* and *3* one-third of the sample villages has a market as compared to less than 20% of the villages in *Clusters 2*, *4, 5* and *6*. There are practically no markets in the villages in *Clusters 7, 8* and *9*. The walking distance to the next market from villages without a marketplace of their own varies between 1 to 3 hours for more than half of the villages in all Clusters. In more than half of the cases there are weekly market days and one-quarter of the villages has access to a daily market. It is only in *Cluster 9* that villages have a limited access even to a weekly market.

Table 1 - Period of market supply interruption

Cluster	Mean period of market supply interruption	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	1.2												
2	2.0												
3	0.5												
4	0.7												
5	0.7												
6	2.2												
7	1.7												
8	3.0												
9	3.6												

**Yellow = 10-20% of villages; orange = 21-40% of villages; red = 40% or more*

Market supply has been judged to be average to good in most Clusters, bad in one-third of the villages in *Cluster 7* and good in three-quarters of the sample villages in *Cluster 5*.

Disruptions in the supply have been experienced the least in *Clusters 3, 4*, and *5* and the most for sample villages in *Clusters 8* and *9*.

Village access to water is dependent on rivers/lakes in most Clusters - more than three-quarters of the communities in *Cluster 8* and two-thirds in *Cluster 7*. In most other Clusters simple wells are a main source of drinking water while in some villages in *Clusters 3* and *6*, public water pumps are accessible in about one third of the villages. About half of the villages in all Clusters experience difficulties in connection with the water supply. This percentage is far lower in *Cluster 2* (one-quarter) and highest (two-thirds) in *Clusters 5* and *9*.

Table 2 - Period of difficult access to water

Cluster	Mean period of difficult access to water	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	2.3												
2	0.6												
3	0.8												
4	1.6												
5	2.4												
6	1.0												
7	1.8												
8	1.4												
9	1.4												

*Yellow = 10-20% of villages; orange = 21-40% of villages; red = 40% or more

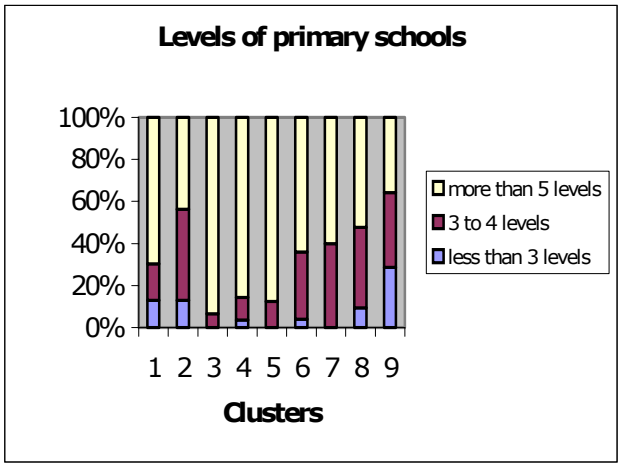
Section 3.4 – Quality of life

During the community interviews, the people were asked if they felt that life for the members is better than it was 10 years ago. Key informants reported that the quality of life of the population has deteriorated in all district clusters over the past ten years. It is only in certain villages in *Clusters 4* and *5* where quality of life has remained the same or improved. In all Clusters except for *Cluster 2*, life has been become more costly - expenses to cover basic needs have risen while purchasing power has declined. Nevertheless, villagers in *Cluster 2* mentioned a growing level of insecurity as the main cause of the deterioration of well-being. A reduction in agricultural production has been reported in all Clusters, mostly in *Clusters 1, 2, 6*, and *7*. In many Clusters natural disasters have been named as key factors – they might also indirectly account for the reduction in agricultural production. Frequent floods have been reported in *Clusters 6* and *7*, while drought has turned out to be crucial in *Clusters 1, 2, 8*, and *9*. Decreasing soil fertility, plant diseases and locust ravages have been reported mostly in *Clusters 7* and *4*.

Section 3.5 - Education

Around half of the villages in the sample have a primary school with the best access being found among villages in *Clusters 1* and *5* where two-thirds have a primary school. Conversely, nearly two-thirds of the sample villages in *Cluster 9* have no local primary school, followed by half in *Clusters 6* and *2*. For most of the villages without a primary school in *Clusters 1, 4, 5,* and *6* a school is less than half an hour away. However for some villages in *Cluster 2* (20%) and *Cluster 9* (40%), the nearest primary school is more than one hour's walking distance.

Figure 1 – Levels of primary schools by cluster



In *Clusters 4* and *5* practically all schools had one class per level. The ratio of number of classes/levels was around 4:5 in *Clusters 1, 2, 6*, and *7*. In *Clusters 3, 8* and *9*, however, the ratio was around 3:5. Overcrowding in classes is the highest in *Clusters 9* and *1*, while *Clusters 2, 3* and *4* have classes smaller than the average.

Although actual enrolment rates cannot be given, a comparative value can be calculated by dividing the number of children in the village by those enrolled in school. This level is the lowest in the villages of *Clusters 9* and *2*, while the highest rates are reached in *Clusters 4, 5*, and *8*. The number of enrolled children per teacher is around 80 children per teacher in *Clusters 1, 5, 7*, and *9*, and around 60 children per teacher in *Clusters 4* and *3*.

Half of the villages report that school fees impede school attendance, especially in *Clusters 6* and *7*, while the same problem was rarely mentioned in *Cluster 2*. Half of the villages in *Clusters 1, 4* and *6* reported that **almost all boys** have been enrolled in school, whereas the same can be said of only one-quarter of the villages in *Clusters 2, 7*, and *8*. Only a small percentage of boys are enrolled in one-third of the villages in *Cluster 9*, and one-quarter of the villages in *Clusters 1* and *2*. Enrolment **rates for girls** show exactly the same trend.

The main reason cited for leaving school in most cases is the parents' inability to buy the basic school items and clothes for their children, particularly in *Clusters 3, 6*, and *7*. In addition the families often need the labour of the children, especially in *Clusters 2, 3,* and *8*. Lack of food is named particularly often in *Clusters 3* and *5*. Furthermore, in *Cluster 5* children without birth certificates are hindered from going to school. While the problem highlighted in *Clusters 1, 3*, and *7* is distance from the next school, it is school fees in *Clusters 5* and *6*. In half of all sampled villages the lack of school infrastructure, the absence of teachers, and limited levels at school frequently account for early school leaving. In *Clusters 5* and *6*, parents' lack of interest and thus the need for sensitization have also been mentioned. In all villages, people express the need for the government to secure the presence of teachers by providing for their salaries as well as for the building of schools with school feeding programs.

Section 3.6 - Health

Only very few villages have a local health centre - a dispensary (CSBII) is found in 15% of the villages in *Clusters 1* and *4*. One-third of the villages in *Clusters 3, 4, 5*, and *6* rely on a centre at less than one-hour distance. However 20% of the villages in *Cluster 1*, 15% in *Cluster 5* and 20% of the villages in *Clusters 7* and *9* have to rely on a health centre that is more than 3 hours away. In the majority of villages in *Clusters 5, 6*, and *9* as well as in half of the villages in the remaining Clusters, people have to pay for basic health care. In *Clusters 5* and *6*, this seriously limits access to basic health care, whereas in other Clusters only half of the villages regard fees as a basic impediment to receiving health care.

There are **nutrition centres** in about one-third of the villages in *Clusters 3, 5*, and *6*, and in only one-fifth of *Clusters 4, 7*, and *8*. Only one village in *Cluster 9* had a nutrition centre, but half of the sampled villages have access to a nutritional centre at a distance of less than 3 hours - this is also the case for *Clusters 3* and *4*. Three-quarters of the sample villages in *Cluster 1* and two-thirds of the villages in *Cluster 2* with no local nutrition centre either know of one that is at 6 hours distance or have never heard of one.

Health problems include mostly malaria (*Clusters 3, 5* and *6*), diarrhoea (*Clusters 1, 2, 5* and *6*) and schistosomiasis (*Cluster 2*). Flu was reported in *Cluster 3*, rubella in *Cluster 9*, and respiratory infections and TB were commonly reported in *Clusters 1, 3, 4, 7* and 8.

Section 3.7 - Livelihoods and economic activities

Throughout all Clusters the most important economic activity of villagers **at the community level** is the marketing of crops. Seasonal work and wage labour is the second most important source of income in most of the clusters. In about one-fifth of the sampled villages in *Clusters 5, 6, 7* and *8*, cash crops play a crucial role. The second most important activity is the sale of animals and animal products, especially in *Cluster 9*. To a lesser extent, handicrafts are of importance in *Clusters 2* and *4*. Most village groups named only two activities, if a third activity was mentioned, it was either handicraft or temporary work and small trade. Villages in *Clusters 5* and *6* seem to have the most diversified set of livelihood activities.

Figure 2 – Relative importance of crops produced

Cluster	1st produce	C*	S	2nd produce	C	S	3rd produce	C	S
1	Rice (1), rice (2)	82	29	Cassava, rice (2), maize	77	18	Cassava, maize	78	22
2	Rice (1), rice (2)	86	46	Cassava, rice (2)	65	53	Cassava, maize, sweet potatoes	67	60
3	Rice (1), rice (2)	93	11	Cassava, maize, potatoes	74	26	Maize, cassava, sweet potatoes	70	35
4	Rice (1), rice (2)	93	19	Cassava, maize, potatoes	91	5	Sweet potatoes, cassava, maize	100	0
5	Rice (1)	79	25	Rice (2), cassava	67	29	Cassava	91	18
6	Rice (1)	89	46	Rice (2), cassava	92	46	Cassava, rice (tanety)	86	46
7	Rice (1), rice (2)	79	50	Rice (2), cassava	100	29	Cassava, sweet potatoes	96	42
8	Rice (1), cassava	70	43	Rice (2), cassava	91	19	Cassava	74	16
9	Cassava	94	72	Maize, cassava	95	79	Sweet potatoes	78	56

*C = for consumption; S = sold in local markets

In addition to the above-mentioned crops, cash crops are produced in *Cluster 5* (coffee, vanilla), *Cluster 6* (coffee, vanilla, sugarcane, litchis and cloves), *Cluster 7* and *8* (coffee, sugarcane and litchis). These products are mainly sold in local markets.

Rice fields are irrigated in one third of the villages in *Clusters 3, 4*, and *5*, in 20% in *Clusters 8* and *1*, and practically not at all in the villages sampled in *Clusters 2, 7* and *9*.

Land disputes, including land titles have been reported in about one-fifth of the sampled villages. They are, however, more frequent in *Cluster 5* (42%) and *Cluster 8* (32%). In about 80% of the villages, principal access to land is by self-employed farmers. A very small percentage of villages rely on sharecropping in *Clusters 1, 3, 4* and *5*.

Section 3.8 - Shocks and Risks

Almost all villages sampled have been affected by **natural shocks**. It is only Clusters *3, 4* and *6* where a considerable number of villages did not suffer any natural shock last year. Cyclones affect almost half of the villages in *Cluster 5*, and (possibly related) floods are reported in almost all areas except *Cluster 9*. They have been especially heavy in the villages of *Cluster 6*. Drought is the third most common shock, severely affecting *Clusters 8* and *2* and, to a lesser extent, *Clusters 1* and *3*. Hail is a problem that affects one-sixth of the villages in *Clusters 3* and *4*. Other Cluster specific shocks are soil degradation for *Clusters 3* and *7*, plant diseases for *Clusters 1* and *9*, and rat invasion for *Clusters 6* and *7*.

Hardly any **social shocks** have been reported in the sampled villages, except for the epidemics in 20% of the villages of *Clusters 3* and *6*, the expenses associated with the new school year in *Clusters 4, 6* and *7*, and the rise of the fees for social services in *Cluster 5*.

The most important **economic shock**, that has affected all villages but *Cluster 9*, was the increase in rice prices. It had an especially strong impact on *Clusters 3, 4, 6*, and *7*. The rising prices of other agricultural products have aggravated the situation in *Clusters 3, 4*, and *9*. Theft is a problem in *Clusters 1, 2, 3* and *4*. However, a large proportion of villages in *Clusters 5* and *8* reported no economic shock at all.

The **political changes** of the last two years affected only one-fifth of the villages of *Clusters 1, 2, 3, 7* and *8*. Their impact was felt already by one-third of the villages of *Clusters 5* and *6*, reaching 40-70% in the sample villages in *Clusters 4* and *7*. This impact consisted mainly in growing insecurity and rising food prices.

Coping strategies related to all shocks consist primarily in reducing the quantity of food and the number of meals consumed per day. In the case of natural shocks, in addition to these two major coping mechanisms, households develop an over reliance on forest products in all Clusters except 3-5; this strategy is especially pronounced in *Clusters 1* and *9*. Households in *Clusters 3, 4* and *6*, moreover, resort to borrowing or buying food on credit. Animal sales are also practiced in *Clusters 3* and *9*. *(Note: Please refer to Part IV for detailed findings).*

While coping mechanisms related to social and economic shocks are fairly similar to the above-mentioned pattern, borrowing/buying on credit has a relatively more important role to play, and in case of economic shocks the selling of animals/land complemented with temporary work is an additional important strategy practiced by households.

Section 3.9 - Food aid

Very few of the sampled villages have been receiving food aid during the last 6 months. It is important to note that the survey was conducted just before the onset of the lean season. Only one-third of the villages in *Cluster 9* and 15% of the villages in *Clusters 6* and *8* have been receiving food aid in this period.

While in *Cluster 6* food aid was delivered via nutritional centres (especially for children under 5) and schools feeding, households in *Cluster 8* have additionally benefited from general food distribution and food-for-work programmes. Households in *Cluster 9* also received food aid, mainly in the form of food-for-work programmes, along with general food distribution and school feeding.

In the past years, food aid was given to an additional 15% of villages in *Cluster 6* and an additional 5% of villages in *Clusters 8* and *9*. Most sampled villages reported that during the last six months nearly all households in serious need had received food aid. However, 12% of the villages in *Cluster 1*, 16% of the villages in *Clusters 2* and *8*, one-third of the villages in *Cluster 6* and nearly 40% of the villages in *Cluster 5* reported that none of the households in need had received food aid in the preceding 6 months. Again, the timing of the survey accounts for the finding that in most villages there were no households in need of food aid.

Critique of food aid was articulated in *Clusters 2* and *9*, where its quantity was judged insufficient. Practically none of the villages reported any case of food aid being sold, exchanged or given away; in the few reported cases it was done in order to buy other types of food or vital non-food items.

Section 3.10 – Community facilities and associations

There is no community silo in the majority of the villages; the only Cluster with a significant number of silos is *Cluster 3* (in 20% of the villages). Even where community storage exists, very few people make use of these facilities. In half of the villages in *Clusters 4* and *5*, community associations are formed for public works: in one-third of the villages in *Clusters 1, 6*, and *7* and much less frequently in the other Clusters.

Producers' associations exist in about one-quarter of all sampled villages. They are widespread in *Cluster 5*, where 40% of villages have some kind of producers' association (e.g. for rice, vanilla, animal husbandry, etc.), such can also be found in about one-third of the villages in *Clusters 1, 6*, and *8* (for beans, vegetables, water management, rice irrigation, fishing, honey, forest exploitation, goats) and in about 20% of the villages in *Clusters 3* and *4* (potatoes, irrigation, peanuts, beans, onions, rice, vegetables). These associations are not common in *Clusters 2, 9*, and *7*.

There are virtually no credit associations in the surveyed villages. A few associations for water management can be found in the villages of *Clusters 4* and *5* and they focus on irrigation, waterways and drinking water access. The same can be said of the associations for socio-economic development, formed in some villages of *Clusters 1* and *4* which are mainly concerned with agricultural development such as the management of fertilizers and seeds and animal husbandry. Other, religious or sports, associations can be found in about one-third of the villages of *Clusters 4, 5*, and *9*.

The lack of associations in the communities is explained by the lack of leadership skills and the mistrust among villagers who might not be aware of the advantages of such an association. Often there are groups of mutual help, essentially on extended family basis. Some villages reported the lack of knowledge related to associations and relevant administrative procedures, the absence of a common goal among villagers who prefer to follow traditional family-centred practices. There are some female community groups, mostly in *Clusters 4, 5*, and *6* and some mixed groups in *Clusters 1, 2, 4*, and *5* where women are also in decision-making positions.

NGOs are present in 60% of the villages in *Clusters 5* and *6*, and in one-quarter of the villages in the remaining Clusters. They focus on activities related to water (mainly in *Clusters 2* and *5*), agriculture (mainly in *Clusters 1, 4, 6*, and *9*), health (mainly in *Clusters 1* and *6*), food aid and nutrition (mainly in *Clusters 3, 5*, and *6*), education (mainly in *Clusters 1* and *5*) and infrastructure (mainly in *Clusters 6* and *9*).

Section 3.11 - The villagers' development priorities

Villagers were asked which aspects of their lives were most important to develop. In *Clusters 1-4*, they mentioned the means to improve agricultural production, including

seeds, fertilizers and insecticide as immediate needs from a short-term perspective. Needs related to potable water were considered crucial in *Clusters 1* and *7-9*. Water management issues related to irrigation and drainage were mainly reported in *Clusters 3* and *5*. Needs related to education such as building schools, literacy initiatives, and recruitment of teachers were seen as of key importance in *Clusters 4, 6*, and *7* and, to a lesser extent, in *Clusters 1, 2*, and *8*.

Villagers in *Clusters 6, 7*, and *8* mentioned the need to develop the existing health care structures, including veterinary facilities. Interestingly, the problem of road infrastructure was seen as a secondary issue in most Clusters, it seemed to play only an important role in *Cluster 7*. Other issues, such as public security, electricity and credit facilities were rarely mentioned in some Clusters. As to long-term priorities, micro-credit programmes, public latrines, community storage facilities and sport/recreation facilities for the young were most often mentioned.

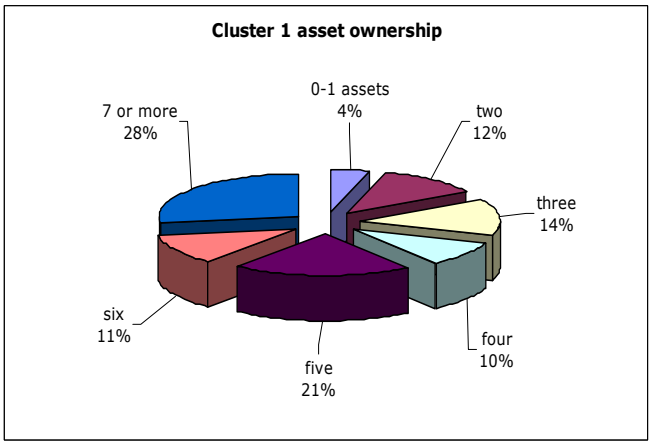
Part IV – Household survey results by district cluster

Cluster 1

Map 5 – Cluster 1

- *Districts:* Ambanja, Ambato-Boina, Analalava, Antsalova, Antsiranana II, Belon I Tsiribihina, Boriziny, Mahajanga II, Maintirano, Marovoay, Mitsinjo, Morombe, Morondava, Soalala, Toliary II districts
- *Sample size*: 25 communities, 227 households
- *Main region of origin*: 21% Atsimo Andrefana, 16% Sofia, 12% Boeny
- *Household headship*: 16% female headed households – 10% of all households are headed by women who are widowed or divorced. Average age of both female and male heads was 38 years. Fourteen percent of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 5.8 persons, among the highest of all district clusters. Nearly one-quarter of the households have 7 or more members. On average 57% of household members were dependents (< 15 years or > 59 years) – the highest of all clusters.
- *Literacy:* Two-thirds of the household heads were literate with 34% of heads and 44% of spouses having no education at all.
- *Chronically ill or disabled:* 17% of sample households had a disabled or chronically ill member, the highest of all clusters. In all, 6% of the household heads were disabled or chronically ill.
- *School enrolment and absenteeism:* Just over half the households had a primary school aged child enrolled in school, 7% had a child in secondary school and 2% in university. Of the primary school children enrolled in school, 46% had been absent from school for one week or more in the last month of the previous school year – the highest of all district clusters. Half the reasons were due to illness while the other half were because the teacher was absent.
- *Housing type and ownership*: More than 90% of the families owned their home. Half the homes are made of mixed materials while 21% are wooden huts. Nearly half the families moved into their current residence since 2000. On average, there were 3.9 persons per room and 22% of the households had more than 5 persons per room on average, indicating possible crowding problems.
- *Water, sanitation, lighting and fuel*: About one-quarter of the households acquire their drinking water from an improved source while 40% rely on rivers or streams for their water, regardless of season. Only 4% of the households used a flush toilet or improved pit latrine for sanitation. Most households used lanterns for lighting and more than 90% use charcoal for cooking fuel.
- *Household asset ownership*: Three-quarters of the sample households owned a bed; more than 60% own a table and 45% with at least one chair. More than half the households owned a radio but only 3% had a television. For productive assets, 70% owned farming equipment, more than 30% owned a cart (among the highest in the sample) and 19% owned fishing equipment – also among the highest in the sample. Fifteen percent of the sample households reported owning a sewing machine. For transportation assets, 18% owned a bicycle and 8% owned a boat – the highest in the sample. Motorcycles and cars were owned by very few households. On average, of the total number of different assets owned by a household, about one-third were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category.

Figure 3 – Cluster 1: asset ownership

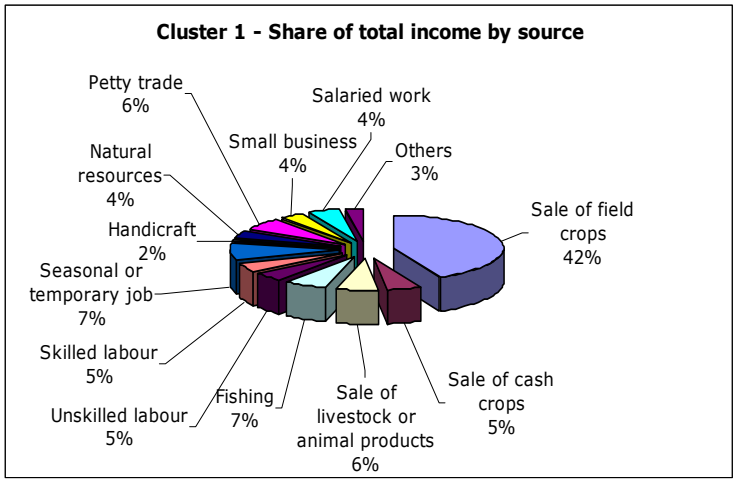


Households in this cluster tend to be better-off in terms of number of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: More than 40% of the sample households indicated they visit the market 4-7 days per week with more than 80% going at least once a week – the highest of all district clusters. Ninety percent usually travel to the market on foot with only 1% using a bicycle.

- *Household income*: For the Cluster 1 sample the most often named sources of income were the sales of field crops (62%), seasonal or temporary work (13%), sale of livestock or animal products (11%) and petty trade (11%). Remittances/family transfers were named as a main income source by only 1% of the sample.

Figure 4 – Cluster 1: Share of total income by source

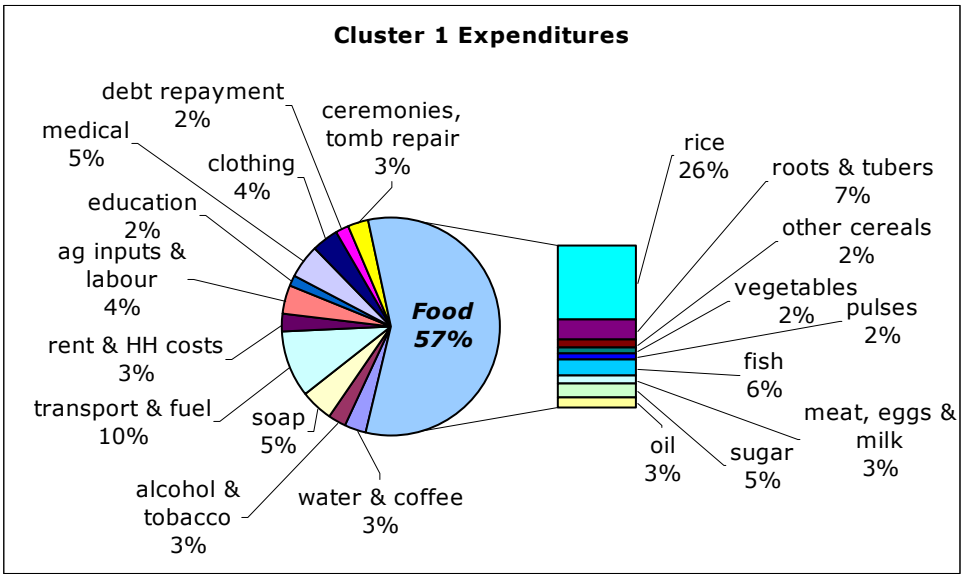


Although households were asked to name up to four main sources of income, 55% of the sample named only one income earning activity – among the highest of all district clusters. As indicated in the chart on the right, sale of field crops contributed to more than 40% of total income for these households while fishing and seasonal/temporary work each provided 7% to total income. Six percent of total income came from sales of livestock or animal products and petty trad activities.

- *Borrowing and debt*: In the sample, 40% of the households borrowed money in 2005, with 91% of those borrowing from family and friends and 9% from a local lender or bank. More than 80% of the households had taken food on credit in the past six months and 70% of these were still in debt – on average 175,000 FMG (USD $16) – the highest among all district clusters.

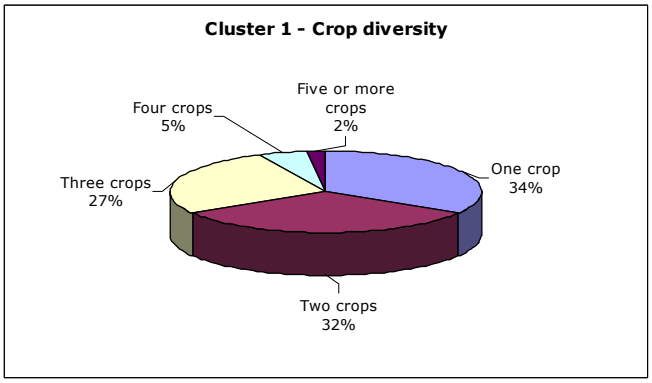
- *Expenditure*: As indicated in the chart below, 57% of total monthly expenditure for sample households is on food with the greatest share going for rice (26%), roots and tubers (7%) and fish (6%). The greatest share of non-food expenditure is for transport and fuel (10%), followed by medical (5%) and soap (5%). The average monthly per capita expenditure for food for sample households is 69,400 FMG (USD $6.3) – among the highest of all clusters. Average per capita non-food expenditure is 54,900 FMG (USD $5.0).

Figure 5 – Cluster 1: Expenditures



- *Land ownership and cultivation*: More than 80% of the sample households had access to agricultural land with an average size of 0.62 hectares owned and 0.65 ha cultivated which is the largest of all district clusters. Two-thirds of the sample households had more than 0.5 hectares. More than 60% of the households own some dry land, 42% own wetland with poor irrigation, 36% own wetland with good irrigation and 29% own some other type of land. Only 19% of the households had a vegetable garden, the lowest of all district clusters.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is 1st season rice, cultivated by 52% of the sample. Cassava is grown by more than 40% of the households, followed by maize (35%), 2nd season rice (27%) and sweet potatoes (14%).

Figure 6 – Cluster 1: crop diversity



The chart on the left shows that crop diversity is rather low for these households with only 2% growing five or more different crops. More than 80% of the sample households get their seeds for the main crop from the previous years' harvest with only 13% relying on purchase for seeds. At the time of the survey, 30% of the households indicated that their main food crop harvest would last 6 or more months.

- *Cereal storage*: About two-thirds of the households store their cereals in a bag while more than 20% use a 'hole' for storage. Only 5% use a granary and 7% have a storage room.
- *Livestock ownership*: More than 70% of the sample households owned poultry with an average of 8 birds. Forty-one percent owned oxen, 23% owned other cattle[3] (4 animals), 10% owned pigs (2 animals) and 10% owned cows (3 animals). Overall ownership was slightly above average compared to the other clusters – especially in oxen ownership.
- *Sources of food consumed in past week*: More than 70% of the food consumed in the previous week by sample households was purchased – the highest of all district clusters. Only 15% (lowest) was from own production while 11% was from hunting/fishing/gathering (highest). None was from food assistance.
- *Food gifts, food aid and external assistance*: More than half the sample households indicated they had given away food in the past six months – the highest of all district

[3] Neither oxen nor bulls

clusters. However, 15% of the households said they had received food in the past six months, mostly from family and friends (83% - highest). Only a few had received any food from food aid programmes. However, nearly 30% indicated they had sold or exchanged food aid. Only 7% of the households benefited from other external assistance.

- *Recent shocks & coping*: More than 60% of the sample households reported that they had experienced at least one shock or unusual event in the past year. Eight percent had experienced 3 or more shocks, among the highest of all district clusters. The most often reported shock was cyclone (44%), followed by drought or irregular rains (29%), flooding (22%), unusually high levels of crop diseases (16%) and the serious illness or accident of a household member (12%). The most often named strategy to cope with these shocks was to change food consumption (29%), followed by temporary wage labour (26%), borrowing money (16%) and reduction in meal frequency (14%).

Cluster 2

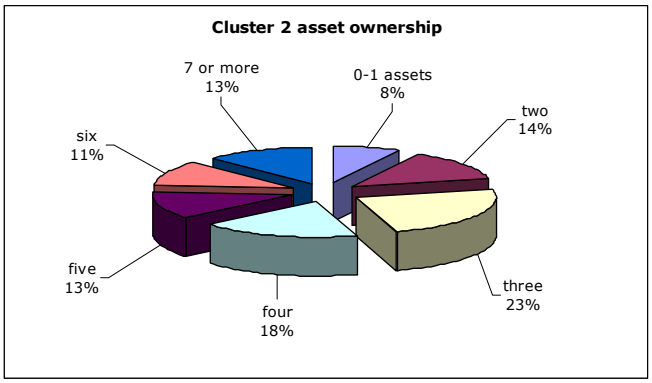
- *Districts:* Ambatomainty, Ankazoabo-Atsimo, Antsohihy, Benenitra, Beroroha, Besalampy, Betioky-Atsimo, Betroka, Kandreho, Mahabo, Mampikony, Manja, Miandrivazo, Morafenobe, Sakaraha districts
- *Sample size*: 25 communities, 247 households
- *Main region of origin*: 24% Menabe, 17% Atsimo Andreafana, 13% Sofia
- *Household headship*: 17% female headed households – 10% of all households are headed by women who are widowed or divorced. Average age of female heads was 40 years and 41 years for males. Seventeen percent of sample households are headed by elderly (60+ years) – the highest of all district clusters.
- *Household size and composition:* Average household size is 5.9 persons, the highest of all district clusters. More than one-quarter of the households have 7 or more members – also the highest of all clusters. On average 56% of household members were dependents (< 15 years or > 59 years).
- *Literacy:* Just fewer than 60% of the household heads were literate with 47% of heads and 61% of spouses having no education at all.

Map 6 – Cluster 2

- *Chronically ill or disabled:* 15% of sample households had a disabled or chronically ill member, among the highest of all clusters. In all, 8% of the household heads were disabled or chronically ill (highest).
- *School enrolment and absenteeism:* Exactly half the households had a primary school aged child enrolled in school, 4% had a child in secondary school with none enrolled in university. Of the primary school children enrolled in school, 41% had been absent from school for one week or more in the last month of the previous school year – among the highest of all district clusters. More than half the reasons were due to illness while one-quarter were because the teacher was absent.
- *Housing type and ownership*: More than 90% of the families owned their home. Nearly 60% of the homes are made of mixed materials while 32% are made of mud plaster. Just less than half the families moved into their current residence since 2000. On average, there were 4.0 persons per room with 25% of the households having more than 5 persons per room on average (highest), indicating possible crowding problems.
- *Water, sanitation, lighting and fuel*: About one-third of the households acquire their drinking water from an improved source while nearly 40% rely on rivers or streams for their water, regardless of season. Only 1% of the households used a flush toilet or improved pit latrine for sanitation. Most households used lanterns for lighting and almost all use charcoal for cooking fuel.
- *Household asset ownership*: Over 60% of the sample households owned a bed; more than 40% own a table and 26% with at least one chair. Almost half the households

owned a radio but hardly any had a television. For productive assets, 66% owned farming equipment, 30% owned a cart (among the highest in the sample) and 21% owned fishing equipment – the highest in the sample. Nine percent of the sample households reported owning a sewing machine. For transportation assets, 11% owned a bicycle and 2% owned a boat. Motorcycles and cars were owned by very few households.

Figure 7 – Cluster 2: asset ownership

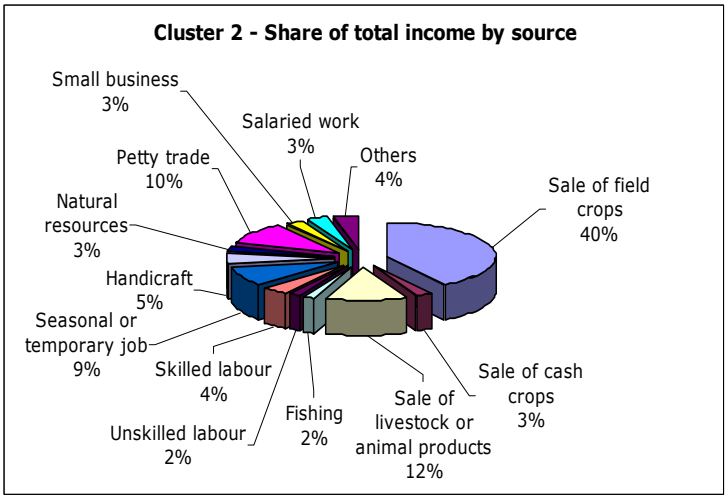


On average, of the total number of different assets owned by a household, about one-third were 'productive assets' – those that can be used to generate income or produce food. The chart shows the distribution of sample households by asset ownership category. Households in this cluster tend to be average in terms of numbers of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: More than 30% of the sample households indicated they visit the market 4-7 days per week with three-quarters going at least once a week. Almost all households indicated they usually travel to the market on foot.
- *Household income*: For the Cluster 2 sample the most often named sources of income were the sales of field crops (62%), sale of livestock or animal products (20%), petty trade (18%), and seasonal or temporary work (14%). Remittances/family transfers were named as a main income source by only 1% of the sample.

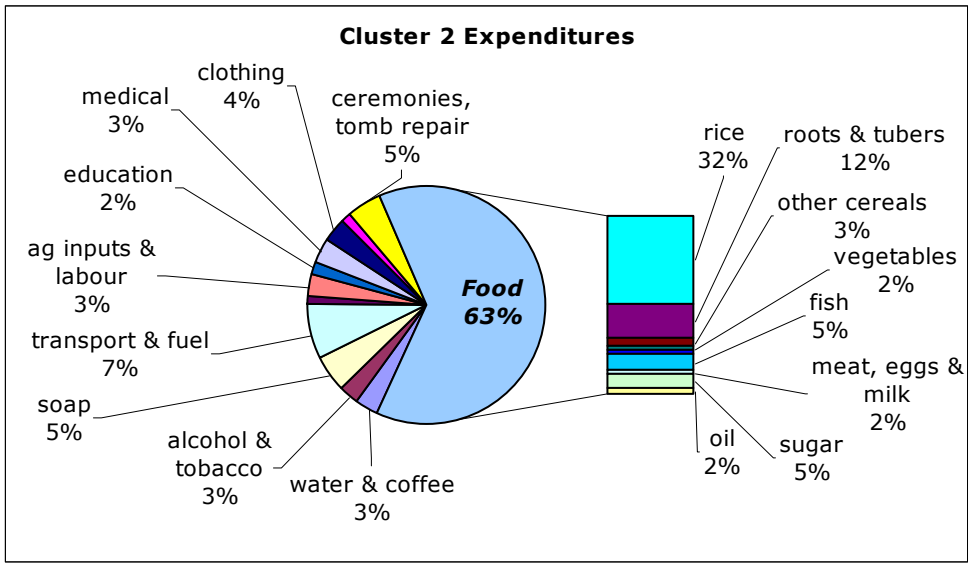
Although households were asked to name up to four main sources of income, half of the sample named only one income earning activity. As indicated in the chart on the right, sale of field crops contributed to 40% of total income for these households while sale of livestock or animal products contributed 12% and petty trade accounted for 10% of total income. Nine percent of total income came from seasonal or temporary jobs.

Figure 8 – Cluster 2: share of total income by source



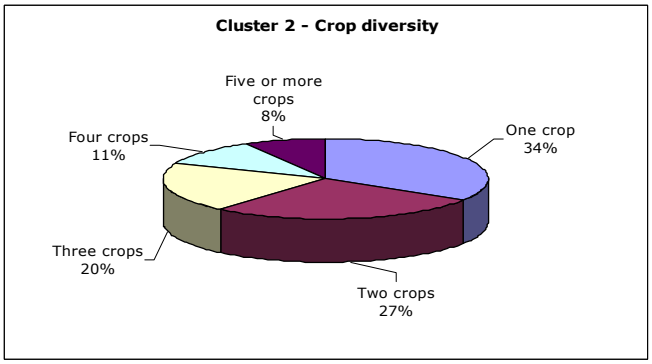
- *Borrowing and debt*: In the sample, 35% of the households borrowed money in 2005, with 91% of those borrowing from family and friends and 6% from a local lender or bank. More than 80% of the households had taken food on credit in the past six months and 65% of these were still in debt – on average 100,000 FMG (USD $9.1).
- *Expenditure*: As indicated in the chart below, 63% of total monthly expenditure for sample households is on food – among the highest of all district clusters. The greatest share of food expenditure is for rice (32%), roots and tubers (12%), fish (5%) and sugar (5%). The greatest share of non-food expenditure is for transport and fuel (7%), followed by ceremonies and tomb repair (5%) and soap (5%). The average monthly per capita expenditure for food for sample households is 76,800 FMG (USD $7.0) – the highest of all clusters. Average per capita non-food expenditure is 59,600 FMG (USD $5.4) – among the highest of all clusters.

Figure 9 – Cluster 2: expenditures



- *Land ownership and cultivation*: Around 80% of the sample households had access to agricultural land with an average size of 0.62 hectares owned and 0.64 ha cultivated which is among the largest of all district clusters. Two-thirds of the sample households had more than 0.5 hectares. Less than 60% of the households own some dry land (lowest), 56% own wetland with poor irrigation (highest), 34% own wetland with good irrigation and 34% own some other type of land (highest). Only 30% of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is 1st season rice, cultivated by 62% of the sample. Cassava is grown by more than 50% of the households, followed by maize (38%), 2nd season rice (21%) and sweet potatoes (16%).

Figure 10 – Cluster 2: crop diversity



The chart on the left shows that crop diversity is low for these households with only 8% growing five or more different crops. More than 80% of the sample households get their seeds for the main crop from the previous years' harvest with only 12% relying on purchase for seeds. At the time of the survey, only 23% of the households indicated that their main food crop harvest would last 6 or more months.

- *Cereal storage*: About two-thirds of the households store their cereals in a bag while around 20% use a 'hole' for storage. Only 2% use a granary and 14% have a storage room.
- *Livestock ownership*: More than 60% of the sample households owned poultry with an average of 8 birds. Thirty-eight percent owned oxen, 25% owned other cattle[4] (6 animals), 6% owned pigs (2 animals) and 13% owned cattle (10 animals). Overall ownership was about average compared to the other clusters – especially in oxen ownership.
- *Sources of food consumed in past week*: Around 70% of the food consumed in the previous week by sample households was purchased – among the highest of all district clusters. Only 19% (low) was from own production while 9% was from hunting/fishing/gathering (high). None was from food assistance.
- *Food gifts, food aid and external assistance*: Forty-five percent of the sample households indicated they had given away food in the past six months – one of the

[4] Neither oxen nor bulls

highest of all district clusters. However, 20% of the households (high) said they had received food in the past six months, mostly from family and friends (80% - high). Around 15% had received any food from general food distribution. However, nearly 20% indicated they had sold or exchanged food aid. Only 5% of the households benefited from other external assistance.

- *Recent shocks & coping*: More than 70% of the sample households reported that they had experienced at least one shock or unusual event in the past year. Over 5% had experienced 3 or more shocks, among the highest of all district clusters. The most often reported shock was cyclone (42%), followed by drought or irregular rains (33%), flooding (22%), unusually high levels of crop diseases (12%) and increased food prices (8%). The most often named strategy to cope with these shocks was to change food consumption (33%), followed by the increased consumption of wild foods (24%), temporary wage labour (20%), and selling cattle (15%).

Cluster 3

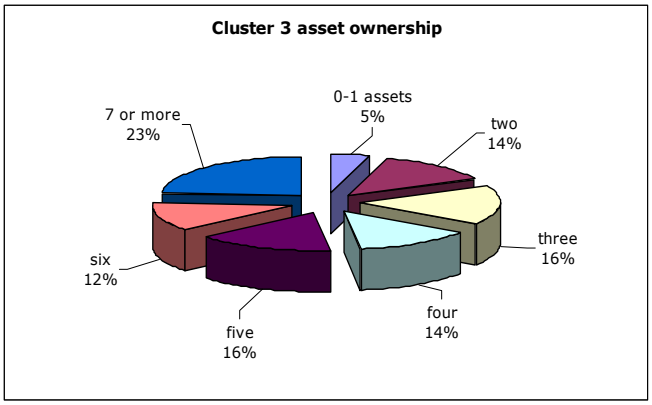
- *Districts*: Ambalavao, Ambatofinandrahana, Ambohidratrimo, Ankazobe, Antsirabe I & II, Arivonimamo, Betafo, Faratsiho, Fenoarivo-Afovoany, Ihosy, Ikalamavony, Maevatanana, Manandriana, Miarinarivo, Soavinandriana, Tsaratanana, Tsiroanomandidy districts
- *Sample size*: 30 communities, 287 households
- *Main region of origin*: 31% Vakinankaratra, 18% Amoroni'I Mania, 14% Analamange
- *Household headship*: 10% female headed households (lowest) – 8% of all households are headed by women who are widowed or divorced. Average age of female heads was 44 years which is significantly higher ($p < 0.01$) than the 37 years for males. Eleven percent of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 5.6 persons and 17% of the households have 7 or more members. On average 55% of household members were dependents (< 15 years or > 59 years).
- *Literacy:* More than 80% of the household heads were literate (high) with only 16% of heads (low) and 26% of spouses (low) having no education at all.

Map 7 – Cluster 3

- *Chronically ill or disabled:* Only 7% of sample households had a disabled or chronically ill member, among the lowest of all clusters. In all, only 1% of the household heads were disabled or chronically ill (lowest).
- *School enrolment and absenteeism:* More than 60% (high) of the households had a primary school aged child enrolled in school, 11% had a child in secondary school with 3% having a child enrolled in university (highest). Of the primary school children enrolled in school, 30% had been absent from school for one week or more in the last month of the previous school year. About half the reasons were due to illness while 21% were because the teacher was absent.
- *Housing type and ownership*: Nearly 90% of the families owned their home. More than 40% of the homes are made of mud plaster while 30% are made of mixed materials. Around one-third of the families moved into their current residence since 2000. On average, there were 2.7 persons per room (lowest) with only 8% of the households having more than 5 persons per room on average (low).
- *Water, sanitation, lighting and fuel*: Nearly half of the households acquire their drinking water from an improved source, the highest of all district clusters. Only 20% rely on rivers or streams for their water, regardless of season. One-quarter of the households used a flush toilet or improved pit latrine for sanitation. Nearly 90% of households used lanterns for lighting – 7% used candles. Over 90% use charcoal for cooking fuel.

- *Household asset ownership*: Over 70% of the sample households owned a bed, 50% own a table and 40% own at least one chair. Nearly 70% of the households owned a radio and 5% had a television – both the highest of all district clusters. For productive assets, 78% owned farming equipment, 18% owned a cart and 17% owned fishing equipment. Nine percent of the sample households reported owning a sewing machine. For transportation assets, 28% owned a bicycle and 3% owned a boat. Motorcycles and cars were owned by few households.

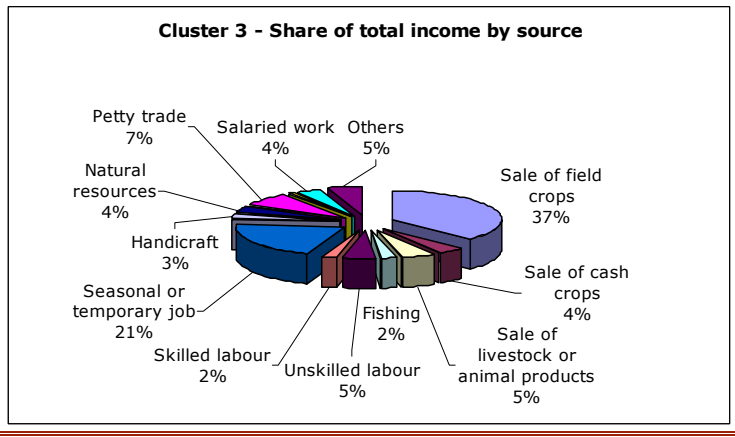
Figure 11 – Cluster 3: asset ownership



On average, of the total number of different assets owned by a household, about one-third was 'productive assets' – those that can be used to generate income or produce food. The chart shows the distribution of sample households by asset ownership category. Households in this cluster tend to be slightly better off in terms of numbers of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: One-quarter of the sample households indicated they visit the market 4-7 days per week with nearly 80% going at least once a week. Nearly 90% of the households indicated they usually travel to the market on foot and 9% use a bicycle.
- *Household income*: For the Cluster 3 sample the most often named sources of income were the sales of field crops (54%), seasonal or temporary work (34%), sale of livestock or animal products (18%) and petty trade (13%). Remittances/family transfers were not named as a main income source in the sample.

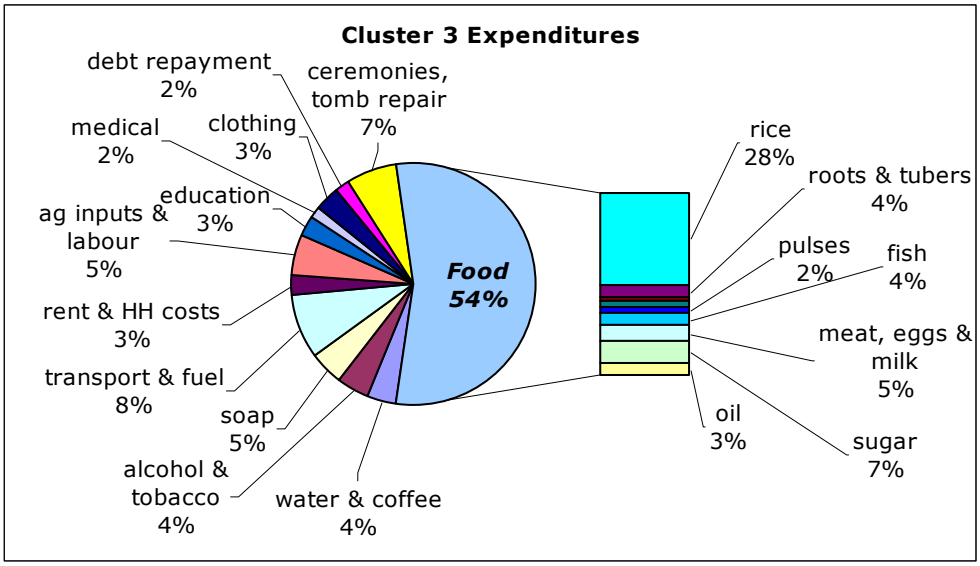
Figure 12 – Cluster 3: share of total income by source



Although households were asked to name up to four main sources of income, 47% of the sample named only one income earning activity. As indicated in the chart on the left, sale of field crops contributed to 37% of total income for these households while seasonal or temporary work contributed 21% and petty trade accounted for 7% of total income.

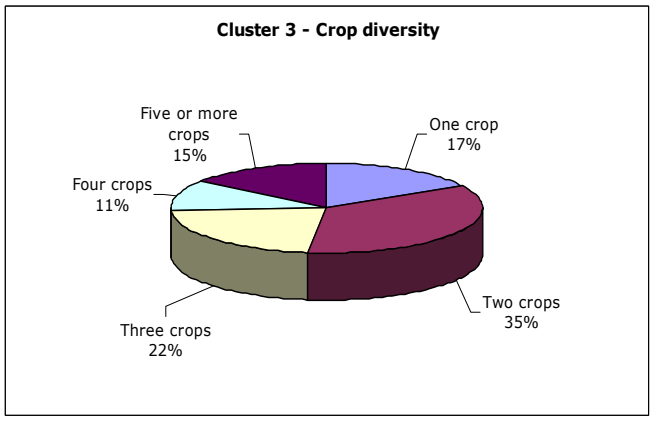
- *Borrowing and debt*: In the sample, 43% of the households borrowed money in 2005 – the highest of all district clusters. Nearly all of those borrowed from family and friends with only 2% from a local lender or bank. Nearly 60% of the households had taken food on credit in the past six months and 57% of these were still in debt – on average 50,000 FMG (USD $4.5).
- *Expenditure*: As indicated in the chart below, 54% of total monthly expenditure for sample households is on food with the greatest share of food expenditure for rice (28%), followed by sugar (7%) and meat/eggs/milk (5%). The greatest shares of non-food expenditure are for transport and fuel (8%), followed by ceremonies and tomb repair (7%), agricultural inputs and labour (5%) and soap (5%). The average monthly per capita expenditure for food for sample households is 40,300 FMG (USD $3.7) with average per capita non-food expenditure being 58,200 FMG (USD $5.3).

Figure 13 – Cluster 3: expenidtures



- *Land ownership and cultivation*: Nearly 80% of the sample households had access to agricultural land but with an average size of only 0.48 hectares owned and 0.46 ha cultivated. Nearly half of the sample households had more than 0.5 hectares. Three-quarters of the households own some dry land, 35% own wetland with poor irrigation, 68% own wetland with good irrigation (highest) and 18% own some other type of land. Nearly half of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is cassava, cultivated by 59% of the sample. First season rice is grown by 56% of the households, followed by maize (40%), beans (31%) and 2nd season rice (29%).

Figure 14 – Cluster 3: crop diversity



The chart on the left shows that crop diversity is relatively high for these households with 27% growing four or more different crops. Nearly 90% of the sample households get their seeds for the main crop from the previous years' harvest with only 9% relying on purchase for seeds (lowest). At the time of the survey, nearly half the households indicated that their main food crop harvest would last 6 or more months – among the highest of all district clusters.

- *Cereal storage*: About two-thirds of the households store their cereals in a bag while 15% use a granary, 9% use a 'hole' and 8% have a storage room.
- *Livestock ownership*: Nearly 70% of the sample households owned poultry with an average of 8 birds. Thirty-eight percent owned pigs (highest), 27% owned oxen, 13% owned other cattle[5] (2 animals) and 12% owned cows (1 animal). Overall ownership was lower compared to the other clusters.
- *Sources of food consumed in past week*: Over 60% of the food consumed in the previous week by sample households was purchased with 31% from own production (high) and only 3% from hunting/fishing/gathering. Less than 1% was from food assistance.
- *Food gifts, food aid and external assistance*: One-third of the sample households indicated they had given away food in the past six months while only 6% of the households (low) said they had received food in the past six months, mostly from family and friends (72%). Over 20% had received any food from 'other' sources while

[5] Neither oxen nor bulls

only a few received food from food aid programmes. None indicated they had sold or exchanged food aid and only 7% of the households had benefited from other external assistance.

- *Recent shocks & coping*: Less than half of the sample households reported that they had experienced at least one shock or unusual event in the past year. Most had experienced only one shock. The most often reported shock was cyclone (46%), followed by increased food prices (16%), drought/irregular rains (8%) and hail (7%). The most often named strategy to cope with these shocks was to change food consumption (49%), followed by borrowing money (17%) and purchasing food on credit (10%).

Cluster 4

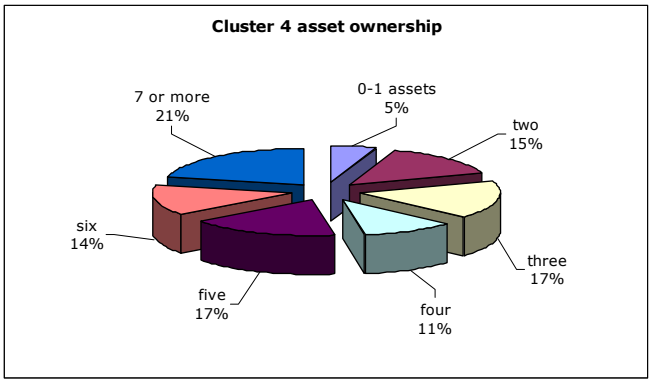
- *Districts*: Ambatolampy, Ambilobe, Ambohimahasoa, Ambositra, Amparafaravola, Andilamena, Andramasina, Anjozorobe, Antanifotsy, Bealanana, Befandriana-Avaratra, Fandriana, Fianarantsoa II, Ivohibe, Mandritsara, Manjakandriana districts
- *Sample size*: 30 communities, 289 households
- *Main region of origin*: 19% Amoroni'I Mania, 19% Haute Matsiara, 17% Vakinankaratra
- *Household headship*: 11% female headed households (low) – 6% of all households are headed by women who are widowed or divorced (lowest). Average age of female heads was 45 years which is significantly higher ($p < 0.01$) than the 38 years for males. Eleven percent of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 5.7 persons and 23% of the households have 7 or more members. On average 54% of household members were dependents (< 15 years or > 59 years).
- *Literacy:* Nearly 90% of the household heads were literate (highest) with only 13% of heads (lowest) and 19% of spouses (lowest) having no education at all.

Map 8 – Cluster 4

- *Chronically ill or disabled:* Nine percent of sample households had a disabled or chronically ill member. In all, only 3% of the household heads were disabled or chronically ill.
- *School enrolment and absenteeism:* More than 60% (highest) of the households had a primary school aged child enrolled in school, 15% had a child in secondary school (highest) with 2% having a child enrolled in university. Of the primary school children enrolled in school, only 23% (lowest) had been absent from school for one week or more in the last month of the previous school year. The reasons for absenteeism were due to illness (65%) and teacher absence (23%).
- *Housing type and ownership*: Only 85% of the families owned their home – the lowest of all district clusters. One-third of the families live in houses of brick or stone while another third live in homes made of mud plaster while 20% live in those made of mixed materials. Thirty-four percent of the families moved into their current residence since 2000. On average, there were 2.9 persons per room (low) with only 7% of the households having more than 5 persons per room on average (lowest).
- *Water, sanitation, lighting and fuel*: Around one-third of the households acquire their drinking water from an improved source while around half rely on rivers or streams for their water, regardless of season. One-fifth of the households uses a flush toilet or improved pit latrine for sanitation. Over 90% of households used lanterns for lighting while nearly all use charcoal for cooking fuel.
- *Household asset ownership*: Over 70% of the sample households owned a bed, 54% with a table and 48% with at least one chair. Two-thirds of the households owned a

radio (high) and 2% had a television. For productive assets, 71% owned farming equipment, 10% owned a cart and 11% owned fishing equipment. Eleven percent of the sample households also reported owning a sewing machine. For transportation assets, 26% owned a bicycle and 2% owned a boat. Motorcycles and cars were owned by very few households.

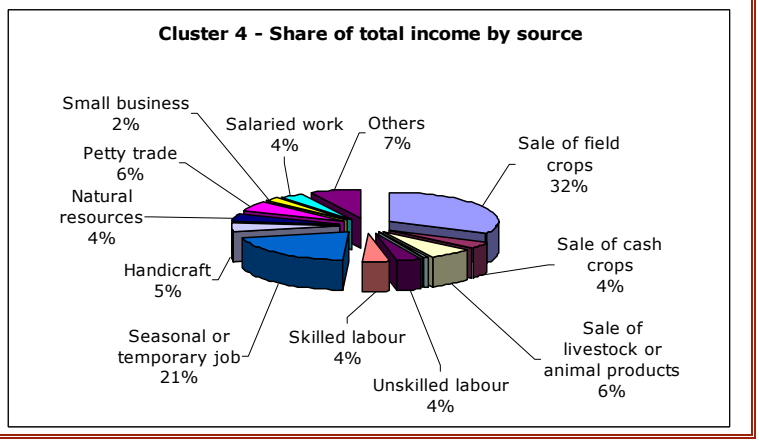
Figure 15 – Cluster 4: asset ownership



On average, of the total number of different assets owned by a household, about 28% were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category. Households in this cluster tend to be slightly better off in terms of number of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: Only 11% of the sample households indicated they visit the market 4-7 days per week (low) with nearly two-thirds going at least once a week. Over 90% of the households indicated they usually travel to the market on foot and 6% use a bicycle.
- *Household income*: For the Cluster 4 sample the most often named sources of income were the sales of field crops (48%), seasonal or temporary work (34%), sale of livestock or animal products (16%) and petty trade (10%). Three percent of the households named remittances/family transfers as a main income source in the sample.

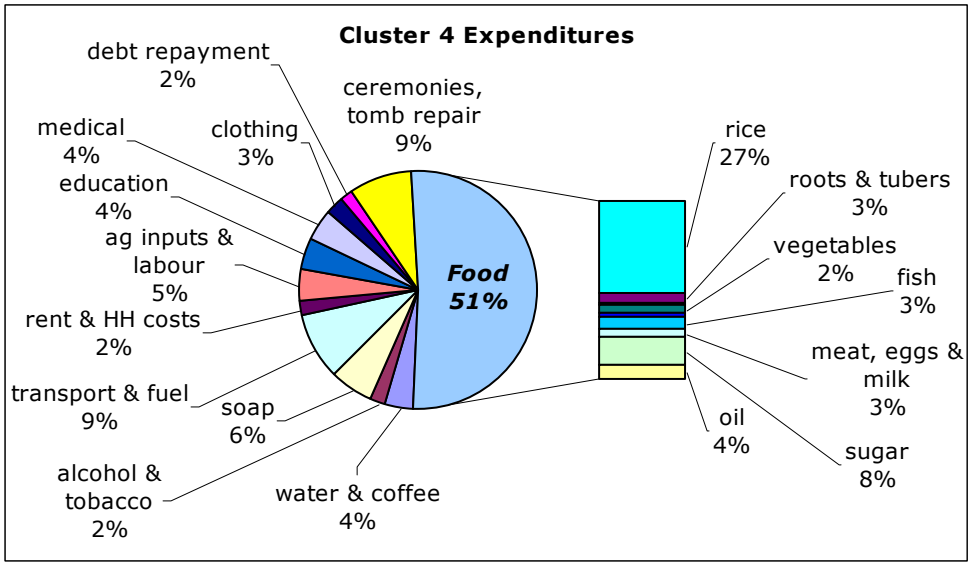
Figure 16 – Cluster 4: share of total income by source



Although households were asked to name up to four main sources of income, 45% of the sample named only one income earning activity. As indicated in the chart on the right, sale of field crops contributed to 32% of total income for these households while seasonal or temporary work contributed 21% and petty trade and 'other' activities accounted for 7% each of total income.

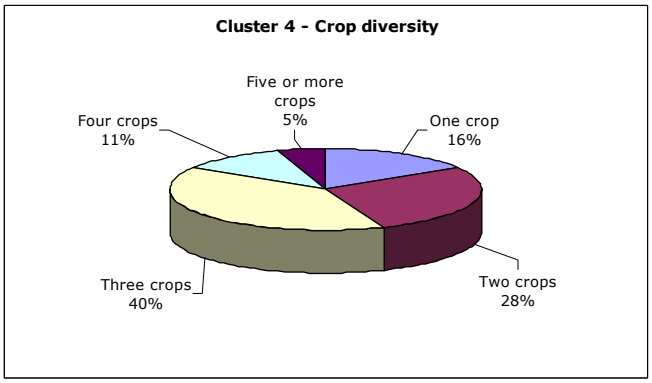
- *Borrowing and debt*: In the sample, 39% of the households borrowed money in 2005 with nearly all of those borrowing from family and friends and 5% from a local lender or bank. Seventy percent of the households had taken food on credit in the past six months and 43% (lowest) of these were still in debt – on average 50,000 FMG (USD $4.5).
- *Expenditure*: As indicated in the chart below, 51% of total monthly expenditure for sample households is on food with the greatest share of food expenditure for rice (27%), followed by sugar (8%) and oil (4%). The greatest shares of non-food expenditure are for transport and fuel and ceremonies and tomb repair with 9% each. The average monthly per capita expenditure for food for sample households is 37,200 FMG (USD $3.4) (low) with average per capita non-food expenditure being 40,600 FMG (USD $3.7).

Figure 17 – Cluster 4: expenditures



- *Land ownership and cultivation*: 85% of the sample households had access to agricultural land with an average size of 0.52 hectares owned but only 0.45 ha cultivated. More than half of the sample households had more than 0.5 hectares. Nearly 80% of the households own some dry land, 53% own wetland with poor irrigation (high), 60% own wetland with good irrigation (high) and 29% own some other type of land. More than 60% of the households had a vegetable garden – the highest of all district clusters.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is 1st season rice, cultivated by 77% of the sample. Cassava is grown by 63% of the households, followed by sweet potatoes (35%), beans (19%) and white potatoes (19%).

Figure 18 – Cluster 4: crop diversity



The chart on the left shows that crop diversity is relatively high for these households with 16% growing four or more different crops. More than 80% of the sample households get their seeds for the main crop from the previous years' harvest with 13% relying on purchase for seeds. At the time of the survey, 48% the households indicated that their main food crop harvest would last 6 or more months – the highest of all district clusters.

- *Cereal storage*: Three-quarters (highest) of the households store their cereals in a bag while 11% use a granary, and 10% have a storage room.
- *Livestock ownership*: Three-quarters of the sample households owned poultry with an average of 8 birds. Twenty-seven percent owned pigs (high), 31% owned oxen, 15% owned other cattle[6] (3 animals) and 12% owned cows (2 animals). Overall ownership was average compared to the other clusters.
- *Sources of food consumed in past week*: Just over half of the food consumed in the previous week by sample households was purchased (low) with 39% from own production (highest) and only 3% from hunting/fishing/gathering. Less than 1% was from food assistance.
- *Food gifts, food aid and external assistance*: One-third of the sample households indicated they had given away food in the past six months while 13% of the households said they had received food in the past six months. Of those, 58% was from family and friends, 29% from general distribution (highest), 18% from 'other'

[6] Neither bulls nor oxen

sources and 10% from supplementary feeding programmes. Only 5% indicated they had sold or exchanged food aid and 8% of the households had benefited from other external assistance.

- *Recent shocks & coping*: Nearly 60% of the sample households reported that they had experienced at least one shock or unusual event in the past year. Most had experienced only one shock. The most often reported shock was cyclone (23%), followed by increased food prices (22%), floods (21%), hail (15%), and unusually high levels of crop disease (8%). The most often named strategy to cope with these shocks was to change food consumption (29%), followed by 'other' strategies (26%) and borrowing money (19%).

Cluster 5

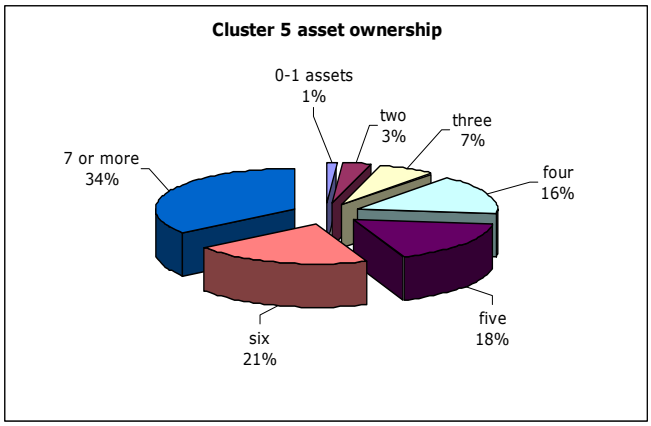
- Districts: *Ambatondrazaka, Andapa, Antalaha, Maroantsetra, Sambava, Vohimarina* districts
- *Sample size*: 25 communities, 245 households
- *Main region of origin*: 57% Sava, 16% Alaotra Mangoro, 16% Analanjirofo
- *Household headship*: 16% female headed households – 13% of all households are headed by women who are widowed or divorced. Average age of female heads was 40 years and 38 years for males. Thirteen percent of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 5.3 persons and 20% of the households have 7 or more members. On average 51% (lowest) of household members were dependents (< 15 years or > 59 years).
- *Literacy:* More than 80% of the household heads were literate (high) with 23% of heads and 27% of spouses having no education at all.
- *Chronically ill or disabled:* Seven percent of sample households had a disabled or chronically ill member. In all, only 3% of the household heads were disabled or chronically ill.

Map 9 – Cluster 5

- *School enrolment and absenteeism:* Nearly 60% of the households had a primary school aged child enrolled in school, 13% had a child in secondary school (high) with 2% having a child enrolled in university. Of the primary school children enrolled in school, only 23% (lowest) had been absent from school for one week or more in the last month of the previous school year. The reasons for absenteeism were due to illness (72%) and teacher absence (19%).
- *Housing type and ownership*: Nearly 90% of the families owned their home with 67% of the families living in wooden huts, 12% in houses made of brick or stone and 11% in huts of metal sheeting. Just over 40% of the families moved into their current residence since 2000. On average, there were 3.6 persons per room with 16% of the households having more than 5 persons per room on average, indicating possible crowding problems.
- *Water, sanitation, lighting and fuel*: Around one-quarter of the households acquire their drinking water from an improved source while about 40% rely on rivers or streams for their water, regardless of season. Nearly 40% of the households uses a flush toilet or improved pit latrine for sanitation – the highest of all district clusters. Over 90% of households used lanterns for lighting while nearly all use charcoal for cooking fuel.
- *Household asset ownership*: Nearly all of the sample households owned a bed (highest), 78% owned a table (highest) and 72% with at least one chair (highest). Two-thirds of the households owned a radio (high) and 5% had a television (highest). For productive assets, 82% owned farming equipment, 8% owned a cart and 17% owned fishing equipment. Seventeen percent of the sample households also reported

owning a sewing machine – the highest of all clusters. For transportation assets, 42% owned a bicycle (highest) and 4% owned a boat.

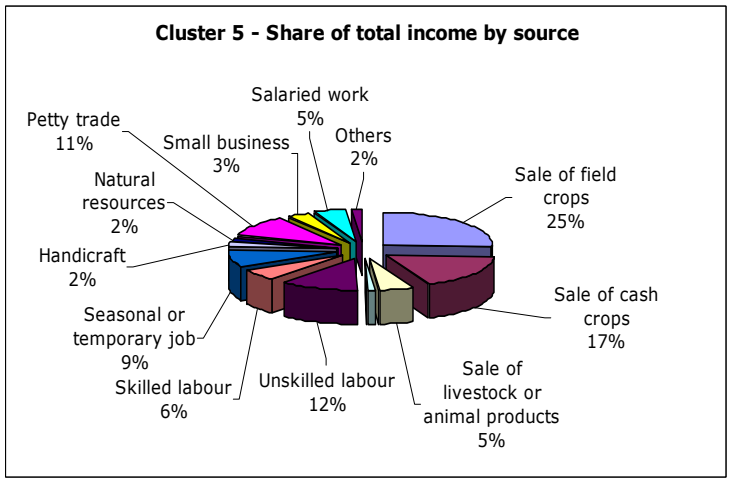
Figure 19 – Cluster 5: asset ownership



Motorcycles and cars were owned by very few households. On average, of the total number of different assets owned by a household, about 28% were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category. Households in this cluster tend to be the best-off in terms of numbers of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: Over 30% of the sample households indicated they visit the market 4-7 days per week with nearly two-thirds going at least once a week. However, 18% indicated they go only once a month. Over 90% of the households indicated they usually travel to the market on foot and 4% use a bicycle.
- *Household income*: For the Cluster 5 sample the most often named sources of income were the sales of field crops (37%), sale of cash crops (26%), unskilled labour (15%), petty trade (15%), and seasonal or temporary work (12%). Only 1% of the households named remittances/family transfers as a main income source in the sample.

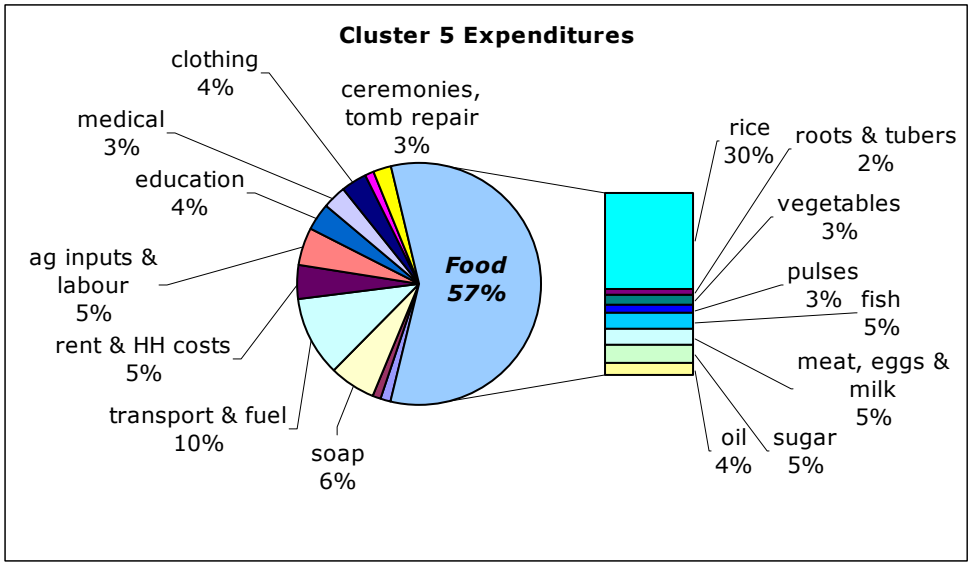
Figure 20 – Cluster 5: share of total income by source



Although households were asked to name up to four main sources of income, 63% of the sample named only one income earning activity – the highest of all district clusters. As indicated in the chart on the right, sale of field crops contributed to 25% of total income for these households while sales of cash crops contributed 17% to total income, followed by unskilled labour (12%), petty trade (11%) and seasonal or temporary work (9%).

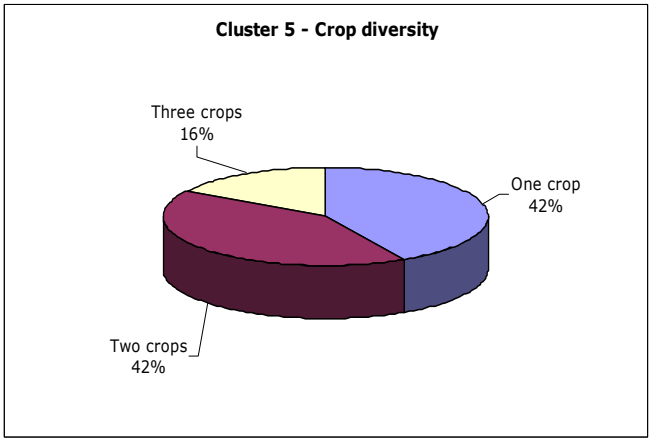
- *Borrowing and debt*: In the sample, only 25% (lowest) of the households borrowed money in 2005 with 83% of those borrowing from family and friends and 12% (highest) from a local lender or bank. Just more than 40% (lowest) of the households had taken food on credit in the past six months and 54% (low) of these were still in debt – on average 137,500 FMG (USD $12.5).
- *Expenditure*: As indicated in the chart below, 57% of total monthly expenditure for sample households is on food with the greatest share of food expenditure for rice (30%), followed by sugar, fish and meat/eggs/ milk with 5% each. The greatest shares of non-food expenditure are for transport and fuel (10%) followed by soap (6%). The average monthly per capita expenditure for food for sample households is 60,900 FMG (USD $5.5) with average per capita non-food expenditure being 55,900 FMG (USD $5.1).

Figure 21 – Cluster 5: expenditures



- *Land ownership and cultivation*: Just over 70% of the sample households had access to agricultural land with an average size of 0.44 hectares owned (low) and 0.47 ha cultivated. Around half of the sample households had more than 0.5 hectares. Three-quarters of the households own some dry land, 33% own wetland with poor irrigation (low), 31% own wetland with good irrigation (low) and 4% own some other type of land (lowest). More than 40% of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is 1st season rice, cultivated by 61% of the sample.

Figure 22 – Cluster 5: crop diversity



Cassava is grown by 35% of the households, followed by vanilla (30%), 2nd season rice (18%) and rice *tanety* (7%). The chart on the left shows that crop diversity is very low for these households with more than 40% growing only one crop. More than 80% of the sample households get their seeds for the main crop from the previous years' harvest with 10% relying on purchase for seeds. At the time of the survey, 34% the households indicated that their main food crop harvest would last 6 or more months.

- *Cereal storage*: Sixty percent of the households store their cereals in a bag while 16% use a granary, and 14% have a storage room.
- *Livestock ownership*: Seventy percent of the sample households owned poultry with an average of 10 birds while 24% owned oxen and 11% owned cows (2 animals). Overall ownership was low compared to the other clusters.
- *Sources of food consumed in past week*: More than 70% of the food consumed in the previous week by sample households was purchased (highest) with 24% from own production and only 2% from hunting/fishing/gathering. None was from food assistance.
- *Food gifts, food aid and external assistance*: One-third of the sample households indicated they had given away food in the past six months while only 5% (lowest) of the households said they had received food in the past six months. Of those, 58% was from family and friends, 8% from general distribution, and 25% from 'other' sources. None indicated they had sold or exchanged food aid and 9% of the households had benefited from other external assistance.

- *Recent shocks & coping*: More than half of the sample households reported that they had experienced at least one shock or unusual event in the past year (low). Almost all had experienced only one shock. The most often reported shock was cyclone (45%), followed by serious illness or accident of a household member (10%), increased food prices (9%), floods (8%), and death of an active household member (8%). The most often named strategy to cope with these shocks was to change food consumption (26%), followed by borrowing money (18%), 'other' strategies (13%) and temporary wage labour (10%).

Cluster 6

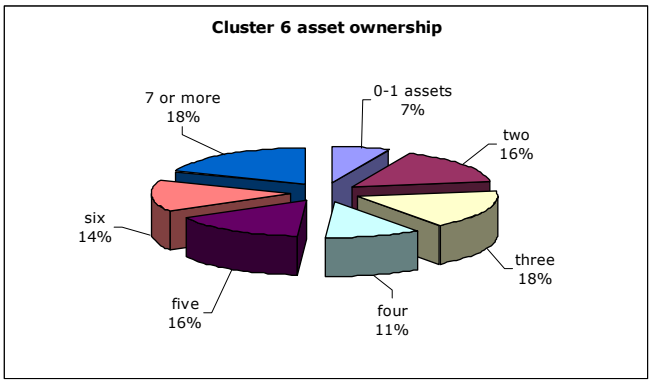
- *District*: Fenoarivo-Atsinanana, Mananara-Avaratra, Moramanga, Soanierana-Ivongo, Taolanaro, Toamasina II, Vangaindrano, Vohibinany districts
- *Sample size*: 25 communities, 268 households
- *Main region of origin*: 27% Analanjirofo, 24% Anosy, 19% Atsimo Atsinanana
- *Household headship*: 29% female headed households – 16% of all households are headed by women who are widowed or divorced – the highest of all district clusters. Average age of female heads was 34.5 years and 36 years for males – the lowest of all clusters. Nine percent of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 4.7 persons (lowest) and only 12% of the households have 7 or more members (lowest). On average 54% of household members were dependents (< 15 years or > 59 years).
- *Literacy:* Two-thirds of the household heads were literate with 31% of heads and 45% of spouses having no education at all.

Map 10 – Cluster 6

- *Chronically ill or disabled:* Nine percent of sample households had a disabled or chronically ill member. In all, only 2% of the household heads were disabled or chronically ill.
- *School enrolment and absenteeism:* Forty-six percent of the households had a primary school aged child enrolled in school, 6% had a child in secondary school with 1% having a child enrolled in university. Of the primary school children enrolled in school, 25% (low) had been absent from school for one week or more in the last month of the previous school year. The reasons for absenteeism were due to illness (39%), teacher absence (32%), and lack of food/income (32%).
- *Housing type and ownership*: Nearly 90% of the families owned their home with more than half of the families living in wooden huts, 26% in houses made of mixed materials and 13% of 'other' construction. Around 40% of the families moved into their current residence since 2000. On average, there were 3.7 persons per room with 17% of the households having more than 5 persons per room on average, indicating possible crowding problems.
- *Water, sanitation, lighting and fuel*: Around 30% of the households acquire their drinking water from an improved source while more than 60% (high) rely on rivers or streams for their water, regardless of season. One-quarter of the households uses a flush toilet or improved pit latrine for sanitation (high). Over 90% of households used lanterns for lighting while nearly all use charcoal for cooking fuel.
- *Household asset ownership*: Nearly 80% of the sample households owned a bed (high), 49% with a table and 50% with at least one chair (high). Over 40% of the households owned a radio and 2% had a television. For productive assets, 77% owned farming equipment, 2% owned a cart and 13% owned fishing equipment. Eleven percent of the sample households also reported owning a sewing machine. For

transportation assets, 18% owned a bicycle and 6% owned a boat. Motorcycles and cars were owned by very few households.

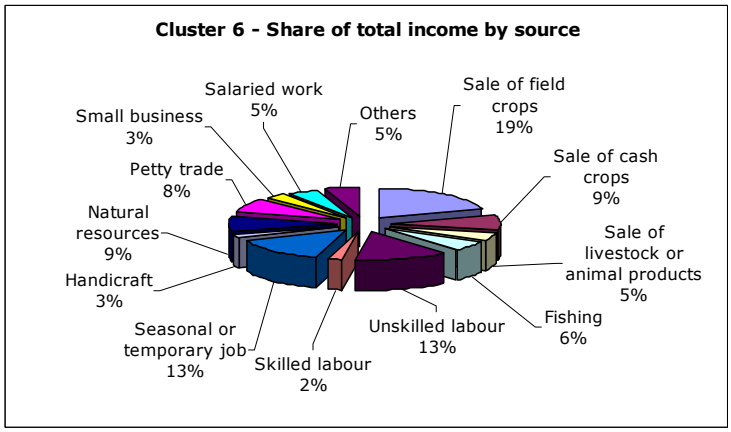
Figure 23 – Cluster 6: asset ownership



On average, of the total number of different assets owned by a household, about 29% were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category. Households in this cluster tend to be about average in terms of asset ownership when compared to the sample households in the other district clusters.

- *Market access and utilization*: Over 30% of the sample households indicated they visit the market 4-7 days per week with more than 70% going at least once a week. Over 90% of the households indicated they usually travel to the market on foot and 5% use a bicycle.
- *Household income*: For the Cluster 6 sample the most often named sources of income were the sales of field crops (31%), seasonal or temporary work (22%), unskilled labour (20%), sale of cash crops (16%), and use of natural resources (11%). Hardly any of the households named remittances/family transfers as a main income source in the sample.

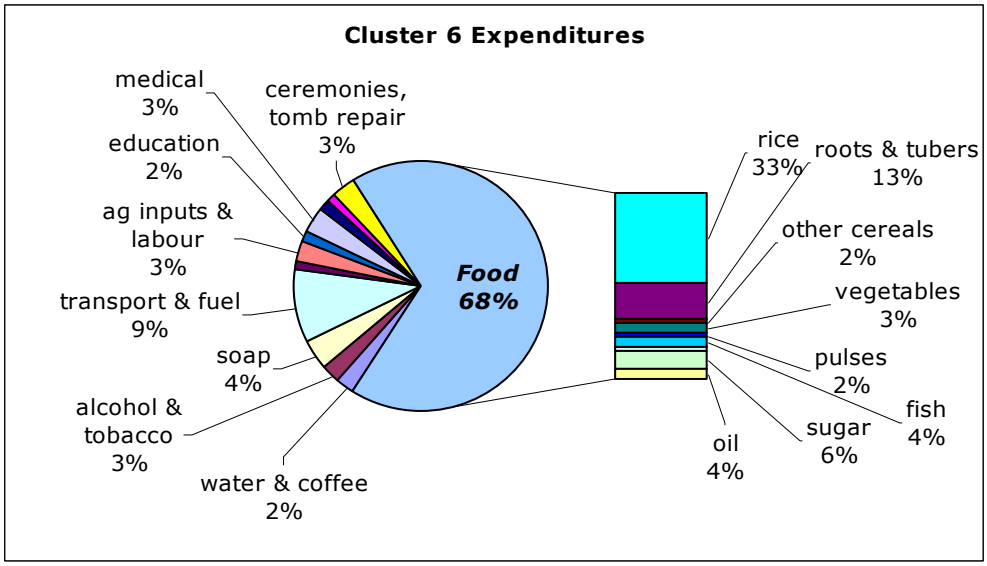
Figure 24 – Cluster 6: share of total income by source



Although households were asked to name up to four main sources of income, 53% of the sample named only one income earning activity. As indicated in the chart on the right, sale of field crops contributed to 19% of total income for these households while unskilled labour and seasonal or temporary job each contributed 13% to total income, followed by sale of cash crops (9%) and petty trade (8%).

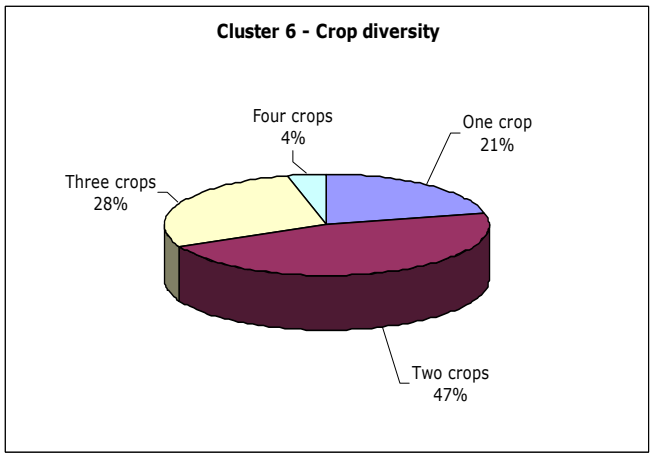
- *Borrowing and debt*: In the sample, 31% (low) of the households borrowed money in 2005 with almost all of those borrowing from family and friends. Eighty percent (high) of the households had taken food on credit in the past six months and 81% (high) of these were still in debt – on average 75,000 FMG (USD $6.8).
- *Expenditure*: As indicated in the chart below, 68% of total monthly expenditure for sample households is on food – the highest of all district clusters. The greatest share of food expenditure is for rice (33%), followed by roots and tubers (13%) and sugar (6%). The greatest shares of non-food expenditure are for transport and fuel (9%) followed by soap (4%). The average monthly per capita expenditure for food for sample households is 48,900 FMG (USD $4.4) with average per capita non-food expenditure being 30,900 FMG (USD $2.8).

Figure 25 – Cluster 6: expenditures



- *Land ownership and cultivation*: Nearly 80% of the sample households had access to agricultural land with an average size of 0.31 hectares owned (lowest) and 0.33 ha cultivated (lowest). Only 31% of the sample households had more than 0.5 hectares – the lowest of all clusters. Nearly 70% of the households own some dry land, 30% own wetland with poor irrigation (low), 51% own wetland with good irrigation and 26% own some other type of land. One-quarter of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is cassava, cultivated by 67% of the sample.

Figure 26 – Cluster 6: crop diversity



First season rice is grown by 65% of the households, followed by sweet potatoes (31%), 2nd season rice (15%) and rice *tanety* (10%). The chart on the left shows that crop diversity is low for these households with more than 68% growing only one or two crops. More than 70% (low) of the sample households get their seeds for the main crop from the previous years' harvest with 21% (high) relying on purchase for seeds. At the time of the survey, 23% the households indicated that their main food crop harvest would last 6 or more months.

- *Cereal storage*: Nearly half of the households store their cereals in a bag while 24% use a storage room, and 14% use a granary.
- *Livestock ownership*: Two-thirds of the sample households owned poultry with an average of 5 birds while 16% owned oxen and 12% owned other cattle[7] (2 animals) and 8% own cows. Overall ownership was low compared to the other clusters.
- *Sources of food consumed in past week*: More than 70% of the food consumed in the previous week by sample households was purchased (high) with 20% from own production (low) and 7% from hunting/fishing/gathering. A very small percentage was from food assistance.
- *Food gifts, food aid and external assistance*: Nearly 30% of the sample households indicated they had given away food in the past six months while 13% of the households said they had received food in the past six months. Of those, only 17% was from family and friends, 31% from 'other' sources and 26% from school feeding.

[7] Neither oxen nor bulls

None indicated they had sold or exchanged food aid and 9% of the households had benefited from other external assistance.

- *Recent shocks & coping*: Three-quarters of the sample households reported that they had experienced at least one shock or unusual event in the past year (high) – most experiencing only one or two shocks. The most often reported shock was flooding (59%), unusually high levels of crop diseases (18%), cyclones (16%), increased food prices (13%) and drought (9%). The most often named strategy to cope with these shocks was to change food consumption (29%), followed by 'other' strategies (20%), reduced number of meals (14%), increased consumption of wild foods (13%) and purchasing food on credit (11%).

Cluster 7

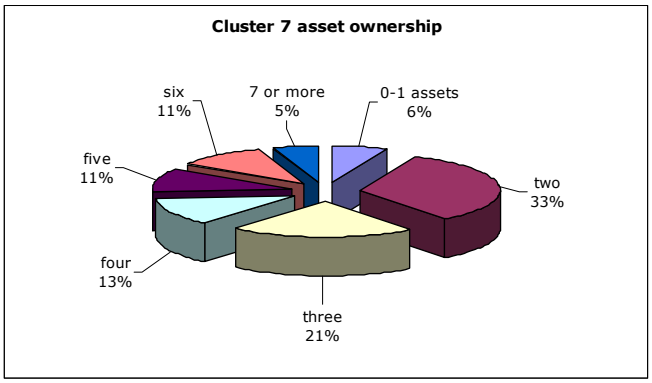
- *Districts*: Anoside An-Ala, Antanambao-Manampotsy, Ifanadiana, Ikongo, Mahanoro, Marolambo, Nosy-Varika, Vatomandry, Vavatenina districts
- *Sample size*: 25 communities, 247 households
- *Main region of origin*: 44% Vatovavy Fitovinany, 36% Atsinanana, 11% Analanjirofo
- *Household headship*: 28% female headed households – 15% of all households are headed by women who are widowed or divorced – among the highest of all district clusters. Average age of female heads was 37 years and 36 years for males (lowest). Nine percent (low) of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 5.2 persons and 15% of the households have 7 or more members (low). On average 52% (low) of household members were dependents (< 15 years or > 59 years).
- *Literacy:* Only 56%of the household heads were literate (low) with 35% of heads and 49% of spouses having no education at all.
- *Chronically ill or disabled:* Nine percent of sample households had a disabled or chronically ill member. In all, only 5% of the household heads were disabled or chronically ill.

Map 11 - Cluster 7

- *School enrolment and absenteeism:* Fifty-six percent of the households had a primary school aged child enrolled in school, 3% had a child in secondary school (lowest) with 1% having a child enrolled in university. Of the primary school children enrolled in school, 33% had been absent from school for one week or more in the last month of the previous school year. The reasons for absenteeism were due to illness (68%) or teacher absence (27%).
- *Housing type and ownership*: Nearly 90% of the families owned their home with more than half of the families living in wooden huts, 28% in houses made of 'other' construction and 17% of mixed materials. Around half of the families moved into their current residence since 2000. On average, there were 4.2 persons per room (highest) with 23% (high) of the households having more than 5 persons per room on average, indicating definite crowding problems.
- *Water, sanitation, lighting and fuel*: Around 30% of the households acquire their drinking water from an improved source while more than 60% (high) rely on rivers or streams for their water, regardless of season. One-quarter of the households uses a flush toilet or improved pit latrine for sanitation (high). Eighty-six percent of households used lanterns for lighting while the rest use wood and all use charcoal for cooking fuel.
- *Household asset ownership*: Only half of the sample households owned a bed (low), 31% with a table (low) and 29% with at least one chair (low). Only 24% of the households owned a radio (low) and none had a television (lowest). For productive

assets, 88% owned farming equipment, 1% owned a cart (lowest) and 11% owned fishing equipment. Five percent of the sample households also reported owning a sewing machine – the lowest of all district clusters. For transportation assets, 5% owned a bicycle (lowest) and 2% owned a boat. Motorcycles and cars were owned by very few households.

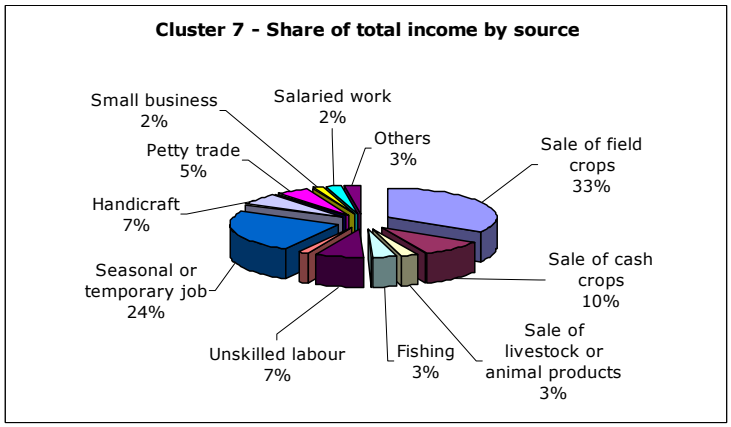
Figure 27 – Cluster 7: asset ownership



On average, of the total number of different assets owned by a household, about one-third were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category. Households in this cluster tend to be worse-off in terms of the number of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: Nearly 40% of the sample households indicated they visit the market 4-7 days per week with nearly 80% going at least once a week. Nearly all of the households indicated they usually travel to the market on foot.
- *Household income*: For the Cluster 7 sample the most often named sources of income were the sales of field crops (54%), seasonal or temporary work (37%), sale of cash crops (16%), and handicrafts (14%). Hardly any of the households named remittances/family transfers as a main income source in the sample.

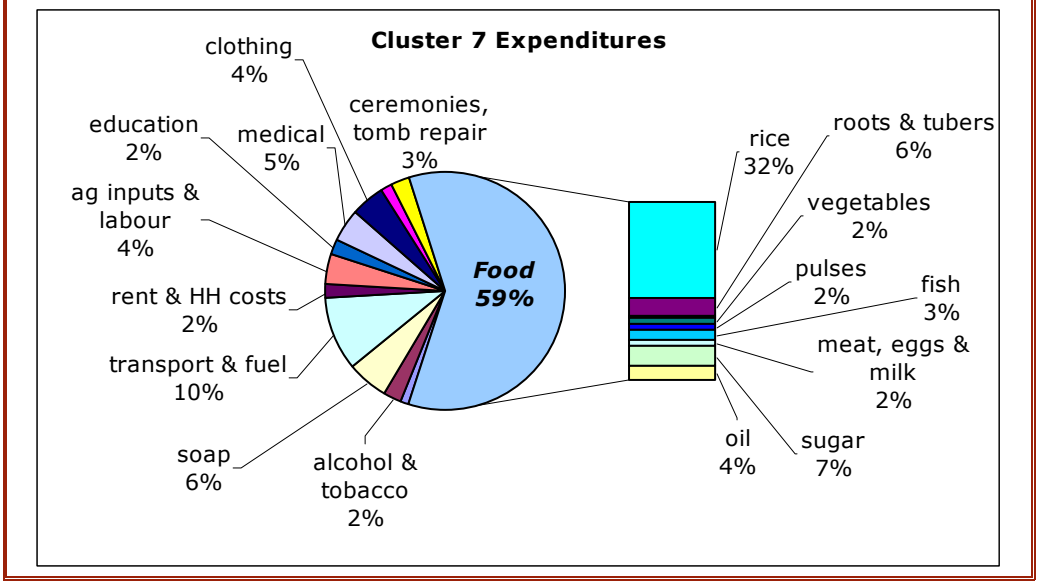
Figure 28 – Cluster 7: share of total income by source



Although households were asked to name up to four main sources of income, 43% of the sample named only one income earning activity. As indicated in the chart on the right, sale of field crops contributed to 33% of total income for these households while seasonal or temporary work contributed 24%, followed by sale of cash crops (10%), handicrafts (7%) and unskilled labour (7%).

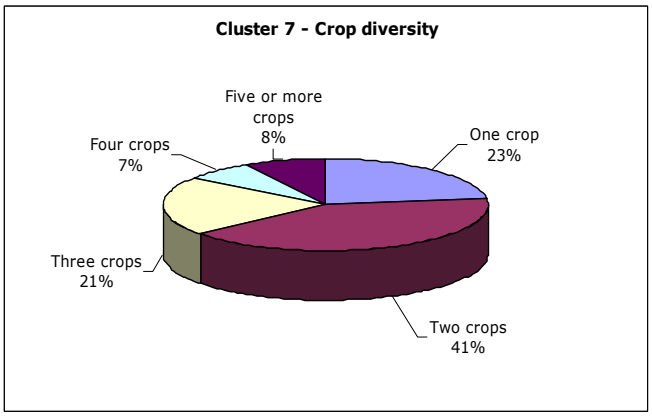
- *Borrowing and debt*: In the sample, 27% (low) of the households borrowed money in 2005 with all of those borrowing from family and friends. Three-quarters of the households had taken food on credit in the past six months and 80% (high) of these were still in debt – on average 30,000 FMG (USD $2.7) (lowest).
- *Expenditure*: As indicated in the chart below, 59% of total monthly expenditure for sample households is on food. The greatest share of food expenditure is for rice (32%), followed by sugar (7%) and roots and tubers (6%). The greatest shares of non-food expenditure are for transport and fuel (10%) followed by soap (6%) and medical expenses (5%). The average monthly per capita expenditure for food for sample households is 20,900 FMG (USD $1.9) with average per capita non-food expenditure being 17,500 FMG (USD $1.6) – both the lowest of all district clusters.

Figure 29 – Cluster 7: expenditures



- *Land ownership and cultivation*: More than 95% of the sample households had access to agricultural land (highest) with an average size of 0.52 hectares owned and 0.52 ha cultivated. Fifty-six percent of the sample households had more than 0.5 hectares. More than 80% of the households own some dry land (high), 44% own wetland with poor irrigation, 39% own wetland with good irrigation and 13% own some other type of land. One-third of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is 1st season rice, cultivated by 74% of the sample. Cassava is grown by 66% of the households, followed by coffee (19%), rice *tanety* (18%) and sugar cane (14%).

Figure 30 – Cluster 7: crop diversity



The chart on the left shows that crop diversity is average for these households with more than two-thirds growing only one or two crops. Around 60% (lowest) of the sample households get their seeds for the main crop from the previous years' harvest with 31% (highest) relying on purchase for seeds and 12% getting seeds from 'other' sources. At the time of the survey, 22% the households indicated that their main food crop harvest would last 6 or more months.

- *Cereal storage*: Over 40% of the households store their cereals in a bag while 23% use a storage room, and 22% (highest) use a granary.
- *Livestock ownership*: Three-quarters of the sample households owned poultry with an average of 7 birds while 17% owned pigs and 7% owned other cattle[8] and 4% each owned bulls, cows, and oxen. Overall ownership was the lowest of all district clusters.
- *Sources of food consumed in past week*: Nearly 60% of the food consumed in the previous week by sample households was purchased (low) with 33% from own production (high), 4% from hunting/fishing/gathering and 3% from exchange or borrowing. A very small percentage was from food assistance.
- *Food gifts, food aid and external assistance*: Only 20% of the sample households indicated they had given away food in the past six months while 11% of the households said they had received food in the past six months. Of those, only 29% was from family and friends, 32% from 'other' sources and 21% from supplementary

[8] Neither bulls nor oxen

feeding. None indicated they had sold or exchanged food aid and 9% of the households had benefited from other external assistance.

- *Recent shocks & coping*: Two-thirds of the sample households reported that they had experienced at least one shock or unusual event in the past year – most experiencing only one or two shocks. The most often reported shock was unusually high levels of crop diseases (32%), drought or irregular rains (30%), floods (11%), locusts (10%) and death of an active household member (10%). The most often named strategy to cope with these shocks was 'other' (27%), followed by change in food consumption (19%), reduced number of meals (17%), and use of savings (14%).

Cluster 8

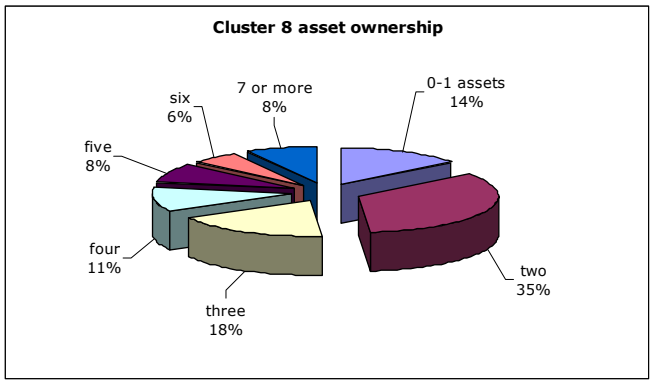
- *Districts*: Amboadary-Atsimo, Befotaka, Farafangana, Iakora, Manakara-Atsimo, Mananjary, Midongy-Atsimo, Tsihombe, Vohipeno, Vondrozo districts
- *Sample size*: 25 communities, 251 households
- *Main region of origin*: 46% Vatovavy Fitovinany, 34% Atsimo Atsinanana, 9% Anosy
- *Household headship*: 25% female headed households – 13% of all households are headed by women who are widowed or divorced – among the highest of all district clusters. Average age of female heads was 35 years (low) and 40 years for males (lowest). Thirteen percent of sample households are headed by elderly (60+ years).
- *Household size and composition:* Average household size is 5.5 persons and 19% of the households have 7 or more members. On average 56% (high) of household members were dependents (< 15 years or > 59 years).
- *Literacy:* Only 52%of the household heads were literate (low) with 42% of heads and 57% of spouses having no education at all.
- *Chronically ill or disabled:* Six percent of sample households had a disabled or chronically ill member. In all, only 4% of the household heads were disabled or chronically ill.

Map 12 – Cluster 8

- *School enrolment and absenteeism:* Sixty-one percent (high) of the households had a primary school aged child enrolled in school, 10% had a child in secondary school (high) but none having a child enrolled in university. Of the primary school children enrolled in school, 28% had been absent from school for one week or more in the last month of the previous school year. The reasons for absenteeism were due to illness (72%) or teacher absence (51%) – both the highest of all district clusters.
- *Housing type and ownership*: Nearly all of the families owned their home with more than half of the families living in wooden huts, 31% in houses made of mixed materials and 15% of mud plaster. Only one-third of the families moved into their current residence since 2000. On average, there were 4.0 persons per room (high) with 21% (high) of the households having more than 5 persons per room on average, indicating definite crowding problems.
- *Water, sanitation, lighting and fuel*: Less than 10% (lowest) of the households acquire their drinking water from an improved source while nearly three-quarters (highest) rely on rivers or streams for their water, regardless of season. Only 3% of the households uses a flush toilet or improved pit latrine for sanitation (very low). More than 90% of households used lanterns for lighting and all use charcoal for cooking fuel.
- *Household asset ownership*: Less than 40% of the sample households owned a bed (lowest), 27% with a table (lowest) and 22% with at least one chair (low). Only 33% of the households owned a radio and 2% had a television. For productive assets, only 67% owned farming equipment (low), 6% owned a cart and 14% owned fishing equipment. Seven percent of the sample households also reported owning a sewing

machine. For transportation assets, 8% owned a bicycle (low) and 1% owned a boat (low). Motorcycles were owned by no households and cars were owned by 1% of the sample households.

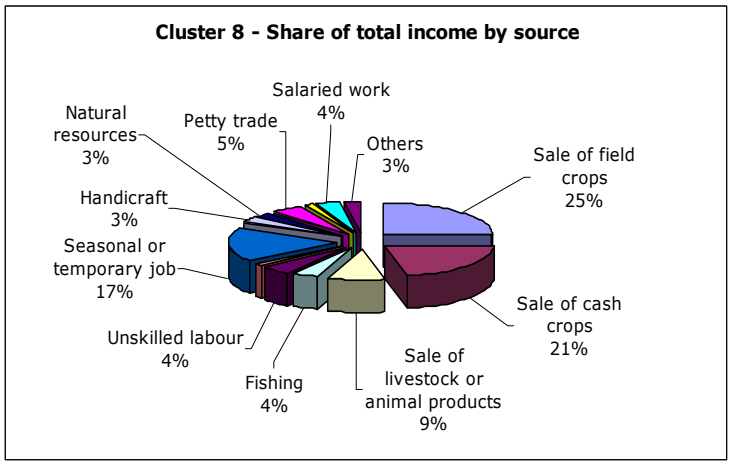
Figure 31 – Cluster 8: asset ownership



On average, of the total number of different assets owned by a household, about one-third were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category. Households in this cluster tend to be worse-off in terms of number of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: Only one-quarter of the sample households indicated they visit the market 4-7 days per week but 80% visited at least once a week. Nearly all of the households indicated they usually travel to the market on foot.
- *Household income*: For the Cluster 8 sample the most often named sources of income were the sales of field crops (49%), sale of cash crops (44%), seasonal or temporary work (32%) and sale of livestock or animal products (16%). Hardly any of the households named remittances/family transfers as a main income source in the sample.

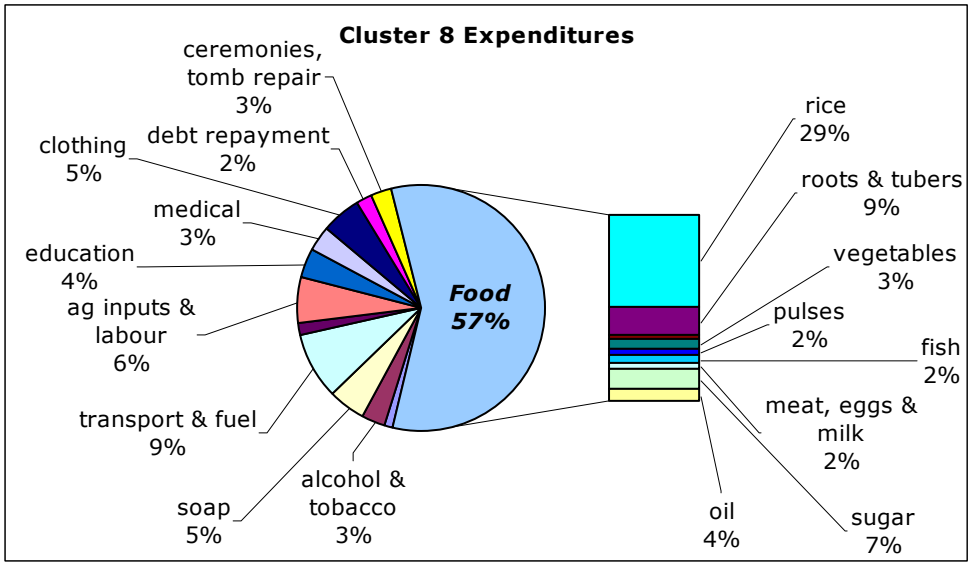
Figure 32 – Cluster 8: share of total income by source



Although households were asked to name up to four main sources of income, 35% of the sample named only one income earning activity – the lowest of all district clusters. As indicated in the chart on the right, sale of field crops contributed to 25% of total income for these households while sale of cash crops contributed 21%, followed by seasonaly or temporary work (17%), and sale of livestock or animal products (9%).

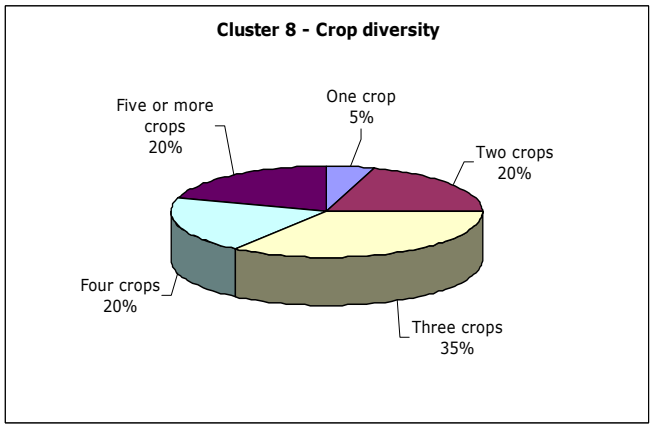
- *Borrowing and debt*: In the sample, 35% of the households borrowed money in 2005 with nearly all of those borrowing from family and friends. More than 80% of the households had taken food on credit in the past six months and 72% of these were still in debt – on average 100,000 FMG (USD $9.1).
- *Expenditure*: As indicated in the chart below, 57% of total monthly expenditure for sample households is on food. The greatest share of food expenditure is for rice (29%), followed by roots and tubers (9%) and sugar (7%). The greatest shares of non-food expenditure are for transport and fuel (9%) followed by agricultural inputs and labour (6%), soap (5%) and clothing (5%). The average monthly per capita expenditure for food for sample households is 34,300 FMG (USD $3.1) with average per capita non-food expenditure being 25,100 FMG (USD $2.3) (low).

Figure 33 – Cluster 8: expenditures



- *Land ownership and cultivation*: More than 90% of the sample households had access to agricultural land (high) with an average size of 0.55 hectares owned and 0.51 ha cultivated. Fifty-eight percent of the sample households had more than 0.5 hectares. Seventy percent of the households own some dry land, 43% own wetland with poor irrigation, 53% own wetland with good irrigation and 25% own some other type of land. Nearly 40% of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is cassava, cultivated by 88% of the sample.

Figure 34 – Cluster 8: crop diversity



First season rice is grown by 77% of the households, followed by coffee (39%), sweet potatoes (38%) and 2nd season rice (30%). The chart on the left shows that crop diversity is high for these households with 40% growing four or more crops. Nearly 90% (high) of the sample households get their seeds for the main crop from the previous years' harvest with 11% relying on purchase for seeds. At the time of the survey, 22% the households indicated that their main food crop harvest would last 6 or more months.

- *Cereal storage*: Nearly half of the households store their cereals in a bag while 29% use a storage room (highest), and 18% (high) use a granary.
- *Livestock ownership*: Over 70% of the sample households owned poultry with an average of 10 birds while 18% owned oxen and 8% each owned pigs or bulls and 7% owned other cattle[9]. Overall ownership was the low of all district clusters.
- *Sources of food consumed in past week*: Nearly 60% of the food consumed in the previous week by sample households was purchased (low) with 36% from own production (high), 5% from hunting/fishing/gathering. None was from food assistance.
- *Food gifts, food aid and external assistance*: Nearly 30% of the sample households indicated they had given away food in the past six months while 10% of the households said they had received food in the past six months. Of those, 42% was from family and friends, 38% from food for work activities and 12% from general distribution. None indicated they had sold or exchanged food aid and 5% of the households had benefited from other external assistance.

[9] Neither oxen nor bulls

- *Recent shocks & coping*: Two-thirds of the sample households reported that they had experienced at least one shock or unusual event in the past year – most experiencing only one or two shocks. The most often reported shock flooding (32%), increased food prices (18%), drought or irregular rains (16%), death of an active household member (15%), and cyclone (13%). The most often named strategy to cope with these shocks was change in food consumption (57%), purchasing food on credit (12%), reduced number of meals (11%), and borrowing money (11%).

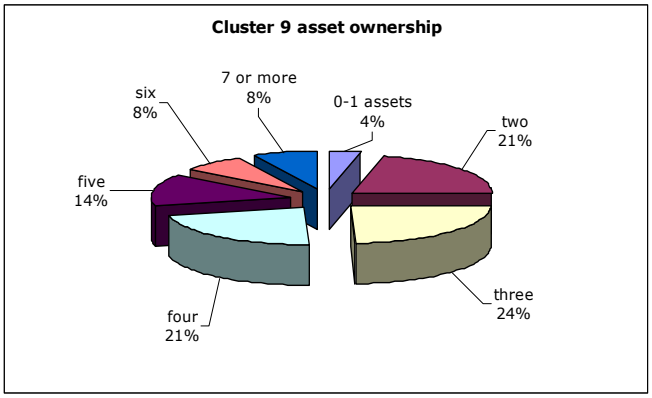
Cluster 9

- *Districts:* *Ambovombe-Androy, Ampanihy, Bekily, Beloha, Nosy-Boraha* districts
- *Sample size*: 20 communities, 200 households
- *Main region of origin*: 75% Androy, 24% Atsimo Andrefana
- *Household headship*: 25% female headed households – 12% of all households are headed by women who are widowed or divorced – among the highest of all district clusters. Average age of was 40 years for both female and male heads. Seventeen percent of sample households are headed by elderly (60+ years) – the highest of all district clusters.
- *Household size and composition:* Average household size is 5.2 persons and 17% of the households have 7 or more members. On average 55% of household members were dependents (< 15 years or > 59 years).
- *Literacy:* Only 34%of the household heads were literate (lowest) with 78% of heads and 82% of spouses having no education at all – by far the highest of all district clusters.
- *Chronically ill or disabled:* Six percent of sample households had a disabled or chronically ill member. In all, only 4% of the household heads were disabled or chronically ill.

Map 13 - Cluster 9

- *School enrolment and absenteeism:* Twenty-six percent (lowest) of the households had a primary school aged child enrolled in school, 5% had a child in secondary school (low) and only 1% having a child enrolled in university. Of the primary school children enrolled in school, 33% had been absent from school for one week or more in the last month of the previous school year. The reasons for absenteeism were due to illness (29%) or farm work (29%).
- *Housing type and ownership*: More than 90% of the families owned their home with one-third of the families living in wooden huts, 28% in houses made of mixed materials and 30% of mud plaster. Only one-third of the families moved into their current residence since 2000. On average, there were 3.4 persons per room with 13% of the households having more than 5 persons per room on average, indicating possible crowding problems.
- *Water, sanitation, lighting and fuel*: One-quarter (low) of the households acquire their drinking water from an improved source while about 40% rely on rivers or streams for their water, regardless of season. Only 4% of the households uses a flush toilet or improved pit latrine for sanitation (low). More than 90% of households used lanterns for lighting and almost all use charcoal for cooking fuel.
- *Household asset ownership*: Half of the sample households owned a bed, 32% with a table (low) and only 12% with at least one chair (lowest). Only 23% (lowest) of the households owned a radio and 1% had a television. For productive assets, 91% owned farming equipment (highest), 42% owned a cart (highest) and 4% (lowest) owned fishing equipment. Eight percent of the sample households also reported owning a sewing machine. For transportation assets, 14% owned a bicycle and hardly any owned a boat (lowest). Motorcycles and cars were owned by very few of the sample households.

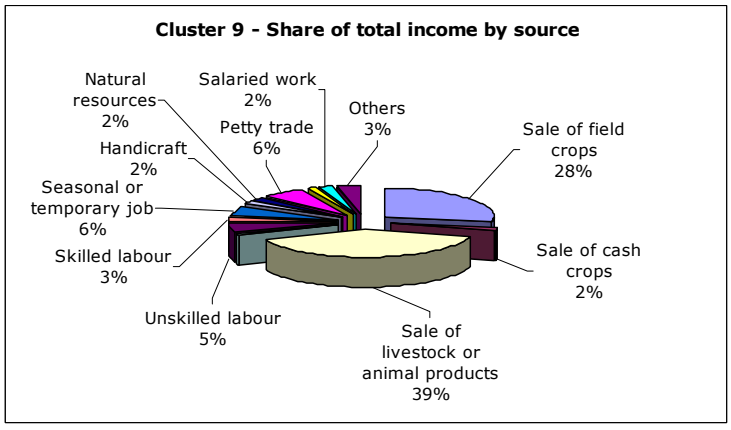
Figure 35 – Cluster 9: asset ownership



On average, of the total number of different assets owned by a household, nearly half were 'productive assets' – those that can be used to generate income or produce food. The chart above shows the distribution of sample households by asset ownership category. Households in this cluster tend to be slightly below average in terms of number of different assets owned when compared to the sample households in the other district clusters.

- *Market access and utilization*: Only 7% of the sample households indicated they visit the market 4-7 days per week – the lowest of all district clusters. However, around 60% visited at least once a week. Nearly all of the households indicated they usually travel to the market on foot with only 2% using a bicycle.
- *Household income*: For the Cluster 9 sample the most often named sources of income were the sales of livestock or animal products (55% - highest of all clusters), sale of field crops (54%), seasonal or temporary work (12%) and petty trade (11%). Five percent of the households named remittances/family transfers as a main income source in the sample – the highest of all district clusters.

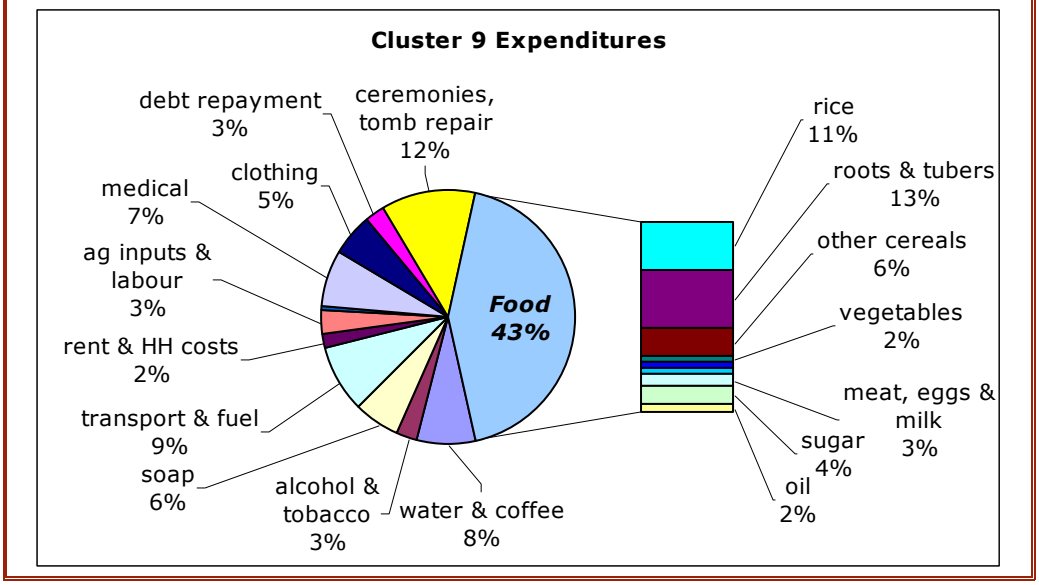
Figure 36 – Cluster 9: share of total income by source



Although households were asked to name up to four main sources of income, 44% of the sample named only one income earning activity. As indicated in the chart on the right, sale of livestock or animal products contributed to 39% of total income for these households while sale of field crops contributed 28%, followed by seasonaly or temporary work (6%), and petty trade (6%).

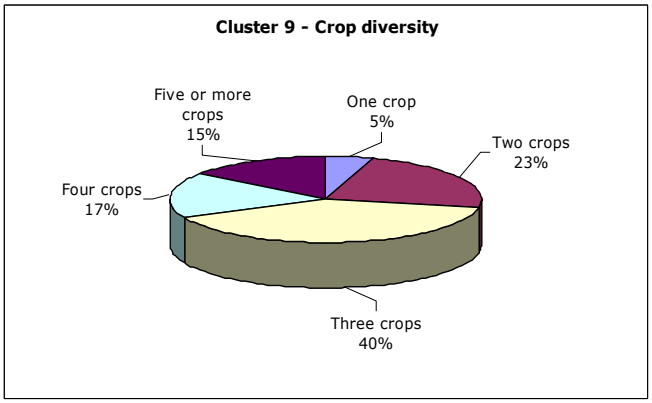
- *Borrowing and debt*: In the sample, 43% of the households borrowed money in 2005 with nearly all of those borrowing from family and friends yet 4% borrowed from a charity or NGO. More than 80% of the households had taken food on credit in the past six months and 86% (highest) of these were still in debt – on average 74,000 FMG (USD $6.7).
- *Expenditure*: As indicated in the chart below, 43% of total monthly expenditure for sample households is on food – the lowest of all district clusters. The greatest share of food expenditure is for roots and tubers (13%), followed by rice (11%) and other cereals (6%). The greatest shares of non-food expenditure are for ceremonies and tomb repair (12%) followed by transportation and fuel (9%), water (8%) and medical expenses (7%). The average monthly per capita expenditure for food for sample households is 43,100 FMG (USD $3.9) with average per capita non-food expenditure being 60,200 FMG (USD $5.5) (highest).

Figure 37 – Cluster 9: expenditures



- *Land ownership and cultivation*: More than 90% of the sample households had access to agricultural land (highest) with an average size of 0.60 hectares owned and 0.59 ha cultivated. More than 60% (high) of the sample households had more than 0.5 hectares. All of the households own some dry land (highest), only 14% own wetland with poor irrigation (lowest), 5% own wetland with good irrigation (lowest) and 18% own some other type of land. More than 40% of the households had a vegetable garden.
- *Crop production and diversity*: The most common crop produced by households in this district cluster is cassava, cultivated by 97% of the sample. Maize is grown by 67% of the households, followed by sweet potatoes (60%), groundnuts (30%) and *voanjobory* (19%).

Figure 38 – Cluster 9: crop diversity



The chart on the left shows that crop diversity is high for these households with 32% growing four or more crops and only 5% cultivating only one crop. Three-quarters of the sample households get their seeds for the main crop from the previous years' harvest with 22% (high) relying on purchase for seeds. At the time of the survey, only 15% the households indicated that their main food crop harvest would last 6 or more months – the lowest of all district clusters.

- *Cereal storage*: More than half of the households store their cereals in a bag while 25% use a storage room (high), 14% use a hole and 8% use a granary.
- *Livestock ownership*: Three-quarters (highest) of the sample households owned poultry with an average of 7 birds while 47% (highest) owned sheep, 41% (highest) owned goats, 41% (highest) owned bulls, 40% (highest) owned other cattle[10] (9 animals) and 14% owned cows. Overall ownership was by far the highest of all district clusters.
- *Sources of food consumed in past week*: Over half of the food consumed in the previous week by sample households was purchased (lowest) with 39% from own production (highest), 5% from gifts (highest) and 2% from hunting/fishing/gathering. Hardly any was from food assistance.
- *Food gifts, food aid and external assistance*: More than 30% of the sample households indicated they had given away food in the past six months while 29% (highest) of the households said they had received food in the past six months. Of those, 57% was

[10] Neither oxen nor bulls

from food for work activities, 41% was from family and friends, and 7% from 'other' sources. Two percent indicated they had sold or exchanged food aid and 2% of the households also had benefited from other external assistance.

- *Recent shocks & coping*: Nearly all (highest) of the sample households reported that they had experienced at least one shock or unusual event in the past year – 10% experiencing 3-4 shocks (highest). The most often reported shock drought or irregular rains (53%), death of an active household member (28%), increased food prices (23%), cyclones (19%), and serious illness or accident of a household member (14%). The most often named strategy to cope with these shocks was to sell cattle (43%), followed by changing food consumption (24%), borrowing money (24%), increasing consumption of wild foods (17%) and selling of small animals (15%).

Part V - Women and child nutrition and health

Introduction

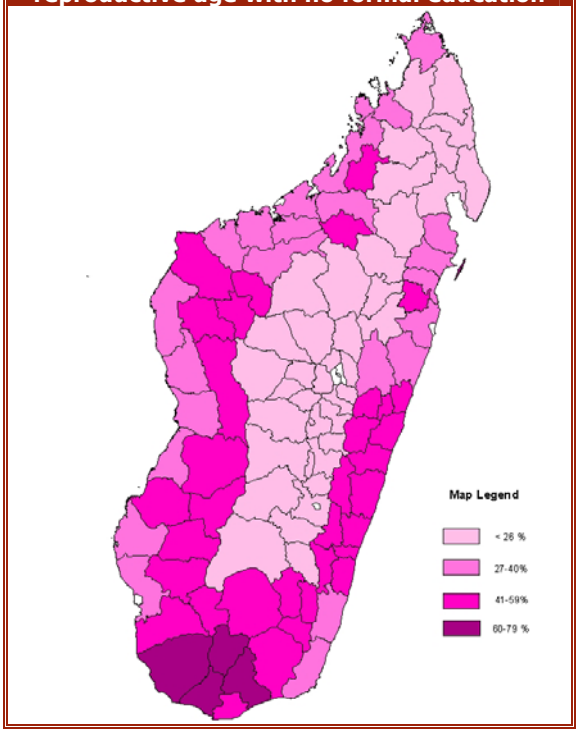
Malnutrition can occur even when access to food and healthcare is sufficient and the environment is reasonably healthy. The social context and care environments within the household and the community also directly influence nutrition. Factors influencing nutritional status include:

- Breastfeeding practices – exclusive breastfeeding up to 6 months of age
- Weaning practices – timely introduction of nutritious weaning foods
- Maternal hygiene behaviours – hand-washing, bathing, etc.
- Relationships between morbidity and water and sanitation
- Pregnancies and antenatal care – birth spacing, tetanus toxoid injections, vitamin A supplementation
- HIV and AIDS

The problem of malnutrition in Madagascar is the highest in the SADC region with 47.7% of children less than three years of age chronically malnourished (stunted), 12.8% acutely malnourished (wasted) and 41.9% with low weight-for-age (underweight)[11]. The 2005 SENAC pre-crisis baseline survey covering 9 homogeneous district clusters in throughout rural Madagascar provides an updated snapshot of health and nutrition of vulnerable groups – particularly women of reproductive age (15-49 years) and young children (0-59 months).

Section 5.1 – Women's nutrition and health

Map 14 – Percentage of women of reproductive age with no formal education



The main findings of the household survey for nutrition and health of women of reproductive age (15-49 years) are presented in the following section. The data in this chapter is presented by age group and district cluster. Data tables with complete findings are presented in Annex II of this report.

5.1.1 – Methodology and sampling

After the household survey interview, information on only one woman aged 15-49 years per household was collected, including age, weight, height, education level, pregnancy status and reproductive history, use of antenatal care, micronutrient supplementation, recent morbidity and hand washing practices. In total, information was collected on nearly 1,900 women.

Much of the data are analysed and presented by age group in order to investigate trends among the cohorts of women. Women of reproductive age are traditionally grouped into 6 age categories: 15-19 years, 20-24 years, 25-29 years, 30-34 years, 35-39 years and 40-49 years.

5.1.2 – Education levels

Of all the women in the sample, 42% had never been to school with only 16% having completed primary level of education and just over 3% completing lower secondary school. More than half the women were literate, ranging from only 22% in *Cluster 9* up to 77% in *Clusters 4* and *5*. The likelihood of being literate increases with age from the 15-19 year old age group (41%) up to 65% in the 34-39 year age group.

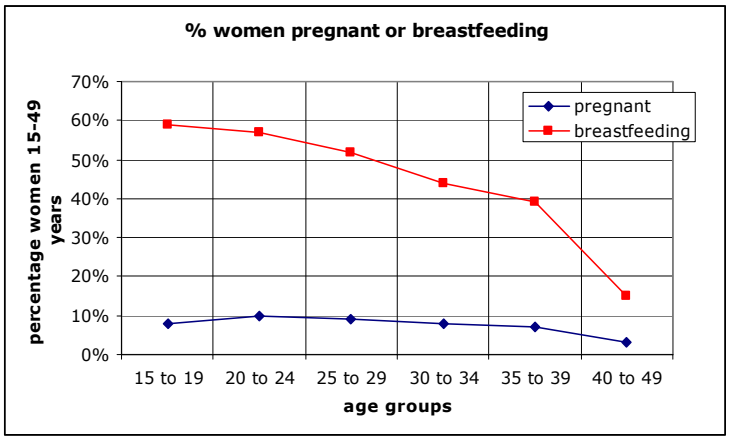
[11] EDSMD-III or DHS Madagascar 2003-2004

By district cluster, the women in the *Cluster 5* sample had the highest levels of education with 21% having at least some secondary education. However, only 18% of the women in the *Cluster 4* sample had never attended school. The lowest level was found in the *Cluster 9* sample (see above, map 14) where only 21% of the women surveyed had attended school – only 6% had at least some secondary education. Education of women was also rather low in the *Cluster 2* sample where nearly 60% of the women had never attended school. These results are consistent with the 1993 census data on literacy which were used for the creation of the district clusters.

5.1.3 – Current pregnancy and breastfeeding

At the time of the survey (August-September 2005), 8% of the women were pregnant. By district cluster, only 4% of the sample women in *Cluster 7* were pregnant as compared to 12% in *Cluster 8* and 11% in *Cluster 3*. The graph on the right shows the percentage of pregnant women by age group. For the sample, the likelihood of a woman being pregnant increases from the youngest group, peaking at the 20-24 years age group where 10% of the sample women were pregnant.

Figure 39 – Percentage of pregnant / breastfeeding women



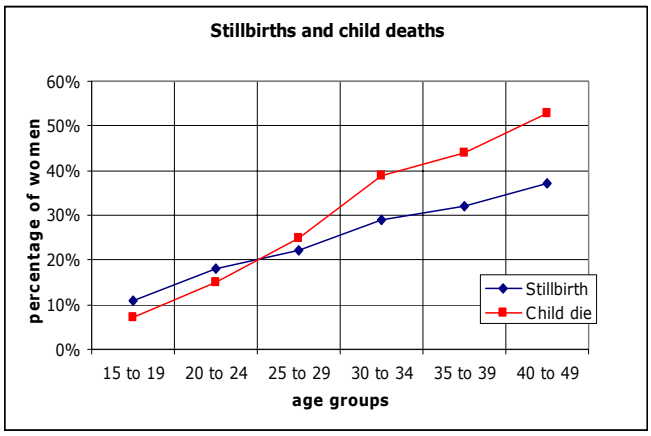
Only 3% of the women over 40 years of age were pregnant at the time of the survey. The body-mass index of the pregnant women was not measured in this survey.

More than 40% of the women were breastfeeding at the time of the survey ranging from 54% in *Cluster 8* to 39% in *Cluster 6* with around 45% of the women in the other cluster samples. In the chart above, it is clear that the percentage of women breastfeeding decreases by age group, with about 60% of women 15-19 nursing their children down to 40% of women 35-39 years and 15% of women over 40 breastfeeding.

5.1.4 – Pregnancy history and number of children

The average age of the women in the sample is 30 years. In total, the women reported a median number of 4 pregnancies and 4 live births. The analysis shows that the women in the 30-34 and 40-49 year age cohorts tend to have one more pregnancy than live birth, indicating a fairly normal situation that older women may be more susceptible to miscarriage or stillbirth.

Figure 40 – Stillbirths and child deaths



As shown in the graph on the left, only 11% of the women in the 15-19 year age group had reported ever experiencing a stillbirth. This percentage increases with age and reaches 37% of women 40-49 years of age. In addition, the percentage of women ever having a child die increases with increasing age group, with the greatest increase between the 25-29 and 30-34 year age groups. As women reach about the age of 30, the likelihood of having a child die becomes greater than that of having a miscarriage of stillbirth.

By district cluster, the average number of pregnancies and live births is three for women in *Clusters 5* and *6* and is four for women in the other clusters. However, women in *Clusters 5* and *9* were most likely to have experienced a stillbirth (31%) while those in *Cluster 4* were the least likely (17%). Reported child deaths were highest among women in *Cluster 8* (44%) and *Cluster 2* (40%) and lowest among women in *Clusters 5* (21%) and *4* (23%).

Women were also asked to remember how old they were when they had their first child. The average age was 18 years for the sample, ranging from 17 years in *Clusters 1, 2 8* and *9* to 19 years in *Clusters 3* and *4*.

The table below shows the relationships between education and reproductive health of women in the sample. The mean age at 1st birth increases with increased education as does the likelihood of receiving antenatal care (ANC) from a doctor, nurse or trained midwife. The likelihood of experiencing the death of a child decreases with increased education up to completion of primary school.

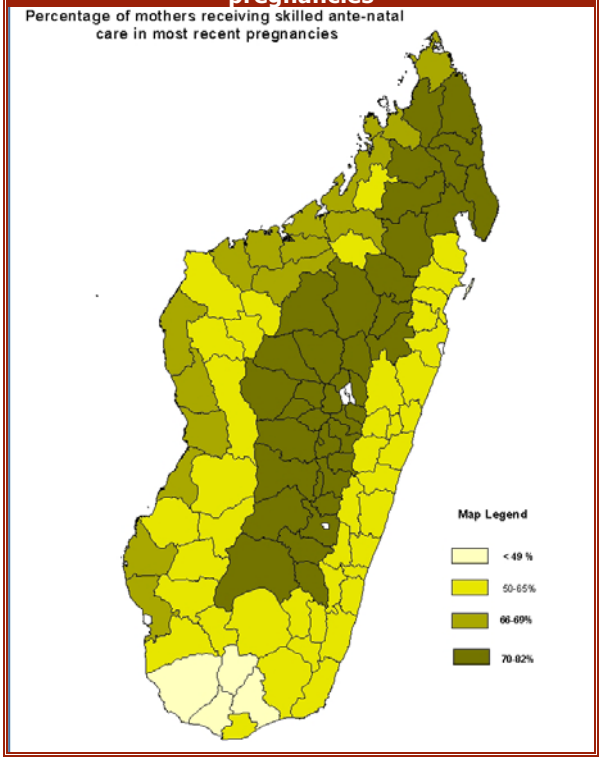
Table 3 - Relationships between education and reproductive health of women

Education levels	No schooling	Primary		Secondary	
		Incomplete	Complete	Incomplete	Complete
Mean age at 1st birth	17 years	18 years	18 years	19 years	22 years
Used skilled ANC	49%	79%	83%	82%	88%
Ever had a child die	35%	31%	24%	25%	24%

5.1.5 – Antenatal care

For each child less than five years of age, the mothers were asked to provide information on their use of antenatal care prior to delivery. For the analysis, 'skilled' antenatal care was defined as at least one visit to a doctor, nurse or trained midwife during pregnancy. Untrained midwives, friends or relatives were not classified as 'skilled' with regards to antenatal care.

Map 15 – Percentage of mothers receiving skilled ante-natal care in most recent pregnancies



Two-thirds of the children in the sample had received skilled antenatal care while in the womb. However, there were quite large differences between the district clusters as indicated in the map on the left – at least 80% of the recent pregnancies in *Clusters 3* and *5* had received skilled antenatal care, followed by 77% in *Cluster 4* and 69% in *Cluster 1*.

Community discussion analysis revealed that although the presence of a dispensary (CSBII) in a village is rare, they are most often found in *Clusters 1* and *4* (15% of sampled communities).

Women in *Cluster 9* had the lowest access to and use of skilled antenatal care – only 49% of the recent pregnancies had received skilled ANC.

For the sample of children 0-59 months, 43% of the mothers had received at least one tetanus toxoid injection during the pregnancy. However, the survey did not collect information on whether the mother received the complete series of injections.

There is not a clear relationship between receipt of tetanus toxoid injections and use of 'skilled' antenatal care in that less than 40% of the mothers in *Clusters 1, 2, 5, 6* and *9* had received this injection as compared to 54% in *Clusters 3* and *8* samples.

5.1.6 – Micronutrient supplementation

Women were also asked if they had taken iron tablets during pregnancy and if they had received a vitamin A capsule after their most recent delivery. In total, 31% of the women had taken iron supplements during the last pregnancy. Over 40% of the women in *Clusters 3, 4*, and *5* had taken the tablets as compared to only about one-quarter in the other clusters. However, only 16% of the sample women in *Cluster 9* reported taking iron supplements during pregnancy.

Post-natal vitamin A supplementation was also not that common with only 36% of the women having ever received the capsules. Nearly half the women in the *Cluster 4* sample had received vitamin A supplements, followed by more than 40% in *Clusters 3, 5*, and *8*. The women in *Cluster 9* were least likely to have received a vitamin A supplement after their last delivery.

5.1.7 – Birth size and low birth weight

According to the ACC/SCN, Intrauterine Growth Retardation (IUGR) refers to foetal growth that has been constrained by an inadequate nutritional environment *in utero* and is a characteristic of a newborn that has not attained its growth potential. There are two main types of IUGR: Group 1 are those born after at least 37 weeks of gestation and weigh less than 2,500 grams; Group 2 are those born prematurely and weigh less than the 10th percentile at birth (2,500 grams).

In most developing countries, it is difficult to determine gestational age so low birth weight (< 2,500 grams) is used as a proxy for IUGR. Research shows that in 2000, 11% of newborns in developing countries had low birth weight at term. The main causes of IUGR are nutritional: inadequate maternal nutritional status before conception, short maternal stature, and poor maternal nutrition during pregnancy (low gestational weight gain primarily due to inadequate dietary intake). Diarrhoeal disease, intestinal parasites, respiratory infections and malaria also have an impact on foetal growth. The underlying and more basic causes relate to the care of women, access to and quality of health services, environmental hygiene and sanitation, household food security, educational status, cultural taboos, and poverty.

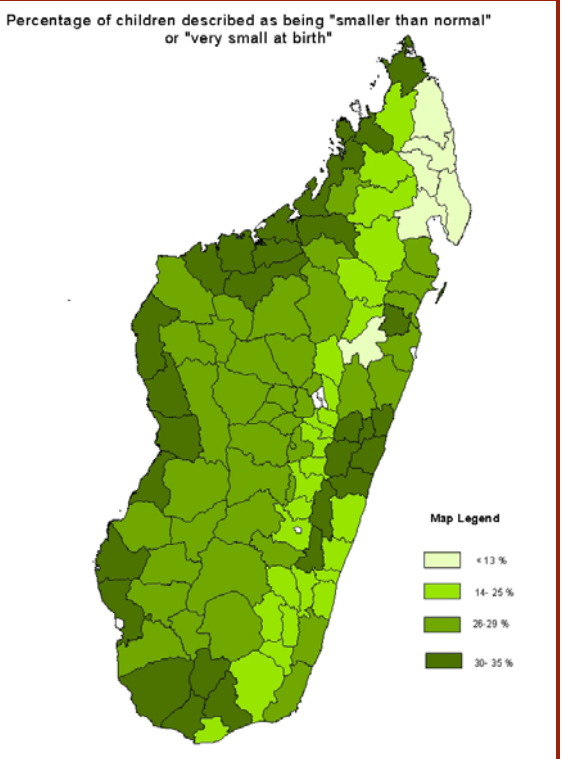
In order to estimate incidence of low birth weight among children in the survey sample, the questionnaire included a question taken from the MICS survey where the mother is asked about the size of the child at birth. The child's birth size is described as being: very large, larger than normal, normal, smaller than normal, or very small. Overall, 24% were very large or larger than normal, 47% were normal, 23% were smaller than normal and 6% were very small.

The map on the right shows the prevalence of low birth weight derived from reported birth size, by district cluster. The highest percentage of children described as being 'very small' or 'smaller than normal' at birth was found in *Clusters 1* & *9* (35%) followed by *Cluster 7* (33%) while the lowest was found in *Cluster 5* (13%).

With the sample, data, several analyses were conducted to see the relationships between potential causes of low birth weight (maternal health, use of skilled antenatal care) and some of the negative effects of being born malnourished.

Results of the causal analysis show that:

Map 16 – Percentage of children described as being "smaller than normal" or "very small at birth"



- Mothers of low birth weight babies were significantly *($p < 0.001$)* less likely to have received skilled antenatal care during their pregnancies.

- Mothers of low birth weight babies were significantly *(p < 0.05)* more likely to be underweight (< 45 kgs).
- Mothers of low birth weight babies were significantly more likely to have experienced at least one episode of diarrhoea *(p < 0.01)* or fever *(p < 0.05)* in the previous 2 weeks.
- Low birth weight babies are significantly *(p < 0.001)* more likely to be found in households with an illiterate head.

Some of the negative health effects of being born 'very small' or 'smaller than normal' show that these children are significantly more likely to have suffered from fever *(p < 0.01)* or diarrhoea *(p < 0.001)* in the 2 weeks prior to the survey.

5.1.8 – Current health and hygiene of women

The women in the sample were asked if they had experienced an episode of diarrhoea or fever in the two weeks prior to the survey. Overall, 13% of the women had experienced at least one episode of diarrhoea and 24% had experienced fever in the past 2 weeks. There were no real differences by age group.

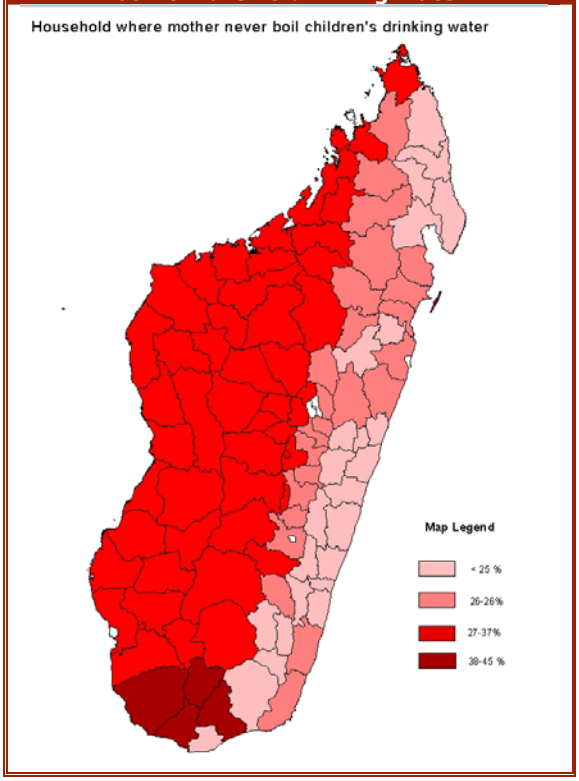
By district cluster, the highest 2 week period prevalence of diarrhoea in women was found in *Cluster 1* (21%), followed by *Cluster 7* (16%) while the lowest was found in *Cluster 4* (7%) and *Cluster 3* (8%). However, the prevalence of fever was 31% in *Clusters 7* & *9*, followed by *Cluster 1* (30%) and *Cluster 2* (28%). Reported fever was lowest in *Cluster 3* (13%). More than 10% of the women in *Cluster 1* and *Cluster 7* reported suffering from both illnesses in the 2 weeks prior to the survey.

During the household interview, women were asked about appropriate hand washing practices for women who are caring for young children. The situations included:

- Before food preparation
- Before eating
- After using the toilet
- After changing diapers
- Only when dirty

More than 10% of the women in *Clusters 1 & 2* never wash their hands which is the highest of all clusters. More than half the women wash their hands before eating – ranging from a low of 27% in the *Cluster 9* sample to two-thirds of the sampled women in *Clusters 7 & 8*. Nearly 40% of the women indicated that they wash their hands before cooking, which was fairly consistent across the district clusters. Another 37% of women wash their hands only when they are dirty – this was most common in women from *Cluster 6*. However, only about 20% of the women use soap and water regularly when washing their hands. Nearly 30% of the women in *Clusters 5 & 6* use soap and water as compared to only 6% of the women in the *Cluster 9* sample.

Map 17 – Household where mother never boil children's drinking water



5.1.9 – Disease prevention measures

During the household interview, women were asked if they ever boil the drinking water for their young children. For the sample, 29% always boiled the water, 33% sometimes boil and 38% never boil their children's drinking water. From the map above it is clear that the women in *Cluster 9* are the least likely to boil drinking water for their children (69% never boil). The households most likely to at least sometimes boil water for their children are found in *Cluster 8* (80%), *Cluster 5* (25%) and *Cluster 7* (25%).

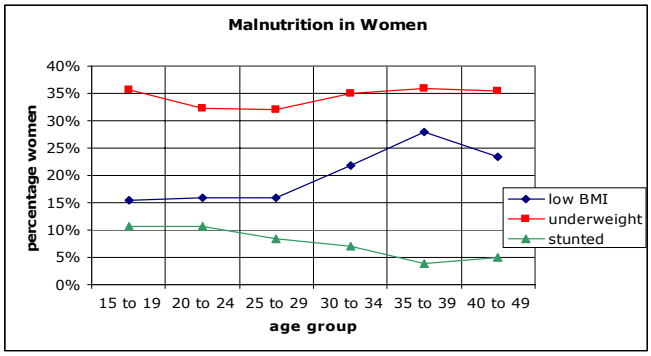
The mothers were also asked if their children slept under a mosquito net the night before the survey. In total, more than 40% said 'yes' ranging from only 8% in *Cluster 3*, 16% in *Cluster 4* and 19% in *Cluster 9* to 65% in *Cluster 2* and 73% in *Cluster 1*.

5.1.10 – Macronutrient malnutrition in women

Unlike disease the negative effects of malnutrition are cumulative over time and can influence the nutritional status of the next generation. Malnutrition that occurs during childhood, adolescence, and pregnancy has an additive negative impact on the birth weight of future babies. Social, economic and cultural factors as well as the biological requirements of pregnancy and lactation have led to an increased vulnerability to malnutrition for women when compared to men.

The non-pregnant women in the survey were weighed and measured in order to determine their nutritional status. Traditionally, for women of reproductive age (15-49 years) the body-mass index (BMI) is calculated to determine if the weight-to-height ratio is within a normal range. A woman is classified as being malnourished if her BMI is less than 18.5 kg/m^2. In addition, an adult woman (18 or older) is classified as being underweight if she weighs less than 45 kilograms and is stunted if her height is less than 145 centimetres. In this survey, 19.5% of the women had a BMI less than 18.5 kg/m^2, 34% were underweight (< 45 kgs) and 8% were stunted (< 145 cms).

Figure 41 – Malnutrition for women



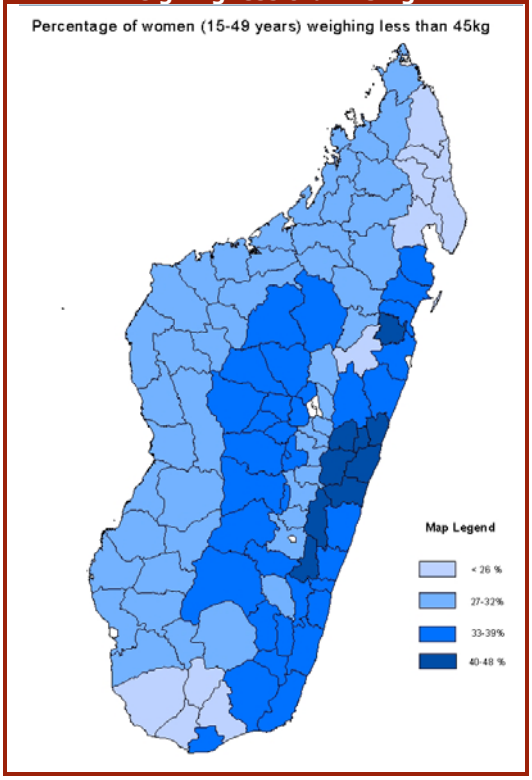
By age group, the levels of underweight and stunting showed slight trends while differences in the prevalence of low body-mass index were more dramatic across age groups. The chart on the left summarizes the prevalence of the three outcomes by age group. The prevalence of underweight is highest in the youngest and oldest women. The prevalence of stunting in women decreases with increasing age group.

The prevalence of low BMI is about the same for women 15-29 years and then increases by more than 10 percentage points for women in the 35-39 year age group.

Malnutrition varied for women by district clusters. Women in *Clusters 4 & 5* had the highest mean body mass index of the sample while those in *Clusters 8 & 2* had the lowest. Consequently, more than 23% of the non-pregnant women in the *Cluster 2* sample had a BMI less than 18.5 kg/m^2 – the highest of all clusters. This was followed by *Cluster 1* (21.9%), *Cluster 6* (21.4%) and *Cluster 7* (20.9%). Around 15% of the women in *Cluster 4* were suffering from low body-mass index.

The map on the right shows the percentage of women weighing less than 45 kilograms, by district cluster. Nearly half the women in the *Cluster 7* sample are considered to be underweight, followed by nearly 40% in *Cluster 8*. Women in *Cluster 7* are also more likely to be stunted (19.7%) with height less than 145 centimetres, which is one reason they don't have the highest prevalence of women with low BMI as the weight and height, although low, are somewhat proportionate.

Map 18 – Percentage of women (15-49) weighing less than 45 kg



In addition, 15% of the women in the *Cluster 6* sample were stunted. Overall, it appears that women in *Cluster 7* are the worst off in terms of nutritional outcomes while those in *Cluster 9* are the best, with the lowest prevalence of underweight and no stunting in adult women.

Section 5.2 – Child nutrition and health

Main findings of the household survey for child nutrition and health are presented in the following section, both by age group and also by district cluster. Data tables with the complete results of the analysis are found in Annex II of the report.

5.2.1 – Methodology and sampling

As mentioned earlier, the households were randomly sampled and it was assumed that there were be at least one women of reproductive age (15-49 years) in each household. If the household had more than one woman of reproductive age, then the woman with children under five years of age was selected and all children in the households (0-59 months) would be included in the child health and nutrition section of the questionnaire.

The age of a child was determined by asking the mother for the date of birth and when possible, using vaccination cards to verify the birth date. If the date was unknown and no documentation was available, a seasonal calendar or calendar of events was used to estimate the age of the child. Children were weighed using UNICEF Mother/child scales while height was measured using a standard measuring board. Due to cultural problems, many children < 24 months of age were measured standing rather than lying down.

In total around **1550 children** were weighed and measured in the 9 district clusters: 164 in *Cluster 1*; 169 in *Cluster 2*, 194 in *Cluster 3*, 215 in *Cluster 4*, 131 in *Cluster 5*, 173 in *Cluster 6*, 111 in *Cluster 7*, 216 in *Cluster 8* and 174 in *Cluster 9*. Although the sample sizes for anthropometry vary by district cluster, the use of random sampling rather than cluster sampling reduces the design effect, allowing relative comparisons to be made between the zones.

5.2.2 – Comparison to the 2003-2004 Madagascar Demographic and Health Survey

Some of the results of the Madagascar Comprehensive Food Security and Vulnerability Analysis survey are presented below and compared to the findings of the 2003-2004 Madagascar DHS. The DHS survey only collected information on children less than three years of age while the CFSVA weighed and measured all children less than five years of age so the comparison of older children is not possible in this report.

The prevalence of wasting is similar by age group although the findings of the DHS indicate higher levels in the older children. The prevalence of stunting is higher among younger children in the DHS but is nearly the same in the older children. Underweight prevalence is higher in the DHS sample for all age groups except the 24-35 months group. In all, the anthropometric findings were quite similar, validating the 2005 CFSVA survey data.

Table 4 – Comparison to the 2003-2004 Madagascar DHS

Age group (months)	Number of children		Wasting[12]		Underweight[13]		Stunting[14]	
	CFSVA	DHS	CFSVA	DHS	CFSVA	DHS	CFSVA	DHS
< 6	176	529	8.5%	5.9%	3.6%	7.2%	10.8%	17.8%
6-9	135	399	10.4%	11.3%	23.0%	31.5%	30.4%	32.0%
10-11	40	150	12.5%	16.1%	41.5%	50.1%	41.5%	46.9%
12-23	316	1129	11.9%	18.4%	46.9%	50.3%	58.5%	57.3%
24-35	323	946	8.7%	14.8%	47.2%	46.3%	49.2%	49.9%

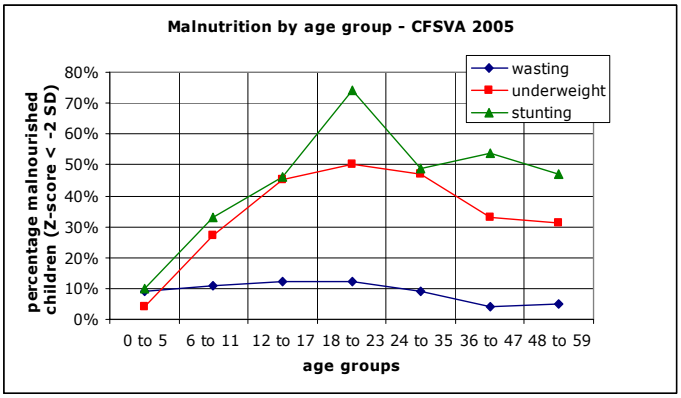
[12] A **wasted child** has a weight-for-height Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Wasting or **acute** malnutrition is the result of a recent failure to receive adequate nutrition and may be affected by acute illness, especially diarrhoea.
[13] An **underweight child** has a weight-for-age Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. This condition can result from either chronic or acute malnutrition or a combination of both.
[14] A **stunted child** has a height-for-age Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Stunting or **chronic** malnutrition is the result of an inadequate intake of food over a long period and may be exacerbated by chronic illness.

5.2.3 – Comparison of malnutrition by age group

The likelihood of being malnourished varies greatly by the age of the child with different factors influencing the health and nutrition status at different ages. The graph below presents the prevalence of wasting, underweight and stunting by age group. The prevalence of **wasting** increases slightly from the youngest age group, peaking at the 18-23 months age group and then decreasing among older children. The rising trend in children aged 6 to 23 months is typical because it reflects the difficulties of weaning and giving appropriate and timely complementary foods.

Stunting shows quite a different trend in that very few children 0-5 months are too short for their age. However, the prevalence of stunting increases greatly for children 6-11 months and then peaking at more than 70% of the children aged 18-23 months. There is a decrease in the 24-35 months age group, with some due to the change in reference population used to calculate z-scores for children 24 months and older.

Figure 42 – Malnutrition by age group



The prevalence of stunting stabilizes in the older children. This trend in stunting prevalence is typical because the long-term impact of malnutrition is reflected more clearly with increasing age.

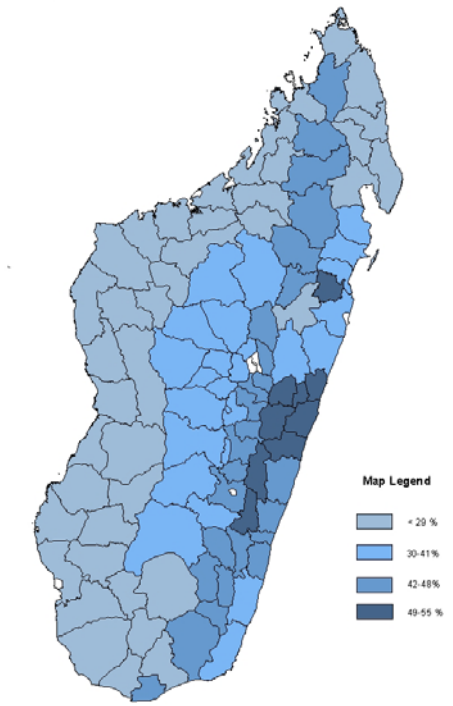
The prevalence of **underweight** shows a smooth and gradual increase with increasing age, starting quite low in the youngest children and peaking at the 18-23 months age group before gradually decreasing and levelling out in the oldest group. In all measures, the most vulnerable children are found in the 18-23 months age group which could reflect the problems in providing appropriate weaning foods and also because children are more independent and mobile and are thus more susceptible to illness and infection. In addition, this is the age where often a younger brother or sister may be born and the mother's attention is taken elsewhere.

5.2.4 – Malnutrition by district cluster

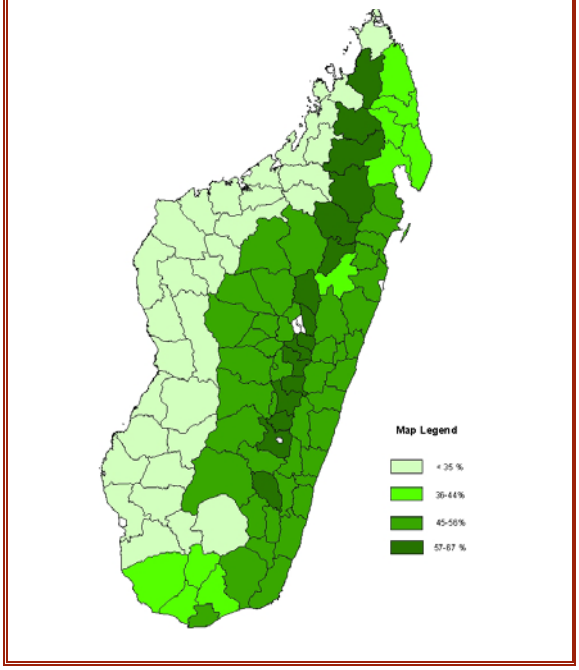
There was a lot of variation between district clusters in the prevalence of child malnutrition. This is party due to the fact that secondary data on malnutrition were used to create the clusters. The prevalence of **acute malnutrition** was highest in *Cluster 8* (10.8%), followed by *Cluster 5* (10.6%) and *Cluster 2* (9.9%). Wasting was lowed in *Cluster 1* (4.3%) and *Cluster 9* (5.8%).

The map on the right shows the differences in prevalence of **underweight** between district clusters. The highest prevalence of child underweight was found in *Cluster 7* where more than 45% of the sample children weighed too little for their age. More than 40% of the children in *Clusters 4* and *8* were also underweight. The lowest levels of underweight were found in *Clusters 1, 2, 5* and *9* where about one-quarter had weight-for-age Z-scores less than -2 SD.

Map 19 – Percentage of children 6-59 months with waz < -200 S.D



Map 20 - Percentage of children with haz < -2.00 SD



The chart map on the left compares the prevalence of **chronic malnutrition** between the district clusters. The map clearly shows that the greatest problems lie along a ridge to the east of the centre of the island. In *Cluster 4*, nearly two-thirds of the sample children were stunted *(95% CI: 57.0, 71.1)*, followed by half the children in *Cluster 3 (95% CI: 42.9, 57.2)* and 48.8% in *Cluster 6 (95% CI: 41.0, 56.5)*.

The prevalence of chronic malnutrition was lowest in *Clusters 1* and *2* where only around 30% of the children were malnourished.

The prevalence of **severe underweight** *(waz < -3 SD)* was around 9% for the sample and was highest in *Cluster 8* (12%), followed by *Cluster 4* (11%) and lowest in *Clusters 5* and *9* (5%). Around 20% of the children in the sample were **severely stunted** *(haz < -3 SD)* with the most founds in *Cluster 4* (32%), followed by *Clusters 8* (26%) and *7* (25%).

There are some household characteristics that are significantly related to child malnutrition. As seen in the chart below, children with a **literate mother** are significantly less likely to be wasted and underweight when compared to children with illiterate mothers. However, there was no impact on the likelihood of being stunted.

Table 5 – Relationship between maternal education and child nutritional outcomes

	Whz	Waz	Haz	Wasted	Underweight	Stunted
Mother not literate	-0.668	-1.620	-1.807	10%	38%	47%
Literate	-0.426	-1.449	-1.817	6%	30%	44%
Significant	***< 0.001***	***< 0.01***	***n.s.***	***< 0.01***	***< 0.001***	***n.s.***

In addition, children from households headed by a woman are significantly more likely to be acutely malnourished and to be 'smaller than normal' or 'very small' at birth.

Table 6 - Relationship between household headship and child nutritional outcomes

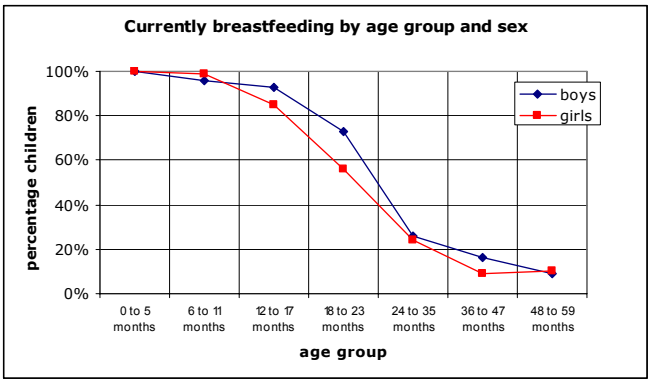
	Wasted	Underweight	Stunted	Low birth weight
Male head	28%	8%	33%	44%
Female head	37%	9%	40%	53%
Significant	***< 0.05***	***n.s.***	***n.s.***	***< 0.05***

5.2.5 – Breastfeeding practices

For each child in the survey, information was collected on breastfeeding initiation, duration and weaning practices. Almost all of the children had been fed breast milk, ranging from 95% in *Cluster 3* to 100% in *Clusters 7* and *8*. The chart below shows the percentage of boys and girls who were still breastfeeding at the time of the survey, by age group.

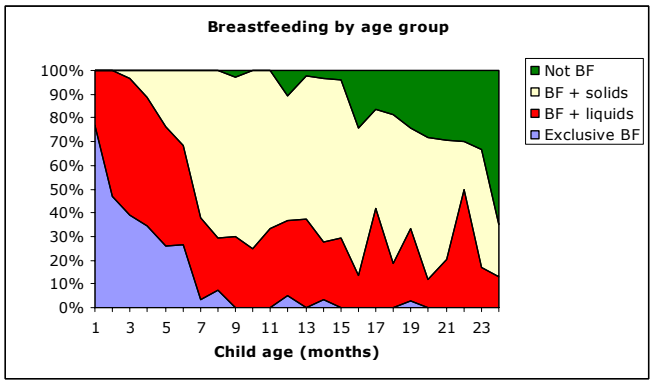
All of the boys and girls in the 0-5 month age group were breastfeeding. This percentage decreases slightly in the 6-11 months group and then more between 12 and 24 months of age and more quickly for girls. The difference between the percentage of boys and girls currently breastfeeding in the 18-23 months age group is statistically significant *(p < 0.05)*. Most children are weaned by the age of 2 years but in general, boys tend to be breastfed longer than girls.

Figure 43 – Currently breastfeeding by age group and sex



The results of the survey show that more than 70% of newborn children are exclusively breastfed (only breast milk – not even water) and 40% are still exclusively breastfed by the age of 3 months.

Figure 44 – Breastfeeding by age group

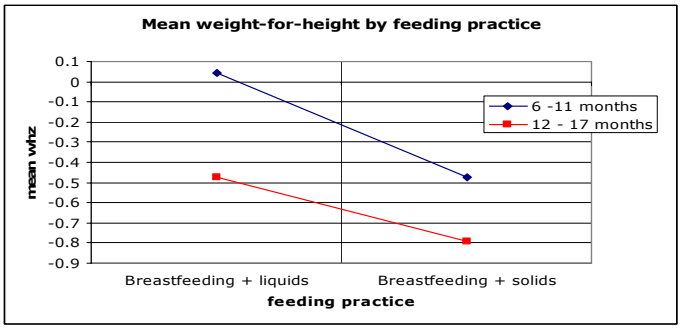


However, by the age of 5 months only one-quarter of children are exclusively breastfed with another 50% taking breast milk and liquids. By the age of 7 months the majority of children are eating solids with breast milk. However, most children continue to be breastfed until around age 16 months when about 20% had been weaned completely. By the age of 2 years, 40% of the children are still being breastfed.

The highest percentage of **exclusive breastfeeding** was found among young children (0-24 months) in *Cluster 7* (20%), followed by *Clusters 5 & 3* (both 18%). The lowest levels of exclusive breastfeeding were found in *Clusters 4 & 9* (5% only). Mothers in *Clusters 5 & 6* are the most likely to practice extended breastfeeding with only 4% of children 0-24 months being completely weaned. The worst breastfeeding practices are found among mothers in *Cluster 8* where only 6% of children are breastfed exclusively, 61% are having breast milk and solids and 15% are completely weaned.

The types of feeding practices have an effect on child growth as indicated in graph 45. For the sample, of children between 6 and 17 months, the mean **weight-for-height** z-scores are much lower for children who are being breastfed and eating solid foods compared to those who are taking breast milk and liquids.

Figure 45 – Mean weight-for-height feeding practice

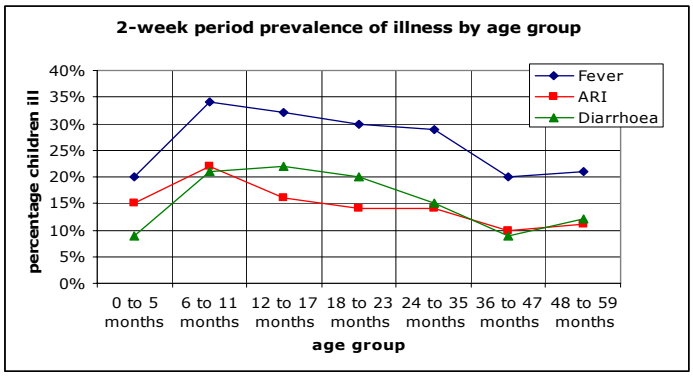


The difference in mean whz score is statistically significant *(p < 0.05)* for children 6-11 months of age, illustrating the negative impact of early introduction of 'adult' foods on child growth. The additional nutrition from solid foods may help lineargrowth but results in longer and thinner children.

5.2.6 – Recent child morbidity

During the interview, the mothers were asked if their children had experienced at least one episode of fever, coughing (if yes, with faster than normal breathing) or diarrhoea in the two weeks prior to the survey.

Figure 46 – 2-week period prevalence of illness by age group

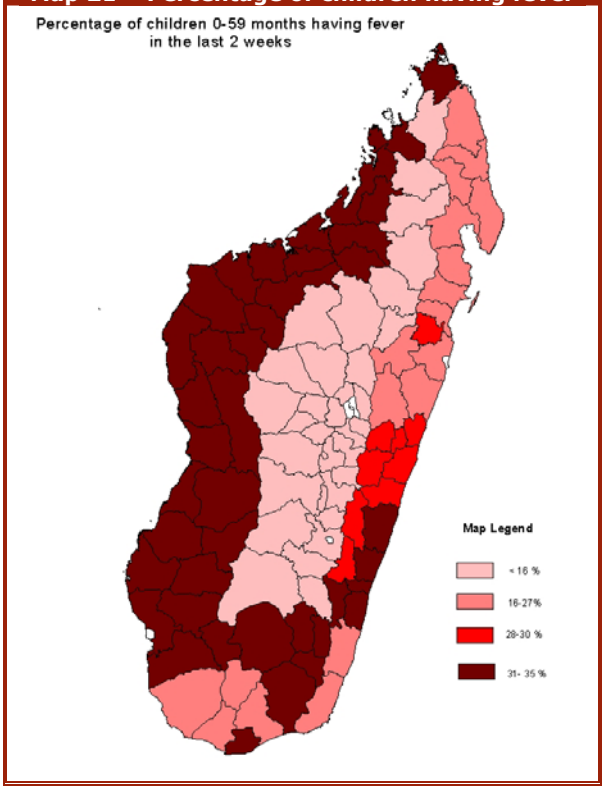


Overall, 15% of the children had experienced at least one episode of diarrhoea, 39% had been coughing and 26% had a non-specific fever in the past two weeks. Coughing with fast breathing is a sign of acute respiratory infection (ARI), which is one of the major childhood illnesses in the developing world. In the sample, there was a 14% 2-week period prevalence of ARI in children less than five years of age.

The prevalence of diarrhoea was highest among children in the 17-23 month age group and then reduces steadily with increasing age except for a small increase in the oldest group of children. Prevalence of fever was lowest in the youngest children (0-5 months) and then peaked in the 6-11 months age group. The prevalence decreased gradually with increasing age, levelling off at 20% for the older children.

A similar pattern exists for the two-week period prevalence of acute respiratory infection (ARI) except that the lowest prevalence exists exclusively in the older age groups. Overall, it appears that children 6-11 months of age are more vulnerable to childhood illnesses than any other age group. Additional analyses show that 22% of the children 6-11 months had experienced 2-3 different illnesses in the 2 weeks prior to the survey. This was significantly higher than for children 0-5 months and those in the older age groups.

Map 21 – Percentage of children having fever

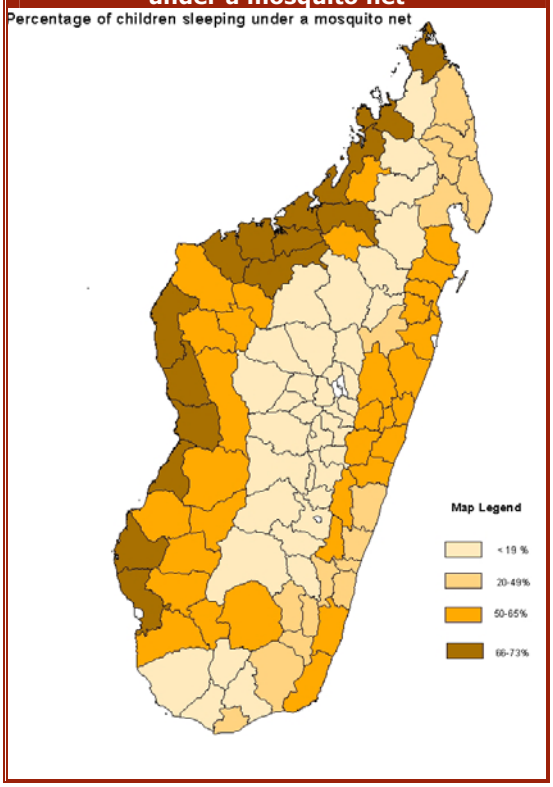


By district cluster, there was some variation in disease prevalence with the highest being found mostly on the western side of the country. As illustrated in map 20 above, more than 30% of the young children in *Clusters 1, 2*, and *8* had experienced **non-specific fever** in the 2 weeks prior to the survey. Thirty percent of the children in *Cluster 7* also had experienced recent fever.

Regarding treatment, more than 60% of the sick children in *Cluster 1* had been treated in the **health centre** where almost all had received anti-malarial medication. However, in *Cluster 2*, only one-third of the children with fever had been treated in the health centre and 89% of those had been treated with **anti-malarial** drugs. In *Cluster 8*, nearly 60% of the children with fever had been treated in the health centre and nearly all had been treated with anti-malarial drugs. Treatment of fever in health centres was lowest in *Cluster 7* where only 19% of the children were treated. However, all of the sick children were given anti-malarial drugs for treatment. Treatment in health centres was also low in

Cluster 3 where 23% of the children were treated and only 83% received anti-malarial drugs.

Map 22 – Percentage of children sleeping under a mosquito net



The map on the left shows the percentage of children sleeping under a **mosquito net**. Even though mosquito net usage is highest in *Cluster 1*, the reported prevalence of fever is also highest. Mosquito net usage is lowest in *Clusters 3, 4* and *9*. In *Clusters 3* and *4*, the reported prevalence of recent fever was low but in *Cluster 9*, the combination of fever and lack of mosquito nets could be problematic.

The prevalence of **acute respiratory infection** (ARI) was highest in *Clusters 8* (24%) and *1* (20%) and less than 10% in *Cluster 3* and *4*.

The 2-week period prevalence of **diarrhoea** was also highest in children found in *Clusters 1* and *2* (21%) and also in *Cluster 7* (20%). However, 58% of the sick children in *Cluster 1* were treated in the **health centre** as compared to only 39% in *Cluster 2* and 21% in *Cluster 7*. The lowest prevalence of diarrhoea was also found in *Clusters 3* (7%) and *4* (8%) but with 53% of the children in *Cluster 4* being treated in health centres.

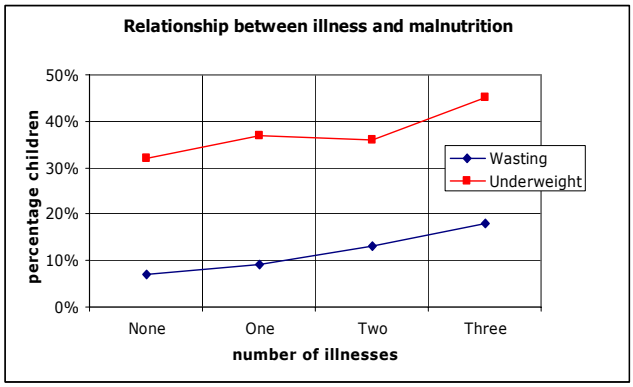
Nineteen percent of the children in *Cluster 9* had experienced diarrhoea in the 2 weeks prior to the survey and 40% had been treated in the health centre.

The type and number of illnesses has shown to have an impact on child nutritional status. When comparing prevalence of illness by current nutritional status the following can be observed:

- Children with recent fever were significantly *($p < 0.001$)* more likely to be wasted (12%) than those without (7%).
- Children with recent diarrhoea were significantly *($p < 0.05$)* more likely to be underweight (41%) than those without (33%).
- Children with recent acute respiratory infection (ARI) were significantly *($p < 0.01$)* more likely to be wasted (13%) than those without (7%).

The chart on the right shows the relationship between numbers of illness and child nutritional outcomes. These relationships are much clearer for acute malnutrition, showing a steady increase in the prevalence of wasting with increased number of illnesses. For underweight, the relationship is similar yet not as pronounced. However, the greatest increases are in children that have suffered from three recent illnesses. This linear relationship does not exist for chronic malnutrition (stunting).

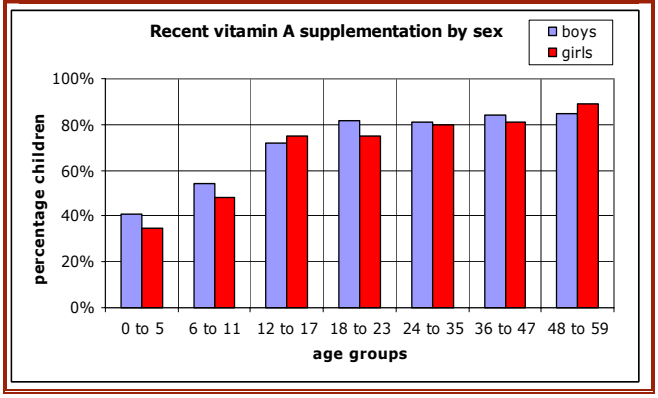
Figure 47 – Relationship between illness and malnutrition



5.2.7 – Vitamin A supplementation, measles vaccination and de-worming medicine

When asked about **vitamin A supplementation** for children, around 70% had received at least one dose – most within 4-6 months of the survey.

Figure 48 – Recent vitamin A supplementation by sex



As illustrated in the chart on the left, supplementation was over 80% in children aged 2-5 years and slightly lowed for those 1-2 years of age. Only around half the children aged 6-11 months had received a vitamin A capsule at the time of the survey. Supplementation was slightly higher for the boys than girls at most ages, especially among the younger children. Supplementation was similar across district clusters but with the highest coverage (79%) found in *Clusters 1* and *4* and the lowest in *Cluster 9* (65%) and *Cluster 8* (67%).

Nearly 80% of the children 12-59 months of age had been immunized against **measles**. Only 60% of the children 12-17 months had received the immunization as compared to more than 80% of the children 2 years and older. By district cluster, the highest measles immunization was found in *Cluster 8* (85%) and *Cluster 4* (84%) while the lowest was in *Cluster 9* (62%), *Cluster 6* (64%) and *Cluster 2* (66%).

Nearly half the children had received **de-worming** medication, ranging from only 28% in *Clusters 2* and *9* to more than 60% in *Clusters 5* and *8*. Very few children less than 1 year of age had received de-worming medication.

Section 5.3 – Knowledge of HIV and AIDS

Acquired immune deficiency syndrome (AIDS) was first recognized internationally in 1981. As of 2000, an estimated 36 million adults and children around the world were living with the human immunodeficiency virus (HIV) and AIDS (UNAIDS. 2000). Although sub-Saharan Africa is home to about 10% of the world's population, more than 60% of the people living with HIV (25.8 million) reside in the region. In 2005, an estimated 3.2 million people in the region became newly infected, while 2.4 million adults and children died of AIDS.

Madagascar has a much lower prevalence rate of HIV infection than the rest of the region, with an estimated 1.7% of adults (15-49 years) infected (UNAIDS, 2004). Approximately 130,000 adults are living with HIV and approximately 10,000 children 0-14 years are infected. UNAIDS estimates that approximately 7,500 persons in Madagascar died of AIDS in 2003. In addition, UNAIDS estimates that approximately 30,000 children under 17 years of age have lost their mother or father or both parents to AIDS (2003).

In 2003, HIV prevalence among antenatal clinic women tested in Antananarivo was 0.3 percent while in *Toamasina*, *Toliara* and *Fianarantsoa* it was at 1 percent. In *Antsiranana* and *Mahajanga*, HIV prevalence was over 1 percent. HIV infection among sex workers remains low, around 1 percent overall.

The Comprehensive Food Security and Vulnerability Analysis (CFSVA) survey included a series of questions on the knowledge of and attitudes towards HIV and AIDS. The heads of households were asked if they had ever heard of HIV and AIDS. Those who had were questioned on their knowledge of ways to prevent transmission.

In the sample, more than two-thirds of the households had ever heard of HIV and AIDS, ranging from 53% of the sample households in *Cluster 8* to more than 80% in *Clusters 3*, *4* and *9*.

The most often cited way to avoid becoming infected with HIV was to have **only one partner**. This response was given by more than 80% of the sample households in *Clusters 3* and *4* as compared to less than two-thirds of the sample households in *Clusters 2*, *8* and *9*. Two-thirds of the sample in *Cluster 6* and more than half in *Clusters 3* and *8* cited **condom use** as a way to prevent infection. Only 18% of the sample households in *Cluster*

9 mentioned condom use. Around 20% of the sample households in Clusters 1, 4 and 7 stated that HIV infection could be prevented by **abstaining from sex**. This method was mentioned by only 8% of the households in *Cluster 9*, 10% in *Cluster 6* and 11% in *Cluster 2*. More than 20% of the sample households in *Clusters 3* and *6* said that one could prevent transmission by **avoiding sex with prostitutes**, as compared to only 3% in *Cluster 9* and 4% in *Cluster 1*. More than one-quarter of the households in *Cluster 3* said that HIV infection can be prevented by **avoiding sex with persons who have many partners**. The method was also mentioned by 17% of the sample in *Cluster 6* and 16% in *Cluster 9* but only 5% in *Clusters 1* and *5*. Lastly, more than 20% of the sample households in *Cluster 3* said infection could be prevented by **avoiding blood transfusions**. This method was also spontaneously mentioned by 12-13% of the sample in *Clusters 2* and *4* but by only 2-3% in the other Clusters.

Very few households felt that infection was caused by **injections** while 15% of the households in *Cluster 3* felt infection could be prevented by **not sharing razors**. Very few households felt that HIV was transmitted through **mosquito bites**. However, 8% of the households in *Cluster 6* felt one could contract HIV by **touching an infected person**. Very few households felt that HIV could be transmitted through **sharing food**.

Part VI – Household Food consumption profiling

Household food consumption profiles were developed, using information on dietary diversity and the consumption frequency of staple and non-staple food as well as the sources of staple foods consumed.

Section 6.1 - Food Access: frequency of consumption and dietary diversity

The number of different foods from different food groups, consumed in a household reflects the dietary diversity and it provides a measure of the quality of the household diet. The variety of foods/food groups consumed by household members is a proxy indicator of household food security and research has demonstrated that dietary diversity is highly correlated with caloric and protein adequacy, percentage of protein from animal sources (high quality protein) and household income.

In the field of nutrition, different food items are divided into a number of 'food groups', of which a combination should be consumed on a daily basis to ensure a nutritionally adequate diet. These key food groups are: cereals, legumes and oilseeds, tubers and roots, vegetables and fruit, animal products, oil and fats.

1.	Rice	8.	Fruit
2.	Other cereals	9.	Fish
3.	Bread	10.	Meat
4.	Roots and tubers	11.	Eggs
5.	Pulses	12.	Milk
6.	Groundnuts	13.	Oil
7.	Vegetables	14.	Sugar

In order to classify the sampled households on the basis of their actual weekly food consumption and dietary diversity, the analysis was based on information on the frequency of consumption (0 to 7 days) for fourteen food items or food groups[15]:

6.1.1 – Methodology for analyzing food consumption data

Because there is the need to analyze several variables simultaneously, multivariate statistical techniques have been used, specifically principal component analysis (PCA) followed by cluster analysis[16].

The aim of the analysis is to cluster together households that share a particular consumption pattern. The advantage of running a cluster analysis on principal components and not on the original variables is that we cluster on relationship among variables. PCA was run on the frequency of consumption of the above mentioned food items. Cereals (other than rice) were considered as supplementary variable, i.e. as a variable that was not considered for building the principal components. In fact, while more than 80% of sampled households did not consume cereals other than rice, the large majority of the rest ate other cereals just as complements to rice- or tuber-based meals.

Cluster analysis was run on 10 principal components obtained by PCA, which explained more than 85% of the variance of the original dataset. Such a high level of consistency with the original complexity of the dataset ensures a good reflection of the relationships among variables. It guarantees also that particular combinations of variables' values (frequencies of consumption of single food items) are maintained and not smoothed too much through a high data reduction approach. In other words, cluster analysis will group together households that have a similar relationship among the frequencies of consumed foods as expressed in the principal components.

6.1.2 – Household food consumption groups and profiles

Based on this analytical approach, 9 distinct profiles of households were identified being characterized by their different food consumption patterns.

These 9 profiles were then summarized into five distinct food consumption groups following the characteristics described below:

[15] The fact that sugar and salt were combined into the same food category during the data collection gives some problems about the interpretation of their consumption. Although both sugar and salt play an important role in the diet improving palatability, they are very different in term of nutrients.

[16] The software used for multivariate analyses is ADDATI 5.3c, developed by Silvio Griguolo, IUAV Venice, Italy, freely available at http://cidoc.iuav.it/~silvio/addati_en.html

Table 7 - Profiles of households				
Food Consumption Group	**Profile**	**%**	**Description of frequently consumed staples**	**Average DD score**[17]
Very Poor	1	17%	Roots/tubers	15
Poor	2	22%	Rice, vegetables, sugar	23
Borderline	3.1	30%	Rice, roots/tubers, vegetables, sugar (oil)	29
	3.2	12%	Rice, roots/tubers, fruit, oil (sugar)	31
Fairly good	4.1	5%	Rice, roots/tubers, pulses, oil, sugar	33
	4.2	4%	Rice, roots/tubers, groundnuts, vegetables, oil, sugar	33
Good	5.1	4%	Rice, roots/tubers, vegetables, oil, sugar, combination of animal products (fish and eggs)	36
	5.2	3%	Rice, roots/tubers, vegetables, oil, sugar, combination of animal products (milk daily + fish and meat)	36
	5.3	3%	Rice, bread, vegetables, oil, sugar, combination of animal products (fish and meat)	41

1. **Very poor food consumption group (17%):** very low food intake, almost certainly nutritionally inadequate. Households consumed only one food item on a daily basis (roots/tubers).
2. **Poor food consumption group (22%):** Diet was based on daily consumption of rice. Vegetables and sugar were sometimes consumed, on average 4 days per week. Oil and fish are eaten more rarely. Households' diet was probably insufficient in term of protein intake. Moreover, the low diversification might lead to micronutrient deficiencies.
3. **Borderline food consumption group (42%):** The diet for these households was mainly based on staple food with little diversification. Rice and roots/tubers were consumed frequently integrating with each other. Oil and sugar are eaten 3 or 4 days per week on average. Two different patterns could be detected within these households: the majority had frequent consumption of vegetables, while slightly more than ¼ of the group ate fruit on a daily basis, eating vegetables only a few days a week.
4. **Fairly good food consumption (9%):** Their diet appeared to include all the basic nutrients, even though these households did not access items from all the six food groups. Roots/tubers were consumed on a daily basis while rice, oil and sugar were eaten frequently. Pulses or combination of pulses and groundnuts, which were consumed daily, provided proteins which combined with proteins from cereals should guarantee an adequate level of essential amino acids for a healthy diet. Vegetables were consumed 3-4 days per week.
5. **Good food consumption (10%):** The diet is more diversified for these households, especially in term of number of different consumed items. Rice (or rice complemented with other cereals) was the daily staple while roots/tubers, vegetables, oil and sugar were frequently eaten (few households ate less frequently tubers but bread on a daily basis). At least two different animal products were consumed 3-4 days during the week, guaranteeing a frequent intake of animal products. Some households combined fish and eggs, some other fish and meat, while a few other households, together with fish and meat, consumed milk on a daily basis.

[17] This score is an average of Dietary Diversity scores from households belonging to the profile. Each household DD score is the sum of the number of consumed food items weighted by their frequencies of consumption over the week.

A compared description of these dietary profiles is shown in the following table. The five food consumption groups, sub-divided into the nine profiles, are reported as columns while the rows represent the food items. Values indicate the average consumption frequency of each food in each household profiles (days/week).

Table 8 - Description of households dietary profiles

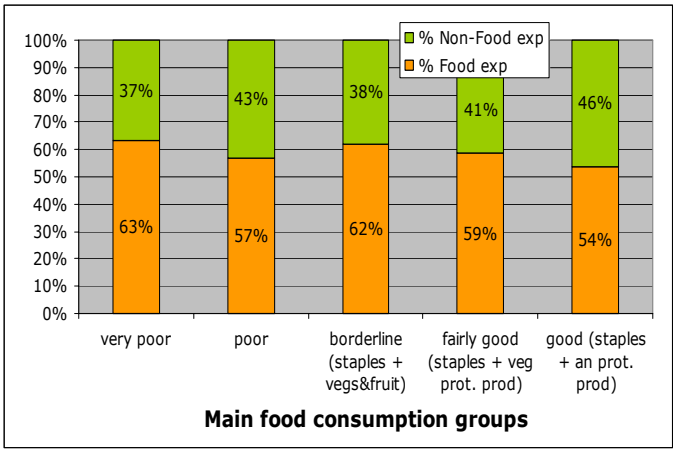
Food items	Very poor	Poor	Borderline (staples + vegetables & fruit)		Fairly good (staples + vegetables & protein)		Good (staples + animal protein)		
	17%	22%	30%	12%	5%	4%	4%	3%	3%
rice	2	7	7	7	5	5	7	5	7
other cereals	1	1	0	0	1	2	1	2	0
bread	0	0	0	0	0	0	0	0	6
roots & tubers	6	1	7	5	6	6	4	4	2
pulses	0	1	1	1	6	2	1	2	2
groundnuts	0	0	0	0	0	5	0	0	0
vegetables	2	4	5	3	3	5	4	4	4
fruit	0	1	0	6	0	1	2	1	3
fish	1	2	1	2	2	1	2	2	3
meat	0	0	0	0	1	1	0	2	2
eggs	0	0	0	0	0	0	3	0	0
milk	0	0	0	0	0	0	0	6	1
oil	1	3	3	4	4	4	5	4	5
sugar	1	4	4	3	4	5	4	4	5

6.1.3 - Household access to food

In order to understand the context of particular diet patterns (especially the poor ones) and whether households could have the means to improve that without humanitarian assistance, their ways of accessing food were investigated.

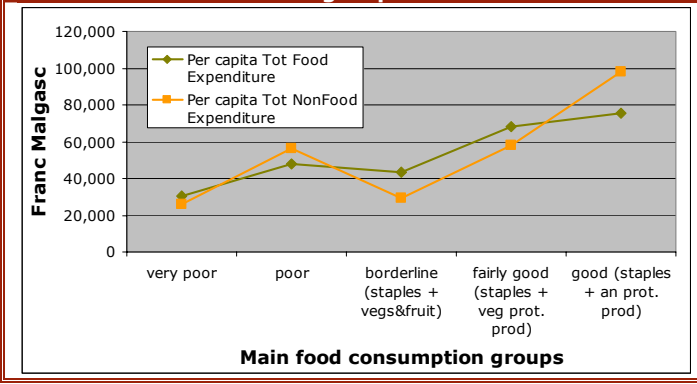
First, cash availability was examined, using the share of household total expenditure spent on food versus the share of non-food disbursement as a proxy indicator.

Figure 49 – Share of expenditure on food by food consumption group



Although food expenditure was found to be higher in the ***very poor*** food consumption group (63% of total household outflow), the difference between the average of this group and the relative values from the other food consumption groups were statistically significant only between "Very poor" and "Good" *($p < 0.001$)* and between "Very poor" and "Poor" *($p < 0.05$)*. The share of expenditure on food, which is one of the typical indicators of wealth, did not seem to explain the differences in the quality of a household's diet.

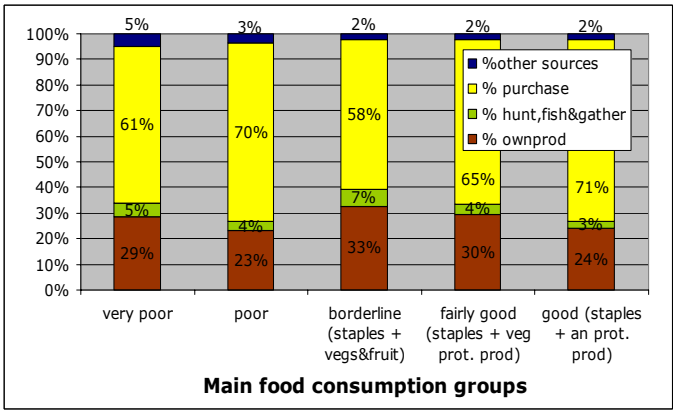
Figure 50 – Total food expenditure by food consumption group



The per-capita monthly food and non-food expenditures in absolute amount were then inspected. Even if both these indicators were generally increasing with improved consumption, it was found that "Borderline" food consumption households were spending less per capita than households with "Poor" food consumption, both for food and non-food, even if their diet was better in term of quality and quantity.

The differences in per capita expenditure can be partly explained by analyzing the sources of consumed food. Access to food is determined by the household's ability/possibility to obtain food from own production, stocks, purchase, gathering, or through transfers (gifts from relatives, members of the community, government, or external assistance). The sources of the different foods eaten by household members were analyzed in an attempt to understand how reliance on particular sources of food can impact household food security.

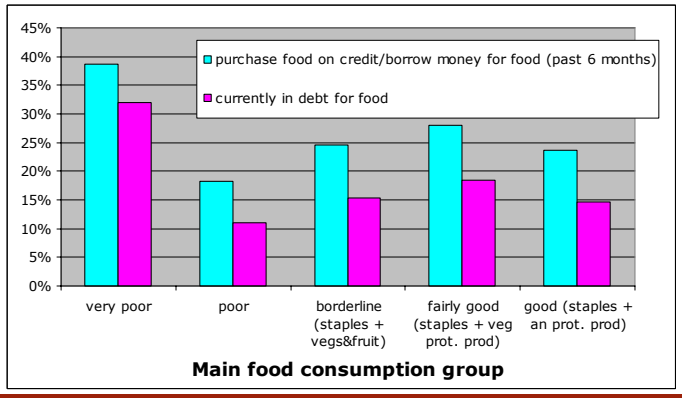
Figure 51 – Source of consumed food item by food consumption group



Each household was asked to report the main sources for each consumed food item. The number of responses for each source was 'weighted' by the frequency of consumption of the foods that were accessed through that particular source. Then the proportion of consumption from each source was calculated. Specifically, households with "Borderline" food consumption reported the highest share of food accessed through own production and hunting, fishing or gathering.

This particular method of accessing food could explain their relatively low per capita food expenditure.

Figure 52 – Mode of purchasing food by food consumption group



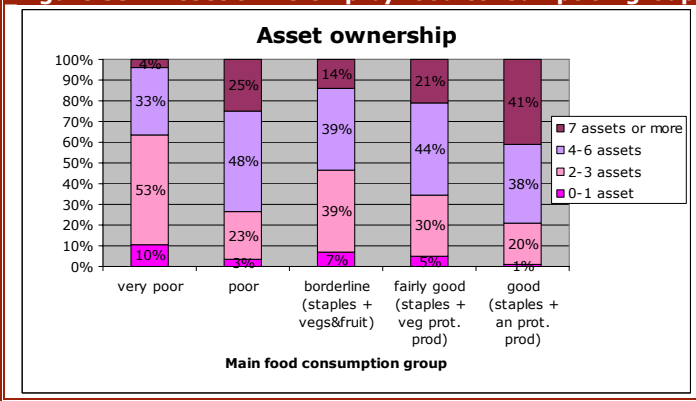
On average, 26% of the sample reported to have purchased food on credit or borrowed money to buy food in the past six months while 17% were currently in debt for food. Significant differences were found again among food consumption groups, with "Very poor" food consumption presenting the highest percentage of households who purchased food on credit or had to borrow money to purchase food in the past six months.

The large majority of them were still in debt for food (83% of those who purchased on credit).

6.1.4 - Asset ownership

Analysis of household asset ownership showed that households with "very poor" food consumption were more likely to be asset-poor than households with better diet/access to food. Analysis of number of different assets owned per household shows that households in the "very poor" food consumption group own about 3 assets on average, while those in the "borderline" consumption group own an average of 4 assets.

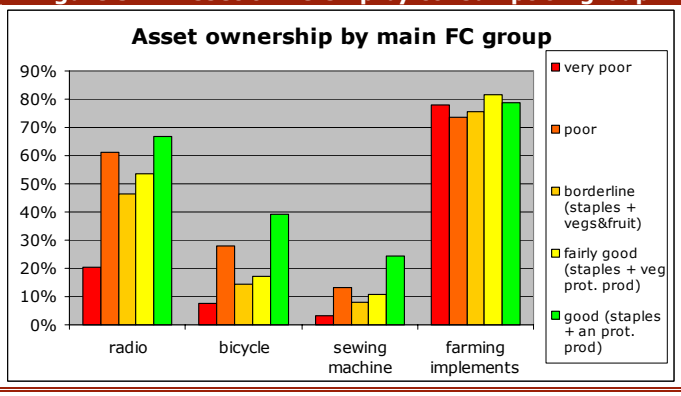
Figure 53 – Asset ownership by food consumption group



Households with "poor" and "fairly good" consumption own an average of 5 different assets while those in the "good" consumption group own an average of 6 household assets. When using categories based on the number of different household assets owned as proxy indicator of wealth, nearly two third of the households with "very poor" food consumption were found be "asset poor" (0 to 3 assets).

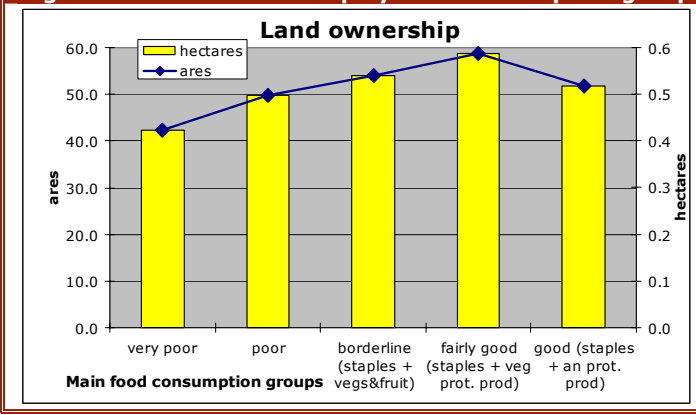
The graph below shows the percentage of households owning a radio, bicycle, sewing machine or farming implements by food consumption group.

Figure 54 – Asset ownership by consumption group



As it can be seen, most households in each group owned farming equipment with little variation between groups. On the other hand, a significantly lower percentage of "very poor" food consumption households did own wealth assets like radio and bicycle or skilled-labour related assets like sewing machines. This fact outlined that "very poor" food consumption households were generally asset poor.

Figure 55 – Land ownership by food consumption group



Even in terms of land ownership households with "very poor" food consumption were being found being poorer than other households. The average size of land owned by "very poor" consumption households was significantly *($p < 0.001$)* smaller than the average values for the four other food consumption groups.

Section 6.2 - Refining the Food Security analysis

From the above analyses, it appears that households presenting **very poor food** consumption **during a normal period** (i.e. not during the lean season) were very likely to have a **food insecurity** problem. As the survey was conducted during late August/September, it was anticipated that it would be at least one or two months before the lean season begins, where households might experience constrains in their food access because of the annual shortage before the new crop yields. This means that their inadequate diet intake seems to be due to a combination of insufficient quantity and quality of resources to access the necessary amount of food.

Broadening the analysis, some other households might do well in a normal period situation, but might be **vulnerable**, meaning not able to manage shocks with their own resources.

Additional Principal Component and Cluster analyses were conducted using a broader range of variables in order to create profiles of household's access to food and exposure to shocks.

Ten variables were used:

- Sex of household head
- Number of assets owned
- Size of land cultivated
- Percentage of consumed food from own production
- Percentage of consumed food from purchase
- Share of total monthly expenditure for food
- Exposure to at least one shock in the past year
- Exposure to natural shocks
- Suffered increase of food prices
- Suffered from illness or death of at least one active HH member

Cluster analysis (***run on 7 principal components, which maintained 90% of the variance of the original 10 variables***) produced five main "food access & shock exposure" household groups:

1. **Rely on market and exposed to natural catastrophes (28% of the sample)** – Characteristics: Household head: 21% female; 75% of food from purchase; 71% of total monthly expenditure for food; all reported shocks – mostly natural catastrophes.
2. **Rely on both markets and production and exposed to illness or death of an active member (10% of sample)** – Characteristics: 29% female headed households; purchase food: 65%; share of monthly food expenditure = 56 percent; all had experienced shocks - all illness or death of an active HH member.
3. **Rely on both markets and production and vulnerable to increased food prices (9% of sample)** – Characteristics: 22% female headed households; 65% of food consumed from purchase; share of total monthly expenditure for food = 62 percent; all experienced shocks with all vulnerable to increasing food prices.
4. **Rely on markets with few reported shocks (28% of sample)** – Characteristics: 23% female headed households; 77% of food consumed from purchase; share of total monthly expenditure on food = 70%; Very few reported shocks.
5. **Mostly land owners and rely on own production with few shocks reported (24% of sample)** – Characteristics: 9% female-headed households; large land owners; 62% of food consumed from own production; share of total expenditure for food = 36%; only half of the group experienced shocks – mostly natural shocks & other small shocks.

6.2.1 - Food Security and Risk Profiles

In order to refine our analysis, the 5 "food consumption" groups and the 5 "access & shock" groups have been cross-tabulated.

In other words, it is important to identify the households that are doing well in terms of food consumption but are highly exposed to shocks – and to determine if they would be able to cope with these shocks.

Table 9 – Cross tabulation of access and shocks group and food consumption groups

Access & shocks groups	Food Consumption groups					
	very poor	poor	borderline	fairly good	good	*total*
Rely on market and exposed to natural catastrophes	5%	6%	11%	2%	3%	*28%*
Rely on both markets & production and exposed to illness or death of an active member	3%	1%	3%	2%	2%	*10%*
Rely on both markets and production and vulnerable to increased food priced	3%	1%	4%	0%	1%	*9%*
Rely on markets with few reported shocks	4%	8%	12%	2%	3%	*28%*
Mostly land owners and rely on own production with few reported shocks	3%	5%	11%	2%	2%	*24%*
Total	***17%***	***22%***	***42%***	***8%***	***11%***	***100%***

Despite the complexities involved in measuring food security and vulnerability, it is relatively easy to identify the worst-off households (the most food insecure) and the best-off households (the most food secure) using the above combination of indicators: food consumption and access + shock exposure profiles.

The percentages of households in the **red area** are households that, during the normal season, had a very poor diet or households with poor diet which were often exposed to shocks (both covariate[18] and idiosyncratic[19] shocks). Those households are likely unable to meet their minimum food requirement for a healthy diet; they are not starving but their diet is poor and they seem not to have the means to improve it. These households could be defined as **Food insecure (25%)**.

The percentages of households in the **green area** include households that were doing well in terms of food consumption and also in term of food access. They should have the necessary assets to cope with possible shocks by themselves. These households could be defined as **Food secure (15%)**.

However, the majority of households in the sampled population fit somewhere in between these extremes. The ***yellow area*** in the middle might group the vulnerable households. However, this middle group was not homogeneous in terms of food security characteristics and outcomes, i.e. it grouped households with different degrees and types of vulnerability.

Table 10 – Cross table Access and shocks groups/Food consumption groups

Access & shocks groups	Food Consumption groups					
	very poor	poor	borderline	fairly good	good	*total*
Rely on market and exposed to natural catastrophes	5%	6%	11%	2%	3%	*28%*
Rely on both markets & production and exposed to illness or death of an active member	3%	1%	3%	2%	2%	*10%*
Rely on both markets and production and vulnerable to increased food priced	3%	1%	4%	0%	1%	*9%*
Rely on markets with few reported shocks	4%	8%	12%	2%	3%	*28%*
Mostly land owners and rely on own production with few reported shocks	3%	5%	11%	2%	2%	*24%*
Total	***17%***	***22%***	***42%***	***8%***	***11%***	***100%***

[18] Shocks affecting a population within a defined area
[19] Shocks affecting only some households in a community

The table above differentiates the different groups in the middle groups in terms of food security and vulnerability, creating five different sub-groups. These 3 first sub-groups could be defined as **"Vulnerable to food insecurity" (23%)**.

1	**"Borderline" and "Fairly good" food consumption households that rely on markets and are exposed to natural catastrophes** might be vulnerable to shift toward food insecurity whenever a shock would happen - both **market shocks** *(if prices increase, they probably could not cope, as they are already spending a lot on food and the cash availability seems to be low)* and **natural catastrophes** *(they don't have adequate economic resources to cope with the catastrophe by themselves and very likely would reduce quality/quantity of their food intake)*.
2	**"Borderline" and "Fairly good" food consumption households that rely on markets and are exposed to illness or death of an active HH member** were likely made vulnerable by the death of the breadwinner or another active household member. If another shock occurs, they would easily slide down into food insecurity.
3	**"Poor", "Borderline" and "Fairly good" food consumption households that rely on both markets and production and are vulnerable to increased food prices** were reducing their food intake mostly because they could not cope with the increasing food prices on the market. Their own production alone could not substitute their lost purchasing power. It should be noted that prices had increased for all but only these households reported that increase as a shock. This might indicate that they had already depleted their resources to cope with shocks and if any other would occur, they would move to a food insecurity condition.

These two last sub-groups could be defined as **"Less vulnerable to food insecurity" (37%)**.

4	**"Poor" and "Borderline" food consumption households that rely on markets but experience few shocks** were eating poorly yet relying on the market and spending high share of their outflow on food. Nevertheless they barely reported any shocks. This may indicate they have enough resources to manage to cope with external problems, without considering those hardships as shocks.
5	**"Poor" and "Borderline" food consumption households that are land owners and rely on their own production and experience few shocks** - did not follow common sense logic. These households presented low food intake even if they were not suffering from any major shocks yet they seemed to have extra resources to have a better dietary intake. It is likely those households were following a particular cultural/geographical determined approach to food consumption or were benefiting from external aid. This group requires further investigation, especially looking into the geographical distribution of this vulnerability group.

6.2.2 - Geographic distribution of food insecure/vulnerable groups

As final stage of analysis, it was important to investigate the geographic distribution of the various types of households across the country. The analysis shows that more than 70% of the sample households in *Cluster 9* were classified as food insecure. On the other hand, in the same cluster the highest percentage of food secure households was recorded (more than 20 percent).

Cluster 2 presented more than 60% of sampled households classified as Food insecure or Vulnerable to shocks, *Cluster 8* followed with 55% of the sample households, while more than half the sample in *Clusters 1* and *6* were in the two worse-off categories. On the other hand, more than 70% of the sample households in *Cluster 3* were less vulnerable to shocks or food secure, followed by more than 60% of the sample in *Clusters 4* and *5*. Despite the fact that 21% of the sample households in *Cluster 9* were food secure, only 2% were classified as being less vulnerable to shocks.

The following table is more detailed in order to show the levels of food security related to the vulnerability to shocks, by district cluster. Of those vulnerable to food insecurity, one-quarter of the sample in *Cluster 2* were also vulnerable to natural catastrophes along with around 20% in *Clusters 1* and *6*. Although only 3% of the total households were both vulnerable to food insecurity and vulnerable to illness or death of a household member, the

highest percentages were found in the *Clusters 7* and *8* samples. The analysis also found more than 10% of the households in *Clusters 4* and *8* vulnerable to increased food prices.

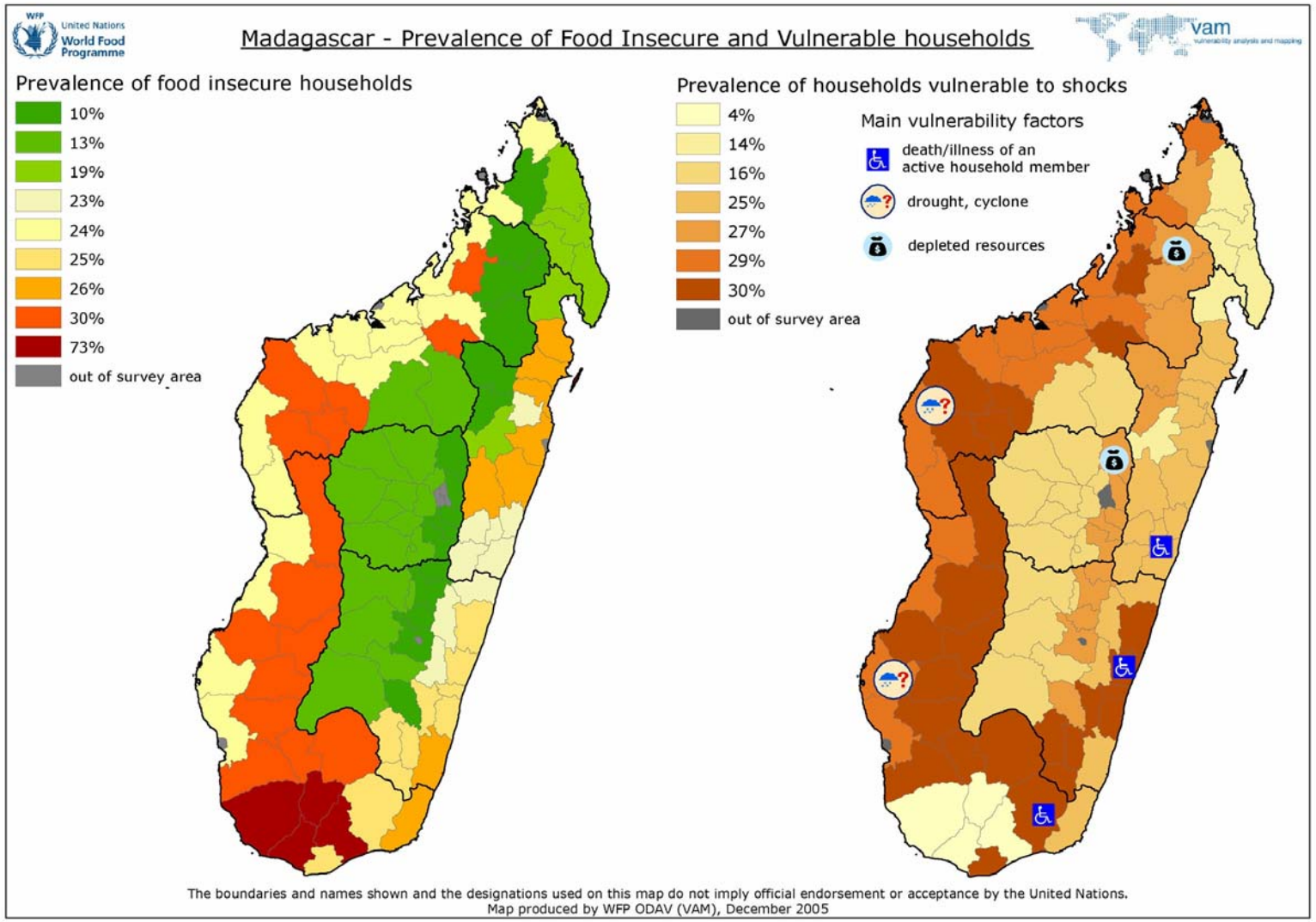
Table 11 - Levels of food security related to the vulnerability to shocks

Cluster	Food insecure	Vulnerable to food insecurity			Less vulnerable		Food secure
		Natural catastrophe	Illness or death of HH member	Increased food prices	Rely on markets – few shocks	Rely on own production – few shocks	
1	24%	20%	4%	5%	21%	13%	13%
2	30%	24%	3%	3%	16%	8%	15%
3	13%	8%	1%	7%	27%	26%	18%
4	10%	13%	3%	10%	22%	31%	10%
5	19%	5%	4%	4%	33%	16%	18%
6	26%	19%	2%	4%	22%	8%	18%
7	23%	15%	6%	4%	23%	21%	8%
8	25%	14%	6%	11%	11%	21%	12%
9	73%	2%	2%	< 1	< 1	1%	21%
Total	***25%***	***14%***	***3%***	***6%***	***20%***	***17%***	***15%***

Nearly 40% of the total households were less vulnerable to food insecurity, ranging from only 2% in *Cluster 9* to half or more in *Clusters 3, 4* and *5*. One-third of the households in *Cluster 5* are less vulnerable to food security, relying on markets and experiencing few shocks. About 25-30% of the households in *Clusters 3* and *4* are less vulnerable to food insecurity, rely on own production and experience few shocks.

Lastly, the lowest percentage of food secure households were found in *Cluster 7*, followed by *Cluster 4*. Overall, each cluster appears to have a similar percentage of households in each food security/vulnerability group with the exception of *Cluster 9* where households are either food insecure (73%) or food secure (21%) with few in the other groups. The map on the following page presents the findings by cluster.

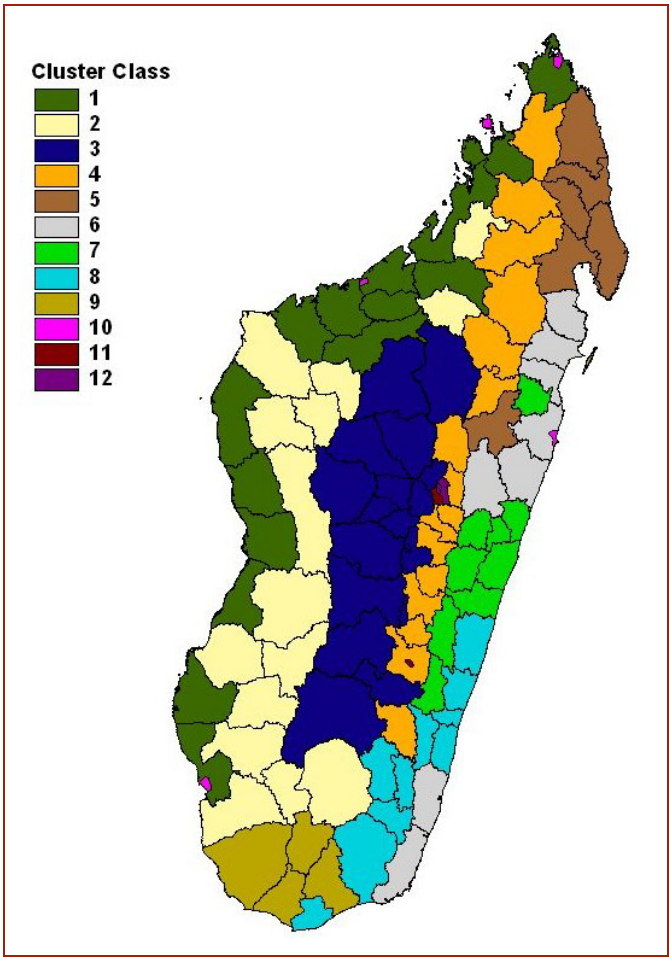
Map 23 – Prevalence of food secure and vulnerable households in Madagascar



Part VII – Conclusions and Recommendations

Section 7.1 – Summary of main findings

The primary objectives of the survey were to identify the hungry poor and vulnerable populations and their areas of settlement, to understand the causes of their food insecurity, and to determine whether food aid has a role in addressing their food insecurity. The findings serve as pre-crisis baseline information against which to measure the effects of a future shock such as a cyclone or drought



On the one hand, the survey has identified food insecure households experiencing a problem of food availability, access or utilization. On the other hand it has pointed out vulnerable households that are at risk of becoming food insecure. Their vulnerability is dependent upon their exposure to risk factors (such as natural disasters) and the coping strategies available to them.

The highest percentage of food insecure households can be found in Cluster 9 (South), followed by Clusters 2 (Western inland area), 6 (South-East / North East littoral area) and 8 (South East). The proportion of vulnerable, but not food insecure, households is highest in Clusters 1 (Western littoral area), 2 (Western inland area), and 8 (South-East), followed by Clusters 4, 6, and 7. Combining **food insecure and vulnerable households**, Cluster 9 (South) is in the most precarious situation, followed by Clusters 2 (Western inland area) and 8 (South-East).

In determining the food security status of the rural population, **natural shocks** have to be taken into account. Almost all villages sampled have been affected by natural shocks, such as cyclones, floods and drought. The worst-off are villages in Clusters 2, 6, 8, and 9. More than 70% of households in Clusters 2 and 6 reported at least one shock and nearly all households did so in Cluster 9. The most often reported shock was cyclone in Clusters 1-5, floods in Clusters 6 and 8, drought in Clusters 7 and 9. Additionally, unusually high levels of crop diseases were reported by Cluster 7 households. The most important **economic shock** was the increase in rice prices that had an especially strong impact on households in Clusters 3, 4, 6, and 7.

Coping strategies related to all kinds of shock consist primarily of reducing the quantity of food and the number of meals consumed per day. In the case of natural shocks, these two major coping mechanisms are supplemented by an over- reliance on forest products. The latter strategy is especially pronounced in Clusters 1, 2, and 9. The sale of cattle formed part of the coping strategy among Cluster 9 households. Taking up temporary wage labour was available as a coping strategy only to households in Cluster 1.

More than 80% of the sample households in Clusters 1,2,6,8, and 9 had bought food on **credit** in the previous six months and more than four-fifths of these households were still in debt at the time of the survey. The highest level of **current debt** was found in Cluster 1 households.

Household food insecurity and its nutritional outcome are mainly due to recurrent disasters, poor infrastructural development, and a low level of diversity in livelihood strategies. This means that the results of the CFSVA can also be of significance for future strategies of poverty reduction, since they also point to the need for increased engagement in the areas of Education, Health, Infrastructure, and Rural Development. No doubt, there are other challenges as well such as the rising expenses to cover basic needs and the concurrent decline in purchase power or the growing level of perceived public insecurity.

Section 7.2 – Education

The lowest levels of **literacy** among heads of household were found in Clusters 7 and 8 (around 55%) and Cluster 9 (34%) while the highest were in Cluster 4 (90%) households. Literacy of spouses ranges from as low as 22% in Cluster 9 up to 77% in Clusters 4 and 5. The likelihood of literacy increases with age: it is 41% in the cohort aged 15-19 years, amounting to 65% in the cohort aged 34-39. Interestingly, **women's educational level** was also rather low in Cluster 2 where nearly 60% of the female spouses had never attended school at all.

Primary school **enrolment** was lowest in Cluster 6 (46%) and Cluster 9 (26%) households, **absenteeism** (children were absent from school for more than one week per month) was most common among children in sampled households from Clusters 1 and 2 (40%). School enrolment and the quality of education are also constrained by the absenteeism of teachers and a school infrastructure as well as the limited accessibility of villages. Around half of the villages in the sample have a **primary school**, but there is none in nearly two-thirds of the sampled villages in Cluster 9 and in half of the villages in Clusters 6 and 2. The next primary school is more than one hour's walking distance from 20% of the sample villages in Cluster 2 and from 40% in Cluster 9. The class per level ratio was around 3:5 in Clusters 3, 8, and 9. **Overcrowded classes** are most common in Cluster 9 and 1 samples.

Half of the villages reported that **school fees** restrained school attendance. The main reason cited for leaving school was in most cases the parents' inability to buy the basic school items (Clusters 3, 6, and 7) and the families' need of the labour of the children (Clusters 2, 3, and 8). In half of all sampled villages the lack of school infrastructure, the absence of teachers, and limited levels at school account, to a large extent, for early school leaving. In Clusters 5 and 6, parents' lack of interest and thus the need for sensitisation were also mentioned.

Section 7.3 – Health

Despite the fact that treatable health problems such as malaria, diarrhoea, respiratory infections and TB are very common, few villages have a **local health centre**. There is a dispensary (CSBII) in 15% of the sample villages in Clusters 1 and 4. One-third of the villages in Clusters 3, 4, 5, and 6 rely on a centre that can be reached in less than one hour. The **fees** often seriously limit access to even basic health care.

Half of the sampled villages in Clusters 3, 4, and 9 had access to a nutritional centre to be reached in less than 3 hours. People in most of the villages with no local nutrition centre in Clusters 1 and 2 had either never heard of one or knew of the existence of a nutrition centre that took 6 hours to reach. .

Stillbirths were most frequent among sample women in Clusters 5 and 9 (31% of the women reported one), with the lowest rate in Cluster 4 (17%). The highest percentage of children described as being 'very small' or 'smaller than normal' at birth was found in Clusters 1 and 9 (35%), followed by Cluster 7 (33%). This rate was lowest in Cluster 5 (13%). The rate of reported **child deaths** was highest in Cluster 8 (44%) and Cluster 2 (40%) and lowest among women in Clusters 5 (21%) and 4 (23%).

The prevalence of **malnutrition in women** of reproductive age varied by district cluster. Women in Clusters 4 & 5 had the highest mean body-mass index (BMI) of the sample while those in Clusters 8 & 2 had the lowest. Nearly half the women in the Cluster 7 sample were found to be underweight (< 45 kgs), followed by nearly 40% in Cluster 8. Women in Cluster 7 were also more likely to be stunted (20% < 145 cms). This rate was 15% in the Cluster 6 sample. Overall, it appears that women in Cluster 7 are the worst off in terms of nutritional outcome while those in Cluster 9 show the lowest prevalence of underweight and no stunting in adult women.

These apparently contradictory results of **nutritional outcomes and food insecurity** can be explained by the fact that there is a considerable share of households that, although less vulnerable to food insecurity, have a poor food consumption profile, basically relying on one main food item, that is usually rice. These households might have insufficient protein intake and their low dietary diversity might also lead to micronutrient deficiencies. Food insecurity (such as in Clusters 9, 2 and 6), however, is often a result of extreme vulnerability to shocks and the lack of coping strategies.

By district cluster, the highest two-week-period prevalence of **diarrhoea in women** was found in Cluster 1 (21%), followed by Cluster 7 (16%), while the lowest was found in Cluster 4 (7%) and Cluster 3 (8%). However, the prevalence of **fever** was 31% in Clusters 7 and 9, followed by Cluster 1 (30%) and Cluster 2 (28%) and lowest in Cluster 3 (13%). More than 10% of the women in Cluster 1 and Cluster 7 reported suffering from both illnesses in the 2 weeks prior to the survey.

The prevalence of **acute malnutrition** in children was highest in Cluster 8 (10.8%), followed by Cluster 5 (10.6%) and Cluster 2 (9.9%). Wasting was low in Cluster 1 (4.3%) and Cluster 9 (5.8%). The highest prevalence of **underweight** in children was found in Cluster 7 where more than 45% of the children in the sample had low weight for their age. More than 40% of the children in Clusters 4 and 8 were also underweight. The prevalence of underweight children was lowest in Clusters 1, 2, 5, and 9. The greatest problems in **chronic malnutrition** in children lie along a ridge to the east of the middle of the island. In Cluster 4, nearly two-thirds of the sampled children were stunted, followed by half the children in Clusters 3 (50%) and 6 (48.8%). The prevalence of chronic malnutrition was lowest in Clusters 1 and 2 where only around 30% of the children were malnourished.

The prevalence of **severe underweight** was highest in Cluster 8 (12%), followed by Cluster 4 (11%) and lowest in Clusters 5 and 9 (5%). Around 20% of the children in the sample were **severely stunted** with the worst levels in Cluster 4 (32%), followed by Clusters 8 (26%) and 7 (25%).

The highest disease prevalence is found mostly in the western part of the country. More than 30% of the young children in Clusters 1, 2, and 8 had experienced **non-specific fever** in the 2 weeks prior to the survey. The prevalence of **acute respiratory infection** (ARI) was highest in Clusters 8 (24%) and 1 (20%) and less than 10% in Clusters 3 and 4. The 2-week period prevalence of **diarrhoea** was also highest in the children in Clusters 1 and 2 (21%), and 7 (20%).

Section 7.4 – Infrastructure

Most villages in the sample have no direct access to **public transportation**. Less than one-quarter of the sample villages is connected to the bus network in Clusters 3, 6, 7, 8, and only 5% of the villages in Cluster 9. It takes sometimes as much as 6 hours to reach a bus line from most villages in Clusters 1, 2, 6, 7, and 9, if no bus passes through the village. While bus roads are generally served throughout the year, accessibility is difficult for up to 5 months in Clusters 7, 2, and 1 and up to 7 months from the sampled villages in Cluster 4.

Less than 30% of the sample villages host a **market**. The walking distance to the nearest market from villages without a marketplace of their own varies between 1 to 3 hours for more than half of the villages in all Clusters. The worst disruptions in **market supply** have been experienced by the sampled villages in Clusters 8 and 9. Only 7% of the sample households sampled in Cluster 4 and 11% in Cluster 9, reported going to a market 4-7 times a week.

Village access to **water** is dependent on the proximity of rivers or lakes in most Clusters. About half of the villages in all Clusters experience difficulties with the water supply. This percentage is much lower in Cluster 2 (one-quarter) and highest (two-thirds) in Clusters 5 and 9. Households in Clusters 1, 5, 9 and especially 8 have the least likely to access drinking water from an improved source.

Section 7.5 – Rural development

Villagers' chief **economic activity** at the community level is the marketing of crops, then the sale of cattle and cash crops. To a lesser extent, handicrafts are of importance in Clusters 2 and 4.

Crop diversity is very low in Cluster 5 (mostly rice) and low in Clusters 1, 2 (mostly rice), and Cluster 6 (mostly cassava). The main harvest does not adequately provide food for the majority of households: supply is insufficient for more than 6 months in Cluster 9 households and less so among households in Clusters 2, 6, 7, and 8.

In terms of **asset diversity**, households Clusters 7 and 8 were the worst off. In Clusters 2 and 8, only two-thirds of the households owned any farming equipment. **Land ownership** was limited in Cluster 5 where just over 70% of sample households had access to farming land. The average size of owned and/or cultivated plots was the lowest in Clusters 6 and 5. Only 19 % of households in Cluster 1 and 25% in Cluster 6 cultivated a vegetable garden.

The average monthly **expenditure on food** by the sampled households was the highest in Clusters 2 and 6 and still relatively high in Clusters 1, 5, 7, and 8. The proportion of food consumed the previous week that was purchased, was however, the highest in Clusters 1, 2, 5, and 6 and the lowest in Clusters 4 and 9.

There is no **community granary** in the majority of the villages and even if there is a community storage facility, very few people make use of them. Mutual mistrust and the lack of leadership skills were cited to account for the lack of associations within the communities.

Villagers were asked which aspects of their lives they thought were most important to **develop**. In Clusters 1-4 they mentioned means to **improve agricultural production**, including seeds, fertilizers and insecticide as their immediate needs from a short-term perspective. Needs related to **drinking water** were considered crucial in Clusters 1 and 7-9. Water management issues related to irrigation and drainage were mainly mentioned in Clusters 3 and 5. Needs related to education such as building schools, literacy initiatives, and the recruitment of teachers were seen as of key importance in Clusters 4, 6, and 7 and, to a lesser extent, in Clusters 1, 2, and 8. Interestingly, the problem of road infrastructure was seen as a secondary issue in most Clusters.

Section 7.6 – Overview of WFP-supported programme options

The Comprehensive Food Security and Vulnerability Analysis (CFSVA) survey covered all rural districts in the country. Principal Component and Cluster analyses were used to create district clusters that are homogeneous in terms of the geo-physical and socio-demographic characteristics. The sample scheme was designed in an attempt to provide representative information for each of the district clusters. The options and recommendations presented below do not take into account the following factors due to the nature of the survey:

- Current WFP-supported activities – In places where WFP and partners are implementing food-based interventions, recommendations should reflect the need to continue and, in come cases, expand food-based programming.
- Capacity of partners to implement programmes – The scope of this survey did not include an analysis of the implementation capacity of NGOs or Government sectors to implement either food- or non-food-based interventions. The objectives of the CFSVA still intend to identify the hunger poor and where they are located, to understand why they are food insecurity and to determine if food aid has a role in addressing thief food insecurity.

7.6.1 – Main causes of food insecurity

Household food insecurity appears to be mainly the result of recurrent shocks, poor health and transport infrastructure and little diversity of livelihood opportunities. These factors affect all three pillars of food security: natural disasters can directly and indirectly affect food **availability**, poor transport infrastructure and limited livelihood opportunities negatively affect household food **access** while poor health infrastructure, lack of access to safe drinking water and poor maternal education impact on an individual's biological **utilization** of food. Therefore health, education and risk reduction to economic and natural hazard shocks should be the priority of any macro and micro-level interventions.

7.6.2 – General interventions

Improvements in food **availability** can be pursued at the national level by supporting food policy analysis, particularly in the areas of domestic food production, food imports and

national food balance sheet. This will be especially important, given the predicted growth in the national food gap over the coming decade. The recent market analysis done by WFP in 2005 is an important basis for this. At the regional level, markets systems development and crop diversification are axes to be further explored. Establishing market linkages especially for the southern part of the country is very important. Opening of trade links, market structures and storage facilities in this remote region should accompany efforts at intensifying staple crop production.

In rural regions with good market **access**, crop diversification and agricultural intensification should be pursued in order to increase both food crop production and the incomes generated through market sales. The particular situation of small farms with limited access to prime crop land must be considered. Improved technologies and better extension programs are needed for food crops such as upland rice, maize and manioc, which are more important to the rural poor than irrigated rice. For cash crops, such as vegetable and tree crops, market information systems will be required, as well as adaptive research and extension. For all crops the availability of inputs must be addressed, while the provision of credit and risk insurance should be considered as priorities.

This study focuses on rural food insecurity, more access issues should be wider considered within the framework of urban vulnerability analysis.

To achieve a better **utilisation** of food, the focus should be on the most vulnerable groups - women or reproductive age (15-49 years) and children less than 5 years of age. With respect to maternal health, areas in critical need of action include maternal nutrition (increase protein/energy and micro-nutrient intake, particularly vitamin A and iron), ante-natal health services (particularly delivery assistance), and women's knowledge and practices in the areas of family planning (particularly birth spacing; reduce the age of first pregnancy).

With respect to pre-school children, policy and programmes should focus on promoting exclusive breastfeeding and improved knowledge on timely and appropriate complementary feeding practices. Improving immunization coverage will also be important as current rates are low. Complementary to all those initiatives, efforts must be upgraded to improve the availability of potable water and sanitation infrastructure in all areas.

7.6.3 – Role of food aid

As the causes of food insecurity are complex and related to chronic poverty, recurrent natural disasters and cultural factors, food aid alone is not the answer to address household food insecurity in rural Madagascar. However, in the short-term, food based programmes can be a viable solution to improve the asset base of vulnerable rural households and improve their access to food. Non-food interventions from the Government and other agencies are essential.

The findings suggest that nutrition and health problems, especially among women and children are matters of concern in the survey areas. Here, fortified blended food, targeted through *Maternal and child health* (*MCH) programmes* to expectant and nursing mothers can continue to play a significant role in improving health and nutrition status and to encourage use of better ante-natal care, decreasing the likelihood of a malnourished woman giving birth to a malnourished baby.

Although in many places primary schools are available, others are still lacking the basic facilities which, in the end, limit the possibilities for increased enrolment and attendance. Therefore continued and expanded implementation of *school feeding* programmes, especially in areas with a high prevalence of food insecure households, could have an impact not only on household food security, but also as an investment in the future of rural households through improved learning.

In order to address some rural infrastructure problems and also to improve community's ability to mitigate natural disasters, food-for-work and food-for-asset creation activities could have a role. Rural road construction, planting of drought-resistant crops or planting trees to block the potentially damaging winds from a cyclone are some activities that could benefit rural populations.

Section 7.7 – Summaries and possible areas for interventions, by province

Cluster 1: Ambanja, Ambato-Boina, Analalava, Antsalova, Antsiranana II, Belon I Tsiribihina, Boriziny, Mahajanga II, Maintirano, Marovoay, Mitsinjo, Morombe, Morondava, Soalala, Toliary II districts

Main findings

- The most often reported shock are cyclone (44%), followed by drought or irregular rains (29%), flooding (22%);
- Highest percentage of sample households with a disabled or chronically ill member (17%)
- Change in food consumption and temporary wage labour are the most frequent ways to cope;
- High level of indebtedness (more than 80% of the households had taken food on credit in the past six months and 70% of these were still in debt – on average 175,000 FMG (USD $16) – the highest among all district clusters);
- High reliance on markets: more than 70% of the food consumed in the previous week by sample households was purchased – the highest of all district clusters;
- Good access to land - the average size of land cultivated (0.65ha) and owned (0.62ha); but only 19% have an access to vegetable garden
- Reasonable school enrolment, but highest level of absenteeism of primary school children (46%)
- Poor access to good quality water - only 25% of the households use improved sources of water (dry season);
- High percentage (22%) of non-pregnant women are considered to be malnourished *(BMI<18.5 kg/m^2)*
- Lowest prevalence of wasting and stunting in young children.
- 24% of households are considered food insecure and 30% vulnerable to shocks (high)

Possible areas of intervention

- Food: MCH programmes (with education), school feeding to reduce absenteeism; FFW/FFA programmes related to disaster mitigation.
- Non-food: Water and sanitation; agricultural extension and environmental protection; micro-credit schemes.

*Cluster 2**:** Ambatomainty, Ankazoabo-Atsimo, Antsohihy, Benenitra, Beroroha, Besalampy, Betioky-Atsimo, Betroka, Kandreho, Mahabo, Mampikony, Manja, Miandrivazo, Morafenobe, Sakaraha districts*

Main findings

- High exposure to shock - more than 70% of the sample households report that they had experienced at least one shock or unusual event in the past year.
- The most often reported shocks are cyclone (42%), followed by drought or irregular rains (33%) and flooding (22%)
- 15% of sample households had a disabled or chronically ill member, the highest of all clusters;
- Change in food consumption (33%) and increased consumption of wild food (24%) are the most frequent cited way to cope
- High level of indebtedness (more than 80% of the households had taken food on credit in the past six months and 65% of these were still in debt – on average 100,000 FMG (USD $9.1))
- 63% of the total monthly expenditure is for food with an average monthly per capita expenditure for food of 76,800 FMG (USD $7.0) – the highest of all clusters.
- In terms of assets ownership, the households in this cluster are considered average;
- Good access to land - the average size of land cultivated (0.64ha) and owned (0.62ha)
- Average school enrolment but high level of absenteeism

- Highest percentage (23%) of non-pregnant women are considered to be malnourished *(BMI<18.5 kg/m^2)*;
- Acute malnutrition in children is high (10%)
- 31% of households are considered food insecure (high) and 30% vulnerable to shocks (high)

Possible areas of intervention

- Food: MCH programmes (with education), possible seasonal supplementary feeding programmes for children, school feeding to reduce absenteeism; FFW/FFA programmes related to disaster mitigation.
- Non-food: Water and sanitation, agricultural extension and environmental protection; micro-credit schemes; programmes to mitigate effects of cyclones; early warning and contingency planning.

*Cluster 3**:** Ambalavao, Ambatofinandrahana, Ambohidratrimo, Ankazobe, Antsirabe I & II, Arivonimamo, Betafo, Faratsiho, Fenoarivo-Afovoany, Ihosy, Ikalamavony, Maevatanana, Manandriana, Miarinarivo, Soavinandriana, Tsaratanana, Tsiroanomandidy districts*

Main findings

- Low exposure to external shock - less than 50% households interviewed have reported that they had experienced at least one shock or unusual event in the past year
- The most often reported shocks are cyclone (46%), followed by increased in food prices (16%)
- Change in food consumption (49%) and borrowing money (17%) were the more frequent way for households in this cluster to cope
- High level of indebtedness: 43% of the households borrowed money in 2005
- In terms of assets ownership, the households in this cluster are considered better off;
- Nearly 50% of the households have a vegetable garden and the crop diversity in this cluster is relatively high
- Nearly 50% of the households indicated that their main food crop harvest would last 6 or more months.
- More than 80% of the household heads were literate
- High level of school enrolment (more than 60% of the household had a primary school aged child enrolled in school)
- Good access to clean drinkable water (nearly 50% of the households acquire their drinking water from an improved source)
- Malnutrition in women is low but stunting in children is high (50%)
- Only 13% of households are considered to be food insecure and 16% vulnerable to shocks; 18% of household are considered to be food secure (one of the highest)

Possible areas of intervention

- Food: Nutrition education
- Non-food: Micro-credit schemes; programmes to mitigate effects of cyclones.

*Cluster 4**:** Ambatolampy, Ambilobe, Ambohimahasoa, Ambositra, Amparafaravola, Andilamena, Andramasina, Anjozorobe, Antanifotsy, Bealanana, Befandriana-Avaratra, Fandriana, Fianarantsoa II, Ivohibe, Mandritsara, Manjakandriana districts*

Main findings

- Average percentage (60%) of HH experienced a shock or unusual event in the past year.
- The most often reported shocks are cyclone (23%), followed by increased in food prices (22%) and floods (21%)
- Change in food consumption (29%) was the main way for household to cope
- In terms of assets ownership, the households in this cluster are considered better-off;

- Lower share of total monthly expenditure for food (51%) and consequently low reliance on purchased food for consumption.
- More than 60% of the households have a vegetable garden and the crop diversity in this cluster is relatively high
- 48% of the households indicated that their main food crop harvest would last 6 or more months.
- High level of literacy (nearly 90% of the household heads were literate)
- High school enrolment and low absenteeism
- Only 10% of households are considered to be food insecure (the lowest) and 27% vulnerable to shocks; at the same time, only 10% of household are considered to be food secure (one of the lowest)
- Lowest prevalence of malnutrition in women (15%)
- Highest prevalence of stunting (65%) in children less than 5 years of age

Possible areas of intervention

- Food: Nutrition education
- Non-food: Agricultural extension and environmental protection

*Cluster 5**:** Ambatondrazaka, Andapa, Antalaha, Maroantsetra, Sambava, Vohimarina districts*

Main findings

- Average percentage experiencing recent shocks (50%) with the most often reported shocks being cyclone (45%), followed by serious illness or accident of a household member (10%)
- Change in food consumption (29%), followed by borrowing money (18%) are the main ways for household to cope
- Low reliance on borrowing and debt (only 25% of the households borrowed money in 2005) and just 40% of the household had taken food on credit in the past 6 months
- In terms of assets ownership, the households in this cluster are considered the best off;
- High level of expenditure on food (57% of total monthly expenditure for sample households is on food)
- Poor access to land (only 70% of the sample households had access to agricultural land)
- High level of literacy (more than 80% of the household heads were literate)
- High primary school enrolment and low absenteeism
- Poor access to drinkable water (only 25% of the households acquire their drinking water from an improved source)
- Lower prevalence of malnutrition in women (16%) but high levels of acute malnutrition in young children (11%).
- 19% of households are considered to be food insecure and 14% vulnerable to shocks; and 18% of households are considered to be food secure (one of the highest)

Possible areas of intervention

- Food: Nutrition education and seasonal supplementary feeding
- Non-food: Water and sanitation, agricultural extension and environmental protection

Cluster 6: Fenoarivo-Atsinanana, Mananara-Avaratra, Moramanga, Soanierana-Ivongo, Taolanaro, Toamasina II, Vangaindrano, Vohibinany districts

Main findings

- High exposure to shocks - 75% of the sample households reported that they had experienced at least one shock or unusual event in the past year
- The most often reported shocks are flooding (59%), followed by unusually high levels of crop diseases (18%)
- Change in food consumption (29%) is the main coping strategy
- Low reliance on borrowing and debt (only 25% of the households borrowed money in 2005) and just 40% of the household had taken food on credit in the past 6 months
- In terms of assets ownership, the households in this cluster are considered to be about average;
- High share of monthly expenditure is for food (68%)
- Small parcels of land owned and cultivated (the average size of land cultivated (0.33 ha) and owned (0.31%) are the smallest) and only 25% of the households have a vegetable garden
- High level of indebtedness (80% (high) of the households had taken food on credit in the past six months and 81% (high) of these were still in debt – on average 75,000 FMG (USD $6.8)).
- High number of female headed of household (29%)
- Low level of school enrolment
- Poor access to drinking water from an improved source (25%)
- Higher levels of malnutrition in women - 21% women with a BMI< 18.5kg/m^2 and 15% women < 145 cm)
- High prevalence (49%) of stunting in children
- High percentage of food insecure households (26%) and households vulnerable to shock (26%); at the same time 18.4% of households are considered to be food secure (one of the highest)

Possible areas of intervention

- Food: MCH programmes (with education), school feeding to increase enrolment; FFW/FFA programmes related to disaster mitigation.
- Non-food: Water and sanitation; agricultural extension and environmental protection; skills training (FHH), micro-credit schemes (especially for female-headed households); disaster prevention (flooding) and mitigation and contingency planning.

Cluster 7: Anoside An-Ala, Antanambao-Manampotsy, Ifanadiana, Ikongo, Mahanoro, Marolambo, Nosy-Varika, Vatomandry, Vavatenina districts

Main findings

- High exposure to shock with 66% of the sample households reported that they had experienced at least one shock or unusual event in the past year.
- The most often reported shock was high level of crop diseases (32%) followed by drought or irregular rains (30%)
- Change in food consumption (19%) is a main coping strategy
- In terms of assets ownership, the households in this cluster are considered to be worse off;
- High level of expenditure on food (59% of total monthly expenditure for sample households is on food) (one of the highest)
- Good access to land ownership (more than 95% of the sample households had access to agricultural land)
- High percentage of female headed of households (28%)
- Poor literacy (only 56% of household heads are literate)

- High level of absenteeism at school (33% of primary school aged children have been absent from school for one week in the last month of the previous school year)
- Very high levels of malnutrition in women, with 21% with a BMI< 18.5kg/m^2, 50% women <45 kg (underweight) and 20% < 145 cm (stunted).
- Highest underweight (45%) in children and high prevalence of stunting (49%)
- High percentage of food insecure households (23%) and 25% vulnerable to shocks); only 8% of households are considered to be food secure (the lowest)

Possible areas of intervention

- Food: MCH programmes (with education), seasonal supplementary feeding programmes, school feeding to prevent absenteeism; FFW/FFA programmes related to disaster mitigation.
- Non-food: Water and sanitation; agricultural extension (especially disease control) and environmental protection; skills training (FHH), micro-credit schemes (especially for female-headed households); adult literacy

*Cluster 8**:** Amboadary-Atsimo, Befotaka, Farafangana, Iakora, Manakara-Atsimo, Mananjary, Midongy-Atsimo, Tsihombe, Vohipeno, Vondrozo districts*

Main findings

- High exposure to shock - 66% of the sample households reported that they had experienced at least one shock or unusual event in the past year
- The most often reported shock was flooding (32%) followed by increased of food prices (18%) and drought or irregular rains (16%) but also death of an active household member.
- Change in food consumption (57%) and purchasing food on credit are the main coping strategies
- In terms of assets ownership, the households in this cluster are considered to be worse off;
- High level of expenditure on food (57% of total monthly expenditure for sample households is on food) (one of the highest)
- High level of indebtedness (75% households had taken food on credit in the past six months and 80% (high) of these were still in debt – on average 30,000 FMG (USD $2.7) (lowest))
- High percentage of female headed of household (25%)
- Poor literacy level - only 52% of household heads are literate.
- Good level of school enrolment with 61% of the household have a primary school aged child enrolled in school
- Very poor access to safe drinking water with less than 10% households acquiring their drinking water from an improved source
- High levels of malnutrition in women with 40% < 45 kgs.
- Highest wasting (11%) and high prevalence of underweight (43%) and stunting (47%) in children under 5
- High number of food insecure households (25%) and 31% vulnerable to shock

Possible areas of intervention

- Food: MCH programmes (with education), seasonal supplementary feeding programmes, FFW/FFA programmes related to disaster mitigation.
- Non-food: Water and sanitation; agricultural extension and environmental protection; skills training (FHH), micro-credit schemes (especially for female-headed households); adult literacy

*Cluster 9**: Ambovombe-Androy, Ampanihy, Bekily, Beloha, Nosy-Boraha districts*

Main findings

- Highest exposure to shock with nearly all the sample households experiencing at least one shock or unusual event in the past year
- The most often reported shocks are drought or irregular rains (53%) followed by the death of an active household member (28%) and increased in food prices (23%)
- Sale of cattle (43%), followed by changing food consumption (24%) and borrowing money (24%) are the main coping strategies
- In terms of assets ownership, the households in this cluster are considered to be below average;
- Low level of expenditure on food (43% of total monthly expenditure for sample households is on food)
- High level of indebtedness - 43% households of this cluster have borrowed money in 2005 and more than 80% households had taken food on credit in the past six months and 86% (highest) of these were still in debt – on average 74,000 FMG (USD $6.7)
- Good access to land with more than 90% of the sample household having acces to land and an average size of land cultivated (0.60 ha) and owned (0.59 ha) among the highest
- High percentage of female headed of household (25%)
- Lowest literacy level with only 34% of household heads literate
- Very poor level of school enrolment with only 26% of the household who have a primary school aged child enrolled in school and high level of absenteeism (33%)
- Poor access to safe drinking water with 25% households acquiring their drinking water from an improved source
- Relatively low prevalence of malnutrition in both women and children
- Highest prevalence of food insecure households (73%) and also the highest percentage of food secure households (21%)

Possible areas of intervention

- Food: School feeding programmes to increase enrolment and decrease absenteeism, FFW/FFA programmes related to disaster mitigation (drought)
- Non-food: Water and sanitation; agricultural extension and environmental protection; veterinary assistance, micro-credit schemes, adult literacy; poverty reduction; improved **marketing system;** improved health infrastructure; early warning and contingency planning.

Annex I – Descriptive tables - household questionnaires

Table 1.1 – Main ethnic groups of respondents

Cluster	N	Main ethnic groups		
1	227	Atsimo Andrefana = 21%	Sofia = 16%	Boeny = 12%
2	247	Menabe = 24%	Atsimo Andrefana = 17%	Sofia = 13%
3	287	Vakinankaratra = 31%	Amoroni'I Mania = 18%	Analamange = 14%
4	289	Amoroni'I Mania = 19%	Haute Matsiara = 19%	Vakinankaratra = 17%
5	245	Sava = 57%	Alaotra Mangoro = 16%	Analanjirofo = 16%
6	268	Analanjirofo = 27%	Anosy = 24%	Atsimo Atsinanana = 19%
7	247	Vatovavy Fitovinany = 44%	Atsinanana = 36%	Analanjirofo = 11%
8	251	Vatovavy Fitovinany = 46%	Atsimo Atsinanana = 34%	Anosy = 9%
9	200	Androy = 75%	Atsimo Andrefana = 24%	-
Total	***2261***	***Vatovavy Fitovinany = 11%***	***Androy = 9%***	***Atsimo Atsinanana = 8%***

Table 1.2 – Household demographics

	% FHH	Single Female head	Elderly head (60+)	Head age		Chronically ill or disabled members	
				Female	Male	Any	HH head
1	16%	10%	14%	38 years	38 years	17%	6%
2	17%	10%	17%	40 years	41 years	15%	8%
3	10%	8%	11%	44 years*	37 years	7%	1%
4	11%	6%	11%	45 years*	38 years	9%	3%
5	16%	13%	13%	40 years	38 years	7%	3%
6	29%	16%	9%	34.5 years	36 years	9%	2%
7	28%	15%	9%	37 years	36 years	9%	5%
8	25%	13%	13%	35 years	40 years	6%	4%
9	25%	12%	17%	40 years	40 years	6%	4%
**Difference statistically significant (p < 0.01)*							

Table 1.3 – Household size and education of head

	HH total	% with 7 or more members	% dependents	Head literate	% no education	
					Head	Spouse
1	5.8	23%	57%	67%	34%	44%
2	5.9	26%	56%	57%	47%	61%
3	5.6	17%	55%	83%	16%	26%
4	5.7	23%	54%	87%	13%	19%
5	5.3	20%	51%	82%	23%	27%
6	4.7	12%	54%	67%	31%	45%
7	5.2	15%	52%	56%	35%	49%
8	5.5	19%	56%	52%	42%	57%
9	5.2	17%	55%	34%	78%	82%
Total	***5.4***	**-**	**-**	***61%***	**-**	**-**

Table 1.4 – Students and absences

	Any students in household?			Absent for more than 1 week?*	Reasons absent?	
	Primary	Secondary	University			
1	52%	7%	2%	46%	Illness = 49%	Teacher absent = 49%
2	50%	4%	0	41%	Illness = 56%	Teacher absent = 24%
3	61%	11%	3%	30%	Illness = 48%	Teacher absent = 21%
4	62%	15%	2%	23%	Illness = 65%	Teacher absent = 23%
5	58%	13%	2%	23%	Illness = 72%	Teacher absent = 19%
6	46%	6%	1%	25%	Illness = 39%	Teacher absent / no food or income = 32%
7	56%	3%	1%	33%	Illness = 68%	Teacher absent = 27%
8	61%	10%	0	28%	Illness = 72%	Teacher absent = 51%
9	26%	5%	1%	33%	Illness = 29%	Farm work = 29%
**Primary students only*						

Table 1.5 – Housing ownership, age and crowding

	Owner of house	Year moved into current residence				Persons per room	% with > 5 persons/room
		1980-89	1990-99	2000-04	2005		
1	93%	31%	20%	42%	6%	3.9	22%
2	91%	31%	21%	40%	7%	4.0	25%
3	88%	30%	33%	30%	6%	2.7	8%
4	85%	37%	28%	30%	4%	2.9	7%
5	89%	33%	27%	34%	7%	3.6	16%
6	88%	35%	26%	33%	6%	3.7	17%
7	87%	26%	23%	39%	11%	4.2	23%
8	95%	41%	26%	29%	4%	4.0	21%
9	93%	38%	26%	30%	6%	3.4	13%

Table 1.6 – Type of housing

	Permanent family house	Room in permanent family house	House made of pise	House made of mixed materials	Hut of metal sheets	Wooden hut	Other
1	6%	1%	17%	50%	1%	21%	5%
2	5%	2%	32%	57%	-	3%	2%
3	19%	6%	42%	30%	-	2%	1%
4	31%	3%	33%	20%	-	9%	3%
5	12%	1%	2%	5%	11%	67%	2%
6	3%	-	3%	26%	-	54%	13%
7	-	1%	3%	17%	-	51%	28%
8	1%	-	15%	31%	-	52%	1%
9	-	-	30%	28%	1%	32%	7%

Table 1.7 – Source of drinking water, sanitation and housing amenities

	Water from improved source		Drinking water from river or stream		Safe sanitation	Lighting from lamp	Cook with charcoal
	Dry season	Rainy	Dry season	Rainy			
1	25%	28%	40%	41%	4%	97%	93%
2	30%	33%	38%	39%	1%	98%	96%
3	48%	47%	21%	20%	26%	89%*	91%
4	30%	34%	51%	48%	20%	93%	96%
5	21%	26%	40%	38%	93%	93%	95%
6	30%	31%	62%	60%	26%	95%	95%
7	29%	30%	63%	62%	26%	86%**	100%
8	6%	10%	74%	71%	3%	94%	100%
9	23%	25%	38%	43%	4%	92%	98%

**7% use candles **11% use wood*

Table 1.8 – Distance to market and market access

	How often visit market?					How travel to market?	
	4-7 days/week	1-3 days/week	Every 2 weeks	Once a month	Never	By foot	On bicycle
1	42%	43%	12%	3%	-	90%	1%
2	32%	43%	17%	7%	< 1%	97%	< 1%
3	24%	53%	10%	12%	1%	89%	9%
4	11%	56%	22%	10%	< 1%	91%	6%
5	31%	33%	12%	18%	6%	92%	4%
6	34%	37%	15%	4%	10%	94%	5%
7	38%	40%	9%	9%	4%	98%	< 1%
8	25%	55%	14%	5%	1%	98%	1%
9	7%	53%	29%	10%	1%	96%	2%

Table 1.9 – Ownership of non-productive assets

	Bed	Table	Chair	Radio	Television	Cooking utensils
1	74%	63%	45%	55%	3%	96%
2	61%	41%	26%	46%	< 1%	92%
3	74%	50%	40%	68%	5%	84%
4	74%	54%	48%	63%	2%	88%
5	96%	78%	72%	67%	5%	89%
6	77%	49%	50%	43%	2%	87%
7	51%	31%	29%	24%	0	91%
8	37%	27%	22%	33%	2%	95%
9	51%	32%	12%	23%	1%	99%

Table 1.10 – Ownership of productive assets

	Fishing equipment	Bicycle	Motorcycle	Car	Boat	Cart	Sewing machine	Farming equipment
1	19%	18%	2%	1%	8%	31%	15%	70%
2	21%	11%	< 1%	1%	2%	30%	9%	66%
3	17%	28%	2%	1%	3%	18%	9%	78%
4	11%	26%	1%	< 1%	2%	10%	11%	71%
5	17%	42%	2%	1%	4%	8%	17%	82%
6	13%	18%	2%	1%	6%	2%	11%	77%
7	11%	5%	1%	< 1%	2%	1%	5%	88%
8	14%	8%	0	1%	1%	6%	7%	67%
9	4%	14%	< 1%	< 1%	< 1%	42%	8%	91%

Table 1.11 – Asset ownership categories

	Asset ownership categories (number of different assets)				% productive assets (of total)	
	0-1	2-3	4-6	7 or more	Mean	Median
1	4%	26%	42%	28%	31%	33%
2	8%	38%	42%	13%	33%	33%
3	6%	30%	41%	24%	33%	33%
4	5%	32%	42%	21%	28%	29%
5	1%	10%	54%	35%	28%	29%
6	7%	33%	41%	19%	29%	29%
7	6%	55%	34%	5%	36%	33%
8	14%	53%	25%	8%	32%	33%
9	4%	46%	43%	7%	43%	50%

Table 1.12 – Borrowing and debt

	Borrow money this year?	Borrow from whom?			Taken food on credit – 6 months	In debt for food on credit	Median amount (Francs)
		Parents/ friends	Local/ bank	Charity/ NGO			
1	40%	91%	9%	-	82%	70%	175,000
2	35%	91%	6%	3%	83%	65%	100,000
3	43%	96%	2%	2%	59%	57%	50,000
4	39%	94%	5%	1%	70%	43%	50,000
5	25%	83%	12%	5%	43%	54%	137,500
6	31%	96%	4%	-	80%	81%	75,000
7	27%	100%	-	-	76%	80%	30,000
8	35%	95%	5%	-	83%	72%	100,000
9	43%	95%	1%	4%	81%	86%	74,000

Table 1.13 – Vegetable garden ownership and cereal storage

	Have vegetable garden	How store cereals?				
		Bag	Granary	Pot	Storage room	Hole
1	19%	67%	5%	1%	7%	21%
2	30%	65%	2%	1%	14%	18%
3	48%	67%	15%	1%	8%	9%
4	62%	74%	11%	< 1	10%	4%
5	44%	60%	16%	2%	14%	8%
6	26%	47%	14%	0	24%	15%
7	30%	42%	22%	1%	23%	12%
8	39%	47%	18%	2%	29%	4%
9	42%	53%	8%	0	25%	14%

Table 1.14a – Livestock ownership

	Poultry		Goats		Sheep		Pigs	
	% owning	#	% owning	#	% owning	#	% owning	#
1	71%	8	5%	3.5	1%	1	10%	2
2	63%	8	3%	6	3%	3.5	6%	2
3	68%	8	-	-	-	-	38%	2
4	74%	8	3%	3	-	-	27%	2
5	69%	10	2%	1	1%	1	6%	1
6	65%	5	1%	1	-	-	5%	1
7	73%	7	1%	3	-	-	17%	1
8	71%	10	5%	15	4%	13.5	8%	2
9	76%	7	41%	10	47%	8	1%	1

Table 1.14b – Livestock ownership

	Bulls		Cattle		Oxen		Other cattle	
	% owning	#	% owning	#	% owning	#	% owning	#
1	6%	5	10%	3	41%	2	23%	4
2	13%	4	13%	10	38%	2	25%	6
3	1%	1	12%	1	27%	2	13%	2
4	4%	3	12%	2	31%	2	15%	3
5	3%	1	11%	2	24%	3	4%	2
6	4%	2	8%	1	16%	2	12%	2
7	4%	4	4%	1	4%	2	7%	1
8	8%	4	6%	3.5	18%	3	7%	5
9	41%	3.5	14%	5	44%	2	40%	9

Table 1.15 – Land ownership and cultivation

	% HH with no land	% HH with < 0.51 ha	% HH with > 0.5 ha	Mean size (ha)	
				Owned	Cultivated
1	19%	17%	65%	0.62	0.65
2	21%	13%	66%	0.62	0.64
3	22%	30%	48%	0.48	0.46
4	15%	32%	53%	0.52	0.45
5	27%	25%	49%	0.44	0.47
6	21%	48%	31%	0.31	0.33
7	6%	37%	56%	0.52	0.52
8	9%	33%	58%	0.55	0.51
9	8%	31%	62%	0.60	0.59
Total	***17%***	***30%***	***54%***	***0.51***	***0.51***

Table 1.16 – Type of land owned

	Wetland with good irrigation	Wetland with poor irrigation	Dryland	Other
1	36%	42%	63%	29%
2	34%	56%	58%	34%
3	68%	35%	76%	18%
4	60%	53%	78%	29%
5	31%	33%	76%	4%
6	51%	30%	68%	26%
7	39%	44%	81%	13%
8	53%	43%	70%	25%
9	5%	14%	100%	18%
Total	**43%**	**39%**	**74%**	**22%**

Table 1.17 – Number of different crops cultivated

	One crop	Two crops	Three crops	Four crops	Five or more
1	34%	32%	27%	5%	2%
2	34%	27%	20%	11%	8%
3	17%	35%	22%	11%	16%
4	16%	28%	40%	11%	5%
5	42%	42%	16%	-	-
6	21%	47%	28%	4%	-
7	23%	41%	21%	7%	8%
8	5%	20%	35%	20%	20%
9	5%	23%	40%	17%	15%
Total	***21%***	***33%***	***28%***	***10%***	***8%***

Table 1.18 – Main crops cultivated

1	Rice (1st) = 52%	Cassava = 44%	Maize = 35%	Rice (2nd) = 27%	Sweet potato = 14%
2	Rice (1st) = 62%	Cassava = 51%	Maize = 38%	Rice (2nd) = 21%	Sweet potato = 16%
3	Cassava = 59%	Rice (1st) = 56%	Maize = 40%	Beans = 31%	Rice (2nd) = 29%
4	Rice (1st) = 77%	Cassava = 63%	Sweet potato = 35%	Beans = 19%	Potato = 19%
5	Rice (1st) = 61%	Cassava = 35%	Vanilla = 30%	Rice (2nd) = 18%	Rice tanety = 7%
6	Cassava = 67%	Rice (1st) = 65%	Sweet potato = 31%	Rice (2nd) = 15%	Rice tanety = 10%
7	Rice (1st) = 74%	Cassava = 66%	Coffee = 19%	Rice tanety = 18%	Sugar cane = 14%
8	Cassava = 88%	Rice (1st) = 77%	Coffee = 39%	Sweet potato = 38%	Rice (2nd) = 30%
9	Cassava = 97%	Maize = 67%	Sweet potato = 60%	Groundnuts = 30%	Voanjobory = 19%
Total	***Cassava = 64%***	***Rice (1st) = 61%***	***Sweet potato = 26%***	***Maize = 23%***	***Rice (2nd) = 19%***
	Beans = 11%	***Coffee = 9%***	***Rice tanety = 7%***	***Sugar cane = 7%***	***Groundnuts = 7%***

Table 1.19 – Number of months main food crop harvest will last

	One month	2-3 months	4-5 months	6-7 months	8-9 months	Ten or more
1	15%	32%	21%	11%	8%	11%
2	25%	34%	18%	10%	6%	7%
3	8%	23%	24%	16%	12%	18%
4	3%	25%	23%	22%	13%	13%
5	9%	29%	28%	13%	6%	15%
6	26%	28%	22%	11%	3%	9%
7	20%	35%	22%	11%	5%	6%
8	12%	38%	28%	14%	3%	5%
9	20%	44%	21%	7%	3%	5%

Table 1.20 – Sources of seeds for main crop

	Purchase	Exchange with other farmers	Kept from previous harvest	NGOs or Government	Other
1	13%	2%	81%	1%	3%
2	12%	1%	85%	-	1%
3	9%	2%	88%	-	-
4	13%	1%	84%	-	2%
5	10%	5%	82%	-	2%
6	21%	1%	71%	3%	4%
7	31%	1%	56%	-	12%
8	11%	-	87%	-	2%
9	22%	3%	74%	-	1%

Table 1.21 – Per capita expenditure (FMG) and share total expenditure for food

	Per capita food expenditure	Per capita non-food expenditure	Per capita total expenditure	% total expenditure for food
1	69,400	54,900	124,300	57%
2	76,800	59,600	136,400	63%
3	40,300	58,200	98,500	54%
4	37,200	40,600	77,800	51%
5	60,900	55,900	116,800	57%
6	48,900	30,900	79,800	68%
7	20,900	17,500	38,400	59%
8	34,300	25,100	59,400	57%
9	43,100	60,200	103,300	43%

Table 1.22 – Sources of food consumed in past 7 days

	Production	Hunting, fishing gathering	Exchange/ borrowing	Purchase	Gift	Food aid
1	15%	11%	1%	72%	1%	0
2	19%	9%	1%	68%	2%	0
3	31%	3%	1%	63%	1%	< 1
4	39%	3%	< 1	55%	2%	< 1
5	24%	2%	1%	72%	1%	0
6	20%	7%	< 1	71%	2%	< 1
7	33%	4%	3%	57%	2%	< 1
8	36%	5%	< 1	57%	1%	0
9	39%	2%	< 1	53%	5%	< 1

Table 1.23 – Food gifts, food aid and external assistance

	In past 6 months		Food aid from where?						Sell or exchange food aid	Receive external assistance
	Give food away	Receive food aid	Family/ friends	General distr.	School feeding	Supple-mentary feeding	FFW	Other		
1	55%	15%	83%	6%	3%	-	3%	14%	29%	7%
2	45%	20%	80%	14%	-	-	2%	6%	18%	5%
3	33%	6%	72%	6%	6%	6%	6%	22%	0	7%
4	34%	13%	58%	29%	-	10%	-	18%	5%	8%
5	36%	5%	58%	8%	-	-	-	25%	0	9%
6	28%	13%	17%	11%	26%	11%	11%	31%	0	9%
7	20%	11%	29%	-	-	21%	11%	32%	0	11%
8	28%	10%	42%	12%	8%	-	38%	4%	0	5%
9	32%	29%	41%	2%	-	-	57%	7%	2%	2%

Table 1.24 – Number of recent shocks/unusual events

	No shocks	One shock	Two	Three	At least four
1	38%	31%	23%	6%	2%
2	27%	40%	29%	5%	< 1
3	52%	42%	6%	< 1	-
4	42%	43%	13%	2%	< 1
5	51%	45%	4%	-	-
6	27%	48%	22%	3%	-
7	35%	48%	22%	3%	-
8	32%	45%	21%	2%	-
9	9%	41%	39%	9%	1%

Annex II - Women and child nutrition and health tables

Table 2.1 – Women's education level, by cluster

Cluster	*N*	None	Primary		Secondary	
			Incomplete	Complete	Incomplete	Complete
1	*192*	42%	41%	3%	12%	2%
2	*204*	59%	34%	1%	5%	1%
3	*235*	26%	54%	3%	12%	5%
4	*239*	18%	60%	3%	14%	5%
5	*189*	24%	47%	8%	15%	6%
6	*216*	39%	43%	5%	12%	1%
7	*212*	48%	42%	5%	4%	1%
8	*213*	51%	33%	7%	5%	4%
9	*173*	79%	14%	1%	5%	1%

Table 2.2 – Pregnancy and breastfeeding status and reproductive history by age group

	Status at time of survey		Reproductive history				Age at 1st birth
	Pregnant	Breastfeeding	Ever stillbirth?	# pregnancies	# live births	Ever child die?	
15-19	8%	59%	11%	1	1	7%	16 years
20-24	10%	57%	18%	2	2	15%	17 years
25-29	9%	52%	22%	3	3	25%	18 years
30-34	8%	44%	29%	5	4	39%	18 years
35-39	7%	39%	32%	6	6	44%	19 years
40-49	3%	15%	37%	7	6	53%	18 years

Table 2.3 – Pregnancy and breastfeeding status and reproductive history by cluster

Cluster	Status at time of survey		Reproductive history				Age at 1st birth
	Pregnant	Breastfeeding	Ever stillbirth?	# pregnancies	# live births	Ever child die?	
1	9%	45%	29%	4	4	28%	17 years
2	7%	44%	30%	4	4	40%	17 years
3	11%	44%	27%	4	4	24%	19 years
4	7%	45%	17%	4	3	23%	19 years
5	8%	41%	31%	3	3	21%	18 years
6	5%	39%	21%	3	3	33%	18 years
7	4%	43%	23%	4	4	39%	18 years
8	12%	54%	21%	4	4	44%	17 years
9	6%	48%	31%	4	4	31%	17 years

Table 2.4 – Relation between women's education and reproductive choices & outcomes

Education levels	None	Primary		Secondary	
		Incomplete	Complete	Incomplete	Complete
Mean age at 1st birth	17 years	18 years	18 years	19 years	22 years
Used skilled ANC	49%	79%	83%	82%	88%
Ever had a child die	35%	31%	24%	25%	24%

Table 2.5 – Use of skilled antenatal care and reported birth size by cluster

Cluster	Received skilled ANC	Received tetanus toxoid	Reported size at birth				
			Very large	Larger than normal	Normal	Smaller than normal	Very small
1	69%	35%	13%	21%	30%	25%	10%
2	60%	38%	11%	23%	28%	29%	9%
3	80%	54%	6%	16%	48%	21%	8%
4	77%	41%	2%	14%	61%	19%	4%
5	82%	35%	18%	21%	48%	7%	6%
6	59%	38%	5%	16%	51%	19%	9%
7	65%	48%	2%	14%	51%	30%	3%
8	64%	54%	5%	10%	60%	23%	2%
9	49%	37%	4%	22%	39%	33%	2%

Table 2.6 – Micronutrient supplementation and recent illness by cluster

Cluster	Iron tablets during PG	Vitamin A after delivery	Both supplements	Two weeks prior to the survey		
				Diarrhea	Fever	Both
1	24%	28%	13%	21%	30%	12%
2	26%	30%	14%	13%	28%	8%
3	42%	46%	25%	8%	13%	4%
4	45%	48%	30%	7%	21%	3%
5	45%	43%	24%	13%	22%	5%
6	26%	36%	15%	11%	25%	5%
7	27%	36%	17%	16%	31%	11%
8	31%	41%	19%	14%	20%	7%
9	16%	16%	9%	14%	31%	9%

Table 2.7 – Recent morbidity and use of mosquito nets by age group

Age group	Two weeks prior to the survey			Slept under mosquito net last night
	Diarrhea	Fever	Both	
15-19	14%	21%	5%	44%
20-24	11%	25%	7%	50%
25-29	13%	21%	7%	44%
30-34	13%	25%	7%	36%
35-39	14%	29%	8%	45%
40-49	11%	26%	7%	34%

Table 2.8 – Disease prevention measures by cluster

Cluster	Boil children's drinking water?			Slept under mosquito net last night
	Always	Sometimes	Never	
1	29%	25%	46%	73%
2	19%	27%	54%	65%
3	28%	25%	47%	8%
4	39%	30%	31%	16%
5	47%	28%	25%	45%
6	38%	32%	30%	56%
7	30%	45%	25%	57%
8	46%	34%	20%	49%
9	19%	12%	69%	19%

Table 2.9 – Hand washing practices by cluster

Cluster	Hand washing practices						Wash with soap and water
	Before cooking	Before eating	After defecation	After changing nappies	Only when dirty	Never	
1	37%	40%	17%	7%	28%	10%	22%
2	34%	35%	14%	6%	28%	12%	16%
3	36%	53%	29%	16%	42%	1%	27%
4	36%	55%	17%	7%	35%	1%	20%
5	30%	54%	20%	15%	35%	1%	29%
6	42%	56%	31%	21%	49%	3%	28%
7	47%	65%	32%	23%	46%	1%	23%
8	49%	66%	15%	13%	32%	5%	19%
9	33%	27%	23%	9%	44%	4%	6%

Table 2.10 – Women's malnutrition by cluster

Cluster	*N*	Mean body mass index		BMI < 18.5 kg/m²		Underweight (< 45 kgs)	Stunted (< 145 cms)
		kg/m²	*95 CI*	%	*95 CI*		
1	*137*	20.54	*20.06, 21.03*	21.9%	*14.9, 28.9*	29.9%	7.7%
2	*147*	20.16	*19.73, 20.58*	23.1%	*16.2, 30.0*	32.7%	5.4%
3	*164*	20.48	*20.15, 20.81*	17.1%	*11.3, 22.9*	35.4%	8.4%
4	*161*	20.73	*20.39, 21.07*	14.9%	*9.3, 20.5*	29.4%	3.3%
5	*146*	20.68	*20.30, 21.07*	16.4%	*10.4, 22.5*	26.2%	5.4%
6	*154*	20.42	*19.99, 20.85*	21.4%	*14.9, 28.0*	36.1%	15.1%
7	*148*	20.36	*19.95, 20.78*	20.9%	*14.3, 27.6*	48.3%	19.7%
8	*129*	20.10	*19.70, 20.50*	20.2%	*13.1, 27.2*	39.8%	5.5%
9	*120*	20.57	*20.02, 21.12*	20.0%	*12.7, 27,3*	25.8%	0

Table 2.11 – Women's malnutrition by age group

Age group	*N*	Mean body mass index		BMI < 18.5 kg/m²		Underweight (< 45 kgs)	Stunted (< 145 cms)
		kg/m²	*95 CI*	%	*95 CI*		
15-19	*130*	20.36	*20.02, 20.71*	15.4%	*9.1, 21.7*	35.7%	10.6%
20-24	*303*	20.52	*20.28, 20.76*	15.8%	*11.7, 20.0*	32.2%	10.7%
25-29	*312*	20.56	*20.30, 20.83*	16.0%	*11.9, 20.1*	32.1%	8.5%
30-34	*261*	20.45	*20.12, 20.79*	21.8%	*16.8, 26.9*	34.9%	7.1%
35-39	*189*	20.41	*19.95, 20.87*	28.0%	*21.6, 34.5*	36.0%	3.9%
40-49	*111*	20.15	*19.66, 20.64*	23.4%	*15.4, 31.4*	35.5%	5.1%

Table 2.12 – Child malnutrition and morbidity by age group

Age group	*N*	z-score < -2.-00 SD			In past 2 weeks			Measles vaccination
		Wasting	Underweight	Stunting	Fever	ARI	Diarrhea	
0-5	*194*	9%	4%	10%	20%	15%	9%	20%
6-11	*179*	11%	27%	33%	34%	22%	21%	24%
12-17	*175*	12%	45%	46%	32%	16%	22%	59%
18-23	*146*	12%	50%	74%	30%	14%	20%	76%
24-35	*327*	9%	47%	49%	29%	14%	15%	81%
36-47	*253*	4%	33%	54%	20%	10%	9%	86%
48-59	*276*	5%	31%	47%	21%	11%	12%	85%
Total	***1550***	***8%***	***34%***	***45%***	***26%***	***14%***	***15%***	**-**

Table 2.13 – Child malnutrition by district cluster

Cluster	*N*	Whz < -2.00 SD		Waz < -2.00 SD		Haz < -2.00 SD	
		%	*95% CI*	%	*95% CI*	%	*95% CI*
1	*164*	4.3%	*(1.1, 7.4)*	25.2%	*(18.4, 31.9)*	30.7%	*(23.5, 37.8%)*
2	*169*	9.9%	*(5.2, 14.5)*	24.1%	*(17.4, 30.7)*	30.9%	*(23.7, 38.1)*
3	*194*	8.3%	*(4.4, 12.3)*	37.5%	*(30.6, 44.4)*	50.0%	*(42.9, 57.1)*
4	*215*	6.3%	*(3.0, 9.7)*	43.7%	*(36.9, 50.5)*	64.6%	*(58.0, 71.1)*
5	*131*	10.6%	*(5.1, 16.1)*	24.4%	*(16.7, 32.1)*	36.6%	*(28.0, 45.2)*
6	*173*	9.1%	*(4.7, 13.6)*	34.8%	*(27.4, 42.1)*	48.8%	*(41.0, 56.5)*
7	*111*	7.5%	*(2.4, 12.7)*	45.3%	*(35.7, 54.9)*	47.2%	*(37.5, 56.8)*
8	*216*	10.8%	*(6.6, 15.1)*	43.4%	*(36.7, 50.1)*	47.2%	*(40.4, 53.9)*
9	*174*	5.8%	*(2.3, 9.3)*	26.0%	*(19.4, 32.6)*	39.3%	*(32.0, 46.7)*

Table 2.14 – Breastfeeding and vitamin A supplementation by age group and sex

	Current breastfeeding		Recent vitamin A supplementation			Measles vaccination	Deworming medicine
	Boys	Girls	Boys	Girls	*Total*		
0 - 5	100%	100%	41%	35%	*38%*	-	4%
6 – 11	96%	99%	54%	48%	*51%*	-	17%
12 – 17	93%	85%	72%	75%	*74%*	59%	51%
18 – 23	73%	56%	82%	75%	*79%*	76%	63%
24 – 35	26%	24%	81%	80%	*80%*	81%	60%
36 – 47	16%	9%	84%	81%	*82%*	86%	65%
48 - 59	9%	10%	85%	89%	*87%*	85%	60%

Table 2.15 – Breastfeeding practices and vitamin A supplementation by district cluster

	Ever breastfed	Children 0 – 24 months				Recent vitamin A	Measles vaccine	De-worming medicine
		Exclusive BF	BF + liquids	BF + solids	Not breastfeeding			
1	98%	9%	35%	47%	11%	79%	77%	41%
2	99%	12%	29%	45%	14%	76%	66%	28%
3	95%	18%	35%	38%	9%	70%	79%	53%
4	99%	5%	37%	48%	13%	79%	84%	53%
5	98%	18%	53%	23%	4%	74%	77%	60%
6	96%	15%	42%	38%	4%	70%	64%	51%
7	100%	20%	25%	45%	12%	75%	77%	56%
8	100%	6%	20%	61%	15%	67%	85%	63%
9	98%	5%	37%	49%	7%	65%	62%	28%
Total	***98%***	***11%***	***34%***	***45%***	***10%***	***72%***	***75%***	***48%***

Table 2.16 – Recent morbidity and treatment by age group

	Fever in past 2 weeks			ARI in past 2 weeks	Diarrhea in past 2 weeks	
	Fever	Treated in health center	Given anti-malarial		Diarrhea	Treated in health centre
0 - 5	20%	33%	92%	15%	9%	24%
6 – 11	34%	51%	87%	22%	21%	47%
12 – 17	32%	46%	88%	16%	22%	47%
18 – 23	30%	48%	95%	14%	20%	45%
24 – 35	29%	41%	97%	14%	15%	33%
36 – 47	20%	48%	92%	10%	9%	28%
48 - 59	21%	44%	96%	11%	12%	39%

Table 2.17 – Recent morbidity and treatment by district cluster

Cluster	Fever in past 2 weeks			ARI in past 2 weeks	Diarrhea in past 2 weeks	
	Fever	Treated in health center	Given anti-malarial		Diarrhea	Treated in health centre
1	35%	64%	97%	20%	21%	58%
2	34%	33%	89%	12%	21%	39%
3	13%	23%	83%	8%	7%	23%
4	15%	44%	93%	7%	8%	53%
5	27%	47%	100%	15%	14%	39%
6	25%	54%	83%	17%	14%	28%
7	30%	19%	100%	12%	20%	21%
8	33%	58%	99%	24%	13%	37%
9	26%	35%	88%	12%	19%	40%

Table 2.18a – HIV and AIDS knowledge and attitudes

	Ever heard of HIV & AIDS	Avoid – abstinence	Avoid – using condom	Avoid – one partner only	Avoid sex with prostitutes	Avoid sex with promiscuous
1	73%	22%	46%	74%	4%	5%
2	63%	11%	44%	64%	12%	11%
3	89%	12%	52%	84%	23%	27%
4	84%	19%	46%	82%	15%	11%
5	71%	15%	49%	73%	9%	5%
6	74%	10%	66%	74%	22%	17%
7	74%	19%	45%	73%	17%	8%
8	53%	16%	55%	61%	18%	11%
9	82%	8%	18%	64%	3%	16%

Table 2.18b – HIV and AIDS knowledge and attitudes

	Avoid – blood transfusions	Avoid injections	Avoid sharing razors	Avoid mosquitoes	Avoid touching infected person	Avoid sharing food
1	7%	1%	1%	1%	2%	1%
2	13%	1%	9%	1%	3%	2%
3	23%	4%	15%	0	3%	2%
4	12%	2%	5%	2%	4%	1%
5	3%	1%	1%	0	2%	3%
6	2%	1%	9%	0	8%	5%
7	2%	< 1%	4%	0	3%	3%
8	3%	2%	3%	0	2%	0
9	3%	1%	1%	0	2%	0

Annex 3: Household questionnaire

1. To be completed by enumerators

Please complete before the Interview

0.1 - |__|__|__|
Code de l'enquêteur

0.2 - **Date:** |__|__| / |__|__| / **2005**
jour *mois*

0.3 - |__|__|__|__|__|__|__|__|__|__|__|__|
Région

0.4 - |__|__|__|
Code Commune

0.5 - |__|__|__|__|__|__|__|__|__|__|__|__|
Fokontany

0.6 - |__|__|__|
Code village / quartier

0.7 - |__|__|__|__|
Code questionnaire

Please read the following consent form: "My name is [your name]. We are collecting information here in [district]. I would like to ask you to participate in a one-to one interview on food security and nutrition. The discussion will take about one hour and will be followed by weighting and measurements at a nearby location. Please answer all the questions truthfully. You will not be judged on your responses and we ask you to be sincere in your responses.

There is no direct benefit, money or compensation to you in participating in this study. Your participation is voluntary. We hope that the research will benefit Madagascar by helping us understand what people need in order to help the country move forward.

The researchers will keep your responses confidential and only researchers involved in this study will review the discussion notes You do not need to use your real name in the interview. Your full name will not be written down anywhere nor will there be any way to identify you. Do you have any questions for me? You may ask questions about this study at any time."

Signature of enumerator:

2. To be completed by the team leader

0.0- Questionnaire number:

|__|__|__|__| |__|__|__| |__|__|__|__|
code Dist. *code Com.* *code Quest.*

0.8 – Date: |__|__| / |__|__| / **2005**
jour *Mois*

0.9 - |__|__|__|__|__|__|__|__|__|__|__|__|
Name of the team leader

Remarks:

Signature of team leader:

Unless specified otherwise, do not read the answer and circle only one answer per questions. Where writing is required, write clearly using capital letters.

SECTION 1 – DEMOGRAPHICS: Read - "I would now like to ask you a few questions on the composition of your household"

*A household is defined as a group of people currently living and **eating** together "under the same roof" (or in same compound if the HH has 2 structures)*

1.1 From which region is the head of household from?

Code Région

01 = Diana	07 = Menabe	13 = Ihorombe	19 = Analamanga
02 = Sava	08 = Atsimo Andrefana	14 = Haute Matsiara	20 = Alaotra Mangoro
03 = Sofia	09 = Androy	15 = Amoron'I Mania	21 = Atsinanana
04 = Boeny	10 = Anosy	16 = Vakinankaratra	22 = Analanjirofo
05 = Betsiboka	11 = Atsimo Atsinanana	17 = Bongolava	
06 = Melaky	12 = Vatovavy Fitovinany	18 = Itasy	

1.2 What is the gender of the household head? 1 male | 2 Female

1.3 What is the head of the household headf? |__|__|

1.4 What is the marital status of the household head?

1	Married
2	Partner
3	Divorced → **1.7**
4	Living apart not divorced → **1.7**
5	Widow or widower → **1.7**
6	Never married → **1.7**
7	polygame

1.5 What is the age of the household head SPOUSE? |__|__|

1.6 *Please, complete the demographics table on the right. Make sure to differentiate between males and females.*

	Male	**Female**
a - 0 – 5 years		
b - 6 – 12 years		
c - 13 – 15 years		
d - 16 – 18 years		
e - 19 – 49 years		
f - 50 – 60 years		
g - 61 + years		

1.7 Can the Household Head / Spouse read and write a simple message? 1 Oui | 2 Non

1.8 What is the level of education of the household head / spouse? (*use codes below*)

1 = Rien
2 = Niveau Ecole primaire
3 = Ecole primaire achevée – CM2
4 = Niveau Collège
5 = Collège achevé – Brevet des collèges
6 = Niveau Lycée
7 = Lycée achevé - Baccalauréat
8 = Niveau universitaire

18.a. household head	**1.8.b. Spouse (if applicable)**
|__|	|__|

1.9 How many children in your household are attending Ecole primaire? |__|__|

1.10 How many children in your household are attending College? |__|__|

1.11 How many children in your household are attending Lycee? |__|__|

1.12 Did any child miss school for at least 1 week during the past trimester? 1 Oui | 2 Non → **1.16** | 3 Don't know → **1.16**

1.13 If yes, why ?

1	Disease
2	Need of additional food/ income
3	Need of additional man power for the farm
4	Need to look after the youngest children
5	School too far
6	School fee to high
7	Not interesting for the family

SECTION 2 – HOUSING AND FACILITIES

2.1	When did your household move to this current settlement?	Année |__|__|__|__|	
2.2	Do you or your household own or rent this dwelling?	1	propriétaire **→ 2.4**
		2	N'est pas propriétaire mais est hébergé gratuitement **→ 2.4**
		3	locataire
2.3	How much do you pay per month (in FMG.) *If payment in kind, write 9999 and specify*	_____ fmg.	
2.4	Which of the following best describes the dwelling? **DON'T ASK, ANSWER BASED ON YOUR OBSERVATION**	1	Maison familiale en dur
		2	Pièce dans maison partagée en dur
		3	Maison en pisé, brique non cuite
		4	Maison en pisé a plusieurs éléments
		5	Case en tôle
		6	Case en bois
		7	Autre_____
2.5	How many rooms do you have?	Pièces |__|__|	
2.6	How many people usually sleep in this dwelling?	Personne |__|__|	

		Saison sèche	**Saison des pluies**
	For each of the following question, please distinguish between rainy and dry season, use the codes in the grey areas.		
2.7	What is the main source of water for your household? *1 = pompe et forage publiques* *5 = cours d'eau, rivière, mare* *2 = robinet public* *6 = Impluvium (eau de pluie)* *2 = eau courante dans la cour* *7 = Citerne* *3 = puits/ source aménagés (ciment, margelle)* *8 = vendeur* *4 = puits non aménagé (trou d'eau)* *9 =autre_____*	|__|	|__|
2.8	How far is the main source of water for your household? *Record both time in minutes and distance in km to access source* *Write 00 if water on premise, Write 99 if don't know*	|__|__|Minutes |__|__|.|__|Km	|__|__|Minutes |__|__|.|__|Km

2.9	What kind of toilet facility does your household use?	1	Système d'évacuation avec chasse d'eau
		2	Latrines améliorées individuelles
		3	Latrines améliorées collectives
		4	Latrines traditionnelles individuelles
		5	Latrines traditionnelles collectives
		6	Dans la nature, au champ, rien
		7	Autre _____
2.10	What is the main source of lighting for this house?	1	Electricité
		2	Pétrole, huile ou lampe a gaz
		3	Bougies, suif ou lampe a piles
		4	Feu de bois
		5	Rien
2.11	What fuel do you use most often for cooking?	1	Gaz
		2	Electricité
		3	Charbon
		4	charbon
		4	Pétrole
		5	Autre _____
2.12	Over the LAST MONTH, how often did you go to the market to buy food	1	4-7 jours par semaine
		2	1-3 jours par semaine
		3	Deux fois (chaque 2 semaines)
		4	1 fois par mois
		5	jamais
2.13	How do you usually get to the market/ local shop?	1	En marchant
		2	Charrette personnelle
		3	Charrette (contre paiement)
		4	Bicyclette
		5	Motocyclette

SECTION 3 – HOUSEHOLD ASSETS AND PRODUCTIVE ASSETS

3.1 Does your household own any of the following assets? *Please circle all that apply*

1	lit	6	Ustensiles de cuisine	11	Bateau (=piroque)
2	Table	7	Equipement de pêche	12	charrette
3	chaise	8	Bicyclette	13	Machine à coudre
4	Radio cassette	9	Motocyclette	14	Charrue, houe, hache, machette, etc.
5	télévision	10	Voiture		

3.2	Total land cultivated (ares)	|__|__|__| ares
3.3	Total land owned (ares)	|__|__|__| ares

3.4. Is it ? : *(circle all that apply)*

3.4.a = bas-fond rizière *(avec bon système d'irrigation, i.e. qui n'a que rarement des problèmes d'inondation/ sécheresse*
3.4.b = bas-fond rizière *(avec mauvais système d'irrigation, i.e. qui a régulièrement des problèmes d'inondation/ sécheresse*
3.4.c = tanety *(pente faible, partie en bas d'une colline, non érodé, cultivable)*
4.4.d = autre terres

Please complete the following table one crop at the time, use the codes outlined for each question

	3.5.a – What are the main crops cultivated by your household? *Please enter code for the 5 main crops from list below. If respondents list less than 5 crops, write 00 in empty spaces.*	**3.5.b –** What was your production of [crop] in kg last year? *Please provide estimate if answer is in other unit*	**3.5.c –** What do you normally do with production? *1 = Mostly sell 2 = Mostly keep for home use 3 = Some sales & some kept 4 = used to pay fermage/metayage*	**3.5.d –** Of the proportion you keep, how many months did/will it last for household consumption? *(if cash crop write 99.9)*	**3.5.e -** How do you usually acquire [crop] seeds? *1 = Purchase 2 = Exchange with other farmers 3 = Reserved from previous harvest 4 = received from NGOs, govt,… 5 = Other, specify:_____*
1ere	|__|__|	|__|__|__|.|__|	|__|	|__|__|.|__|	|__|
2ieme	|__|__|	|__|__|__|.|__|	|__|	|__|__|.|__|	|__|
3ieme	|__|__|	|__|__|__|.|__|	|__|	|__|__|.|__|	|__|
4ieme	|__|__|	|__|__|__|.|__|	|__|	|__|__|.|__|	|__|
5ieme	|__|__|	|__|__|__|.|__|	|__|	|__|__|.|__|	|__|

01 = riz 1ere saison	06 = patate douce	11 = pois du cap	16 = letchis	Autres:
02 = riz 2ieme saison	07 = haricots	12 = pomme de terre	17 = café	_____
03 = riz *tanety*	08 = arachide	13 = soja	18 = girofle	_____
04 = mais	09 = lentille	14 = voanjobory	19 = vanille	_____
05 = manioc	10 = voatsiroka	15 = canne a sucre	20 = poivre	

3.6	Do you have a household vegetable plot /garden?	1	Oui	2	Non
3.7	How do you usually store your cereals?	1	Sac		
		2	Grenier sur pilotis		
		3	Poterie		
		4	Pièce de stockage		
		5	Trou		
		6	Pas de stockage		
		7	Autre, préciser_____		
3.8	Does your household own any farm-animals?	1	oui	2	Non **→ Section 4**

If yes, please how many of each of the following animals do you own? (*write 00 if none*)

a	volailles	|__|__|	**f**	Vaches laitières	|__|__|
b	Chèvres	|__|__|	**g**	Bœufs de trait	|__|__|
c	Mouton	|__|__|	**h**	Autres bœufs	|__|__|
d	Cochons	|__|__|	**i**	ânes	|__|__|
e	Taureaux	|__|__|			

SECTION 4 – INCOME

4. *Please complete the following table one activity at the time, using the codes below,* ***for the YEAR***

	4.1.a – What are your household's main income activities throughout the year? *(use activity code, up to four activities)*	**4.1.b.** Who participates in this activity? *(use member code)*	**4.1.c** *– Using proportional piling or 'divide the pie' methods,* ***please estimate the relative contribution to total income of each activity.***
Main	|__|__|	|__|	|__|__|
Second	|__|__|	|__|	|__|__|
Third	|__|__|	|__|	|__|__|

Codes Activités génératrices de revenus

01= Vente des produits vivriers
02= Vente des cultures de rente
03 = Vente de bétail/ vente de produits animaux
04 = Pêche
05 = Travail manuel non qualifié
06 = Travail manuel qualifie (artisan)
07 = Travail saisonnier/ temporaire
08 = artisanat
09 = Utilisation des ressources naturelles (bois de chauffe, charbon, brique, graminées, aliments sauvages, …..miel…)
10 = petit commerce
11 = commerce
12 = Don/ envoi d'argent
13 = Emploi / travail salarie
14 = location de propriétés (terres, parcelles, bâtiments)
15 = épargne, crédit
16 = mendicité, assistance
17 = Pension, indemnités gouvernementales
18 = Autre, préciser _____

Code membre

1 = Head of the Household only
2 = Spouse of the head of the Household only
3 = Men only
4 = Women only
5 = Adults only
6 = Children only
7 = Women & children
8 = Men & children
9 = Everybody

4.2	Did you borrow money this year?	1	Oui	2	Non → **Section 5**
4.3	If yes, from whom **?**	1	Oui – parents / amis		
		2	Oui – œuvres caritatives/ ONG		
		3	Oui – prêteur local – compte en banque		
4.4	Did you purchase food on credit or borrow money to purchase food in the last 6 months?	1	Oui	2	Non → **Section 5**
4.5	Are you currently in debt because of credit for food?	1	Oui	2	Non → **Section 5**
4.6	How much do you owe?	|__|__|__|__| FMG			

SECTION 5 – EXPENSES

5.1 5. Did you spend money on [item] **last week** for domestic consumption? *If no, write 0 and go to next item*		**a. –** Estimated total expense in the last week **(fmg)**			**a. –** Estimated total expense in the last week **(fmg)**
a	riz		**k**	lait	
b	Racines et tubercules *(manioc, patates, etc.)*		**l**	eau	
c	Autres céréales – Mais, Sorgho		**m**	Café, épices, …	
d	Haricots, pois, arachides		**n**	Alcool et tabac	
e	Bredes et légumes		**o**	Savon ou lessive	
f	Poisson, produits de pêche		**p**	Transport	
g	viande		**q**	Bois de chauffe, charbon	
h	oeufs		**r**	Pétrole, bougie, éclairage	
i	Sucre et sel		**s**	piles	
j	Huile, beurre				

5.2	Who in your household has taken the decision of these expenses ?	1	Mainly the wife	2	Mainly the husband	3	Both

5.3 Did you spend money on [item] **last week** for domestic consumption? *If no, write 0 and go to next item*		Estimated total expense in the last week **(fmg)**			Estimated total expense in the last week **(fmg)**
a	Matériel agricole, outils, semences, engrais, pesticides, animaux		**g**	Remboursement de dettes, et amendes	
b	Main d'oeuvre		**h**	Construction, réparation de la maison	
c	Dépenses médicales		**i**	Cérémonies, événement social de la famille ou du voisinage	
d	Education, frais scolaires		**j**	Construction réparation du tombeau	
e	Vêtements chaussures		**k**	Dépenses administratives ou dépenses pour l'église ou les cérémonies religieuses	
f	Equipement de la maison (radio, machine a coudre, bicyclette, etc.)		**l**	location (maison / terre)	

5.4	Who in your household has taken the decision of these expenses ?	1	Mainly the wife	2	Mainly the husband	3	both

SECTION 6–SOURCES OF FOOD AND CONSUMPTION

Read : I would now like to ask you a few questions about food consumption in your household

6.1.a	Yesterday, how many times did the men in this household take a meal?	|___| times
6.1.b	Yesterday, how many times did the women in this household take a meal?	|___| times
6.2	Yesterday, how many times did the children in this household take a meal?	|___| times

6 Could you please tell me how many days in the **past one week** your household has eaten the following foods and what the source was *(use codes on the right, write 0 for items not eaten over the last 7 days and if several sources, write the main)*

	Food items	*# of days eaten last 7 days*	*Main Food Source*
a	Riz	|___|	|___|
b	Autres céréales *(Mais, Sorgho, millet,…)*	|___|	|___|
c	Racines et tubercules *(patates, manioc, …)*	|___|	|___|
d	Pain	|___|	|___|
e	Haricots et Pois	|___|	|___|
f	Bredes et autres légumes	|___|	|___|
g	Arachides	|___|	|___|
h	Fruits frais	|___|	|___|
i	Poisson et produits de la mer	|___|	|___|
j	Viande	|___|	|___|
k	oeufs	|___|	|___|
l	Huile, graisse animale, beurre	|___|	|___|
m	Sucre	|___|	|___|
n	Lait et produits laitiers	|___|	|___|

Codes source of food

1 = production (culture, animaux)
2 = chasse, pêche, cueillette
3 = échange, paiement contre travai troc
4 = emprunt
5 = achat
6 = cadeau (nourriture) de la famille ou des voisins
7 = Aide alimentaire (ONG, association, autorités administratives…)

6.4	Did you or your household give food to others in need in the last 6 months?	1	oui	2	Non
6.5	Has any member of your household received food aid or food gift in the last 6 months?	1	oui	2	Non → **6.7**

			Food aid type	***# Benef.***
6.6	If yes, please specify the type of food assistance and the number of beneficiary in your household?	1	Cadeau de la famille/ amis/ voisins	|__|__|
		2	Distribution générale	|__|__|
		3	Cantine scolaire	|__|__|
		4	CRENA	|__|__|
		5	CRENI	|__|__|
		6	Vivre contre travail	|__|__|
		7	Autre, préciser _____	|__|__|
6.7	Did your household sell or exchange food aid in the last 6 months?	99	non	
		1	Pour acheter des produits non alimentaires	
		2	Pour acheter d'autres produits alimentaires	
		3	Pour payer des frais de santé/ de scolarité	
		4	Pour acheter du bétail	
		5	Pour résoudre des problèmes d'argent imprévus	
		6	Autre, préciser_____	
6.8	Has any member of your household received any other type of external assistance beside food aid in the last 6 months?	1	oui	2 Non → **Section 7**
6.9	If yes, from whom? **Circle all that apply**	1	UNICEF	
		2	SEECALINE	
		3	ADRA	
		4	CARE	
		5	Croix Rouge	
		6	Autres ONG	
		7	Gouvernement	
6.10	If yes, what type of assistance?	1	Epargne/ crédit	
		2	Scolarisation	

SECTION 7 – SHOCKS AND FOOD SECURITY

7.1	Over the last year have you been affected by a choc or a sudden, unexpected event?					oui	Non → **8**
7.2	By order of importance, what were the main causes for the problems you just mentioned? *Do not read options, write number in front of the identified cause by order of importance*						
	|___|	A. Cyclones	|___|	J. Niveau anormalement élevé des maladies du bétail	|___|	S. Vol d'un capital productif	
	|___|	B. Inondations	|___|	K. Niveau anormalement élevé de maladie et épidémie	|___|	T. Manque d'opportunités de travail	
	|___|	C. Sécheresse/ pluies irrégulières	|___|	L. Prix élevé de la nourriture	|___|	U. Insécurité/ violence	
	|___|	D. Grêle	|___|	M. Prix élevés des intrants agricoles	|___|	V. Manque de main d'oeuvres	
	|___|	E. Criquet	|___|	N. Perte d'emploi pour un membre de la famille	|___|	W. Problème de maîtrise de l'eau	
	|___|	F. Glissement de terrain, érosion	|___|	O. Diminution des revenus d'un membre de la famille	|___|	X. Litiges fonciers	
	|___|	G. Incendie/feu	|___|	P. Maladie grave ou accident d'un membre de la famille	|___|	Y. Fermeture / ouverture d'un axe routier ou de transport fluvial	
	|___|	H. Ensablement	|___|	Q. Mort d'un actif de la famille	|___|	Z. Arrêt des aides et projets du gouvernement ou des ONG	
	|___|	I. Niveau anormalement haut des problèmes phytosanitaires	|___|	R. Mort du chef de famille			

7.3 *For the four main shocks above, please complete the following table using the codes. Please be consistent in the ranking. Complete one line at the time.*

7.2 Rank & Cause *(copy code from above the four main causes)*	**7.3-a** Did [cause] create a decrease or loss for your household of: 1 = Income & in-kind receipts 2 = Assets (e.g. livestock, cash savings) 3 = Both income and assets 4 = No change	**7.3 – b** What did the household do to compensate or resolve these problems caused by the shock *Use codes below, record all used*	**7.3 – c** Has the household recovered from the inability to have enough food? 1 = Not recovered at all 2 = Partially recovered 3 = Completely recovered
1. _____	|__|	|__|__|	|__|
2. _____	|__|	|__|__|	|__|
3. _____	|__|	|__|__|	|__|
4. _____	|__|	1.|__|__|	|__|

01 = changement de la ration alimentaire (produits moins appréciés, moins chers)
02 = consommation de plantes de cueillette
03 = emprunt de nourriture
04 = achat de nourriture a crédit
05 = utilisation de l'épargne
06 = intensification du salariat agricole
07 = consommation du stock de semences réserves pour la saison suivante
08 = réduction du nombre de repas
09 = migration saisonnière (<6 mois) de certains membres de la famille
10 = travail temporaire
11 = diminution des dépenses de santé et de scolarité
12 = consommation des récoltes précocement
13 = emprunt
14 = vente de bijoux ou d'ustensiles de cuisine
15 = vente des meubles et équipements de la maison
16 = Vente de volailles
17 = vente des petits animaux (chèvres, moutons, cochons)
18 = vente du bétail
19 = vente de semences ou matériel agricole
20 = Mise en location des terres
21 = vente de terres
22 = Emigration permanente de certains membre de la famille (> 6 mois)
23 = travail contre nourriture seulement
24 = envoi des enfants pour travailler
25 = Autre, préciser

SECTION 8 – HIV / AIDS

8.1	Have you ever heard of an illness called AIDS?		1	Oui	2	Non → **Section 9**
8.2	What can a person do to avoid getting HIV or the virus that causes AIDS? **CIRCLE ALL WAYS MENTIONED,** **DO NOT READ RESPONSES**	a	Abstain from sex			
		b	Use condoms			
		c	Limit sex to one partner/stay faithful to one partner			
		d	Avoid sex with prostitutes			
		e	Avoid sex with persons who have many partners			
		f	Avoid blood transfusions			
		g	Avoid injections			
		h	Avoid sharing razors/blades			
		i	Avoid kissing			
		j	Avoid mosquito bites			
		k	Seek protection from traditional healers			
		l	Avoid touching a person with AIDS			
		m	Avoid sharing food			
		n	Other, specify_____			

SECTION 9 – MATERNAL HEALTH AND NUTRITION

Read: Now I would like to ask you some questions about the women and children in this household.
Please get an overview of how many children aged < 59 months live in the household and their respective mother/care taker

9.1a	Are there children 6 - 59 months in this household?	1	Oui	2	Non
9.1b	Are there children < 6 months in this household?	1	Oui	2	Non
9.1c	Are there mothers/ care takers or women between 15 and 49 years old in this household?	1	Oui	2	Non

Select 1 mother / care taker (if mothers are absent) of those children or 1 of the women aged 15 – 49 years.
To the selected mother/care taker/woman

9.2a	What is your age?	|__|__|			
9.2b	Can you read and write simple messages?	1	Oui	2	Non
9.2c	What is your level of education?	1	*Rien*		
		2	*Niveau Ecole primaire*		
		3	*Ecole primaire achevée – CM2*		
		4	*Niveau Collège*		
		5	*Collège achevé – Brevet des collèges*		
		6	*Niveau Lycée*		
		7	*Lycée achevé - Baccalauréat*		
		8	*Niveau universitaire*		
9.3	Are you currently pregnant or breastfeeding? **CIRCLE ONLY ONE**	1	enceinte		
		2	allaitante		
		3	Ni l'un, ni l'autre		
		4	Les 2		
		5	Ne sait pas		

9.4	If pregnant, how many months pregnant?	|__| mois			
9.5	How many times have you been pregnant?	|__|__| grossesses **si 00 → 9.13**			
9.6	When you were pregnant, did you receive iron-folate tablets (small red tablets)?	1	Oui	2	Non
9.7	If you ever suffered a miscarriage, how many times?	|__|__| fausse-couche			
9.8	If you ever suffered a stillbirth, how many times?	|__|__| enfant mort-né			
9.9	How many living children have you given birth to?	|__|__| enfant			
9.10	How many of those children have died?	|__|__| enfant			
9.11	How old were you at your first delivery?	|__|__| ans			
9.12	Immediately after the birth of your last child, did you receive a vitamin A capsule (red colour capsule)?	1	Oui	2	Non
9.13	In the past 2 weeks have you been ill with Diarrhea?	1	Oui	2	Non
9.14	In the past 2 weeks have you been ill with Fever?	1	Oui	2	Non
9.15	Last night, did you sleep under a mosquito net?	1	Oui	2	Non
9.16	Do you boil (and then cool down) the water before consumption for your children below 5 years?	1	Oui, toujours		
		2	Oui, parfois		
		3	Non		
9.17	When do you wash your hands? **DO NOT READ,** **CIRCLE THE ANSWERS THAT ARE MENTIONED**	A	Avant de préparer les repas		
		B	Avant de manger		
		C	Après être allé aux toilettes		
		D	Après avoir lave les enfants après qu'ils sont allés aux toilettes		
		E	Quand elles sont sales !		
		f	Jamais **=> section 10**		
9.18	After visiting the toilet, what do you use to wash your hands?	1	De l'eau seulement		
		2	Du sable/ du savon fait maison et de l'eau		
		3	Du savon et de l'eau		
		4	rien		

SECTION 10 – CHILD HEALTH AND NUTRITION

ASK TO THE SELECTED RESPONDENT ONLY IF THERE ARE CHILDREN < 59 MONTHS IN THE HOUSEHOLD, ELSE, TERMINATE
Read: Now I would like to ask you some questions about your children *(Continue the interview with the same woman)*

	Starting with the youngest child, please enter the names of the three youngest children and ask the following question for one child at the time:	**Dernier enfant né**	**Second enfant dernièrement né**	**Troisième enfant dernièrement né**
10.1	(child number) First name	**(1)** _____	**(2)** _____	**(3)** _____
10.2	Birth month	|__|__|	|__|__|	|__|__|
10.3	Birth year	|__|__|__|__|	|__|__|__|__|	|__|__|__|__|

10.4	Child's age in months	|__|__|mois	|__|__|mois	|__|__|mois
10.5	Child gender?	1 garçon 2 fille	1 garçon 2 Fille	1 garçon 2 Fille
10.6	Are you the mother of [Name]	1 Oui 2 Non	1 Oui 2 Non	1 Oui 2 Non
10.7	When you were pregnant with [NAME], did you get antenatal care? (if yes, whom)	1 docteur 2 infirmière 3 Sage femme 4 matrone 5 Autre 6 personne	1 docteur 2 infirmière 3 Sage femme 4 matrone 5 Autre 6 personne	1 docteur 2 infirmière 3 Sage femme 4 matrone 5 Autre 6 personne
10.8	When you were pregnant with [NAME] were you given an injection in the arm to prevent the baby from getting convulsions after birth? (Anti-tetanus shot – an injection at the top of the arm or shoulder).	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
10.9	When [NAME] was born, was he/she [read options]?	1 Très gros 2 Plus gros que la norme 3 normal 4 Plus petit que la norme 5 Très petit	1 Très gros 2 Plus gros que la norme 3 normal 4 Plus petit que la norme 5 Très petit	1 Très gros 2 Plus gros que la norme 3 normal 4 Plus petit que la norme 5 Très petit
10.10a	Did you ever breastfeed [NAME]? (if no, **→ 11.11**)	1 Oui 2 Non	1 Oui 2 Non	1 Oui 2 Non
10.10b	Is [NAME] still being breastfed?	1 Oui 2 Non	1 Oui 2 Non	1 Oui 2 Non
10.10c	How long after birth did you first put [NAME] to the breast? *If less than 1 hour, write 0. If less than 24 hours, record hours. Otherwise, record days.*	|__|__| heures |__|__| jours	|__|__| heures |__|__| jours	|__|__| heures |__|__| jours
10.11-	**For children < 24 months only -** Since this time yesterday, did [NAME] receive any of the following? **ASK ONLY FOR YOUNGEST CHILD** **CIRCLE ALL THAT APPLY**	1 Lait frais, en boite ou en poudre 2 Eau simple 3 Eau sucrée ou jus 4 Solution de réhydratation orale (SRO) 5 Médicament traditionnel 6 Thé, tisane 7 Autre liquide 8 Bouillie solide ou semi-solide		
10.12a-	Has [NAME] ever received a vitamin A capsule (supplement) like this one? *Show capsule*	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
10.12b-	If yes, how many months ago did [NAME] take the last dose? *(write 99 if don't know)*	|__|__| mois	|__|__| mois	|__|__| mois
10.13a-	Has [NAME] been ill with a fever at any time in the past 2 weeks?	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
10.13b-	If yes, Was [NAME] seen at a health facility during this illness?	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
10.13c-	If yes, Was [NAME] prescribed an anti-malaria drug?	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
10.14a-	Has [NAME] been ill with a cough at any time in the past 2 weeks?	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
10.14b-	If yes, when [NAME] had the cough, did he/she breathe faster than usual with short, rapid breaths?	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas
11.15a-	Has [NAME] been ill with diarrhea at any time in the past 2 weeks? *(Diarrhea: perceived by mother as 3 or more loose stools per day or one large watery stool or blood in stool)*	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas	1 Oui 2 Non 3 ne sait pas

SECTION 11 – ANTHROPOMETRIE

11.1 Measures- children less than 59 months		**(1)**	**(2)**	**(3)**
Read to the selected woman: Would you please join me to a nearby location to continue this interview. We would like you to come with your three youngest children aged less than 59 months. We would like to measure and weight them as part of our assessment. Again, no name will be recorded and the results will remain confidential.				
11.2-	**Child height/length** *(in centimetres, with 1 decimal place*	|__|__|__|.|__| cm	|__|__|__|.|__|cm	|__|__|__|.|__|cm
11.3	Does the child have bilateral pitting oedema? *(Check both feet for oedema)*	1 Oui 2 Non	1 Oui 2 Non	1 Oui 2 Non
11.4	**Child weight** – *Enter weight in kilograms, with one decimal place.*	|__|__|.|__| kg	|__|__|.|__| kg	|__|__|.|__| kg
Measurements- mother				
11.5	**Mother's height** (in centimetres)	|__|__|__|.|__|cm		
11.6	**Mother's weight** (in kilograms)	|__|__|__|.|__|kg **only for non-pregnant mother!**		