



Comoros:

Comprehensive Food Security and Vulnerability Analysis (CFSVA)

Conducted in January – February 2006

Strengthening Emergency Needs
Assessment Capacity (SENAC)

Comoros: Comprehensive Food Security and Vulnerability Analysis (CFSVA)

Prepared by *Tango International*

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For any queries on this document or the SENAC project, please contact odan_info@wfp.org or

Krystyna Bednarska, Country Director Madagascar: krystyna.bednarska@wfp.org

Eric Kenefick Regional VAM Officer Johannesburg: eric.kenefick@wfp.org

For information on the VAM unit, please visit us at <http://vam.wfp.org/>

United Nations World Food Programme

Headquarters: Via C.G. Viola 68, Parco de’ Medici, 00148, Rome, Italy

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**Comoros: Comprehensive Food Security and Vulnerability
Analysis (CFSVA)**

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John Meyer
Donald Nelson
David Black
TANGO International
February 2006

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Executive Summary

Approximately, 100,000 people living on the flanks of Mt. Karthala, Grand Comore, are vulnerable to food insecurity, due to varied effects of infrequent volcanic eruptions. In addition to damaging domestic water supplies, the latest eruption (November 2005) affected the production of cash crops that are normally sold to purchase rice and other foods. Currently, the affected populations have managed this shock through support from social networks. However, due to large numbers of chronically poor and food insecure households these social networks are under increasing pressure and are beginning to fail. Roughly 300,000 people, primarily in rural zones on Anjouan, and, to a lesser extent, Mohéli and Grand Comore, are chronically food insecure. The food insecurity is primarily a result of food access problems. Cash revenues are not sufficient to purchase the food necessary to make up for production deficits. Interventions to address chronic food insecurity and poverty can serve the long-term needs of these people only if linked to well-designed livelihoods interventions.

Background

The Union of Comoros consists of three main islands located in the northern part of the Mozambique Channel just off the coast of East Africa. The islands have a total population estimated at 625,000 of which 52% live in Grande Comore, 43% in Anjouan, and 5% in Mohéli.¹ The climate is highly variable, both geographically and temporally. The rainfall patterns are characterized by distinct rainy and dry seasons. In general terms the rainy season occurs between November and March-April.

While currently stable, the country still faces possible political turmoil in the future. It has experienced around 20 coups since independence in 1975. The next presidential election will take place in April, 2006. While violence seems unlikely, the possibility of continued or renewed political discord poses risks for poor households who are sensitive to disruptions in the fragile internal economy.

Objectives and methods

The Comprehensive Food Security and Vulnerability Analysis (CFSVA) study was designed to investigate those who are currently food insecure and those who are vulnerable to food insecurity. The first issue is determined by analysing food security outcomes including health and nutrition indicators while the second is addressed using a livelihoods and vulnerability framework. In the case of Comoros where there is limited quantitative data specifically related to the relationship between livelihoods and food security, and where food purchase is a primary means of access, poverty indicators are useful proxies for vulnerability. While poor people are not necessarily food insecure, they are highly exposed to shock events and have limited coping capacities. The study was designed to collect and analyze pre-crisis information to provide a baseline understanding of the current situation. Specifically, the study was designed to answer the following questions:

- Who are the hungry poor?
- Where do they live and how many are they?
- Why are they food insecure?
- Can food assistance make a difference in reducing hunger?

Livelihood systems

There are four principal activities households pursue to meet their needs; agriculture (farming of staple and cash crops and livestock), fishing, petty trade, and emigration/remittances. Many households pursue a combination of these strategies. Together, agriculture and fishing constitute more than 40% of the country's GDP. Primary export crops include vanilla, cloves, coffee, and ylang-ylang and account for more than 20% of the production value. Primary staple crops include bananas, cassava, taro, and sweet potato. The agricultural sub-sector (staple crops) contributes around 80% of agricultural production value, against only 12 to 21% for exportable cash crops.

¹ The data presented in this summary are a representative sample taken from recent studies in Comoros. Additional data and citations can be found in the body of the report.

Livestock production is a small-scale activity with very few commercial producers. Most livestock production is a complementary activity of farming households. The number of professional fishermen is estimated at 8,500 and the number of people employed in the industry is estimated at 24,000 - about 6% of the working-aged population. Petty trade and micro-business are important livelihood strategies for many households. Overall this sector contributes to 16% of the economy. It is especially important for women, as nearly half of the people active in this sector are women and it accounts for 20% of all female employment. Finally, the importance of remittances cannot be overemphasized. An estimated 20-25% of the Comorian population lives overseas. These émigrés maintain strong ties with the population back home and contribute US \$36 million dollars in cash transfers and US \$15 to \$20 million in goods each year.

Livelihood outcomes

Available data show that poverty is widespread and growing, with more than 54% of population living under the poverty line. This proportion is higher in rural areas and among farm families. Poverty exists nationwide but disparities exist among the three islands: Anjouan is the worst off, with an estimated 61% of households under the poverty line. The proportions in Mohéli (56%) and Grande Comore (34%) are lower but still of concern. The number of meals consumed per day is a key indicator of food insecurity. On average, about 14% of households consumed one meal per day (at the time of one study), with highest levels recorded in Anjouan (16%) and Grand Comore (12%). Another recent national study found the following levels of the three nutrition indicators: stunting 41.1%, underweight 24.9%, and wasting 7.9 percent. Stunting was much higher in rural areas, while wasting was higher in urban areas.

Vulnerability and vulnerable groups

Households vulnerable to transitory food insecurity are those exposed to periodic shocks, including flooding, environmental degradation and volcanic activity; including the recent eruption of Mt. Karthala. Livelihoods most at risk are agriculture and fishing. Other households in this group, including agricultural and fishing families, experience annual 'lean' seasons and reduce consumption or purchase food on credit to cope.

A second group is comprised of households whose 'normal' livelihood systems almost never provide food in adequate quantity and diversity. These are households who are currently and chronically food insecure. In addition, due to the negative trends in vulnerability indicators (e.g. import and export prices, environmental degradation, and informal safety net breakdowns), households and groups that were traditionally vulnerable to transitory food insecurity are increasingly vulnerable to chronic food insecurity. These are households whose coping strategies have been stretched beyond their means and are unable to recover following a shock event such as a volcanic eruption.

Households tend to cope with chronic food insecurity through emigration and a weakening social support network, and trends are not promising for the future. Other coping strategies include reduced food consumption and changes in dietary consumption.

Conclusions

Food security in the Comoros is largely an issue of access. Both primary and secondary data sources confirm that food is generally available on the island year round, even in the more remote areas. Secondary data indicate problems of chronic and current food insecurity. Fourteen percent (50,000 individuals) of the agricultural population eats only one meal a day and 67% (240,000 individuals) eats two or fewer meals. Nutrition indicators are also negative; more than 40% of the children are stunted and 8% are wasted. Forty-three percent of all infant deaths are related to malnutrition. This chronically food insecure group forms the majority of the population.

Anjouan: By all measures this island is the most food insecure and contains the most vulnerable households. The reliance on fishing (a livelihood activity strongly correlated with household poverty), in conjunction with limited and overexploited agricultural land creates a situation in which many households are unable to meet their basic needs. As a result the island is experiencing out-migration. Food insecure areas (based on consumption) are Nioumakélé and Mutsamudu while the most vulnerable (using a poverty proxy) are Mramani, Domoni and Moya.

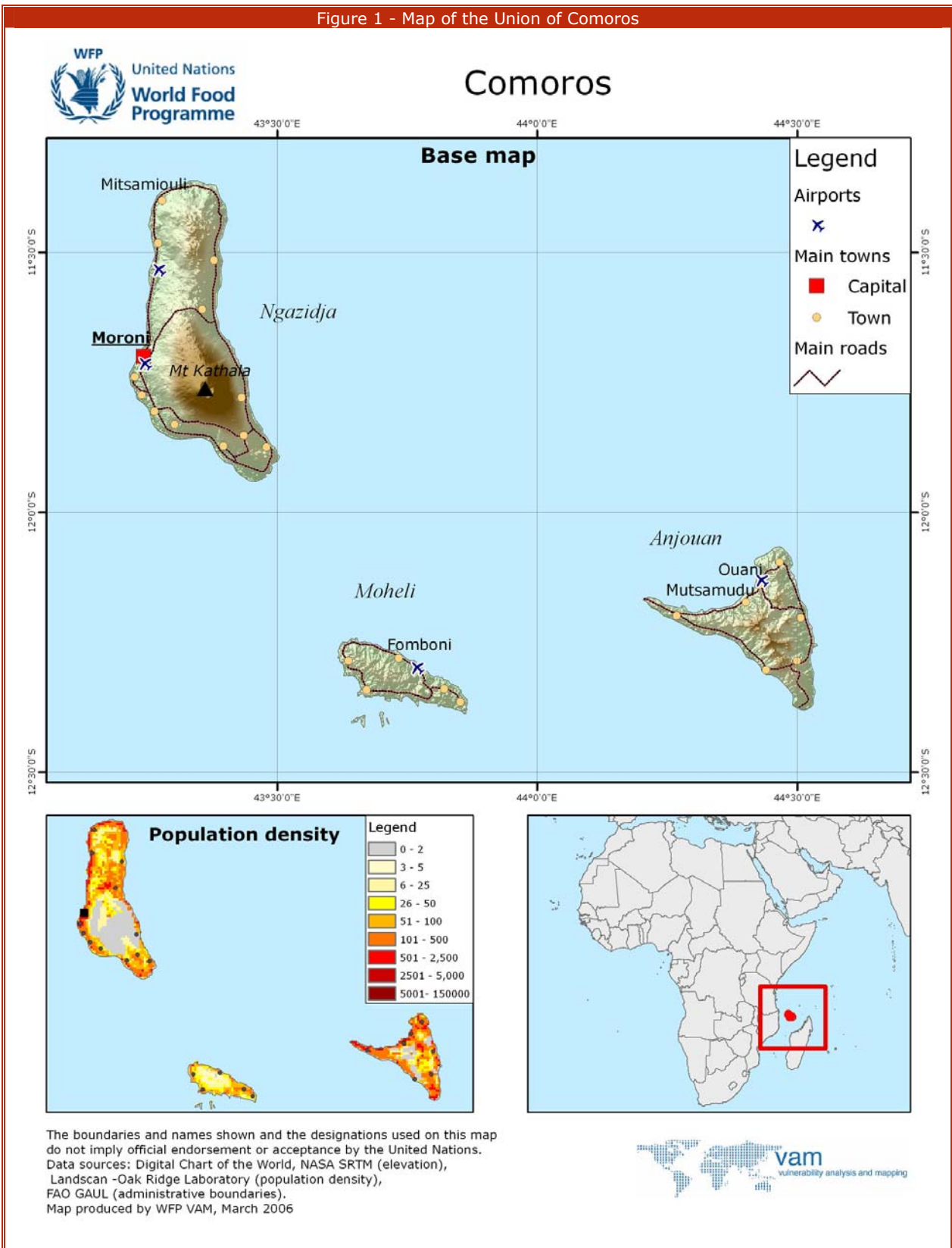
Grande Comore: Current indicators show that the largest island is ranked between the other two in terms of food security. The island has more developed infrastructure than the

others and is the recipient of larger amounts of remittances. There is also a greater dependence on livestock production than on the other islands. Food insecure areas (based on consumption) are Fombouni, Mitsamiouli, Dembeni, and Moroni while the most vulnerable (using a poverty proxy) is Dimani.

Mohéli: Mohéli is the least food insecure of the islands. Consequently, it may be the most vulnerable to food insecurity. Food consumption is better on Mohéli and large numbers of people from other islands are beginning to move there in search of arable land and less congested fishing areas. This is beginning to put a strain on the environment. The food insecure area (based on consumption) is Fomboni with the most vulnerable areas (using a poverty proxy) are Nioumachoua and Wanani.

Institutional support for vulnerable Comorian communities, whether by national or international agencies, is largely absent. People in the rural zone feel that they have been largely abandoned to their fate while trend analysis supports this view. As time progresses, acute food crises may become more frequent and severe. However, of greater concern are the chronically food insecure whereby rural and (to a lesser extent) urban poor are often unable to acquire food of acceptable quality and quantity. However, before any type of intervention can be developed, a detailed baseline food security survey should be conducted. The currently available data are not sufficient to precisely identify needs or target populations.

Figure 1 - Map of the Union of Comoros



Part I - Introduction and Background

The Comoros archipelago consists of four main islands located in the Mozambique Channel of the Southern Indian Ocean. One of the islands, Mayotte, remained a French protectorate following independence in 1975. The three islands that comprise the Union of Comoros have a land mass of 1,862 km², and are located approximately 300 kilometres from both of their closest neighbours; Mozambique to the west, and Madagascar to the southeast. The islands have a total resident population estimated at 632,000 of which 52% live in Grande Comore (Ngazidja), 43% in Anjouan (Ndzouani), and 5% in Mohéli (Mwali) (IMF 2004). Population density varies widely from island to island with 575 persons/km² on Anjouan, 258 persons/km² on Grande Comore and 123 persons/km² on Mohéli (Union des Comores 2005).

The volcanic islands were not formed at the same time, but rather were formed in succession following migration of volcanic activity. Mohéli is the oldest island (3.4 to 1.4 million years old) followed by Anjouan (1.5 – 0.4 million years old) and Grande Comore (130 thousand years old) (Republique Federale Islamique des Comores 1993). The islands display a large diversity of landscapes and geomorphology. Mohéli is characterized by high mountainous relief near the volcano, which lessens in the east as the landscape transitions into coastal plains. As the oldest of the islands, coral reefs surround the island providing habitat for abundant marine life. Anjouan is the most mountainous of the islands and supports only a limited swath of flatlands along the margin of the ocean. Grande Comore stands out from the other two islands due to the existence of Mt. Karthala, the only active volcano in the region which reaches a height of 2,361 meters. To the north of the volcano are descending plains where a majority of the livestock production takes place. In the past, all of the islands were covered in primary evergreen forests. The extent of primary forest has diminished due to anthropogenic activities and continues to dwindle. Virgin forest only exists in the upper regions where access is difficult.

The islands are well within the Indian Ocean monsoon system and the humid, tropical climate is influenced primarily by the Inter-Tropical Convergence Zone. The climate is highly variable, both geographically and temporally. The rainfall patterns are characterized by distinct rainy and dry seasons with the rainy season generally occurring between November and March-April. The onset and length of the rainy season and the level of precipitation vary greatly within and between the islands. The longest rainy season, in the Mitsiamouli region of Grande Comore, lasts nearly eight months. The shortest, in Mohéli, lasts five months. Annual rainfall totals vary between 1,187mm in Fomboni, Mohéli, to 5,623mm in Koimbani, Grande Comore. The orthography of the islands is a prime determinant of climatic conditions. On the windward sides, rainfall totals increase dramatically as altitude increases. The leeward regions fall within a rain shadow and the climate is considerably drier. Mohéli is the most leeward of the islands, protected from northerly winds by Grande Comore and protected from southeasterly winds by Madagascar and Anjouan.

In spite of the abundant rainfall and lush forests, the Comoros face problems similar to other small island states. Notwithstanding the high levels of rainfall, drinking water has always proved problematic. Mohéli is the best supplied with running water and Anjouan has running water that flows from the central mountain peak, though it lacks running water on any of the three peninsulas. Grande Comore does not have any perennial surface water sources. Comorians without access to running water are dependent on catchments tanks and cisterns to meet their consumptions needs. In addition, the soils are not generally fertile. While rich in some minerals they lack humus and other organic matter and require vigilant husbandry to maintain their productivity.

Because of their location on the East African trade route the islands have been exposed to a diversity of cultures and peoples since humans first made their homes on the islands, toward the end of the first millennium. Before French colonization the islands were dominated by Arab and Persian cultures and the primary language of the elite was Arabic. Today, 98% of the Comorians are Sunni Muslims. Grande Comore is the most traditional of the three islands and there are still strong divisions in the roles of men and women, particularly in the rural areas. However, Islamic traditions and the importance of social obligations are evident on all of the islands. One of the more visible and important religious and social rituals is the *grand mariage*. This marriage ceremony provides the opportunity for the family to demonstrate its economic position and serves as a way to

redistribute wealth within the community. It also functions as a mechanism by which individuals rise in rank and stature and enter into the elite of society.

The Comoros belong to the group of Least Developed Countries and Small Island Developing States, with a per capita GDP of \$450 and a Human Development Index score of .544. This ranks the Comoros 132nd out of 177 countries; slightly higher than Sub-Saharan Africa (.515) and Madagascar (.499); and above the threshold for countries with low human development (.486). The economy is based on agriculture, which accounts for 40% of the GDP, and on imports, which account for 52% of the GDP on average. The lack of diversity in economic activities leaves the country exposed to external shocks and an increasing debt burden. The country now has an interim Poverty Reduction Strategy Paper and has implemented a Staff Monitored Program in efforts to qualify for the Heavily Indebted Poor Countries initiative to reduce external debt.

Prior to French colonization the islands did not function as a single political unit and it was only after independence that the islands began to seek ways to unify. The transition from independent, colonized countries to a Union of islands with shared histories and culture has been marred by significant political turmoil, punctuated by approximately 20 coups since independence. In 1997 Anjouan seceded from what was then known as the Federal Islamic Republic of the Comoros. Anjouan failed to be reintegrated with France and following three years of increasing sanctions and the threat of military involvement by the OAU came to an agreement and signed the Fomboni Accords in 2000.

The Fomboni Accords set the stage for building a "New Comoros Community" based on internationally recognized borders and a confederal political structure. The new constitution, which created the Union of the Comoros, was signed in 2001. The governing structure created by the constitution calls for a single Union president who is assisted by two vice-presidents from the other islands. A Union president is elected every four years according to the principle of rotation among the islands. The second election, and the first test of the principle of rotation, is slated for April of this year.

Part II - Objectives and methodology

Section 2.1 - Objectives

The overall objective of the Comprehensive Food Security Vulnerability Analysis (CFSVA) is to provide information relating to food security and vulnerability of the Comorian population. WFP does not maintain a presence in the country and food security and vulnerability information is scarce. Therefore, the study was designed to collect and analyze pre-crisis information to provide a baseline understanding of the current situation. Specifically, the first objective is designed to answer the following questions:

- Who are the hungry poor?
- Where do they live?
- How many are they?
- Why are they food insecure?
- Can food assistance make a difference in reducing hunger?

In the course of the assessment the team has identified information gaps (see below). In addition, the team will be able to contribute to the refinement of assessment and analysis methods in countries where WFP does not have a presence.

Section 2.2 - Methods

The CFSVA used a participatory and consultative approach involving Government, UN, donors, NGOs and community representatives in order to encourage productive partnerships (i.e., for data collection, analysis, reporting), build synergies and avoid duplication in assessment and analysis activities. Data used in the analysis came from both secondary and primary sources.

2.2.1 - Secondary data

Outside of the country, secondary data on the Union of the Comoros are difficult to obtain. A majority of the secondary data used in the analysis came from individuals and institutions located on each of the three individual islands. A full list of resources collected is found in the Bibliography.

2.2.2 - Primary data

Primary data collection was designed to help fill in some of the gaps found in the secondary data. Specifically, it was designed to help capture some of the heterogeneity both within and between the islands. Various types of primary data collection methods were used, including:

- Key informant interviews;
- Market surveys;
- Focus groups;
- Household interviews; and
- Transect walks.

Topical outlines used to guide discussions with key informants and community respondents are attached as Annex II.

2.2.3 - Analytical approach

The assessment examines two aspects of food security; who is currently food insecure and who is vulnerable to food insecurity. The first is determined by looking at food security outcomes including health and nutrition indicators. The second is addressed using a livelihoods and vulnerability framework. In the case of Comoros where there is limited quantitative data specifically related to the relationship between livelihoods and food security, and where food purchase is a primary means of access, poverty indicators are useful proxies for vulnerability. While poor people are not necessarily food insecure, they are highly exposed to shock events and have limited coping capacities.

Food security is defined as having adequate food available, access to the food, and proper use and consumption of the food (Figure 2). In a food secure context individuals and households are able to meet all three of these requirements.

Vulnerability, on the other hand, looks at possible future states by analyzing exposure to shocks and events that effect the food security requirements and the relative ability of households to adequately respond to the effects of the shocks. The ability of individuals and households to meet all three food security requirements is based on their livelihood strategies.

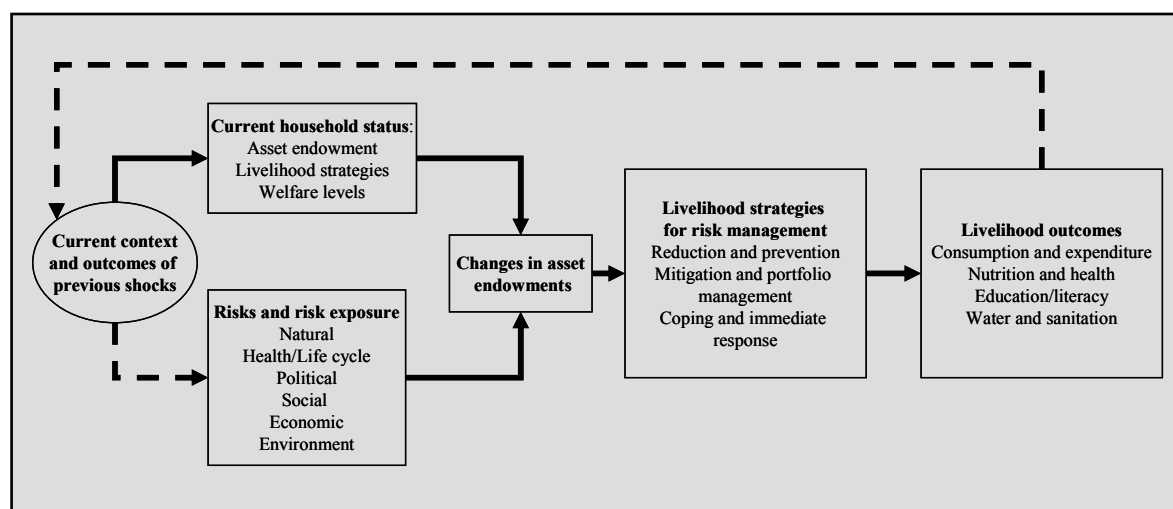
Livelihoods refer to the variety of ways in which households are able to earn a living and meet their daily dietary, physical, social and other needs. Successful livelihoods are dependent on household ownership of or access to human, natural, social, physical and financial capital. While livelihood outcomes are measured at a household level, livelihood options, and thus outcomes, are influenced by factors at numerous levels ranging from the individual to the national and global. The analysis examines risks and context factors internal and external to the household as they relate to food availability, access, and consumption and is based on a synthesis of secondary data and information collected from primary sources.

Box 1 - The three pillars of food security

- **Availability**
Aggregate food **availability** means that sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports or food aid are consistently available to individuals or are within reasonable proximity to them.
- **Access**
Individuals have sufficient **access** to food when they have "adequate incomes or other resources to purchase or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level." In addition to purchase, households access food through agricultural production. Access can also be constrained by a range of market factors such as price trends, and location and physical or social accessibility of market infrastructure.
- **Utilization**
Finally, adequate food **utilization** is realized when "food is properly used; proper food processing and storage techniques are employed, adequate knowledge of nutrition and child care techniques exists and is applied; and adequate health and sanitation services exist".

Source: USAID, 1992

Figure 2 - Risk and Livelihood Framework



Source: (VAM 2005)

2.2.4 - Sites visited

Three communities, including the capitals, were visited on each of the islands. Three criteria were examined to help determine appropriate communities; risk (exposure to shock events), food security outcome indicators (nutrition indicators), and the types of livelihoods pursued by the households. Key informants were used to identify the regions and communities that represented different characteristics and that demonstrated overall

high poverty levels. The following table lists the selected communities and general characteristics of each.

Table 1 - Sites visited and selection criteria				
Island	Community	Risk	Food security	Livelihoods
Grande Comore	Moroni	Capital		
	Kourani	Volcanic eruption		Agriculture
	Tsinimouapanga	Volcanic eruption		Agriculture
Anjouan	Moutsamoudou	Capital		
	Hajoho	Flooding/storms	High malnutrition	Agriculture
	Koni-Djodjo	Cyclones/storms	Participation in recuperation centres	Agriculture
Mohéli	Fomboni	Capital		
	Hoani	Volcanic eruption, flooding		Fishing, agriculture
	Hamavouna	Flooding	High malnutrition	Fishing, agriculture, livestock

2.2.5 - Data limitations/constraints

A principal limitation, for both primary and secondary data, is that the data do not capture the full range of variation within and between the islands. Although the country is geographically small, there is a high level of heterogeneity within the population that results from variations in physical infrastructure, institutional access, agro-environmental contexts, social issues, as well as risk environments. Secondary data are limited by their aggregation at the regional and island level. The ability to fully document the heterogeneity through primary data collection was limited by time constraints.

2.2.6 - Field constraints

The constraints listed below are presented with future researchers in mind. They are factors that must be considered prior to any future assessment activities on the islands.

- Grande Comore is the most traditional of the three islands in terms of social relations between men and women. The female team member was not permitted to participate in the men's group discussion and the male team members were not allowed contact with the women of the village. Teams should always be composed of both males and females.
- Transportation between the islands can be complicated and is not always reliable. Time buffers should be built into schedules.
- Outside of the capitals many of the residents do not speak French. A local interpreter is necessary to conduct focus group discussions and household interviews.

2.2.7 - Information gaps

The following bullet points describe the types of information that either does not exist, is not up-to-date, or was unavailable at the time of the assessment. Such information would have been useful for filling in the gaps in our current understanding of the context and trends regarding vulnerability to food insecurity in the Comoros.

- The secondary data which formed the basis of the analysis was not designed to answer questions of food security². The only data analyzed by population sub-groups are the poverty data, but the livelihood groups used are gross and not precise. As a result, the food insecurity groups discussed in this report are broader and coarser than ideal. Primary research designed to understand vulnerability and

² One exception is the food consumption module of the agricultural census. However, this data is available only at the regional level and is not correlated with livelihood groups or any other sub-group of the population.

food security is necessary for greater precision in identifying vulnerable groups. Data for nutrition indicators are only available at the national level;

- There is a lack of digital cartographic and geo-spatial data, which limits the ability to graphically view and analyze vulnerability and food security. The cartographic information that does exist, produced by the French National Geographic Institute, does not contain political/administrative boundary data;
- There are no recent comprehensive food consumption data;
- There is no detailed survey report presenting household level livelihood information. Rather, most available survey data look at monetary poverty;
- Further research should be done to understand the international marketing mechanisms and how these impact farm gate prices and household vulnerability;
- The role of remittances in response to emergencies, and not solely as a livelihood strategy, should be further explored. Increased understanding of the trends in remittances should also be pursued.

Part III - Socio-economic background

Section 3.1 - Demography

It is often noted that the Comorian population is increasing at a high rate, which results in increasing pressure on the ecological system. Indeed, in the last 25 years the total resident population has nearly doubled from 335,150 to an estimated 632,000 in 2004 (IMF 2004). The rate of increase estimate provided in Table 2 is lower than other estimates that put the rate of natural increase at 3.0 (PRB 2005) which is much higher than the 2.5 average for Africa and the 1.2 world average. Three-quarters of women use no method of birth control. This statistic was slightly lower for educated women (61%) and women living in urban zones (66%) (Republique Federale Islamique des Comores 2001). Fertility rates are slowly decreasing over time (Mondoha, Schoemaker et al. 1996). Within the islands themselves, there are significant differences in the rate of population increase. Mohéli, which is the most urban of the three islands, is increasing at a rate of more than 50% higher than that of the other two islands.

Table 2 - Resident population and change

Location	Number of inhabitants			% of total population 2003	Rate of increase 1991-2003	% Urban	% Rural
	1980	1991	2003				
Mohéli	16,536	24,331	35,751	6.2	3.3	54.8	45.2
Anjouan	135,958	188,953	243,732	42.3	2.1	28.6	71.4
Grande Comore	182,656	233,533	296,177	51.4	2.0	24.1	75.9
Total	335,150	446,817	575,660	100.0	2.1	27.9	72.1

Source: 2003 RGPH

Population density is another way to understand the population changes. The following figures show how density has changed in recent years (ACTIV 2005).

- Grand Comore : from 3.8 people/ha to 4.8 people/ha, or an increase of 27%
- Anjouan: from 5.0 people/ha to 6.4 people/ha, or an increase of 29%
- Mohéli: from 1.5 people/ha to 2.2 people/ha, or an increase of 47%

Almost all households are headed by men; female-headed households total only between 7 to 8% on each of the islands. Education rates are increasing but household heads still tend to have low levels of educational attainment. In Anjouan 67% of the household heads do not have any type of formal education as compared to 61% in Grande Comore and 52% in Mohéli. In the Comoros, as in many other locations in the world, educational attainment is a primary determinant for income and poverty. Only 11% of household heads with a post-secondary education are poor and only 22% of the non-poor are uneducated (Lachaud 2005). A literacy rate of 56% was measured for those 15 and over which is slightly less than the average for sub-Saharan Africa (UNDP 2003).

The Comorian population is extremely young - more than 40% of the population is less than 25 years old and nearly 80% younger than 35 years of age. The rural demographic is slightly younger than its urban counterpart (ACTIV 2005). Poor households have on average 6.6 members, while households of moderate means have 5.2 members and rich households have 4.1 members (Hassane 2005).

School enrolment was reported at 73% - 66% for girls. This level has remained steady or increased over time. However, concern remains about drop-out rates and failure to graduate, particularly for girls (Union des Comores 2005). Non-enrolment is much higher in Anjouan (68% vs. 54%) and in rural areas (64% vs. 46%) (Mondoha, Schoemaker et al. 1996). Girls are more likely to stay out of school as age increases. The main reasons given for dropping-out were failure in classes, not liking school, and getting married. 'Lack of money' or 'need to help family' were less frequently cited. For reasons not clearly explained, only 57% of children under 15 years of age live with both their biological parents; 20% do not live with either parent; and 22% live only with their mother (Mondoha, Schoemaker et al. 1996). This situation is accentuated in urban zones.

Section 3.2 - Income and poverty

Over 60% of the Comorian population depends to some degree on income from the agricultural sector. Often this is insufficient to meet the needs of the household, however, and non-farm sources of income are limited. Day labour demand, for example, is scarce and represents less than 7% of all economic activity (*Mouhidine 2005*). Of the household heads with off-farm income, there is a lesser chance of holding a salaried position (20%) for rural residents than those that live in the urban areas (47%) where it is the primary type of economic activity. Salaried positions, however, are not always a guaranteed income. Many salaried positions are government financed and employees may not be paid every month. According to interviews, some civil servants have not been paid in over a year. In the rural areas the primary non-farm economic activities involve self-employment and include petty trading and micro-businesses. These activities represent nearly 60% of all non-farm economic activities. Women are more likely than men to be self-employed in both the rural and urban environments.

The above figures relate to households with off-farm economic activity. Many households, however, do not have any local source of cash income or do not have any income other than farm production sales. Twenty-nine percent of all households do not have any family members working outside of the home or farm. This figure varies between a high of 41% in Anjouan to a low of 18% in Grande Comore. In addition, 34% of all households have only one income earner while only 14% have 3 or more income earners (*Union des Comores 2005*).

An important source of household income which is also the most significant source of cash resources are remittances coming from Comorian émigrés, living in France or its territories. Remittances are negligible on Mohéli but 57% of households on Anjouan and 43% on Grand Comore receive some form of transfer. In 2001, transfers roughly equalled the national budget of the country (approximately 17 billion Comorian francs) (*ACTIV 2005*).

3.2 1 - Monetary poverty

The lack of economic opportunities in the Comoros contributes to a high overall poverty index. Poverty is widespread on all three islands and individuals have seen a decline in living conditions as a result of political and economic crises and insecurity. Poverty is not a direct measure of food security or vulnerability to food security but it is related and provides perspective on the overall economic context of the country. The Gini coefficient – which measures inequality in income distribution – is following a negative trend. It increased 26%, from .443 in 1995 to .557 in 2004 (*Lachaud 2005*). Table 3 presents the poverty figures by region. The incidence of poverty at the household level for the country is 37% which equates to nearly 45% of the population, or 285,000 people. In all three of the islands the headcount poverty rate is over 40%, though Mohéli has the highest rate at nearly 50%. Rural rates are also much higher for Grande Comore and Anjouan, though they are nearly equal in Mohéli.

Location	Households		Individuals
	Rate	Contribution	Rate
Grand Comore	35.3	46	42.7
Moroni	27.8	6.9	37.4
Other urban areas	19.5	2.1	27.9
Rural	39.1	37	45.4
Anjouan	38.4	47.7	46.4
Urban	25.5	8.8	31.3
Rural	43.5	38.9	52.1
Mohéli	37.8	6.4	49.1
Urban	37.5	3.5	48.1
Rural	38.3	2.9	50.2
Total	36.9	100	44.8

Source: (*Lachaud 2005*)

Poverty is not evenly distributed among the population; rather it is strongly tied to factors such as education and economic activities. The economic activity category with the lowest

rate of poverty is a salaried position (25%). On the other end of the scale are the fishermen of whom 54% are poor with a headcount rate that reaches 60 percent. There is virtually no difference between agriculturalists who produce staples and those who produce cash crops (*Lachaud 2005*).

3.2.2 - Non-monetary poverty

Non-monetary poverty indicators also suggest high levels of poverty, particularly in the rural areas. Nearly 60% of the households live in structures other than cement, including adobe, palm leaf, wood, and sheet metal structures. Few households have access to electricity. In Grande Comore, the island with the highest rates, only 42% of the households have electricity, the majority of which are located in the capital. The rest of the population depends primarily on kerosene, an imported product whose price continues to rise. On all three islands, cooking is mostly done on wood stoves and nearly 80% of all households use wood to prepare their meals. Wood is also the fuel used to extract the ylang-ylang essence. The pressure from these two activities is making fuel wood more difficult to access.

Section 3.3 - Health

A 2002 survey that focused on public perceptions related to poverty and poverty indicators, found that health status and the quality of, and access to, health care are factors of great importance (*Union des Comores 2002*). Only 14% of the population has adequate access to primary health care. This percentage is lowest in Anjouan where it drops to 10 percent. Principal constraints are lack of health care agents and accessible health care facilities. Costs of consultations and of medicine also limit the extent of medical care. A large contributor to the poor health situation is lack of access to potable water. According to the 2002 Poverty Perception Report (*Union des Comores 2002*) only 23% of the population has access to improved water sources. This ranges from a high of 39% in Grande Comore to 14% in Mohéli and 9% in Anjouan. Most households depend on cisterns and rain catchments for their consumption needs. These water sources, which are largely open and unprotected are prime mosquito breeding grounds and implicated in high rates of malarial infection. These water sources are also easily contaminated and contribute to diarrhoeal disease.

Section 3.4 - Diaspora

Following independence large numbers of Comorians began emigrating which resulted in what is known as the Diaspora. Currently an estimated 20-25% of the Comorian population lives overseas translating into 150,000 to 200,000 individuals. Three trends have been noted regarding migration.

- Internal migration from Grand Comore and Anjouan to Mohéli and from Anjouan to Grand Comore: mostly due to search for land resources or employment. The strongest trend currently is from Anjouan to Mohéli.
- Regional migration to Madagascar and East Africa (mostly from Grand Comore; less so from Anjouan); to Mayotte (mostly from Anjouan); and
- Long-distance migration mostly from Grand Comore to the French cities of: Marseille, Paris, Toulon, Dunkerque (*ACTIV 2005*).

The majority lives in France or Mayotte. These émigrés maintain strong ties with the population back home and contribute US \$36 million in cash transfers and US \$15 to \$20 million in goods each year (*Cruz, Fengler et al. 2004*). The Diaspora population can be divided into three generations:

- the first generation consists of those who migrated in the first decade after independence;
- the second generation is comprised of individuals who were brought over at a young age and were educated abroad;
- the third generation is made up of those who were born and educated abroad.

The third generation is estimated to represent between 60 and 70% of the Diaspora population. This has significant ramifications for the home populations as cultures, religion, and other ties gradually grow distant it is likely that remittances will decline as

familial obligations are diminished. Nevertheless, the dream of most families is to have a member living overseas.

Section 3.5 - Livelihood strategies

In-depth knowledge of livelihoods systems is integral to understanding causes of vulnerability and to selecting appropriate interventions for different vulnerable groups. There are four principal activities households pursue to meet their needs; agriculture (farming and livestock), fishing, self-employment, and emigration/remittances. A small percentage of households have one primary livelihood activity such as livestock husbandry, but most households pursue a combination of these strategies. The following sections concisely describe these strategies along with some constraints to productivity or income; factors that help explain vulnerability to food insecurity. The relationships between these livelihood groups and vulnerability are explored more fully in Section 3.11.

3.5.1 - Agriculture

Agriculture is the most common of the four principal activities and 62% of the total population is dependent to some degree on agricultural production (*ACTIV 2005*). The contributions of agriculture and fishing combined constitute 41% of the country's GDP. The farming system is complex with each household growing a wide variety of crops. The agricultural sector is focused on staples and types of crops that are consumed locally. The staples include bananas, cassava, taro, and sweet potato and contribute around 80% of agricultural production value. Other agricultural production includes a variety of fruits, horticultural products such as onions, eggplant and other vegetables, and coconuts. Primary export crops include vanilla, cloves, coffee, and ylang-ylang and account for between 12 and 21% of the production value (*ACTIV 2005*). About half of households produce vanilla, and 25% or less produce cloves and ylang-ylang (*Gale-Group 2000*). Production of these export crops is a complement to staple food production; few if any farms are dedicated solely to cash crop production. The team could not determine conclusively if the set of households producing export crops are by definition less vulnerable than households not employing that activity. All types of agricultural products are commercialized, including a large part of the staples, since access to many food items such as rice, sugar, oil, etc. and non-food needs is through income generated, in part, by crop sales. The only source of cash for many families is through marketing of their production.

Access to arable land is one of the largest constraints for producers on all three islands, though it is more pronounced on Anjouan and parts of Grande Comore. There are two ways in which individuals have access to land. The first is ownership. Comorian society is matriarchal and matrilineal³ and land ownership is through the female line. However, the size of farm parcels has decreased with the passing generations, forcing farmers to find other ways to gain access to land. Households that either do not own land or do not own enough land to form a viable economic unit must negotiate access with members from their village. Normally the land is not freely given and the negotiated terms vary widely. Some land owners may ask for gifts from the production while others may require a percentage which may be equal in value of up to half of the harvest (*Household interview*).

Land that is not privately owned is controlled by villages or by the state. Statistics could not be located that define tenure and ownership patterns. It was stated, however, that in the absence of legal documentation, ownership is often a contested issue, particularly for land not privately owned (*Interview UNDP*). The lack of documentation, combined with a high demand means that outsiders have difficulty gaining access to land. Some of the areas where land access is most insecure are those settled by people from other islands who immigrated during the colonial plantation era. These people are often concentrated in areas such as the villages of Barakani and Ndrondroni (Mohéli) where the colonists maintained a strong presence until independence. At the same time land holding sizes tend to be larger on Mohéli (3 ha) than on the other islands (*PDRM 1997*). Statistics show that on Anjouan the majority of arable land is already under cultivation (*ACTIV 2005*).

³ Matriarchal refers to aspects of Comorian society in which all land and housing assets, as well as power and prestige are passed from mother to daughter, and not through the male lineage. Matrilineal is an outgrowth of the Comorian matriarchal system where a husband relocates to live in his wife's house and work on the wife's land. In cases of divorce, assets remain with the woman.

Almost all of the agricultural production is done by individual households. There are very few production/marketing associations or cooperatives on any of the islands. Among poor households visited in the course of this study, none benefited from membership in any type of farming association. The SNAC (*Societe Nationale de Agriculteurs Comoriens*) operates on each of the islands but assists relatively few households and mostly those with the means to pay membership fees. In Anjouan, for example, only 600 farmers are on the association's roster.

In addition, access to agricultural credit is reportedly so limited as to be considered non-existent. The 2004 agricultural census noted that less than 0.5% of farm households were working with credit (*ACTIV 2005*). A community-based savings and credit institution, called SANDUK, is present in many villages but poor households visited were often unaware of its existence and did not have access to its services.

Much of the agricultural labour is provided by the women. This creates labour constraints particularly when children are young and require more care. Agricultural technology is very basic. The orthography of the region and the crop selection dictate an almost completely manual operation. Past WFP efforts in Anjouan were directed at terracing and contour planting. Although WFP closed operations in the early 1990's the remains of these projects are still evident on the hillsides. Irrigation is also very limited. There are small irrigation perimeters on Anjouan but few producers participate.

Livestock production is a small-scale activity with very few commercial producers. In fact, the total number of ruminants on the islands is around 175,000, the majority of which are goats, followed by cattle and sheep (*ACTIV 2005*). The ruminants serve as a source of savings for many of the families and cattle are also exploited for their milk production. Milk production is almost entirely for household consumption. Fewer than 100 persons in the country are dedicated to intensive poultry production (*ACTIV 2006*).

3.5.2 - Fishing

Fishing is an activity on all three of the islands. While there are some households that subsist solely from fishing, in general it appears to be carried out in conjunction with agricultural activities. Fishing, like agriculture, is primarily a small-scale activity and there are not large commercial fishing fleets. There are two distinctions within the fishing community that impact, and are reflected in, the success of the fishermen. The first is the type of boat used, of which there are two general models. The traditional canoe is carved out of a single tree trunk and made by the fishermen themselves. These canoes are attached to outriggers and are propelled by oars and sometimes sails. These are the least expensive boats but they are also the most restrictive in terms of access to the best fishing areas, which shift throughout the year. The second type of boat is commercially constructed, made out of fibreglass and use an outboard motor. These boats are considerably more expensive but allow freedom to follow the best fishing throughout the year.

The better-off fishermen own their own outboard boats. Those without boats are able to lease and this is a strategy that many individuals use. Lessees may pay up to 50% of the value of their catch to the boat owners (*Household interview*). Fishing technology is limited and most fishermen fish with lines. The volcanic nature of the islands also provides ideal habitat for octopus and other marine animals, which are harvested as the tide recedes.

Fishing faces three primary constraints. The first is that with the exception of Mohéli, there does not exist a continental shelf. This reduces the area that is conducive to the shallow water type of fishing most common in Comoros, which takes place within several hundred meters of shore (*San 1983*). The second constraint relates to the types of fishing vessels and their sources of power. This is a constraint that was more significant in the past when there were fewer outboard motors on the islands. The increase in outboards has created a division among fishermen and the more successful are those that have access to diesel motors and can follow the fish. This has meant that many fishermen undertake the journeys from Anjouan and Grande Comore to fish in the more productive waters off of Mohéli. There do not appear to be conflicts over the fishing resources. The high season is from November to February.

Even with the increased ability to successfully fish the waters, production remains limited by the lack of storage and processing capabilities. There are no commercial or small-scale freezers in which to store the harvest and the catch is sold fresh. The result is that the

fishermen have to sell their entire catch each day to avoid waste. It also means that during the low season there are fewer fish being marketed in the villages.

3.5.3 - Remittances

The importance of remittances cannot be underemphasized; they make up about 12% of the country's GDP (*Cruz, Fengler et.al.*). The majority of cash transfers (between 70-90%) from emigrants are used for consumption. The remittances allow for the total value of consumption to outpace the national GDP. Remittances also play a role in the larger social context of the villages. Many emigrants belong to associations, which usually represent a village. The associations generate money and pool resources to help their villages with infrastructure projects such as road tarring, schools, mosques, health posts, etc. The remittances also play an important role in generating the wealth needed to conduct a *grand mariage*. These costly but socially important marriage ceremonies take place over several days, redistributing wealth among the community and elevating social status of the participants.

3.5.4 - Self-employment

Petty trade and micro-business are important livelihood strategies for many households. Sales activities include food and non-food products, although in the households visited, only agricultural production was marketed. Overall this sector contributes to 16% of the economy (*Union of Comoros 2005*). It is especially important for women, as nearly half of the people active in this sector are women and it accounts for 20% of all female employment. Many communities are on regular transportation routes and women routinely go to markets in the larger towns and the capitals. What they sell varies throughout the year as does the provenance of the products. When they do not have their own production to sell they purchase market items from neighbours and from local markets to sell in the larger towns.

Section 3.6 - Risk events and past impacts

The risks to which Comorians are most exposed can be roughly grouped into three categories; environmental, health, and political risks. Natural disasters, including cyclones, drought, epidemics, food shortages, tornado and volcanic eruption, have affected the population of the Comoros Islands over the last 50 years (*see Table 4 below*). This section discusses these risks and provides examples of impacts from past shocks. It should be noted that past impacts are presented as historical events and that current or future impacts are likely to be different due to the evolving livelihood context. The consequences of the main disasters are presented in the table below. The reader will note that human mortality has been minimal for most of these disasters.

Year	Type of disaster	Location	Killed	Injured	Homeless	Affected	Total
1951	Tornado		500				
1975	Food shortage	Not specified		0		300,000	300,000
1977	Volcano	Grande Comore	1		5,000	20,000	25,000
1981	Drought	Grande Comore	0				
1983	Cyclone	Nationwide	33	52		30,000	30,052
1985	Cyclone	Anjouan, Grande Comore	2			35,000	35,000
1987	Cyclone	Nationwide	24	0	50,000	0	50,000
1989	Typhoid outbreak	Anjouan	3			450	450
1989	Cyclone	Anjouan	0				
1991	Volcano	Grande Comore	0		200		200
1999	Cholera epidemic	Anjouan	16	0	0	172	172

Source: (WFP 2003)

3.6.1 - Environmental risks

Volcanic activity – The only island currently experiencing volcanic activity is Grande Comore. Over the last two hundred years the volcano has erupted every 10 to 12 years. The majority of eruptions from Mt. Karthala have been magmatic eruptions, the last of

which occurred in 1977. The resulting flows of lava are risks for particular villages that are in the path of the lava. The phreatic eruptions, which exit through the crater, involve ash, cinders and other projectiles and effect larger areas of the island. Any type of eruption may also include the release of toxic gasses, which due to their density, travel down the sides of the volcano until they dissipate. The nature of the eruption (e.g. lava flow or ash), the vagaries of wind patterns, and other factors can influence the scope and scale of impacts on communities. Box 1, below, recounts the case of the 2005 eruptions.

Box 2 - Recent eruptions on Mt. Karthala

In 2005, Grande Comore experienced two phreatic eruptions, one on April 16th – 17th and the second on November 24th. The eruptions placed a large amount of ash and cinders in the atmosphere which were then deposited on the southern region of the island. The second eruption directly affected over 100,000 people. Many of the residents nearer the crater abandoned their homes, heading to the capital city to stay with relatives until the end of the eruption. The first impacts of the eruptions were on health and water. Many residents suffered respiratory, skin, and eye problems as a result of the ash. The ash also contaminated the open cisterns of many households leaving the population without potable water sources. After the April 16 eruption, 34 villages with about 31,000 persons had domestic water supplies destroyed by volcanic ash. The effects in November were more widespread and about 245,000 in 76 villages suffered from some degree of ash fall. Nearly two weeks passed before it rained, which exacerbated negative affects of fallen ash (*Croissant-Rouge Comorien 2005*).

Four regions of Grand Comore – Dimani, Oichili, Mbadjini Est and Mbadjini Ouest – were impacted by the April 2005 eruption, while an additional three regions – Bambao, Hambou and Itsandra – plus the city of Moroni were impacted in November 2005. Nearly half the population was affected in some way by the November event, some displaced due to fears of lava flow, and others affected by falling ash. Between 120,000 and 175,000 people had their source of water temporarily fouled by falling ash. Falling ash covered tree crops, although most recovered when rain returned. Vegetable crops, important for household cash revenues, were not so fortunate; a cropping cycle was lost to many. Livestock did not suffer high mortality but egg production was reduced. Informants reported that birds and bats either died or fled the affected areas.

The long-term effects on agricultural production are as yet unclear. An FAO impact assessment was scheduled for the week following the CFSVA visit. However, according to informants it appears that there livestock illness and death occurred and that most perennials (e.g. bananas, manioc) lost their leaves because of ash cover. While many of these plants survived, the stress will likely reduce production. The greatest immediate losses were to the horticultural production, which was completely wiped out in some areas, destroying the primary cash income source of many people. The first rains, which occurred two weeks after the eruption, washed the ash off of the plants and houses. However, the ash collected at the bottom of the mountains covering and rendering useless the farmlands. Residents in these areas have begun to harvest the ash and sell it as construction material in an effort to cope with the loss of their agricultural income.

Cyclones/storms – Cyclones hit the Comoros every two to five years (*Personal interview with Mahmoud Ali Baye – Director, Central Bureau of Meteorology*), with various consequences on populations and infrastructure. However, because the islands are somewhat protected by Madagascar, large cyclones are much more infrequent. Cyclones tend to move in from the north and the east and the brunt of the damage is felt where they make land fall. Cyclones and lesser storms have significant impacts on crop production, particularly bananas. According to informants, a single storm can wipe out an entire years production leading to large-scale hunger.

Large storms are more frequent than cyclones and lead to serious flooding in some of the lower communities. The problem of flooding is more serious in Anjouan and Mohéli than Grande Comore due to the greater extent of deforestation and geologic characteristics. In Anjouan and Mohéli the communities visited had been impacted by significant flooding. In each of the communities there were crops losses, both in the field and in storage, and entire houses were carried away by flood waters. The most recent floods were in 2005. The community residents feel that the number and severity of floods is increasing and that their communities are at an increasing risk to damage from floods.

Degradation – Risks of environmental degradation threaten both agriculture and fishing livelihoods on all of the islands. Degradation combined with the heavy rains and cyclonic activity are the causes of the increasing flooding on the islands. On Mohéli and Anjouan, particularly, soil erosion threatens the fertility and productivity of the agricultural land. These two islands are at greater risk due to the high relief of the mountains and the harder rock underneath the soils that make rainfall percolation more difficult. Grande Comore,

while still at risk of degradation, demonstrates a lesser problem due to the more gradual relief and the more porous nature of the bedrock.

Soil erosion is exacerbated by high levels of deforestation that occur in response to the need to expand productive agricultural land. This has led to clearing forest cover on regions with high relief. Clearing usually takes place in several stages. The first is to clear out the smaller trees and shrubs to make room for banana and cassava. Once these are established the larger trees are removed and additional crops are planted. Even with staged removal of forest the bananas and manioc do not provide sufficient protection to secure the soil. The average return on the farm parcels diminishes rapidly and only the first two years provide decent returns. After six years most parcels must be abandoned. Deforestation is also a result of extraction for firewood, charcoal making, and for the sale of valuable hardwoods.

Forests and forest products are important from both environmental and socio-economic perspectives (*Houssen 2000; Issouf 2000*). For example, the typical Comorian household uses an average 4 kg of fuel wood each day to prepare food. Forest cover has declined precipitously, from 6.7% in 1985 to 2.8% currently (*Union des Comores 2005*). The links between this degradation and increased erosion, flooding damage, and sediment loads in coastal waters is not lost on most Comorian respondents. Anjouan Island is visibly the most affected by forest loss. Only about 8% of that island was covered by natural vegetation 15 years ago (*Ng'weno 1994*). Demand for wood exceeds the annual biomass production of existing forests, perhaps pointing to the need for a major reforestation effort (*Houssen 2000*).

Fishing (and fishing households) is also exposed to the risk of environmental degradation. In part, this is a result of the high levels of soil erosion which wash into the ocean, smothering the coral reefs. However, the reefs are also threatened by coral harvesting. The coral is harvested by dynamite and broken down to produce lime, a primary ingredient in cement. The degree to which this continues is unclear. While there is evidence of continuation, officials contend that it has been significantly reduced. Coral is also at risk of bleaching, which has occurred on a large scale two or three times in the recent past. Bleaching may be caused in part by sedimentation from soil erosion but the greater contributor is increasing sea temperatures. The effects of bleaching are a reduction in the photosynthetic properties of the coral and a corresponding reduction in the fish and marine animals that are dependent on the coral for survival. Coral can recover from bleaching within several months if the bleaching is not too severe and does not last too long. However, if the bleaching episodes are extended the coral host will die.

Destruction of beaches and reefs, and sedimentation all contribute to the decline of marine resources and endangering households dedicated to fishing (*Granek and Brown 2005*). French experts believe the country's waters could guarantee sustainable fish output of around 85,000 tonnes/year. At present, however, local inshore fishermen, using canoes (*galawas*), catch only about 13,000 t/y. (*Gale-Group 2000*). Any increase in local fishing capacity would require significant investments in capacity building and credit programs for fishermen and development of the infrastructure and storage capacity needs necessary to accept such a large increase in fishing.

Disease – Both crop and livestock systems are exposed to disease risk and both have suffered significant impacts in the recent past. The government has largely withdrawn from the veterinary sector and there is no vaccination program supported by the government. An NGO, ACTIV, claims some responsibility for veterinary services and livestock pharmaceuticals and is reportedly active on each of the three islands (*ACTIV 2006*). As a result of government withdrawal, there have been several disease events that reduced the number of cattle on the islands. Most of the diseases arrive due to clandestine importation of cattle from Madagascar or other regions. Two years ago East Coast Fever wiped out several thousand cattle in the livestock region of Grande Comore. Most producers were able to recover thanks to an FAO program that helped rebuild the herds. In other areas however, there has been a continued decline in cattle production, punctuated by disease events.

Coconuts are not native to the Comoros but once introduced gradually became an integral part of the agriculture system and dietary regimen. Many of the traditional foods include dried coconut and green coconuts are a source of clean liquid. In the past, they were also sources of income. While they did not demand a high price, there was always a market for coconuts. Over the last couple of years a majority of the coconut trees have become

infected with bacteria that destroy the productivity of the trees. The vast majority of trees observed were infected, with visible blackening of fronds. The disease has spread to all of the islands and has resulted in the Comoros having to import coconuts. The price of coconuts has more than tripled. The disease has had a dual impact on households in that people eat less coconut and are losing a valuable source of income. Possible responses include the importation of resistant varieties of coconut palms, but this has not begun at the time of the CFSVA.

3.6.2 - Health risks

Information is scant on vulnerability to food insecurity due to human health problems. Several outbreaks of cholera have been registered since 1997 (*WFP 2003*). Malaria infection rates are high on all of the islands, particularly during certain seasons of the year. No respondent however stated that households are unable to supply their food needs due to illness of productive family members. However, nationwide only 40% of children reportedly sleep under a mosquito net, and only 30% use insecticide treated nets. This figure is considerably better in Mohéli and in urban areas. Clinical tests for malaria are not common in Comoros, but one study noted that 31% of children under five had experienced fever during the previous two weeks. Values for this indicator were lower in Mohéli and in urban areas (*Republique Federale Islamique des Comores 2001*).

Prevalence rates of HIV/AIDS on all of the islands are very low - approximately one-tenth of 1 percent. Most of the reported cases are in Moroni (*UNAIDS 2000*). No evidence was uncovered that households are food insecure because of mortality/morbidity of productive adults due to HIV/AIDS.

3.6.3 - Political risks

The risk of political conflict is high with the potential for significant long-term effects on the environment and livelihoods. Since independence in 1975 the political environment has been tumultuous and the country has experienced numerous coups. Currently the country is undergoing a period of relative calm, following a new constitution in 2001 which created the Union of Comoros. Secessionist movements in Anjouan and Mohéli preceded this. The movement in Anjouan, which began in 1997, lasted several years. In response, the OAU imposed sanctions against the country that included bans on air, maritime, and telephone links, and petroleum products (*EIU 2000*). Despite ongoing smuggling, scarcity increased, especially of petroleum products, which inevitably inflated prices. Power blackouts became commonplace, and the closure of banking and financial institutions stifled trade (*Gale-Group 2000*).

The impacts of the sanctions were profound. In response to lack of petroleum products, used to power the diesel generators and supply electricity to the island, the population was forced to exploit the forest resources for fuel. This sparked large-scale deforestation as people began cutting back the forest in the higher, more rugged, and steeper regions. The price of rice also rose dramatically during this time causing people to consume less rice and more bananas, cassava and other, less nutritious local crops. Partly in response to the sanctions the residents began to plant bread fruit trees in large quantity. The coping strategies employed by the population were not sufficient to maintain food security. As a result hunger became much more common and pronounced (*Interview UNDP*).

While currently stable, the country still faces possible political turmoil in the future. The 2001 constitution gives each island a semi-autonomous government with its own president. There is one federal president who fills a four year term before the presidency is passed to another island. The current federal president of the Union will step down to allow the election of a federal president from Anjouan. April elections will mark the first time that this transfer process will take place. When the Presidents of the islands and of the Union were elected in 2002, the unfinished Constitution led to sharp conflicts of authority, particularly with respect to problems related to public finances and security, which again plunged the country into a serious political crisis that had the effect of paralyzing the establishment of constitutional institutions. It was almost two years before legislative elections could take place (*Union of Comoros 2005*). While violence seems unlikely, the possibility of continued or renewed political discord poses risks for poor households who are sensitive to disruptions in the fragile internal economy (*IMF 2005, Union des Comores 2004*).

3.6.4 - International marketing

The economy of the Union of Comoros is highly dependent on exports of several crops, primarily vanilla, cloves, and ylang-ylang extract. The volatile international markets have profound impacts both at the national and household levels. From 2003 to 2005, for example, the country suffered a 50% decline in exports due to the fall in price for vanilla, which fell from \$300/kg in 2003 to \$50/kg in 2005 (*IMF 2004*). Vanilla is also problematic as high production costs makes Comorian production non-competitive in the world market (*Union des Comores 2004*). The recent price declines are likely to reduce the national GDP growth rate from 2.8 to 1.3% in 2005. In addition, increased production in India, Vietnam and Indonesia will decrease market share for Comorian farmers (*IRIN 2006*).

Clove prices also continue to decline as synthetic versions of the product are increasingly common. Producer prices have fallen from CMF 1,900 in 2002 to CMF 600-900 in 2004 (*IMF 2005*). Ylang-ylang synthetic production has increased although quality is not considered to be equal to natural production. Prices of ylang-ylang extract have held steady over the last 3-4 years but the long-term price trend is highly volatile. Overall, about half of households produce vanilla, about 25% produce cloves and less than 10% grow ylang-ylang (*Gale-Group 2000*).

Section 3.7 - Food insecurity outcomes

As noted earlier, food insecurity manifests itself in negative outcomes for households and individuals. These outcomes can be measured directly using indicators such as food consumption or indirectly through nutritional indicators. In addition, other indicators related to human well being can be used to understand food security status and potential. This section discusses these indicators within the Comorian context.

3.7.1 - Food Consumption

Data directly measuring caloric consumption or dietary patterns were sparse. However both qualitative and quantitative measures indicate a range of problems related to food consumption. In a study of popular perceptions of poverty, food was classified as the most important factor to consider, i.e. the most important marker or indicator of poverty (*Union des Comores 2002*). The study also estimated the percentage of the population rating themselves as food secure. Overall, the percentage of food secure households was very low (16.6%), especially in Anjouan. On Anjouan, only 4.6% of respondents stated that food consumption was adequate in quality and quantity. However, respondents in Grand Comore and Mohéli cited that they were food secure more than 20% of the time. Throughout the country, meat, fish and rice are the food items most frequently lacking in the daily diet.

The Agricultural Census used number of meals per day as a key indicator of food insecurity. One meal per day was recorded by 14% of the sample, with highest levels recorded in Anjouan (16% of households) and Grand Comore (12%) (*ACTIV 2005*). These figures refer only to the agricultural sector and do not include urban areas. In **Mohéli**, the region of Fomboni was noted as having the high proportion eating one meal per day. This region also has a high number of children per household. On **Anjouan**, the Nioumakélé region has the highest concentration of households eating only one meal per day. This area has the greatest number of households headed by adolescents, and high percentage of children. On **Grand Comore**, four regions are recognized as being highly food insecure. In Fombouni, 22% of households were having one meal per day. Other regions with high numbers of families consuming one meal were Mitsamiouli (14%), Dembeni (12%), and Moroni (13%) (*ACTIV 2005*).

The data in the following table comes from the 2003 agricultural census, and is illustrative only, reflecting the food security of just the agricultural populations. These data, and the extrapolated consumption figures, represent approximately 62% of the population (*ACTIV 2005*). The data are presented at the regional level. At the time of the census, nearly 50,000 households from all of the islands were eating only one meal a day and nearly 190,000 were eating only two meals. The data do not assess the quality of the meals.

Table 5 - Meal-per-day consumption for agricultural households

Island	Region	Agricultural population	1 meal per day		2 meals per day		3 meals per day	
			%	N	%	N	%	N
Mohéli	Fomboni	5,091	8%	425	44%	2,259	47%	2,408
	Mlédjélé	6,077	0	0	48%	2,894	52%	3,190
	Djando	2,872	0	0	23%	652	77%	2,215
	Total	14,039	2%	376	41%	5,719	57%	7,944
Anjouan	Domoni	31,491	10%	3,120	57%	18,011	33%	10,366
	Mutsamudu	18,391	20%	3,604	54%	9,991	26%	4,797
	Nioumakélé	41,881	36%	15,110	56%	23,355	8%	3,416
	Ouani	39,330	6%	2,435	50%	19,646	44%	17,254
	Sima	41,889	6%	2,521	38%	15,835	56%	22,980
	Total	172,983	16%	27,341	51%	87,465	33%	57,687
Grande Comore	Dembeni	19,983	16%	3,122	52%	10,462	32%	6,399
	Foumbouni	19,436	22%	4,318	38%	7,395	40%	7,728
	Koimbani	16,824	9%	1,487	51%	8,566	40%	6,771
	Mbeni	26,476	6%	1,518	58%	15,407	36%	9,551
	Mitsamiouli	34,482	14%	4,917	65%	22,424	21%	7,141
	Moroni	21,024	13%	2,645	67%	14,114	19%	4,062
	Ntsoudjini	29,627	3%	968	61%	17,945	36%	10,707
Total	167,851	12%	19,604	56%	94,653	32%	53,395	
TOTAL		354,873	13%	47,814	53%	187,243	34%	119,108

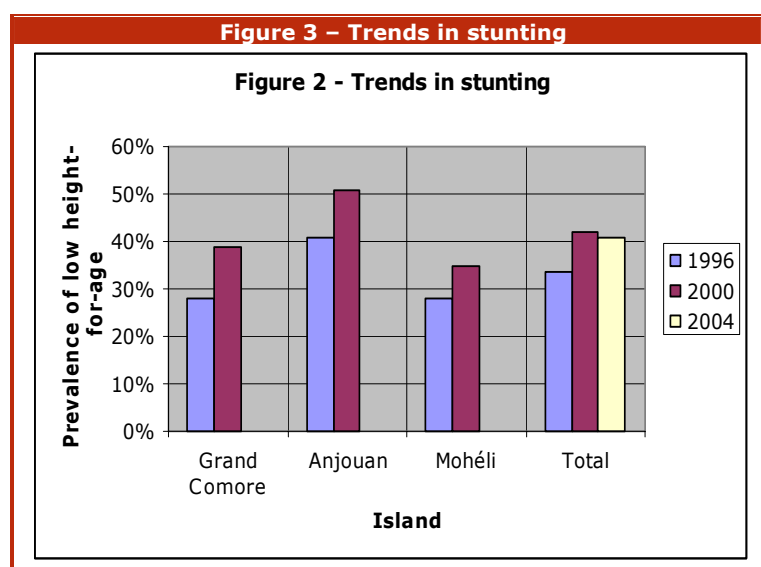
Source: Adapted from ACTIV 2005.

The national food energy intake is insufficient (1,753 kcal/person/day), and 41% comes from imports. Protein consumption is far below acceptable levels, with 50% of animal protein consumed coming through importation. Observable symptoms of micronutrient deficiencies exist, including goitre. This study notes that no national consumption study has been conducted since 1965, which constrains the ability to track trends for food security (*Union des Comores 2004*).

3.7.2 - Nutritional Status

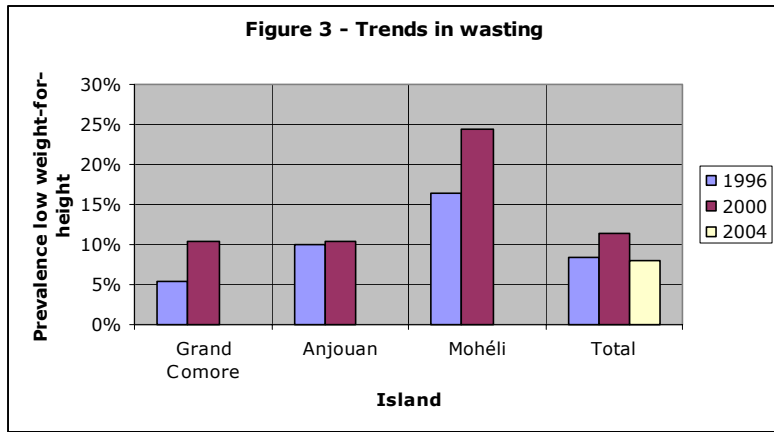
A variety of sources relate measurements of nutritional indicators. It should be recalled that **stunting** refers to long-term, chronic food insecurity, **wasting** to acute, recent nutritional shortfalls, and **underweight** is a composite of the two concepts (*Union des Comores 2005*). Rural and urban differences for these indicators were not great in 1996 when the prevalence of stunting in urban children was 39.9%; the wasting prevalence was 10.3%; and 25% of the children were underweight. In the rural areas 35% of the children were stunted; 7.6% were wasted; and 26.1% were underweight. For all types of malnutrition, boys were slightly worse off than girls (*Republique Federale Islamique des Comores 2001*).

The differences between the islands are significant. The following three figures show the changes between 1996 and 2000 for each island and include country aggregate figures for the year 2004. For chronic malnutrition, the problem is greatest in Anjouan where in 2000, more than half of the children less than five years of age were stunted. On all islands, the prevalence of stunting increased from 1996 to 2000 with the greatest increases found on both Grand Comore and Anjouan.



However, by 2004, the prevalence of stunting had decreased for the country as a whole.

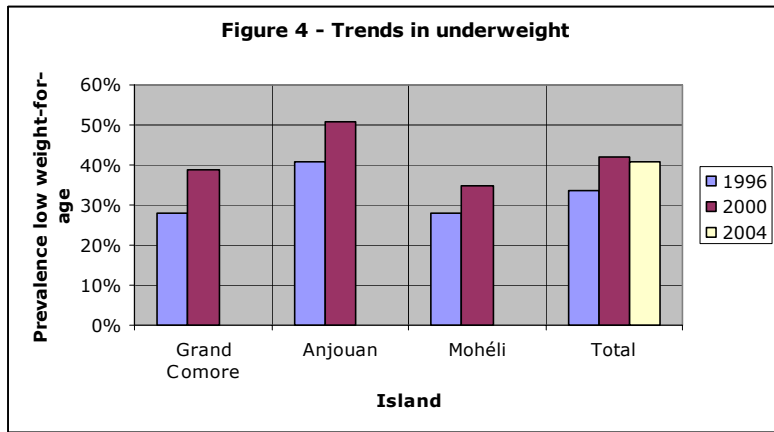
Figure 4 – Trends in wasting



Overall, the prevalence of wasting had increased between 1996 and 2000 but decreased by 2004 back to the 1996 levels. By island, the problem is greatest in Mohéli where the prevalence of acute malnutrition was nearly 25% in 2000. The problem is about the same for both Grand Comore and Anjouan.

Based on the current information, it would be advisable to have an update on the nutrition situation, especially in Mohéli.

Figure 5 – Trends in underweight



The prevalence of underweight, a composite indicator reflecting both acute and chronic problems, remains quite high at over 40% of children less than five years of age. The data show increases from 1996 to 2000 for all islands with the greatest increases in Grand Comore and Anjouan.

The changes in these three indicators corroborate other evidence that much of the population is suffering from chronic food insecurity and that acute food insecurity affects a smaller percentage of the population. The consistently high prevalence of stunting and underweight also show that chronic food insecurity remains a significant problem in the country (Sources: Mondoha, Schoemaker et al. 1996; Union des Comores 2004; Union des Comores 2005).

Women are also prone to higher than average levels of malnutrition. About 12% of women in rural communities are underweight, compared to 7% of women in urban areas. In addition, 12% of women in Grand Comore were found to be malnourished, compared to 9% on Mohéli and 8% on Anjouan (Mondoha, Schoemaker et al. 1996).

3.7.3 - Health and longevity

Life expectancy in the Comoros has been alternatively estimated at 60.6 and 63.2 years (Union des Comores 2005, UNDP 2003). The infant mortality rate (IMR – number of deaths per 1,000 live births) decreased to 59 in 2000 from 86 in 1991 and 77 in 1996. However, the infant mortality rate as of 2003 was 79.3. Malnutrition is linked to infant mortality at a rate of 44 deaths for 1,000 births. This represents about 43% of all childhood deaths (Mondoha, Schoemaker et al. 1996). This IMR was slightly better in urban areas (65.3) than in rural areas (85.3). Grand Comore has the highest IMR at 102.9 followed by Anjouan (69.5) and Mohéli (63.2) (Union des Comores 2005). Child mortality has increased from a low of 29 in 1996 to 74 in 2000. Maternal mortality has been measured at between 500 and 950 per 100,000 births and about 9% of babies weight less than 2500 grams at birth (Union des Comores 2005).

Section 3.8 - Food availability

Food availability is generally presented in terms of a national food balance sheet consisting of production, and imports (government and commercial). Unfortunately, data available to the team was inadequate for a full analysis/presentation in such a format. However, other data provide significant insight into food availability. According to one study, average per capita caloric availability declined from 1,851 to 1,753 kilocalories between 1996 and 2000. Both totals represent less than the recommended daily requirement (2,160kcal/day) and less than measured levels in neighbouring countries such as Madagascar and Seychelles. During the same time period the proportion of the population that is classified as 'underfed' increased to about 55% and the proportion of the daily diet composed of less nutritious starches also increased. During the period 1992-2000, 39% of food requirements came from imports, a trend that is decreasing over time (*Union des Comores 2004*). More recently, average daily per capita calorie supply was estimated at 1,800 to 1,950 which compares poorly to 2,238 in the rest of sub-Saharan Africa (*EarthTrends 2003*).

3.8.1 - Food production

Less than a quarter of crop production is comprised of traditional cash crops. But even with the emphasis on staple production, the island barely produces a half of what it needs. Per capita production of cereals has decreased by 38% since 1980 (*EarthTrends 2003*). Grand Comore and Anjouan are both reported to be deficit producers of the key staple crops: i.e. banana, cassava, yam, sweet potato and taro. Only Mohéli reported excess production, and only for banana and cassava (*Saido 2002*). The Comoros Growth and Poverty Reduction Strategy (GPRS) places significant emphasis on increased productivity of staple and cash crops (i.e. vanilla, cloves, ylang-ylang), through traditional actions such as use of inputs, introduction of new cash crops, intensification of small animal production. (*Union of Comoros 2005*). Statistics show a deficit in animal protein production for each of the three islands. However, on Mohéli and Grand Comore, fish production largely makes up these deficits (*ACTIV 2005*).

Climate conditions and crop selection in the Comoros lead to a production system in which there is always a harvest. The type of crop varies throughout the year and overall production levels decrease during the dry season (typically April – October). As a result prices for local agricultural products such as bananas and horticultural products increase.

3.8.2 - Food importation

A substantial portion of food consumed in Comoros is imported from abroad. This refers primarily to rice, although cooking oil importation is of increasing importance and other products are imported at times of acute need. Virtually all imported rice is handled by a parastatal organization, Onicor. The prices of government imports are regulated and are supposed to be stable throughout the year. Many (but not all) respondents claimed that the price of rice would drop, and its quality would improve, if the government would allow a free market process. On the other hand, it appears that rice and others foods are universally available in even remote villages. Despite rumoured delays in rice importation, the few shop owners interviewed stated that supply was essentially constant in their shops.

Although food is available on the islands there are times of year where supply decreases and prices rise. These periods coincide with Ramadan and the month of July, when many family members return from overseas. Because of the large number of family visitors, July is also the month in which there are a large number of weddings. Due to the extravagant consumption at these events, supply at local markets is impacted and prices increase.

Inter-island exporting/importing of staple foods also takes place with Mohéli being a net exporter to the other islands. However, the island economy, particularly the isolation factor, generally means high prices that are excessive for poor consumers (*Saido 2005*).

Section 3.9 - Household access to food

In Comoros, respondents described access problems as the most significant constraints regarding vulnerability to food insecurity. In this case, physical access is only rarely an issue. The one case brought to our attention related to villagers living close to the volcanic ash-fall having difficulty travelling to distant markets, as local markets were temporarily

closed. Mostly, access is constrained by the limited economic means of poor households, as described in the following sections.

3.9.1 - Economic opportunities/constraints

A range of diverse factors conspire to limit opportunities for economic activities. Some examples come from a GOC survey of rural households in which lack of required equipment/materials, theft of crops and animals, low prices of agricultural products, lack of agricultural inputs and lack of markets for selling agricultural products were identified as primary economic constraints. On Grand Comore, destruction of crops by natural causes received a higher score. On Mohéli, economic stagnation and lack of training were rated highest. On Anjouan, economic stagnation and drought received higher scores (*Union des Comores 2002*).

Inter-island commercialization of agricultural products remains rudimentary despite some efforts at forming producer groups or associations (*Saido 2005*). A large gap exists between the price paid to farmers and the eventual market price, due to a long series of taxes and tariffs imposed at various points along the way. These charges are a major reason for dysfunctional local markets. The SNAC (*Societe Nationale de Agriculteurs Comoriens*) is an example of a group ostensibly trying to resolve this without much success (*Saido 2005*). The volatility of the world vanilla market has implications for small farmers. International vanilla prices spiked in 2003 (to as high as \$500/kg), but collapsed in 2004 (reaching about \$50/kg by early 2005)(IMF 2005). Buyers have been reluctant to purchase from growers. In fact, government controls have placed limits on harvest dates of vanilla and dictate farm gate prices. Ostensibly to make Comorian vanilla more competitive on the world market, such controls limit a household's ability to make decisions based on acute need of the family.

About 75% of agricultural labour comes from within the family. Paid agricultural labour only makes up the other 25%, of which 2% is permanent employment. Grand Comore has higher levels of paid labour. The vast majority of paid agricultural labourers are men (88%) (*ACTIV 2005*).

Nearly half of the population is unemployed and has never worked, a group mostly made up of young adults. Unemployment status seems unrelated to the level of education, which has makes for a dire outlook regarding future vulnerability (*Lachaud 2005*).

3.9.2 - Remittances

The Comorian economy; particularly that of Grand Comore, lives largely off the flow of capital from the Diaspora émigrés who live in France or its territories of La Reunion and Mayotte. Remittances are negligible on Mohéli, but 57% of households on Anjouan and 43% on Grand Comore receive some form of transfer. In 2001, those transfers roughly equalled the national budget of the country (approximately 17 billion Comorian francs. However, there has been a sharp downturn in the value of remittances in the years since: 11 billion CF in 2002 and 9 billion CF in 2003 (*ACTIV 2005*). This downturn has significant implications for food access in the country. As noted earlier, between 70 and 90% of the value of the remittances is applied towards consumption (*Cruz, Fengler et al. 2004*).

3.9.3 - Social capital

Much has been made of the social network in Comoros, and its role in protecting vulnerable households and individuals. In one study it was noted that the traditional social safety networks well within a village but not across villages. Thus, although villages tend to protect their poorest members, the overall level of poverty can still differ sharply by village. Family members in need of assistance have the right to demand it from their relatives, and those relatives have the obligation to provide. This system is particularly effective in protecting single mothers (and other single women) from severe poverty (*Ng'weno 1994*). Respondents indicated that this system is in the process of breaking down as overall poverty levels increase.

3.9.4 - Coping strategies

The literature did not have much in-depth information on coping strategies and the sequence with which different strategies are employed according to the severity of need. Comorians are famous for 'getting by' and when asked about strategies employed during particularly difficult times, most noted that food consumption decreases and that rice is not

eaten. One author stated that putting children into the work force is another coping strategy frequently employed, particularly among female-headed households. Boys are more often employed in this way (*Lachaud 2005*).

Section 3.10 - Food Utilization

The third component of food security – ‘utilization’ – includes a range of dietary behaviours, as well as practices regarding safe transport, storage and preparation of food. This section also describes issues related to water and hygiene, important to nutritional status but also linked with overall food security. While data on food utilization are sparse, this section explores utilization issues that are important in other countries and therefore may also impact utilization in the Comoros.

3.10.1 - Diet and food quality

The key question is whether people in vulnerable households understand good nutrition and would eat a properly balanced diet if access to the right foods were assured. Concurrent to this is whether special dietary practices appropriate for pregnant and lactating mothers and children are practiced. On the first point, no information was received that would indicate a poor understanding of proper diet. For instance, fish is a key part of the diet for those who could afford it. Farmers grow vegetables but often sell them in urban markets because of a desire to earn cash. Vegetable production is of much less importance on Mohéli, with implications for household diet and income from market sales (*PDRM 1997*).

The quality of food purchased at shops and markets was described as average at best. Exposure to rats and insects is common as is contamination by bacteria or chemical pathogens (*Union des Comores 2004*).

3.10.2 - Breastfeeding and weaning practices

Even though breastfeeding is practiced throughout Comoros, exclusive breastfeeding is rare, a fact that represents a risk factor to infants and children. Only 23% of newborns are exclusively breastfed, though the percentages are much lower in Mohéli. By the age of one month, only about 10% of babies are exclusively breastfed. By two months, all babies are receiving supplemental foods or liquids. Breastfeeding practices are the same for male and female infants. These figures are an improvement over an earlier study conducted in 1996 (*Republique Federale Islamique des Comores 2001*).

3.10.3 - Water supplies and sanitation

It is difficult to estimate the percentage of the population that has access to clean, potable water. Estimates range from a high of 85% to a low of 13 percent. Most likely, the higher estimates include captured rainwater as a clean source of water (*Republique Federale Islamique des Comores 2001; Union des Comores 2005*). Nevertheless, the trend is for an increasing number of households to have access to potable water and many are becoming linked to municipal water system (*Mouhidine 2005*).

Sanitation, at least with regard to disposal of human waste, has been measured at acceptable levels. Overall, 85% of households had an adequate system, with urban households scoring slightly higher. Mohéli was rated slightly higher than the other two islands (*Republique Federale Islamique des Comores 2001*). Diarrhoeal disease is a frequent outcome linked to unclean water and poor hygiene. Diarrhoea is also linked to malnutrition indicators. More than 18% of children under five were reported to have had a case of diarrhoea during the previous two weeks. This was much reduced from previous measures but these figures can be influenced by season and other factors (*Republique Federale Islamique des Comores 2001*). One study found that, children in urban areas were more likely to experience diarrhoea than their rural counterparts (28% vs. 22%). Prevalence of diarrhoea was more common on Mohéli (31%) than on Anjouan (27%) or Grand Comore (18%) (*Mondoha, Schoemaker et al. 1996*).

3.10.4 - Access and utilization of health care

There is a network of health centres that includes a set of national and regional hospitals. Grand Comore and Anjouan are each divided into seven sanitary districts, while Mohéli is divided into three. Three urban medical centres are found on each island. Military health facilities and CARITAS dispensaries are also distributed around the islands. National health

policy and planning focuses on decentralization, supply of medicine and cost recovery. The assessment team was not able to visit health facilities or gain information on access and quality of services provided (*Union des Comores 2004*). One study had overall levels of access to health care at 14%, with Anjouan the lowest of the three islands at 10 percent. When asked about health care, community respondents often referred to the high cost of prescription drugs as the most significant obstacle to proper care (*Union des Comores 2002*). It seems that poor people can get themselves to hospitals or clinics if the need arises, but cannot buy the medicine prescribed to them. Mohéli residents put greater importance on decreasing costs, whereas expansion of coverage of health network is of greater importance in Grand Comore and Anjouan.

Section 3.11 - Vulnerability and Food Insecurity

This section synthesizes information from previous sections to respond to the question "who is vulnerable?" To do so, information is presented in two sections: one on vulnerability to **transitory** food security, and the second on vulnerability to **chronic** food insecurity. The causes for each type of vulnerability and who comprises the groups are described below.

3.11.1 - Transitory food insecurity

The transitory food insecure are those households prone to periodic shocks, such as the recent eruptions of Mt. Karthala, or on a much smaller scale, floods off of eroded hillsides. The households living on the flanks of the volcano experienced setbacks in food supply and consumption following eruptions and may suffer longer-term asset loss and impoverishment as a result⁴. In total more than 100,000 people were directly affected. Reported short-term impacts on household food security included destruction of vegetable gardens (cash crop), closed food shops, damage to some staple crops, and loss of forage for animals. The most serious impact, apparently, was ash contaminating the water supplies used for drinking and cooking.

Because of the risk environment (e.g. flooding, volcanoes, heavy rains etc), farming households are more vulnerable to transitory food insecurity than other livelihoods. The primary risks in the country affect agriculture more directly than other activities such as fishing and petty trade. However, this does not mean that other groups are not vulnerable, but rather that they are less exposed to risk events. They become more vulnerable as impacts in the agricultural sector reverberate throughout the economy; increasing food prices and decreasing demand for fish and other products due to declining agricultural incomes.

Many households reported annual hungry or lean seasons. These times of the year correspond with low production periods for both agriculture and fishing, normally around July through September for fishermen and November through January for agriculturalists. During these lean times households must reduce consumption, buy on credit or employ other coping strategies to guarantee food consumption.

3.11.2 - Chronic food insecurity

This section focuses first on those households whose 'normal' livelihood systems almost never provide food in adequate quantity and diversity. These are households who are currently food insecure. In addition, due to the negative trends in vulnerability indicators (e.g. import and export prices, environmental degradation, and informal safety net breakdowns), households and groups that were traditionally vulnerable to transitory food insecurity are increasingly vulnerable to chronic food insecurity. These are households whose coping strategies have been stretched beyond their means and are unable to recover following a shock event such as a volcanic eruption. Based on inadequate data available, it is not possible to provide estimates of the number of households in this situation. However, the trends do suggest a continually increasing number of households are no longer able to maintain viable livelihoods.

As stated above, many households are currently food insecure and suffer from constant or frequent inadequacies in quality or quantity of food consumed. This group is larger than the group vulnerable to transitory food insecurity, and demonstrates the greatest need for

⁴ A report prepared concurrently with this one, but authored by a representative of WFP-Southern Africa, focuses on current food needs related to the volcanic eruptions of 2005.

intervention. Based on a variety of secondary sources the following section provides details about this diverse group. Each source has a particular way of grouping the chronically food insecure and vulnerable populations. There are however, some general summary statements that can be made relating to livelihoods and food insecurity. The most vulnerable households include:

- Households that depend exclusively or primarily on fishing;
- Farming families that do not have adequate access to productive land; and
- Households without a diverse livelihood strategy portfolio (i.e. households that pursue a limited number of activities).

The UNDP comprehensive report on food insecurity (*Union des Comores 2004*) identifies the main groups that have poor food security outcomes:

- Households without employment and/or whose home production is low;
- Households with a large number of dependants (more than five children);
- Households headed by women⁵;
- Persons with special needs (pregnant/lactating women, infants, handicapped, etc.);
- Farming households lacking land resources; and
- Fishing families.

The most useful secondary sources for locating chronically food insecure people are based on measures of poverty. Within the Comoros islands poverty correlates well with food insecurity due to the fact that a large percentage of food, including staple foods such as rice, is purchased. Production capacity for many of the households is so low that if they are unable to sell their production, and thus generate income, they are unable to access adequate food. At the same time, it is recognized that there are other factors that contribute to household vulnerability to food insecurity. However, much of this information is obscured in aggregated data that was not designed to assess food security. These factors are mentioned in the section that discusses information gaps. A household survey from 2003 distinguishes four socio-economic/income categories that are prone to high rates of poverty.

1. Households headed by a protected salary earner (25% scored as poor);
2. Households headed by a person engaged in micro-business, stockbreeding or fishing (46-54% scored as poor).
3. Households headed by an unprotected salary earner, either an independent worker in the informal sector or an apprentice family assistant (between 30-35% scored as poor);
4. Households headed by a farmer or a person who is unemployed or not working (39% scored as poor);

These last socio-economic groups account for almost two-thirds of poverty cases in the country: farming households (30%), unprotected wage-earning families (16%) and non-working households (20%) (*Union of Comoros 2005*).

Additional indicators are identified in the literature that can be used to identify the poorer households and thus those that are more vulnerable to chronic food insecurity (*Republique Federale Islamique des Comores 2001; Mouhidine 2005; Union des Comores 2005*). While this information may be useful in understanding the nature, causes and characteristics of poverty, it also highlights the difficulty agencies might face in targeting such households geographically.

- Widows and divorced household heads are more likely to be impoverished than either married or single/never married household heads. However, the sex of the household head is **not** correlated with poverty status.
- Households are much more likely to be impoverished if the head of household is uneducated. Poor households are generally dedicated only to agriculture/fishing and do not have salaried employment.

⁵ This is contradicted by other sources, which cite the matrimonial system of inheritance as a mitigating factor for women, reducing their vulnerability to food insecurity (*Union de Comores 2005*).

- Poor sub-regions are invariably those without electricity and housing for poor households is either of palm leaves or mud walls. Studies show that the percentage of homes with leaf walls has decreased and access to electricity has increased. However, feedback from village respondents in areas of greatest insecurity suggests that currently more houses are being built with thatch.
- Households with external transfers are less likely to be poor, compared with those that receive none. The impact of this is mostly felt in Grand Comore and Mohéli. Transfers in Anjouan are a net loss.
- Overall less than 1% of children are orphans but between 10 to 20% of children live separated from their birth parents. This figure is higher in urban areas and much higher in Mohéli. In cases where both parents are living, children are much more likely to live with only their mother and rarely only with father. Children do not often work formally but are heavily involved in household chores - about 50% of girls and 40% of boys work more than 4 hours/day. This figure is much higher in Mohéli and higher for children from 10-14 age group (*Republique Federale Islamique des Comores 2001*).

Community respondents raised some concerns related to the vulnerability of children. In one household, all girls were being kept out of school to work on the farm. Boys continued at school because, the father said, they needed the education more. In another household, two sick and malnourished children were being cared for (poorly) by an older sister, because the mother was working in the fields. In yet another household, children had been sent away because the family did not have money to pay school fees. Finally, a household kept some of its children out of school, also because of lack of cash for school expenses. Additional information gained during household interviews is attached as Annex VI. Investigation of greater depth would be required to better understand the scope and scale of vulnerability to food insecurity among Comorian children.

3.11.3 - Location of food insecure and vulnerable populations

The location of food insecure and vulnerable populations is difficult due to the high level of heterogeneity within communities and the fact that many households pursue a variety of livelihood strategies. For example, fishing households are more likely to be poor and food insecure than those who have salaried income. However, fishing is an activity that occurs in all of the coastal towns. At the same time there are general characteristics that can be used to describe larger regions. For example, Anjouan is the island that produces the most spices and as a result the farmers are more vulnerable to international market fluctuations than farmers that produce locally consumed staples.

On all of the islands vulnerability to food insecurity is an issue in both rural and urban areas, although urban residents are less likely to be impoverished and food insecure than their rural counterparts (*Union des Comores 2005*). On average, Grand Comore is better off than the other two islands. Households raising livestock on Grand Comore are more likely to be the poor as compared to fishing households on Anjouan while small traders were most often poor on Mohéli (*Lachaud 2005*).

The non-monetary poverty report (*Union des Comores 2005*) identified the regions with the highest levels of poverty:

- Mohéli – Nioumachoua and Wanani;
- Anjouan – Mramani, Domoni and Moya; and
- Grand Comore – Dimani.

Similarly, the Agricultural Census identified areas of food insecurity, based on household consumption of less than two meals per day (*ACTIV 2005*). The results given in that case are as follows:

- Mohéli – Fomboni
- Anjouan – Nioumakélé, Mutsamudu; and
- Grand Comore – Fombouni, Mitsamiouli, Dembeni, and Moroni.

There is little overlap between the poor regions and the food insecure regions. One way to interpret this is that the poor regions can be considered as vulnerable regions because any shock event will reduce the ability to purchase food, while those regions with low consumption are the current food insecure areas.

Section 3.12 - Response capacity and options

Foreign assistance to the Comoros has declined from \$64 million in 1996 to \$16 million in 2000, corresponding to international misgivings about governance and the political process in Comoros. This explains the absence of social services and infrastructure investment that the team observed in rural zones. The country's excessive foreign debt will continue to act against increased public expenditures (*Union des Comores 2005*). International assistance, particularly in support of rural poor, seems to be a necessary ingredient. The following sections are not recommendations but describe some current and potential intervention strategies, proposed or indicated by key informants during the assessment mission.

3.12.1 - Institutional framework for response

A **national emergency preparedness and response plan** has been developed by the government with support from the UNDP. The plan defines a coordination cell, made up of the head of the relevant Ministry along with a technical advisor from the sector affected by a given disaster, and representatives from the President's office, from each island and from the national radio station. In operational terms, the national direction for civil protection, part of the defence ministry, is in charge of emergency response. The interior ministry holds titular responsibility on each island. A highly detailed description of institutional roles, responsibilities and lines of authority is included in the plan (*Union des Comores 2004*).

The plan includes descriptions of a range of emergency scenarios with potential human consequences and preparedness requirements. Sectors for response were defined as food security, health and nutrition, water and sanitation, and shelter. The national FAO coordinator is the focal point for food security responses, with assistance of the Port Authority and UNDP. WFP is listed as a member of the coordinating committee and given responsibility for estimating food needs, regardless of the fact that it has no permanent presence in the country. The food security sector proposes as its objective the provision of food to up to 75,000 persons affected by a disaster. A balance sheet defines food stocks to be kept in reserve (e.g. 18,750 kg rice) and notes that current reserves are non-existent (*Union des Comores 2004*).

The value and quality of a plan can only be judged when it is put into action. The response to the November volcanic eruption could serve as a test case for the plan. Unfortunately, no formal or informal evaluation has been conducted of the response. Anecdotally, stakeholders state that portions of the plan dealing with civil protection and communication worked reasonably well. Information was diffused to the extent possible and no major cases of panic or civil disorder were reported. However, most plan elements dealing with the material needs of affected populations were ignored. No food stocks or other similar materials were available to plan managers and, thus, could not be distributed even if such a distribution were called for.

A **National Nutrition Action Plan** (PNAN) is in place to guide multi-sectoral responses to problems of malnutrition. It promotes efforts to increase food consumption, diversify diets and generally assure food security. It also seeks to reinforce support infrastructure for improved distribution and quality control of food stocks (*Union des Comores 2004*). No information was discovered that evaluates the relative success of this plan.

Comoros, which for over three years have been eligible for the Heavily Indebted Poor Countries (HIPC) initiative and now have an interim **Poverty Reduction Strategy Paper** (PRSP), have experienced difficulties in their attempts to benefit from this major debt reduction mechanism, especially owing to a structural weakness in macro-economic management and institutional instability. The country has been running a **Staff Monitored Program** (SMP) with the IMF since February 2005 with the possibility by the beginning of 2006 of establishing a formal programme supported by a **Poverty Reduction and Growth Facility** (PRGF) (*Union of Comoros 2005*).

The national GPRS mentions the re-emergence of food insecurity and malnutrition and notes the health problems linked to these factors. However, the set of activities laid out in the health 'strategic pillar' do not explicitly address malnutrition (at least in the framework of traditional nutritional programming). Nor is there mention of food insecurity brought about by disease impacts and the interventions that might mitigate food shortages of affected households (*Union of Comoros 2005*).

3.12.2 - Emergency preparedness and response

The recent (April and November 2005) eruptions of Mt. Karthala offer lessons on emergency response. The assessments leading to response to volcanic eruption focused mostly on water and medicine. The April assessment report states that things could be made easier for host families if food were provided (*UNICEF 2005*). A later situation report states that UNICEF procured locally 10 tonnes of rice as contingency stock. In the same report, it was stated that food was not needed but that it would be distributed should the need arise (*UNICEF 2005*). Shortly thereafter, 5 tonnes of rice was distributed to families in 19 villages (*UNICEF 2005*). The OCHA situation report following the November 2005 eruption makes no mention of food or nutrition, except to say that affected households did not have food needs (*OCHA 2005*).

After the April 2005 eruption there was also a small, one-time food distribution, managed by the Red Crescent. This activity had no reporting or evaluation and it is impossible to say if the response was appropriate, adequate and timely. Red Crescent representatives admit that their emergency response is impeded by a cumbersome bureaucratic process. They must submit an appeal through the ***Plate-forme d'Intervention Régionale pour l'Océan Indien*** (PIROI) of the French Red Cross, which evaluates the submission and sends it on to potential donors. This takes more time than is appropriate for emergency response.

Reports are that in November no food was distributed due to lack of reserve stocks. Ideas considered during discussions include:

- A strategic grain reserve, supported by the WFP, to be available for emergency response. This idea was strongly promoted by those responsible for managing the national emergency response plans, as many tasks can not be accomplished without resources such as food. This idea could be problematic, however, as stock rotation would need to take place on an on-going basis and would need to be managed locally. This is costly and risky in a context where major food emergencies occur infrequently and where transparency and accountability have been of concern.
- Regional pre-positioned stocks (e.g. managed by WFP-Madagascar) with monitoring of emergency indicators (primarily volcanic/seismic activity and flooding) in Comoros. A pre-2005 Emergency Preparedness report noted the likelihood of volcanic activity, with the possibility of 100,000 people being significantly impacted, requiring a range of support including food assistance (*WFP 2003*). Its reference to food, however, is rather scant. WFP-Tanzania, it says, could mobilize food resources if needed. Port capacity and storage facilities are described in general terms. No suggestion is made regarding contingency stocks or food stock pre-positioning.
- Cash reserves that could be used to purchase additional food via private sector channels.
- Cash distribution to beneficiaries, which could be used to purchase food from the private sector. The drawback of this is that virtually all rice is imported and marketed by a government-controlled body. In a sense, the government would deduct a portion of every dollar distributed as assistance to poor households.

3.12.3 - Nutrition programming

Small-scale nutrition projects have functioned in various locations around the country. In the year 2000, an international NGO called *Initiative Développement* opened a therapeutic feeding programme in Domoni, Anjouan, with the objective of caring for children with severe cases of wasting. Their work took place in the *Centre de Nutrition Thérapeutique* in Domoni. In 10 months, 54 children were treated under this project. CARE International managed a large scale community nutrition project throughout Anjouan, reportedly with satisfactory results. The activities ended in 2001 and were not assumed by GOC offices.

A follow-up project, implemented by the NGO CAP, worked with about 800 cases of malnutrition during its 2002-2003 campaign. Documentation on these activities does not explain why the Domoni health district was targeted. However, it is an urban centre close to areas of known food insecurity such as Konni, and is distant from Mutsamudu yet has the advantages of a main city (*Ministère de la Santé Publique, CAP et al. 2003*). The project evaluation speaks of nutritional monitoring by volunteers at the community level. This component was constrained however, by the desire by locals to be paid for their efforts.

In addition, sustainability was a concern as the government health sector was not involved. The objective of this project was to improve the health status of children of at-risk families and, specifically, to improve access of children and vulnerable women to preventative and curative nutritional care. Among results cited, the project identified and assisted large numbers of children in vulnerable communities. The evaluation also noted, however, that the project did not have great success in assisting vulnerable women, and that the delivery mechanism for interventions may have caused the most disadvantaged to be excluded (*Dustagheer, Mohamed et al. 2005*).

The team conducted research in communities assisted by these projects and observed some unfortunate developments. In many cases, community members, even those whose children participated in the program, could not remember any nutritional messages or lessons. More troubling was a case in Konni Djodjo where a badly malnourished child was found in the care of an older sister. The child had undergone therapeutic feeding and was sent home with a sack of maize meal. The food was gone, the child was still severely malnourished and the care-giver had no idea what to do. This points to a concern that has been voiced elsewhere; how to justify costly intensive therapeutic feeding programs, when the child will be released back into a chronically food insecure household?

3.12.4 - Non food responses

The most important response to volcanic activity appears to have been cleaning water receptacles and supplying water to affected communities. UNICEF was most often cited as taking the lead in such activities. Community members felt that clean water was the most pressing need following the ash fall. UNICEF/UNDP supplied drinking water to affected populations after the April volcanic eruption but eight times less water was distributed than was needed to satisfy basic needs of 20liters/person/day (*Croissant-Rouge Comorien 2005*).

In a similar case, the PIROI (sub-regional coordination for the Red Crescent and Red Cross) received an appeal and mobilized a response – 60 volunteers for cleaning and filling water cisterns. In the case observed, they took about 2 weeks to supply potable water to the village of Kourani (visited by the team). This is probably a reasonably rapid response. However, affected households needed a more timely delivery of water for drinking and cooking (*Croissant-Rouge Comorien 2005*).

In a more general sense, a wide range of interventions could be imagined that would make positive contributions to resolving long-term, chronic food insecurity. Primarily, these would seek to increase household income, in ways that do not rupture families or damage the environment. In-depth consideration of these themes, however, is beyond the scope of this study. The recently conceived PRSP presents detailed intervention strategies, many of which are relevant non-food responses to problems of food insecurity (*Union of Comoros 2005*).

Part IV - Conclusion

Food insecurity in the Comoros is largely a question of access. Both primary and secondary data sources confirm that food is generally available on the island year round, even in the more remote areas. However, nearly all families need to purchase at least some of their food, including the staple rice. Problems of access are due to the limited incomes of households which constrain their ability to purchase sufficient food and quality food. Though not as frequently cited by informants, it is likely that issues of consumption also affect food security. High rates of diarrhoea among children and high rates of malaria suggest that individuals are not getting the most nutritional value out of their food and that many have additional nutritional needs during disease recovery.

Available secondary data are not sufficient to calculate accurate numbers and locations of vulnerable and food insecure populations. The consumption data available should be considered illustrative and reflects the food security of just the agricultural populations. These data, and the extrapolated consumption figures, represent approximately 62% of the population (*ACTIV 2005*). At the time of the census, nearly 50,000 households from all of the islands were eating only one meal a day and nearly 190,000 were eating only two meals. This translates into approximately 67% of the population. Grande Comore (68%) and Anjouan (67%) are more food insecure than Mohéli (44%)

Nutrition indicators are also negative; over 40% of the children are stunted and 8% are wasted. Forty-three percent of all infant deaths are related to malnutrition. This chronically food insecure group forms the majority of the population. According to the 2002 poverty survey only 17% of the population was food secure at that time.

Households are vulnerable to food insecurity because they are highly exposed to diverse sources of risk and their livelihood systems are fragile. Many of these households pass through periods of food insecurity during each year as agricultural and fishing production seasons change. It is likely that many of the transitory food insecure households will become chronically food insecure. The major trends for indicators of robust livelihoods and coping strategies are all negative. In brief:

- Social networks and informal safety nets have been pushed to the breaking point and are deteriorating. Many families that in the past could count on help from their families and villages are now forced to manage on their own.
- Remittances, of which 70–90% is used for consumption, are likely to decline in the near future. As cultural, religious, and other ties gradually grow distant, familial obligations will diminish.
- Environmental degradation is occurring at an accelerated pace undermining the agricultural and fishing livelihoods. As the population increases there will be increasing demand for access to marginal land, exacerbating problems of erosion and flooding.
- International market prices for spices are declining as competition increases and synthetic substitutes are produced in greater quantities.
- With the exception of Mohéli, the islands are deficit producers of staple crops. As cash crop income declines households will have less ability to purchase staples.

The characteristics of households vulnerable to food insecurity and their environments are different, or in different proportions, on each of the islands.

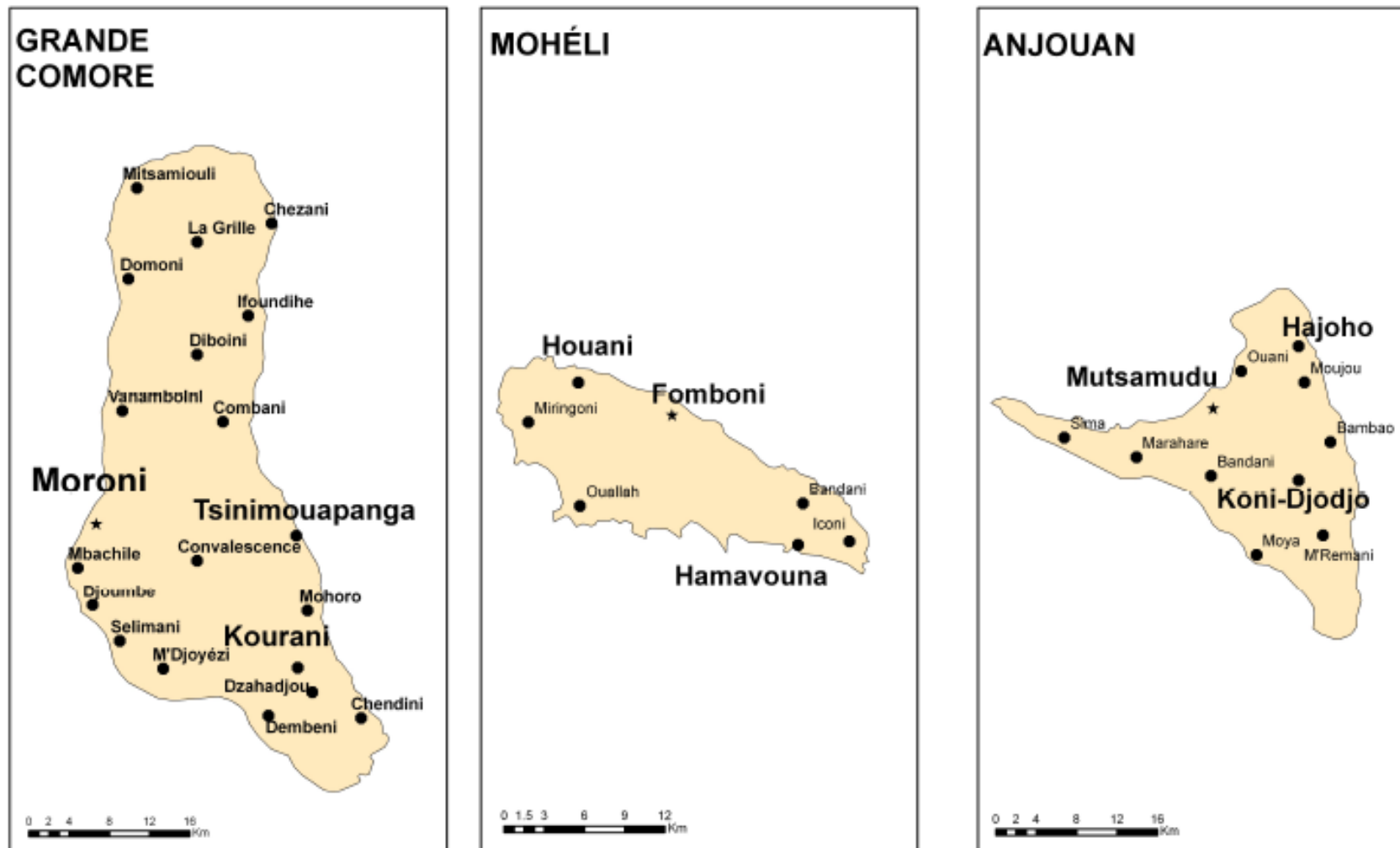
Anjouan: By all measures this island is the most food insecure and contains the most vulnerable households. The strong reliance on fishing, in conjunction with limited and overexploited agricultural land creates a situation in which many households are unable to meet their basic needs. As a result the island is experiencing out-migration. Food insecure areas (based on consumption) are Nioumakélé and Mutsamudu. The most vulnerable (using a poverty proxy) are Mramani, Domoni and Moya.

Grande Comore: Current indicators show that the largest island scores between the other two in terms of food security. The island has more developed infrastructure than the others and is the recipient of larger amounts of remittances. It is also on Grand Comore that volcanic activities create transitory food insecurity at levels reaching 100,000 individuals. Food insecure areas (based on consumption) are Fombouni, Mitsamiouli, Dembeni, and Moroni. The most vulnerable (using a poverty proxy) is Dimani.

Mohéli: Mohéli is the least food insecure of the islands. Consequently, it may be the most vulnerable to future insecurity. Consumption is greater on Mohéli and large numbers of people from other islands are beginning to move there in search of arable land and less congested fishing areas. This is beginning to put a strain on the environment. The food insecure area (based on consumption) is Fomboni. The most vulnerable areas (using a poverty proxy) are Nioumachoua and Wanani.

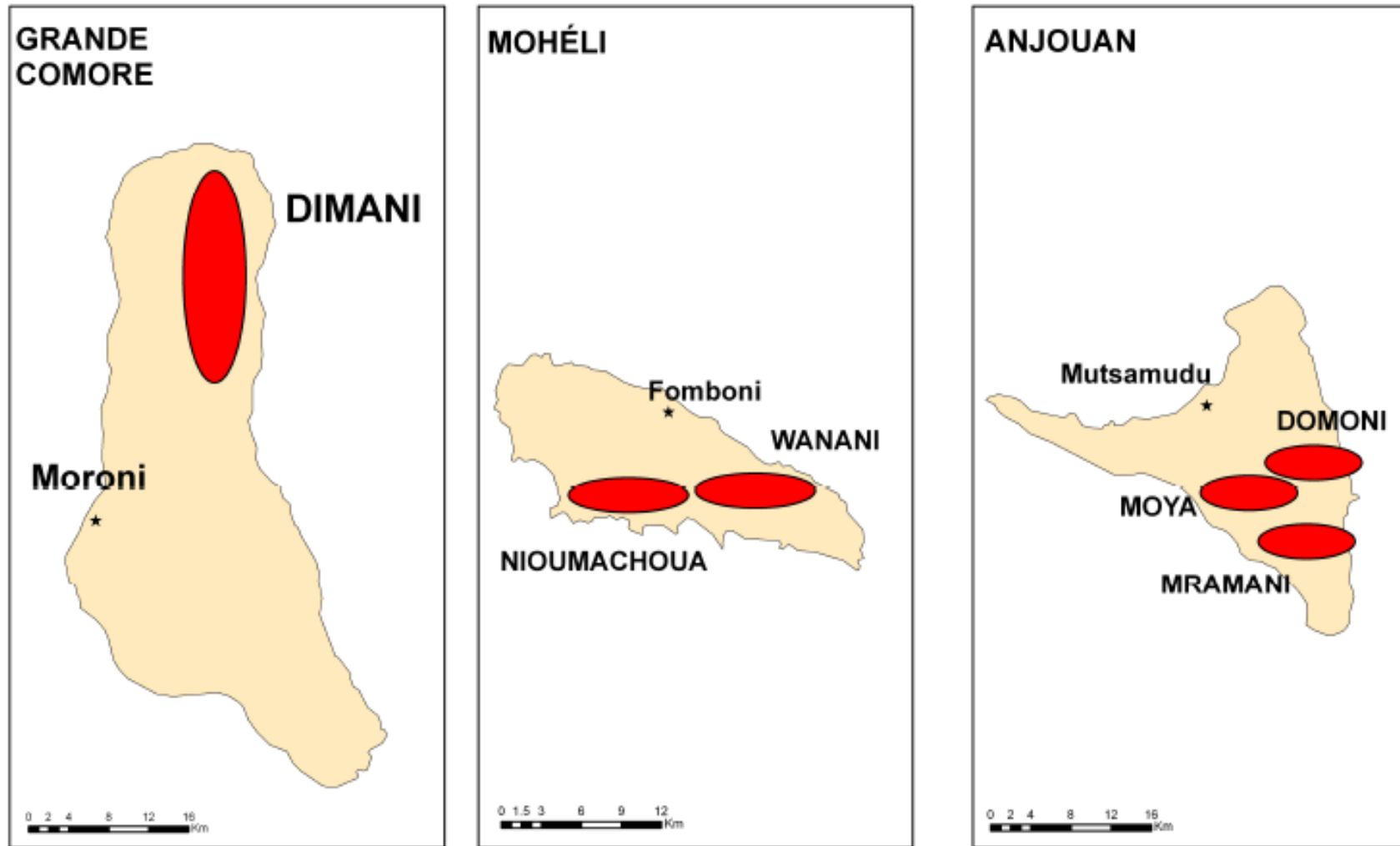
Institutional support for vulnerable Comorian communities, whether by national or international agencies, is largely absent. People in the rural zone feel that they have been largely abandoned to their fate. Analysis of trends supports this view. As time progresses, acute food crises may become more frequent and severe. However, of greater concern is the chronic food insecurity whereby rural and (to a lesser extent) urban poor are often unable to acquire food of acceptable quality and quantity. While general food distribution clearly is not indicated, WFP could conceivably play a role in food security programming. This type of programming could be done in collaboration with institutions specialized in longer-term livelihoods interventions. However, before any type of intervention can be developed, there will need to be detailed baseline food-security data collected.

Annex I: Map of sites visited



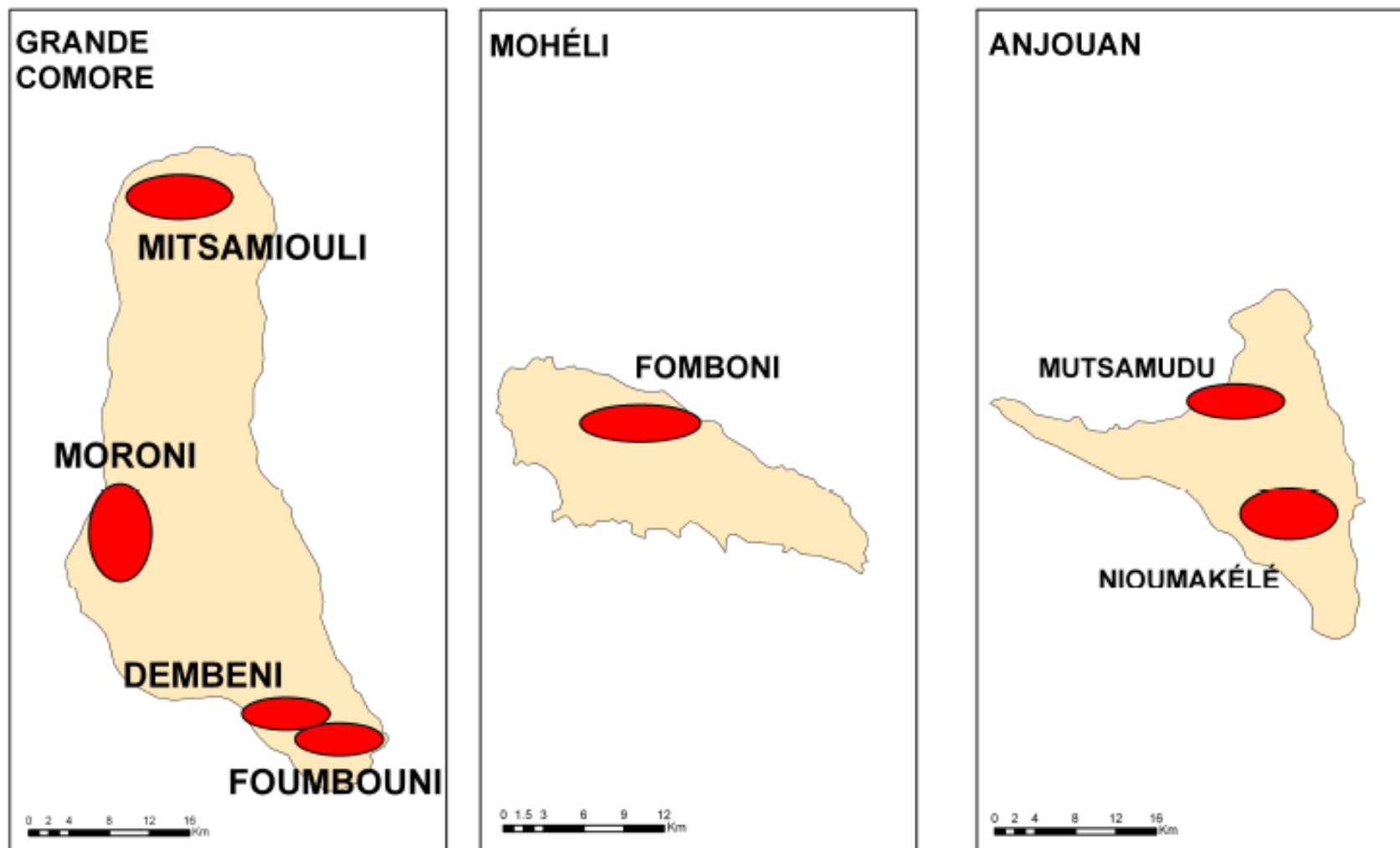
This map is illustrative only and shows relative spatial relations.

Annex II: Map of high vulnerability areas (high poverty)



This map is illustrative only and shows relative spatial relations and sizes of affected areas.

Annex III: Map of high food insecure areas (low consumption)



This map is illustrative only and shows relative spatial relations and sizes of affected areas.

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Annex V: Assessment instruments

TOPICAL OUTLINE

FOCUS GROUP DISCUSSION IN VOLCANO-AFFECTED COMMUNITIES

Date:	Island:
Region and village name	
Name of team members	
Name(s) or identities of interviewees:	

INTRODUCTION

- Who we are and why we are here and how long the process will take.
- What info do we need and who would we like to get it from.
- What will be done with the results of our work?

GENERAL INFORMATION

- Approximate population of community.
- Important sub-groups (economic, ethnic, political, other) that exist in the community.
- Demographic considerations (e.g. FHHs, orphans, handicapped, etc.)

SHORT-TERM IMPACTS OF ERUPTION

- What happened in this area? Seismic action? Lava? Ash? Flooding?
- Extent of affected area? Was everyone in community affected? Equally?
- Human Costs: people killed, injured, ill?
- Asset Losses: Animals killed, standing crops destroyed, houses damaged or destroyed, food stocks damaged/destroyed, water supplies damaged/destroyed, other assets lost.
- Immediate Actions: Family migrate? Where? Some family members sent away? Where? Was anyone left behind and why?
- Consumption: What did you have to eat and drink in the days following the eruption? Where did you get food/drink and how obtained. (Link with issues of social capital).
- Coping Strategies: (in addition to things already mentioned,) what different/extraordinary steps did people take to acquire food (e.g. asset sales, borrow food/money). Did some households suffer from food shortage? How common and for how long?

LONG-TERM IMPACTS

- Recovery: To what extent have people returned? Who has not and why?
- Asset Condition: To what extent has physical damage to homes and community physical assets been rectified? What remains to be done and timeline for repair/replacement.
- Human impacts: Recovery of those whose health was affected by ash? Any longer-term health impacts (e.g. financial drain, lost productivity)? What can be done?
- Livelihood Impacts: Sources and relative value of income before, now and into future. Groups most affected and why.
- HH Ag Assets: Have animal resources recovered? What are prospects for reconstituting herds/flocks? What does this mean for household livelihood security?
- HH Ag Assets Part 2: What are prospects for crops this year? Availability of seeds/tools? Longer-term impacts on soil fertility?
- HH Financial Assets: Debt, mortgaged assets or labour, expended savings, and long-term implications. Inflation of market prices? Other new expenses due to volcano damage?
- Social Capital: Pos/neg impacts on solidarity-community/family kinship.
- Food Security Outcomes: How does consumption compare to pre-crisis conditions? Any concerns about food availability or access? Why and what can be done? What will people do to cope with food shortages over the next months?

PREPARATION AND ASSISTANCE RECEIVED

- Community Level: Preparations for the shock? Was the village/family/individual response coordinated and orderly or chaotic / ad hoc.
- External Support-Pre-Crisis: Early warning? How soon/of what nature? Information provided on assistance available, evacuation plans, etc? By whom, when, how?
- External Support-Immediate: Did authorities come to your community during crisis? Who and what did they do? Coordination of evacuation or help with transport to safe locations? Security assured? Basic needs provided for if needed? What, when, how? Why, why not?
- External Support-Follow-up: Information on conditions for return? Help with move home? Assistance with recovery and rehabilitation. What, when, who?
- External Support-Evaluation: Have you been asked for your feedback on the quality, timeliness, efficiency etc. of institutional support during and following crisis. When, by whom, to what end?
- Food Assistance: Did anyone receive food assistance during the past crisis? Who, what, when. Was food assistance needed? By whom, what, when, etc. How would food assistance have made a difference?
- Recommendations: What should be done differently at each level and during each phase of the emergency?

HISTORICAL TRENDS

- Shocks: What is history (frequency, severity, etc.) of volcanic activity? What other serious shocks have been experienced here (e.g. cyclone, famine, etc.) Frequency, severity, etc.
- Effects/Response: Compare the recent crisis to previous and compare in terms of damage, impacts, and the nature of response at local and national level.
- Changes: What permanent changes (if any) resulted from these? (New livelihood activities, crop types, permanent out-migration, etc.)
- Coping: What is trend with household capacity to cope with crisis; better, worse, unchanged, and why? What can/should be done at HH, community, national level to better cope with crisis?

CLOSING

- Any questions for us or important information we are missing?
- Repeat main objective of study and what will be done with information received.
- Thanks to all for their time and active/honest participation.

TOPICAL OUTLINE

FOCUS GROUP DISCUSSION IN COMMUNITIES UNAFFECTED BY VOLCANO

Date:	Island
Village or location	
Name of team members	
Name(s) of interviewees:	

INTRODUCTION

- Who we are and why we are here and how long the process will take.
- What info do we need and who would we like to get it from
- What will be done with the results of our work.

GENERAL INFORMATION

- Approximate population of community.
- Important sub-groups (economic, ethnic, political, other) that exist in the community.
- Demographic considerations (e.g. FHHs, orphans, handicapped, etc.) Is the demographic nature/composition of the village changing in significant ways? How and why?

LIVELIHOOD SYSTEM/OUTCOMES

- What are main livelihood activities in the community during 'normal' times? Who is involved in each (i.e. are there distinct livelihoods groups.) Importance (#s) of different groups?
- In addition to those noted above, what are sources of income- (e.g. remittance, farming, livestock, fishing, employment, crafts, etc). What is the approximate breakdown in significance of each?
- If not mentioned above, explore gender roles in livelihood activities? Is this changing? Why?
- Sources of food consumed in household (rough estimates): Own production ?%; purchased ?%, gifts/shared ?%; aid ?%. Estimates of variation from household to household?
- In this community, are there households who seldom or never have enough to eat? Rare or common? In this community, are there certain times of the year when many or most HHs do not have enough to eat. (Availability or access problem?) Are there particular types of households especially prone to these problems?
- Must people often forego preferred or nutritious foods because of lack of availability or access constraints?
- How do households cope with temporary food shortages? What do they do if food shortages persist or become more serious?

CAPITAL/ASSETS (opportunities / constraints relevant to food security)

- PHYSICAL – Physical access to markets, transport, market infrastructure, household food/water storage.
- NATURAL – Issues related to access to farmland or pasture, land tenure, land productivity, access to other natural resources essential for livelihood activities.
- FINANCIAL – Credit and debt, savings and banking resources, etc. Issues related to inflation, value of money, etc.
- HUMAN – Issues related to productivity of adults, dependency ratio, morbidity/mortality, etc.
- SOCIAL - Role of solidarity-community kinship in maintaining food security. Other social welfare bodies in communities (e.g. mosque)?

VULNERABILITY CONTEXT/HISTORICAL TRENDS

- Shocks: What is history (frequency, severity, etc.) of volcanic impacts and other serious shocks experienced here (e.g. cyclone, famine, etc.) Frequency, severity, etc. Do these lead to acute food shortage? For whom, when, why, how?
- Changes: What permanent changes (if any) resulted from these? (E.g. asset loss, increased poverty, new livelihood activities, changes in farming system, permanent out-migration, etc.)

- Trends: Any decline in the quality or quantity of food consumed (men, women, children). Due to what (decreased productivity, higher prices, difficult access to market, etc.)
- Coping: What is trend with household capacity to cope with crisis; better, worse, unchanged, and why? What can/should be done at HH, community, national level to better cope with crisis.

ASSISTANCE / INSTITUTIONAL SUPPORT

- Assistance in Food/Nutrition: Any history of food aid or nutritional programs in the community? Who, what, when, why, who was served? Helpful? What would have worked better or been more useful?
- Emergency Preparedness and Response: Local: Any HH or community-level preparations or preparedness for shocks or periods of acute food shortage? What measures are taken at the household or community levels when those events occur?
- Emergency Preparedness and Response: External: Who provides assistance in difficult times? The nature/quality of external responses to crises. How has this changed over time? Better or worse now than before. How and why?
- Suggestions: What should be done differently at household, community and/or national levels to better respond to food emergencies?

CLOSING

- Any questions for us or important information we are missing?
- Repeat main objective of study and what will be done with information received.
- Thanks to all for their time and active/honest participation.

TOPICAL OUTLINE
INTERVIEW W/ HHs UNAFFECTED BY VOLCANO

Date:	Island
Village or location	
Name of team members	
Name(s) of interviewees:	

INTRODUCTION

- Who we are and why we are here and how long the process will take.
- What info do we need and who would we like to get it from
- What will be done with the results of our work?

GENERAL INFORMATION

- Demographic makeup of HH (e.g. FHHs, orphans, handicapped, etc.) Has the demographic nature/composition of the village changed in significant ways? How and why? Anyone from the HH living elsewhere.

LIVELIHOOD SYSTEM/OUTCOMES

- What are main livelihood activities in the HH during 'normal' times? Which HH member is involved in each (i.e. are there distinct livelihoods groups.)
- In addition to those noted above, what are sources of income- (e.g. remittance, farming, livestock, fishing, employment, crafts, etc). What is the approximate breakdown in significance of each?
- If not mentioned above, explore gender roles in livelihood activities? Is this changing? Why?
- Sources of food consumed in household (rough estimates): Own production?%; purchased ?%, gifts/shared ?%; aid ?%. Estimates of variation from household to household?
- In this HH, are there households who seldom or never have enough to eat? Rare or common? In this HH, are there certain times of the year when many or most HHs do not have enough to eat. (Availability or access problem?) Are there particular types of households especially prone to these problems?
- Must people often forego preferred or nutritious foods because of lack of availability or access constraints?
- How does household cope with temporary food shortages? What do they do if food shortages persist or become more serious?

CAPITAL/ASSETS (opportunities / constraints relevant to food security)

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VULNERABILITY CONTEXT/HISTORICAL TRENDS

- Shocks: What is history (frequency, severity, etc.) of volcanic impacts and other serious shocks experienced here (e.g. cyclone, famine, etc.) Frequency, severity, etc. Do these lead to acute food shortage? For whom, when, why, how?
- Changes: What permanent changes (if any) resulted from these? (E.g. asset loss, increased poverty, new livelihood activities, changes in farming system, permanent out-migration, etc.)

- Trends: Any decline in the quality or quantity of food consumed (men, women, children). Due to what (decreased productivity, higher prices, difficult access to market, etc.)
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- Assistance in Food/Nutrition: Any history of food aid or nutritional programs in the community? Who, what, when, why, who was served? Helpful? What would have worked better or been more useful?
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- Suggestions: What should be done differently at household, community and/or national levels to better respond to food emergencies?

CLOSING

- Any questions for us or important information we are missing?
- Repeat main objective of study and what will be done with information received.
- Thanks to all for their time and active/honest participation.

Annex VI: Seasonal calendar (*Farm Family in Houani, Mohéli Island*)

Activity or Factor	J	F	M	A	M	J	J	A	S	O	N	D
Climate												
Rainy Season												
Dry Season												
Production of Staple Crops												
Taro: Land preparation and planting												
Taro: Harvest												
Highest yields of cassava and banana												
Highest yields of coconut.												
Mango harvest												
Breadfruit harvest												
Production of Commercial Crops												
Vanilla: Planting/germination												
Vanilla: harvest												
Market Prices – No pattern was noted for either sales or purchases of food products.												
Illness												
Period when illness (malaria mentioned) more prevalent.												
HH Expenditures												
Contributions to marriage celebrations												
School fees and related costs												
Food Security												
Food shortage (one meal per day)												
Food most abundant (at least two meals, variety, protein)												
Team Notes: The family said that harvest of crops like cassava, banana and coconut is spread throughout the year. It was also noted that all crops are liable to be sold, for the purchase of rice, fish and other items.												

Annex VII: Wealth ranking

Men of Ntsinimoipanga Domba, Mbadjini, Grand Comore, 25/01/06

Factor or Variable	Ultra-poor	Poor	Middle Class	Rich
Proportion of population	45%	38%	15%	2%
Demographic tendencies	HHs headed by old people, handicapped; orphans	HHs headed by unschooled or illiterate. Unemployed.	Generally those with family members overseas.	Live in France and return to Comoros only rarely.
Livelihood Activities	Farming on borrowed land, woodcutting, household labour	Farming on own land. Paid labour/crafts, chauffeur, etc.	Functionaries/bureaucrats, remittances	
Assets (not fully covered)	No land, no livestock	Some land, (livestock killed during eruption)	Land (frequently not cultivated-given to poor, livestock (killed), vehicles	
Food security status	At least one meal per day. Starchy diet of rice/cassava, no protein consumption	Two meals per day usually: tubers, rice. Rare consumption of animal protein.	Three meals per day; diverse diet.	
Impacts of the volcano	Loss of some standing crops, work stoppage as field covered with ash. No longer able to get water from cisterns of wealthier HHs.	Loss of some standing crops, work stoppage as field covered with ash. No longer able to get water from cisterns of wealthier HHs.	Impacts limited although water was spoiled if the cisterns were uncovered.	
Coping with those impacts	Borrow or ask for gifts from wealthier HHs. Do without purchased food.	Borrow or ask for gifts from wealthier HHs.	Made use of cars to leave the affected area. Used money from overseas to purchase food outside of the affected areas.	

Team notes: The estimated proportion of the population in each wealth class was not recalculated after the characteristics of each were defined. Some adjustment by the group would seem likely. The group stated strongly that they felt that social status was a more important classification than economic or wealth ranking. Classification by social status would divide households into those who had fulfilled the obligations of Grand Mariage and those who had not. Although wealthier households were said to be more capable of financing their Grand Mariage, members treated each other as equals.

Annex VIII: Persons interviewed

GRANDE COMORE:

Giuseppina Mazza – United Nations Resident Coordinator
Youssef Mbechezi – United Nations, Assistant to the Resident Representative
Sitti Hadidja Ahmed Iliasse - Translator
Simona Valmonar, UNDP Economist
Hamadi Idaroussi – Secretary General of the Ministry of Rural Development, Fishing, and Crafts; National Representative of the Food and Agriculture Organization
Abdou Madi Mari – Minister of Defense, Security, and Decentralization
Said Abou – Aid Coordinator, Red Crescent
Pr Mamadou Ball – Representative World Health Organization
Abdou Razak, Director of Agriculture, Livestock and Fishing, Grand Comore
Josefa Marrato, UNICEF
Said Mbae, UNICEF
Sitti Batu Oussein – UNFPA
Mamadou Boensha – UNFPA
Mihidhoir Sagaf – National Executive Director, Fonds D’Appui au Developpement Communautaire
Dassar Baccar –
Dr. Saïdo – Veterinary Technician, Association Comorienne des Techniciens et Infirmiers Veterinaires
Hamidou Soule – Head of Kartala Observatory, National Center for Development and Scientific Research
Colonel Ismael Mogne Daho – Coordinator of Emergency Response, Gendarme Federal
Mohammed Djamalidine – Head of Survey Division, Agricultural Census
Mahmoud Ali Baye – Director, Central Bureau of Meteorology

ANJOUAN

Houmadi Abdallah – UNDP Representative, Projet AMIE
Charles Kayitaré – DDR Project Chief
Ibrahim Chei Omar - Translator

Dr. Soulaïmana Aboubacar – Chief Executive, *Collaboration Action Perennisation*
Charif Abdallah – General Director, Planning
Amirodine Boura – Director of Economic Affairs
Mohamed Said – Cabinet Head, FOPPAP
Mohamady Kasim – Livestock Director
Darousse Houmadi – General Secretary of Production
Hissami Eddine Zarcaeh – General Director of Production
Siti Baria Sidi – Press Attaché, POQ
Ali Houmadi – Technical Consultant – FOPPAP
Binti Salim – Head of Production
Ibrahim Abdallah Charif – Director of Environmental Protection
Ali Attoumani – Representative, CEA
Abdourahamane Soulaïmane – Representative, Animal Health
Hadji Said Abdallah Bacar – Director of Commerce
Ali Maboeyaz – General Secretary, Syndicat National Agricole Commorienne
Abdou Ahamed – Treasurer, Syndicat National Agricole Commorienne
Ibrahim Abdallah Charif - President, Bahati Ya Walizezi
Malide Saidoumai – Controller, Bahati Ya Walizezi
Abdoul-Hamid Aboubacar – General Director of Health, Red Crescent

MOHÉLI:

Nafion Mohammed – *Chef d’Antenne*, AMIE/PNUD
Ismael Kassim – Translator
Lahadji Ahamada – Executive Secretary, Red Crescent
Chamisidiny Lahilahi – Health Coordinator, Red Crescent
Abdou Soimadou Ali – Agricultural Engineer
Madi Abasse – Development Advisor
Afretane Romli – Director, Fishing

Annex IX: Sample Household Interviews

The following household case studies were selected for the Annex to provide insight into the range of household characteristics and the contexts in which people live. The households include examples of agriculturalists, fishermen and households that pursue a combination of strategies. They also include some very poor, chronically food insecure households as well as households that experience transitory food insecurity. Data collection focused on households with negative food security outcomes, therefore, within these case studies there are no examples of food secure households.

Location: Koni Djodjo, Anjouan

Household composition: The interviewee, the daughter of the head of household lives with her husband, parents, grandmother, brother and two children. A sister lives in Mayotte. The interviewee, currently 20 years old, dropped out of school after the fourth grade to get married. So far, she does not regret having made this decision. The majority of her girl friends stayed in school.

Livelihoods Activities/Revenue Sources: The household's main livelihood activity is both staple and cash crops production. They grow rice, sweet potatoes, bananas, peas, maize, and taro. Some of the harvest, particularly the sweet potatoes and peas, is sold to purchase rice, fish, and manioc leaves. The household also farms ylang-ylang, selling about 10 kg of flowers per week. The grandmother gathers wild leaves (*tisane*) that are dried and sold to make a beverage similar to tea. The sister living in Mayotte rarely sends money, and only in insignificant quantities. The interviewee does not work in the fields where her mother and father were at the time of the interview. (This household has the luxury of a favorable dependency ratio.) In general, she feels that men work harder than women in her community.

Assets: The family has four dispersed plots of land, totaling about 1 hectare. They also own a cow and two chickens, kept as a form of savings.

Food Consumption Situation and Patterns: The interviewee said that food is most scarce now (January), during the maize planting season. They currently eat one meal per day of rice with manioc leaves. After 3 months like this, the maize harvest will begin a season of relative abundance of food. All members of the household eat the same foods. She has no recollection of a food crisis, where famine conditions prevailed. There is always a little something to eat. Rice is always available in the local market at a price slightly higher than that fixed by the government.

Coping/Trends: The household has not received formal assistance or participated in development activities. Fatima had never heard of Sanduk, a community savings and credit association, or the CAP nutrition project, partially funded by UNICEF, which has worked in the area. Community solidarity is limited to funerals and weddings. Otherwise it is increasingly every family for itself. The interviewee says that there are many, many families in Konni Djodjo poorer than hers. In her opinion, it is the government's responsibility to take care of these people, and not the duty of other community members.

Location: Hoani, Mohéli

Household composition: The interviewee lives in a mud-walled hut with a clay floor, three rooms evenly divided with bamboo wall dividers, and no electricity or running water. She is a woman who estimates her age to be approximately 40, and is married. She lists her husband as head of the household although he works 15 kilometers away in the capital of Fomboni as the *'gardien chef'* at the only hospital. She lives with her three unmarried sisters who have no children. She herself has 3 children, one boy (5), and two girls, 10 and 13. She attended Koranic school as a child because, as she said, she was 'obligated to do so', and subsequently completed two years of primary school, but remains illiterate. She has no family members living abroad to supplement her income from remittances.

Livelihoods Activities/Revenue Sources: The family owns a small parcel of land. She carries the primary responsibility of raising bananas and cassava, and some vegetables. Occasionally she has enough surplus after family needs to sell in the local village market, but this does not occur often enough to add significantly to their family income as it is not a reliable or consistent source. Alihati plants only her own field, which she describes as 'small', but otherwise was unable to give a size approximation. She does not work other land for pay, nor does she barter her labor for goods. The wind and rain of storms cause occasional damage to her field (mostly of the bananas), usually on an annual basis, but she describes those losses as insignificant. Other food sources include rice and fish which she is obligated to purchase with her husband's meager salary as a hospital guard.

Assets: The family owned one goat but it died recently. They own a few chickens, which provide some eggs on a weekly basis for supplemental protein.

Food Consumption Situation and Patterns: Alihati and her family eat three meals a day, although she stated that only bananas are eaten for breakfast and lunch, with rice for dinner. Even though Howani village is located right on the beach, and there are a number of local fishermen, no one in her family fishes and she is obligated to purchase fish locally at 500 CFA/Kilo. As it takes an entire kilo to feed her and her family, they eat fish only approximately every 10 days. Red meat (goat) is eaten 'very rarely', maybe twice a year. In terms of farm animals, she owned only one goat but it died recently. She owns 'a few' chickens, who provide some eggs on a weekly basis for supplemental protein.

Coping/Trends: The interviewee has no recollection of the former PAM program in Mohéli, and is sure neither she nor any family members received any benefit from it. The neighbors do help with food during difficult times but they expect to be reimbursed. She praises God for this assistance, as well as the micro-credit she is extended at the local shops. These shops sometimes lend her food items on a limited basis but expect to be paid back over time. She says she sometimes feels weak from hunger and had a listless composure while answering questions. However, she states that when she or her children are ill they are able to get treatment and medicine at the only hospital in the capital Fomboni. The availability of medical care at a lowered cost is the only government assistance of which she is aware. Adequate supplies of water are available from local wells, as well as the stream that runs by the village. In general, however, Alihati feels that life is getting more difficult and she cited the increased cost of fish over the past year from 400 CFA/kilo to 500CFA/kilo as an example. She stated everything is more expensive now including rice. Although there are village associations that provide mutual social support, she does not belong to any of them, and feels generally unsupported by others in her struggles. She left the general impression that her household struggles are increasing due to limited resources and income, rising expenses, and lack of community support.

Location: Hoani, Mohéli

Household characteristics: The compound consisted of a palm house and a shaded cooking area. There was a breadfruit tree and 10 – 12 banana trees in the compound. The dinner being prepared consisted of green bananas, rice, and fish. All of the questions were responded to by the husband. The household has 6 members: the husband, wife and 4 children. The youngest two were present and appeared to be 2 and 4 years old. The children were healthy and active. No family members have emigrated.

Livelihoods Activities/Revenue Sources: The husband came from Anjouan 2 years ago. He only fishes and does not practice any kind of agriculture. The wife cares for the children. He farmed in Anjouan until 1994, when he switched to fishing because he couldn't earn a living farming. When I asked the other two present, who were farmers, why they didn't fish, they answered that they didn't know how to fish or they would.

He does not own a boat of any sort, rather he rents a motorized fiberglass boat in partnership with another individual. They pay 50% of the cash from sales to the owner and split the other 50%. This is not unusual; of the approximately 40 fishermen in the village only 10 are boat owners. The boats cost 2 million KMF, including the motor. While he wants to buy his own boat he is unable to save the capital necessary.

On the days he fishes he goes out twice a day. He usually goes out every other day. He fishes with a line. Because he has a motor he is able to travel all over the island looking for the best spots. They are currently getting 650KMF/kg and sell to people in the village. One of the largest constraints is the lack of energy and the consequent storage problems. If he doesn't sell all of his fish he must eat what he can or share with his neighbors or the fish will spoil.

Assets: The family owns a few chickens, but no other livestock.

Consumption – Everything other than fish is purchased. They eat twice a day, and usually eat fish twice a day accompanied by rice, bananas, or matabá. June, July, and August are the least productive months

Coping/Trends: During the dry season when fish is scarcer the family gets by using savings. When that runs out they purchase food on credit. The two townspeople who accompanied the interview later indicated that because the husband was from Anjouan the household was better off than most of the fishing households because the Anjouanese were excellent fishermen. While this family is better off than many it still has difficulty accessing food during 3 months of the dry season. Although the family is able to create savings, it is only used for consumption and is not sufficient to purchase productive assets such as a boat.

Location: Koni-Djodjo, Anjouan

Household characteristics: The interview was conducted standing next to the palm house of the interviewee. She had a child of 1 year on her hip and a 4 year old standing next to her. Both children had reddish hair, runny noses, and scabs on their arms, legs, and bellies. Both were also stunted. The husband was in the house but did not make an appearance.

The household consists of 6 people: the wife, husband, and 4 children, ages 1, 4, 13 and 6.

Livelihoods Activities/Revenue Sources: The only source of household income is through agricultural sales. The wife does all of the agricultural labor. On her land she has oranges, ylang-ylang, coconuts and potatoes. There is very little manioc grown in the region. She harvests 10-13 kg of ylang every 12 days, which is sold for 200KMF/kg. The coconuts are not sick but she has very few. They are for consumption and sale. She is now planting potatoes that she will consume and sell in 6 months. Right now she does not have any food crop ready to harvest. The interviewee would like to plant more land but faces labor constraints because she must also take care of the children.

Assets: The house does not have a compound and no garden or fruit trees. The woman owns 3 parcels of land though she was unable to indicate the size.

Consumption: Chicken is eaten once a month or less. Fish, while available, is not eaten because the children have allergies. The family eats once a day and very rarely consume any type of vegetable. Their typical meal consists of rice and whatever else they can acquire. There are days where the family does not eat. The interviewee could not specify a time of year when the family eats less. Shi indicated that food is hard to come by during the entire year.

Coping/Trends: Many people in the village are in the same situation as this family and there is little to go around. Consequently, the family does not receive help from relatives or neighbors. The family is sometimes able to buy food on credit. Both husband and wife suffer from bodyaches and headaches that affect their ability to work. Within the last year or so, a 13 year old child of theirs went to the hospital in Pomoni because of malnutrition. He later died in the hospital. The interviewee indicated that their life and food access have always been difficult but that in recent years it has become even more difficult