WFP
World Food Programme

VAM **VULNERABILITY ANALYSIS & MAPPING** **REPORT**

THE GAMBIA

FOOD SECURITY AND NUTRITION SURVEY

May, 2003

ACKNOWLEDGEMENT

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- Department of Planning under the Department of State for Agriculture
- National Nutrition Agency (NaNA)
- UNDP
- FAO
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SUMMARY

Gambia faced irregular and insufficient rains and below average harvests during the agricultural season 2002. Food Security Assessments indicated that the above would seriously affect the food security situation of households. Based on these and other findings WFP launched an emergency operation (EMOP)[1] to assist the most vulnerable households during the most difficult months of the year.

The rapid food security assessment presented in this report has been conducted to assist the implementation of the emergency operation. The objectives are threefold: (1) evaluate the food security and nutrition situation of rural households before the start of the lean season; (2) assist the WFP country office to target the most vulnerable households and (3) define/confirm intervention areas for WFP activities.

The main indicators used to determine acute food insecurity are food consumption patterns, risk management strategies and acute malnutrition. The main indicators to determine vulnerability to food security are type and level of sources of income as well as available risk management strategies.

Most households eat three meals a day and have a diversified and complete diet with cereals, proteins (mainly from fish) and vegetables. Few negative coping strategies are developed. The level of acute malnutrition among children is 8.2%. This level of acute malnutrition is similar to the malnutrition levels found during the MICS2 survey of 2000 (8%), and significantly lower than the malnutrition rate found during WFP's anthropometric survey of October 2002, which gave 11.2% of wasted children. Acute malnutrition is directly associated with prevalence of illness and poor weaning practices. Overall the results indicate that most subsistence farmers have so far been able to cope with the poor agricultural year; few households were facing an **acute food insecurity** problem in May 2003.

However signs of stress were present. Most villages have access to a market within 5 km of the village. However, the availability of food commodities is problematic for most foods in all markets. Only rice and palm oil are readily available but most other foods are only occasionally found in the markets. Compared to October 2002 less children are eating diversified diet composed of breast milk, cereals, sugar,

Characteristics of the most vulnerable households

- They make out 11 % of the rural population
- Highest frequency in Lower River division
- Maximum 4 months of food self-sufficiency
- Own very few animals (no cattle) or fruit trees
- Very low production of groundnuts (50 kg)
- Very limited access to productive assets
- Relative high level of female headed (15%)
- Land access problems

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[1] EMOP 10249.0 Western Sahel

vegetable and animal protein and fruits and vegetables indicating a reduced food availability and accessibility at household levels. The survey revealed that 11% of the households do not have sufficient resources to cover food and other basic needs during the lean season without recurring to destructive coping strategies. These households are considered very vulnerable to food insecurity. Another 9% is considered potentially vulnerable to food insecurity.

The most vulnerable households are mostly subsistence farmers, depending on cereal production. They cultivate less cash crops than the average Gambian household, have few fruit trees, no cattle and hardly any other animals. Land access is sometimes a problem for these households. Many of the households are female headed. They have a cereal self-sufficiency ratio of four months only, are borrowing food or money, are reducing their food consumption and are looking for extra wage labour. Levels of school enrolment, acute malnutrition and child morbidity are not significantly different from the other households.

Although vulnerable households are scattered throughout the country, some differences are found between divisions and within divisions.

The highest prevalence of the most vulnerable households is found in Lower River Division (21% of the households, i.e. about 11,500 people). The prevalence of most vulnerable households in all other divisions is between 8-12%. The percentage of potentially vulnerable households is also highest in the Lower River Division (13% or 7,100 people). These percentages range from 11-8% in the other divisions. The spatial distribution of the phenomena of vulnerability is most accentuated in the central part of the country covering the Lower River Division, East North Bank and East Western Divisions. In this area all villages are exposed to a certain degree of vulnerability. This area seems to be most affected by a reduction in agricultural production. About 15% of the households rely on salaried work as their main source of income and are among the richer households of the Gambia. However, for a relatively high percentage of households cereal and cash crop production are the only source of income (33%). Alternative sources of income such as livestock, forestry and fruit trees, etc. are less developed.

Levels of vulnerability to food insecurity are lowest in Central and Upper River Divisions. These regions live from cereal and cash crop production but have also developed livestock activities. The large majority of the households cover more than 12 months of food needs. Despite the relatively better food security situation it should be noted that some poverty indicators are among the worst in the country. School enrolment is significantly below the national average, malnutrition levels are among the highest in the country, weaning practices are extremely poor and access to basic infrastructures is more difficult than in the other divisions.

Food aid interventions should primarily focus on the most vulnerable households. The areas most affected are Lower River, and East Western and East North Bank divisions (representing

around 11,000 people in Lower River and 9,000 in both Western and North Bank Divisions). Interventions could apart from school feeding focus on food for work or food for training interventions, preserving and creating assets, diversifying income generating activities and increasing literacy rates especially among women.

Food aid interventions in Central and Upper River Divisions should be well targeted. The programme could include schoolfeeding and nutrition. If possible for the nutrition interventions the younger children under 2 years should be targeted.

1. INTRODUCTION

The Gambia is a small (11,295 sq. km) country, surrounded by Senegal on all sides, except on the Atlantic coast. The total population is 1,455,842 with a growth rate of 4,2 and an infant mortality rate of 92 deaths/1,000 live births (HDR, 2000).

The country has no important mineral or other natural resources and has a limited agricultural base. About 80 percent of its population is engaged in farming which is characterized by low productivity but contributes 33 percent of the GDP.

Groundnuts are the most important crop produced in the Gambia, approximately 45 percent of the Gambia's 200 000 hectares of cultivable land is planted with groundnuts, and almost all farmers are engaged in groundnut cultivation.

In normal years cereal production is highest in the North Bank and the Lower River division producing on average respectively 350 and 250 kg of cereals per habitant per year. The average cereal production in normal years in the Central River and Upper River Division is 140 and 121 kg/person/year. Western division (including the Kombo's) has the lowest production per capita (103 kg)[2].

The types of cereals produced vary significantly per division (see table underneath). The production of groundnuts is important in all divisions (on average 27,9% of total crop production). In the Western Division the most important cultivated cereals are maize and late millet (20,4% of total production). In Lower River and North Bank Division early millet is the most important cereal. The production of rice is important for the rural populations in the Lower River and Western Division (about 10% of cultivated crops).

Table 1: Distribution of crop cultivation per Division (%)

Division	Early Millet	Late Millet	Maize	Sorghum	Upland rice	Swamp rice	Groundnuts	
Western	4,4%	30,0%	20,4%	11,0%	8,0%	0,4%	25,7%	100%
Lower River	56,6%	0,2%	5,4%	2,4%	6,3%	3,7%	25,2%	100%
North Bank	55,0%	0,0%	4,2%	1,7%	0,8%	0,6%	37,7%	100%
Central River	36,3%	0,8%	8,0%	11,0%	0,6%	2,0%	41,4%	100%
Upper River	15,2%	5,0%	18,7%	31,7%	1,4%	0,0%	27,9%	100%

Source: Report of the Agricultural Census 2001/2002

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[2] Source: Report of the Agricultural Census 2001/2002

Livestock is an important source of income for the rural population in the Upper River and the Central River Division.

Tourism is Gambia's primary earner of foreign exchange and provides a livelihood for the coastal population. Trading activities together with transport constitute a dynamic component of the services sector throughout the Gambia. All along the border trading activities contribute significantly to the total income of the households. Re-export trade normally constitutes a major segment of economic activity, but a 1999 government-imposed pre-shipment inspection plan, and instability of the Gambian dalasi (currency) have drawn some of the re-export trade away from Banjul. Small-scale manufacturing activity features the processing of groundnuts, fish, and hides. The government's 1998 seizure of the private peanut firm Alimenta eliminated the largest purchaser of Gambian groundnuts; the following two marketing seasons have seen substantially lower prices and sales. A decline in tourism in 2000 has also held back growth.

2.   CONTEXT FOOD SECURITY AND NUTRITION SURVEY

In July-August 2002, a dry spell of several weeks caused sowing failures and delayed the start of the crop year in many farming areas of The Gambia. The dry spell extending from mid-July to the first week of August affected agricultural activities nationwide. The late and erratic rains affected in particular the production of:
- early planted crops,
- late millet in the Western Division,
- upland rice in Western Division and Lower River Division
- swamp rice in the Lower River and Central River Division
- groundnuts nationwide

The joint FAO/CILSS crop and food supply assessment mission in November 2002 estimated that the divisions most affected by poor cereal production were Western (50 percent below last year), Lower River (-35 percent), North Bank (-24 percent). Groundnut production was evaluated at 73 400 tonnes, 52.4 percent below last year. The mission concluded that the latter would seriously affect the purchasing power of most farmers throughout the country.

Table 2 **Cereals production estimates in 2002 compared to 2001 by region ('000)**

Division	Total Cereal 2001		2002 over 2001 (%)	
	Area Planted (ha)	Production (t)	Area	Production
Gambia	**158.9**	**200.0**	**-8.7**	**-25.3**
Western	22.1	26.5	-41.1	-50.2
North Bank	53.3	55.9	1.9	-24.3
Lower River	14.1	17.6	-10.6	-34.7
Central River	21.65	32.4	-9.35	-16.55
Upper River	26.9	35.2	-0.4	-20.2

Source: FAO/CILSS crop and supply mission, November 2002

To evaluate the effects of the failed rains on the food security and nutrition situation in October 2002 Concern Universal conducted a rapid household food security survey and World Food Programme conducted a nutrition survey. The Concern rapid household food security survey estimated that the food insecurity situation could be severe and widespread by June 2003. The lack of the availability of seeds and livestock fodder were considered a serious problem. Western Division would be most affected. The situation was considered relatively better in the Upper River Division. The Concern survey indicated that the food security situation should be closely monitored throughout the year. The nutrition survey revealed the presence of acute malnutrition affecting 11.2% of the children. These rates were up from the recent 2000 MICS figures (8.6%) and slightly above the 10 percent ceiling used in African countries to indicate an alarming situation. The study indicated that the nutrition situation should be monitored during the year 2003 and during the lean season in particular.

Given the above food security problems World Food Programme prepared an emergency operation to assist the most vulnerable households through free distribution and food for assets projects during the extended 2003 lean season (June to October).

3.　SURVEY METHODOLOGY

3.1　Objectives of the survey

The rapid food security assessment presented in this report has been conducted to assist the implementation of the emergency operation. The objectives are threefold: (1) evaluate the food security and nutrition situation of rural households before the start of the lean season; (2) assist the WFP country office to target the most vulnerable households and (3) define possible intervention areas for WFP activities.

3.2　Survey implementation

The assessment was undertaken by WFP in close collaboration with government institutions (Department of Planning – under the Department of State for Agriculture, and the National Nutrition Agency), UN agencies (UNDP, FAO), Catholic Relief Services (CRS) and Concern Universal.

3.3　Sampling and Sample size

The survey was conducted among rural populations of 68 villages randomly selected by a two-stage cluster method (Cluster sampling) from thirty-one districts within the five divisions of The Gambia. A list of districts and villages from the 1993 population census issued by the Central Statistics Department was used. The size of the sample was calculated using the following formula:

$$n = t^2 \times p \times (1-p) / d^2$$

n= sample size
t= parameter related to the error risk = 1.96
p= expected prevalence of food beneficiaries (90%)
d= absolute precision expressed as a fraction of 1

The survey covered 68 villages and 614 households. In total 889 children were weighed and measured. The survey was carried out during 16 days. The figure below shows the location of the villages selected during the survey.

3.4　Survey Instruments

The assessment consisted of in-depth household food security interviews, a participatory community food security discussion, and an anthropometric survey. The household food security interview focused on discussing the households' availability and access to food (including agricultural production, livestock, migration, other sources of income, food consumption

patterns, demographics, etc). It also identified the risks the households are exposed to and analysed the risk management strategies (coping strategies) that the households have developed. The community focus group discussion was centred around livelihood strategies, illnesses, access to infrastructures, etc. The nutrition survey included anthropometric measurements of children aged 6-59 months and questions on recent illnesses, diets, and source of drinking water.
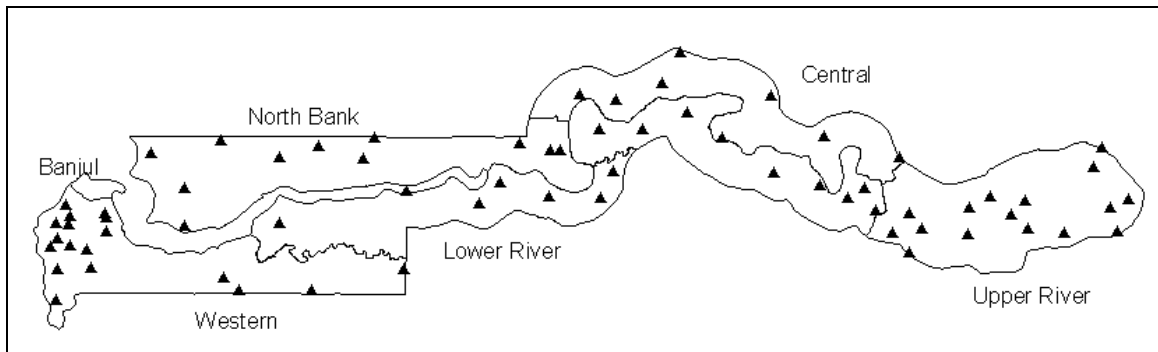
Map 1 Sampled villages

4.   ANALYTICAL FRAMEWORK

The food security and vulnerability levels of households have been evaluated through the analysis on food availability (availability of foods in the market), food accessibility (agricultural production and income sources) and food utilization (malnutrition and food consumption patterns) as well as through the examination of the occurrence of risks and the risk management strategies.

The survey evaluated the **current food security or current vulnerability to food insecurity** of households through the analysis of the food consumption patterns of the households during the week prior to the survey. Because the study was a rapid vulnerability assessment, it was not feasible to collect information on biological utilisation of food for the entire household that often involves invasive and/or time consuming tests. In this assessment, the information collected includes the frequency and composition of foods consumed by the household during the last week, and the frequency and composition of foods consumed by children below five years during the last 24 hours. A minimal food consumption was determined to identify currently vulnerable households. In addition to the above, the assessment used acute malnutrition among children and the information on the use of certain negative risk management strategies as indicators for **current food security status**. The malnutrition indicator is taken with caution since malnutrition can be caused by other factors than food insecurity.

The vulnerability level of the household was determined by the likelihood of a household to fall below a minimal level of food consumption during the lean season. If the estimated resources of a household for the year are below the level necessary to meet the household food needs, the household is considered vulnerable. Household agricultural production and reported annual income were used to calculate household resources. This household resource was compared to the cash value of the household kilo-calorie requirement for the year. The kilo-calorie requirement comes from the joint FAO/WHO/UNU expert consultation on energy requirements. The cash value of the food requirement is calculated in market value of rice. If household resources for the year exceed the cash value of the households kilo-calorie requirement for the year, the household can meet a minimum level of consumption and is not considered vulnerable this year. In addition to the above, the survey assessed the type of risk management strategies available to the households to overcome possible food insufficiencies.

5.   ACUTE FOOD INSECURITY

This chapter evaluates the level of acute food insecurity through the analysis of the current food consumption patterns, acute malnutrition and the presence of risk management strategies.

5.1   Food Consumption

The survey indicated that most households ate a balanced diet during the week before the survey. Households eat on average three meals per day. Cereals are eaten three times a day, vegetable and animal proteins as well as fruits and horticulture products are consumed on a daily basis by the large majority of the households. Only fresh milk is consumed occasionally. The class of households with the least diversified diet class consume 2,8 meals per day. They consume cereals three times a day, animal or vegetable proteins at least once a day, and occasionally vegetables and fruits (2-3 times a week). The households in this class eat a much less diversified diet but still meet the set of minimal diet requirements and are therefore not considered to be currently food insecure. The Central River Division has the highest percentage of households with a minimal diet. However there is no association between food consumption and level of income from agricultural production or other income sources. Many large surplus farmers and food secure households are found among the households with a less diversified diet.
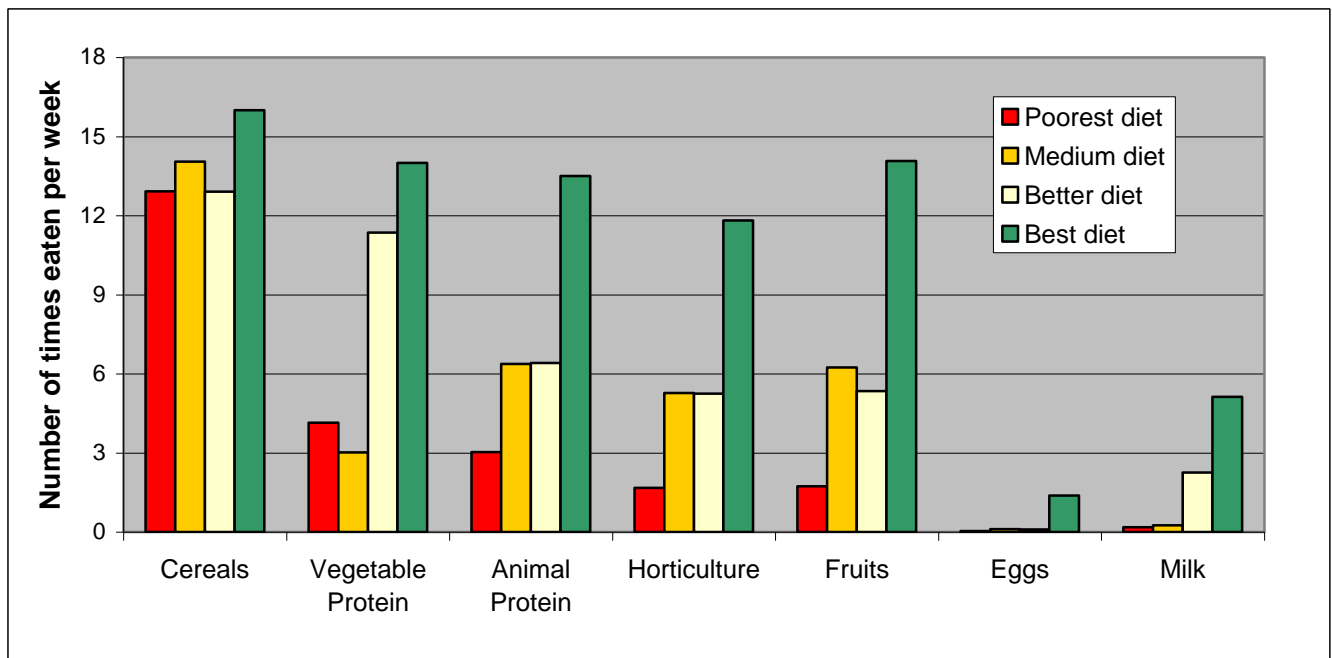
Graph 1: Food frequency consumption per food per week

5.2 Acute Malnutrition

The nutrition survey revealed an acute malnutrition rate of 8.2% among children aged 6-59 months. This level of acute malnutrition is similar to the malnutrition levels found during the MICS2 survey of 2000 (8%), and significantly lower than the malnutrition rate found during WFP's anthropometric survey of October 2002, which gave 11.2% of wasted children. A more in-depth analysis on the levels of malnutrition and the direct causes of malnutrition i.e. inadequate food consumption and illnesses can be found in chapter 10.

5.3 Risks and risk Management Strategies

Most households (80%) indicate having experienced unusual, difficult periods over the last year, 80% expect to face difficulties in the future. The main causes of these difficulties are drought and irregular rains (40%), crop damage (20%), lack of agricultural inputs (18%), and price fluctuation (8%). There are no significant differences between the prevalence of neither difficult periods nor the type of difficulties indicated between household groups and divisions.

Most villages (93%) consider that living conditions have worsened over the last five years, and only some villages in Central River Division (18%) and a few in Western and North Bank Division consider life to have improved or remained the same. All villages in the Lower River and the Upper River Divisions indicate that the situation has deteriorated. The most important reason given is insufficient rainfall. Other reasons are lack of agricultural inputs (seeds in particular) and lack of agricultural equipment.

	Improved or no change (% of villages)	Worsened (% of villages)
Western	5,6%	94,4%
North Bank	9,1%	90,9%
Lower River	0%	100,0%
Central River	18,2%	81,8%
Upper River	0%	100,0%
Total Average	6,4%	93,7%

Table 3   Evolution of village living conditions

Households have recurred to a number of coping mechanisms. The most important strategies are borrowing food and money (20,5% of the households indicated using this strategy), additional wage labour (16,3%), selling livestock (9%), selling firewood (15%) and petty trade (8,3%). The use of negative coping strategies such as seed consumption, selling of productive assets, migration, etc. is limited.

5.4   Food availability at Market level

About 33% of the villages have access to a food market in the village. Ninety percent (90%) of the villages have access to a market within 5 km from the village. Access to **food markets** is best developed in Lower River and Western Division with 60-70% of the villages having a daily market. In the Upper River Division 25% of the villages have a market. In the North Bank and Central River Division less than 10% of the villages have a market. The existence of a market in the village is not related to the vulnerability of the village. In fact the access to markets seems better for the category of most vulnerable villages.

During the time of the survey (May 2003) the availability of food commodities was problematic for most foods. Only rice and palm oil were readily available but most other foods were only occasionally found in the markets. For instance meat is only occasionally available in Central and Upper River and very rare in North Bank and Lower River. This situation is expected to deteriorate further during the months from June to September; 90% of the villages indicate that the availability of food commodities is lowest during the rainy season.

Most villages have a motorable road passing through the village (82%). However for 60% of the villages this road is impassable during 2-3 months per year. This percentage is slightly higher for the vulnerable villages (73%).

Almost 95% of the villages have received food aid over the last year, and all people in all villages were beneficiaries of the aid. Most primary schools (92%) benefit from a WFP schoolfeeding programme, except Upper River where 81% of the schools are benefiting.

5.5   Conclusions on Acute Food Insecurity

Most households eat three meals a day and have a diversified and complete diet with cereals, proteins (mainly from fish) and vegetables. Few negative coping strategies are developed. The level of acute malnutrition among children is 8.2%, similar to averages found in previous years (MICS 2000), and significantly lower than the malnutrition rate found during WFP's anthropometric survey of October 2002 (11.2% of wasted children). Food aid programme activities took place in most villages. Overall the results indicate that most subsistence farmers have so far been able to cope with the poor agricultural year; few households are facing an **acute food insecurity** problem in May 2003. Nevertheless signs of stress are present (no agricultural stocks, lack of food commodities in the markets, the quality of the diets of children deteriorated compared to October 2002, limited alternative resources available, lack of seeds) and serious difficulties are foreseen for some households during the lean season.

6. VULNERABILITY TO FOOD INSECURITY

To determine the vulnerability level, households are ranked according to food needs coverage i.e. estimated total income divided by household food needs (all expressed in rice equivalent) and available risk management strategies.

Out of the total rural population, 68% of the households are food secure with their income or own production (expressed in rice equivalents) providing minimum 12 months of food. Food secure households tended to use assets and cash to handle difficult periods. They sell assets and in particularly livestock. They have considerably more animals, and the sale does not represent a long-term risk for these households. Enough animals are remaining to regenerate the herd for these households. Another important strategy for the food secure groups is looking for additional wage labour.

About 11% of the households are considered very vulnerable to food insecurity; they have a self-sufficiency ratio of less than four months per year. Another group is considered potentially vulnerable to food insecurity. This group covers between 4-7 months of cereal needs. The most important coping mechanisms for the most vulnerable and potentially vulnerable households are borrowing food and borrowing money (25% of the available strategies). Some negative and non-sustainable coping strategies are employed such as consumption of seeds and sale of productive assets. In general the strategies of the most vulnerable households are not very diversified and durable due to the fact that they have limited access to human, financial and physical assets. The lack of risk management strategies increases their vulnerability and the increased vulnerability reduces the available risk strategies (vicious cycle).

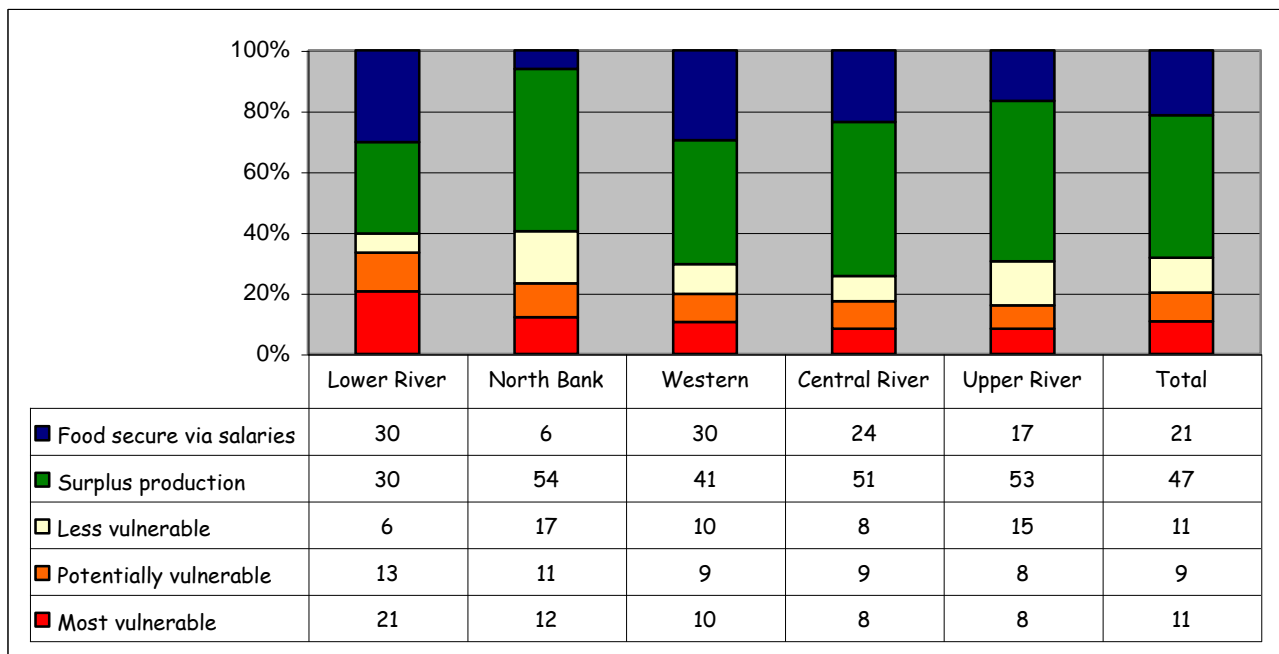| Household Class	Food Self sufficiency per year (number of months)	Households (%)
Most vulnerable	0 to 4 months	11
Potentially vulnerable	4 to 7 months	9
Not vulnerable	7 to 12 months	11
Surplus production (food secure via own production)	More than 12 months	47
Food secure through production and salaries[3]	More than 6 months and more than 80% of income obtained from salaries	21

Table 4: Self-sufficiency per household class

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[3] These "richer households" which have a good income from salaried work and agricultural production were "removed" from the dataset because they distorted averages and often appeared being vulnerable for instance because of low access to productive assets.

7.   GEOGRAPHIC LOCATION OF VULNERABLE HOUSEHOLDS

Although vulnerable households are scattered throughout the country, some differences are observed between and within divisions.

7.1   Household Analysis

The spatial distribution of the households and their vulnerability is represented in the graph and table below. The results show that the highest relative proportion of the most vulnerable households is found in Lower River, followed by North Bank and Western divisions. They have respectively 21%, 12% and 10% of the most vulnerable households, while Central and Upper River have 8% of most vulnerable households. The prevalence of vulnerable and potentially vulnerable households is also highest in the Lower River Division (34%, i.e. about 18,700 people) followed by the North Bank Division (23%, i.e. about 53,000 people). The percentage of households having a surplus production is lowest in Lower River Division. The low production figures are the result of a combination of the late and erratic rains, low river water levels and problems with the rice cultivation. Agricultural production has been most successful in parts of the North Bank, Central and Upper River Division where over half of the household have a surplus production. Livestock is also considerably better developed in these latter divisions.

	Lower River	North Bank	Western	Central River	Upper River	Total
Food secure via salaries	30	6	30	24	17	21
Surplus production	30	54	41	51	53	47
Less vulnerable	6	17	10	8	15	11
Potentially vulnerable	13	11	9	9	8	9
Most vulnerable	21	12	10	8	8	11

Graph 3: Prevalence of household vulnerability classes per division.

7.2   Village Level Analysis

The villages have been classified into three vulnerability classes based on the percentages of vulnerable and potentially vulnerable households in the villages. About 30% of the villages are affected by a vulnerability problem. All villages in Lower River Division are vulnerable to some extent. Most of the villages classified as not vulnerable are situated in the Western, Upper River and Central River Divisions.
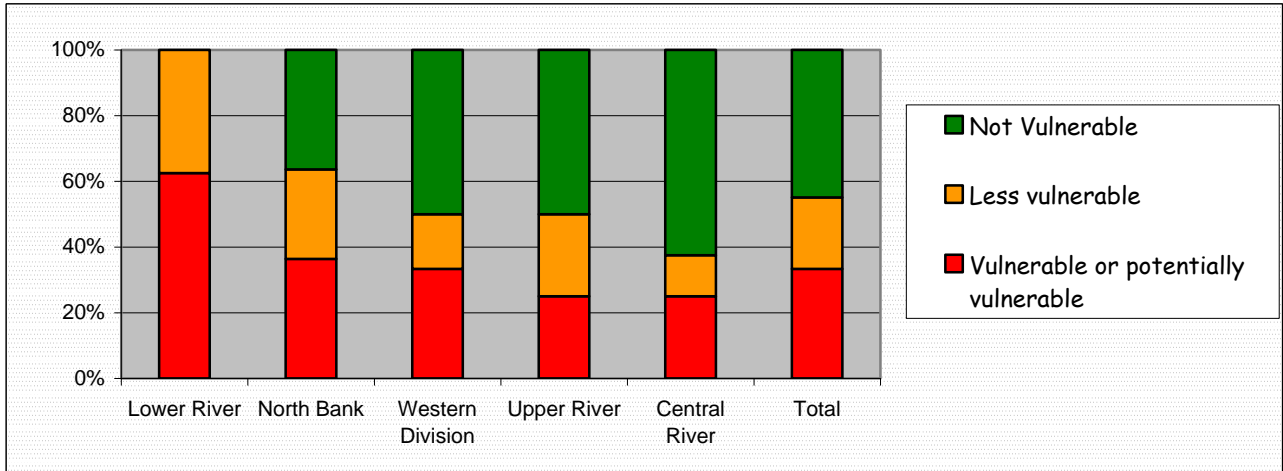
Graph 4: Prevalence of village vulnerability classes per Division

The area covering the Lower River and the East North Bank Division seems to be most vulnerable with all villages facing some level of vulnerability (see map). Apart from this area (coloured in yellow) the geographical distribution of vulnerability is rather homogeneous.

Map 2: Location of different village classes and indication of most affected area
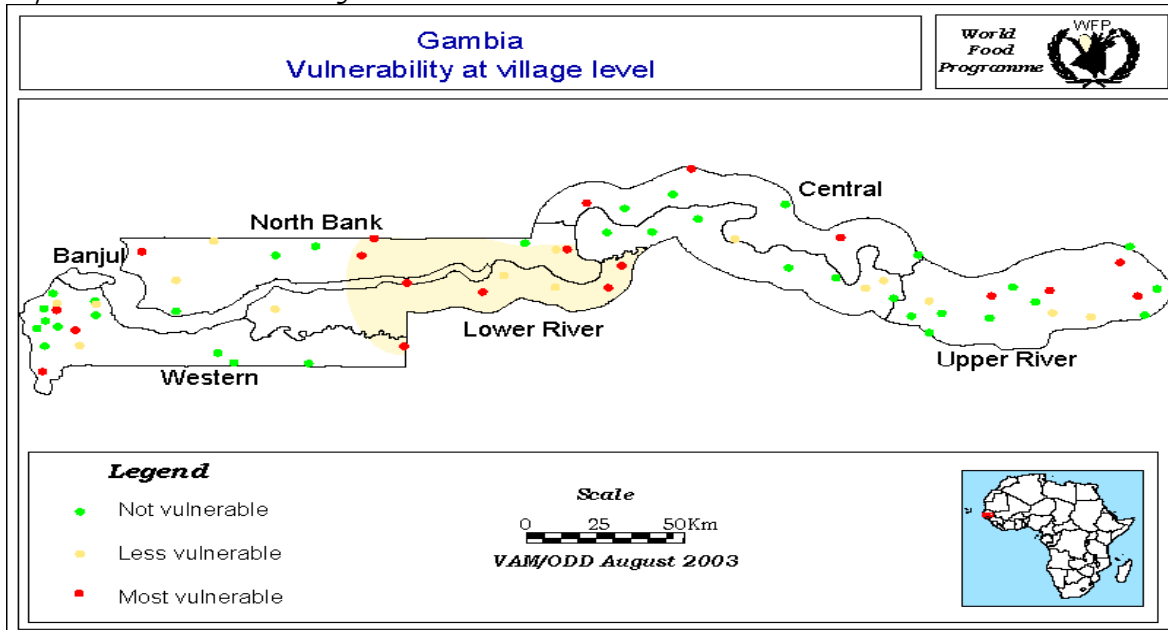
8. SOME CHARACTERIZATION OF VULNERABLE HOUSEHOLDS

The most vulnerable households have a food self-sufficiency ratio of less than 4 months, mainly obtained from cereal production. The food self-sufficiency ratio does not include other basic household needs, such as health and education costs, which makes these households very vulnerable during the lean season. This section characterizes the most vulnerable households with the objective to better target the households in need of food aid and to optimize intervention activities.

8.1 Household Heads and Demographics

The most vulnerable household group has **15% female headed households** compared to maximum 3% for any other household group. More than half of the heads (55%) have no education and only 2% have finished the primary level, while 40% have had religious education. Most heads have discontinued studies to go to work (76%) while others have left because of the costs involved or marriage. There are no significant differences from the less vulnerable households. The dependency ratio for the most vulnerable households is significantly higher than the one for the other household classes. On average the dependency rate for the most vulnerable class is 0,9 child per adult. This ratio is on average 0,76 for the other classes.

8.2 Sources of income

All household classes (except the food secure through salaries class) rely very much on agricultural activities for their main source of income (on average 88% of the households indicate that the main source of income is coming from agricultural activities).

The type of agricultural activities varies per vulnerability class (see graph). Compared to the other classes the most vulnerable households rely more on cereal and less on cash crop production. Livestock only contributes very little to the overall income of the vulnerable households. In fact the most vulnerable households have no cattle, and almost no draft animals. Another difference is that the most vulnerable have
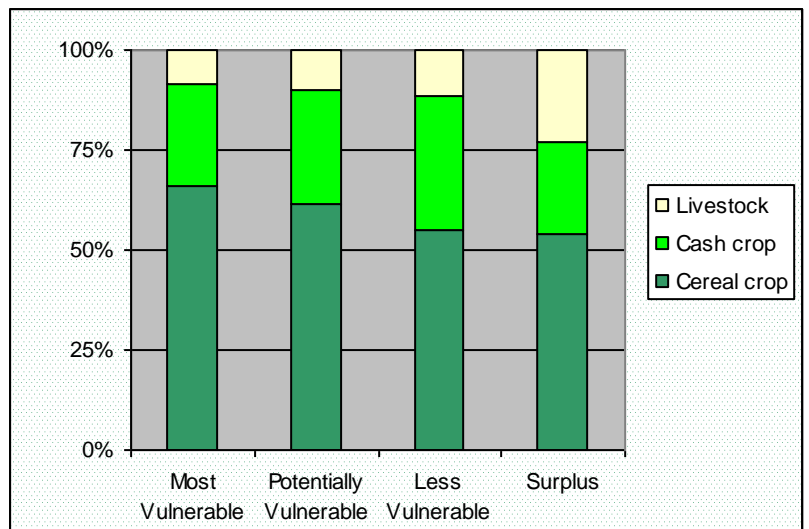

Graph 5: Distribution of main agricultural activities per class

very few productive trees such as banana , citrus, mango or cashew nut. Especially for the trees that provide extra income such as mango and cashew nut, the difference is considerable. The most vulnerable have 97% less cashew nut trees and 70% less mango trees, than the country average (see table).

Household class	Palm oil Tree	Banana Tree	Citrus Tree	Cashew Tree	Mango Trees
Most vulnerable	0	0,6	1,4	0,3	2,8
Potentially vulnerable	0	0,3	0,7	0,8	5,5
Not vulnerable	0	1,1	2,04	2,5	5,9
Surplus production	0,2	1,5	3,4	8,6	8,6
Food secure/salaries	0,6	1,0	3,2	4,8	4,6

Table 11: Average number of trees per household class

The sources of income are significantly less diversified for the most vulnerable households. Most households have only two different sources of income. More than 27% has only one source of income.
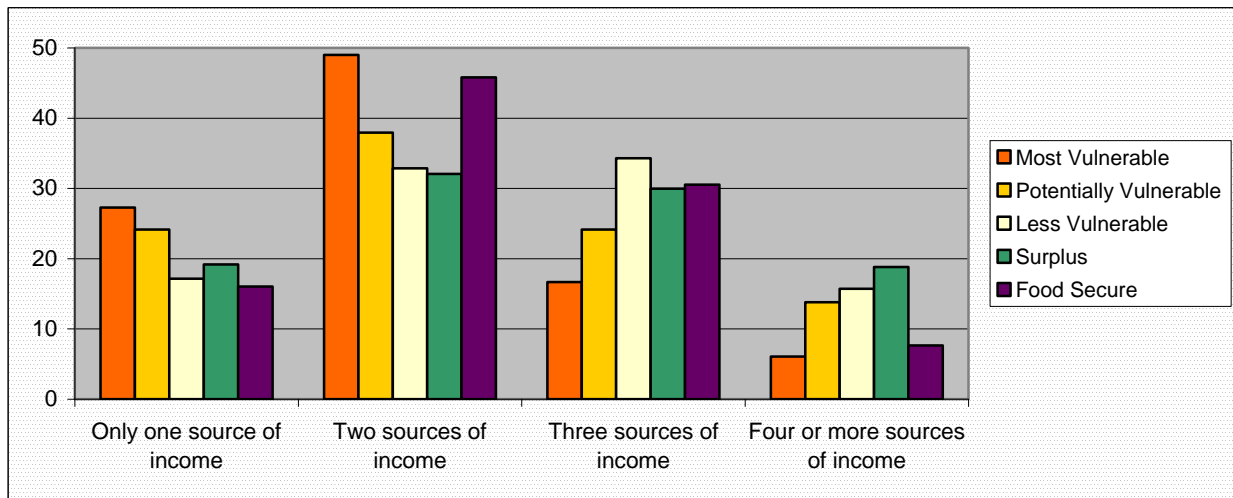
Graph 6: Sources of income per household class

8.3   Participation of household members

When asked about participation of household members in the main source of income differences are observed between the classes (see graph). The percentage of women responsible for the main source of income is significantly higher in the most vulnerable group. The participation of children (everyone participates) is slightly higher in the vulnerable and potentially vulnerable groups. Men are the main breadwinners in the food secure/salary group. The members of the most vulnerable households are significantly less involved in communal work. More than 33% of

the households indicate that none of the household members are involved in communal work compared to the national average of 17%.
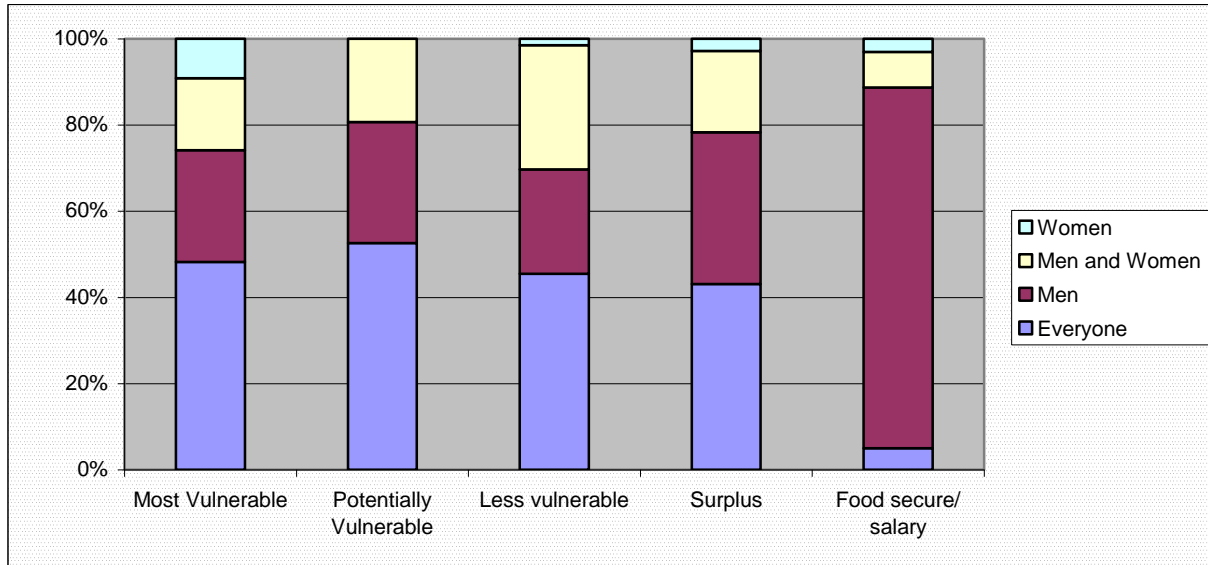
Graph 7: Category of people participating in main source of income

8.4   Agriculture

The most important crops cultivated by the vulnerable households are upland rice, maize and millet. The vulnerable households cultivate much less groundnuts than the other classes - the average production per household is 50 kg while the national average is 530 kg (the potentially vulnerable household group produces more than 150 kg).

The most vulnerable group cultivate significantly less hectares than the other agricultural groups. The smaller size of the fields might among others be related to the lack of external assistance available (see table), the lack of agricultural production assets and the lack of access to land.

Table 5: Area cultivated per Household Class (ha)

Household Class	Average land cultivated (ha)
Most vulnerable	3,15
Potentially vulnerable	4,86
Not vulnerable	4,87
Surplus production (food secure via own production)	6,44
Food secure through production and salaries[4]	5,22

The table underneath indicates that the vulnerable group has significantly less help during field preparation and weeding. The income of the most vulnerable households does not allow the households to pay for external labourers.

Household Class	External assistance for field preparation	External assistance for weeding
Most vulnerable	10%	12,7%
Potentially vulnerable	17%	25,9%
Not vulnerable	11%	15,7%
Surplus production (food secure via own production)	20%	30,7%
Food secure through production and salaries[5]	17%	24,4%

Table 6: Field assistance per Division (% of households)

The most common tools are hoe or axe (92% of the households). Other small tools are not commonly found among the vulnerable households. None of the families have a plough and only very few have a cart, a seeder or a weeder.

The table below illustrates the access to agricultural land. Most important land ownership of the most vulnerable households is inheritance (46%) followed by clan owned (19%) and communal land (18%). An important difference is that the most vulnerable household group has more communal land and less private land obtained from inheritance compared to all other classes.

	Permission from chief (communal)	Inheritance	Family Clan owned	Outright ownership/ Purchase	Other
Most vulnerable	**24%**	**36%**	**18%**	**6%**	**16%**
Potentially vulnerable	12%	53%	19%	9%	7%
Not vulnerable	17%	49%	19%	4%	11%
Food secure	12%	55%	19%	5%	8%

Table 7: Land access per household class

Few vulnerable households have seeds for the next agricultural season: only 6% have rice, 27% have maize, 41% have millet seeds and only 8% have groundnut seeds. The availability of groundnut seeds is significantly lower than for the other household classes. The other figures are however not significantly different from the other households.

8.5 Diet

The most vulnerable households eat slightly less meals per day than the other households. Also their children have a lower frequency of meals (3.5 meals per day compared to 3.8 meals). The composition of the diet of the most vulnerable households is similar to the national average for cereals with an average of three meals with cereals per day. The most common cereal is rice (two meals per day) followed by millet. The most vulnerable group eats significantly fewer proteins than all other groups (5 times a week compared to 9 times per week). Their frequency of consumption of oil, milk, vegetables and fruits is also lower but less pronounced. Proteins and vegetables or fruits are eaten by all at least once daily.

The weaning practices of the most vulnerable households on the other hand are significantly different than of the other household groups (see table). More than 56% of the children aged 6-12 months in the most vulnerable households do not receive any complementary foods.

What is the main complementary food you are giving to the child < 12 months					
Class of household	Water with sugar	Porridge	Porridge + groundnuts	Porridge + milk	Nothing
Most vulnerable	8,7%	39,1%	4,3%		47,8%
Potentially vulnerable		50,0%		14,3%	35,7%
Not vulnerable	3,7%	37,0%	7,4%	11,1%	40,7%
Surplus	4,3%	51,7%	8,6%	11,2%	24,1%
Food Secure/salaries	5,1%	59,0%	5,1%	12,8%	17,9%
Total	4,6%	49,8%	6,8%	10,5%	28,3%

Table 8: Type of complementary food per household class (% children)

The food consumption of the older children do not differ very much from one household to another, except for fresh milk, which is rarely given to children in the most vulnerable household group (5.3% versus 15% for other groups). During the last 24 hours before the interview, 96% of the children have received rice or millet, 65% received fish, 77% vegetables or fruits and 83% have been given sugar.

9. MALNUTRITION

The discussion below evaluates the prevalence of acute malnutrition[6] among children 6-59 months and analyses the direct causes of malnutrition i.e. inadequate food consumption and illnesses. Comparisons are made with the results of the nutrition survey conducted in October 2002.

9.1   Acute Malnutrition

The nutrition survey revealed an acute malnutrition rate of 8.2%. This level of acute malnutrition is similar to the malnutrition levels found during the MICS2 survey of 2000 (8%), and significantly lower than the malnutrition rate found during WFP's anthropometric survey of October 2002, which gave 11.2% of wasted children.

Children in the Western and North bank division have the lowest levels of acute malnutrition. The Central river and Lower River Divisions have the highest levels. However, the differences between the divisions are not significant at 5% due to the low number of children involved. Acute severe malnutrition rates are very low and below 1.5% for all divisions in the country.

	Moderate Acute malnutrition (%)	Severe Acute malnutrition (%)	Total Acute malnutrition (%)
Central River	10.1	1.0	**11.1**
Lower River	8.9	0.0	**8.9**
Upper River	7.9	0.7	**8.6**
Western	5.0	1.4	**6.4**
North Bank	4.9	0.0	**4.9**
Total	7.5	0.7	**8.2**

Table 9: Acute malnutrition levels per Division

The age group most affected by acute malnutrition is the group of children in the weaning period, i.e. children between 6-12 and 12-23 months. For these groups the acute malnutrition rates are 8,8% and 10,3% respectively. Boys are more malnourished than girls with averages of 9.4% and 6.7% respectively. The figures underneath summarise the results of the different nutrition surveys. It can be concluded that the acute malnutrition situation improved since October 2002. The levels of malnutrition are below the 10% ceiling for African countries.

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[6] Wasting: A wasted child has a weight-for-height Z-score that is below -2 SD based on the NCHS/CDC/WHO reference population. Acute malnutrition is the result of a recent failure to receive adequate nutrition and/or illness, especially diarrhoea.
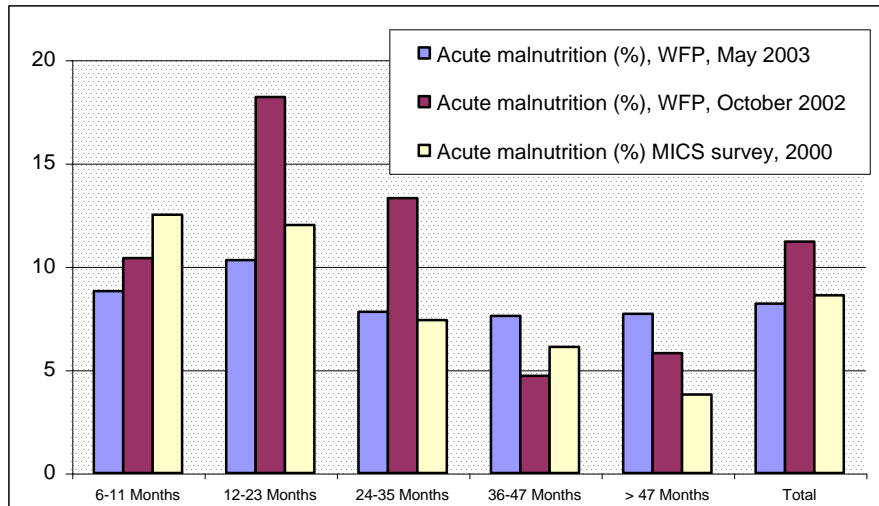
	6-11 Months	12-23 Months	24-35 Months	36-47 Months	> 47 Months	Total
Total Acute malnutrition (%), WFP May, 2003	8,8	10,3	7,8	7,6	7,7	8,2
Total acute malnutrition (%), WFP October 2002	10,4	18,2	13,3	4,7	5,8	11,2
Total acute malnutrition (%) MICS survey, 2000	12,5	12	7,4	6,1	3,8	8,6

Graph 8: Acute Malnutrition for different studies (weight for height Z-score)

9.2 Chronic malnutrition

In the country, 27,6% of the children between 6 and 59 months is stunted measured using the height for age indicator; an average 9,7% of the children suffers from severe chronic malnutrition and 17,9% of moderate malnutrition. Generally, the chronic malnutrition rates increase from the east of the country to the west (see map underneath) and differences between the divisions are significant (Sig. 0.01).
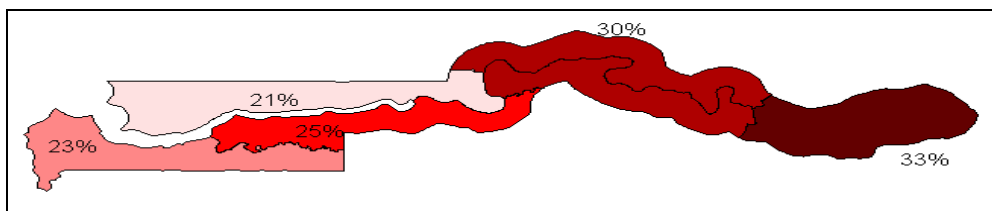
Map 3: Total stunting rates by division

These values are very high compared to the UNICEF Multi-Indicator Cluster survey (MICS2) of 2000, which found only 19% of stunted children as well as the WFP anthropometric survey of October 2002, which recorded 17%.

	Moderate Chronic Malnutrition (%)	Severe Chronic Malnutrition (%)	Total Chronic Malnutrition (%)
Upper River	17.5	15.0	32.5
Central River	23.1	7.2	30.3
Lower River	17.7	7.6	25.3
Western	15.6	7.1	22.7
North Bank	14.2	6.8	21.0
Total	17.9	9.7	27.6

When considering sex and age groups, the highest malnutrition rates are found in boys in the age groups of 12 to 36 month, with more than one third of the boys suffering from moderate to severe malnutrition. Girls show a slightly different and globally lower level of malnutrition rates with two age classes more affected (12-23 months and 36-47 months).

Age in months	Boys	Girls
6-11	21% (0%)	21% (4%)
12-23	38% (12%)	28% (10%)
24-35	33% (12%)	16% (8%)
36-47	26% (10%)	30% (12%)
> 47	32% (14%)	20% 5%
All	31% (11%)	23% (8%)

From all the children, 67% are considered to have had normal weight at birth. From the severe malnourished, 28% were considered very small compared to 11% for the other groups. There is also a significant effect (Sig. 0.00) of the duration of the breastfeeding on the chronic malnutrition of the children. On average there are 12.8 months of breastfeeding for severely stunted children compared to 15.6 months for the other children.

There is also positive association between stunting of children and the living conditions of the household. Construction material of the outside walls (Sig. 0.03) and material of the roof (Sig. 0.01) is significantly better for well-nourished children.

Other relationships are not clear. For instance, families with stunted children have more sheep, goat, horses and donkeys, but not cattle. The same families with stunted children have a higher production of cereals (upland and lowland rice, maize) but not groundnuts and cassava.

9.3   Morbidity

The morbidity level during the last two weeks prior to the survey is estimated at 41,7% which indicates a significant improvement compared to the findings of the October 2002 survey. The table underneath shows the morbidity levels for the most important illnesses for the current nutrition survey as well as the one conducted in October 2002. The divisions Upper River, Central River and Lower River have the highest morbidity rates (> 41%). North Bank and Western Division are much less affected by illnesses (< 30%). Malaria remains the most important illness reported among children. Boys seem to be more affected by illnesses than girls. The younger children (i.e. children under 2 years) have significantly higher morbidity rates than the older children.

	Results Survey May, 2003			Results Survey, October 2002		
	Boys (%)	Girls (%)	Total (%)	Boys (%)	Girls (%)	Total (%)
Malaria/fever	43,1	36,5	40	53,1	52,2	52,7
Diarrhoea	20,8	18,2	19,6	21,4	25,5	23,4
Cough	31,6	27,2	29,6	37,2	37,7	37,4
Total ill	44,3	38,8	41,7	65,3	65,6	65,4

Table 10: Morbidity levels

Survey results	6-11 Months	12-23 Months	24-35 Months	36-47 Months	> 47 Months	Total Average
Total children ill (%), May 2003	52,2	50,5	44,2	34,0	32	41,7
Total children ill (%), October 2002	71.9	75.1	64.2	60.5	53.7	65.5

Table 11: Morbidity levels per age class

Fever/malaria, cough, diarrhoea and measles are associated with the malnutrition condition of the children. Acute malnutrition among children that had been ill over the last two weeks is equal to 10,3% compared to 6,6% for the other children. Especially measles and diarrhoea seem to be associated with acute malnutrition (acute malnutrition equals 23% for children with measles and 13,1% for children with diarrhoea compared to respectively 7,2% and 6,8% for children without measles and diarrhoea).

9.4   Food Consumption Children

Mothers were asked whether the children ate a certain type of food the day before the survey (yes/no). The mothers were not asked about the quantity consumed per type of food. The different types of foods consumed by the children were classified in four types of diets depending on the quality of the diet. The table underneath indicates that 21,8% of the children have a poor/inadequate diet. This percentage is similar to the one found in October 2002. Overall the quality of the diet has deteriorated compared to October 2002. Only 26,8% have a

diversified diet composed of breast milk, cereals, sugar, vegetable and animal protein and fruits and vegetables compared to 40% in October 2002 indicating a reduced food availability and accessibility at household levels. The prevalence of children eating poor diets is highest in the Central and Upper River Division (28%).

Classes of diet	Survey May, 2003, (%)	Survey October 2002, (%)	Quality of diet
Breast milk plus cereals, at least animal and vegetable protein source, and fruits or vegetables	15%	23,5%	Good weaning diet
Very large variety of foods (animal and vegetables protein source, cereals, and fruits or vegetables)	11,8%	16,2%	Good
Cereals, animal and vegetable protein source no fruits and vegetables or cereals fish and fruits and vegetables	53,3%	41,0%	Average
Poor diet (cereals and beans or cereals and breastmilk)	21,8	19,2%	Poor

Table 12: Percentage of children per type of diet

Most children with a poor diet, i.e. over 40% of the children, fall into the category 6-23 months,. These children are in the weaning period, they are breastfed but they do not consume sufficient complementary foods to meet the energy, protein and vitamin requirements. The children in this group are exclusively breastfed or consume breast milk complemented with only a cereal and some sugar. When mothers were asked to indicate what kind of complementary foods are given to the children aged 6-12 months the bad weaning practices became even clearer. Among the children aged 6-12 months over 30% are eating either nothing or some water and sugar as complementary food. In the Central River Division this percentage is as high as 65%!

Children with a poor diet are more acutely malnourished than children eating a very diversified diet. The differences are not statistically significant but this is probably due to the small number of children eating a good diet.

10. HEALTH SITUATION/SANITATION

This chapter describes the physical access to health infrastructures, the utilization of basic health services, morbidity levels and access to water.

10.1 Health Infrastructures

Access to health infrastructures has improved over the last years however it is still difficult in some rural areas. Access is significantly more difficult in the Central and Upper River Divisions than in the other three divisions

Table 13: Average distance to health facilities per division

Division	Drugstore (km)	Pharmacy (km)	Health post (km)	Doctor/ nurse (km)	Trained midwife (km)	Family planning worker (km)	Community health worker (km)	Traditional birth attendant (km)
Western	12,3	4,6	3,7	3,8	4,1	4,9	3,2	1,6
North Bank	12,5	15,1	1,8	6,7	7,3	5,8	5,5	1,2
Lower River	9,7	9,7	2,1	7,9	7,9	7,6	0,7	0,0
Central River	22,6	15,3	4,2	7,0	7,8	7,8	5,5	5,7
Upper River	31,7	31,7	9,4	13,7	16,2	3,0	3,7	1,9

10.2 Availability and Utilisation of Basic Health Facilities

Most households indicate they use the existing basic health services and to benefit from various health campaigns. Almost all pregnant women (99%) attend antenatal care. The antenatal care is most often provided by a nurse or a midwife (in 90,8 of the cases). Nevertheless, only 6% of the women received iron-folate during pregnancy and only 40% have received Vitamin A supplementation. The nutrition survey revealed that: (1) large majority (86%) of children received Vitamin A capsules during last 12 months; (2) 86% of children are vaccinated against measles; (3) 72% of the children who were ill were taken to the hospital or other health structures. Anti-malaria and general immunization campaigns have been carried out in respectively 87% and 97% of the villages during the last three years. No significant differences are found between the five household vulnerability classes or between the divisions.

10.3   Morbidity

All villages mention malaria as the major health problem, followed by diarrhoea. In Western and Central River, the majority of the women give birth at the hospital or health post, while in the other divisions birth is mainly carried out with a traditional birth attendant. The average age of first pregnancy is 17 years. On average, 11% of the mothers have suffered from diarrhoea and 25% from fever over the last two weeks; 41% of the children have been ill over the last two weeks - on average more boys (43.9%) than girls (38.3%). Child morbidity is highest in Central River Division. Maternal morbidity is highest in Upper and Lower River Division.

10.4   Access to water

On average 30% of the households drink water from an unprotected well. The percentages are highest in the Western, Central and Upper river divisions. No significant differences in access to water are found between household groups.

11. EDUCATION

11.1 Infrastructures

Almost half of the villages have a primary school. Exceptions are North Bank Division with only 9% of the villages having a school and Lower River Division with 86% of the villages having a school. The average distance from the village to the school is 1.5 km. The Lower River Division is the division with the lowest average distance (0,5 km). The highest averages are found in the Upper River and Northbank divisions (1,9 and1,7 km respectively).

11.2 Adult Education

Adults' education is low throughout the country; only 16% of the adults have finished primary school. Differences between divisions are significant. In the Western and Lower River Divisions respectively 26% and 20% of the adult population have been in primary school. In Upper River, North Bank and Central River Divisions these percentages are as low as 10%. In the food secure/salary household class the level of educated adults is significantly higher than in the other vulnerability classes (30%).

In general large differences are found between men and women: the percentage of educated male adults is 22%, the percentage of educated female adults is only 9%. About 80% of the women discontinued school because of marriage, men quit school mainly because of agricultural or other work (60%).

11.3 School enrolment children

On average 67% of the children aged 7-12 are enrolled in primary school. School enrolment is slightly higher for boys (70,8%) than for girls (63,5%). There are significant differences in school enrolment between the divisions (see figure below). Central River and Upper River have considerably lower school enrolment figures than the other divisions. The levels of school enrolment are not significantly different between the household vulnerability classes.

The main reasons for not sending children to school are the involvement of children in agricultural or other work (mainly North Bank and Lower River Divisions), the cost of schooling which is considered too expensive (all divisions) and lack of parental interest (mainly Upper River and Central River division).
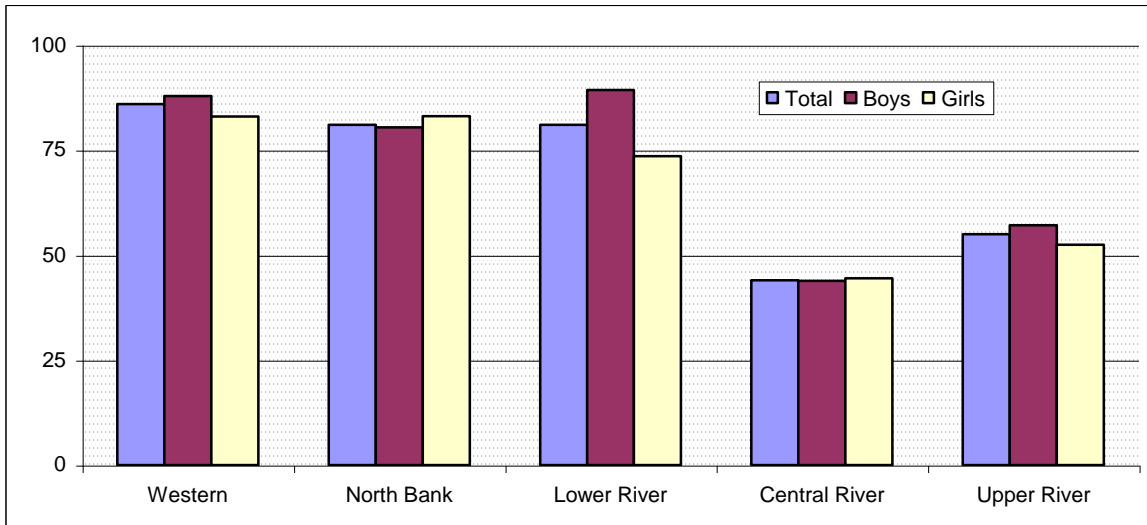
Graph 9: School enrolment of children between 6-13 years per division (%)

12.   INTERVENTION OPTIONS

Food aid interventions should primarily focus on the most vulnerable households. The areas most affected are Lower River, and East Western and East North Bank divisions (representing around 11,000 people in Lower River and 9,000 in both Western and North Bank Divisions). The households need to build and/or rebuild assets to be able to strengthen their risk prevention and mitigation strategies. Interventions could apart from school feeding focus on food for work or food for training interventions, preserving and creating human and physical assets, diversifying income generating activities and increasing literacy rates especially among women. Interventions should be carefully planned since they should not intervene with on going agricultural activities. They could be linked to the agriculture work through food for training for example.

Food aid interventions in Central and Upper River Divisions should be well targeted. The interventions could include schoolfeeding and nutrition interventions. If possible for the nutrition interventions the younger children under 2 years should be targeted. The intervention should be accompanied by education sessions on nutrition health and hygiene. To optimise the impact of WFP interventions all WFP's programs/projects should be planned and carried out in collaboration with other UN agencies and NGOs operating in the same zones.