



CROP AND FOOD SECURITY ASSESSMENT FOR LIBERIA



Monrovia, 27 February 2006

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ANNEX 1: PARTICIPANTS

LIST OF ACRONYMS

This report is prepared on the responsibility of the FAO and WFP Liberia Country Offices with information from official and unofficial sources. Since conditions may change rapidly, please contact the undersigned for further information if required.

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MISSION HIGHLIGHTS

- The 2005 rice production (milled) is estimated at 85,000 MT which is very low in comparison to area planted during the season.
- The yield per hectare is estimated at 0.4 MT milled rice which is less than 30% of the average yield per hectare (1.3MT) estimated by the Baseline Survey of the Ministry of Agriculture in 2001.
- The main reason behind the extreme low yields of rice in 2005 is the heavy attacks of pests, mainly grass cutters and birds.
- Liberia's cereal import requirement, mostly rice, in 2006 is estimated at 204 000 MT, of which 90,000 MT are anticipated to be imported commercially and 74,000 to be covered through planned food aid leaving a gap of 40,000 MT of uncovered deficit.
- While cassava consumption has increased because of low rice production, there is evidence of decrease in yield estimated by the mission at 6MT of fresh cassava which is less by 2 MT than average yield (8MT) estimated by the Baseline Survey of the Ministry of Agriculture in 2001.
- Cassava low yield are attributed to poor crop husbandry practices combined with the wide spread infection of mosaic virus disease through out the country.
- After accounting for losses, the Mission estimates that some 444, 000 MT of fresh cassava will be available for consumption in 2006.
- The cereal equivalent of fresh cassava is estimated at 133,000MT. This is expected to reduce the cereal import requirement.
- Besides the timely supply of emergency assistance of agricultural inputs to war affected farmers, especially returnees, an immediate response to address the problem of pests in 2006 planting season is recommended as a priority. Together with the immediate response, medium and long term pest management programmes to be designed and implemented.
- Enhancement of productive capacities of small holder farmers is recommended through introduction, multiplication and distribution of improved, high yielding, early maturing and disease resistant varieties of food crops with emphasis on rice and cassava.
- Land Development particularly for swamps and selected uplands for rice production, cum fish and vegetables on commercial purposes is recommended. Increasing agricultural production in Liberia's many swamps will require technical assistance in order to control the risk of schistosomiasis (flake-worm), diversify lowland production, and overcome producers' preference for upland cultivation.
- The high level of losses to be addressed through support to extension services and training on crop husbandry practices, small scale post harvest technologies, equipment, processing, storage and marketing.
- Liberians produce a homogeneous but wide range of food crops and, with technical assistance in specific areas, much of the population has the potential for food and nutritional security in terms of the **availability** of food.
- The war has severely disrupted cash-crop production at the household and industrial (plantation) levels. The loss of income from household cash-crop

production and from opportunities for wage labour on the plantations negatively affects Liberians' **access** to food.

- Overall, **food utilization**—access to safe water, adequate sanitation, medical care, appropriate infant and child feeding practices represents one of the main constraints on food security.
- There are three major social groups that are vulnerable to food insecurity, mainly due to the lack of household labour necessary for the various activities that comprise rural Liberians' livelihood strategies: single women, the elderly, and orphans. The first two groups are the largest and the most vulnerable.
- Women have important roles in food- and cash-crop production, as well as in marketing, and therefore are key actors in efforts to improve food security.
- Liberia's HIV/AIDS prevalence rate has increased during the past five years and the disease is a serious, potential threat to rural households' livelihoods and food security.

1. OVERVIEW

The United Nations Food and Agriculture Organization (FAO) and World Food Programme (WFP) conducted a joint Crop and Food Security Assessment Mission (CFSAM) at the request of the Government of Liberia. The Ministry of Agriculture (MOA) hosted the Mission that was carried out during the period 11 January to 3 February 2006.

The most recent CFSAM in Liberia was conducted in 2000. The absence of this assessment during the past five years created an information gap that hindered the quantification of food production, surplus, deficit, and supply needs. In October 2005, the Government of Liberia requested FAO and WFP to carry out a CFSAM. Against this background, the mission's main objectives were to assess crop and livestock production levels, and to update information on the population's food security and vulnerability status.¹

After briefing sessions in Monrovia with the MOA, international and national NGOs, and donor agencies, the mission split into two teams (Team I worked in north-west and central Liberia, and Team II covered south-east Liberia). Each team consisted of four members that represented WFP, FAO, and the MOA, plus a representative from the Local NGO Network (LINNK) on Team 1 and a representative of the Liberian Farmers' Union (LINFU) on Team 2. During the field visits the mission was also accompanied by representatives of local and international NGOs as observers in their respective counties/districts of operations. Those observers included UNMIL, UNHCR, ICRC, CRS, LWF, GAA, CARITAS, LINK and LAS.

The field visits activities included meetings with local authorities, United Nations (UN) personnel, international and local non-governmental organizations (NGO), visits to farming and fishing communities, and yield measurements in selected production sites. Focus group discussions were held with mixed groups of men and women in all farming and fishing communities visited; key informant interviews were carried out at county and district level. Key informants included local representatives from MOA, MOH, NGOs, and UNMIL Civil Affairs.

The two teams visited 28 communities in 21 districts in the 15 counties of Liberia. The teams aimed to work in two districts in each county, which was not always possible due to the poor roads that made driving very time-consuming, particularly in the southeast. Team 2 used both helicopters and vehicles to reach its seven south-eastern counties; Team 1 traveled in vehicles except for helicopter transport to Lofa County. Communities for the assessment were chosen based on the following criteria:

- Mix of farming and fishing communities;
- Communities close to and far away from district and county headquarters;
- Communities with and without WFP and FAO assistance; and
- Communities with different population sizes.

Both teams changed some of the communities chosen for the assessment based on the team members' knowledge of some areas and based on the time required for interviews and traveling on poor roads. The CFSAM report therefore is based on a feasible rather than a representative set of rural communities.

The mission team used an open-ended questionnaire during the focus group discussions and a topical guide for the interviews with key informants at county and district level. Prior to the field visits questions and topics were identified by the mission members to assess the various dimensions of food security: availability of food (mainly crop production and constraints), access to food, utilization of food, and risks/shocks and coping mechanisms.

¹ CFSAM usually estimate the number of people affected by food insecurity and how many should be targeted for food assistance and their geographic distribution. However, there is no secondary data available in Liberia to come up with reliable figures. A countrywide Comprehensive Food Security and Nutrition Survey (CFSNS) will be implemented in the second quarter of 2006, which will allow the estimation of food insecure population.

2. SOCIO-ECONOMIC SETTING

2.1 Background

In August 2003, the Government of Liberia and two rebel groups, Liberians United for Reconciliation and Democracy (LURD) and Movement for Democracy in Liberia (MODEL) along with several political parties signed the landmark Comprehensive Peace Accord (CPA), resulting in the cessation of hostilities that had raged intermittently for over fourteen years. This agreement was subsequently followed by the formal inauguration of a two year National Transitional Government and Legislature comprised of representatives from the government, rebel groups and civil society. It was accompanied by the establishment of the United Nations Mission in Liberia (UNMIL) (Security Council resolution 1509 (2003) of 19 September 2003) consisting of support to the implementation of the ceasefire agreement and the peace process, protection of United Nations staff, facilities and civilians, aid to humanitarian and human rights as well as assistance with national security reform, including national police training and formation of a new restructured military. This mission represents the second attempt of the United Nations to assist Liberia with a multi-national, peace-keeping force, the first being in the 1990s.

At the conclusion of the Liberia Reconstruction Conference held in February 2004 in New York, Liberia and its development partners adopted the Results Focused Transition Framework (RFTF), an overarching national transition strategy, to implement over the transition period 2004-2005. The framework defines a set of critical results to be achieved in order to bring about the desired level of national social pacification, economic revival and public service resuscitation, thus helping to establish a foundation for sustainable peace, democratic development, socio-economic progress and the rule of law prior to presidential elections in October 2005.

The Liberian economy currently operates at about one third of its pre-war level with a GDP of less than US\$500 million compared to over one billion in 1988. The performance of key growth sectors is extremely below the required levels reflecting the impact of the 14 years long war. Following the end of the conflict in 2003, the economy grew by 20%, generated in large part from humanitarian assistance.

The MDG Report of Liberia in 2004, reported that the proportion of people living on less than US\$1 a day had increased from 55.1% in 1997 (UNCCA, 1997/98) to 76.2% in 2001 (UNDP, 2001). The same report asserts that extreme poverty increased from 14% in 1997 to 52% in 2001, with more than 1.4 million people living in abject poverty i.e. on less than US\$ 0.50 per person a day. According to the 1998 UNCCA Report, almost 80% of the population of Liberia was living below the poverty line, which is, living on less than US \$1 per person a day.

At present, the fiscal mismanagement of the National Transition Government of Liberia (NTGL) is widely believed to be responsible for the severe economic crisis and the lack of confidence that this has instilled in the donor community. Although the 2004 national, cash-based budget is only \$80 million, over 10% was apparently unaccounted for and many traditional sources of fiscal revenues (e.g. port fees) do not make it into the government's budget.

A quarter of Liberia's population was reported to be displaced during the war. Forty percent of the country's population is estimated to reside in Monrovia, a city in which there is currently no publicly distributed water, electricity or sanitation services. With the country's infrastructure in shambles, minimal productive capacity and underpaid civil service with minimal capacity to deliver public goods, the economy survives largely on humanitarian aid and a vibrant informal sector.

Unemployment in the economy remains a menace to the reconstruction efforts of the Government and the international community, scoring at about 85 percent. Civil servants salaries are several months in arrears and are among the lowest in the region (US\$20-US\$50/month). In the face of rising unemployment, the general price level continued to be high with an average rate of inflation standing at a double digit of 15.8 percent during 2005. This is partly a result of the partial inactivity of the productive sector.

Most of the farming areas and the subsistence farming population were displaced during the crisis, resulting in widespread hunger, chronic malnutrition and acute food crisis. Other sectors

fares no better. Mining sector collapsed from relatively 12% share of GDP in 1988 to 0.082% in 2004. Over the same period, the tertiary sector dropped from 50.5% of GDP to 17.4%. Manufacturing was virtually non-existent while the small and medium scale business sector practically disappeared into petty trading. Indeed, there are reasonable concerns that, with the potential (but yet to be ascertained) impact of the HIV/AIDS pandemic and the very high dependency ratio (9:1), the social indicators and poverty levels could only have deteriorated further. And, with an annual growth rate of 2.4%, Liberia could easily remain one of the countries with the fastest growing proportion of poor people.

2.2 Current economic situation

2.2.1 Government revenue and expenditure

The amount of L\$5,240 million was reported as revenue for the 2nd quarter of 2005. According to Central Bank of Liberia, government's revenue constitutes 32.7 percent of the 2004/2005 fiscal budget. The main sources of revenue are Customs and Excise Tax, Direct Taxes, Indirect Taxes, Forestry Development Authority (FDA), Petroleum Sales Levy, and Maritime.

As for expenditure, 2005 recorded an average government outlay of L\$4,926 million, representing about 30.8 percent of the national budget. Spending on general administrative services by government continued to increase as the government has strived to ensure a smooth transition from the interim arrangement to a democratically elected government.

Recurrent expenditure for the 2nd quarter of 2005 was recorded at L\$1,150.4 million or 93.4 percent of total expenditure, while development expenditure accounted for L\$81.1 million or 6.6 percent.

2.2.2 Public debt

The macro-economic environment is under severe pressure from high external and domestic debits. During the second quarter of 2005, total public debt stock was recorded at US\$ 3.7 billion, matched against the second quarter of 2004, the debt stock increased by US\$234.5 million or 6.8 percent.

Of the total public debt, Liberia's external debt for the period ending on 30 June 2005 stood at US\$3.3 billion or approximately 90.0 percent of the total debt stock. Also, total domestic debt stood at US\$ 377.2 million or 10.3 percent of the nation's stock of debt. The increase in domestic debt can be principally ascribed to perennial build up of interest arrears owed to local financial institutions. However, with the new elected government on board, and with discussions ongoing for the possibility of putting in place a Government Economic Management Action Plan (GEMAP), hopes are high that the Liberian economy will pickup.

2.2.3 Balance of trade

The current account balance of payments is constrained by a huge negative trade balance. Against an average of more than US\$240 million of imports, exports earned a mere US\$14 million during 2005.

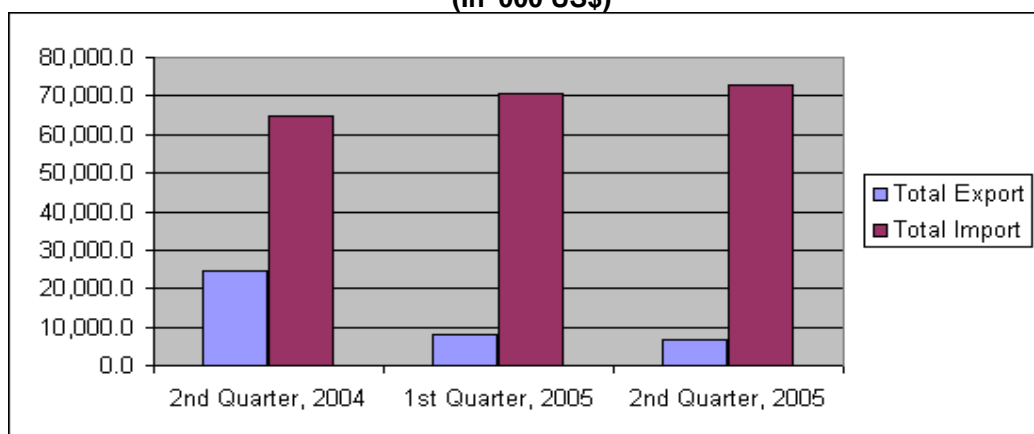
The high deficit in the balance of trade mainly attributable to a very narrow export base, coupled with lower receipts from existing exports. The continued UN ban on log and diamond exports has a substantial share to this huge negative balance. Since the imposition of UN sanctions on log exports, rubber exports continue to dominate the export sector with a share of 85.3 percent of total exports of Liberia during 2005. Notwithstanding this development, proceeds from rubber exports have been on the decrease in recent times.

Table 1: Balance of trade
2nd Quarter, 2004; 1st & 2nd Quarters, 2005

(In '000 US\$)			
	2nd Quarter, 2004	1st Quarter, 2005	2nd Quarter, 2005
Total Export	24,648.7	7,877.8	6,835.5
Total Import	64,976.2	70,570.2	72,936.9
Trade Balance	(40,327.5)	(62,692.4)	(66,101.4)

Sources: Ministries of Commerce & Industry, Finance and the Forest Development Authority, Monrovia, Liberia

Table 2: Exports and imports
2nd Quarter, 2004; 1st & 2nd Quarters, 2005
(In '000 US\$)



Source: Central Bank of Liberia, Monrovia

2.2.4 Exchange rate

During the 2nd quarter of 2005, exchange rate depreciated to L\$58.50 per US dollar when compared to the corresponding quarter of 2004, a reduced depreciation of 1.7 percent is recorded. The recorded depreciation was due mainly to the increase in money supply.

Table 3: Exchange Rates: L\$/US\$
(2nd Quarter 2004; 1st & 2nd Quarters, 2005)

	Jun-04	Mar-05	Jun-05
Market Rate: End of Period	57.50	56.75	58.50
Market Rate : Period Average	56.88	56.42	58.08

2.2.5 Sectoral performance

Agriculture

The performance of the agriculture sector, which comprises forestry and fisheries, declined during the quarter. With the ban on log exports still in place, the forestry sector is virtually dormant as no data on pit-sawing are available. Cocoa production contracted, while there are no data on coffee harvested during the review period. During the period under consideration, total fish caught indicated a rise of 2.4 percent. Rubber and a small volume of cocoa are currently exported but the destruction of iron ore infrastructure has stopped the country's primary export (40% of export earnings prior to the war). Coffee plantations are also overgrown, thus eliminating this source as well (although there is apparently some Ivorian coffee transiting Liberia).

Table 4: Key Agricultural Production
2nd Quarter, 2004; 1st & 2nd Quarters, 2005

Commodity	Unit	2nd Quarter, 2004	1st Quarter, 2005	2nd Quarter, 2005
Rubber	Mt.	26,486	7,524	7,197
Cocoa	Mt.	254	2,046	100
Coffee	Mt.	-	-	-
Fish	Kg.	241,280	214,275	219,512
Round Logs	M ³	-	0	-
Sawn Timber	M ³	-	0	-

Source: Ministry of Planning and Economic Affairs; Forestry Development Authority (FDA); Ministry of Commerce & Industry; Liberia Produce Marketing Corporation (LPMC), and National Port Authority (NPA), Monrovia, Liberia

a. Rubber

The production of rubber during 2005 recorded a decline estimated at 72.8 percent lower than 2004. The low production of rubber was a direct result of three basic factors: the unprofessional tapping of rubber trees by untrained tappers, the heavy seasonal rainfall, and the aging of the rubber trees being tapped.

b. Cocoa and coffee

Cocoa production continued to decline over the past few years. Apart from the war and abundance of the farms, the fall in production is also a result of the seasonal rainfall. The Coffee production data were not available. However, unavailability of data is an indication of lack of production of this cash crop.

c. Fish

Output of fish totaled of 880 MT during 2005. This sector has been seriously impacted by the war in terms of displacement of fisher folks, loss of nets, gears and other fishing inputs.

d. Log and sawn timber

The production of logs has since ceased due to the sanctions imposed on log exports, by the United Nations. Although pit-sawing is taking place, no output data are available at the time of the preparation of this report.

Manufacturing

The manufacturing sector, which includes wood-based products, plastic products, beverages as well as food-processing, is characterized by low outputs. These products are mainly intended to satisfy domestic consumption, with a limited quantity for export. The development of this sector is further impeded by the rising cost of imported raw materials, inadequate public electric-generating capacity, and low domestic demand.

2.3 Infrastructure and basic services

2.3.1 Road infrastructure

Liberia's road infrastructure had been devastated. The country's very few paved roads are full of potholes and the rest of the road network is dirt. Vehicular travel in rural areas is difficult in the dry season and impossible in many areas in the rainy season. The roads in the south-eastern counties are muddy and difficult to navigate even during the dry season. Bridges on the dirt roads are made of logs, or logs and planks; they are particularly hazardous in the coastal south and south-eastern counties.

2.3.2 Markets

Most county capitals and some secondary urban centres have daily markets. The exceptions are Barclayville in Grand Kru and Fishtown in River Gee that hold weekly markets. Markets in the south-east generally offer a rather limited, homogeneous and costly set of food and non-food commodities, with the exception of those closely located to the border to Ivory Coast.

People in central/north-western Liberia reported that they can reach their local markets by foot year-round in half an hour to two and a half hours. Access is more difficult in the south-eastern counties where people interviewed walked up to half a day to reach the markets.

Women are mainly responsible for marketing, so their time and energy is invested in this essential activity. Difficult access to markets, particularly in the rainy season, is a negative influence on production and income, as well as on the availability of foodstuffs. Commercial crops such as rubber, cacao and coffee also are affected by Liberia's poor transportation network. Producers have to pay for transport to buyers' substations or sell to middle-men at lower prices at the farm gate. Poor infrastructure thus dampens production, limits the marketing network, and constrains people's access to goods and cash.

Several community groups in the central/northwest reported that they sell the products (pepper, plantain, eddoe, sweet potato, eggplant) in the local markets as well as in Monrovia. People in these counties also bring agricultural products such as plantain, cassava, or chickens to their relatives in Monrovia and in return receive used clothes and some dry goods, or cash to buy the latter to resell at home. These rural traders return with dry goods (basic consumer necessities such as salt, soap, Maggi cubes, rice, batteries, sugar, onions, cloth, rubber slippers, kerosene and cigarettes to resell in their communities. Transportation to Monrovia in the central/north-western communities surveyed generally cost about \$700-\$850 Liberian Dollars (LD) per person and LD \$150-\$300 per sack of goods.

In contrast, there is less trade between the south-eastern counties and Monrovia. This is because there is no direct, main road along the coast from Harper to Monrovia. Heavy trucks and buses have to travel from the south-east to Monrovia via Zwedru that makes the trip two days and expensive. For example, from Barclayville in Grand Kru, the cost of transport to Monrovia in the dry season is LD\$2,500 and more than LD\$4,000 during the peak of the rainy season. People have to walk up to 20 hours to reach the main road and then travel by road around 17 hours to reach Monrovia.

People living in communities close to Guinea, Sierra Leone, and Ivory Coast cross the borders to trade in food and dry goods. The traders bring goods such as rice, soft drinks, beer, salt, soap, kerosene, laundry soap, onion, cloth, slippers, trap wires, cutlasses, etc. into Liberia. This trade is profitable because the price of the above items is much higher in Liberia. For example, one kg of rice costs LD\$30 in a community close to Ivory Coast compared to LD\$20 for a very small cup (approximately 250 grams) in Barclayville market (Grand Kru).

2.3.3 Water and sanitation

Almost half of the communities visited by the mission have improved water sources in the form of hand pumps and protected wells mainly constructed by NGOs or UN agencies. However, that does not mean that all community members have access to these sources because (1) the number of wells are often not sufficient to give all community members easy access, so some people use unimproved sources, mainly creeks, rivers and swamps; and (2) some people reported that they prefer water from creeks because it is cooler and tastes better.

Community sanitary facilities are mainly urinals and the bush or beach. Many houses have their own, hand-made urinals of woven mats or sticks or, rarely, corrugated zinc. The bush and the seashore are used for defecation. The latrines that the NGOs have and continue to build are few in number relative to community populations, and may be dirty, in poor structural condition, or locked so that only some people have access to them. Pit latrines for individual households are limited to urban settlements. Major hygiene campaigns would be required to raise people's awareness of the importance of hygiene in good health.

2.3.4 Health care and health situation

In the majority of the communities surveyed there are no health-care services. In order to obtain medical care people walk or are carried in hammocks to the nearest clinics. Most health services are operated by humanitarian agencies, namely the International Medical Corps, World Vision, Save the Children/UK, MERLIN, UNHCR, and churches. People said that the state and the mobile clinics usually do not have enough medicine to treat all their patients.

People across the 15 counties reported that the most common diseases that affect both children and adults are malaria, coughs, colds/pneumonia, and diarrhea. In two communities visited measles and conjunctivitis also were reported as diseases that affect children.

Adults reported that they suffer from stomach problems, body pains, arthritis, and rheumatism from hard work; women reported that they get headaches from carrying loads on their heads. Eye problems and worms (“filaria”) causing blindness and skin rashes (that may be the initial stage of schistosomiasis) were reported as other adult diseases in a few communities.

Liberia’s estimated Human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) prevalence rate was 8.2% in 2000 and increased by 46% to an estimated rate of 12% in 2003 (Liberia Human Development Report Final Draft, 2006). Radio – public and UNMIL’s – is the major source of information about HIV/AIDS in the communities surveyed. Some focus groups reported that they have learned about the disease, how it is transmitted (promiscuity), and the means of prevention (condoms, fidelity) from the radio. However, people also reported incorrect transmission modes such as stepping in others’ urine and using the toilet after an HIV/AIDS-affected person. As men generally spend more time listening to the radio, they seem to be better informed than women.

HIV/AIDS may not be recognized (or not reported) in rural areas but given its 46% increase during 2000-2003 and the estimated 12% prevalence rate in 2003, the disease and its consequences are a threat to rural households’ livelihoods, food/nutritional security, and efforts to help rebuild them. HIV/AIDS probably affects a large proportion of women because rape was used by the combatants during Liberia’s long conflict and because women are four times as likely as men to contract the disease. HIV/AIDS will exacerbate food/nutritional insecurity in a major vulnerable group: single women and/or their children, who already are vulnerable due to high dependency ratios. Testing, counseling, and treatment therefore are at least as necessary as awareness-raising in rural areas.

2.3.5 Education

Most communities visited by the mission team have functional schools. Most have primary schools (grades 1-6) or primary and junior high schools (grades 1-9). Only few communities had a secondary school (grade 10-12). Schools are likely to be over-crowded as they have a high student-teacher ratio, and lack equipment.

Primary-school children in the communities surveyed walk up to 1 hour to the nearest school. In more remote areas the distance may be too far and not safe for the younger children to go. Some people reported that primary-school girls get “tired” of walking to school and drop out. Adolescent boys tend to work to pay for their education. Adolescent girls generally drop out of school because (1) unlike the boys, they have less access to wage labour outside the home because as women their principal economic role is farming for the household; (2) these girls did not attend primary school during the war and people tease them for doing so at their age; and (3) they are more interested in getting married than attending school. One Muslim community reported that parents marry off their daughters at a young age (16-17) when they are in 7th grade in order to avoid out-of-wedlock relationships, and that once the girls are pregnant they quit school. Adolescent girls who speak good English and are literate are the exception and most were educated in or went to Monrovia during the war.

This gender difference in education is rooted in the cultural tradition that girls do not need education because they will be wives and mothers. The older women in the discussion groups consistently said that they were not sent to school but their brothers were. More men than women therefore are literate in the majority of the communities surveyed, although also men’s literacy rates appear to be low.

3. THE AGRICULTURAL SECTOR

Pre-war information indicates some 634,000 ha of arable land was used for cultivation (approximately 6.5 percent of the total land area). In 1988, the area planted with rice was estimated at 235,000 ha and 52,245 ha with cassava. The potential for pasture land is estimated at 182,000 ha, of which a substantial portion is unexploited. Liberia's agro-ecology contains four zones: the coastal plains, the hill zone, mountain and plateau regions, and the northern highland zone.

Liberia's agricultural sector was largely developed as dual system consisting of a commercially-oriented plantation sector and subsistence producers. The majority of rural Liberians have worked as labourers on commercial plantations or on small subsistence farms with a relatively small percentage of farms involved in cash crop production. This situation presents a striking contrast to that found in the majority of neighboring countries. Specifically, that Liberia lacks a dynamic smallholder sector in which farm households manage an integrated and diversified cash crop-food crop production system (including livestock, fisheries and agro-forestry).

The irrigation potential in Liberia is estimated at 600,000 ha, consisting mainly of freshwater swamps. However, the total swamp cultivated area represents approximately 3 percent of the estimated potential. The pre-war estimated yield of upland rice is 1.3 MT/ha, swamp rice 1.6 MT/ha, and equipped inland valley swamps more than 2t/ha.

Four production systems characterized Liberian agriculture:

- Foreign commercial plantations producing perennial export crops (rubber, palm oil);
- State owned plantations run by the Liberian Palm Products Corporation and the Liberian Cocoa and Coffee Corporation;
- Domestically owned, medium-sized commercial farms producing industrial crops for export and livestock for the local market; and
- Small traditional household farms using primitive production techniques with extremely limited use of modern inputs.

Household farms are based on family labour with an estimated average size of 1.5 ha according to 2001 Baseline Survey. Output is largely consumed by household members and consists of food crops (rice, roots, tubers, legumes), small livestock (chickens, goats) and small plots of cash crops (coffee, cocoa).

The predominant character of the traditional small farm is one of low productivity of land and labour. Shifting cultivation on the uplands is still the main technique; the secondary forest is cleared and burned, followed by one to two years of cultivation after which the land is returned to bush fallow for eight to ten years. Shifting cultivation is necessary to restore soil fertility in what are generally poor, acid, heavily leached soils, unsuitable for continuous cultivation of annual crops. In general, land tenure arrangements are based on tribal tradition. These traditional arrangements are well adapted to the bush fallow cropping system.

The damage to the agricultural sector is manifested in low productivity of agricultural systems, disruption of production due to the displacement of farming communities, erosion of marketing systems due to degradation of roads, transport and processing infrastructure, physical insecurity, lack of farming possibilities (including seeds & tools) in the areas of displacement; and socio-economic dislocation. As a result of the above factors, Liberia remains among the most food insecure countries with less than 10% of the arable land being cultivated.

4. POPULATION ESTIMATES

The latest official census was carried out in 1984. Since then, an accurate estimate of the population has been difficult to come by. However, the Ministry of Planning and Economic Affairs continues to develop annual population projections which are calculated on the basis of 1995 baseline of 2,000,000 with an annual growth rate of 3.4%.

The 1997 population estimate was based on the Common Country Assessment (CCA) results of the same year, including the estimated number of refugees abroad.

Taking 1997 estimate as a baseline, about 2.4% growth rate (considering the war conditions) was determined for calculation of the projections for the years which followed up to 2005. Other population estimates were carried out on the basis of different relevant exercises such as the Community Assessment Survey, which was carried out by UNHCR/NRC, LRRRC, UNICEF Polio Eradication National Immunization Days, HIC Village Mapping Exercise 2005, partial assessment surveys carried out by different NGOs and academic institutions and, the most recent voters' registration statistics of the general election in October 2005. The comparison among these different estimates revealed a wide range of variations in population estimates at county/districts level.

However, results from the various calculations showed the final estimate of the population figure around 3 million. Accordingly, despite the reservations on the accuracy of the projections of the Ministry of Planning and Economic Affairs which didn't take into consideration the changes that occurred during the war on the demographic profile, especially the massive displacement of the population between the counties, the mission decided to take that population figure since it is the only available official source.

The table below indicates the population projections for 2005 as calculated by the Ministry of Planning and Economic Affairs.

Table 5: Population projection of Liberia

County	Population
Bomi	21,864
Bong	323,449
Grand Bassa	161,573
Grand Cape Mount	39,191
Grand Gedeh	98,704
Grand Kru	25,242
Lofa	269,801
Margibi	206,717
Maryland	127,402
Montserrado	928,855
Nimba	538,814
River Cess	29,450
Sinoe	71,965
River Gee	62,297
Gbapolu	117,879
TOTAL	3,023,203

Source Data: Statistics Division, Ministry of Planning & Economic Affairs

5. FACTORS AFFECTING CROP PRODUCTION

5.1 Access to farmland and area under cultivation

In general, there is no inherent problem in accessing land for farming; although in some cases farmers may have to arrange for farmland through local authorities. Considering the link between emergency assistance of agricultural inputs and land ownership as central to any expectation that such assistance can support 'vulnerable groups', there is evidence of a satisfactory impact due to easy access to land at small holders level. However, the lack of access to production inputs have pushed a relatively high percentage of poor farmers to work as hired labourers with the richer farmers within the community.

5.2 Rainfall

At the moment, there is no particular compilation and publication of environmental statistics in Liberia. A summary paper on Environmental Statistics in Liberia prepared by the Ministry of Planning and Economic Affairs (MPEA) and Liberia Environmental Protection Agency (LEPA) in 2005 raised concern over the scattering and fragmentation of available environmental information among various line ministries and agencies. Moreover, all meteorological stations within the country were damaged during the recent ended civil war. Therefore, it is difficult to obtain updated information on core Environment Statistics and its corresponding methodological issues

The standard general information of the climate of Liberia indicates that it is generally determined by the equatorial position and distribution of high and low pressure belts over the African continent and Atlantic Ocean. Because of this position and the moderating influence of the nearby Atlantic Ocean, the country has a fairly warm temperature throughout the year with very high humidity.

The pre-war available data cited by the same source indicate the average annual temperatures of Liberia range from 75°F to 85°F (24°C to 30°C). The highest temperatures occur between January and March and the lowest temperatures are usually recorded during the months of August and September. These low temperatures are mainly caused by the large amount of cloud cover, which is common over much of coastal West Africa (NECOLIB/EPA, 2002).

Based on the prevailing precipitation, two seasons are differentiated – rainy and dry seasons. The rainy season lasts from late April to October. The months of heaviest rainfall are June, July and September. The dry season begins in November and ends in April.

The average annual rainfall near the coast is estimated at 4770mm, while toward the interior, the amount decreases to an average annual amount of 2080mm. There is a high average annual rainfall near the coast because the coastline runs approximately from southeast to northwest and at right angles to the prevailing southwesterly rain bearing winds. As the maritime air reaches the coast, it is forced to rise and once it cools condensation takes place, hence, the extremely heavy rainfall near the coast.

5.3 Access to seeds, tools and support gap

According to FAO data, it is estimated that more than 50% of the farming population have not had access to seeds and tools provided by NGOs and UN agencies directly involved in the agriculture sector. However, those who did not receive assistance have relied on their limited capacity to get their seeds from different sources including purchase, loans and donations from relatives. The data indicates that a total of 3,241 MT of rice seeds were distributed to 158, 566 beneficiary farmers which gives an average of 20 kg/ farmer. This quantity is only enough for planting 0.32 ha/ farmer.

For instance, the mission observed that a few number of intervening agencies are providing both the basic inputs package complimented with the required monitoring technical backstopping, while a large number of other agencies are providing only a segment of the package. There is also evidence that some intervening agencies' role ends with distributing the inputs to communities without further monitoring and follow-up. In general, the mission has

further confirmed the findings of the recent nation wide Assessment of Emergency Interventions in Liberia Agriculture Sector sponsored by FAO that intervening NGOs monitoring and backstopping are far below the required levels.

5.4 Access to labour

Farming households largely depend on family labour, hired labour and the *Kuu*² system. In some parts of the South-eastern region, such as Maryland, River-Gee and Grand Kru there is no structural establishment of the *kuu* system rather they depend on family and hired labour. On the other hand, in the Western, Central and North-eastern region, farmers largely depend on family labour and the *kuu* system. The mission observed a general decline in the *kuu* system which was once very common in rural area. The explanation provided by most of the farmers referred that to inability of the farmers to provide food for the *kuu* volunteers groups. The direct impact of this decline is the reduction of the area cultivated per farmer. However, hired labour has become an alternative under extreme circumstance. The cost of hired labour per day in the south-eastern region is estimated at LD\$ 100 – LD\$150 (US\$2 – US\$3) especially for land clearing and related activities, whereas in the Western, Central and North-eastern region cost of hired labour per day is estimated at LD\$100 – LD\$250 (US\$2 – US\$5). It is worth noting that labour availability within rubber producing belts is difficult to readily access due to the high cost associated with it.

5.5 Fertilizer use

In general, the mission observed that there is either limited use of such input or not use at all by small farmers. However, in exceptional cases, fertilizer was used in vegetable cultivation and sometimes mixed with poultry manure. The limited use of fertilizer by small farmers is attributed to its inaccessibility, low purchasing power of the farmers, on the one hand and inability of intervening agencies to include such item in their inputs package on the other.

5.6 Weather factors and cropping calendar

It was reported that the onset of early rains obstructed planned activities such as burning and planting. The cropping calendar varies from one region to another. For instance, in the South-eastern region farming activities such as brushing and planting starts as early as January while in the Western, Central and North-eastern region these activities start one month later. Consequently, harvesting and post harvest operations follow the same sequence.

5.7 Farming ecology

In general, it is estimated that at least 80% of the farming population conduct farming activities in the upland ecology as opposed to 20% in the lowland ecology. However, it must be noted that 95% of farming activities in the lowland areas accounts for undeveloped swamps; while a mere 5% represents developed swamps. Taking into account the advantages and disadvantages of each ecology, expansion in swamp land rice production is highly recommended because of many considerations among them, the high productivity, environment conservation and less incidence of pests attacks. However, there are some health hazards associated with swamp activities and the development and lay out of swamps is too labour intensive while farmers lack the skills and technical knowledge of these practices

² *Kuu* is a traditional community-based cooperative work group that carries out brushing and cleaning of agricultural plots.

6. PRODUCTION CONSTRAINTS

6.1 Pests attacks

The major problem resulting in significant decrease of rice yields is the high incidence of pests mainly, grass cutters (ground-hogs) and birds through out the country. The mission estimates that these pests have eaten over 50% of the expected harvest. The extent of destruction of the crop has reached an alarming level in the mission's judgment. Therefore, an immediate action is recommended. The phenomenon is not new, but these pests' attacks have intensified following the end of war and resumption of farming activities in rural areas. Some of the initial explanations include the suspension of farming activities during the years of war, which usually involve pest control measures, combined with reduced hunting activities which also reduces the population of these pests. This resulted in the multiplication of these pests with high rates which continued to attack relatively less area of cultivated land in comparison to pre-war cultivated areas. The impact of pests is much higher on scattered small farms areas, which are dominant, than on large farm areas. The traditional methods of control used by the farmers proved to be inefficient in face of recent heavy attacks.

Other pests reported include bush cow, and porcupines. The cassava crop through out the country is infected with cassava mosaic virus which, in turn, is responsible of the low yields of this food crop.

6.2 Other constraints

In general, production constraints are similar as one moves from one county to another. Some NGOs provided seeds and tools to groups of farmers (sharing concept), while a few NGOs and UN agencies provided seeds and tools to farm families or individual households. The former is a limiting factor to achieving a successful agricultural production.

The late delivery of production inputs by NGOs and UN agencies was reported by beneficiaries as one factor limiting their options for better planning. The constraints reported by the farmers also include the early heavy rains in many regions which result in disturbance and delay of farming activities. As well, floods that wash away the crops are reported in some south east regions

7. COUNTY SITUATION SUMMARY

7.1 Bomi

Bomi County is bordered on the west by Grand Cape Mount County, on the north by Gbarpolu County, on the east by Montserrado County and on the south by the Atlantic Ocean. Eighty-two percent (82%) of the rural households are engaged in agricultural activities (2001 Agricultural Baseline Survey –MOA). Rubber and oil palm plantations are the main cash crops; although these are in dire need of rehabilitation. Major food crops under cultivation are: rice, cassava and vegetables with limited production areas and low yields. Apart from few chickens and ducks, no other livestock species are observed in the county. There is little or no activity in the area of fisheries. Intervening agencies in the agriculture sector are: FAO, WFP, GAA, ICRC, SC-UK and WVU.

7.2 Bong

Bong is one of the most productive counties in Liberia. It is bordered on the west by Gbarpolu and Lofa Counties; on the north by the Republic of Guinea; on the east by Nimba County; and on the south by Margibi and Grand Bassa Counties. It is estimated that 88% of the rural households are involved in agricultural activities (2001 Agricultural Baseline Survey –MOA). The county has numerous smallholding farmers engaged in the production of basic cash crops such as rubber, oil palm, coffee and cocoa. Basic food crops of cultivation are: rice, cassava, plantain and vegetables. Apart from chickens and ducks, no other livestock species are observed in the county. Activity in aquaculture is limited to few towns and is in need of rehabilitation. Intervening agencies in the agriculture sector are: FAO, WFP, ACF, CRS, SC-UK, and LWF/WS.

7.3 Gbarpolu

Gbarpolu was created as a county in 2002. Most parts of the county are inaccessible due to lack of roads. Cash crops production is low and basic food crops include rice, cassava and vegetables. Apart from chickens and ducks, no other livestock species are observed in the county. Intervening agencies in the agriculture sector are: FAO, WFP, ICRC and SC-UK.

7.4 Grand Bassa

This county is located in the south-eastern part of the country. Buchanan, the capital, is located along the coast and is said to be the second largest city and sea port in Liberia. It was reported that there will be an increase in returnees this year (2006), resulting to a corresponding increase in demand for production inputs. It is expected that over 60% of returnees will be in need assistance. The southern part of the county relies mainly on coconut farming, fishing, oil palm extraction (established oil palm and wild palms), while most of the staple food (cassava, rice, plantain and related food commodities) are produced in the northern part of the county bordering Bong, Nimba and Rivercess counties. Less than 20% of the population is involved in livestock keeping especially local breeds of chickens on the free range. However, the mission observed few ruminants (goats and sheep) also in the free range.

7.5 Grand Cape Mount

Grand Cape Mount County borders Sierra Leon with 78% of the rural households engaged in agricultural activities (2001 Agricultural Baseline Survey –MOA). Coastal fishing is a major occupation of the Kru and Fanti people that live in Robertsport and along Lake Piso. Rubber and oil palm are the main cash crops while rice and cassava are the major food crops. The production of these food crops is not as high as in Bong County. Apart from chickens and ducks, there is no other livestock species observed in the county. Intervening agencies in the agriculture sector are: FAO, WFP, GAA and WVL as well as several local NGOs.

7.6 Grand Gedeh

The capital is Zwedru and is situated in the central part of the county which is bordered by the Ivory Coast on the east. The main livelihood can be described as cross-border trade, hunting, farming and oil palm extraction. This county looks better off in terms of assistance received by different NGOs and productive activities. However, it was reported that the main constraints prevailing in this part of the country are poor road network, limited ready access by productive areas to markets, coupled with the lack of adequate access to basic production inputs especially seeds and tools. About 10% of the population is said to be raising local breeds of chickens on the free range besides their farming activities. Rice and cassava production, which constituted the dominant activity, is now experiencing a steep decline, as hunting is the predominant activity.

7.7 Grand Kru

It is a newly created political sub-division of Liberia and its capital is Barclayville situated along the coast. The mission observed that this part of the country is largely cut off from the rest of the country due to poor road network. This has prevented most aid agencies to provide assistance to the existing population. Therefore, it is considered by the mission as one of the most disadvantaged counties in the southern eastern region of Liberia. Cassava production and fishing are the dominant activities. Farmers are involved in the exchange of one product for another (barter) and have to walk long distances to access no structure markets to affect the trade. Production levels of cassava, fishing and rice are considerably low and least sustainable for the larger population, resulting to food insecurity.

7.8 Lofa

Lofa is the largest county in the country in terms of land area and one of the most productive. It is also one of the most affected counties during the civil war. Agriculture production during the pre-war years was very high with coffee, cocoa, oil palm as leading cash crops. These crops have all been overtaken by overgrowth bushes and are in dire need of rehabilitation. In terms of food crops production, rice dominated the output. Fewer households have chickens and ducks while other livestock species are completely absent. Intervening agencies in the agriculture sector are: FAO, WFP, ICRC, Concern Worldwide and LWF/WS as well as several local NGOs.

7.9 Margibi

Margibi County is in the rubber production belt of the country. Seventy-six percent (76%) of the rural household are engaged in agricultural activities with rubber tapping taking the lead (2001 Agricultural Baseline Survey –MOA). Food crops production in the county is low compared to other counties with rice, cassava and vegetables as priority crops. Intervening agencies in the agriculture sector are: WFP, ICRC, ADA and Mercy Corps.

7.10 Maryland

Maryland situated along the coast is expecting a number of up to 11,000 returning refugees mainly from Ivory Coast. There is considerable potential for livestock keeping, given its vast and rich savannah land. Prior to the war, it was one of the leading counties in cattle rising. However, the mission observed few cattle in parts of the county and the number is likely to increase, given animal restocking programs carried out by some NGOs which include goats, sheep, and cow. WFP supports agricultural rehabilitation through FSLI projects. Tree crops especially cocoa, coffee, rubber and oil palm played a major role in the local economy in the past. At present, these plantations require full rehabilitation as means to provide employment opportunities and income for the local economy and the country as a whole. Cassava and rice production are considerably low due to limited capacity of farmers. Fishing is considered a predominant activity. The general population is mainly constrained by poor roads network.

7.11 Montserrado

Montserrado County is the most populated county with Monrovia hosting up to 40% of the country's total population. Montserrado County also played host to thousands of IDPs and Sierra Leonean Refugees. Sixty percent (60%) of the rural population are engaged in agricultural activities, mainly rubber tapping, rice, roots and tuber production (2001 Agricultural Baseline Survey – MOA). Production output is very low due to poor soil fertility and severe damage caused by pests. Coaster fishing is an occupation of the Kru and Fanti people that live along the coastline. Intervening agencies in the agriculture sector are: FAO, WFP, ICRC, ADA, WV, LWF/WS, Mercy Corps and scores of local NGOs.

7.12 Nimba

Nimba is one of the most populated counties in the country with 88% of the rural population engaged in agricultural activities. The county is one of the most productive in the country with food crops of rice, cassava, plantain and vegetables as high priority crops. Cash crops such as rubber, oil palm, coffee, and cocoa are major sources of income for the farmers. However, during the post-war years, production had dropped considerably due to limited inputs, pest infestation and poor soil fertility. Intervening agencies in the agriculture sector are: FAO, WFP, CRS and scores of local NGOs.

7.13 River Cess

River-Cess county is situated along the coastal belt. Major food crops such as rice, cassava, plantain and pineapple are produced in the north (Morweh) and in the south a few segment of the population is engaged with fishing and coconut farming. It was reported that only few

agencies, FAO and ICRC, are providing assistance to farmers. The north which produces bulk of the food is inaccessible to larger towns and market centers due to bad roads. There is limited livestock keeping and less than 10% of the population is raising local breeds of chickens on the free range. The mission did not observe the presence of cattle and small ruminants such as goats, sheep and cow.

7.14 River Gee

It was reported that 80% constitute the farming population. While it has a considerable potential for food production, it is in urgent need of basic production inputs to strengthen its capacity. Besides FAO, DRC and FIND, there are no apparent presence of other INGOs and UN agencies operating in the county. The larger population is constrained by the absence of bad road network. Current support by aid agencies is limited and normally do not target the entire existing population for immediate assistance. Some of the predominant activities are rice and cassava farming in both the upland and Lowland with low yields due to absence of best practices and improved varieties.

7.15 Sinoe

Sinoe is situated along the coastal belt and its capital is Greenville with an estimated population of 120,000 people. It is expected that the rate of returnees will increase this year (2006). The main livelihood is fishing, gold and diamond mining. The county mostly relies on the northern part for local food production but available outputs hardly filters to the general population due to bad roads. Local food commodities in the capital are scarcely available in the market and prices are considerably high with the exception of fish, which is in constant supply and affordable. There are large scale rubber and oil palm plantations such as the Sinoe Rubber Corporation and the Butaw Oil palm Company and other tree crops like cocoa and coffee, which require rehabilitation. This would be a source of employment opportunity for the larger population. Rice and cassava production are lowest due to the absence of best practices, unimproved varieties of seeds, planting materials and tools. WFP supports communities through FSLI programmes.

8. FOOD PRODUCTION ESTIMATES

8.1 Rice and cassava

Although rice and cassava is largely consumed by most Liberians, it is not grown on a large scale by any individual or entity. Production of these crops is mostly carried out by subsistence farmers who use rudimentary tools and traditional methods of cultivation. Moreover, there are no current available statistics describing the performance of these two crops. The only available statistics are those produced by the Bureau of Statistics of the Ministry of Agriculture in November 2001. According to this baseline survey, Average rice farm size per farmer (Baseline Survey 2001) is 1.18ha compared to 0.48 for cassava. The report also shows that estimated average rice and cassava yields are 1.3MT/ha for rice and 7.8MT/ha for cassava.

Relative to the baseline estimates of yields of cassava and rice, the mission observed a gloomy picture of the current situation. Yields of rice and cassava are extremely low. The mission estimated that less than 30% of the baseline figure is produced in 2005 season for rice and 76% for cassava.

8.2 Method used to estimate food production (rice and cassava)

For the estimates of production, the mission found that most farmers were able to tell how many tins (12.5kg/tin) they planted and the final figure of bundles of rice with which they ended up in their kitchen (traditional family food store). Since farmers use to start eating from the beginning of harvest, the mission estimated the quantities consumed during the harvest season at 20% of the final harvest. Sampling yield measurement was also carried out in some of the areas visited. The averages obtained from these exercises were used to estimate the average yield harvested per one hectare.

The estimates of the cassava production have been rather difficult and complicated as the crop is being harvested on frequent basis through out the year according to the need. Therefore, it is difficult for the farmers to remember how much and when they harvested. The 2001 Baseline Survey estimated the average yield per hectare at 7.8MT. However, due to the heavy infection of mosaic virus which has tremendously increased over the past few years coupled with pests and improper husbandry practices the mission suggested a decline in the cassava average yield per hectare against the 2001 Baseline figure. For further confirmation, sample yield measurements were carried out in different locations and resulted in an average of 0.6kg/square meter. On basis of the sample measurements, the mission concluded an average of 6MT/hectare.

Table 6: Rural population and number of farming households in 2005

County	Estimated population	Estimated rural population (70%)	Estimated family size	# of farming families
Bomi	21,864	15,305	6	2,551
Bong	323,449	226,414	6	37,736
Grand Bassa	161,573	113,101	6	18,850
Grand Cape Mount	39,191	27,434	6	4,572
Grand Gedeh	98,704	69,093	6	11,515
Grand Kru	25,242	17,669	6	2,945
Lofa	269,801	188,861	6	31,477
Margibi	206,717	144,702	6	24,117
Maryland	127,402	89,181	6	14,864
Montserrado	928,855	650,199	6	108,366
Nimba	538,814	377,170	6	62,862
River Cess	29,450	20,615	6	3,436
Sinoe	71,965	50,376	6	8,396
River Gee	62,297	43,608	6	7,268
Gbapolu	117,879	82,515	6	13,753
TOTAL	3,023,203	2,116,242		352,707

Table 7: Estimated production of rice in 2005

County	Number of farming families	Average area/family (ha)	average yield/ha (MT)	average yield/family (MT)	Total production
Bomi	2,551	0.6	0.4	0.24	612.24
Bong	37,736	0.6	0.4	0.24	9,056.64
Grand Bassa	18,850	0.6	0.4	0.24	4524
Grand Cape Mount	4,572	0.6	0.4	0.24	1,097.28
Grand Gedeh	11,515	0.6	0.4	0.24	2,763.60
Grand Kru	2,945	0.6	0.4	0.24	706.80
Lofa	31,477	0.6	0.4	0.24	7,554.48
Margibi	24,117	0.6	0.4	0.24	5,788.08
Maryland	14,864	0.6	0.4	0.24	3567.36
Montserrado	108,366	0.6	0.4	0.24	26,007.84
Nimba	62,862	0.6	0.4	0.24	15,086.88
River Cess	3,436	0.6	0.4	0.24	824.64
Sinoe	8,396	0.6	0.4	0.24	2,015.04
River Gee	7,268	0.6	0.4	0.24	1,744.32
Gbapolu	13,753	0.6	0.4	0.24	3,300.72
TOTAL	352,708				84,649.92

Table 8: Estimated production of cassava

County	# of farming families	Average area (ha)	Average yield/ha (MT)	Average yield/family (MT)	Total production
Bomi	2,551	0.3	6	1.8	4,592
Bong	37,736	0.3	6	1.8	67,925
Grand Bassa	18,850	0.3	6	1.8	33,930
Grand Cape Mount	4,572	0.3	6	1.8	8,230
Grand Gedeh	11,515	0.3	6	1.8	20,727
Grand Kru	2,945	0.3	6	1.8	5,301
Lofa	31,477	0.3	6	1.8	56,659
Margibi	24,117	0.3	6	1.8	43,411
Maryland	14,864	0.3	6	1.8	26,755
Montserrado	108,366	0.3	6	1.8	195,059
Nimba	62,862	0.3	6	1.8	113,152
River Cess	3,436	0.3	6	1.8	6,185
Sinoe	8,396	0.3	6	1.8	15,113
River Gee	7,268	0.3	6	1.8	13,082
Gbapolu	13,753	0.3	6	1.8	24,755
TOTAL	352,708				634,874

8.4 Food supply and demand situation

The food supply situation country-wide is gloomy, owing in part to high degree of inaccessibility to productive areas of the country on the one hand, and the inability of intervening agencies to supply available farm inputs on time to targeted beneficiaries on the other. The available food commodities found in rural and urban markets are almost least affordable due to high demand by the population (demand far exceeds supply).

The data collected during 2005 by ACC, processed and analysed at FAO data warehouse indicate a relative increase in the areas cultivated during 2005. This increase is due to a combination of two reasons: 1st: return of increasing numbers of farmers from IDP and refugee camps to their original areas where they resumed their farming activities and 2nd: the increase of assistance of agricultural inputs, mainly rice seeds, provided by ICRC, international NGO and FAO together with other UN agencies mainly WFP and UNHCR.

8.4.1 Food supply/demand balance for 2006

The mission's main observation is the extremely low yields of rice and relatively low yields of cassava during 2005. While the yields per hectare varied among different areas visited due to ecology, soil fertility, extent of infestation of pests and diseases, and the level of assistance by intervening actors, the averages of 0.4 MT/ha and 6 MT/ha of paddy rice and cassava respectively have been estimated. Accordingly, the estimated total production of rice and fresh cassava for 2005 is estimated at **84,650 MT** and **634,874 MT** respectively.

- Opening stocks of cereals based on available secondary data, missions observations and estimates, and discussions with government officials and WFP indicate that the opening stocks in January 2006 was estimated at 3759.5MT
- Seeds requirement for 2006 is estimated at only 2,000 MT, assuming that most of farmers have not kept seeds for the next season and would largely depend on the seeds supplies provided by NGOs.
- Post harvest losses are relatively high. The official estimates of this are reporting an average of 15% amounting 12,697 MT from the total production.

- By the beginning of 2006 WFP has reported existing food aid pledges not yet fulfilled for about 67,000 MT which are expected to be delivered to the country during 2006. An estimate of 7000 MT to be delivered by ICRC and CRS is also expected during 2006. This brings the food aid pledges, including rice and bulgur wheat, to 74,000 MT.
- The mission estimates that Liberia is able to import about 90,000 MT of rice. This is mainly based on the government's statistics of imported rice during the years 2003, 2004 and 2005. According to the government figures amounted to 118,627 – 122,677 and 89,959 respectively.
- Consumption - per caput cereal consumption per year has been estimated at 92 kg/person (CFSAM Liberia 2000).
- Domestic utilization = Per capita consumption x country population
= (92kg/per person/year) x 3,023,203
= 278 MT
- The post-harvest losses of the estimated production of fresh cassava **634,874 MT** are estimated at 30% (on basis of CFSAM Liberia 2000 and the recent calculated estimates of losses in Malawi and Mozambique in southern Africa) which amounts 190.5MT. Accordingly, the production of fresh cassava available for consumption is estimated at 444,347MT.
- The cereal equivalent of fresh cassava based on FAO calorie content of selected foods is estimated at 30%.³
- Accordingly, the cereal equivalent of the harvested cassava is estimated at 133,304MT

Table 9: Food (cereals and cassava) balance sheet for 2006 ('000 MT)

	Total cereal		Cassava
Domestic availability	89	Domestic availability (fresh weight)	635
Opening stocks 2006	4		
Production (milled rice)	85	Production (fresh weight)	444
Domestic Utilization	293	Domestic Utilization	
Food use	278	Food use	
Losses, seed and other uses	15	Losses, seed and other uses	190
Import requirements^{1/}	204	Cereal equivalent of cassava	133
Commercial imports	90		-
Planned Food aid	74		-
Uncovered Deficit	40		

9. LIVELIHOOD ACTIVITIES AND PATTERNS

9.1 Farming based livelihood system

Farming, or "rice farming," as many groups said, is the major livelihood system for most Liberians, except along the coast where fishing and cassava farming is more important. The majority of the communities surveyed across Liberia had re-established themselves in 2003 and 2004. With the exception of Lofa where many people returned too late for the 2005 agricultural season, all farming communities had harvested rice in 2005. However, in the interior of the south-eastern counties, heavy rains caused significant crop losses in 2005.

There is a clear division of labour by sex in farming. Men do the heavy work of "brushing" (clearing the bush), felling trees, and burning; women are responsible for "scratching" (sowing), weeding, and harvesting. The men in the central/north-west area may help with the weeding and harvesting if the farms are large, which was not reported in the south-eastern counties.

³ Source of FAO's |Food Composition Tables for International Use":
www.fao.org/docrep/x5557e/x5557e04.htm.

In general, women constitute around 60% of the farmers in rural areas and carry out up to 80% of the farming activities throughout the planting season. However, according to FAO Liberia, they received less than 40% of the assistance provided by NGOs during 2005.

Women also plant “women’s crops” in the rice farm (cassava, beans and vegetables) around the farms and in the piles of burnt brush. This intercropping is a form of risk-management; as one informant said, even if some crops do not produce, the others do.

“Hunger farms” are another risk-management strategy. These are small household rice farms that often are near the community and are sown a month or two before the main rice farms. The hunger farms produce before the harvest from the main farms and thus shorten the time when little or no rice is available.

Liberians grow both upland and swamp rice. The farmers surveyed said that the advantages of swamp rice are that it is shorter cycle, more productive because it produces a ratoon crop without any labour, and requires less work because the swamp has less brush and smaller trees to clear. Swamp rice is grown in a cleared field and broadcast, not in paddies with controlled irrigation and rice seedlings.

People consistently reported that working in the swamp causes health problems: in addition to leeches and provoking rheumatism the water has worms that cause an itchy skin infection, poor health, and eye problems. “Filaria” in the swamp are reported to cause these health problems, but actually fluke-worms (schistosomiasis) are the cause. The fluke-worms burrow into the skin and cause the itching, and then attach to the bladder and colon. Schistosomiasis is a debilitating disease that requires medical treatment to be cured. Rubber boots and gloves and training are necessary to avoid contracting it. Some agronomists said that after a few years the use of chemical fertilizer and pesticides decreases the fluke-worm population, but until Liberia’s farmers can afford the recurrent costs of chemical inputs and rubber equipment, and have training, the traditional technology for growing swamp rice is a health risk.

The MOA promotes swamp-rice production in order to preserve Liberia’s forests and their important biological resources. Liberia is reported to have large areas of swamp to exploit, but the international community’s funding and technical assistance (TA) will be necessary to control the health risks of cultivating the swamps.

In addition to their crops in the rice farms, women have “**backyard gardens**” where they produce crops that include maize, broad beans, pepper, different varieties of squash/pumpkin, eggplant, cucumber, sweet potato, and African eggplant. Onions were reported only in Lofa County. Women also cultivate small, mono-crop patches of cassava, peanut, sweet potato, and eddoe that, like the vegetables, are for both consumption and to generate income through market sales. There are both bitter and sweet cassava varieties in Liberia. Across Liberia producing these crops is an important activity for single women because they are marketable, particularly in the dry season, and because they do not necessarily require male labour.

Rice is the staple cereal and an essential food in most of Liberia: people who have not eaten rice will say that they “have not eaten.” **Cassava** is the preferred carbohydrate staple in some areas such as Sinoe and Grand Kru. Other major carbohydrate sources are plantain, eddoe, and sweet potato. Liberia’s food crops are quite homogeneous throughout the country but they are numerous, which contributes to dietary diversity. All the food crops grown in the survey communities are shown in the table below.

Table 10: primary livelihood system: Farming

Agricultural Production: Farming Households' Primary Activity	
Food crops	<p>Staple starches: rice, cassava, plantain, eddoe, sweet potato, yam</p> <p>Legumes: broad beans, pigeon pea, mung beans, peanut, sesame</p> <p>Vegetables: hot pepper, okra, eggplant, African eggplant ("bitter ball" or "garden egg"), country tomato, cucumber, and various squashes, and palava sauce</p> <p>Fruit: pineapple, oranges, banana, coconut, papaya, lime, mango.</p>
Women's household Gardens	Maize, hot pepper, okra, eggplant, African eggplant, country tomato, cucumber, and various squashes, broad bean, pigeon pea, onion, and palava sauce. Women also cultivate peanut, sesame, and cassava.
Farming Households' Secondary Activities	
Cash crops	<p>Commercial cash crops: rubber, cacao, oil palm, coffee (over-grown farms and low prices are not encouraging the rehabilitation/production of coffee). Secondary cash crops: coconut, sugarcane, kola nut, oranges, pineapple, sugarcane.</p>
Sales of agricultural products	<p>Rice: generally sold to pay for necessities such as school fees and medical care. Local seed is scarce, which limits the area planted and households' harvests. Only few communities reported that they sell rice. Cassava in various forms (flour, <i>garri</i>, <i>fufu</i>, <i>domboy</i>, roasted, and the unprocessed root).</p> <p>Also: palm oil, plantain, eddoe, maize, sweet potato, beans, banana, pineapple, cassava and sweet potato greens, and women's vegetables (above).</p>
Petty trade	Both men and women engage in petty trade. The pattern is to sell agricultural products and palm oil, and then buy dry goods to resell in the community. Many rural people sell and buy in Monrovia and some are active in cross-border trade in food and consumer necessities.
Hunting in the southeast and fishing in the central/northwest	Bush meat and fish are eaten and sold, both fresh and dry. Hunting is more important in the south-eastern counties, and fishing is ubiquitous in the central/northwest. Some fishing communities raise sea turtles from hatchlings.
Wage labour	Both men and women work as wage labourers. They work in the farms, for payment in cash and kind (rice); they transport goods by foot; and men tap rubber.
Charcoal-making	Men fell trees and burn them into charcoal; women break the charcoal into chunks and bag them. The payment for bagging 20 sacks of charcoal is one sack.
Other	<p>Men: cut and sell firewood; make and sell fish traps; illegal diamond mining was mentioned in Margibi county; make rattan furniture; and some men work part-time at trades such as masonry and carpentry.</p> <p>Women: make and sell fish traps; weave baskets and trays to sell; make and sell pastries, doughnuts, bread, and sweet bread.</p>

Liberians' rural households' livelihood systems consist of various economic activities in order to diversify income sources and manage risk (see Table 6). **Farmers' secondary activities** include the following:

Livestock

Livestock are a key component of the farming households' economy and a form of savings that can be liquidated when necessary. The people in some communities said that they had kept sheep and goats for ceremonies and to give as gifts to visitors. Before the war goats and sheep in the central/north-west were sold to raise money to celebrate important events such as a child's graduation from school, weddings, and funerals. But most households in these areas now have only chickens and ducks because their pigs, goats, sheep, and cattle were "carried off by the war." Nimba County is the exception in this region: there are goats, some sheep, and a few cattle there.

Limited livestock holdings also are the case in the south-east except in some communities in Maryland and Grand Gedeh that have cattle. Many households in communities in the coastal grassland areas of Maryland raised cattle before the war. Maryland, Grand Kru, and Sinoe have potential for cattle raising if enough financial resources would be available for restocking.

Cattle are a means of asset diversification and thus risk management in Maryland and only are sold in times of need. Also sheep and goats are kept for the same purpose, however, they are slaughtered during the two main holidays throughout the year; chicken are mainly served when hosting guests and are occasionally consumed by the household. Hardly any of the animals are produced for commercialization.

In the central/north-west, women keep poultry; both sexes can have small ruminants; and only men can own cattle. Women in the south-east control only poultry; men are responsible for goats, sheep, and cattle.

In most cases, the few ruminants or cattle present in the village are owned by only one or two of the farmers who are relatively well off and have focused on this activity. Diseases, in absence of veterinary services, combined with pests attacks and high prices are the main the factors that discourage farmers from restocking to compensate their livestock which was lost during the war.

Cash crops and sales of agricultural products

This survey classifies cash crops as a secondary activity because so few farmers currently produce them. People have been absent from their communities for years due to the war and their cash crops have been "carried away by the bush." Most households have limited resources, particularly labour, to invest in rehabilitating the cash crops; their priorities are to rebuild their houses and plant their rice farms. In general men control cash-crop production and its income although women's labour (for maintenance and harvesting) is used to produce them.

Community across Liberia reported that before the war their major cash crops were rubber, cacao, oil palm, coffee, and sugarcane. Rubber has been Liberia's principle cash crop since Firestone started working in the country in 1926. The majority of farmers in central/north-western Liberia said that rubber is their current most important cash crop. One reason for this is that companies such as Firestone and B.F. Goodrich have maintained their collection system. Middlemen take Firestone vehicles to communities to purchase the raw rubber and there are substations where producers can bring their harvest and sell it for a better price, although they pay for transport. Currently there are two levels of rubber production: the farmers' with "private farms" who sell their product at relatively low farm-gate prices, and large rubber plantations that are being rehabilitated.

Very few communities across Liberia actually own cash-crop farms. Many people said that their coffee farms are not worth the investment of labour necessary to put them back in production because the price of coffee is so low, even though the Liberian Produce Marketing Corporation (LPMC) is contacting them to encourage production.

A number of farmers who formerly worked on the sugar-cane plantations in the south-east now have their own small-scale "private farms." These farmers hire labour to work on their farms and the owners make cane-juice liquor ("gin"). The liquor is traded across the border to Ivory Coast and is an important source of income.

Virtually all agricultural commodities are produced for household consumption as well as to generate small cash. Women's crops in particular are important sources of income. A few focus groups in the central/north-western counties were asked to identify their most profitable food crops, which are: cassava, eddoe, rice, hot pepper, pigeon pea, peanut, broad beans, plantain, maize, sweet potato, sesame, African eggplant, and pineapple. Palm oil is always cited as an important source of income. Few households cannot afford to sell their rice because local seed is scarce, which limits the area they can plant and their harvest. People in only three communities reported selling rice.

Hunting and fishing

Across the country hunting and river/creek fishing are important secondary activities. The dry season is the best time of the year for both activities.

Men hunt with dogs and traps, and use rifles or sticks to kill the game. Hedge hogs, squirrel, and small forest deer are common game. Women are responsible for cleaning, cooking, and selling the bush meat. Low yields and yet profits from farming activities combined with problems associated with raising livestock are pushing further more farmers to embark on hunting as a fast profit and less effort alternative.

Fishing in creeks and low rivers is mainly women's work and they go regularly to provide fish for household consumption and for sale in the community and local markets. Elderly women who can no longer farm often can still fish. Women fish in groups as large as 30 to prevent violence by men, but the catch is individual. They use the traditional, round nets of woven-palm and the traps that they make. Men also fish but not as regularly as women; they use hooks and lines, and traps. They also cordon off sections of a creek and bail out the water to catch the fish. Fish and bush meat are eaten and sold both fresh ("raw") and dried.

Remittances

Information about remittances is limited because people did not want to discuss the subject in detail. The consistent response about remittances was that no community members had relatives outside Liberia and that only some had relatives in Monrovia. All the community discussion groups maintained that their relatives in Monrovia were students or poor and could not send them money. The people in only one community said that it was public knowledge when somebody received money but the amount was a secret. The common rural-urban support relationship is that the rural population brings agricultural products (cassava, plantain, chickens) to relatives in Monrovia and receives dry goods, often used clothes and medicine, in return. People in the central/north-west call this "bartering" with their urban relatives.

Other activities carried out by women include:

- Processing and marketing palm oil, which is one of the most profitable products they sell. Men's only role is to cut down the bunch of palm nuts; the women do all the processing and market the product. Boys and young men in the south-east cut and sell the palm-nuts, for boys it is a major source to pay for their education.
- Petty trade, mainly based on selling agricultural products in local markets and buying dry goods to resell in the community.
- Wage or "contract" labour in the farms, for payment in cash or kind (rice). Women's wage labour is limited to their traditional tasks of sowing, weeding, and harvesting.
- Drying and selling bush meat.
- Making and selling cane-juice liquor (fire water) is mainly women's work because they are responsible for taking the cane to the mill and bringing back the cane-juice.
- Felling trees to make charcoal is men's work, but poor women make it from fallen trees. They also work as wage labourers to bag the charcoal. A woman who fills 20 bags of charcoal is given one as payment. Both women and men sell charcoal.

Other activities carried out by men:

- Wage labour for tapping rubber and clearing land for rice farms (brushing and felling trees). One man in the north-west reported that his payment for felling 15 acres of trees was LD\$3,000, which is about US\$ 55. Men in coastal communities work as crew on the larger fishing boats for pay in cash in kind.
- Petty trade, like the women.
- Felling trees to sell firewood and make charcoal.
- Making palm wine from palm trees; both men and women sell it.
- Working in trades such as masonry and carpentry.

9.2 Ocean fishing

Several fishing communities were surveyed in the southeast (Grand Bassa, Maryland) and one in the northwest (Grand Cape Mount). The best months to fish are during the dry season, which is November to June in the southeast and October to March in the northwest. Only men go to sea to fish; they use hooks and lines and nets. Most fishermen have small canoes with sails; a minority has powerboats and the resources to hire labour. Men and boys work as wage labourers and are paid mainly in kind but also in cash. The men sell their catch to the women in the community, including their own wives, who are responsible for processing and marketing the fish.

The types of fish caught include flying fish, kuta, sting ray (said to be a shark), bony fish, cavalla, cassava fish, and kingfish. People in the northwest also catch turtle hatchlings and raise them on fish in plastic and stone tubs until they are full grown, when they bring US\$40 at the market. Turtle eggs are sold all along the coast here.

Fish are sold fresh and dried in local markets. In the southeast fish is mainly sold dry due to lack of adequate cold storage facilities and often long distances to reach markets. In January the women in Maryland and Grand Bassa counties were buying 4-5 herrings for LD\$ 20 and selling 3-4 herrings for the same price. Large quantities of fish cannot be marketed in the southeast because commercial transport is very limited. Some buyers come to the communities and buy fish in exchange for dry goods. The women in the community in Grand Cape Mount have access to several towns and to Monrovia where they go to sell smoked fish.

Apart from marketing, the main problems reported by fishing communities include the lack of fishing inputs (nets and gears) and the disturbance caused by the ships of the fishing companies which results in destruction of the local fisher folks nets. As the majority of the fisher folks can not afford to have their own inputs (nets, gears and boats) they end up working for investors, mostly from outside their areas, and share with them the profit at an unfair rate.

Fisher-people's secondary activities depend heavily on their location. The fishing community visited in Grand Bassa is more occupied in petty trade, selling prepared food, wage labour, and skilled work (carpentry, tailoring), they are not doing any type of farming. The saline soil in the community in Grand Kru prohibits the cultivation of rice and cassava. This community barter fish for cassava that inland communities produce. The coastal community visited in Maryland has inland villages where they live and farm for part of the year. They cultivate both food and cash crops. Some families are restocking cattle that were lost during the war. Women interviewed in the Cape Grand Mount cultivate backyard gardens of cassava, sweet potato, peanut, pepper, eggplant, eddoe, and yam. This community produces some rice but bird damage due to the small area planted is a disincentive on production.

9.3 Other livelihood systems

9.3.1 Logging/Pit sawing

Timber remained one of two major exports during the war: in 2003 it generated 42% of Liberia's export earnings and currently it is the basis of one Liberian livelihood system (Liberia Human Development Report final draft, 2006). Business people from Monrovia supply equipment, fuel, and salaries for pit sawing in River Cess. Interviewees reported that some business people in Monrovia obtain government permission from the Forestry Development Agency (FDA) for the pit sawing. The government permits logging in River Gee that has a low population density and large forest reserves, in order to support the county's rehabilitation and reconstruction.

Young men between 17-25 years of age from all over the country are loggers. They are paid good salaries and live in small, mobile logging camps in makeshift huts. There are women and children in some of these camps. Some loggers that were interviewed have been working as long as three years, sawing planks and carrying them from the forest to the main road.

9.3.2 Mining

Key informants and community members reported that illegal mining and trade in diamonds and gold is done in Grand Kru, River Gee, Grand Gedeh, and Sinoe counties, despite the UN sanctions. The gold mines are located mainly in the first three counties above and diamond mining is particularly large-scale in Sinoe. Approximately 40,000 miners, including foreigners from other West African countries, live in makeshift communities in BOPC area and Sapo National Park. Many people who live in the mining areas, especially young men, work as wage labourers in the mines during the agricultural off-season. Women and children also work as wage labourers: they transport goods by foot for the business people who come to the mining areas. Children in particular work as load carriers.

The mining communities lack basic services such as safe drinking water and latrines, and are known for crowding and exposure to water-borne diseases. In June/July 2005 a cholera outbreak struck hundreds of people in the diamond-mining communities in Sinoe.

Mining potentially is a source of employment for local communities, but currently the local benefits are minimal. Communities' only benefits from the mining business are opportunities for wage labour and petty trade.

9.3.3 Long-term employment on rubber plantations

Private companies in Liberia produce rubber that historically is the country's major export. The Liberia Agricultural Company (LAC) in Grand Bassa and the Cavalla Rubber Corporation (CRC) – formerly Firestone – in Maryland offer long-term employment. The Sinoe Rubber Company (SRC) is operating but its ownership is in dispute and as a result, employment opportunities are unsure and limited. LAC, CRC, and Firestone in Margibi are the major rubber plantations that currently are operating in central and south-eastern Liberia. Production uses all the household labour: men tap the rubber trees, women help to collect the rubber, and children clean the cups. The workers are paid based on the amount of rubber they harvest each month. Many children, especially boys, work on the rubber plantations to support themselves and their families. This increases the drop-out rate for both boys and girls in the rubber-production areas.

The rubber companies generally offer better health care and education services than available elsewhere. Employee benefits include free medical care and education for dependents. The plantation schools provide better-quality education and have higher standards than most Liberian schools because the teachers are paid regularly. These benefits attract households from surrounding areas to work on the plantations. Long-term rubber-plantation workers do very little farming as they have no or little access to land and their work is labour-intensive; hence they highly depend on food purchases from the market.

9.3.4 Charcoal-making

Felling trees, chopping them up and burning them to make charcoal is another livelihood system. Charcoal-makers often are mobile; entire families move in order to find their primary material. They are mainly spread throughout Margibi and Montserrado counties in the Firestone plantation areas. Most charcoal-making households do not have access to basic services such as health care and education, and lack safe water, and sanitation facilities.

Men, women and children work together to produce charcoal. Men's role is to fell, chop, and burn the trees. Women and children bring the water for putting out the fire and bag the charcoal. Some women and children work as wage labourers to bag the charcoal. They are paid in kind: one bag of charcoal for every 20 bags that they fill.

10. FOOD CONSUMPTION, VULNERABILITY, AND COPING MECHANISMS

10.1 Dietary diversity

Dietary diversity is a widely accepted proxy indicator for access to food. Diversity suggests that people are obtaining the mix of nutrients the body requires. Although a mix of informants were interviewed (elderly, widows, the better-off), the information from this one-week recall is only illustrative and not statistically representative. It does not provide information about the amounts of the different foods eaten and thus about micronutrient, protein, and calorie intake. Also, the recall responses are subject to a noteworthy bias, the recalls were done after the harvest and during the dry season, when fishing and hunting are most productive, and when people are more likely to eat well. Seasonal variation in food consumption status can be assumed in Liberia because the great majority of its people are farmers and their production cycle includes a hungry season of four or more months.

Liberians' preference is to eat rice for both daily meals but the war disrupted agricultural production and exposed people to different consumption patterns in foreign countries. Others were forced to cope and ate less-preferred foods such as wild yam, palm cabbage, plantain, and cassava (often "stolen from our own fields") that were more readily available.

People generally were reluctant to discuss the differences in diet between the poor and the better off. However, a few groups gave the same answer: better-off households eat larger quantities and better quality food. "Better quality" means that they eat rice, meat, fish, and palm oil regularly. These households have the resources to buy fish and bush meat. The poor often have to eat cassava or another starch instead of rice, eat sauce without meat or fish, and use salt on their food instead of palm oil. They suffer in the hungry season when their relatives cannot afford to give them food and may buy bulgur wheat if it is available because it is cheaper than rice.

The table below shows an example of the differences in the consumption of "quality foods". The "better-off" household consumed rice every day, and fish or meat every day. The carbohydrates consumed by the single-headed household were of lower quality in the Liberian context: bulgur wheat and wild food (bush yam, palm cabbage) are less preferred substitutes if the household cannot afford rice or cassava. The poorer person ate fish or meat only three times during the week, often only as a supplement to give taste to the food.

Table 11: Differences in food consumption between a single-headed household and a "better-off household" in Grand Gedeh, South-East Liberia

	Single-headed household (number of days during the past week food item consumed)	"Better-off" household (number of days during the past week food item consumed)
Rice	2	7
Cassava	0	2
Bulgur wheat	3	0
Sweet potato	0	1
Plantain	1	0
Bush yam	3	1
Fish	2	3
Bush meat	1	4
Palm cabbage	7	4
Banana	1	3
Palm butter	7	7
Salt/Maggi	7	7

10.1.1 Number of meals

The consumption pattern in Liberia is two meals per day, one in the morning and one in the afternoon/evening. The dietary staple and strong cultural preference is rice, except along the coast where people prefer cassava. The morning meal generally consists of a starchy food such as cassava, plantain, or eddoe with palm oil. The afternoon/evening meal consists of rice and sauce or soup that includes vegetables (okra, sweet potato or cassava greens), pepper, palm oil, and fish or meat. Palm oil is used in virtually all dishes and in general fish is eaten more than meat. "Dry rice" is a meal of rice with a sauce that has no fish or meat. There is no formal midday meal, so during the day people eat fruit, coconut, plantain, sweet potato and snacks such as peanuts or sweet bread.

10.1.2 Sources of food

Households producing rice reported that during the harvest they eat rice as many times a day as they want. During this period it is also common to give rice away as gifts. Shortly after the harvest the left over rice is usually put in the overhead storage. The rice is kept for seed, the hungry season, and probably to be sold in case of necessity. People mainly purchase imported rice for the rest of the year. Across counties surveyed those who cannot afford to buy sufficient rice for their households buy bulgur wheat, which is much cheaper, and cook it with an equal portion of rice.

In January people in all the central/north-west communities reported that they were buying rice in the local markets. Only the people in two communities in Nimba county said that they were selling rice. The latter said that they sold only as many cups of rice as necessary to pay for essentials such as school fees or medical care. The conventional wisdom that African farmers are net food purchasers currently seems to be true in Liberia.

In January 2006 the south-eastern communities visited in the interior areas were consuming their 2005 rice harvest, but most of those closer to the coast already had consumed their own rice by November/December 2005. Coast communities in Grand Kru and Sinoe mainly produce cassava; only in few occasions they are able to purchase rice. A small cup of rice costs Liberian \$ 20 in Barclayville (Grand Kru), compared to Liberian \$ 5-10 in Harper that has easy access to imported rice from Ivory Coast.

10.1.3 Hunger season

The general hungry season is from June until the rice harvest between September and December depending on the location. One informant said that "August is the meanest month." People eat cassava, wild yam, palm cabbage, bush meat, and "anything we can get our hands on" during this period. Cassava is sliced and dried and stored in the house and sweet potato and eddoe also are stored for the hungry season. Upland "hungry farms" of rice or cassava are planted before the rains start to provide food before the main harvest.

10.2.1 Nutritional status

The assessment mission did not collect anthropometric data and the statements below are based on observations and secondary data sources.⁴ Most women, children, and men appeared to be the appropriate body weight, based on observation. Stunting is evident among some children in Grand Kru, based on asking ages and seeing their heights. Stunting rates (chronic malnutrition) can be assumed to be high throughout Liberia due to the fact that many children lacked regular food intake during the past years of the war and the lack of improved water sources combined with a generally poor health situation. The most recent National Nutrition Survey indicated that the prevalence of stunting was 39.4% in 2 (MOH, UNICEF 2000).

⁴ During the countrywide Comprehensive Food Security and Nutrition Survey which will be carried out from March to April 2006, anthropometric data will be collected which will enable a comparison of the nutritional status between counties.

According to the Emergency Food Security Survey carried out in 2005 covering 3 counties, stunting ranged from 27.1% in Montserrado to 41.4% in Nimba (WFP, 2005).

The elderly living in single-households tended to be particularly vulnerable to malnutrition. For example, in one community visited near Buchanan in Grand Bassa, the traditional social support system had broken down during the course of the war. Now families use their scarce resources to re-build their lives finding it difficult to support the more vulnerable community members.

10.2.2 Coping strategies

Participants of community focus group discussions were requested to name the coping strategies they use when facing food shortages (i.e. during the hunger season). They differ between vulnerable and less vulnerable households.

Vulnerable groups

- Food and non-food (seed, cassava cuttings, clothes) assistance from relatives. This strains the caretakers' resources because they also have lost assets in the war (family members, livestock, and houses) and are living at reduced levels also.
- Some women household heads – widows and those with children – join a *Kuu* (cooperative work group) to make small, one-acre rice farms. Elderly widows sometimes can repay the *Kuu's* labour with child care. Women household heads form their own *Kuu* so that they can make rice farms at their own pace.
- Relatives may take in a widow's child to help relieve her burden.
- Gifts or loans of food.
- The elderly and blind/disabled may beg for food from relatives and "sympathetic people," particularly during the hungry season.
- Rice or cassava "hunger farms" that produce before the rice harvest.
- Children eat rice first. Adults eat less-preferred/lower-quality foods (cassava, sauce without fish or meat, bread fruit, bread seed).
- Combine equal amounts of rice and bulgur instead of eating rice.
- Eat bulgur because it is cheaper than rice or other foods.
- Reduce the quantity of food eaten.
- Widows and adolescent men who support family members tend to cultivate swamp-land rice because it requires less heavy labour than upland rice. There is less brush and smaller trees in the swamp so hiring male labour for clearing is affordable.
- Work as wage labourers for payment in cash or kind; women and men may work for less than the normal wage because they need the work.
- Cut and sell firewood; women grow and sell cassava and vegetables, weave fishing nets, and bag charcoal for payment in kind.
- Use child labour for production, marketing, and other activities that generate food or cash. Some children and adolescents drop out of school in order to help support their single/elderly parents.

Less-vulnerable groups

- Rice or cassava "hunger farms" that produce before the rice harvest.
- Decrease or stop support to extended-family members in order to take care of immediate family who are the first responsibility. "If you keep feeding people, give them two cups of rice every time that they ask, you will create dependence and you cannot do that because then they will always come and ask."
- Reduce the quantity and quality of food eaten (eat cassava, bulgur, palm cabbage, bush yam, bitter root).
- Buy food on credit.
- Sell livestock to raise cash (reported only in the southeast).

- Work as wage labourers for payment in cash or kind; people may work for less than the normal wage because they need the work.
- Wage labour: transport goods by foot to the gold mines.
- Cut and sell firewood.

11. CAUSES OF FOOD INSECURITY

11.1 Agricultural production constraints

The main factors hindering the production of more food crops are limited availability of seed rice and animal pests. Farmers' major complaint is the lack of rice seed which is the beginning of a vicious cycle: limited seed, small rice farms, concentrated pest damage, crop losses in the field, reduced harvests, and insufficient rice for food and seed for the next agricultural season. As outlined in section 6, pest attack is a serious problem resulting in significant decrease of rice yields. Therefore, immediate action is required to address this constraint.

11.2 Limited access to markets

The consequences of Liberia's poor infrastructure and transportation network on the buyers and sellers that constitute the country's markets were discussed in Section 2.3. In summary, poor roads are a serious constraint on the country's production, distribution, and consumption system, from the household to the national levels. Limited access to markets discourages farmers' agricultural production; the state's investment in developing the rural agricultural and livestock sector; and providing medical and other professional services in rural areas.

This situation has negative effects on all three facets of food security:

- The **availability** of foodstuffs (variety and quantity) on the market is limited, particularly in areas such as the south-east where the driving is difficult year-round, and throughout the country during the rainy season. Most areas in Grand Kru, for example, are not accessible by vehicle at all (UNMIL, 2006).
- Difficult physical access to markets pushes up market prices and hence has a direct negative impact on people's **economic access** to food, as well as to the services (medical, educational) that affect food security.
- The poor transportation network is a constraint on people's access to health care and on the continuity of rural education and health-care services. Ruptures in these services and in the availability of medicine ultimately affect food **utilization**.

11.3 Food utilization issues

Liberia has excellent natural resources and agricultural potential. Now that the country is moving toward rehabilitation and development, farmers can concentrate on reviving their agricultural production. WFP and other development agencies agree that food utilization issues are a major factor in food insecurity. These issues include:

- Limited access to medical care due to distance and costs. This problem is linked to the poor transportation network.
- Inadequate community-level water and sanitation. There is a serious lack of improved rural water sources even though the United Nations Children's Fund (UNICEF) and a number of NGOs have been making protected wells. Improving sanitation requires education as well as infrastructure and ultimately requires household – not community – latrines.
- Women's lack of knowledge about household hygiene, food preparation, and child feeding practices.

11.4 High dependency ratios

Single women with children and households that are responsible for the elderly and orphans have high dependency ratios. Single women do not have sufficient household labour for the hard work of agricultural production plus the range of secondary activities that farming households are engaged in to make ends meet.

Orphans, the elderly, and the disabled are said to be cared for by relatives or their parents' friends. But the extended family's support is limited because their assets are depleted and they are in the process of rebuilding their own livelihoods. More than one community group said that they support their dependent relatives to the extent possible, but that their immediate families come first. In the hungry season they "close the door and put their feet against it" because their first responsibility is to their own nuclear family. High dependency ratios thus cut both ways: they strain the caretakers' resources and slow the restoration of their livelihood systems, and they keep the affected household dependent because these households do not have the human resources for a viable livelihood system.

12. RECOMMENDED RESPONSE OPTIONS

This section provides first recommendations on how to address the underlying causes of food insecurity that were outlined in the previous chapters. This report, being qualitative in nature combined with the short period spent in field activities, is the first step towards coming up with a collaborative action plan that will involve all relevant Ministries, UN agencies, local and international NGOs. Consultation meetings are planned for mid 2006 after the completion of the Comprehensive Food Security and Nutrition Survey (CFSNS), which will provide more in-depth information on the extent of the identified constraints and geographic areas and population groups to be targeted by various types of interventions. Agricultural Sector Assessment and detailed crop surveys are planned during the second half of the year to bridge the present information gap and provide a clear picture of the situation of food security.

12.1 Options to improve food production (availability)

- Pest control, specifically of rodents and birds, combined with extension services to be considered a priority in 2006 interventions by different actors in the sector.
- Ensuring the provision of production inputs to all returnees and war affected communities to produce food at household levels.
- Ensure adequate and timely availability of planting materials (seeds and cuttings) for the next planting season which starts from February 2006. Food rations should be provided to households receiving materials as seed protection measurement.
- Introduction, multiplication and distribution of improved, early maturing and disease resistant varieties of food crops with emphasis on rice and cassava.
- Land Development particularly for swamps and selected uplands for rice production, cum fish and vegetables on commercial purposes.
- Support to small scale post harvest technologies, equipment, processing, storage and marketing.
- Support marketing opportunities by rehabilitating roads and bridges, e.g. through FSLI programmes.

12.2 Options to improve access to food

- Accelerating the rehabilitation of artisanal fisheries; and carry out an assessment and rehabilitation/construction of existing aquaculture infrastructures.
- Start a progressive consolidated restocking of the livestock sub sector.
- Continue on-site ESF to improve children's access to food during school days.
- Take-home rations for girls in fifth grade and above to decrease drop-out rates; and take-home rations for children of both sexes and all ages from vulnerable groups (women- or elderly-headed households, orphans) to provide an incentive to these households to keep their children at school.
- Expand FSLI projects and specifically target communities that have *Kuus* (collective work groups) to use this collective labour to rehabilitate/replant community members' cash-crop farms.
- Multiply and sell Liberian peanut seed because it is scarce, women sell peanut to generate income, and because with nutrition education, peanuts can make a valuable contribution to children's nutrition.

12.3 Options to improve food utilization

- Expand MCH activities to provide improved food access and health-care services to women and children under five, and health education to women (household hygiene, child feeding practices).
- Water and sanitation programmes that include training on maintenance of facilities and awareness of health and hygiene issues.
- De-worming campaigns for school children and children below 5.
- Expansion of institutional feeding for HIV/AIDS infected orphans, and introduction of food assistance to HIV/AIDS affected households with members that are enrolled in HIV/AIDS counseling/support groups.
- Integrate HIV components in school feeding and MCH activities, as well as truck drivers' training programmes to increase awareness and prevent new infections.

12.4 Early warning of food crises

- Support the Government with the set-up of a food security monitoring system (e.g. sentinel sites) to monitor food security and respond to food-security crises (animal pests, heavy rains destroying harvest, sudden influx of refugees, etc.)
- Consolidate the recently set-up Nutrition Surveillance System implemented by humanitarian community and the Government of Liberia.

ANNEX 1: PARTICIPANTS

Name	Title/Role
Mohammed Khaled	FAO Emergency Coordinator
Claudia Ah Poe	WFP VAM Officer
Elizabeth Adelski	WFP Emergency Food Security Specialist
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Jallah Kennedy	Ministry of Agriculture (MOA) - Observer
Cornelius Corneh	Ministry of Agriculture (MOA) - Observer
Fayah Henneh	Liberia National Farmers' Union (LINFU) - Observer
Daoda Fahnbulleh	Liberia NGOs Network (LINNK) - Observer

LIST OF ACRONYMS

ACC	Agriculture Coordination Committee
ACF	Action Conte la Faim
ADA	African Development Agency
ARI	Acute respiratory infection
BOPC	Botuc Oil Palm Company
CCF	Christian Children's Fund
CFSAM	Crop and Food Security Assessment Mission
CFSNS	Comprehensive Food Security and Nutrition Survey
CPA	Comprehensive Peace Accord
CRC	Cavalla Rubber Company
CRS	Catholic Relief Services
DRC	Danish Refugee Council
ESF	Emergency School Feeding
FAO	Food and Agriculture Organization of the United Nations
FDA	Forestry Development Authority
FSLI	Food Support to Local Initiatives
TA	Technical assistance
GDP	Gross Domestic Product
GEMAP	Government Economic Management Action Plan
GoL	Government of Liberia
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Persons
IMC	International Medical Corps
LAC	Liberian Agriculture Company
LCCC	Liberia Cocoa and Coffee Corporation
LCIP	Liberia Community Infrastructure Programme
LD	Liberian dollars
LEPA	Liberian Environmental Protection Agency
LPPC	Liberia Palm Products Corporation
LRRRC	Liberia Refugee, Repatriation and Resettlement Commission
LURD	Liberians United for Reconciliation and Democracy

LWF/WS	Lutheran World Federation/World Service
MCH	Mother-Child Health
MDG	Millennium Development Goal
MERLIN	Medical Emergency Relief International
MOA	Ministry of Agriculture
MODEL	Movement for Democracy in Liberia
MPEA	Ministry of Planning and Economic Affairs
MSG	Monosodium Glutamate (“Manpo”)
NECOLIB/EPA	National Environmental Commission of Liberia/Environment Protection Agency
NGO	Non-Governmental Organization
NRC	Norwegian Refugee Council
NTA	National Transitional Assembly
NTGL	National Transitional Government of Liberia
RFTF	Results Focused Transition Framework
SC-UK	Save the Children - United Kingdom
SRC	Sinoe Rubber Company
TA	Technical assistance
UN	United Nations
UNCCA	United Nations Common Country Assessment
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children’s Fund
UNMIL	United Nations Mission in Liberia
USAID	United States Agency for International Development
USD	United States dollars
VAM	Vulnerability Analysis and Mapping
WFP	United Nation's World Food Programme
WHO	World Health Organization
WVL	World Vision Liberia