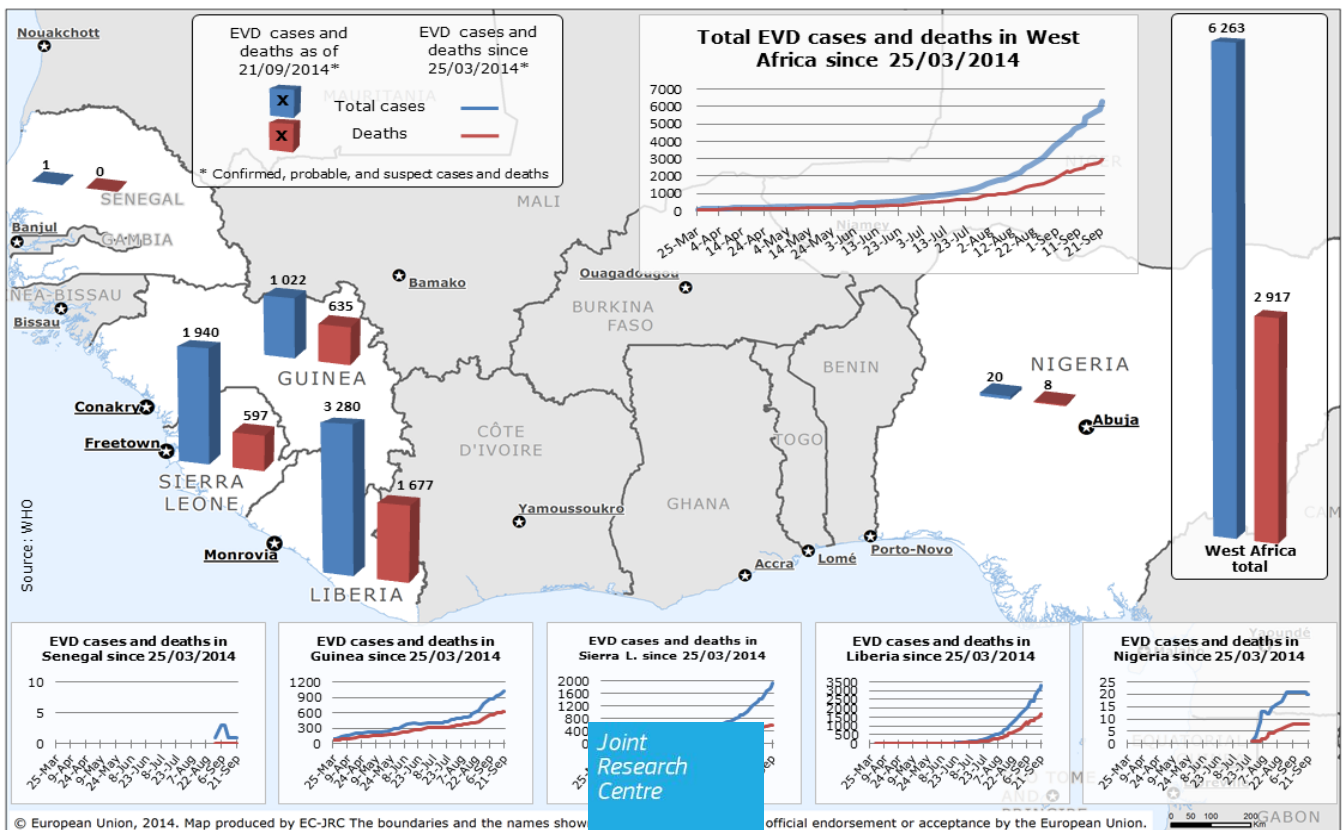# JRC SCIENCE AND POLICY REPORTS

Impact of the West African Ebola Virus Disease Outbreak on Food security

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Main Conclusions

- The exceptional extent and duration of the 2014 Ebola Virus Disease (EVD) outbreak in West Africa has had significant adverse effects on food security in Guinea, Sierra Leone and Liberia, the countries most affected.

- Despite these adverse effects on food security, food availability is not expected to be significantly reduced on average compared to a normal year. Overall production in affected countries is expected to decline slightly, essentially because of labour shortages. In addition, all borders other than the Guinea-Senegal border had been re-opened by the end of November 2014. Food imports may thus resume and food availability may improve starting December 2014.

- However, areas that have been severely hit by the EVD outbreak may face serious food availability issues, especially at the start of 2015 when food stocks from the current harvest will be exhausted. This is the case of N'zérékore in Guinea, Lofa and Margibi in Liberia, and Kailahun and Kanema in Sierra Leone, where rice harvests are well below average and movements are still restricted.

- Lack of access to food due to the adverse impact of the EVD outbreak on household incomes has had the most negative effect on food security. Movement and trade restrictions that have been imposed in order to limit the transmission of the disease have seriously disrupted economic activities. This economic slowdown has hit all areas of Guinea, Sierra Leone and Liberia, irrespective of the magnitude of the EVD outbreak. Certain groups have been disproportionally affected by loss of income, namely informal and agricultural workers. Border closures have also led to reduced income for cash crop producers due to missed export opportunities.

- Staple food prices are following normal trends in most areas, i.e. they are decreasing due to the harvest. In Guinea and Sierra Leone, price levels are similar to those of a normal year. In Liberia, rice prices are higher than usual. This is due partly to the EVD outbreak, and partly to the devaluation of the Liberian dollar.

- Households directly affected by the Ebola virus, i.e. whose members have been infected and/or died, and those in villages put under quarantine will have food supply problems. They will need support, in the form of direct food aid, cash transfers or livelihood support. Food aid interventions should be delivered alongside the health-related interventions. According to the WFP, 200 000 additional people need immediate aid due to the EVD outbreak, adding to the 1.5 million people that already suffer from chronic food insecurity.

- Income support intervention in the affected countries is critical to stimulate the local economy, limit the adverse impact of the general economic slowdown on livelihoods and improve household resilience to future shocks.

This report focuses on the impact of the Ebola Virus Disease (EVD) outbreak on household food security in the three most affected countries: Guinea, Liberia and Sierra Leone. It aims to help the European Commission prioritise its interventions in these areas.

The JRC does not have a physical presence in the region affected by the EVD outbreak nor direct informants in the three main affected countries. This report is an analysis of the situation based on the information provided by the following sources: the Assessment Capacities Project (ACAPS), Action Contre la Faim, the Centres for Disease Control and Prevention (CDC), the Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS), the European Centre for Disease Prevention and Control (ECDC), the International Food Policy Research Institute (IFPRI), the Food and Agriculture Organization (FAO), FEWSNET, the International Federation of the Red Cross and Red Crescent Societies, the International Growth Centre (IGC), Mercy Corps, UNICEF, the UN Mission for Ebola Emergency Response (UNMEER), USAID, the World Food Programme (WFP), the World Health Organization (WHO), the World Bank, and media reports.

The WFP bases its assessments on direct collection of data by text message (SMS) or Interactive Voice Response (IVR). FEWSNET is not physically present in the three countries but is in contact with local partners, such as trade organisations. FEWSNET has surveyed traders by SMS to corroborate reports by key informants and partners on market activities. The International Growth Centre (IGC) in Sierra Leone also relies on a phone-based price monitoring system. Mercy Corps in Liberia conducted household surveys in Lofa and Nimba counties and Monrovia in October 2014. The WHO reports the number of Ebola cases as part of the Ebola response roadmap. Other agencies use available data or simulation methods to assess the impact of the Ebola outbreak on food security.

Impact of the West African Ebola Virus Disease Outbreak

on Food Security

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1. Introduction

The Ebola Virus Disease (EVD) outbreak in West Africa is the largest Ebola outbreak in terms of numbers of cases recorded (17 942 as of 10 December 2014) and geographical zones affected (ACAPS, 26 November 2014; CDC, 2014; WHO, 10 December 2014). This outbreak is likely to have direct and indirect impacts on household food security and livelihoods in the three most affected countries (Liberia, Sierra Leone and Guinea). The emergency is clearly of a medical or epidemiological nature, but it is becoming clear that the epidemic is also affecting other sectors such as economic activities and food security. The extent, magnitude and severity of the food security impact of the EVD outbreak are likely to increase as the epidemic continues. Moreover, the outbreak is occurring in countries that already had significant food insecurity problems. In order to avoid adding a food crisis to the existing health crisis, the food security situation must be urgently assessed to address any potential need for assistance.

DG DEVCO contacted the World Food Programme (WFP) and the Food and Agriculture Organization (FAO) to carry out a joint assessment of the situation. Moreover, the Club du Sahel has consolidated the response from other stakeholder through the RPCA[1] network. In order to have an independent assessment of the situation, DG DEVCO asked JRC-FOODSEC to provide its own analysis of the impact of Ebola on food security in affected countries. This report relies on data provided by international agencies including the World Health Organization (WHO), the World Food Programme (WFP), West African organisations, non-governmental organisations (NGOs), and media reports. As is generally the case regarding food security analysis in Sub-Saharan Africa, data are scarce. However, the dynamics of the outbreak bring additional challenges which hamper assessments of the current food security situation: information becomes outdated very quickly and regular field-based assessments are not being carried out. Projections are even more difficult to make because an unusually high degree of uncertainty is associated to the future epidemiological path of the EVD.

The report is structured as follows: Section 2 gives a rapid overview of the progression of the EVD outbreak. Section 3 identifies potential impacts of the Ebola outbreak on food security. Sections 4, 5 and 6 review the available evidence about the impact of the Ebola outbreak on food availability, access and utilisation, respectively. Section 7 focuses on the impact on food security. Information gaps are described in section 8, and conclusions are drawn in section 9.

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[1] Created in 1984, the RPCA (*Réseau de Prévention des Crises Alimentaires*) is an international network for cooperation and coordination under the political leadership of ECOWAS and UEMOA and managed by CILSS and the SWAC/OECD Secretariat. It brings together Sahelian and West African countries, bilateral and multilateral cooperation agencies, humanitarian agencies and international NGOs, professional agricultural organisations, civil society, the private sector, and regional and international information systems (http://www.oecd.org/site/rpca/aboutus/).

This report focuses on the three countries most affected by the EVD outbreak: Guinea, Liberia and Sierra Leone. Information on neighbouring countries may be mentioned when relevant, but are not the focus of the report.

2. Ebola Virus Disease progression (as of 10 December 2014)

As of 10 December 2014, WHO has reported 17942 confirmed, probable and suspected cases of the EVD in six affected countries (Guinea, Liberia, Mali, Sierra Leone, Spain and the United States of America) and two previously affected countries (Nigeria and Senegal). There have been 6388 reported deaths.

Countries most affected by the EVD outbreak are **Guinea, Liberia and Sierra Leone**. These countries are classified by the WHO as "countries with widespread and intense transmission" by WHO. Transmission remains intense in the capital cities of these three countries. Case numbers continue to be under-reported, especially in the Liberian capital Monrovia (ECDC, 24 October 2014).

Other countries have witnessed isolated cases of EVD. These countries are classified by the WHO as "countries with an initial case or cases or with localized transmission" by WHO. The outbreak of EVD in Senegal and Nigeria were declared over on 17 and 19 October respectively. A national EVD outbreak is considered to be over when 42 days (twice the 21-day incubation period of the Ebola virus) has elapsed since the last patient in isolation tested negative for EVD. Isolated cases have also been reported in Spain, the United States and Mali.

The distribution of cases was as follows as of December 10 (WHO, 10 December 2014) :

o **Countries with widespread and intense transmission:**

Country	Data as of	Case definitions	Number of cases		Number of deaths
			Cumulative	Past 21 days	
Guinea	7 December 2014	all	2 292	511	1 428
Liberia	3 December 2014	all	7 719	852	3 177
Sierra Leone	7 December 2014	all	7 897	1 824	1 768
Total		all	17 908	3 187	6 373

The numbers of cases displayed in this table include all confirmed, probable and suspected cases as reported by the WHO.

o **Countries with an initial case or cases, or with localised transmission:**

Country	Data as of	Number of cases	Number of deaths	Comments
United States	10 December 2014	4	1	Latest patient tested negative on 09/11/2014
Spain	10 December 2014	1	0	
Mali	10 December 2014	7	6	
Nigeria	10 December 2014	20	8	Nigeria was declared Ebola-free on 19 October 2014
Senegal	10 December 2014	1		Senegal was declared Ebola-free on 17 October 2014

Neighbouring countries classified by the WHO as "countries with widespread and intense transmission", but with no records of Ebola cases, include Benin, Burkina Faso, the Ivory Coast, and Guinea-Bissau. There is also an unrelated outbreak of EVD in the Democratic Republic of the Congo.

Figures 1 to 4 depict the cumulated number of Ebola cases by week as reported in data of the Office for the Coordination of Humanitarian Affairs (OCHA) published on the Humanitarian Data Exchange website. It includes the total number of probable, confirmed and suspected Ebola cases in Guinea, Liberia, and Sierra Leone. It is generally agreed that the number of Ebola cases is underreported[2].

Figure 5 displays the same information in map form, to show the dynamics of the epidemics. In September, the dynamics were worrying with reported cases doubling approximately every 20 days, according to the CDC (CDC, 26 September 2014). According to data available in December 2014, the disease was not spreading quite so quickly. On December 10, the number of cases recorded per week was slightly increasing in Guinea, decreasing in Liberia, and increasing or stable in Sierra Leone. The pattern in Sierra Leone is much less encouraging[3]. Ebola is not among the most transmissible diseases, but the very low capacities of health-care systems in the three most affected countries help to explain how the Ebola outbreaks have spread so quickly (The Economist, 10 December 2014; New York Times, 3 November 2014, ; CDC, 26 September 2014).

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[2] The US Center for Disease Control and Prevention (CDC) estimates that for every case reported and recorded in publicly available case counts, an additional 1.5 cases are not recorded (http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/qa-mmwr-estimating-future-cases.html).

[3] The cumulative number of cases is thus still increasing but much more slowly than before in Liberia. The increase in the number of cumulative in the last week of December is lower than the increase of the number of cases in previous weeks. In Guinea, the cumulative number of cases is still increased more during the first week of December than during previous weeks. In Sierra Leone, the increase in the number of cases during the first week of December is much larger than in previous weeks.
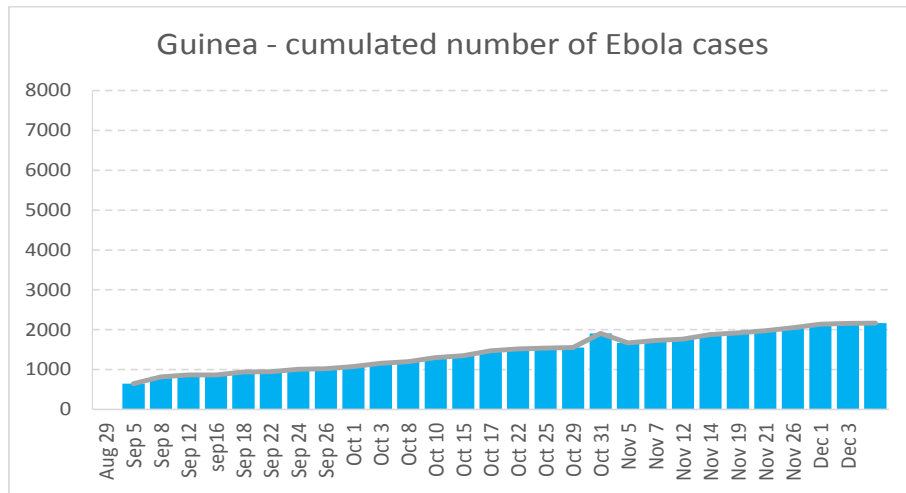
Figure 1: Cumulative number of reported Ebola cases in Guinea.
Source: Humanitarian Data Exchange Platform, OCHA. Data available to download from https://data.hdx.rwlabs.org/dataset/rowca-ebola-cases
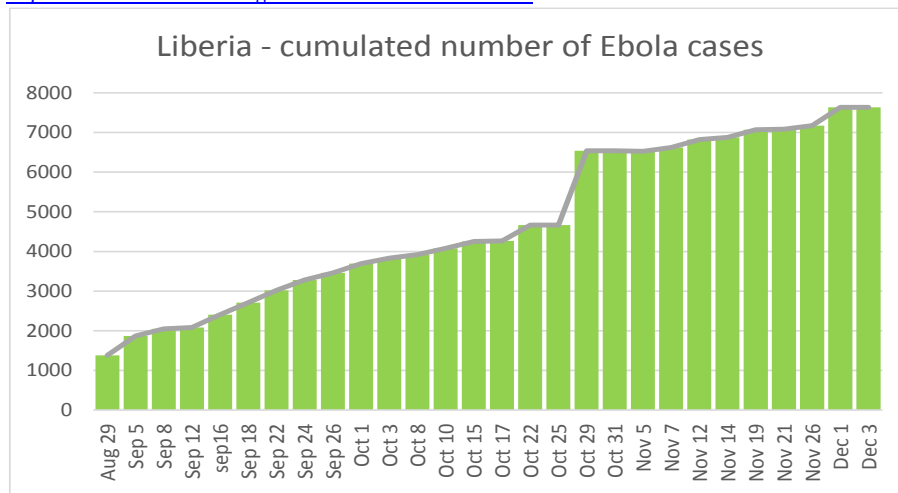

Figure 2: Cumulative number of reported Ebola cases in Liberia
Source: Humanitarian Data Exchange Platform, OCHA. Data available to download from https://data.hdx.rwlabs.org/dataset/rowca-ebola-cases
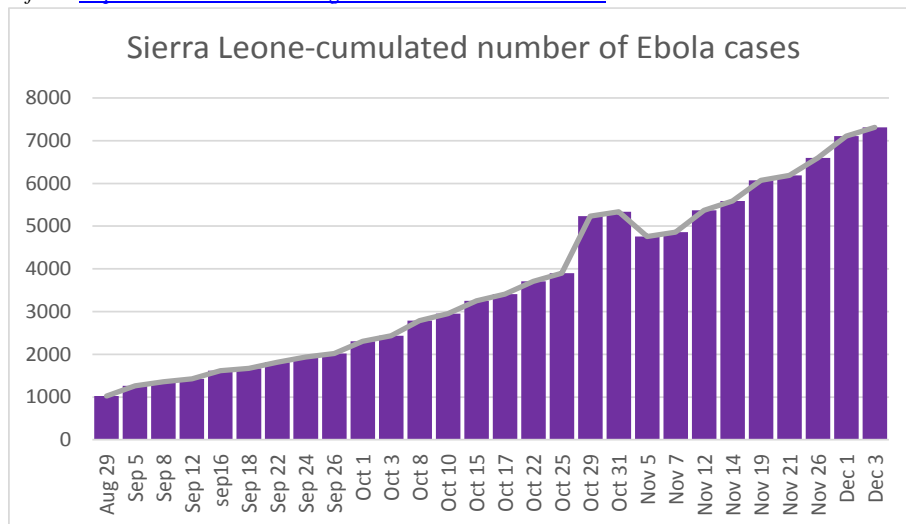

Figure 3: Cumulative number of reported Ebola cases in Sierra Leone
Source: Humanitarian Data Exchange Platform, OCHA. Data available to download from https://data.hdx.rwlabs.org/dataset/rowca-ebola-cases
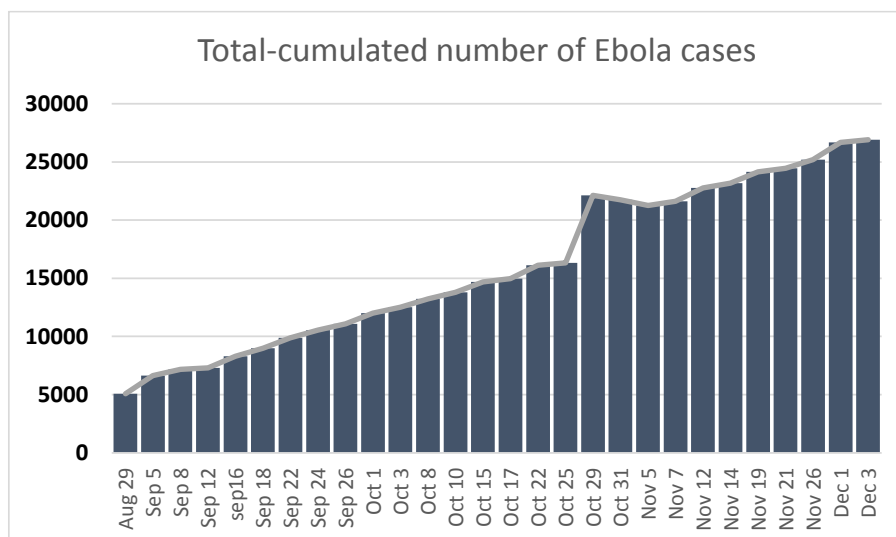
Figure 4: Cumulative number of reported Ebola cases in Guinea, Liberia and Sierra Leone

Source: Humanitarian Data Exchange Platform, OCHA. Data available to download from
https://data.hdx.rwlabs.org/dataset/rowca-ebola-cases

Data used for Figures 1 to 5 and reported by OCHA on the Humanitarian Data Exchange Platform are based on official information reported by ministries of health. These numbers are subject to change due to ongoing reclassification, retrospective investigation and availability of laboratory results. The increase in the number of cases in the week of October 29 is due to inclusion of new districts in the list of districts monitored by the WHO. The fewer cases reported the week of 5 November compared with the week of 29 October is due to a change in the use of data sources. As of 5 November, the cumulative total numbers of cases and deaths nationally and by district are identical to those presented in situation reports compiled by ministries of health and WHO country offices. Previously, these totals were derived from a combination of patient databases and country situation reports. The revised approach incorporates the totals presented in this report with those given in national reports.
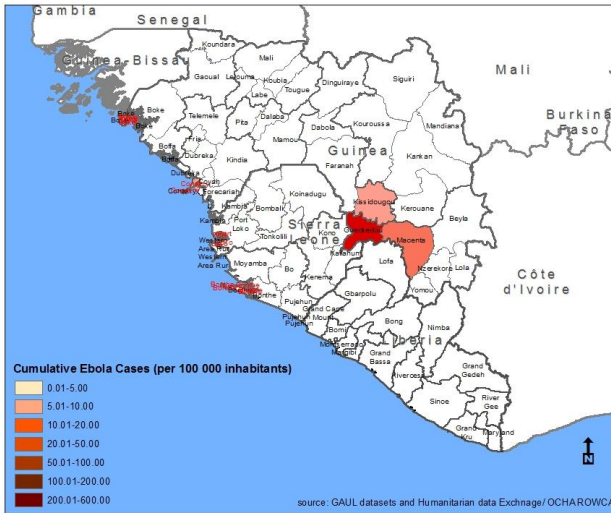
Cumulative Ebola Cases - End of March 2014
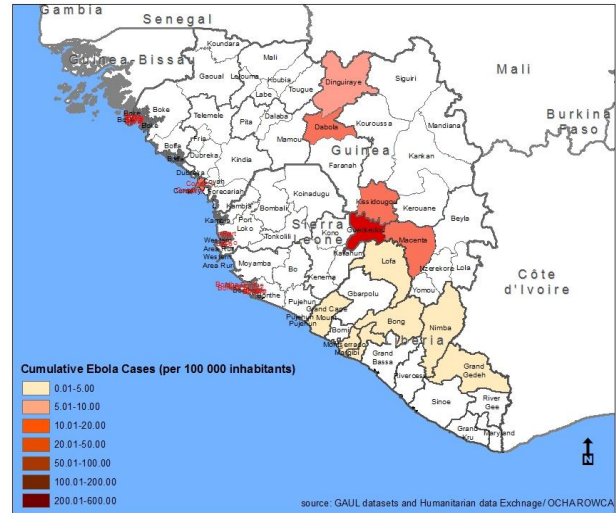
Cumulative Ebola Cases - End of April 2014
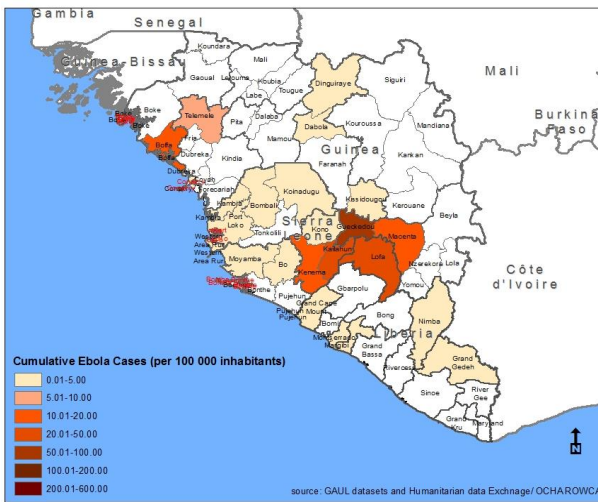
Cumulative Ebola Cases - End of June 2014
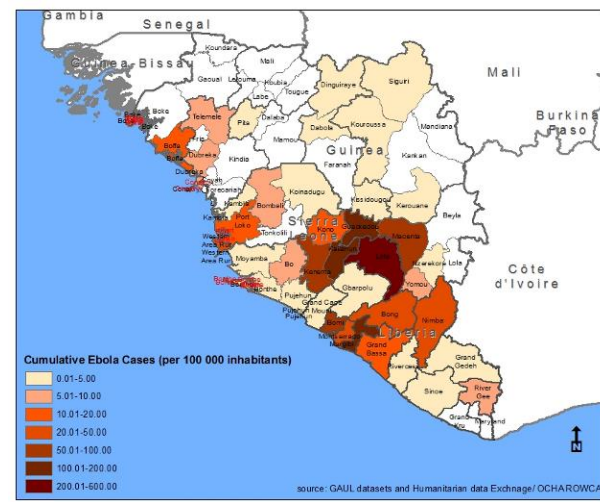
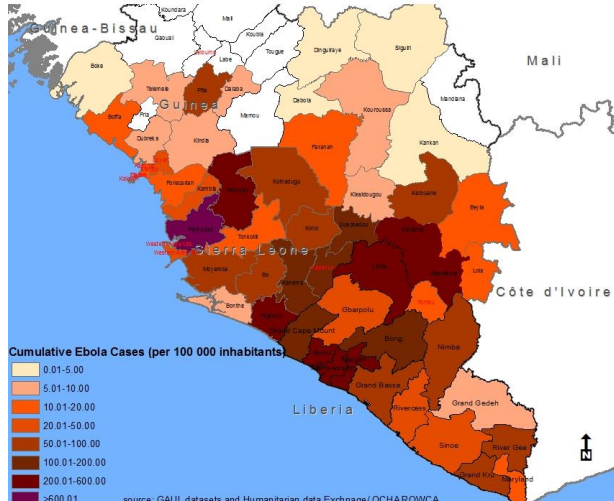Cumulative Ebola Cases - End of August 2014
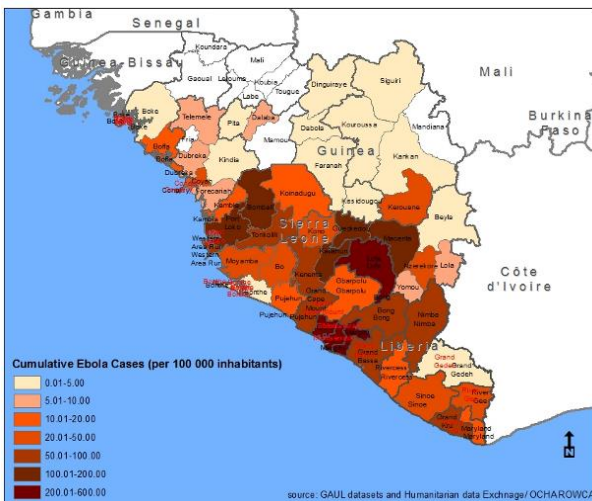
Cumulative Ebola Cases - End of October 2014

Cumulative Ebola Cases - End of November 2014

Figure 5: Cumulative Ebola cases per 100 000 inhabitants

Source: Authors based on data from Humanitarian Data Exchange Platform, OCHA. Data available for download at data.hdx.rwlabs.org/storage/f/2014-12-03T19:58:13.829Z/ebola-data-db-format.xls

3. Possible Impacts of the EVD outbreak on Food Security

The Ebola outbreak has obviously **direct impacts on food security for households whose members have died from Ebola or are currently ill**. If the virus has affected income earner(s), household incomes are reduced and food access is limited, thereby threatening household food security. Moreover, all members of households with individual(s) that have contracted EVD are put under quarantine, reducing their physical access to food. Food has to be provided during the quarantine period to maintain household food consumption at an adequate level. Food provision is also necessary to prevent households breaking their quarantines to look for food or income.

However, the EVD outbreak has a much wider impact on food security, linked to the effects of measures taken to limit the transmission of the virus. These measures are likely to affect food availability and access through several pathways depicted on Figure 6.

Restrictions[4] on the movement of goods may threaten food security in the short and medium term. With the exception of the Malian/ Guinean border, all main border crossing points between Guinea, Sierra Leone, Liberia, Cote d'Ivoire, Senegal and Guinea Bissau were officially closed at the end of August 2014. Cameroon and Chad also closed their borders with Nigeria (WFP, 26 August 2014). This may lead to reduced food trade and ultimately reduced food availability in markets. Reduced food availability may entail increased prices if demand is greater than supply. It is also likely to slow economic activity and thus reduce incomes. As a result, access to food may be jeopardized. At the end of November 2014, all the borders were re-opened aside from the Guinea-Senegal border which remained closed (La Vie Sénégalaise, 7 November 2014).

Movements of persons have also been restricted. The government in Sierra Leone has now quarantined half of the country's population across 14 districts[5]. It is also worth noting that heightened levels of fear also led to (unofficial) restriction in population movements (FEWSNET, 8 September 2014). There is evidence that farmers abandoned their farms and food stocks, and limited their work in the fields because they feared contamination by the Ebola virus (FAO, 5 September 2014). Information on the exact location of official quarantines and roadblocks remains limited.

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[4] The Internal Federation of the Red Cross and Red Crescent Societies regularly publish maps of movement restrictions (IFRC, 12 November 2014) . The history of movement restrictions is also available on the Humanitarian Data Exchange Platform https://data.hdx.rwlabs.org/dataset/a4785eb5-5010-4098-815f-309ba59fb99a/resource/92d5036d-f2a2-4405-8511-a4931f67728f.

[5] The Kenama and Kailahun districts were quarantined on 8 August 2014, Port Loko and Bombali in the north, Moyamba in the south and Waterloo in the Western Area Rural District on 25 September (Reuters, 25 September 2014). On 2 December 2014, Tonkolili was added to the list of districts that no one is allowed to leave or enter without special dispensation (Agence France Presse, 2 December 2014)

Liberia and Sierra Leone also announced a **ban on bush meat** (FAO, 5 September 2014) since it is suspected to be a host for the Ebola virus and can potentially contaminate humans. The ban on bush products may degrade the quality of the diets of households, by decreasing the quantity of protein consumed (CILSS, 26 September 2014).

Given the extent to which this phenomenon is taking place, it is very difficult to assess its impact on household food security. Data is scarce and different analyses are available on how the consequences of movement and trade restrictions and ban on bush meat currently affect food availability and access. In this report, we assess the evidence of reduced food availability and/or access, and the extent and severity of food insecurity in countries affected by the EVD.
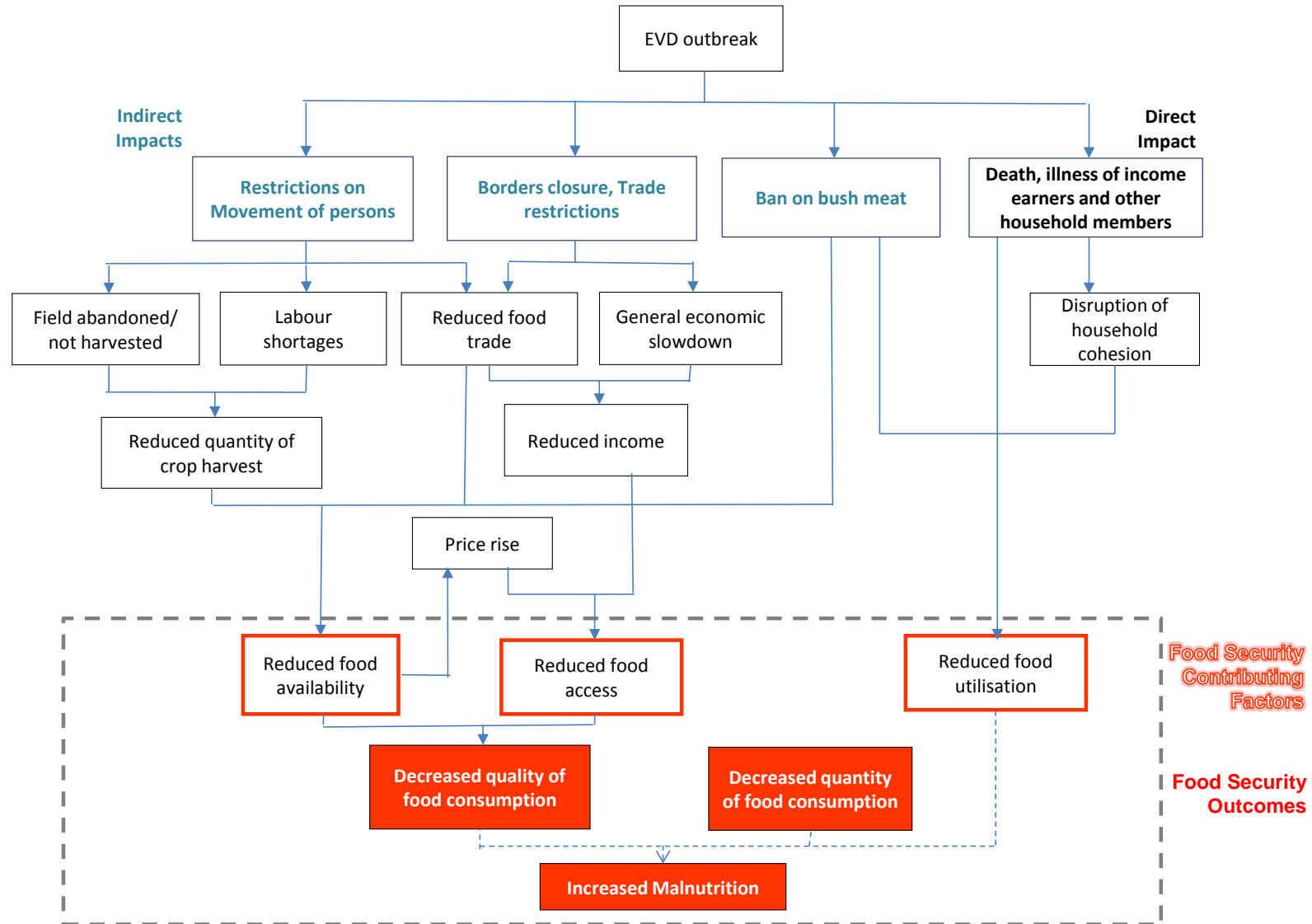
Figure 6: Causal Chain of the impacts of the EVD outbreak on Food Security

This scheme does not aim to give an exhaustive picture but rather to schematically represent the most important impact channels of the EVD outbreak on food security

4. Food availability

Food in Ebola-affected countries originates from domestic production and imports. Rice and cassava are the staple foods in these countries.

4.1. Domestic production

The period between September and January is the harvest season in the three Ebola affected countries (see Figure 7 below). Harvest are ongoing for maize, groundnuts, potatoes and rice in most areas.

Sierra Leone
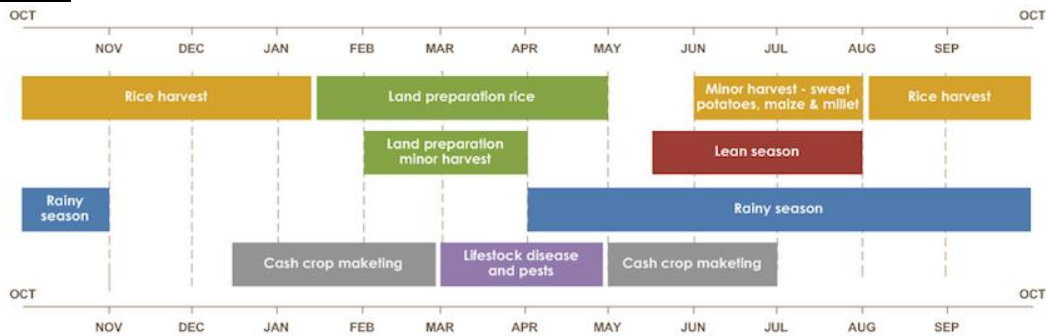
Liberia
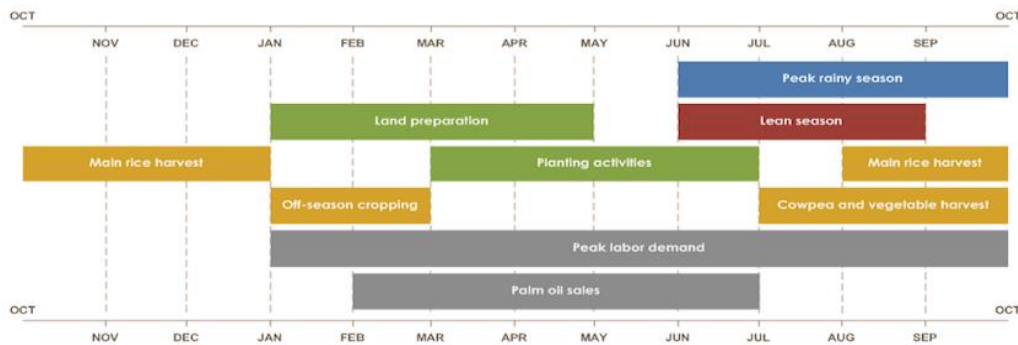
Guinea
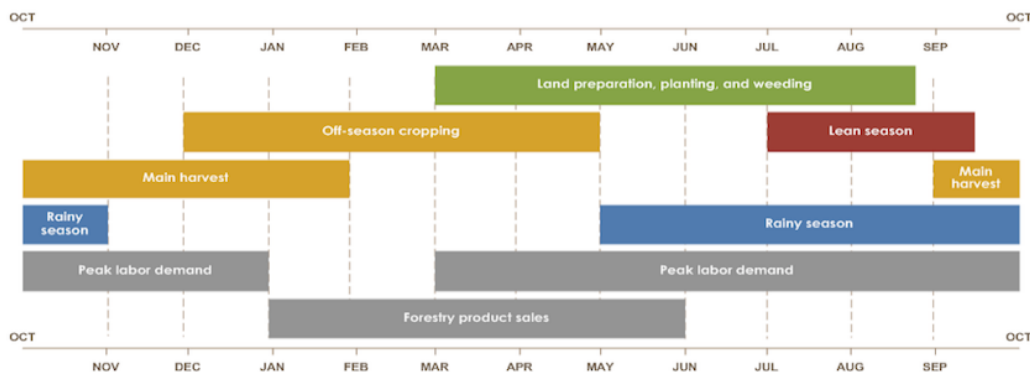
Figure 7: Seasonal calendars Guinea, Liberia and Sierra

Source: FEWSNET, http://www.fews.net/fr/west-africa

Despite good rainfall, the **rice harvest may be slightly below average** in the areas affected by the EVD outbreak due to labour shortages. Collective harvesting teams that are usually organised in communities to maintain and harvest rice fields were operating far below normal levels. People avoid gathering in large groups due to fears of contamination. In Kailahun and Kanema (Liberia), Mercy Corps (4 November 2014) report that collective harvest and field maintenance teams were reduced from 50 to 5-10 people. This may lead to below-average harvests despite good crop development, particularly in places where holdings are large and labour supply is not sufficient to harvest all the fields (FEWSNET, 10 October 2014). Informal estimates of the USAID-funded Food Enterprise Development (FED) program and Ministry of Agriculture, reported by Mercy Corps (4 November 2014), are that yields could be decreased by 25-50%.

In the short term, FEWSNET still expect that the rural food producers have the same food availability as that in a typical year. The FAO report is more alarming (FAO, 5 September 2014): "The likely labour shortages on farms would have severe implications for food and cash crop production in the affected areas, with the peak of the crop harvesting". According to the CILSS, it is also possible that production is below average in the areas most affected by the Ebola outbreak since less area may have been planted area. Labour shortages may have already occurred in May, when the epidemic started (CILSS, 26 September 2014).

In **Sierra Leone**, results from food security rapid assessments in Kailahun and Kanema indicate that at least 40% of farmers may have abandoned their farms (The Sunday News, 23 November 2014; FAO, 5 September 2014). 90% of the plots in Inland Valley Swamps have not been cultivated (FAO, 5 September 2014). However, these two districts are very particular because they were the first and for a long time the worst affected by the EVD outbreak. It is very difficult to know if a similar situation prevails elsewhere in the Ebola-affected countries. The Kailahun and Kanema districts are also cocoa-production areas. According to the AFP (AFP, 23 November 2014), the cocoa harvest is much lower this year due to late planting linked to the Ebola outbreak and longer rainfall events than usual. Anecdotally, the head of an export company indicated to the AFP that it has reduced its volume of activities by more than 6 times the 2013 levels due to lack of products.[6]

Preliminary results from the International Growth Centre (IGC) suggest that the **rice harvest could be delayed in Sierra Leone and Liberia due to excessive rainfall** in October. TAMSAT rainfall estimates indeed show excessive rainfall in "rice bowl areas"[7] such as the Western area, Pujehun, and Port Loko. This could delay the rice harvest and even damage the crops. Field assessments would be needed to assess the real impact of this excessive October rainfall on the harvest.

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[6] Quoted by the AFP "Today, I do about 300 bags of 65 kg a day, compared to about 2 000 bags last year. We don't have enough products".

[7] As defined in FEWSNET livelihood maps (See http://www.fews.net/fr/west-africa/sierra-leone/livelihood-zone-map/november-2010)
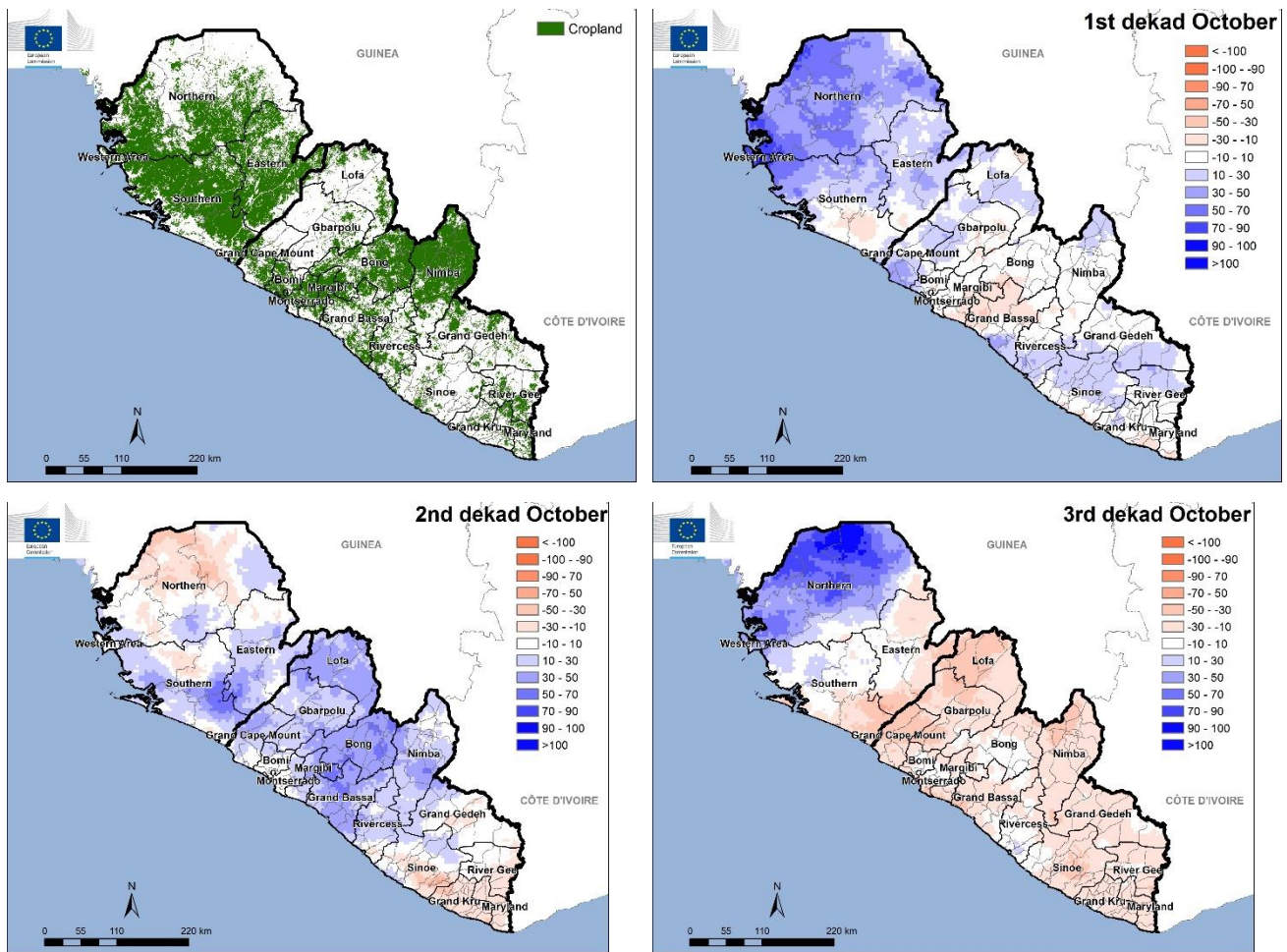
Figure 8: Crop mask EC-JRC-MARS-FOODSEC and rainfall anomalies in October 2014 in Sierra Leone and Liberia.

Source: Authors based on TAMSAT data. Excessive rainfall is displayed with increasing intensity of blue.

In **Liberia,** the rice harvest is also expected to be lower this year because of labour shortages (Mercy Corps, 4 November 2014)**.** The usual collective teams that work on rice field have not worked this year due to fear of contamination. This has affected maintenance and fencing activities of upland rice areas in August. The yield is estimated to be reduced by 10 to 25%. This has also affected the planting of lowland rice, whose yields may be reduced by about 25% or more (Mercy Corps, 4 November 2014). FAO estimates indicate a 20% decrease in rice production in Lofa and Margibi (FAO, December 2014).

In **Guinea**, according to the FAO, crop production will be slightly below average (FAO, December 2014). The FAO estimates an average decline of 4% in rice production in 2014 for the country. However, the situation is quite heterogeneous, and losses are greater in Ebola-affected areas. Cocoa production has been hit hard. The FAO estimates that production has fallen by one third, from 3 511 tonnes to 2 296 tonnes, whereas the World Bank estimates that it has fallen by one half.

To conclude, according to available evidence, domestic rice production may be slightly below average due to labour shortages. In addition, excessive rain in late October and

November may have damaged rice crops in some parts of Liberia and Sierra Leone. Products that need less agricultural work, such as cassava, may not be affected by labour shortages

4.2. Imports

Terrestrial border closures prevent terrestrial imports to Ebola-affected countries. According to FEWSNET (8 September 2014), informal trade continues at low levels across terrestrial borders due to the difficulty of monitoring the borders. However, media reports seem to indicate that such exchanges are very limited.

The impact of border closures on food availability depends on the share of food typically imported by the country, and of the possible substitution of terrestrial imports with maritime imports.

Guinea, Liberia and Sierra Leone have different profiles regarding the share of imports in total consumption (see **Error! Not a valid bookmark self-reference.** for an idea of the shares of rice, cassava and vegetable oil imports). **Liberia** is the most import-dependent country. It has a structural food deficit at the national level (USAID Office For Peace, October 2014). The country relies on international markets for half to two third of its rice requirement. It also imports a large part of its bean and vegetable consumption. **Guinea** imports about 20% of its rice supply, and **Sierra Leone** imports 21% of its rice supply.

Table 1: Average supply of key commodities with percentages imported.

	Rice		Cassava		Vegetable Oil	
	Total supply (1 000 MT)	Percent Imported	Total supply (1 000 MT)	Percent Imported	Total supply (1 000 MT)	Percent Imported
Guinea	1 433	20%	377	0%	98	44%
Liberia	392	56%	168	0%	67	29%
Sierra Leone	912	21%	1 119	0%	77	18%

Source: FEWSNET computation based on FAOSTAT and Comtrade data, Total supply includes production and imports. The figures displayed in this table are computed averages based on several years available in the FAOSTAT and Comtrade databases.

It seems that, in all three countries, **rice is mainly imported through the ports that are currently still functioning.** According to Mercy Corps (4 November 2014), traffic at the Monrovia port, **Liberia**, is following seasonal patterns: there was less traffic than usual in quarter 3, 2014 compared to quarter 2, 2014. They also indicate that traffic was higher in quarter 3 of 2014 compared to quarter 3 of 2013. However, they do not specify whether or not this increased traffic is due to additional imports made via maritime routes to compensate for the decrease in terrestrial imports due to border closures. There is also evidence that the fear of Ebola has slowed Asian rice shipments to Ebola-affected countries

(Science and Development Network, 31 October 2014; International Buisiness Times, 03 September 2014; WFP, 29 September 2014). It is reported that ships have difficulties in finding crews willing to travel to Ebola-affected countries.

Theoretically, **Guinea** could be more affected by the closing of terrestrial borders since it typically trades important quantities of goods via the terrestrial border with Senegal [8]. Some terrestrial trade flows to Guinea have been diverted from their typical routes and transit via Mali from and to Senegal and Côte d'Ivoire. We are not aware of data that could be used to assess the actual drop in imports by land in any of the three Ebola-affected countries.

In **Liberia**, Mercy Corps reports the **substitution of terrestrial imports by maritime imports**. "Borders closure has obliged to import via shipping line instead of terrestrial lines" (Mercy Corps, 4 November 2014). The biggest constraint on importing food in Liberia is the capacity of the port to receive large cargo vessels. In Liberia, only two ports accept international cargos: Monrovia and Buchanan. The Monrovia Port currently handles food imports, and can handle three cargo vessels at a time. However, cargo ships importing rice usually stay two weeks at the port, thus limiting the possibility for other cargo ships to enter. During the dry season, only two vessels usually enter the port to meet local rice demand. Despite no evidence in other Ebola-affected countries, it is possible that terrestrial imports are also substituted by maritime imports in Guinea and Sierra Leone. Ports (Freetown, Monrovia, and Conakry) are functioning normally. The used of cranes to offload containers requires very little human interactions, so the probability of EVD transmission is limited. Port authorities have also increased protection measures to limit the transmission of the virus.

It is very difficult to assess the actual changes in imports compared to a typical year due to lack of data. It seems that ports are functioning normally, so typical maritime imports patterns have not been modified. According to the information available, it is reasonable to think that **quantities of imported rice arriving in the ports (Conakry, Freetown and Monrovia) are comparable to other years at this time of the season**.

Regarding terrestrial imports, the situation is more difficult to assess. FEWSNET November Special Report reports that "even in a typical year, there are no major trade flows of staple food items across these borders so that their official closure is not expected to have any major impact on food availability, with the possible exception of isolated border areas" (FEWSNET, 3 November 2014). On the contrary, the WFP baseline survey in **Liberia** conducted in 2010 mention that cross border trade with Côte d'Ivoire provides vital imported rice supplies to the chronically food insecure in Liberia South-east (WFP, 2010). Cross border trade is also typically an opportunity for cash crop producers close to the frontier to sell their products, especially in Bong, Lofa and Nimba counties that export

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[8] Guinea also imports large quantities via its border with Mali, which has stayed open.

palm oil and in Grand Cape Mount that export *gari* (WFP, 2010). Populations close to the borders are likely to face limited availability of goods that are usually imported, namely the Liberian areas near the Côte d'Ivoire border and Guinean areas close to the borders since Guinea typically imports substantial quantity via terrestrial borders. At the end of November 2014, all the borders have been re-opened except the Guinea-Senegal border that remained closed. Food imports may thus resume in December 2014.

4.3. Internal trade flows

Food availability is challenged by transportation difficulties within countries. Although major ports are open and functioning, flows of imported rice to inland markets are limited, particularly in Liberia and Sierra Leone. Domestic production also runs into difficulties in reaching domestic consumer markets or being exported.

In **Liberia**, internal transportation is always challenging especially during the rainy season (June-October), when road conditions are poor. However, such transport problems seem to have been exacerbated since August 2014. In Monrovia, vegetable vendors complain that transport takes longer than usual and that perishable goods arrive spoiled (Mercy Corps, 4 November 2014). Trucks are controlled at check points and are not allowed to travel during curfew hours. The travel time from Nimba to Monrovia, which used to take one day, may now take two or three days. The transportation union in Nimba County indicates that the current crisis has reduced the number of trucks travelling from Nimba to Monrovia or other areas to two trucks per day during the rainy season. Usually four to five trucks travel daily during the rainy season. During the dry season, this number increases to eight to ten. Results of the WFP-FAO-Government of Liberia Joint Rapid Food Security Assessment that covers all Liberian counties indicate that almost all key informants interviewed perceived there to be less trucks this year than last year (WFP, FAO, Governement of Liberia, 29 October 2014). President Ellen Johnson Sirleaf lifted the state of emergency in Liberia on 3 November 2014. This means that night curfews will be reduced, and weekly markets can now take place all over the country, which may improve transport conditions. Travel time from and to Monrovia may return to levels closer to normal travel time at this period of the year. As shown in Figure 9, internal transportation issues may not be a problem for the area around Monrovia since rice is still arriving through the ports. However, rice deficit areas such as Nimba, Grand Bassa, Lofa or Maryland may face issues since the current harvest will not be able to meet demand (see Figure).
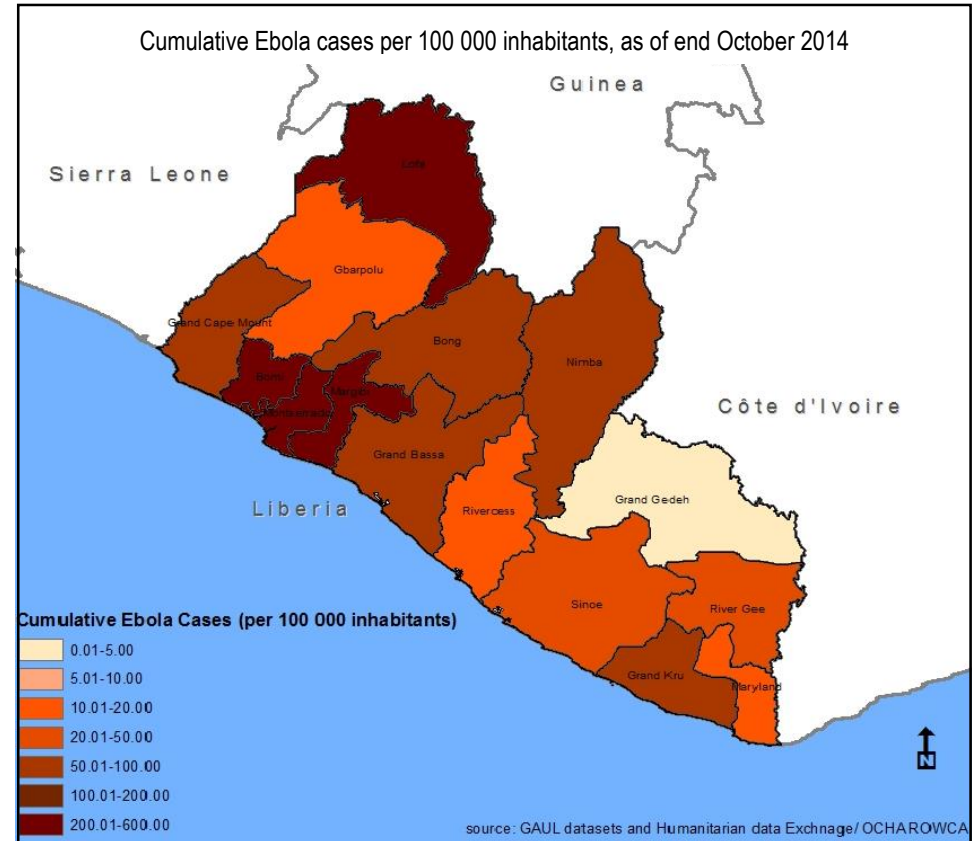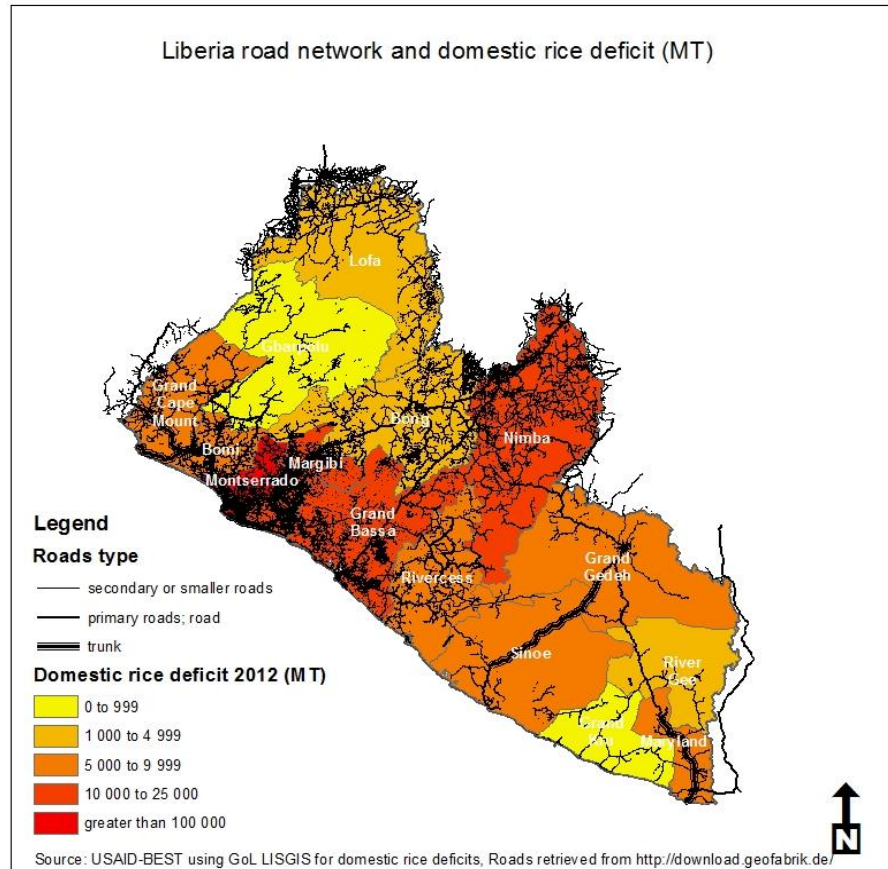
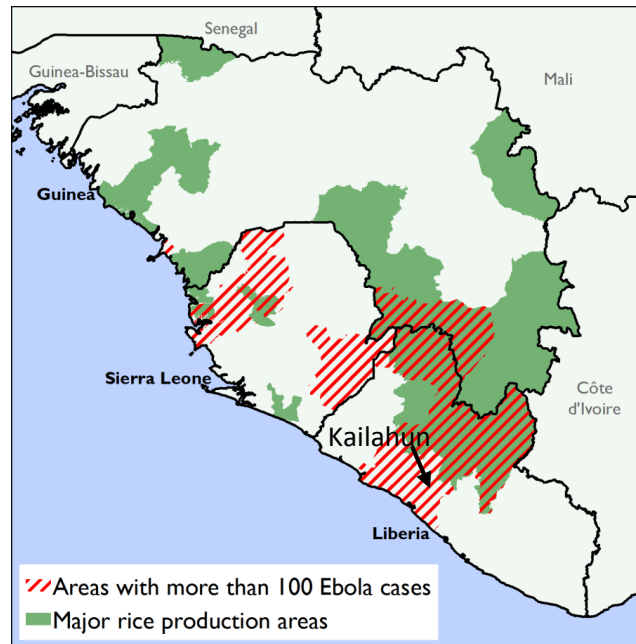**Figure 9: Rice deficit, roads and Ebola cases in Liberia**

Figure 10: Ebola cases and surplus rice-producing areas.
Source: FEWSNET, 8 October 2014

In **Sierra Leone**, as depicted in Figure , it is very likely that internal rice flows have been disrupted. The typical flows indeed cross the areas worst affected by the EVD. According to coffee exporters in Kenema, one of the areas worst affected by the EVD outbreak, transportation to Freetown is very difficult. Regular customers no longer come to buy coffee because they are afraid of roadblocks and checkpoints. The journey from Kenema to Freetown, from where goods are shipped to Turkey and the Netherlands, can now take up to two days, whereas before the Ebola outbreak it took just a few hours (AFP, 23 November 2014).

In **Guinea**, to our knowledge, quarantined areas have been introduced in Macenta on 8 September 2014 and Gueckedou, Nzerekore in August 2014. A state of emergency was declared in August 2014 introducing road checkpoints and limiting movements. In August 2014, media reports indicated that flows of fruit and vegetables were no longer arriving in Conakry due to roadblocks (Nypost, 15 August 2014).

4.4. National security stock

According to FEWSNET (FEWSNET, 3 November 2014), Guinea, Liberia, and Sierra Leone have not had significant national security stocks. These countries can generally import rice quickly during times of crisis from international markets. However, due to the recent Ebola outbreak, reports indicate that the government of Sierra Leone is currently in the planning stages of building an emergency food

reserve by the end of 2014 through local or regional procurements. In Guinea and Liberia, there are no plans to build public stocks at this time.

4.5. Synthesis

To sum up, **food availability is likely to be less than that of an average year.** The rice harvest is likely to be slightly below average due to labour shortages. Due to movement restrictions, it seems that increased transport time and costs complicate and reduce the quantity and quality of goods reaching consumer markets. Perishable goods especially suffer from increased transport times.

At this time of the year (December 2014), areas that are more at risk are mainly urban centres, especially areas that are close to terrestrial borders and far from the ports. Food stocks from the current harvests are likely to be exhausted In the first 3 to 6 months of 2015, and agricultural areas worst affected by Ebola are likely to face food shortages. The more remote the area, the more likely food shortages will be. Areas that are at risk of food shortages are those most affected by the EVD outbreak: Lofa and Nimba in Liberia, Macenta and Nzerekore in Guinea, Kailahun and Kanema in Sierra Leone, as well Conakry, the capital city of Guinea.

At the household level, **agricultural producers** are likely to have access to minimally adequate food stocks during the harvest months. However, food is likely to become scarce sooner than usual in early 2015. Stocks will be depleted faster than usual[9]. To cope with this situation, agricultural households will probably increase their consumption of locally produced cassava, delaying the need to source food from local markets (FEWSNET, 10 October 2014). Cassava harvesting occurs year-round and is less labour-intensive than other crops. However, this will only partially mitigate the food supply scarcity resulting from reduced market functioning.

Market-dependent households may already face significantly reduced food availability due to market disruptions linked to restrictions of the movements of persons and food stuffs. This mainly concerns the urban centres at this time of the year (FEWSNET, September 8, 2014). It seems that, within countries, internal trade flows of staple foods have decreased compared to normal years in Sierra Leone and Liberia.

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[9] In a normal year, household food stocks may last for two to three months in certain rural areas of Liberia, and up to five to six months in surplus-producing zones of Guinea (FEWSNET, 8 September 2014).

5. Food access: markets, prices and household incomes

5.1. Prices

Food prices are available from the WFP database (http://vam.wfp.org/sites/mvam_monitoring/index.html). FEWSNET reports prices from national statistical institutes in graphical format, and the International Growth Centre (IGC) also reports market prices collected by a country-representative phone survey carried out in Sierra Leone.

In **Guinea**, **staple food prices are stable** and generally below 2013 levels. In Labe, the price of domestic rice had greatly increased between April and August 2014, but fell back to 2013 levels in September. Data from the Guinean market information system - Systèmes d'Information sur les produits alimentaires en Guinée (SIPAG) - reported by FEWSNET (FEWSNET, 3 November 2014) indicate stable food prices for imported rice and maize both in Conakry and Nzerekore. Prices this year follow seasonal trends, declining at harvest time. October price levels reported by the WFP are shown in Figure 11. Food prices were quite homogenous across Guinea in October 2014, except for imported rice which had a higher price level in Lower Guinea.
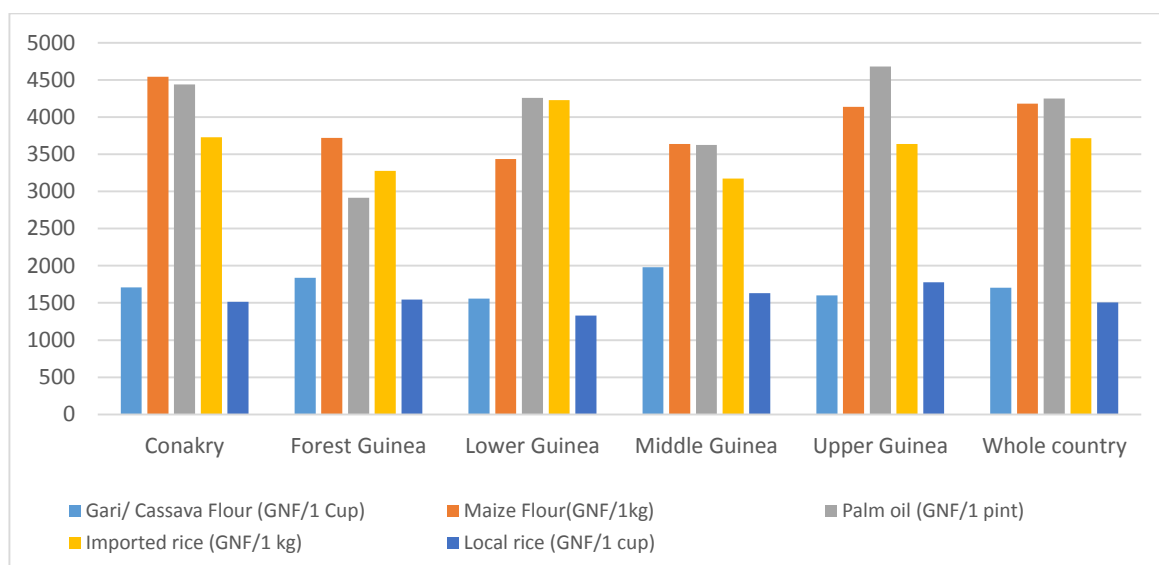

Figure 11: Average prices for basic commodities in Guinea (October 2014)
Source: *WFP mVAM*

Cash crop prices in Guinea may have declined. From anecdotal evidence, it is reported that trade restrictions have reduced the demand for cash crops and that net sellers are not able to sell their production. For example, in Guinea, a drop in the price of onions has been reported in the mountain areas, close to the border with Senegal. Reduced trade and sales have led to a surplus accumulation of onion stocks.

Farmers usually sell onions to the Senegalese market. In 2013, they sold around 250 tonnes by September. This year, they had only shipped 22 tonnes by September (Euractiv, 25 November 2014). Again in Guinea, potato producers complain that they are not able to export their produce (Kababachir, 12 November 2014). In September 2014, the WFP reported that, according to the local farmers' federation, potato exports to Senegal in August 2014 were significantly lower than during the same period in 2013, causing a significant drop in both producer and retail prices in the region of Fouta Djallon. The local farmers' federation says that the average farm-gate price for potatoes did not exceed 2 000 GNF/kg during August and early September, while in 2012 and 2013 August prices were 3 092 and 3 483 GNF, respectively. The local retail price for potatoes has dropped by 65% between June and September 2014 on the market of Labé, which is a key market in this region, located on the Guinea-Senegal trade route. A similar observation was made in the market of Faranah (central Guinea – close to the border of Sierra Leone), where prices dropped by 42% between the first and second week of September. However, with respect to last year's prices, the price of potatoes in the Labé market reported by FEWSNET (graph below) seems to behave according to the seasonal pattern. Potato prices in the Labé market increased significantly in July 2014, but in October were comparable to 2013 figures. Senegal was the main destination of exports for potato producers. Their ability to cope with the income shocks remains difficult to assess. Yam prices in the Kankan market and rubber prices in the Nzerekore market have also been steadily declining and are much lower than their 2013 values. These low prices may are likely to translate into reduced incomes for producers.
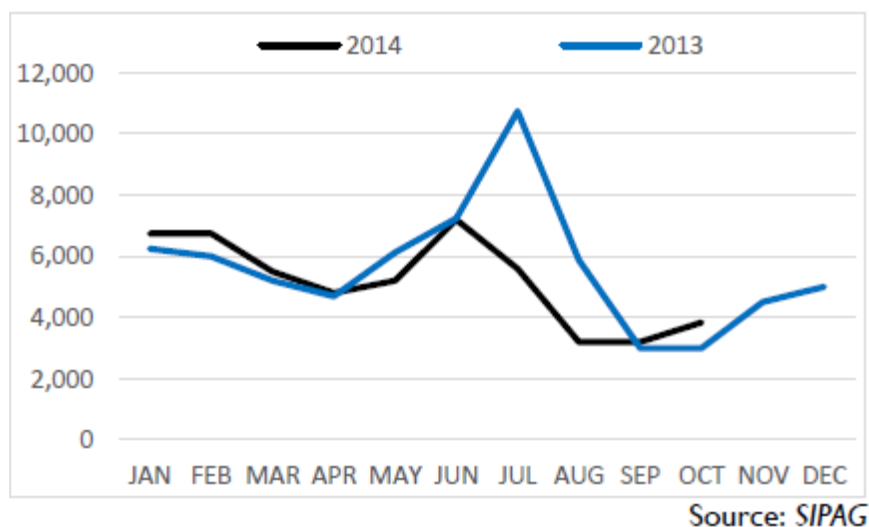

Figure 12: Potato prices in the Labé market (Guinea) - GNF/kg
Source: FEWSNET

In **Liberia**, the price of imported rice increased above typical levels around June-July 2014 depending on the market (WFP, 26 August 2014). The most affected districts include Bomi (+18%), Lofa (+12%), Maryland (+42%) and Nimba (+36%). This increase is probably partly due to movement restrictions in parts of Liberia, the devaluation of the Liberian Dollar, and the increase in the international price of rice. Prices of local rice decreased across the country during the rice harvest period (see Figure 9). The prices of other staple commodities (palm oil, gari) were fairly stable (see Figure 104 and 15).
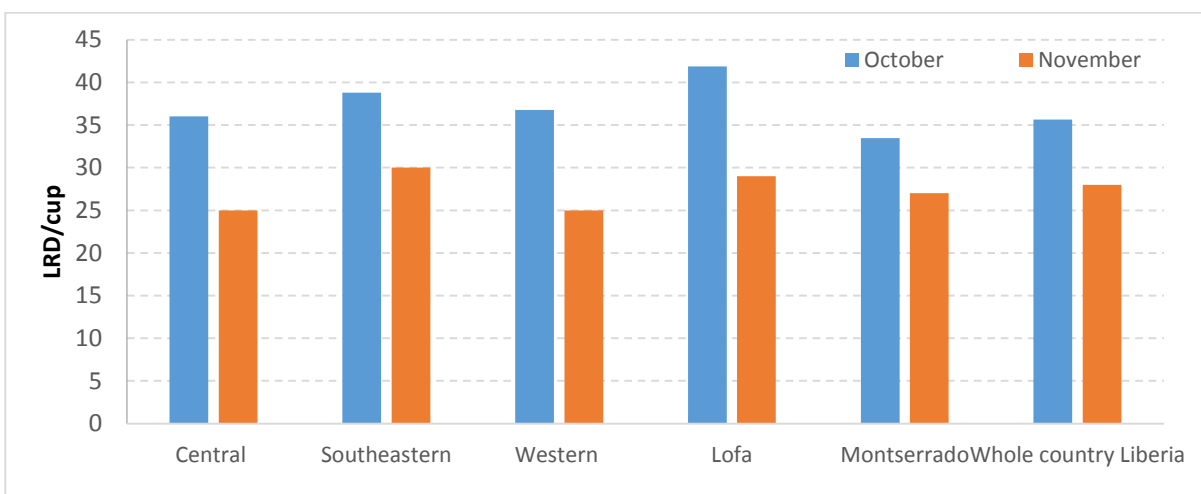

Figure 9: Local rice prices in Liberia
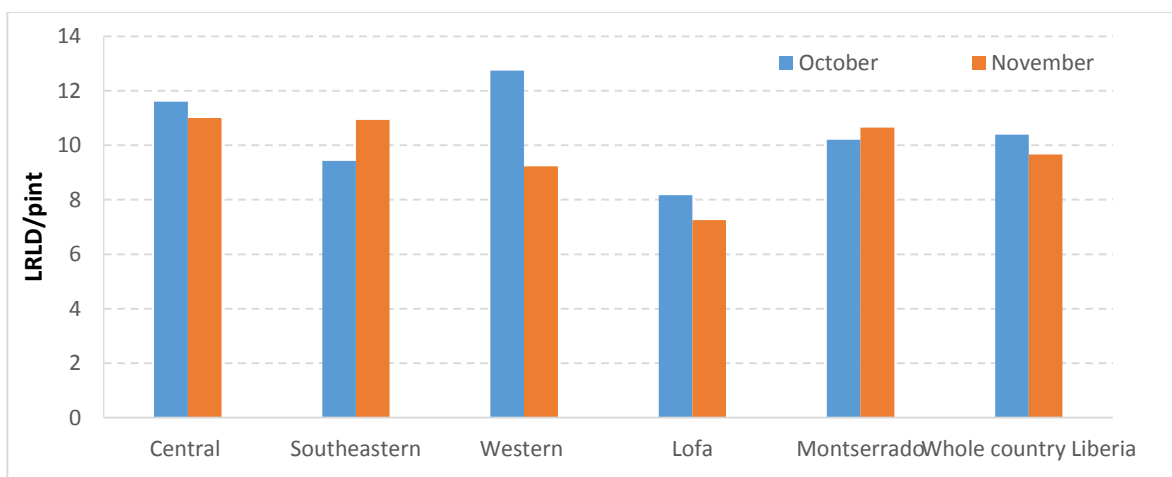Source: *Authors based on data from WFP mVAM*

Figure 10: Palm oil price in Liberia
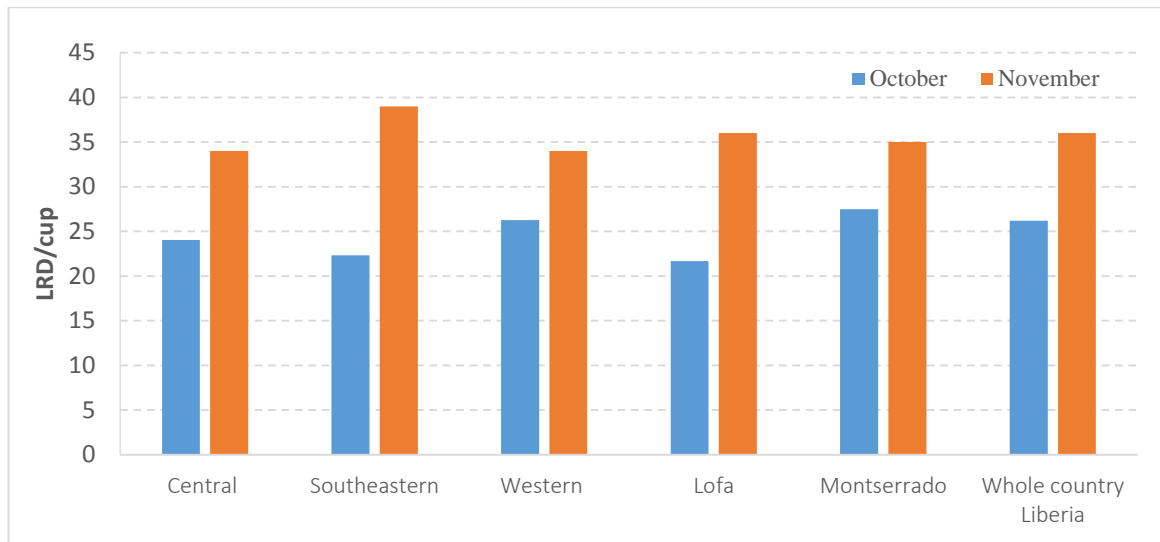Source: *Authors based on data from WFP mVAM*

Figure 11: Gari/cassava flour price in Liberia
Source: *Authors based on data from WFP mVAM*

In **Sierra Leone**, price levels for basic commodities (rice, cassava, palm oil) are generally normal for the season (IGC, November 2014; WFP, 29 September 2014). The geographic pattern of food prices that prevailed before the EVD outbreak has not changed, with higher food prices in the western area, where the capital is located, and lower in producing areas. In Kailahun and Kanema, the two districts worst affected by the EVD outbreak, the prices of local rice and palm oil are below the national average according to typical price pattern for the country (WFP, 10/2014). FEWSNET reports increases of 10% to 35% in imported rice prices between July and September. From October to November 2014, WFP reports stable prices for imported rice and decreasing prices for domestic rice due to the start of the harvest. November 2014 prices from WFP mVAM surveys are reported in Figure 16.

Average prices, however, mask outlying price behaviours in localised areas. For example, imported rice prices in Moyamba increased by 51% and decreased by 16% in Bonthe (FEWSNET, 3 November 2014). The sharp increase in Moyamba is likely due to the quarantine in place for this district and the 21-day shutdown of the Moyamba junction, a key trade hub in the area. High prices also persist in Kailahun (Eastern Province) and parts of the Southern Province of Sierra Leone. The IGC also reports a larger number of high outlying prices compared to 2012, their baseline year. Outlying prices are observed in the districts both worst and least affected by Ebola.
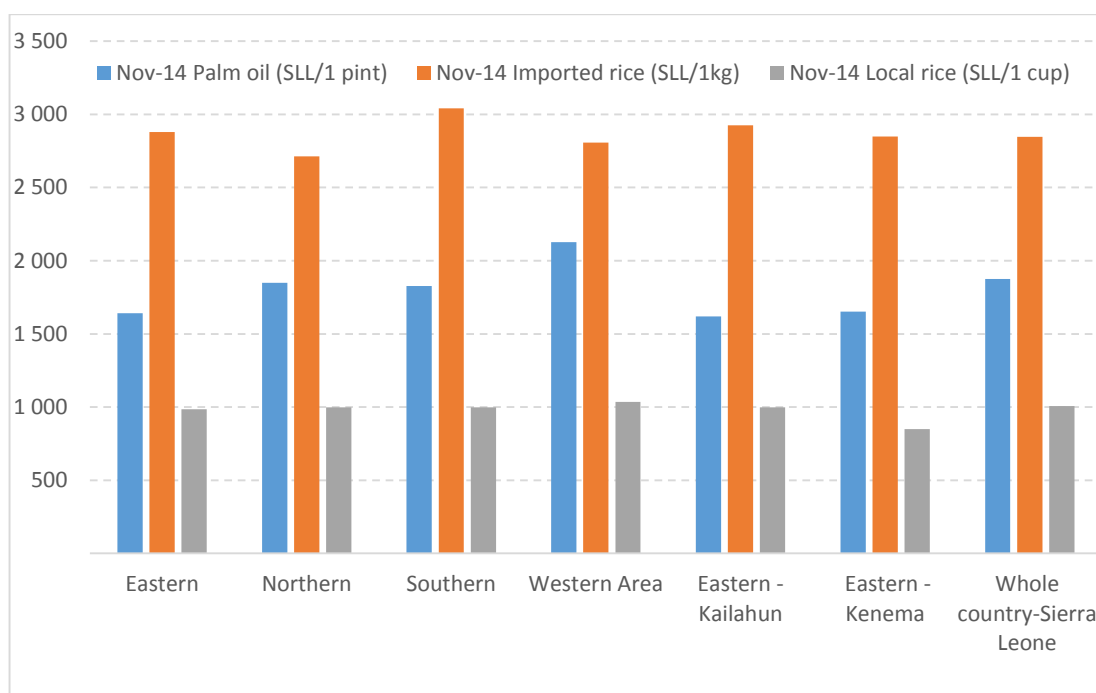
Figure 12: Prices of palm oil, imported and local rice in Sierra Leone (November 2014)
Source: *Authors based on data from WFP mVAM*

5.2. Markets

According to WFP and FEWSNET (WFP, 26 August 2014; FEWSNET, 3 November 2014), markets in **Guinea** appear to be functioning. However, media reports indicate that markets in Conakry are functioning at a reduced level due to supply issues. Food producers in Guinean regions face difficulties in transporting their produce to the markets in the Guinean capital city.

Rural weekly markets have been banned in **Sierra Leone and Liberia** in order to limit large gatherings of people. Urban daily markets, that usually involve a smaller number of people, are still open[10].

In **Liberia**, as of 13 October, around 60% of markets outside Monrovia had been closed or scaled down (UNMEER, 13 October 2014). The main market in Foya, a major market in the Lofa district, has been closed for six months now. Most of the other markets in the surrounding Lofa County were also ordered to stop trading in recent months (World Bank, 13 November 2014). According to Mercy Corps operating in Lofa and Nimba, there has been widespread compliance with the ban on

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[10] Daily markets are typically reserved for local trade from community members and people living nearby. These are largely viewed as retail markets. Weekly market days will occur in most of these locations. On market days, vendors and transporters arrive from outside the area to sell/purchase goods to/from local farmers and retailers. These markets days see higher levels of wholesale activity and are the main occasions on which trucks transport goods across the border.

weekly markets due to active enforcement of the rule by the police. A significant reduction in the number of vendors and transport trucks was observed in November 2014 (Mercy Corps, 4 November 2014). Markets still take place, but the scale is significantly reduced. As a result of reduced supply of imported food and food produced in other parts of the countries, trade and consumption of locally produced goods have slightly increased. In larger towns, slightly more daily markets are being held to compensate for the loss of business on market days. Despite these substitution effects, the overall activity has reduced. There is less access to food in quarantined areas due to the limited variety of food available and reduced market activities.

In **Sierra Leone**, market activities have been decreasing since the beginning of the outbreak as more districts are put under quarantine. In August and mid-September 2014, activities were reduced in the cordoned-off region[11] (Kailahun and Kenema at that time), whereas market and trade activities in other regions were fairly normal. The number of traders in domestic rice and palm oil in the cordoned-off region (Kailahun and Kenema) was down by about 40% (IGC, October 2014). In November 2014, the same survey indicated that markets and trade activities have fallen in all districts. The numbers of traders fell in all districts, with 69% less traders declared in Kailahun and Kenema and 29% less traders in Port Loko Moyamba and Kombali (IGC, November 2014). These data are particularly worrying since the start of the rice harvest is usually accompanied by a large increase in the number of traders.

Food price levels for final consumers are also directly influenced by the closure of market days (Mercy Corps, 4 November 2014). Because weekly market days function partly as wholesale markets, prices can be lower on these days. Food prices may thus have increased for households that usually buy at reduced prices from weekly markets.

The reduction in trade and market activities has reduced food access compared to a normal year in the three Ebola-affected countries. The variety of food available is more limited due to the scarcity of imported foods and foods produced in other parts of the country. In Guinea, food access has been negatively affected in Conakry. In Liberia and Sierra Leone, reduced food access is apparent in quarantined areas. Substitution effects are taking place. Households are consuming locally produced rather than imported foods. Informal trade activities are taking place outside the markets, and daily market activities have grown in response to the absence of weekly markets. A FEWSNET SMS-based trader survey carried out in Sierra

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[11] Cordoned-off regions are those areas that were put under quarantine by government. Kailahun and Kenema were cordoned off by the Guinean authorities at the beginning of the EVD outbreak in August. Port Loko Moyamba and Kombali were quarantined later, in early October.

Leone and Liberia indicates that, in mid-November, half of the traders reported that food availability was sufficient to meet the needs of local consumers (FEWSNET, 27 November 2014). However, FEWSNET does not provide the spatial distribution of the markets surveyed, nor the disaggregation of the results between the areas worst and least affected by the EVD outbreak. It is therefore difficult to assess the situation in areas worst affected by the Ebola outbreak. To conclude, in most places in the three Ebola-affected countries, there is expected to be minimally adequate access to food, at least during the harvesting months. Localized food access issues may happen in quarantined areas.

5.3. Household incomes

Movement restrictions due to official restrictions or people's fears of contamination are likely to severely disrupt market functioning and contribute to significantly reductions in household income (FEWSNET, 10 October 2014). Reduced incomes will limit household food access, even if food is still available at local markets. Both rural and urban households would experience significant declines in income from most sources (e.g. agricultural labour, petty trade, and the sale of forestry products, bush meat, and crops) due to the effects of a general economic slowdown and major market disruptions (FEWSNET, 10 October 2014).

In Sierra Leone, farmers sell most of their produce to traders who travel from farm to farm. An IGC survey carried out in October found that the number of traders had sharply fallen in quarantined areas (IGC, November 2014), which is likely to reduce farmers' sales and incomes. Rice is mainly kept for domestic consumption. According to the Agricultural Household Tracking Survey 2010 (AHTS 2010), 80% of farmers have no surplus to sell. However, cash crops (cocoa, coffee, vegetables) are still generating incomes in some areas.

There is evidence of a drop in wage rates in the **east of Sierra Leone** (WFP 10/2014 and Figure 14). Manual labour wages are stable from September to November 2014. However, the WFP mVAM surveys (mobile technology for remote food security surveys[12]) indicates negative changes in four out of seven regions of Sierra Leone. This is worrying because wage rates should increase at this time of the year due to the increased demand for agricultural workers to carry out the harvest. Wage rates are not increasing this year due to the lower demand for agricultural labour linked to fears of contamination. Rapid food security assessment surveys for Kailahun and Kenema, two districts of eastern Sierra Leone, indicate that casual

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[12] See http://vam.wfp.org/sites/mvam_monitoring/ for more details.

labour wage rates are much lower in those two districts than elsewhere in the country, which limits people's access to food.
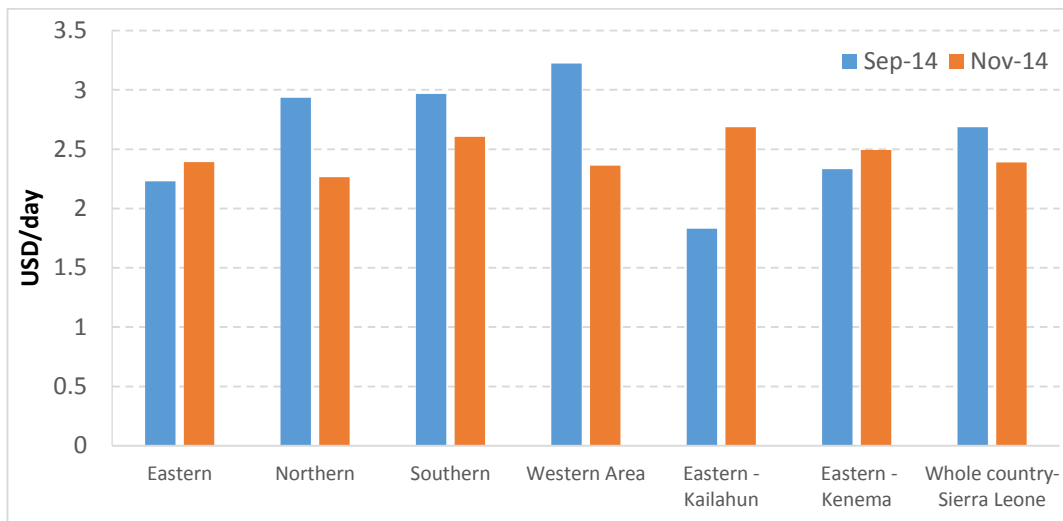

Figure 13: Changes in manual labour wages between September and November 2014 in Sierra Leone

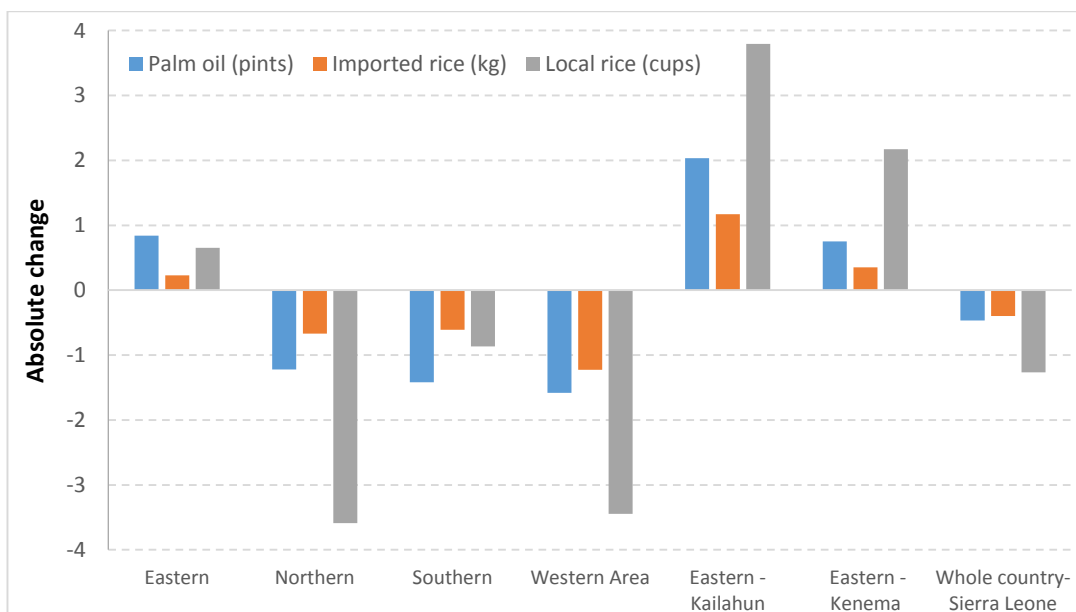Source: *Authors based on data from WFP mVAM*

Figure 148: Changes in terms of trade of manual labour wages for three selected products between September and November 2014 in Sierra Leone

Source: *Authors based on data from WFP mVAM*

In **Liberia**, wages from manual labour were stable during the period October-November 2014, except in the western region where wages for manual labour decreased (see Figure 19). The terms of trade between manual labour and basic food commodities decreased between October and November 2014. A sharp drop in the

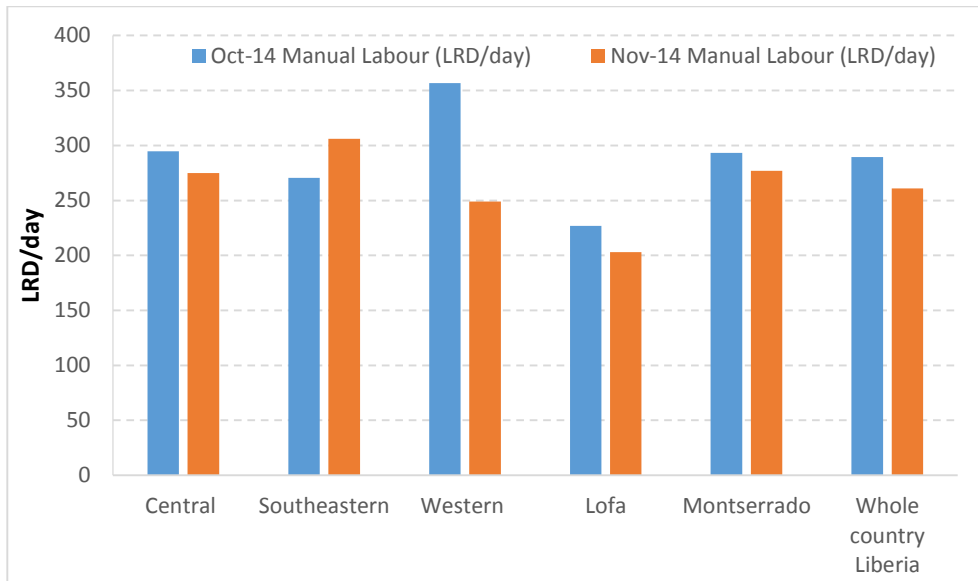terms of trade of manual labour to basic commodities is observed in the Western province (see Figure 20).

Figure 15: Manual labour wages in Liberia (October and November2014)
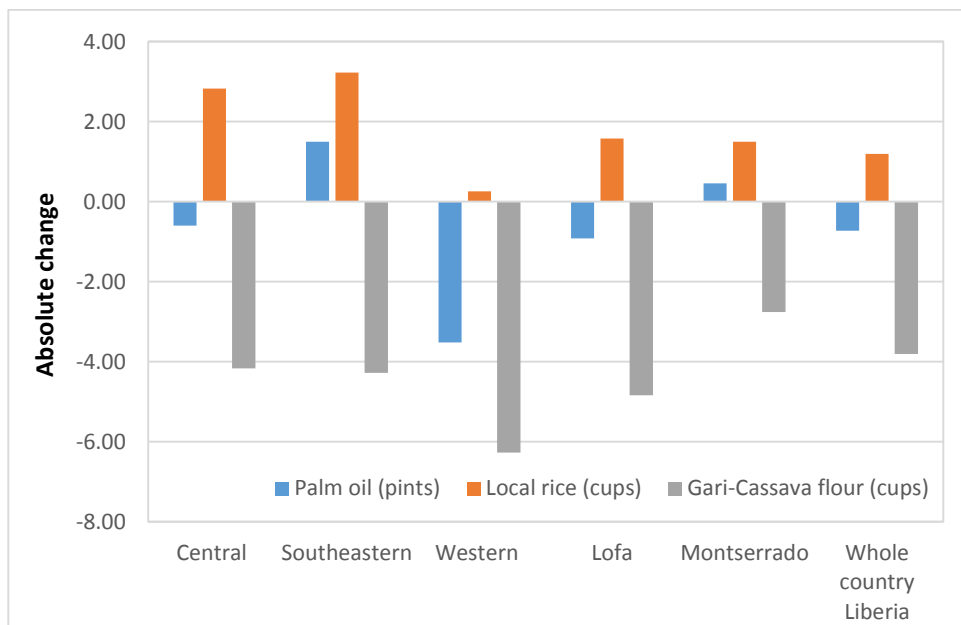Source: *Authors based on data from WFP mVAM*

Figure 20: Change in terms of trade between manual labour wages compared to selected commodities between October and November 2014 in Liberia
Source: *Authors based on data from WFP mVAM*

In **Guinea,** the reported drop in cash crop prices due to trade and export restrictions is likely to translate into reduced incomes for the sellers of cash crops. Terms of trade of manual labour wage versus maize, palm oil and imported rice are very low in Forest and Upper Guinea for. That means that people can buy less maize, palm oil and imported rice with their daily manual labour wages in those two regions

compared to the rest of country. We do not have data from other years to compare if wage rates and their spatial distribution are typical for this time of the year.

5.4. Synthesis

Physical food access is reduced because of movement restrictions and market closures. Prices for staple food are still normal for the season. This may be surprising considered food availability constraints mentioned in the above paragraph. The harvest may be sufficient to fill the current demand. In particular, food producers are likely to have normal and sufficient access to food until the end of 2014 since they will rely on their own harvest. Food access could become a problem in the beginning of 2015 when household food stocks will be depleted and food producers need to rely on markets for their food supply. Monitoring staple food prices in the coming months will be helpful. If price rise above normal levels, food access issues are expected. Food access is mainly challenged by household reduced purchasing power of households due to the general economic slowdown. There is also evidence of lower wage rates, specifically for agricultural work. This may have a negative impact on the incomes of agricultural wage workers, who are usually among most vulnerable. Cash crop prices may have fallen due to restrictions on movement and trade, but data are currently insufficient to confirm this. Falling cash crop prices are likely to lead to reduced incomes for the sellers of these crops.

6. Food utilisation

Obviously, food utilisation is inadequate for individuals affected by the disease. In addition, the presence of one or more members affected by the disease in a household is likely to disrupt the family organisation. Movement restrictions may also upset the normal functioning of scattered families. Inadequate care of the children and inadequate feeding practices are likely to result, especially if the caretaker has died.

According to CILSS (CILSS, 26 September 2014), the ban on bush products may degrade the quality of the diets of households, by decreasing the quantity of protein ingested. This can degrade the nutrition status of vulnerable people if not compensated by other sources of proteins. In Liberia and Sierra Leone, schools have been closed in quarantined areas, so school feeding programmes are no longer operating. That may degrade the quality of food consumption for children who were benefiting from these programmes. WFP surveys collecting information on coping strategies (see also section 7 below) indicate that in the areas worse affected by Ebola, people are reducing the quantity and quality of food consumed by reducing the number of meals and consuming less preferred foods (WFP, November 2014).

Concerns also arise about malnourished children not being treated anymore because of parents avoiding medical facilities due to fear of the disease (UNICEF, 3 November 2014).

Food utilisation is likely to deteriorate, especially for households directly affected by the virus and quarantined households in areas worst affected by the disease.

7. Overall assessment of household food security

Estimating the number of food insecure people is always challenging due to the multidimensional nature of food insecurity. We rely here on two food insecurity indicators collected by the WFP, namely the Food Consumption Score[13] (FCS) and the Coping Strategies Index[14] (CSI). In addition to the usual challenges linked to food-insecure population estimates, projections in the case of the EVD outbreak are especially delicate due to the limited knowledge on the future evolution of the numbers of Ebola cases.

The WFP developed a simple model to estimate the number of food-insecure people by multiplying the Food Consumption Score (FCS) for the baseline year 2010 for Liberia and Sierra Leone, and 2012 for Guinea, by infection rates at province level, market dependency, and livelihood zone (WFP, November 2014). According to their calculations:

- **1.7 million** people are **currently food insecure**, among which 200 000 are food-insecure because of Ebola,
- **2.3 million people** are expected to be **food insecure by March 2015**, with Ebola accounting for 750 000 additional food-insecure people, under the assumption that the disease continues to spread at the average rate observed in October 2014[15] (low scenario),
- **3 million** are expected to be **food insecure by March 2015**, among which 1.4 million due to Ebola, under the assumption that the disease spreads at the maximum rate observed in October 2014[15] (high scenario).

Figure 21 is a graphical representation of these figures. The grey bars correspond to the number of food-insecure people observed in the baseline year. The purple bars correspond to the additional number of food-insecure people due to the Ebola outbreak.

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[13] The Food Consumption Score (FCS) is a proxy indicator of food consumption. It is calculated as a weighted sum of frequency of consumption of 8 food groups. The weighting aims to represent the nutritional content of each food group. A poor FCS refers to a FCS less than 21 (without oil and sugar) or 28 (with oil and sugar). Borderline FCS refers to values between 21.5 and 35 (WFP, 2008).

[14] The Coping Strategies Index (CSI) is a proxy indicator of household food security that is widely used because it is simple to collect and interpret. It has shown a relatively good correlation with other measures of food insecurity.

[15] To be accurate, the assumption is that the disease continues to spread at the average rate observed in the previous 42 days before the WFP ran its simulation. Although the exact period is not mentioned, the report is dated November 2014.
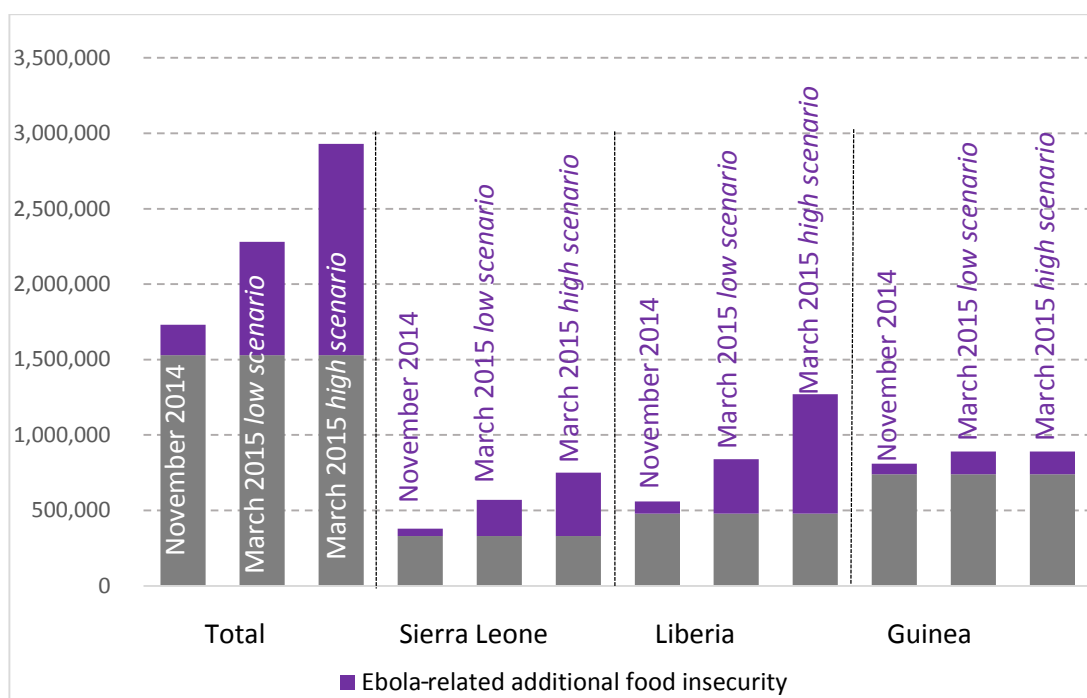
Figure 21: WFP estimates of the number of food-insecure people in the three Ebola-affected countries
Source: Authors based on data from WFP

Another way to assess the severity of a food security situation is to observe food-related coping strategies. If households engage in strategies that hinder their long-term income prospects for buying sufficient food, their food security situation deteriorates. The WFP has been collecting data on coping strategies via mobiles phones in October and November 2014 (see maps below). Information collected in the mVAM surveys can be used to calculate the reduced Coping Strategy Index (rCSI[16]).

The November 2014, values of the rCSI indicate severe food insecurity in Forest Guinea, especially in Nzerekore, as well as in Lofa (Liberia) and Conakry (Guinea). A very large proportion of the population in these areas is reported to have reduced their number of daily meals.

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[16] The reduced CSI was developed to compare food security across different contexts. It is a sub-set of the context-specific CSI, but is calculated using a specific set of behaviours with a universal set of severity weightings for each behaviour. Thus, the reduced CSI uses a standard set of five individual coping behaviours that can be employed anywhere and by any household (WFP, USAID, Care, Feinstein International Center, Tango, January 2008). The five standard coping strategies and their severity weightings are:
• eating less-preferred foods (1.0),
• borrowing food/money from friends and relatives (2.0),
• limiting portions at mealtime (1.0),
• limiting adult intake (3.0), and
• reducing the number of meals per day (1.0).

The absence of improvement of the rCSI in Guinea and Liberia between October and November 2014 indicates a serious situation. Harvests have started in all areas but have not led to the usual improvement household food security.

By contrast, rCSI levels dropped in Sierra Leone in November 2014 with the start of the rice harvest, even in areas worst affected by the virus. rCSI levels still remain high in Kailahun (Eastern Province).

As mentioned throughout the report, the Ebola outbreak is very likely to impact food security differently depending of the households' livelihood profiles and whether they are directly or indirectly impacted by the Ebola virus.

Households directly affected, with members that have died from or are infected by Ebola, are likely to have a food security problem. For rural producers, the loss of active members reduces food availability because agricultural field work and the harvest cannot be carried out. Moreover, for both rural and urban households, food access is limited due to reduced incomes as a result of the loss of working members. These households may also face difficulties in accessing food due to social stigma and/or quarantine measures. According to FEWSNET (FEWSNET, 8 October 2014), these households currently face an **IPC Phase 3** food security situation. This means that they face food consumption gaps, or, are marginally able to meet food needs due to accelerated depletion of livelihoods and assets (IPC, 2012). In the absence of humanitarian assistance, the food security situation of these households is expected to deteriorate to Phase 4 of the IPC scale between January and March 2015, which implies greatly increased large food consumption gap or extreme loss of livelihood assets (FEWSNET, 8 October 2014).

Market-dependent households in areas worst affected by Ebola, but not directly affected by the virus, are particularly vulnerable to market disruptions and prices increases. They probably face reduced income due to trade and movement restrictions which further jeopardises their access to food. According to FEWSNET (FEWSNET, 8 October 2014), these households can be classified under **IPC Phase 2** (food consumption gaps with acute malnutrition or accelerated depletion of assets required to meet food needs) **or IPC Phase 3** (large food consumption gaps, very high acute malnutrition or extreme loss of livelihood assets).

Agricultural households in areas worst affected by Ebola do not currently suffer from food insecurity since they can rely on their own production. The situation may deteriorate from March 2015 once stocks are depleted and these households have to rely on local markets. Stocks will last for less time than usual due to this year's below-average harvest (see section 0 p. 15.)

Households in areas not affected by Ebola are not currently facing significant changes in their food security situation compared to typical patterns at this time of

the year. However, their situation may deteriorate if movement and trade restrictions lead to limited food availability and market disruptions. Market-dependent households are more vulnerable to market-related shocks (markets disruptions and high prices). Agricultural households can expect to rely on their own food stocks until March 2015. However, all households may face a drop in incomes due the general economic slowdown, and may slip into IPC Phase 2 if the Ebola outbreak continues to progress.
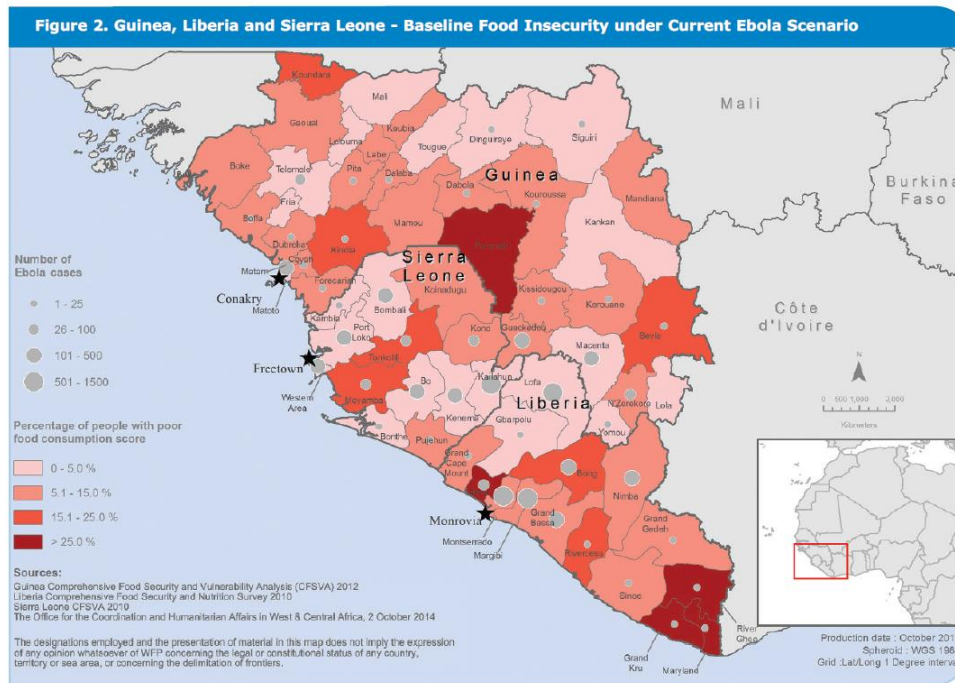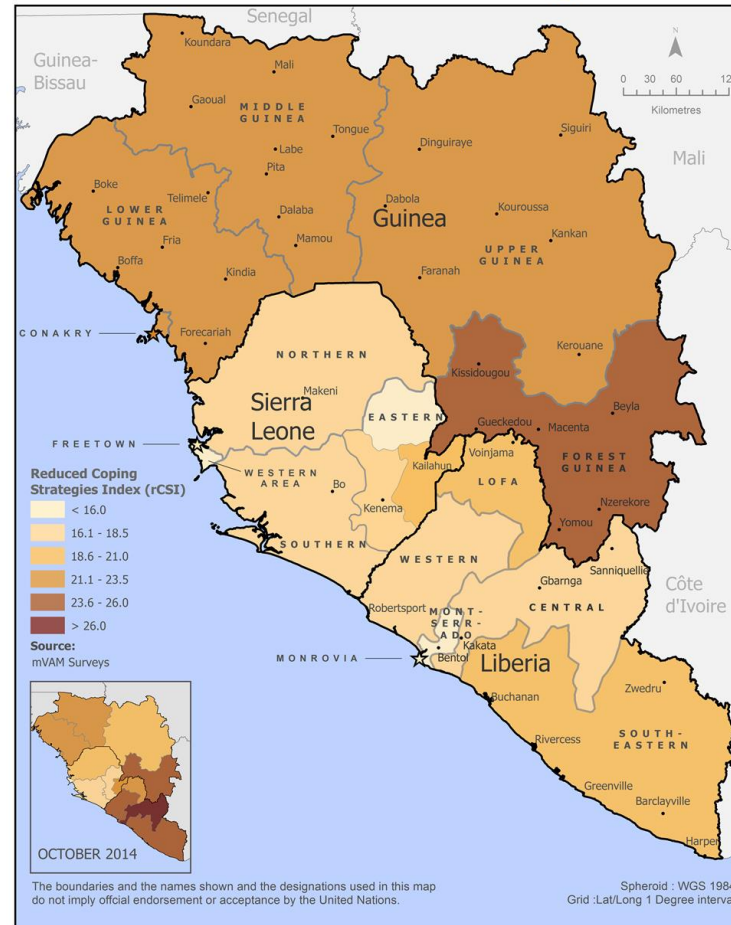
Figure 22: Food insecurity estimates by the WFP model (FCS) and WFP rCSI
Source: WFP

8. Information gaps and monitoring needs

As is typically the case in food security analysis, only partial data are available to assess the severity and extent of food insecurity in Ebola-affected countries. Moreover, due to the dynamics of the EVD outbreak, information becomes outdated very quickly, and regular field-based assessments are not being carried out.

In response to the need for information, rapid assessments have been organised to quickly gather information on crop production, animal production, food security outcomes and livelihoods in the affected areas (WFP, FAO, Guinea, 17 October 2014; FAO, 5 September 2014). The CILSS encourages and supports the assessment of food security in areas affected by the Ebola outbreak and its consequences (CILSS, 26 September 2014). These surveys mainly collect indicators of prices, coping strategies and food consumption for a limited number of households. The analysis of this data gives an indication of the situation. However, the lack of comparison to reference values and the lack of representativeness of the data reduce the confidence level of the analysis.

Moreover, the projection of the number of food-insecure people is characterised by an unusually high degree of uncertainty associated with the future epidemiological path of the EVD[17].

As it is becoming obvious that the consequences of the EVD outbreak will impact food security as well as the general economy of the Ebola-affected countries and neighbouring countries, the Assessment Capacities Project (ACAPS) has launched the Ebola Needs Analysis Project (ENAP) to develop a clear picture of the impact of Ebola. ENAP is a six-month project funded by the UK's Department for International Development (DFID). It will provide monthly analytical reports on humanitarian needs in those regions most affected by the EVD (ACAPS, 26 November 2014).

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[17] Until the beginning of December, FEWSNET estimated the exponential rate of increase in the number of Ebola cases to be 200 000 - 250 000 cumulated cases by January 2015 (FEWSNET, 8 October 2014), but have since updated their figures to 40 000 - 100 000 cumulative Ebola cases by January 2015. No methodology is providing for the computation of these figures. The WFP uses the historical spread at province level, using October data, and assume a reversal in the rate of infections by early January (WFP, November 2014). They assume a total of 46 500 to 95 000 cumulated Ebola cases by March 2015. Predictions of the number of cases, including those done by WHO, have been proved wrong (IRIN, 3 December 2014)

9. Conclusions

There are major gaps in the information available on the food security situation in countries affected by the EVD outbreak. From the evidence available, we can say that food security may deteriorate in the first quarter of 2015 in areas affected by the EVD outbreak if assistance is not scaled up.

A distinction of the different household groups is useful for targeting assistance. Households directly impacted by Ebola are likely to need direct food assistance, at least during the quarantine periods. For households that have lost income earners, short-term cash transfers may help access food. Vulnerable households with poor coping capacities will be the first impacted by reduced incomes and increased prices.

Market-dependent households in areas worst affected by Ebola, particularly those working in the casual labour sector, face food security issues. Food availability is limited in localised areas due to movement and trade restrictions. But the main impact of the EVD outbreak on food security is reduced access to food due to reduced incomes driven by the economic slowdown. Reduced incomes leading to reduced demand creates a vicious circle that needs to be reversed. Better transportation conditions would improve supply flows. Agricultural producers in areas worst affected by Ebola are currently facing minimal food insecurity. Their situation could deteriorate quickly in early 2015, when food stocks are used up and they have to rely on the market.

Income support interventions would help stimulate the local economy and prevent livelihood losses. Cash wages or voucher transfers would enable vulnerable households to gain short-term incomes. Of course, all groupings of people should be carefully managed by medical authorities to avoid the further spread of the disease. Heightened levels of food insecurity are likely to appear in early 2015, particularly if the virus continues to spread, restrictions of movement and trade are maintained, and no assistance is provided.

References

ACAPS. (26 November 2014). *Ebola Needs Analysis Project (ENAP): A new project to support humanitarian decisions in Ebola affected countries.* Retrieved from http://reliefweb.int/report/liberia/ebola-needs-analysis-project-enap-new-project-support-humanitarian-decisions-ebola

ACAPS. (26 November 2014). *Ebola Outbreak in West Africa.*

Action Contre la Faim. (03 September, 2014). *Ebola : Action contre la Faim craint une mise en danger de la sécurité alimentaire dans la région.* Retrieved from http://reliefweb.int/report/liberia/ebola-action-contre-la-faim-craint-une-mise-en-danger-de-la-s-curit-alimentaire-dans

AFP. (23 November 2014). *Ebola-hit Sierra leone's cocoa leaves bitter taste.* Retrieved from http://reliefweb.int/report/sierra-leone/ebola-hit-sierra-leones-late-cocoa-leaves-bitter-taste

Agence France Presse. (2 December 2014). *Sierra leone widens Ebola quanrantine.* Retrieved from http://reliefweb.int/report/sierra-leone/sierra-leone-widens-ebola-quarantine

AGP. (09 Octóber 2014). *Diplomatie/ Ouverture des frontières de la Côte d'Ivoire aux pays touchés par Ebola.*

CDC. (2014). *2014 West Africa Outbreak.* Retrieved from http://www.cdc.gov/vhf/ebola/index.html

CDC. (26 September 2014). *Estimating the future number of cases in the Ebola epidemic- Liberia and Sierra Leone, 2014-2015.* Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/su6303a1.htm?s_cid=su6303a1_w

Christian Aid. (21 October 2014). *West Africa: Hunger Threatans to Undermine Ebola Quarantine Measures.* Retrieved from http://reliefweb.int/report/sierra-leone/hunger-threatens-undermine-ebola-quarantine-measures-warns-christian-aid

CILSS. (26 September 2014). *Impacts de l'épidémie de fièvre hémorragique à virus Ebola sur la sécurité alimentaire.*

ECDC. (16 November 2014). *Ebola and Marburg fevers: Epidemiological situation, latest update.* Retrieved from http://www.ecdc.europa.eu/en/healthtopics/ebola_marburg_fevers/Pages/epidemiological-situation.aspx

ECDC. (24 October 2014). *Epidemiological update: outbreak of Ebola virus disease in West Africa.* Retrieved from http://www.ecdc.europa.eu/en/press/news/_layouts/forms/News_DispForm.aspx?List=8db7286c-fe2d-476c-9133-18ff4cb1b568&ID=1097

EDCC. (17 October 2014). Retrieved from http://www.ecdc.europa.eu/en/press/news/_layouts/forms/News_DispForm.aspx?List=8db7286c-fe2d-476c-9133-18ff4cb1b568&ID=1088

Euractiv. (25 November 2014). *Agriculture development chief: 'The crisis after Ebola will be a food shortage crisis'.* Retrieved from http://www.euractiv.com/sections/development-policy/agriculture-development-chief-crisis-after-ebola-will-be-food-shortage

Fan, S. (22 October 2014). *Preventing an Ebola Food crisis.* Retrieved from http://www.ifpri.org/blog/preventing-ebola-related-food-crisis

FAO. (2 October, 2014). *"Ebola Outbreak: impact on agriculture and food security in West Africa" , side event to the 24th Committee on Agriculture.* Retrieved from http://www.fao.org/fileadmin/user_upload/COAG/docs/COAG_Side_Event_Ebola.pdf

FAO. (5 September 2014). *Ebola Virus Disease - N°1.* Retrieved from http://www.fao.org/fileadmin/user_upload/emergencies/docs/FAO%20Brief%20EVD%20Ou break%20N1.pdf

FEWSNET. (10 October 2014). *Guinea, Liberia and Sierra leone Food Security Alert.*

FEWSNET. (27 November 2014). *Guinea, Liberia, Sierra Leone Special Report.* Retrieved from http://www.fews.net/ebola

FEWSNET. (3 November 2014). *Guinea, LIberia and Sierra Leone Special Report .*

FEWSNET. (8 october 2014). *Projected food security impacts of Ebola in Guinea, Liberia ans Sierra Leone.*

FEWSNET. (8 September 2014). *Guinea, Liberia and Sierra Leone Special Report.* Retrieved from http://www.fews.net/sites/default/files/documents/reports/Ebola_SR_2014_09_en_6.pdf

FEWSNET. (8 September 2014). *Guinea, Liberia and Sierra Leone Special Report.* Retrieved from http://www.fews.net/west-africa/special-report/september-8-2014

Guineenews. (29 August 2014). *Frontières Côte d'Ivoire-Guinée : vers l'ouverture d'un couloir humanitaire?* Retrieved from http://guineenews.org/frontieres-cote-divoire-guinee-vers-louverture-dun-couloir-humanitaire/

IFRC. (12 November 2014). *West Africa Ebola Outbreak.* Retrieved from http://reliefweb.int/sites/reliefweb.int/files/resources/map4-reliefweb.int_sites_reliefweb.int_files_resources_MDR_EbolaOU9_18.11.2014.pdf and http://reliefweb.int/sites/reliefweb.int/files/resources/map3-reliefweb.int_sites_reliefweb.int_files_resources

IGC. (November 2014). *The implications of the Ebola outbreak on markets, traders and food security in Sierra Leone.*

IGC. (October 2014). *The Economis Impact of Ebola - october 2014 Report.* Retrieved from http://www.theigc.org/news-item/the-economic-impact-of-ebola-october-2014-report/

International Buisiness Times. (03 September 2014). *Ebola's Expanding reach: Thai Rice Shipments Slowed by West Africa Outbreak.* Retrieved from http://www.ibtimes.com/ebolas-expanding-reach-thai-rice-shipments-slowed-west-africa-outbreak-1677548

IPC. (2012). *Technical manual V2.0.* Retrieved from http://www.ipcinfo.org/ipcinfo-detail-forms/ipcinfo-resource-detail0/en/c/162270/

IRIN. (3 December 2014). *Virus Ebola: Que réserve l'avenir.* Retrieved from http://www.irinnews.org/fr/report/100910/virus-ebola-que-r%C3%A9serve-l-avenir

Kababachir. (12 November 2014). *Ebola affecte les producteurs de pomme de terre.* Retrieved from http://www.kababachir.com/2014/11/12/ebola-affecte-les-producteurs-pomme-terre/

Le Vie Sénégalaise. (7 November 2014). *La CEDEAO rouvre toutes les frontières fermées à cause d'Ebola.* Retrieved from http://laviesenegalaise.net/la-cedeao-rouvre-toutes-les-frontieres-fermees-a-cause-debola/

Mercy Corps. (4 November 2014). *Economic Impact of the Ebola Crisis on Select Libeiran market.*

NBC News. (08 September 2014). *Liberian Soldiers Seal Slum to Halt Ebola.* Retrieved from http://www.nbcnews.com/storyline/ebola-virus-outbreak/liberian-soldiers-seal-slum-halt-ebola-n185046

New York Times. (3 November 2014,). *How the speed of response defines the Ebola Crisis.*

Reuters. (25 September 2014). *Sirra Leone quanrantines three more districts in fight against Ebola.* Retrieved from http://www.reuters.com/article/2014/09/25/us-health-ebola-leone-idUSKCN0HK0T920140925

Sci Dev net. (31 October 2014). *Ebola affected countries face new threat: food crisis.* Retrieved from http://www.scidev.net/asia-pacific/food-security/news/ebola-affected-countries-face-new-threat-food-crisis.html

The Economic Times. (15 November 2015). *Senegal partially reopens borders with worst-hit Ebola states.* Retrieved from http://articles.economictimes.indiatimes.com/2014-11-15/news/56115287_1_ebola-virus-guinea-senegal

The Economist. (10 December 2014). *Ebola in graphics. The toll of a tragedy.*

The Sunday News. (23 November 2014). *Ebola hits West Africa food security.* Retrieved from http://www.sundaynews.co.zw/ebola-hits-west-africa-food-security/

UNICEF. (3 November 2014). *Sierra Leone, 3 November 2014: Vaccinations another casualty of Ebola.* Retrieved from Sierra Leone, 3 November 2014: Vaccinations another casualty of Ebola

UNMEER. (13 October 2014). *External Situation Report.* Retrieved from http://www.un.org/ebolaresponse/pdf/Situation_Report-Ebola-13Oct14.pdf

USAID Office For Peace. (October 2014). *Liberia: The Role of Markets in Food Security, Pre-Ebola Crisis.*

WFP. (2007). *Libeira Market Review (LMR).*

WFP. (2008). *Food Consumption Analysis.* Retrieved from http://home.wfp.org/stellent/groups/public/documents/ena/wfp196627.pdf

WFP. (2010). *CFSVA Liberia.*

WFP. (2011). *The State of Food Security and Nutrition in Sierra Leone.*

WFP. (26 August 2014). *Special Bulletin: West and Central Africa- Market Update: Special Issue on the Ebola Outbreak.* Retrieved from https://www.wfp.org/content/west-and-central-africa-markets-update-special-issue-ebola-outbreak-august-2014

WFP. (29 September 2014). *West and Central Africa Markets Update.* Retrieved from http://documents.wfp.org/stellent/groups/public/documents/ena/wfp268458.pdf

WFP. (November 2014). *Guinea, Libeira and Sierra Leone: Food Insecurity remain high in spite of the harvest.*

WFP. (November 2014). *Special Focus Ebola: How can we estimate the impact of Ebola on food security in Guinea, Liberia and Sierra Leone.*

WFP, FAO, Governement of Liberia. (29 October 2014). *Joint Rapid Food Security Assessment-Liberia-Preliminary Results (Markets).*

WFP, FAO, Guinea. (17 October 2014). *The Ministry of Agriculture, FAO and WFP join forces to assess the impact of the Ebola virus disease outbreak on agriculture and food security.*

WFP, USAID, Care, Feinstein International Center, Tango. (January 2008). *Coping Strategies Index: Filed Method Manuel . Second Edition.* Retrieved from http://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf

WHO. (2014 -latest available situation report: December 10-). *Ebola Data and Statistics: Situation Summmary.* Retrieved from http://apps.who.int/gho/data/view.ebola-sitrep.ebola-summary-latest?lang=en

WHO. (22 October 2014). *WHO: Ebola Response Roadmap Situation Report -.*

World Bank. (13 November 2014). *Ebola: Food Markets Still Closed in Liberia's Bread Basket region.* Retrieved from http://www.wfp.org/stories/ebola-food-markets-still-closed-liberia-bread-basket-region

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