Risk Assessment

Liberia

Agricultural Risk Profile

What are the key findings?

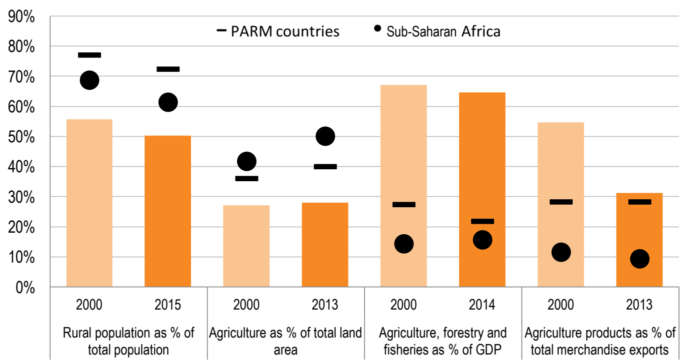
- The analysis suggests that output price risks are greater than production risks. Natural rubber prices drive this result.
- Floods and storm events are the most frequent natural disasters.
- Droughts are rare. The number of drier months is falling.
- The Ebola epidemic severely disrupted production, markets and income.
- Maize, cocoa beans and rice are the crops most affected by yield losses.
- Natural rubber, coffee and palm oil are most affected by output price risks.
- Political stability was improving before Ebola but remains relatively low.

What are agricultural risks?

Agricultural risks are uncertain events that cause farmers significant financial loss or other adverse outcomes. They are different from constraints, which are predictable and constant limitations. Risks can negatively affect rural employment and assets, increase food insecurity, and lead to inefficient private and public sector investment. The purpose of the profile is to provide a high-level quantitative analysis of selected risks. It uses a common methodology, drawing on easily available information. As annual national averages are used, local and seasonal variations cannot be observed. This may underestimate production risks as compared to output price risks. The scope of the analysis is also limited by the lack of output data for livestock products. For Liberia local price data was not available so export prices were used. A detailed country risk assessment requires a much fuller investigation

What role does agriculture play?

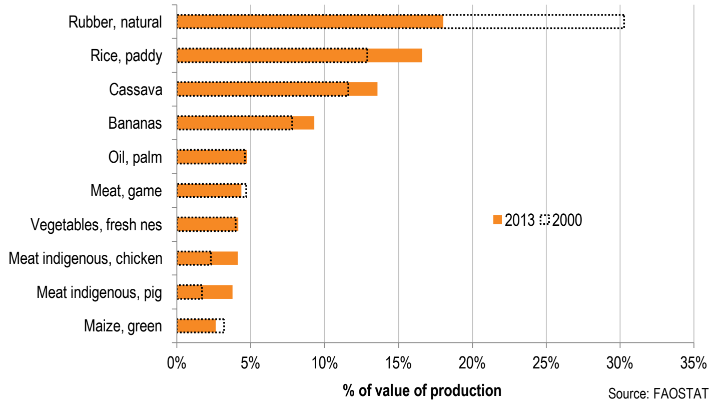
About half of the total population of 4.5 million is rural, less than the Sub-Saharan Africa and PARM countries averages. Despite occupying less than 30% of land area, agriculture accounts for two-thirds of GDP, well above the African average.



Source: FAOSTAT

What products are most important?

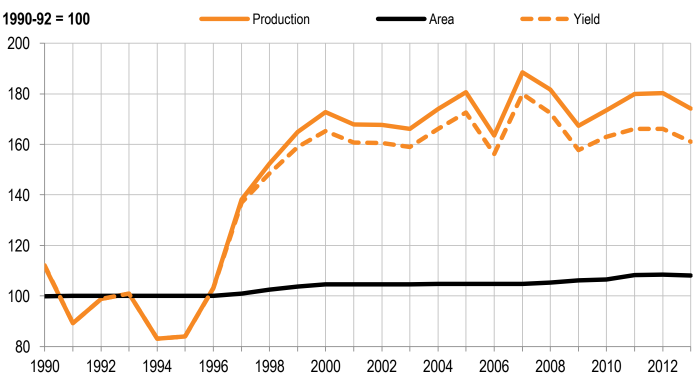
Rubber, rice and cassava are three more important products. The top ten products represent 81% of production in 2013, with all crops accounting for 85%. While the production of rubber has fallen, the output of most other commodities has been increasing.



Source: FAOSTAT

How has the sector grown?

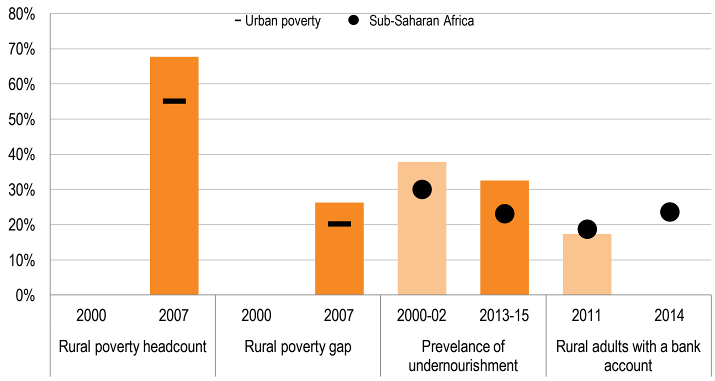
Between 1990 and 2013, agricultural output increased by 75%, with most of this occurring in the late 1990s. This is primarily due to rising yields, with just 8% more land in agriculture. Both crop and livestock output has risen at very similar rates (2.7% and 2.6% per annum).



Source: FAOSTAT

How vulnerable are people to risks?

Almost 70% of the rural population is living in poverty, with the poverty gap wider than in urban areas. While the prevalence of undernourishment has fallen it remains above the Sub-Saharan Africa average. Access to credit appears to be around average African levels.



Sources: World Bank and FAOSTAT

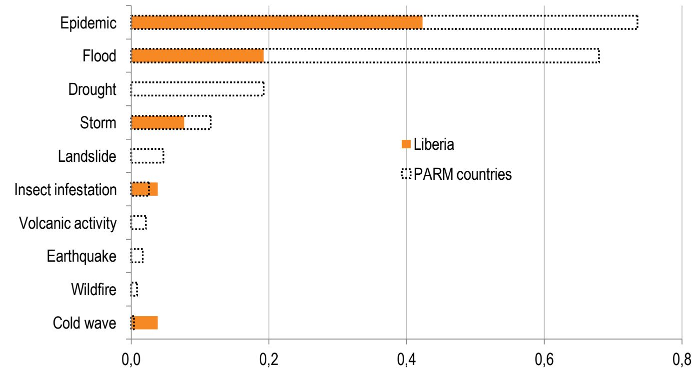
Production risks

What are production risks?

A large number of risks affect agricultural production. These include climate related events (such as droughts, floods and cyclones), outbreaks of pests and diseases, and damage caused by animals, windstorms or fire. The geographic and temporal spread of these impacts can vary significantly. Production risks are mostly associated with yield reductions but can also affect product quality

How often do major disasters occur?

In the period 1990-2015, epidemics were the most frequent disaster to affect Liberia. A major flood event occurs once every five years, and a storm disaster every decade. No droughts or volcanic activity events were recorded.



What is the likely impact of future climate change?

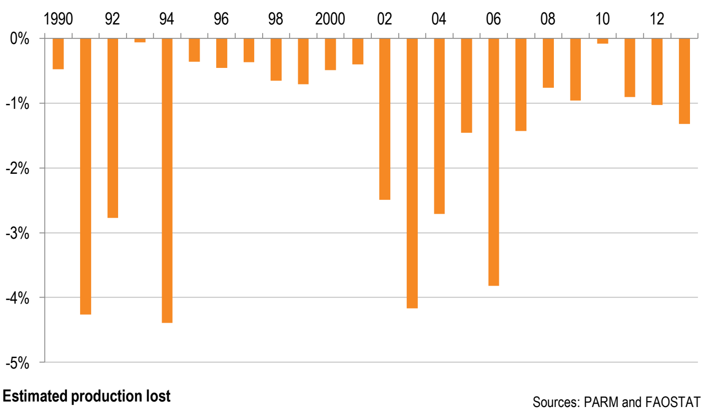
The IPCC 5th assessment report concludes that land temperatures over Africa are likely to rise faster than the global land average, particularly in the more arid regions. Tropical West Africa, including Liberia, is also identified as a hotspot, with possible temperature rises of between 3-6°C above the late 20th century baseline.

Projected rainfall change over most of sub-Saharan Africa, including West Africa, is uncertain due to complex topography. Further research is required.

Increasing temperatures and changes in precipitation are very likely to reduce cereal crop productivity, and could also adversely affect high-value perennial crops. Pest, weed, and disease pressure on crops and livestock is expected to increase.

Has the risk varied over time?

Totalling the annual value of production losses for the 12 crops provides an indicative production risk profile for the period. Production losses averaged 2%, ranging from 0-4%. The largest estimated losses occurred in early 1990s and early 2000s.



Sources: PARM and FAOSTAT

What animal diseases are present?

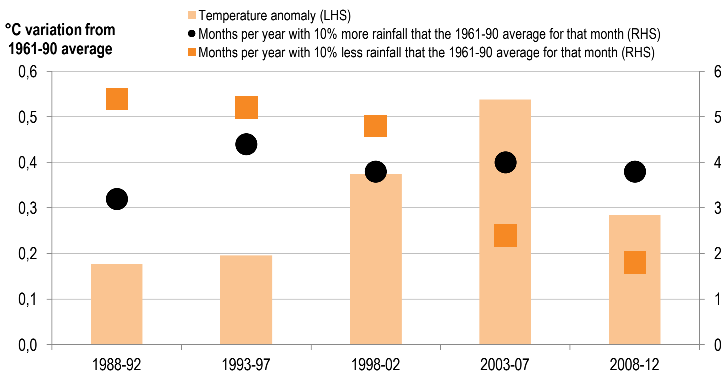
No information on livestock diseases is available for Liberia from the OIE database.

What has been the impact of Ebola?

Since the first reported outbreak in December 2013, the Ebola Virus Disease (EVD) has exacted a heavy toll in Liberia, along with neighboring Guinea and Sierra Leone. As of 13 April 2016, Liberia has reported over 10,600 cases of EVD, and over 4,800 deaths. In June 2016 the country was declared Ebola-free. The epidemic has impacted agriculture in many ways. The flight of rural workers and an inability to work in groups due to fear of infection caused a drop in crop production. Government imposed movement restrictions prevented goods reaching the market, leading to post-harvest losses for producers and higher prices for consumers. Further, the purchasing power of households fell due a large reduction in employment, income, foreign investment.

Are weather anomalies increasing?

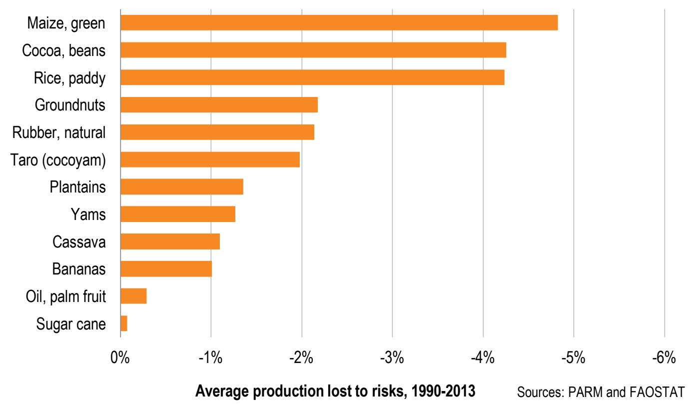
While temperature levels are higher than the 1961-1990 average, a notable fall in the average occurred in 2008-12. A downward trend in the number drier than average months is also observed.



Sources: PARM and World Bank Climate Change Knowledge Portal

Which crops appear most at risk?

Maize, cocoa beans and rice are the crops most affected by yield losses as estimated by the impact on production. Annual yield losses averaged over 4% of production for these crops during 1990-2013, with maize having an average loss of 10% every 2 years.



Sources: PARM and FAOSTAT

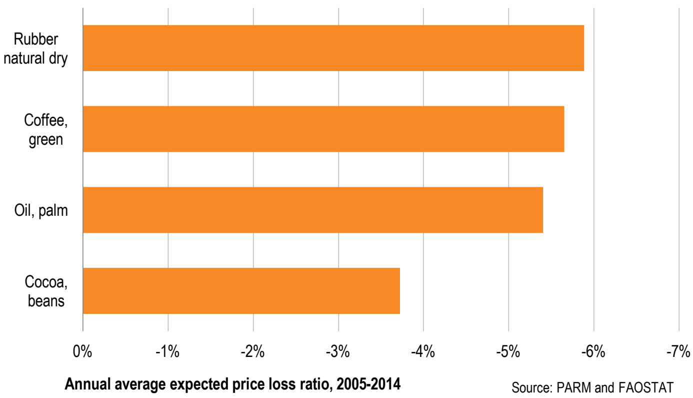
Market risks

What are market risks?

Market risks are issues that affect the price and availability of outputs and inputs. Commodity markets can have a high degree of volatility caused by changing local and global supply and demand. Producers are concerned about low prices (reducing their income); consumers are worried by high prices (raising their expenditure). Other market risks include exchange rate volatility, which can affect the price of outputs and inputs.

Which products appear most at risk?

Over the period 1999-2013, natural rubber, coffee and palm oil appear to be the commodities most affected by output price risks. These three products have an average annual price loss of greater than 5%, with an average loss of 15% every 2.5 years for rubber.



How are the product and temporal risks estimated in this profile?

Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.
To calculate product specific risk values, the average yield or price loss below the threshold level and the frequency of these occurrences are multiplied to obtain average production and price loss ratios. This is done for the 12 most important crop and livestock commodities for which data was available.
To calculate the risk profile over time, the individual loss for each respective year is added together across the crop commodities only

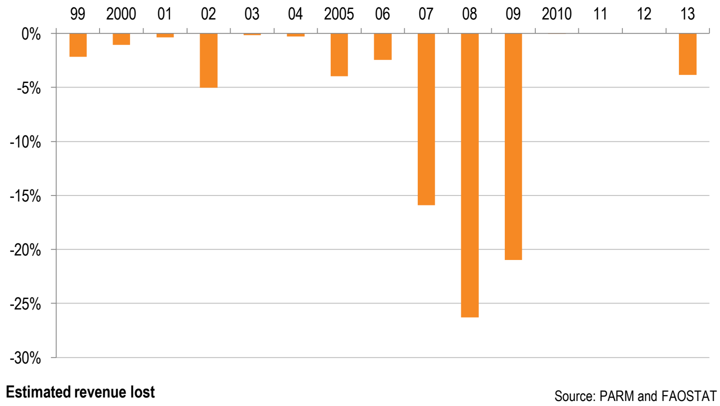
How variable are input prices?

Import data is not available for Liberia.

IMPORT DATA IS NOT AVAILABLE FOR LIBERIA.

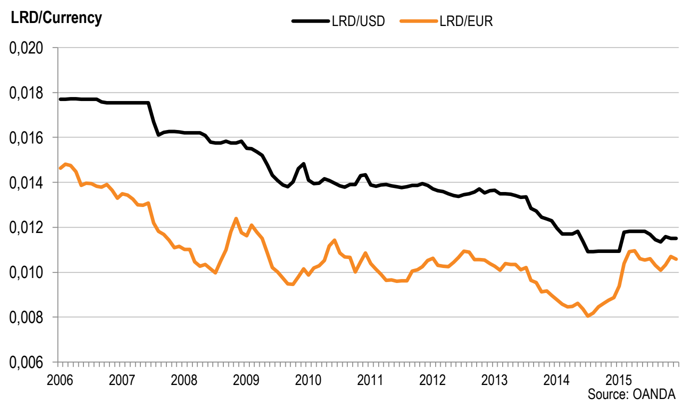
Has price risk changed over time?

Totalling the estimated revenue lost due to output price risks for the individual commodities provides an indicative market risk profile. The average annual loss is 6%, with losses over 20% in 2008 and 2009. This is driven by the profile for natural rubber.



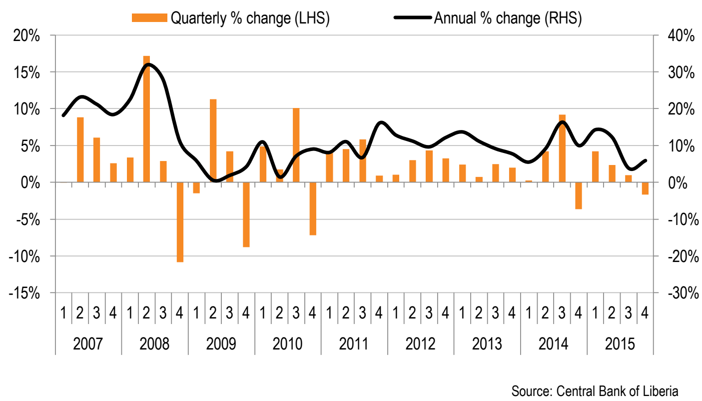
Is there an exchange rate risk?

Liberia has a dual currency regime, with the USD enjoying legal tender alongside the Liberian dollar (LRD). The vast majority of exports are to the United States and Europe. With the USD accounting for 90% of money supply, there is little exchange rate risk.



Do food prices vary for consumers?

Over 2007-15, the food component of the consumer price index recorded an average annual increase of 12%. The highest annual rate of 32% was recorded in June 2008. Prices have risen more slowly since 2010 and fluctuate less.



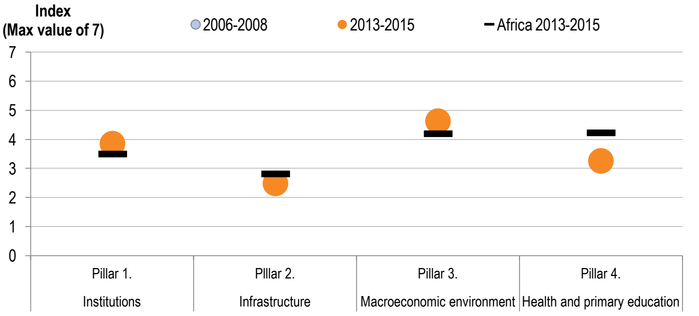
Macro level risks

What are macro level risks?

Macro level risks cover unexpected changes in the broader economic environment in which agriculture occurs. It can include changes in government or business regulations, fiscal and monetary policy settings, external trade restrictions, political instability, corruption, regional conflict and domestic unrest.

Are basic requirements in place?

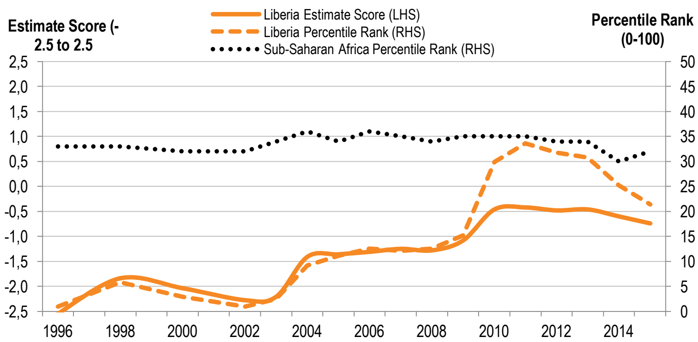
Index scores for the basic requirement pillars place Liberia above the African average for two pillars but below for two. While institutions and the macro-environment are move favourable, Liberia scores relatively poorly in health and primary education.



Source: World Economic Forum, Global Competitiveness Index

Is the political environment stable?

Liberia scores below the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking has improved markedly this century, rising from the bottom 1% in 2002 to 34% in 2011. Its ranking has slipped in the last few years.



Source: Worldwide Governance Indicators

Overall risk assessment

The PARM process

A detailed risk assessment is carried out as part of the PARM process, in partnership with NEPAD and the relevant African government. It is a rigorous consultation process involving a risk assessment report drafted by international and local experts, followed by a national validation workshop with the participation of stakeholders including farmers, private sector companies and government. Risks are identified at a detailed level, e.g. droughts, raids, etc.

A detailed risk assessment has yet to occur for Liberia. Consequently, the overall risk assessment is conducted at a higher level based on the analysis contained in this profile.

What are the main agricultural risks?

The analysis suggests that overall output price risks are greater than production risks. Both are relatively low compared to other PARM countries. The frequency of revenue losses associated with output price risks and their severity (both on average and in the worst-case scenario) are greater than for production risks.

RISK	VARIABLE	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST-CASE SCENARIO
PRODUCTION	RAW SCORE	0.29	-7%	-24%
	RISK LEVEL	HIGH	LOW	MEDIUM
OUTPUT PRICE	RAW SCORE	0.37	-14%	-29%
	RISK LEVEL	HIGH	LOW	MEDIUM

What are the linkages between risks?

Managing risks in agriculture is particularly challenging, as many risks are highly correlated, resulting in whole communities being affected at the same time. Impacts on yield that are widespread and have a significant impact on total market supply can have profound effects on market prices. In Liberia, an epidemic such as Ebola is a clear example of one risk that can trigger others, reducing crop output because of labour shortages (production risks), and further inflating prices because of government imposed travel bans (market risks).

What is PARM? The Platform for Agricultural Risk Management (PARM), an outcome of the G8 and G20 discussions on food security and agricultural growth, is a four-year multi-donor partnership between developing nations and development partners to make risk management an integral part of policy planning and implementation in the agricultural sector. PARM operates a process to achieve this through risk assessment, policy dialogue, tools assessment and capacity development.

PARM Secretariat International Fund for Agricultural Development (IFAD)

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