



Risk Assessment

# Uganda

## Agricultural Risk Profile



### What are the key findings?

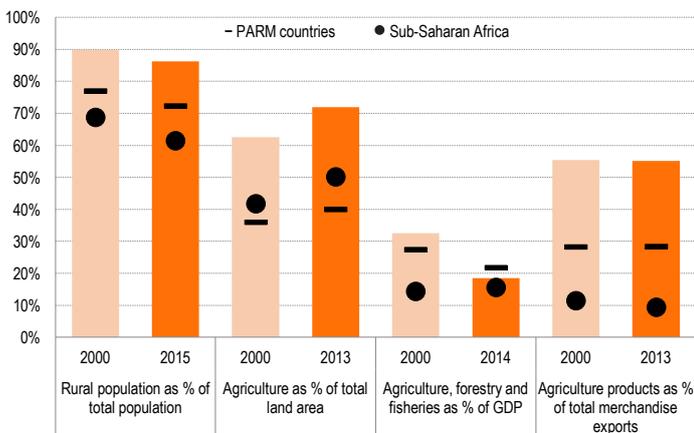
- ▶ Crop pests and diseases, output prices and postharvest losses are identified as the three greatest agricultural risks.
- ▶ Many livestock diseases are endemic, and along with droughts and counterfeit inputs are also high-level risks for Uganda.
- ▶ Temperature levels are rising fast.
- ▶ Cassava and beans are the two crops most affected by yield losses.
- ▶ Maize, millet and sorghum are most affected by output price risks.
- ▶ The price of imported inputs appears a risk, along with a depreciating currency.
- ▶ Political stability is low but improving.

### 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 price and output data for livestock products. For Uganda, price data was available only for 2001-13 and for a small number of crops. The results of a detailed risk assessment are incorporated into the profile.

### What role does agriculture play?

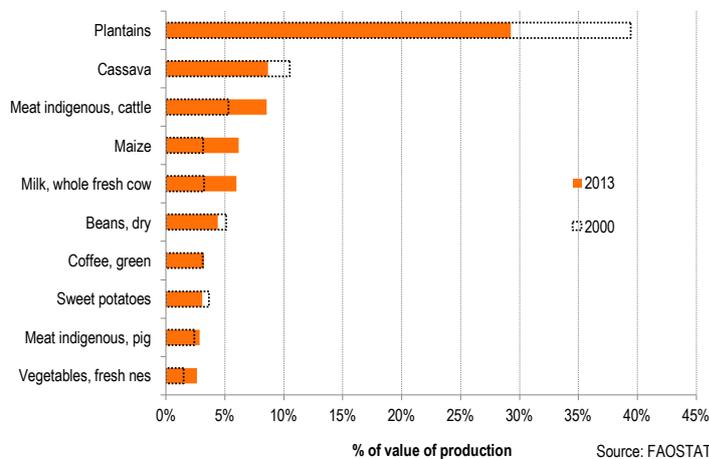
Agriculture is relatively more important than in most other African countries. About 86% of the total population of 19 million is rural, over 70% of the land area is used for agriculture, and agriculture contributes over 50% of merchandise export earnings.



Source: FAOSTAT

### What products are most important?

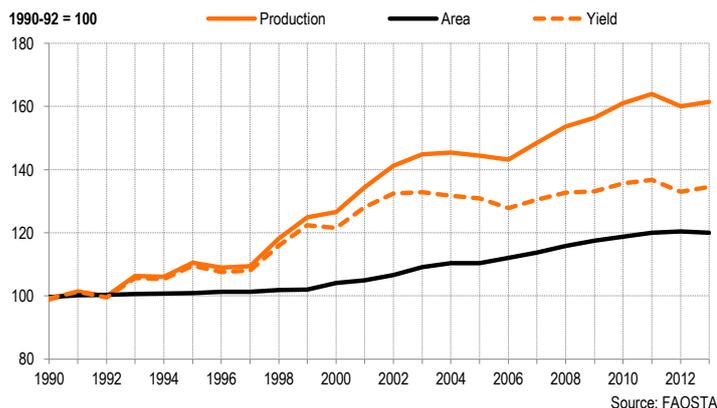
Plantains are by far the most important product, although their relative importance is decreasing. The top ten products represent 75% of production in 2013, with all crops accounting for 78%. Cattle meat, maize and milk production show the largest increases.



Source: FAOSTAT

### How has the sector grown?

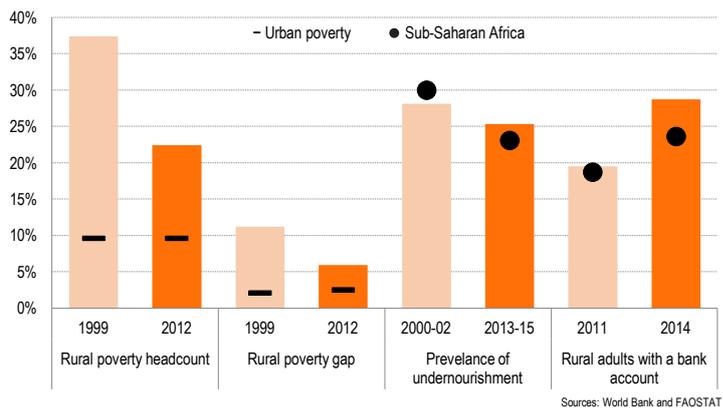
Agricultural output increased by 60% between 1990 and 2013, a 2.2% annual growth rate. This has been driven by both an expansion in yields (1.4% per annum) and in land area (0.8%). Livestock production has risen faster than crop output.



Source: FAOSTAT

### How vulnerable are people to risks?

Both the number of rural people living in, and the level of, poverty has fallen dramatically. The prevalence of undernourishment has also fallen but 25% of the population remain undernourished. Access to credit has grown faster than in other African countries.



Sources: World Bank and FAOSTAT

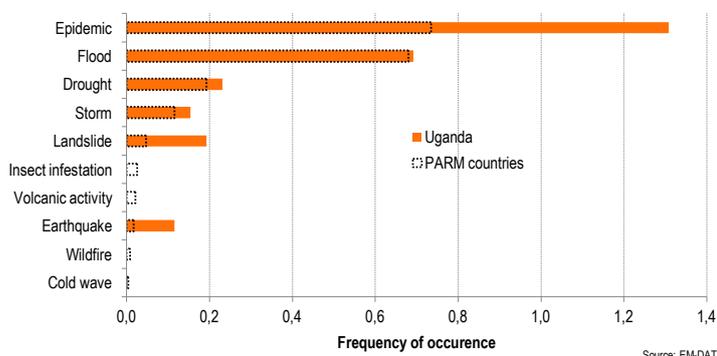
# Production risks

## 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.

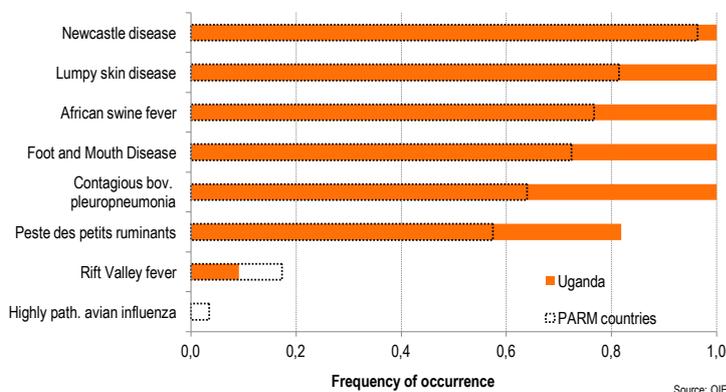
## How often do major disasters occur?

In the period 1990-2015, epidemics were the most frequent disaster to affect Uganda. A major flood event occurs about every 18 months. Droughts, storms and landslide events occur every 5 years or so. Uganda also suffers the occasional earthquake.



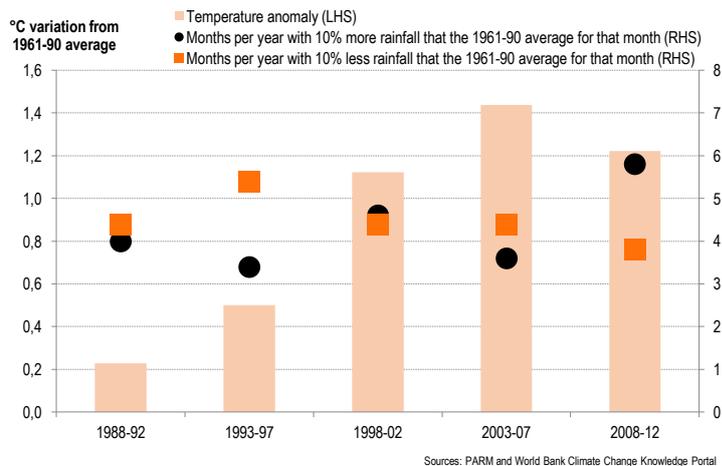
## What animal diseases are present?

Of the eight animal diseases analysed over the period 2005-2015, five could be considered endemic. A sixth, Peste des petits ruminants, has been present every year since 2007. Only Highly pathogenic avian influenza has never been reported.



## Are weather anomalies increasing?

Temperature levels are rising. The 2008-12 average was 1.2°C warmer than the 1961-1990 average despite falling. Changes in rainfall patterns are harder to identify. The number of wetter than average months was greater than drier months in 2008-12.

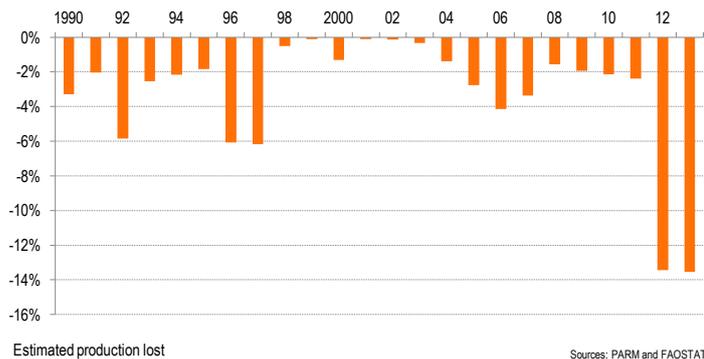


## What is the likely impact of future climate change?

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. Mean average temperatures are likely to be 2°C higher than experienced in the late 20th century. Projected rainfall change over most of sub-Saharan Africa is uncertain due to complete topography and more research is required. Some models predict a wetter core rainfall season in Uganda while others suggest drying over most parts of the country. 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.

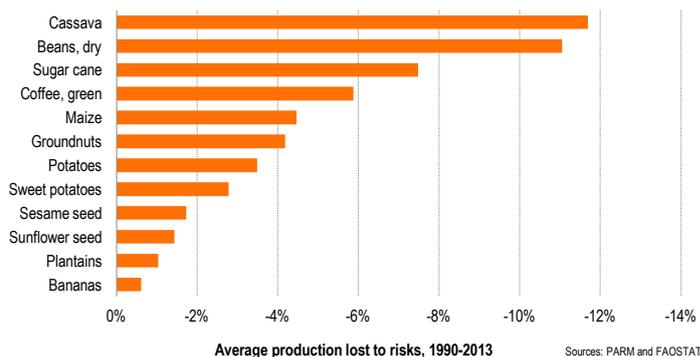
## Has the risk varied over time?

Totalling the annual value of production losses for the 12 crops provides an indicative production risk profile for the period. Production losses averaged 4%, ranging from 0-13%. The largest loss occurred in 2012 and 2013, primarily due to yield losses for cassava.



## Which crops appear most at risk?

Cassava and beans are the two crops most affected by yield losses as estimated by the impact on production. Annual yield losses averaged over 10% of production for both crops (average losses of 47% once every four years for cassava and 27% every 2.5 years for beans).





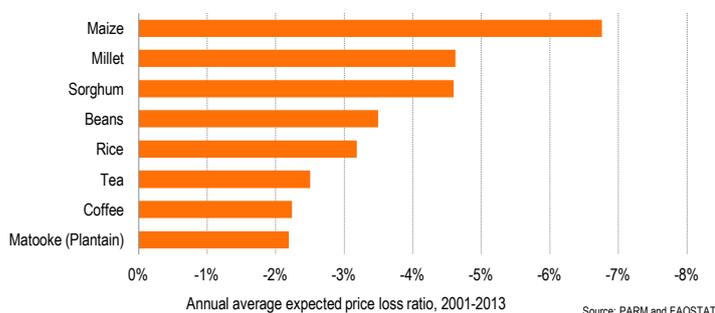
# Market risks

## 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, and the purchase of “fake” inputs such as seeds.

## Which products appear most at risk?

Over the period 2001-2013, maize, millet and sorghum appear to be the commodities most affected by output price risks. These products have an annual average price loss of greater than 4%.



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

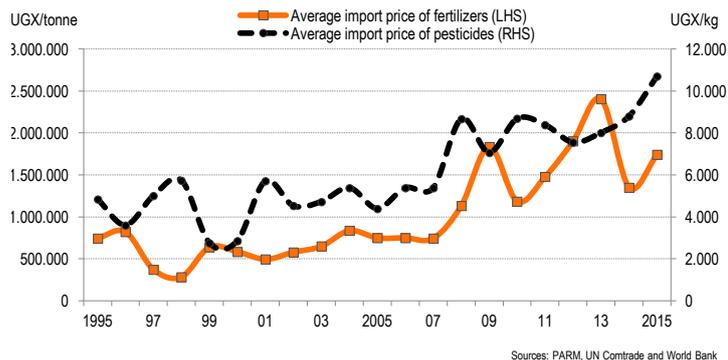
Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.

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 are added together across the crop commodities only.

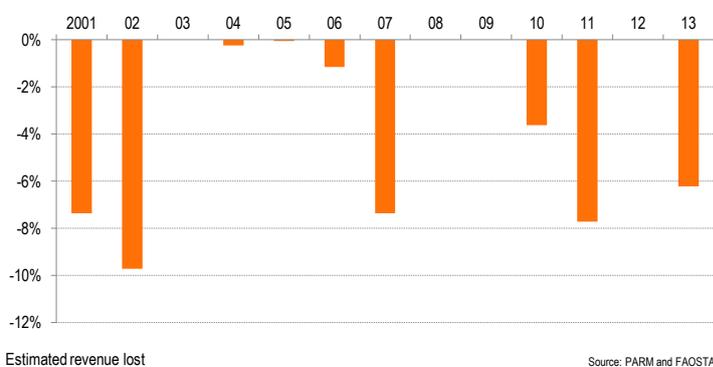
## How variable are input prices?

Variations in annual average import prices suggest farmers face input price risks. Since 1995 import prices have risen by 15% or more at least once every two years for fertilisers, and once every three years for pesticides.



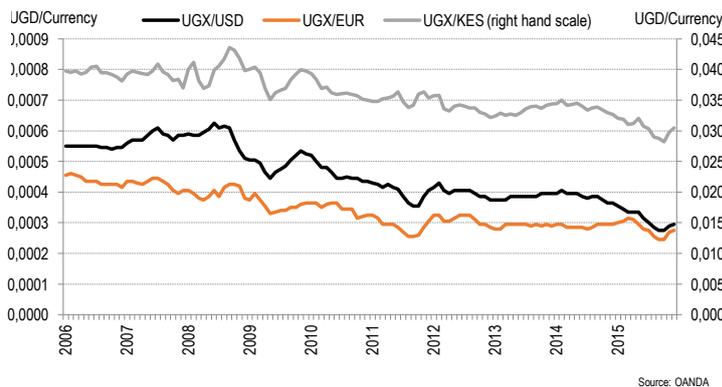
## Has price risk changed over time?

Totalling the estimated revenue lost due to output price risks for the individual commodities provides an indicative market risk profile. The average annual revenue loss is 3%, with a maximum loss of almost 10% in 2002. No trend over time can be observed.



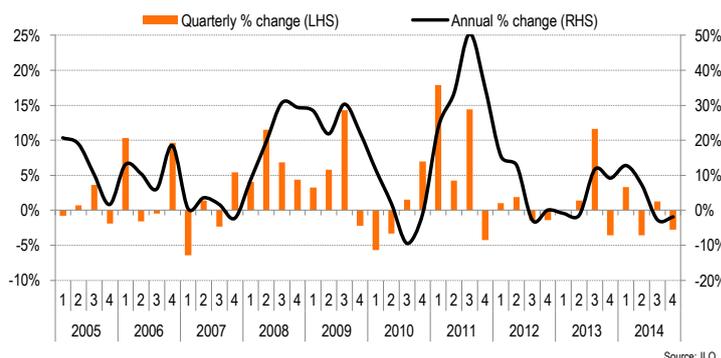
## Is there an exchange rate risk?

Over the past decade the Ugandan shilling (UGX) has depreciated against the USD, Euro and the Kenyan shilling, it's main African export market. As it has become weaker, the effect of variation has become larger.



## Do food prices vary for consumers?

Over 2005-14, the food component of the consumer price index recorded an average annual increase of 13%. The highest annual rate of 50% was recorded in September 2011. Prices have risen more slowly since 2010 but fluctuate more.



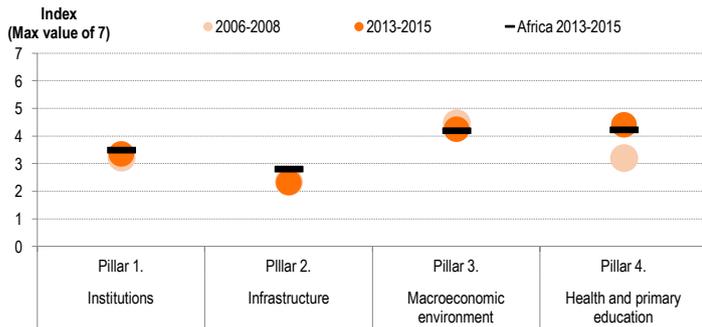
# Macro level risks

## 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?

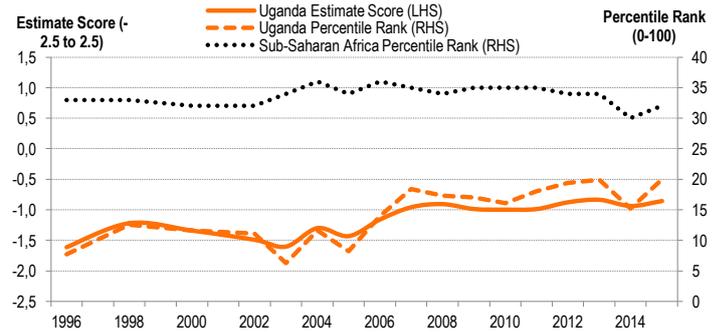
Index scores for the basic requirement pillars place Uganda close to the African average for three pillars, falling it below it for infrastructure. The index score for health and primary education has lifted notably over the past ten years.



Source: World Economic Forum, Global Competitiveness Index

### Is the political environment stable?

Uganda scores below the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking has shown a steady improvement since 2003, rising from a percentile ranking of 6 to 20, and bringing it closer to the African average.



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.

In Uganda, a national stakeholders risk assessment validation workshop was held in June 2015. The workshop identified three very high-level risks in Uganda: crop pests and diseases, output prices and postharvest losses. Other identified high-level risks were livestock pests and diseases, droughts and counterfeit inputs.

## What are the main agricultural risks?

RISK	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST CASE SCENARIO
CROP PESTS AND DISEASES	● VERY HIGH	● VERY HIGH	● VERY HIGH
OUTPUT PRICE RISKS	● VERY HIGH	● VERY HIGH	● HIGH
POSTHARVEST LOSSES	● VERY HIGH	● HIGH	● HIGH
LIVESTOCK PESTS AND DISEASES	● MEDIUM	● VERY HIGH	● MEDIUM
DROUGHTS	● MEDIUM	● MEDIUM	● VERY HIGH
COUNTERFEIT INPUTS	● LOW	● VERY HIGH	● LOW
KARAMOJA CATTLE RAIDS	● VERY LOW	● HIGH	● VERY LOW
FLOODS	● VERY LOW	● HIGH	● VERY LOW
HAILSTORMS	● VERY LOW	● HIGH	● VERY LOW
THUNDERSTORMS	● VERY LOW	● HIGH	● VERY LOW
ALL OTHER NATURAL RISKS	● VERY LOW	● HIGH	● VERY LOW
NORTHERN UGANDA INSURGENCY	● VERY LOW	● VERY 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. Drought is a clear example of one risk that can trigger others, aggravating some pests and diseases (additional production risks), leading to spikes in food prices (market risks) and even stimulating conflicts over water and pasture (macro level 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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