



Risk Assessment

Niger

Agricultural Risk Profile



What are the key findings?

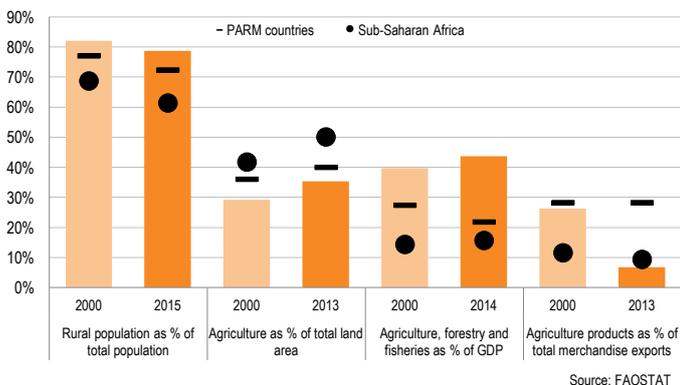
- ▶ The analysis suggests that production risks are greater than output price risks, in both frequency and severity.
- ▶ Temperature is rising and the number of wetter months is increasing.
- ▶ The weather is very dry and reductions in rainfall significantly affect production.
- ▶ Sesame seed, tomatoes, rice and potatoes are the crops most affected by yield losses.
- ▶ Vegetables, sesame seed and rice are most affected by output price risks.
- ▶ Input price risks could be significant.
- ▶ Political stability has deteriorated markedly since 2000.

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 and local price data for livestock products. In addition, World Competitiveness Index data is not available for Niger. A detailed country risk assessment requires a much fuller investigation.

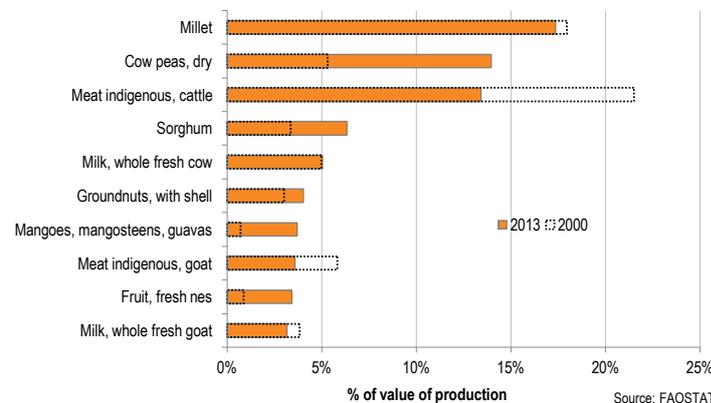
What role does agriculture play?

About 80% of the total population of 20 million is rural, higher than the Sub-Saharan Africa and PARM countries averages. Although occupying a smaller share of land and contributing less to exports than the African average, it makes a large contribution to GDP.



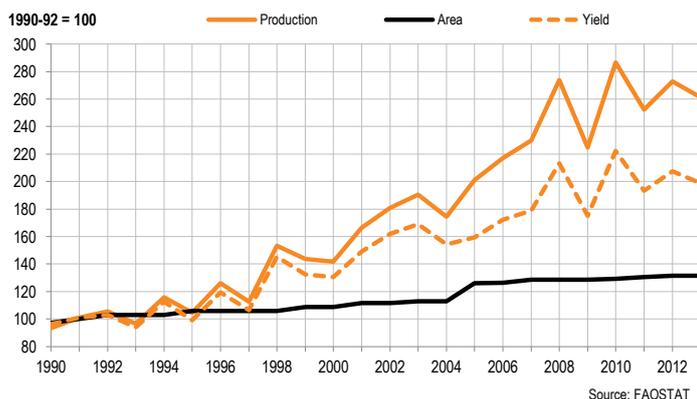
What products are most important?

Millet, cow peas and cattle meat are the three most important products. The top ten products represent 74% of production in 2013, with all crops accounting for 64%. Crops are becoming relatively more important than livestock output, particularly cattle meat.



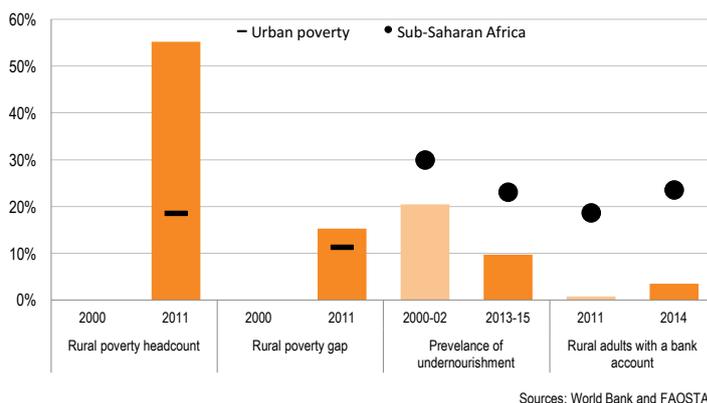
How has the sector grown?

Between 1990 and 2013, agricultural output increased by 160%. This is due to both rising yields and an increase in total land area. Large annual variations in average yields are observed. Crop output has risen twice as fast as livestock (8% and 4% annual rates).



How vulnerable are people to risks?

Over 55% of the rural population live in poverty, compared to just 20% in urban areas, although the average poverty gap is fairly similar. The prevalence of undernourishment has fallen and is relatively low. The portion with bank accounts is also very low.



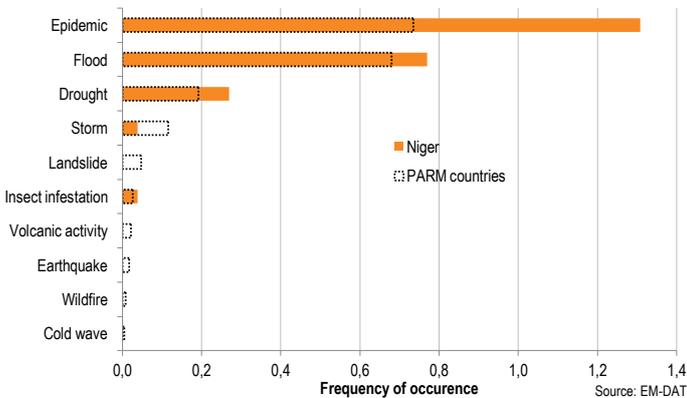
Production risks

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 Niger. A major flood event occurs almost annually, about four times more frequent than a drought. A major storm event and an insect infestation disaster were recorded.

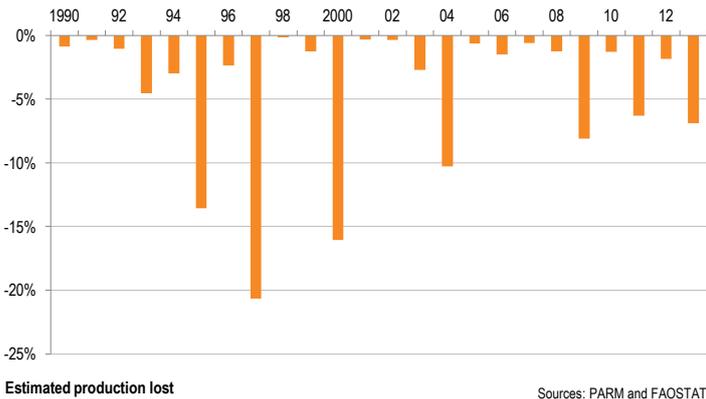


What is the likely impact of future climate change?

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 Niger, 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?

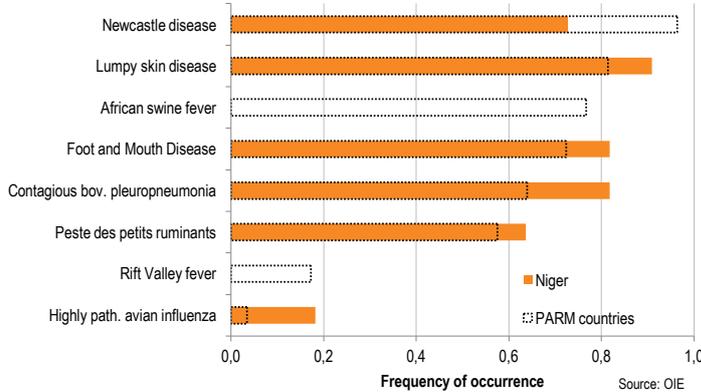
Totalling the annual value of production losses for the 12 crops provides an indicative production risk profile for the period. Annual production losses averaged 6%, ranging from 0-21%. Yield losses greater than the average occur about once every three years.



Sources: PARM and FAOSTAT

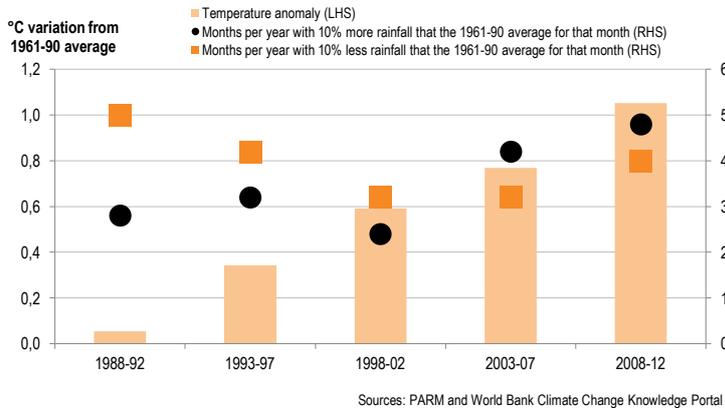
What animal diseases are present?

Of the eight animal diseases analysed over the period 2005-2015, none could be considered endemic. Two have never been reported or recorded as absent. The presence of the other six has been reducing over time, becoming absent or limited to a locality.



Are weather anomalies increasing?

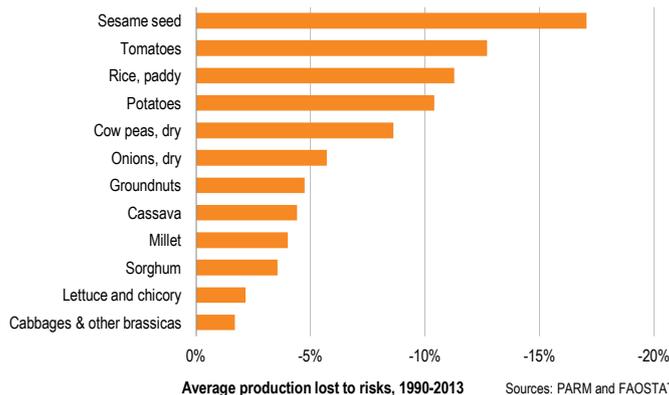
Temperature levels are rising, with the 2008-12 average 1°C warmer than the 1961-1990 average. There is no clear change in rainfall patterns although a rise in the number of wetter than average months is observed.



Sources: PARM and World Bank Climate Change Knowledge Portal

Which crops appear most at risk?

Sesame seed, tomatoes, rice and potatoes are the crops most affected by yield losses as estimated by the impact on production. For these crops annual yield losses averaged over 10% of production, with an average loss of 30% every 2-3 years for tomatoes.



Sources: PARM and FAOSTAT



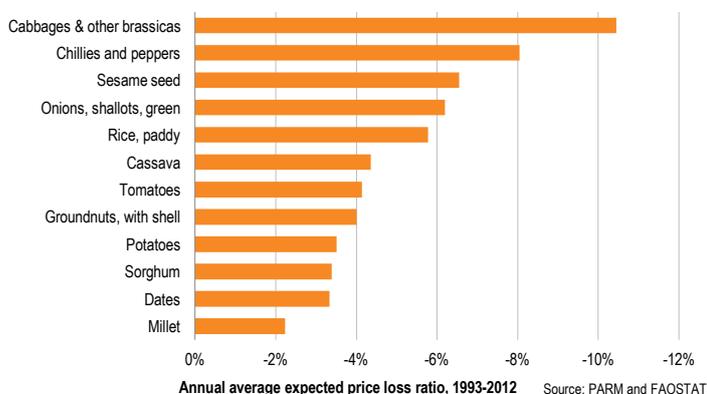
Market risks

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 1993-2012, certain vegetable crops, sesame seed and rice appear to be most affected by output price risks. These products have an average annual price loss of greater than 5%, with an average loss of 40% once every 4 years for cabbages.



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

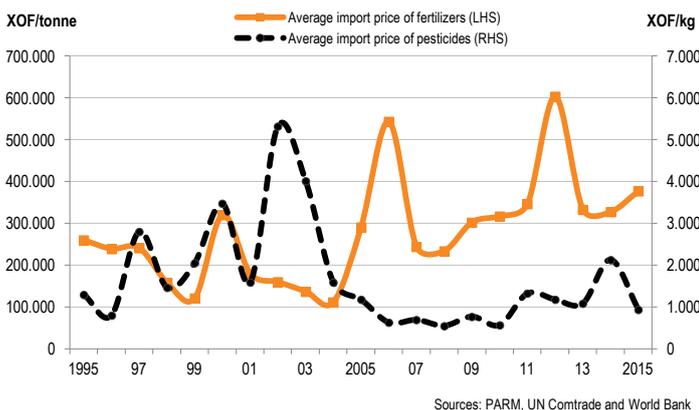
Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.

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.

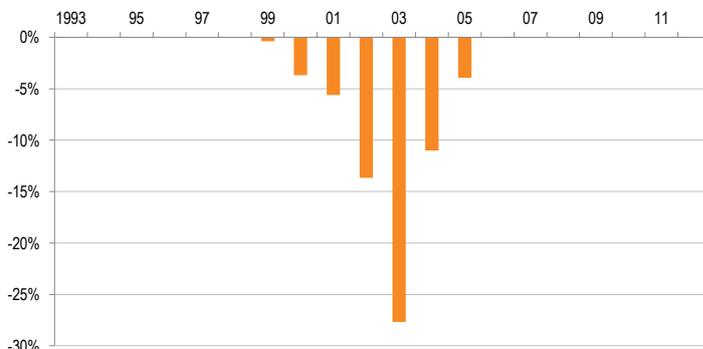
How variable are input prices?

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 three years for both fertilisers and pesticides. Prices have more than doubled on a number of occasions.



Has price risk changed over time?

Totalling the estimated revenue lost due to output price risk for crop commodities provides an indicative market risk profile for the period. The average annual loss is 3%. A revenue loss in 2003 is estimated for all 12 crops due to higher output and lower prices.

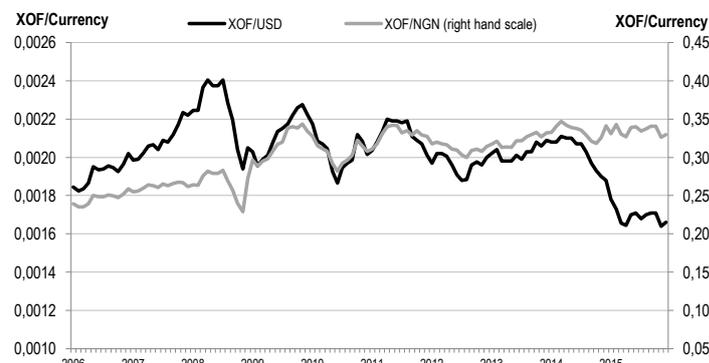


Estimated revenue lost

Source: PARM and FAOSTAT

Is there an exchange rate risk?

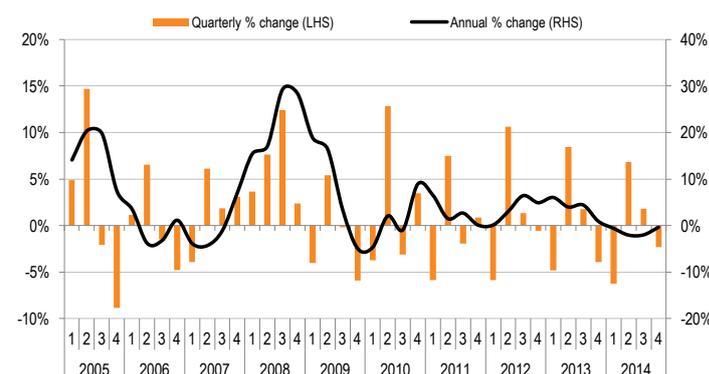
Niger's currency, the West African Franc (XOF), is pegged at a fix rate to the Euro. Against the USD, the XAF has fluctuated within a narrow range since 2006. However, the XOF has appreciated against the Nigerian naira, an important animal export market.



Source: OANDA

Do food prices vary for consumers?

Over 2005-14, the food component of the consumer price index recorded an average annual increase of 6%. The highest annual rate of 30% was recorded in September 2008. Prices have risen more slowly since 2010 but fluctuate more.



Source: ILO

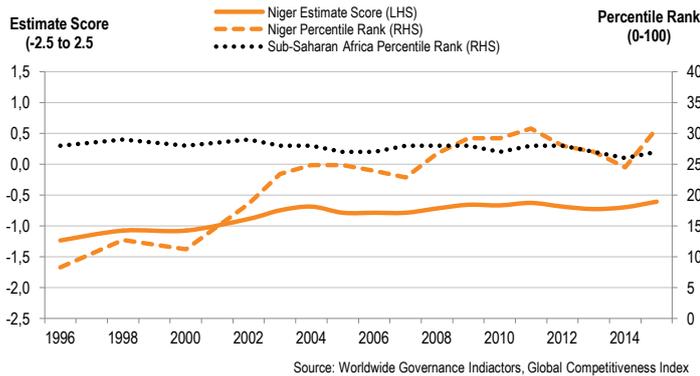
Macro level risks

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.

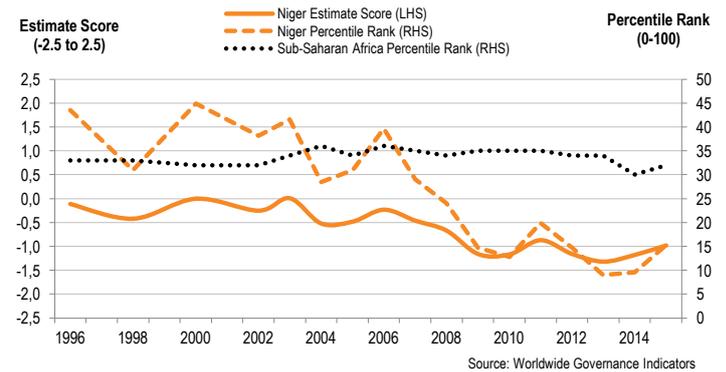
Is the government effective?

The governance effectiveness index for Niger has lifted markedly since 1996. Before 2000 Niger ranked in the bottom 10% of countries. It has steadily risen and has now reached the African average of around 30.



Is the political environment stable?

Niger generally scores below the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking has deteriorated markedly since 2000, falling from a percentile ranking of 45 to 15.



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.

The World Bank undertook an agricultural risk assessment of Niger in 2013. Drought is considered the principle risk, with locust outbreaks another high frequency-high severity risk. Flood incidences are increasing but are not a serious risk. Food price volatility is a big concern for consumers. Political instability is a major risk, resulting in volatility in agricultural sector funding.

What are the main agricultural risks?

The analysis suggests that overall production risks are greater than output price risks. The frequencies of yield losses associated with production risks and their severity, both on average and in the worst-case recorded, are greater than for output price risks.

RISK	VARIABLE	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST-CASE SCENARIO
PRODUCTION	RAW SCORE	0.33	-17%	-40%
	RAW SCORE	● HIGH	● MEDIUM	● HIGH
OUTPUT PRICE	RISK LEVEL	0.30	-14%	-28%
	RAW SCORE	● 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 Niger, drought is a clear example of one risk that can trigger others. Droughts can force gain-eating birds and grasshoppers to move from pasture to cultivated crops, and intensify conflict between herders and farmers over water and pasture.

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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