Risk Assessment

Ethiopia
Agricultural Risk Profile

What are the key findings?

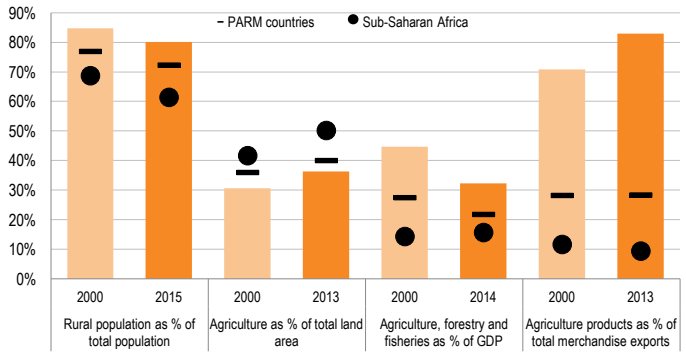
- Droughts are identified as the greatest agricultural risk.
- Temperature levels are rising fast, and erratic rainfall patterns are observed.
- Many livestock diseases are endemic, and along with crop diseases and pests, are identified as high-level risks for Ethiopia.
- Yams and sesame seeds are the crops most affected by yield losses.
- Food crops are most affected by output price risks.
- The rising price of imported inputs is also a high-level risk, along with exchange rate variability.
- Political stability is poor and worsening.

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. Further, production and price data for Ethiopia only go back as far as 1993 and 1994 respectively. A detailed country risk assessment requires a much fuller investigation.

What role does agriculture play?

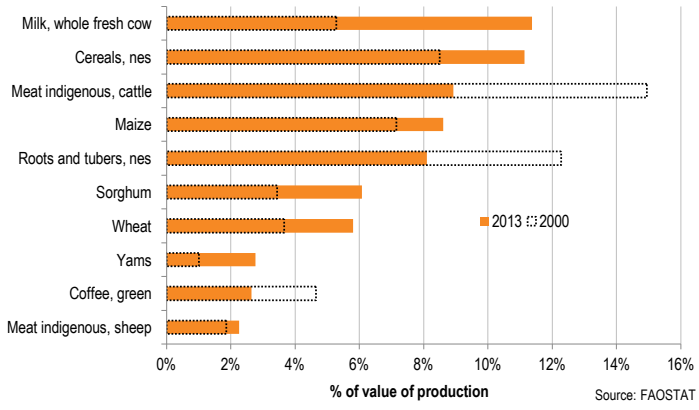
About 80% of the total population of 99.4 million is rural, higher than the Sub-Saharan Africa and PARM countries averages. Agriculture contributes to more than 80% of export earnings and 30% of GDP, far more than most other African countries.



Source: FAOSTAT

What products are most important?

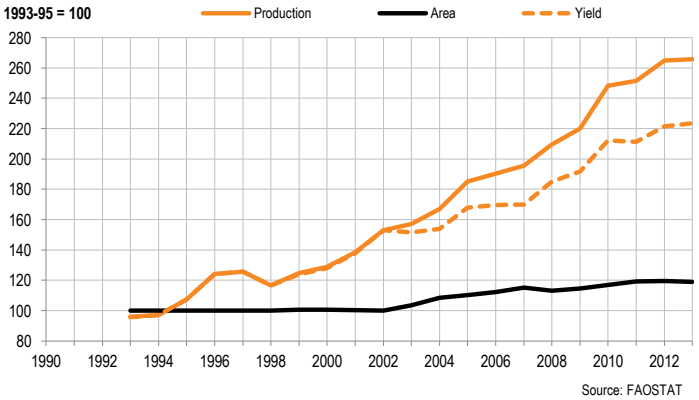
Cows milk, cattle meat and maize are the three most important commodities. The top ten products represent 68% of production in 2013, with all crops accounting for 70%. Production of most of the top ten commodities has increased in since 2000.



Source: FAOSTAT

How has the sector grown?

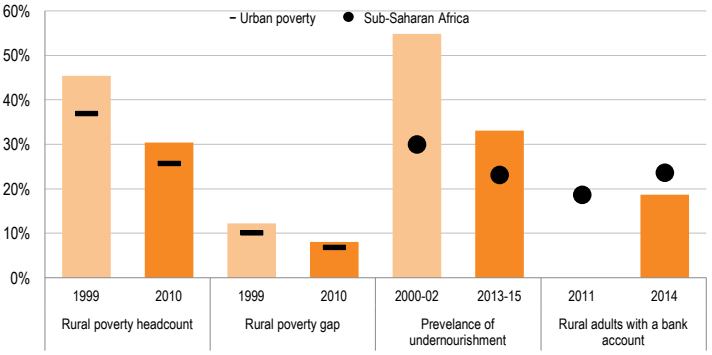
Between 1993 and 2013, agricultural output increased by 160%, an average increase of 5.4% per annum. This is primarily due to rising yields, which have grown 4.5% per annum. Crop and livestock output have both risen at similar rates (5.8% and 5.0%).



Source: FAOSTAT

How vulnerable are people to risks?

Both the incidence and level of rural poverty has fallen since 1999, and is very close to urban levels. The prevalence of undernourishment has more than halved but remains above the Sub-Saharan average. Access to credit is also below average.



Sources: World Bank and FAOSTAT

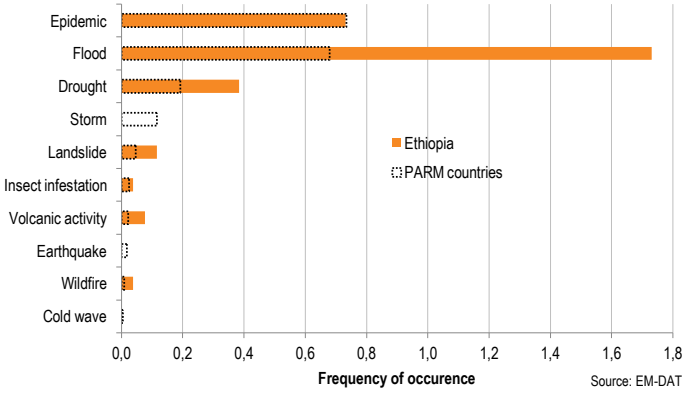
Production risks

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, floods were the most frequent disaster to affect Ethiopia, often occurring twice a year. Landslides can accompany these. A drought event occurs once every two and a half years. Volcanic activity occurs, but no major storm events.



What is the likely impact of future climate change?

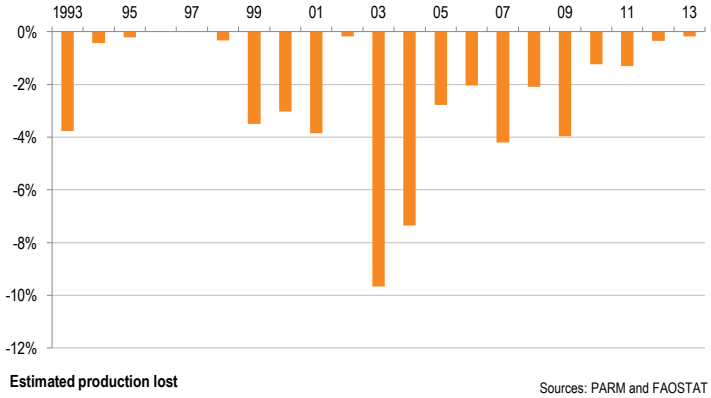
The IPCC 5th assessment report concludes that land temperatures over Africa are likely to rise faster than the global land average, particularly in the more arid regions. Mean average temperatures are likely to be 2°C higher than experienced in the late 20th century.

Projected rainfall change over most of sub-Saharan Africa is uncertain due to complex topography. Rainfall is likely to increase in the Ethiopian highlands. Future precipitation projections show that extremes (droughts and floods) may become more frequent.

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.

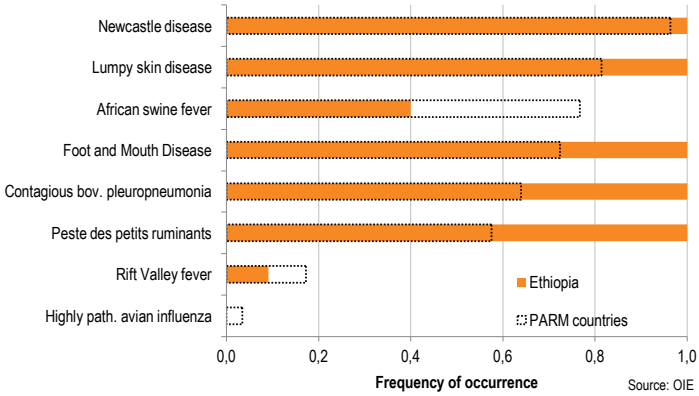
Has the risk varied over time?

Totalling the annual value of production losses for the 12 crops provides an indicative production risk profile for the period. Annual production losses averaged 3%, ranging from 0-10%. The largest estimated losses occurred in 2003 and 2004.



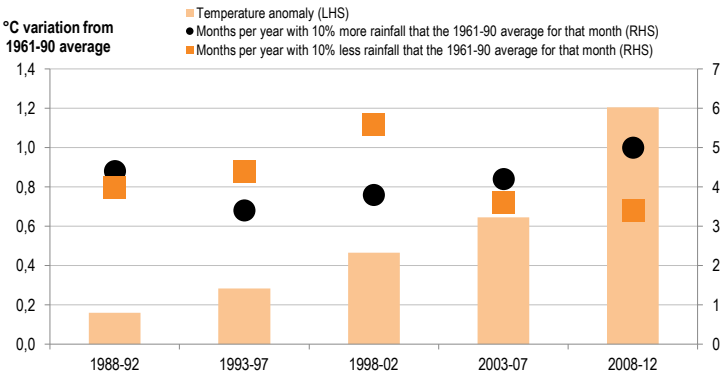
What animal diseases are present?

Of the eight animal diseases analysed over the period 2005-2015, five could be considered as being endemic in Ethiopia. Highly pathogenic avian influenza is the only one that has never been reported as occurring.



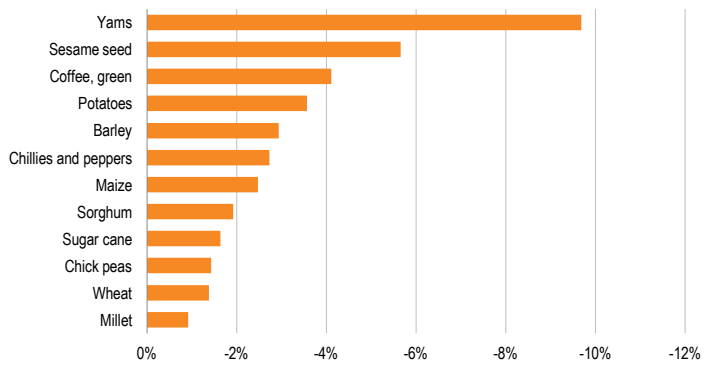
Are weather anomalies increasing?

Temperature levels are rising, with the 2008-12 average 1.2°C warmer than the 1961-1990 average. There is no clear change in rainfall patterns although a rise in the number of wetter, and a fall in the number of drier, than average months is observed.



Which crops appear most at risk?

Yams is the crop most affected by yield losses as estimated by the impact on production. Annual yield losses averaged 10% of production for yams (an average loss of 29% once every three years). Sesame seed and coffee averaged losses of more than 4%.



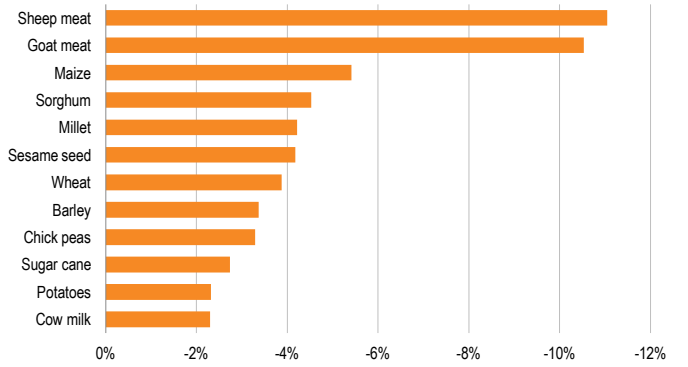
Market risks

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 1994-2012, sheep meat and goat meat appear to be the commodities most affected by output price risks. These two products have an annual average price loss of greater than 10% (an average loss of 25-30% occurring every two and a half years).



Annual average expected price loss ratio, 1994-2012

Source: PARM and FAOSTAT

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

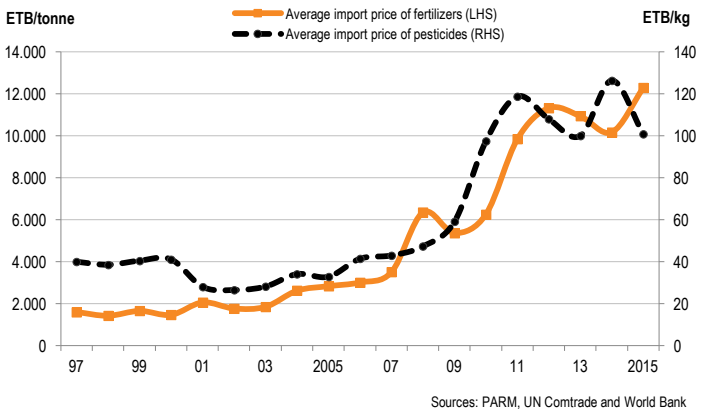
Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.

To calculate product specific risk values, the average yield or price loss below the threshold level (severity) 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?

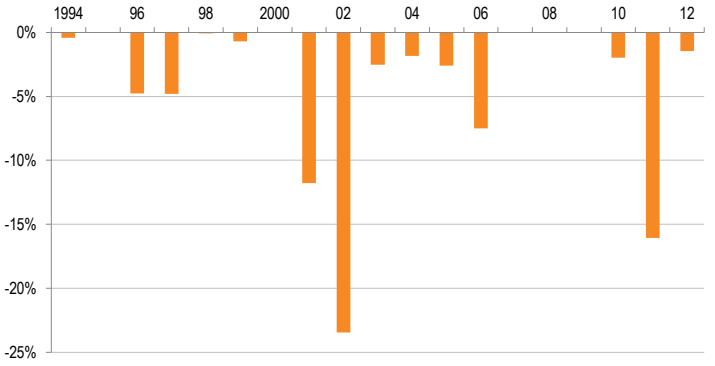
The rise in annual average import prices rather than variations is likely to imposing input risks on farmers. The average import price of fertiliser in 2015 is more than six times higher than in 2003, while pesticide prices have risen by 250%.



Sources: PARM, UN Comtrade and World Bank

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 revenue loss is 4%, with losses over 15% in 2002 and 2011. No trend over time can be observed.

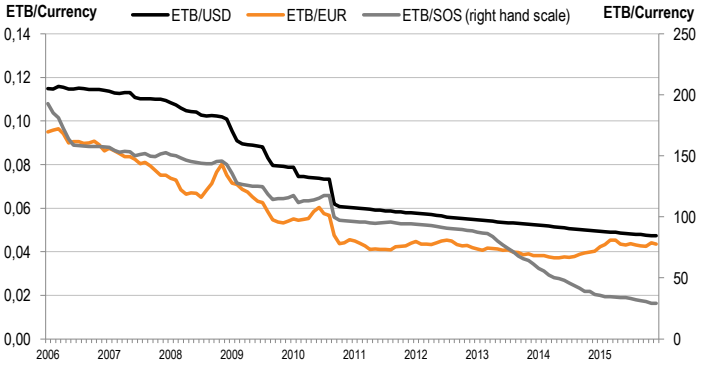


Estimated revenue lost

Source: PARM and FAOSTAT

Is there an exchange rate risk?

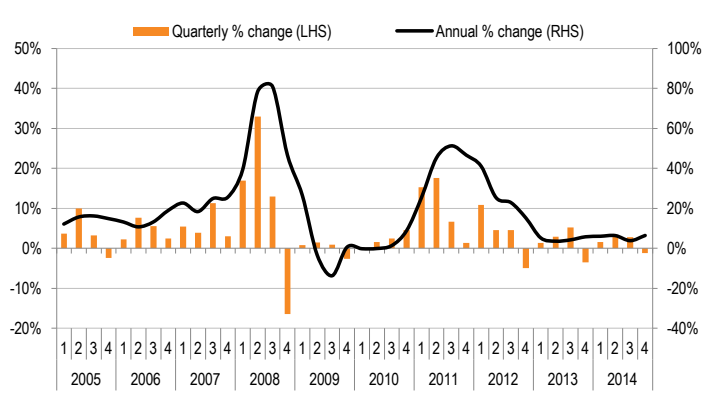
Over the past decade there has been a significant depreciation of the Ethiopian birr (ETB) against the USD, Euro and the Somali shilling, it's main African export market. As it has become weaker, the effect of variation has become larger.



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 20%. The highest annual rate of 81% was recorded in September 2008. Prices have risen more slowly since 2010 and fluctuate less.



Source: ILO

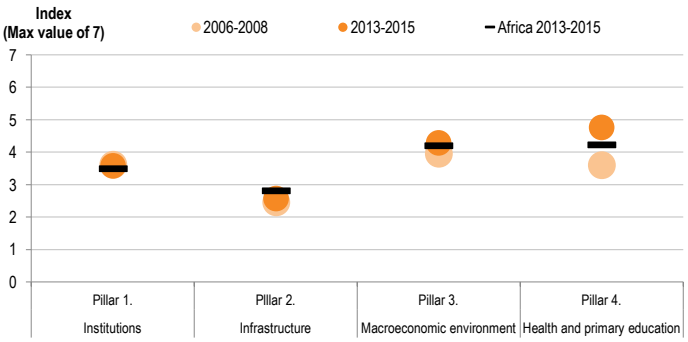
Macro level risks

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.

Are basic requirements in place?

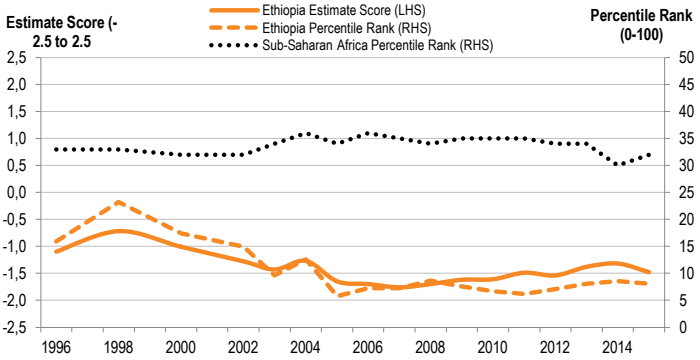
Index scores for the basic requirement pillars place Ethiopia very close to the African average across all four pillars. Index scores have lifted for three, with a particular improvement in health and primary education, lifting it above the African average.



Source: World Economic Forum, Global Competitiveness Index

Is the political environment stable?

Ethiopia scores well below the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking has deteriorated markedly since 1998, falling from a percentile ranking of 23 to below 10.



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 risk assessment study and a national validation workshop have been completed for Ethiopia. Droughts have been identified as the major risk for Ethiopian agriculture. The next four high-level risks are: livestock diseases and pests, crop diseases and pests, price risks for food crops, and rising input prices

What are the main agricultural risks?

RISK	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST-CASE SCENARIO
DROUGHTS	HIGH	HIGH	VERY HIGH
LIVESTOCK DISEASES & PESTS	VERY HIGH	MEDIUM	HIGH
PLANT DISEASES & PESTS	HIGH	MEDIUM	VERY HIGH
PRICE RISK: FOOD CROPS	MEDIUM	HIGH	VERY HIGH
INPUT RISK: RISING PRICES	HIGH	MEDIUM	HIGH
ERRATIC OR VARIABLE RAINFALL	VERY HIGH	MEDIUM	LOW
EXCHANGE RATES VARIABILITY	HIGH	LOW	MEDIUM
FLOODS	VERY HIGH	LOW	LOW
POLICY RISK: EXPORT BAN	HIGH	VERY LOW	HIGH
POLICY RISK: PRICE SUBSIDY	VERY HIGH	VERY LOW	VERY LOW
PRICE RISK: EXPORT CROPS	MEDIUM	MEDIUM	VERY LOW
INTEREST RATE VARIABILITY	MEDIUM	VERY LOW	VERY LOW

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 affects on market prices. In Ethiopia, 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)

Via Paolo di Dono 44 - 00142 Rome (Italy) parm@ifad.org www.p4arm.org @parminfo