

CLIMATE RISK SENSITIVITY IN THE FOOD VALUE CHAIN: WHEAT

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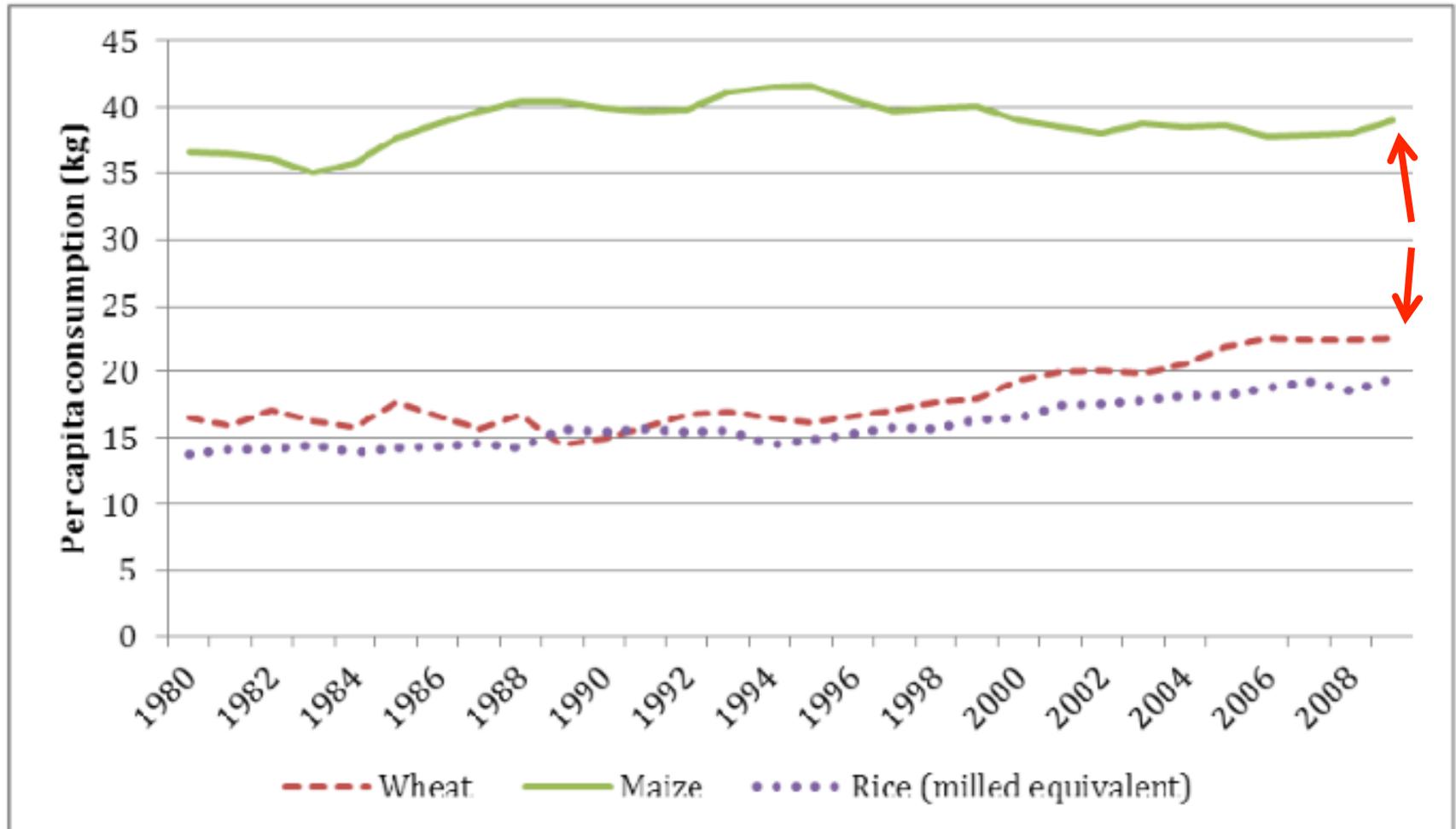
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Our Daily Bread

- **Human maize consumption is decreasing while the consumption of wheat (mostly for bread and pasta) is increasing.**
- **Wheat has a higher protein content than maize or rice**
- **The nutritional value of bread is decreasing (higher-yielding semi-dwarf wheat cultivars)**
- **Nutrient content has depreciated more than 30% from its original genetic configuration.**
- **Commercial bread has bleaching products and dough strengtheners (acetones, peroxides, bromates)**
- **Price of bread may complicate issues....**

Wheat consumption

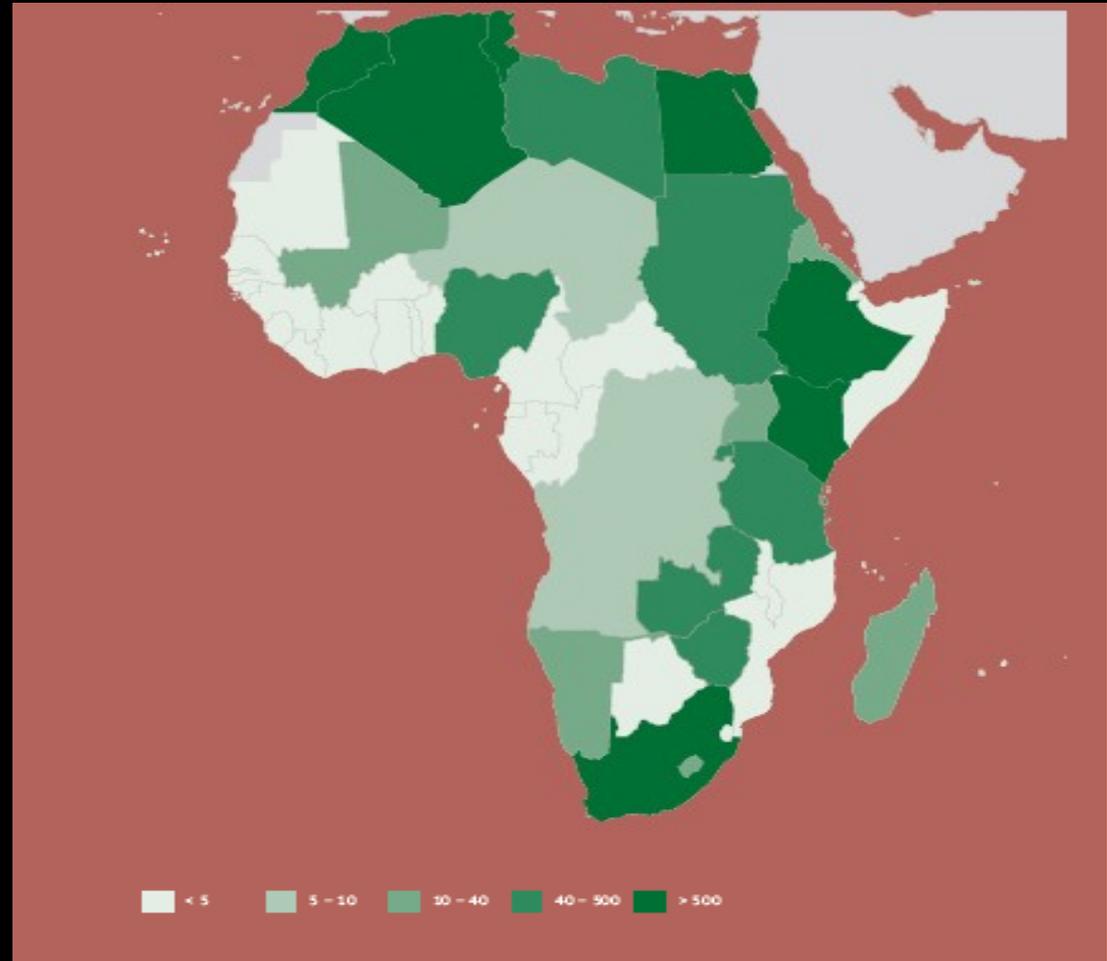
Figure 2. Per Capita Wheat, Maize, and Rice Consumption in Sub-Saharan Africa, 1980-2009



Sources: FAOSTAT Commodity Balances and Population databases.

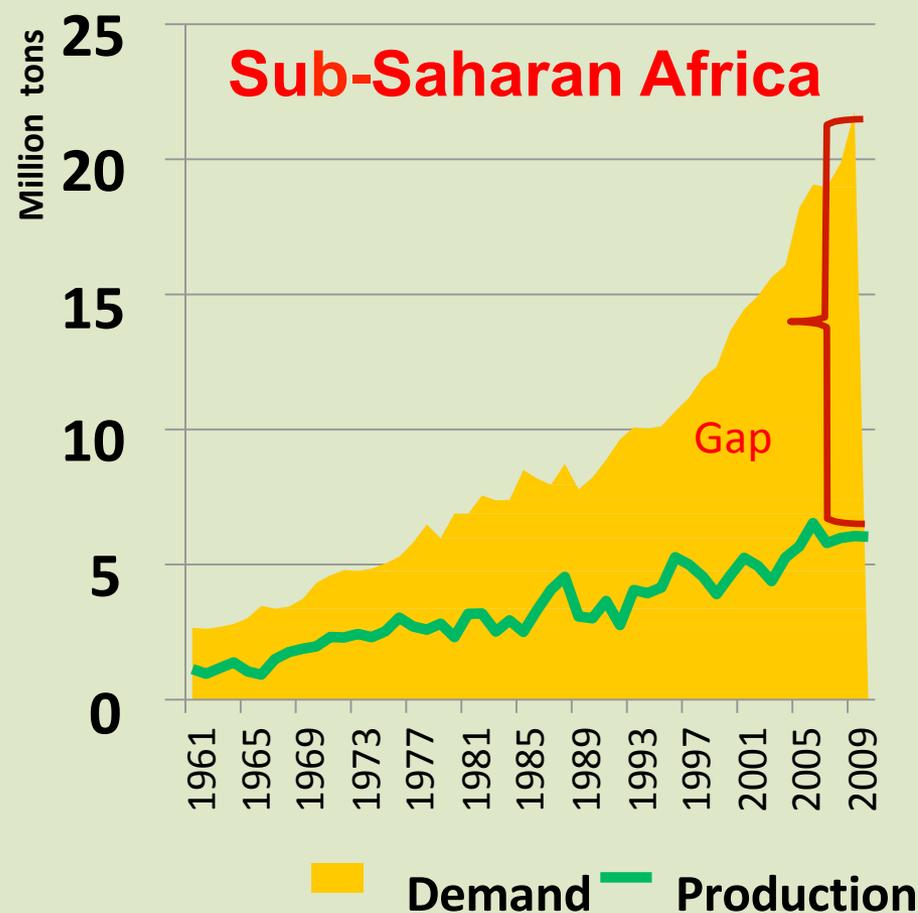
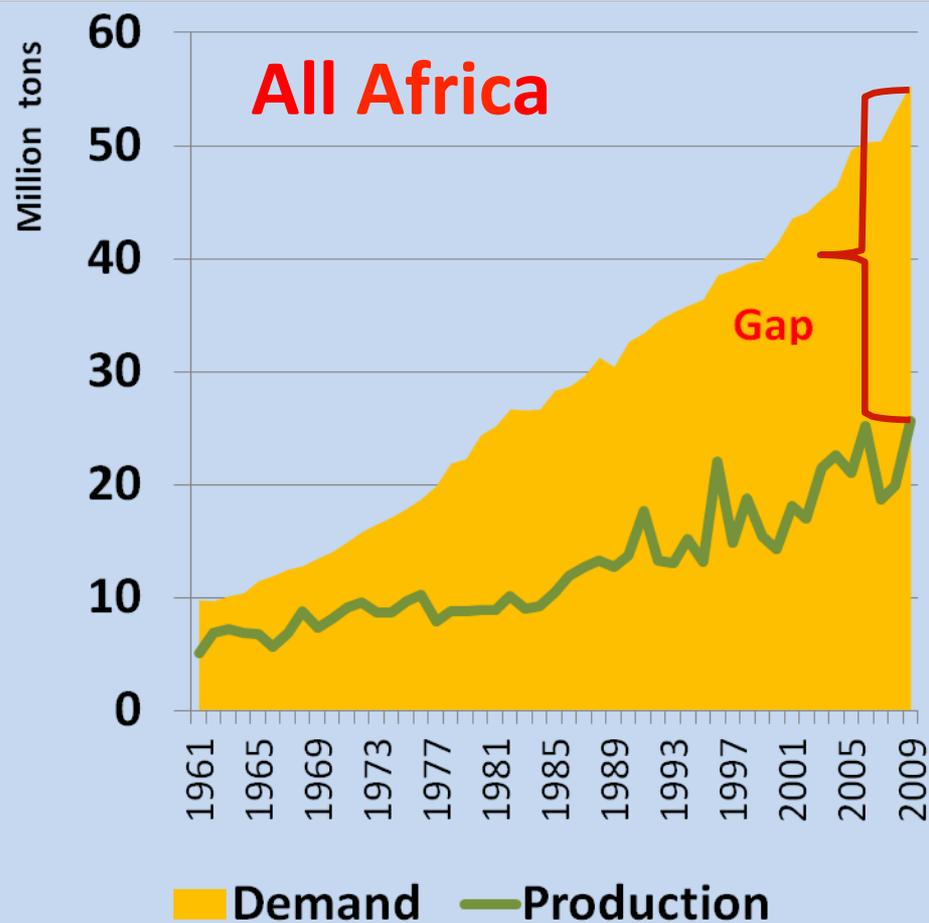
Major wheat producing countries in Africa exceeding 500,000 tonnes

- Algeria
- Egypt
- Ethiopia
- Kenya
- Morocco
- South Africa
- Tunisia



Wheat producing countries (000 tonnes, 2010, CIMMYT)

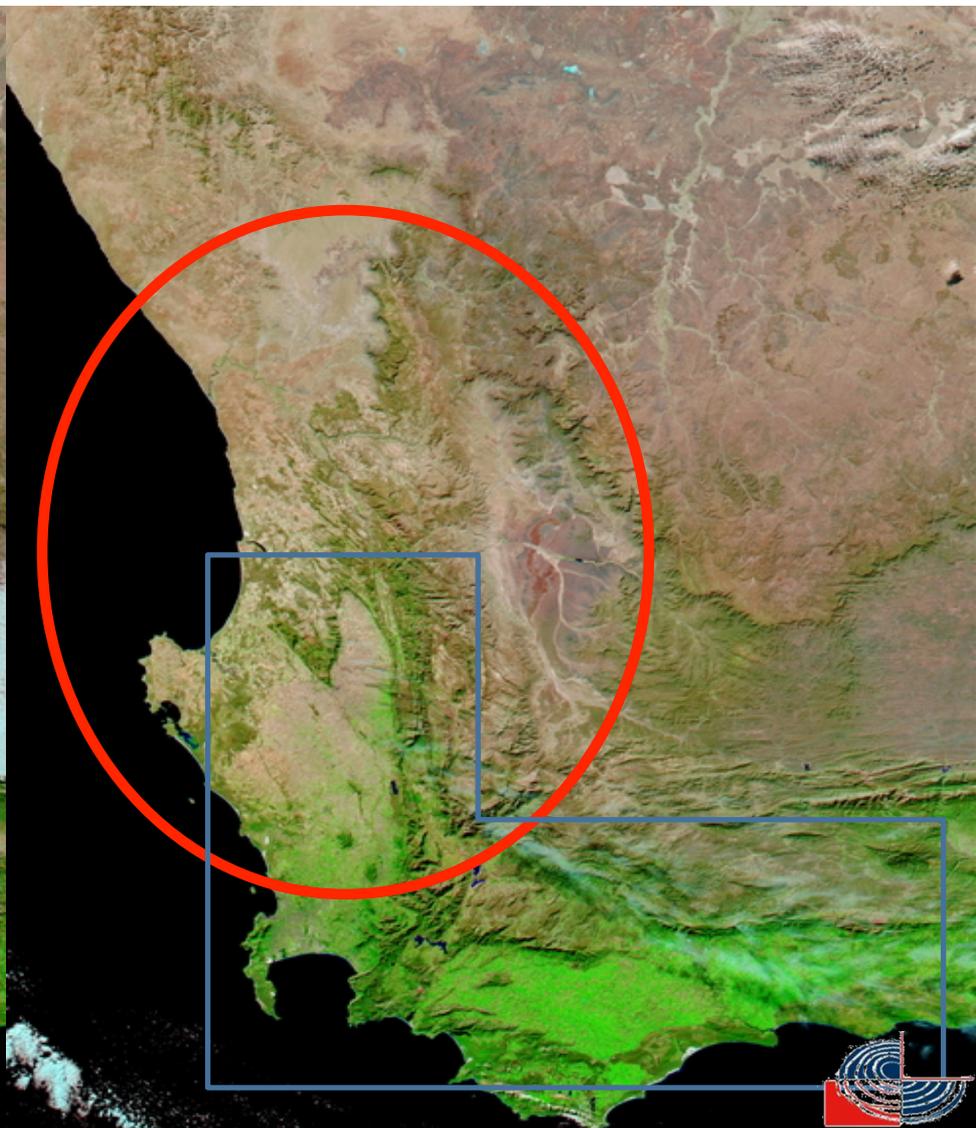
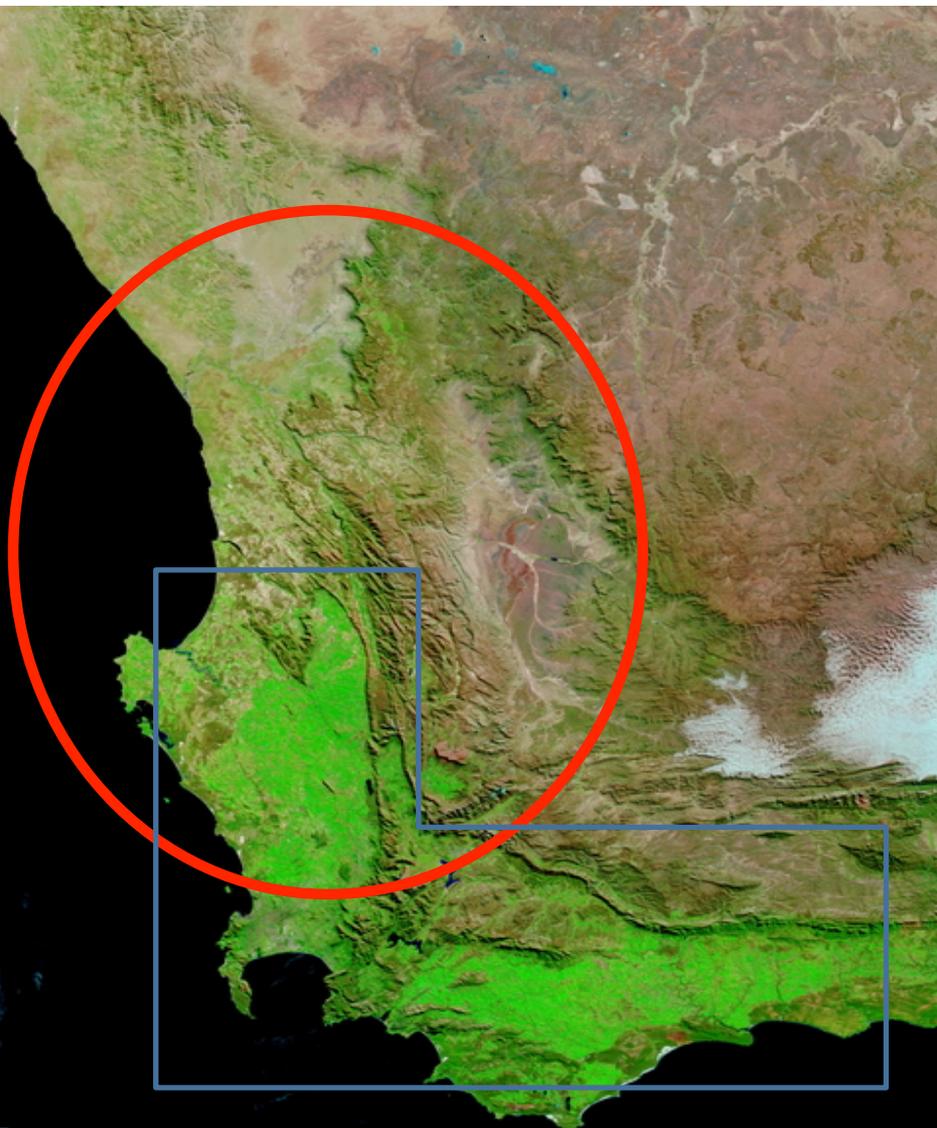
Widening gap between wheat production and consumption in Africa



Climate variability is a reality – Climate change a threat

– Normal Year

– Drought Year

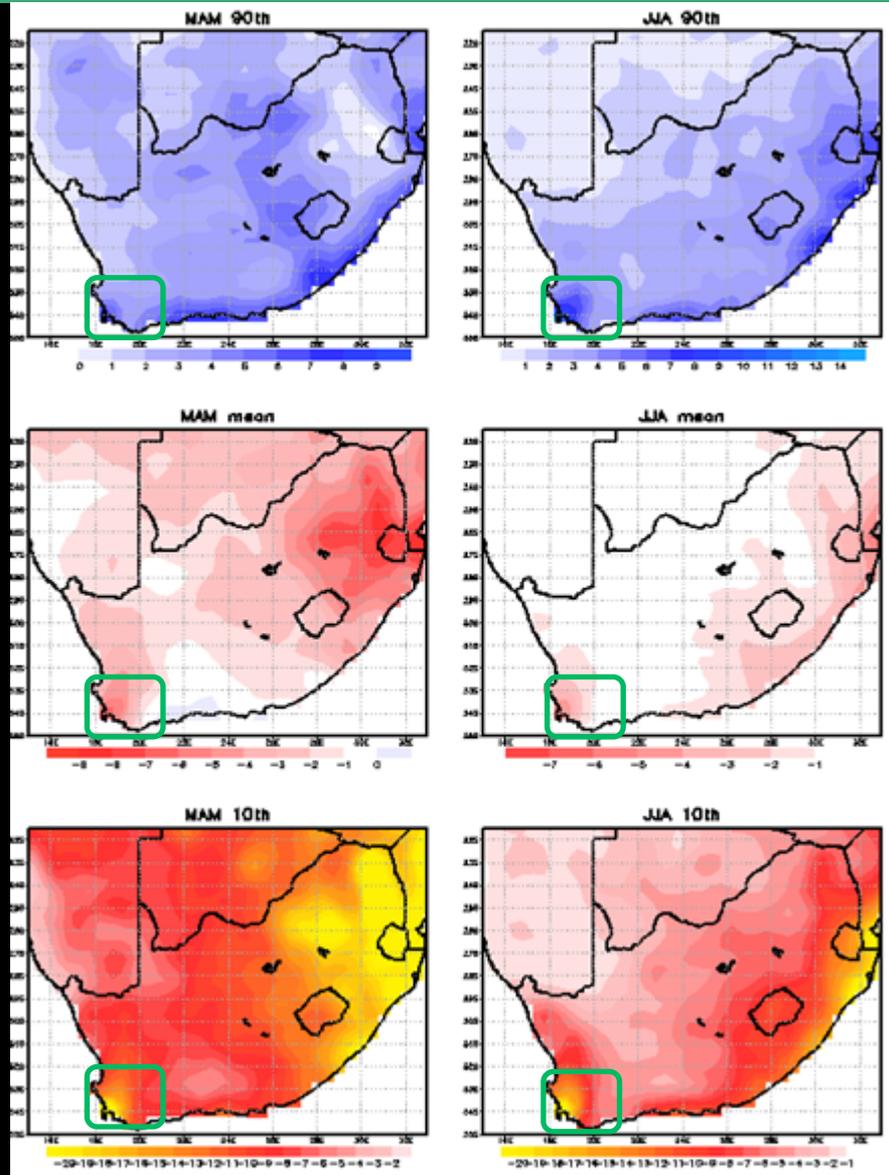


Downscaled scenarios for 2050-60

90th percentile

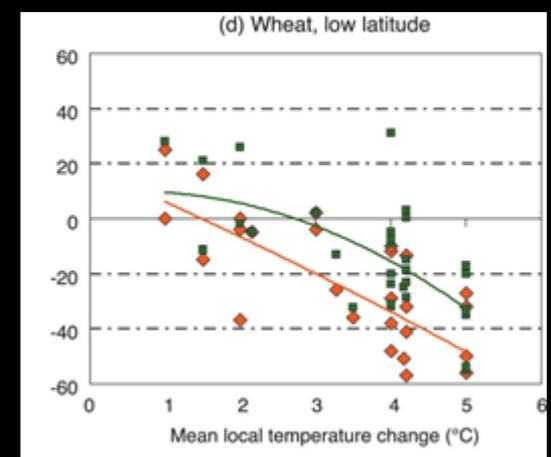
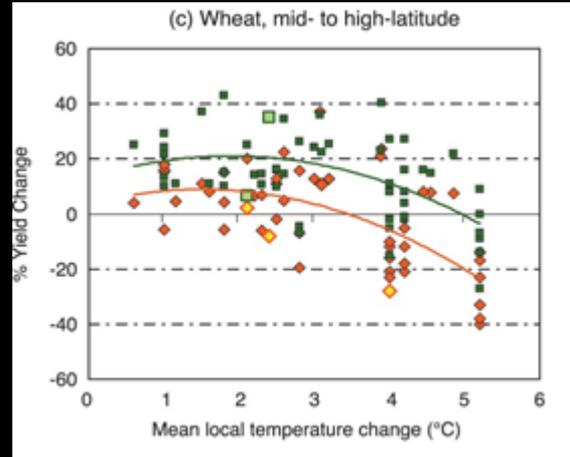
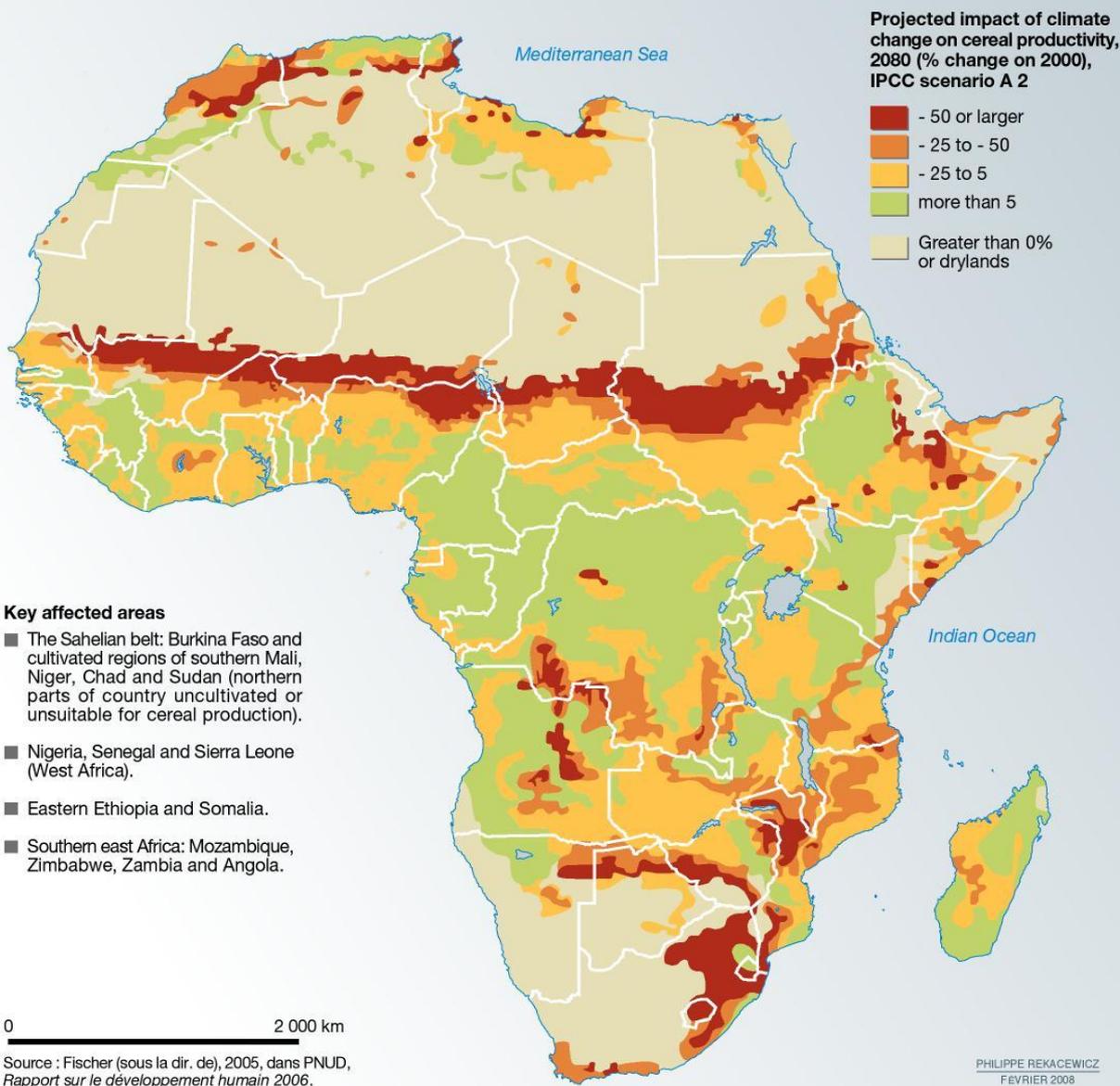
Mean

10th percentile

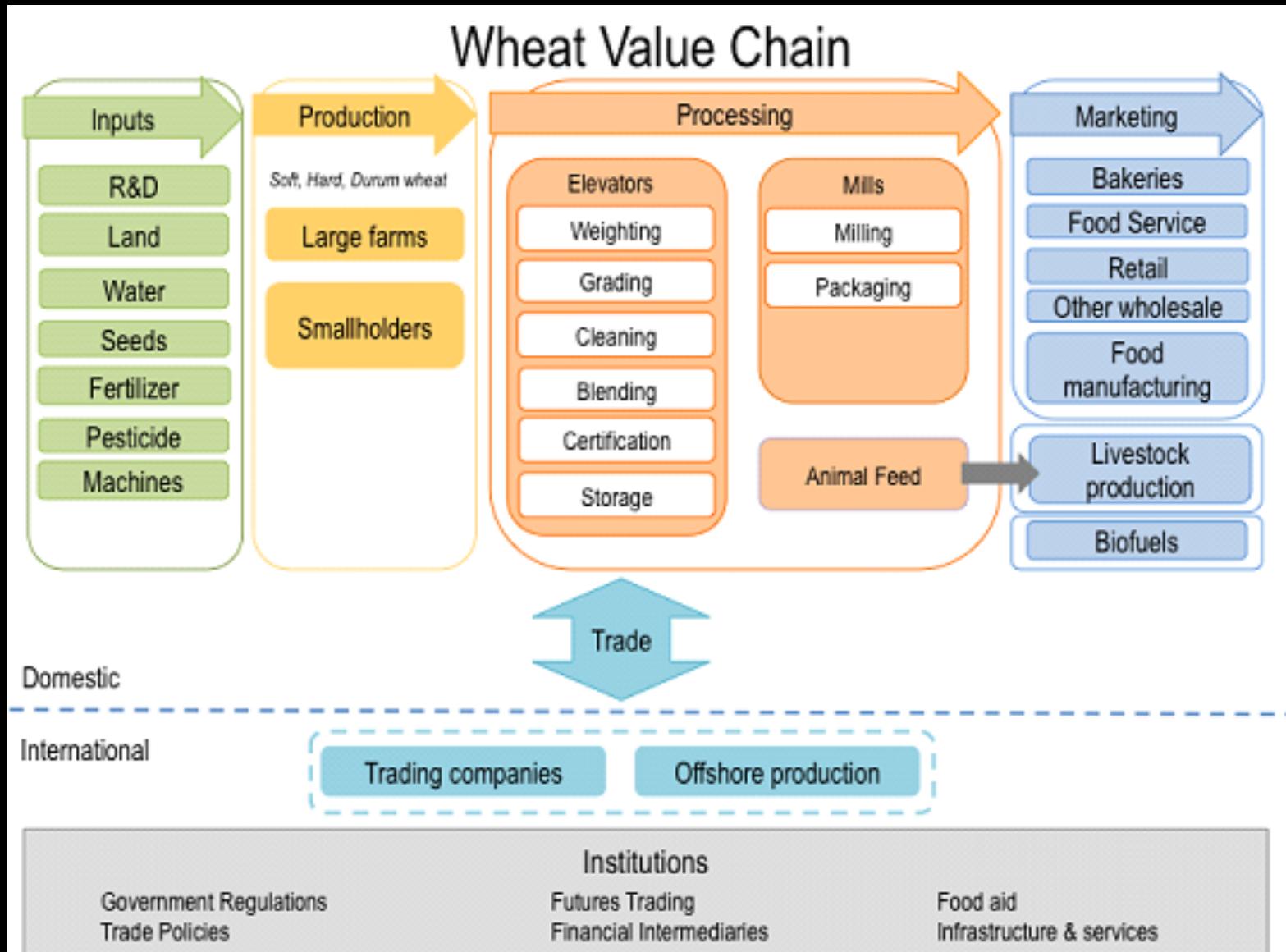


Cereal productivity in Sub-Saharan Africa under a scenario of the IPCC that shows CO₂ atmospheric concentrations a level at 520-640 ppm by 2050

Cereal Production



Impacts on the value chain



Actors in the wheat value chain and their exposure to CC impacts

Producers

- High input cost/land value ratio as a result of sharp increases in variable costs of production resulting in greater production risks.
- Slow and inadequate input/product price adjustment to external factors e.g. exchange rate.
- Expensive crop insurance and limited insurance capacity

Traders

- High dependency on transport infrastructure – delays and exposure to extreme events may cause losses
- Storage risks – risks of quality losses

Processors/Millers

- Competition from cheaper/subsidized imports where CC impacts are less

Processors/Bakers

- High dependence on quality, which may be affected, and increase prices
- Competition from cheaper/subsidized imports where CC impacts are less

Wholesalers/Retailers

- Distribution risks due to transport cost and threats, and increased risk of spoilage due to increased temperatures and variable, possibly more intense, rainfall
- Increased costs of raw materials leads to higher selling prices, opening up competition to cheaper imported goods.

External input providers (non-wheat raw material, transport, packaging etc)

- Risks to power supply (and knock on risk to transport), due to increased temperature and more intense rainfall in electricity production areas
- Access and availability of water (for small % of irrigated wheat production, and for manufacturing) leading to price increases
- Increased temperatures and moisture increase demand for pesticides and thus costs

Socio-economic issues

- Any risks carried through to retailers will be reflected in the price and supply of bread, biscuits and pasta. Since bread is increasingly becoming a staple food, any increases in price pose a serious threat to food security.



Wheat farmers

- Wheat has been regarded a non-African crop
- Irrigation offers huge potential – where possible
- Commercial vs small scale (4-5t/ha vs 1-2t/ha)
- Monoculture – the Visagie Brothers
“we grow wheat, and we do it damn well”
- Diversification – Chris Richter
“I can rely on my other activities when the rains are bad”
- Conservation agriculture
- Alternative crops/livestock
- Good wheat, good bread - Schoon de Companje
“We naturally ferment our stone-milled high protein flour doughs for full flavour and for easy digestion”

Food Technology responses

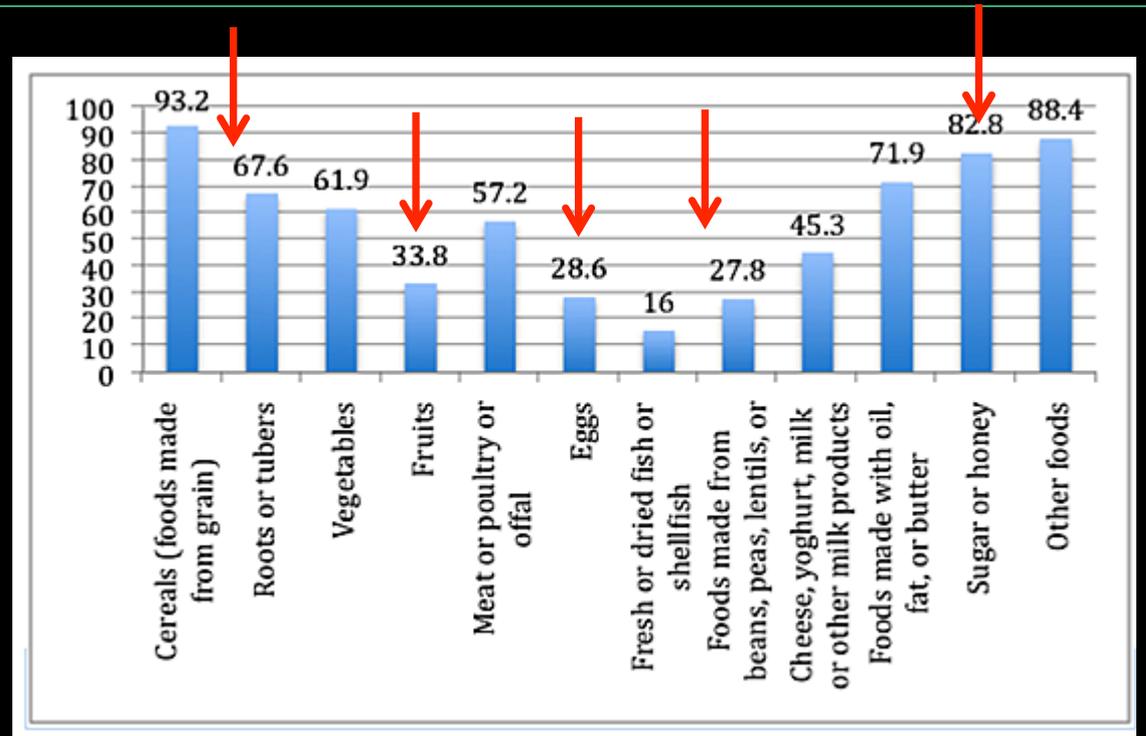
Climate risk sensitivity:

- Seeds
- Plants
- Animal health
- Transport
- Cold chain
- Packaging



Food Technology responses

- Processing
- Preserving
- Nutrition
- Education
- Equity
- Affordability
- Sustainability



Food Policy responses

- Joint African Ministers of Agriculture and Trade (CAMAT), 29-30 Nov. 2012, Addis Ababa: endorsed wheat as one of Africa's strategic commodities for achieving food and nutrition security
- High level FARA meeting, Accra, Ghana, July 2013 – developed a strategy for promoting African wheat production

Roadblocks?

- African Governments are subsidizing wheat imports; not stimulating domestic production
- Many infrastructure bottlenecks exist in the wheat Value Chain; prevent farmers access to inputs, markets, and consumers; grain marketing costs are high

The future of wheat...

- SSA is becoming increasingly reliant upon imported staple food grains at a time when world prices for these commodities are rising and when prices and supplies are likely to become more variable as a result of climate change.
- Sub-Saharan Africa's wheat consumption is higher in urban areas than in rural areas, and at present most of the urban demand for wheat in SSA is being met by imports or domestic production on large-scale commercial farms. Very little of the wheat demanded in SSA is produced by smallholders.
- Increasing demand can't be met by development initiatives.
- Climate change will impact wheat production

Questions

- Is the Green/Wheat revolution in Africa a positive development?
- How will climate change affect wheat production/food security issues?
- How will urbanisation affect the poorer communities?
- Can wheat agriculture be sustainable and climate-proof?
- Will agriculture be able to sustain more livelihoods than currently?
- What part can Government/Research Institutions play?



THANK YOU

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Credits:
CSIR, HSRC, Bruce Hewitson,
The Hunger Project, Guy Preston,
Gina Ziervogel, Roland Schulze