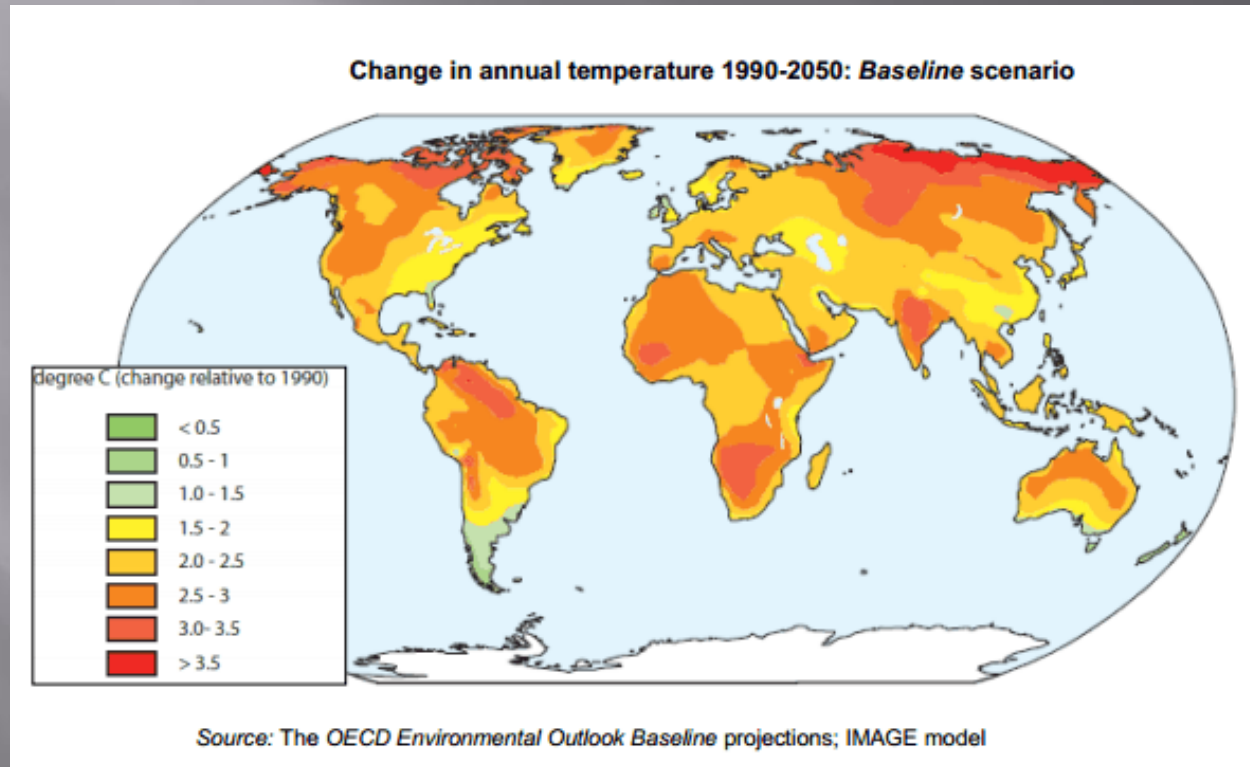


EFFECTS OF CLIMATE CHANGE AND LAND TENURE ON FOOD SECURITY

Mutjinde Katjiua,
Department of Land Management
Development Dialogue Forum
22 August 2012

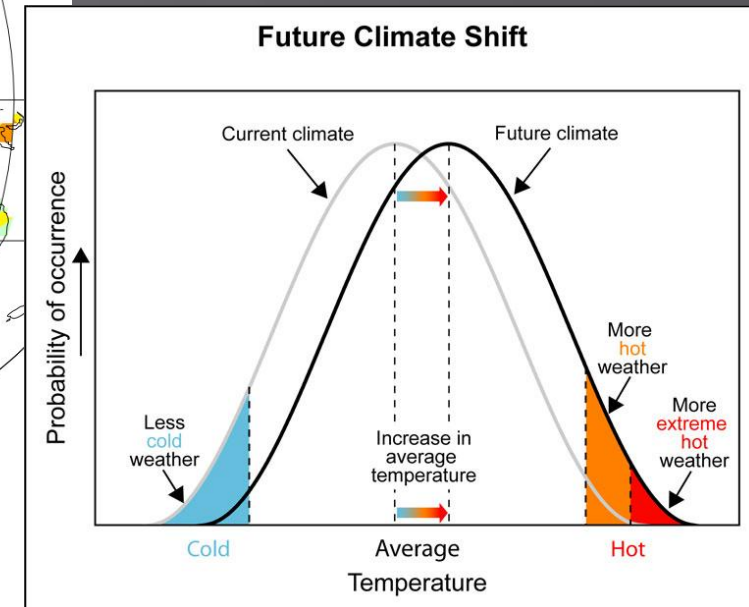
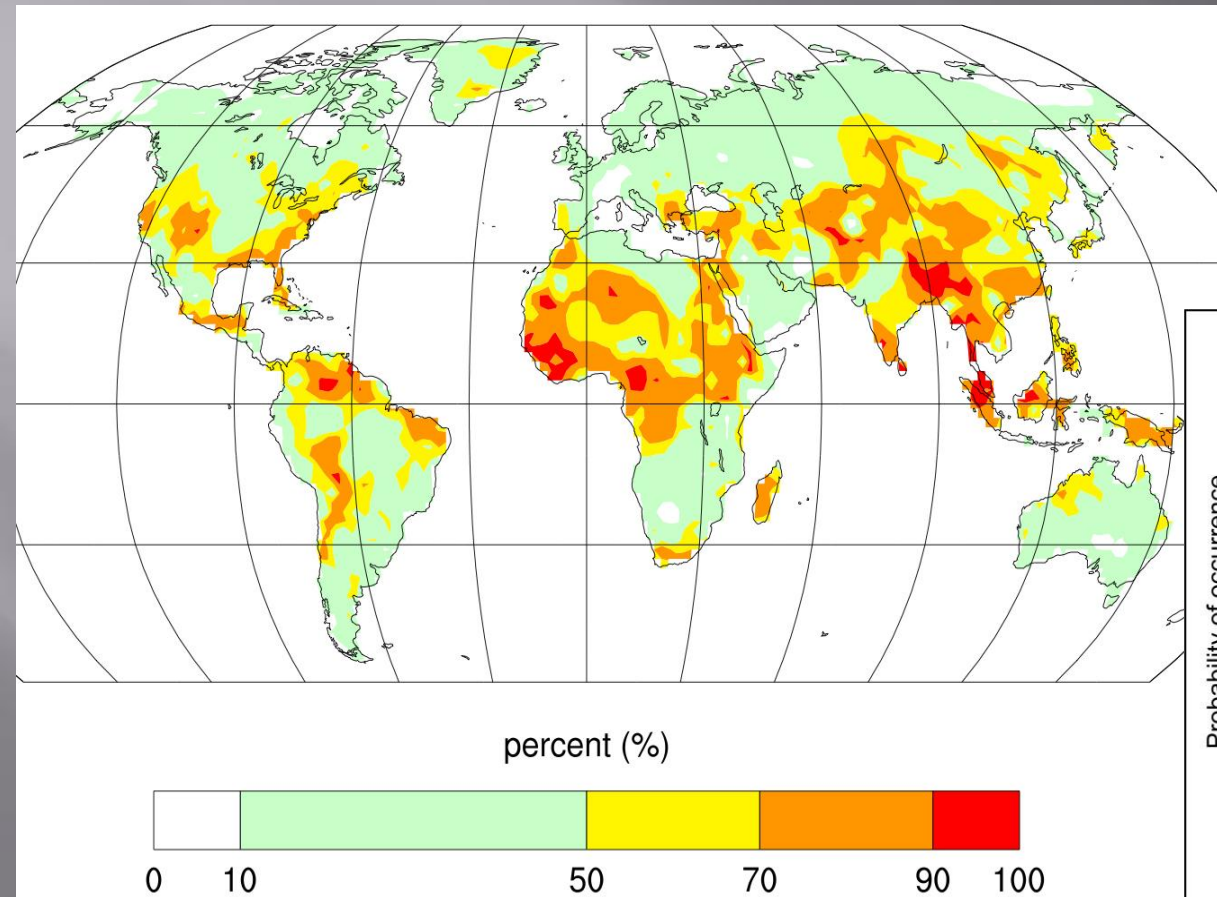


Annual global temperatures are on the increase



IPCC WG 2 Technical report, 2007

Summers in 2040 – 2060 Warmer than Warmest on Record



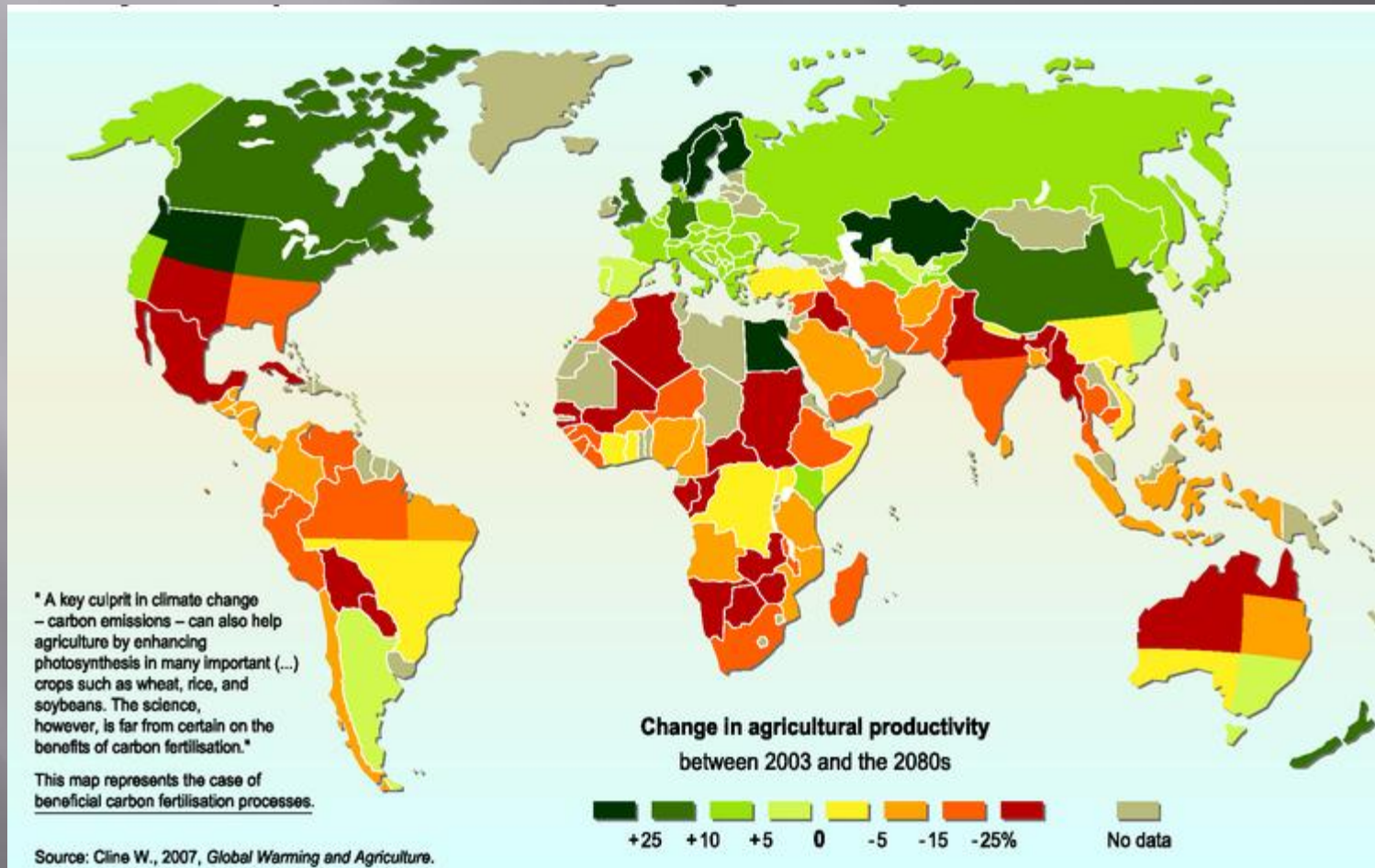
Peak temperatures reduce maize production

- ▣ Recent crop trials from 123 research stations in East and Southern Africa showed that:
 - Days above 30°C reduced maize yield by at least 1%
 - 32°C was twice damaging than 31°C



Source: Lobell, D. 2011. *Nature Climate Change*

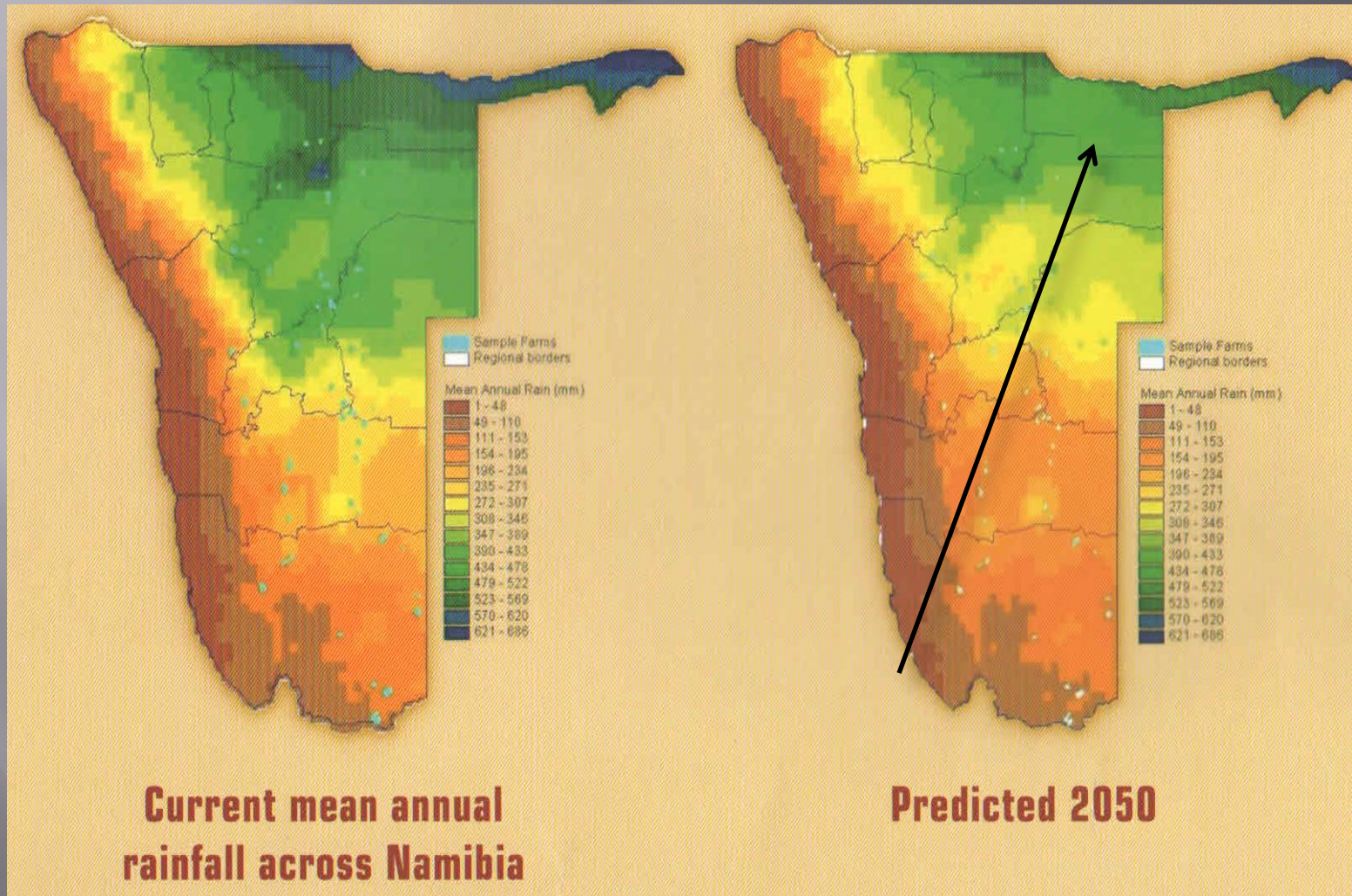
Projected impact of CC on agricultural yields



Climate change impacts on crop production

- ▣ Shift in agro-ecological zones
- ▣ Shorter growing season
- ▣ Decline of arable land in Southern Africa
- ▣ High temperatures / high water demand
- ▣ Lowered crop production
- ▣ Inundation / flooding (elsewhere)

Shift in rainfall pattern and Agro-ecological zones



Source: MET, vulnerability of Namibia to climate change

Climate change will increase Food Insecurity in Sub-Saharan Africa

- ▣ Due to the combination of:
 - ▣ Repeated exposure to droughts and floods,
 - ▣ High reliance on rainfed agriculture and livestock for basic food security and national economic growth, and
 - ▣ Widespread degradation of its agricultural resource base (Padgham, J. 2009)
 - ▣ Low technological capacity to adapt to a warming climate;

Climate change and Food Prices

BloombergBusinessweek News From Bloomberg

Djibouti's High Food Prices Leave 88% of Rural Poor Needing Aid

By Brian Latham on November 01, 2011 | [Twitter](#) [Facebook](#) [LinkedIn](#) [Google+](#) | 0 Comments

Drought in the US,
is pushing local prices;

If South Africa receives
less rain, the local maize
market will move to
import parity, pushing
prices even higher

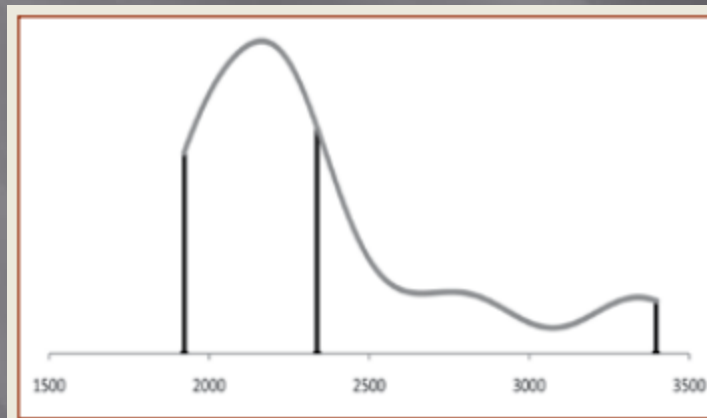


Figure 1: SAFEX white maize price, 2013 (R/ton)

BFAP SCENARIO 2013

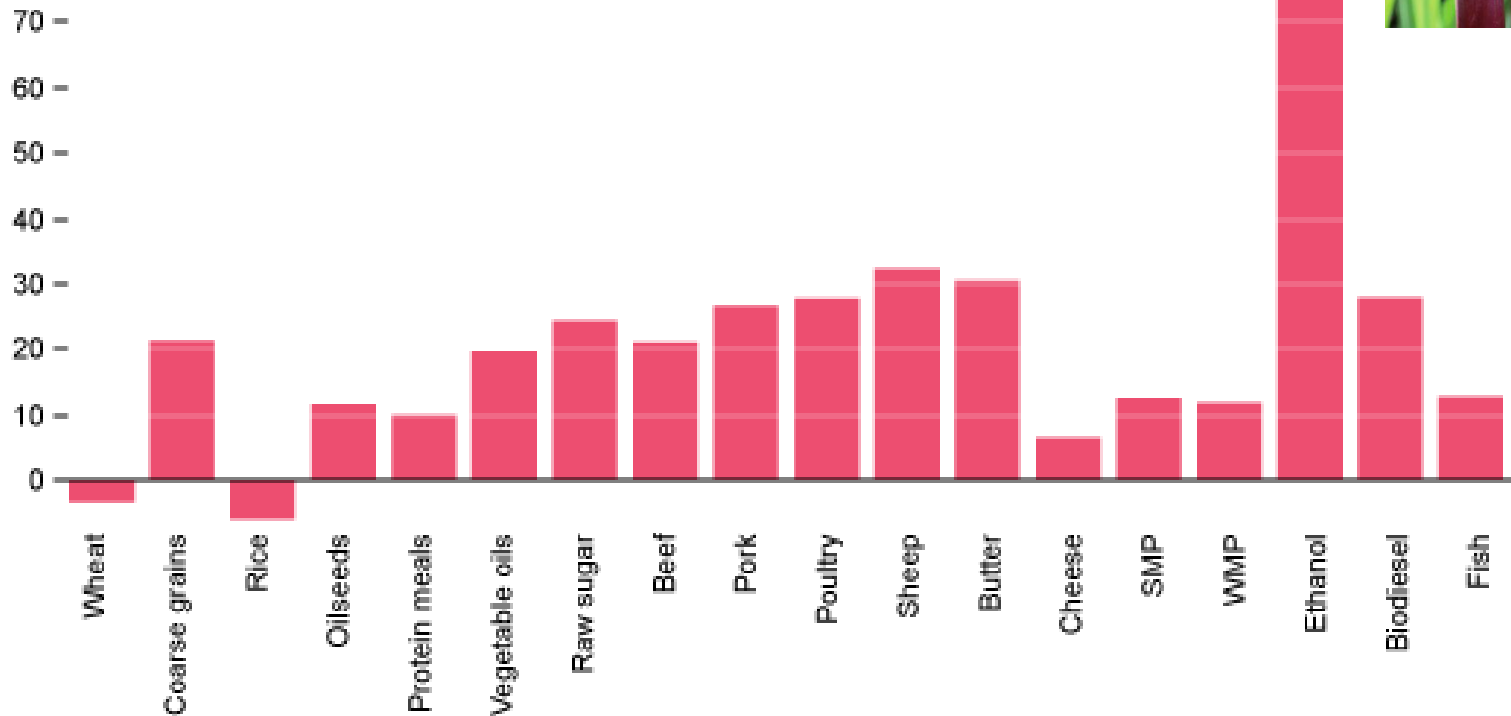
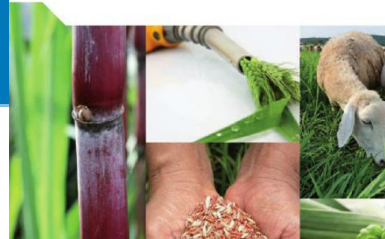
When the impact of
weather becomes a
reality for food
prices



Climate change and Food Prices

OECD-FAO
Agricultural Outlook
2012-2021

Price changes in real terms, % (2012-21 compared to 2002-11)



Source: OECD

Effects of Land and Resource Tenure On Food Security

What is tenure

- ▣ It is a bundle of rights that defines:
 - The rules of access to land, fisheries, forests and other natural resources.
 - ▣ **Who** is entitled?
 - ▣ Entitled to **what? When? Where? How?**
 - The organisation that sets the rules
 - ▣ How is the organisation constituted?
 - ▣ How are rules set?
 - ▣ Monitor compliance? Sanctions and incentives? Review of rules.
- ▣ Secure and equitable access to natural resources can allow people to produce food for consumption and to increase income.
- ▣ Inadequate and insecure tenure rights to natural resources often result in extreme poverty and hunger

Tenure issues that specifically could improve crop production systems

- ▣ Tenure arrangements should take into account local practices that are aimed at improving soil fertility (e.g. fallowing);
- ▣ Formalisation of land rights to access credits can lead to investment in agric production

(Deininger et al. 2003, 2007);

- ▣ Formalisation should not only provide for user access to a land parcel, but also guarantee secure and tradable land right to ensure access to credits.

Climate change impact on livestock production

- ▣ Reduced rainfall and increased variability;
- ▣ Increased pressure on limited forage, will lead to land degradation
- ▣ Greater mobility of pastoralists
 - Intra-country migrations
 - Across the northern border
- ▣ Switch to small stock farming
- ▣ Rural-urban migration



A relevant tenure for pastoralists should enable the following

- ▣ Greater flexibility in using spatially variable forage resources
- ▣ Ecologically-economically successful pastoral tenure arrangements are characterised by differing categories of rights of access, i.e.
 - Communally used rangeland (not open access)
 - Fenced-off small camp or crop field
 - Privately held (e.g. a seasonally-used well)
 - Group ownership (dry season post, usually a remote site)

Communal land reform

- constraints-

- ▣ Current land reform promotes individualisation of communal lands
 - It is **practically** progressive privatisation of land by individuals;
 - While making the remaining land (the commons) vulnerable for further individualisation.
 - The absence of defensible group **resource tenure** arrangements renders such resources to open-access situations.
- ▣ A combination of household-level and village-level group titling will be more suitable for pastoralist to manage and access patch forage resources for their livestock.

The Hunter-Gatherer

- ▣ Opportunistic gathering of wild products such as fruits, wood and honey for home consumption and for sale have been used at times of crop failure

Thus it is a critical coping strategy
among vulnerable rural residents



But whose resources are wild products?

- ▣ Individualisation of land parcels also tend to individualise land resources.
- ▣ Thus limiting access of gatherers to resources (and income) such as:
 - ▣ Medicinal plants (devil's claw)
 - ▣ Veld food / fruits (monkey oranges, marula, berries)
 - ▣ Fire wood
 - ▣ Poles and droppers
 - ▣ Thatch grass, etc.
- ▣ Hence increasing the vulnerability of gatherers

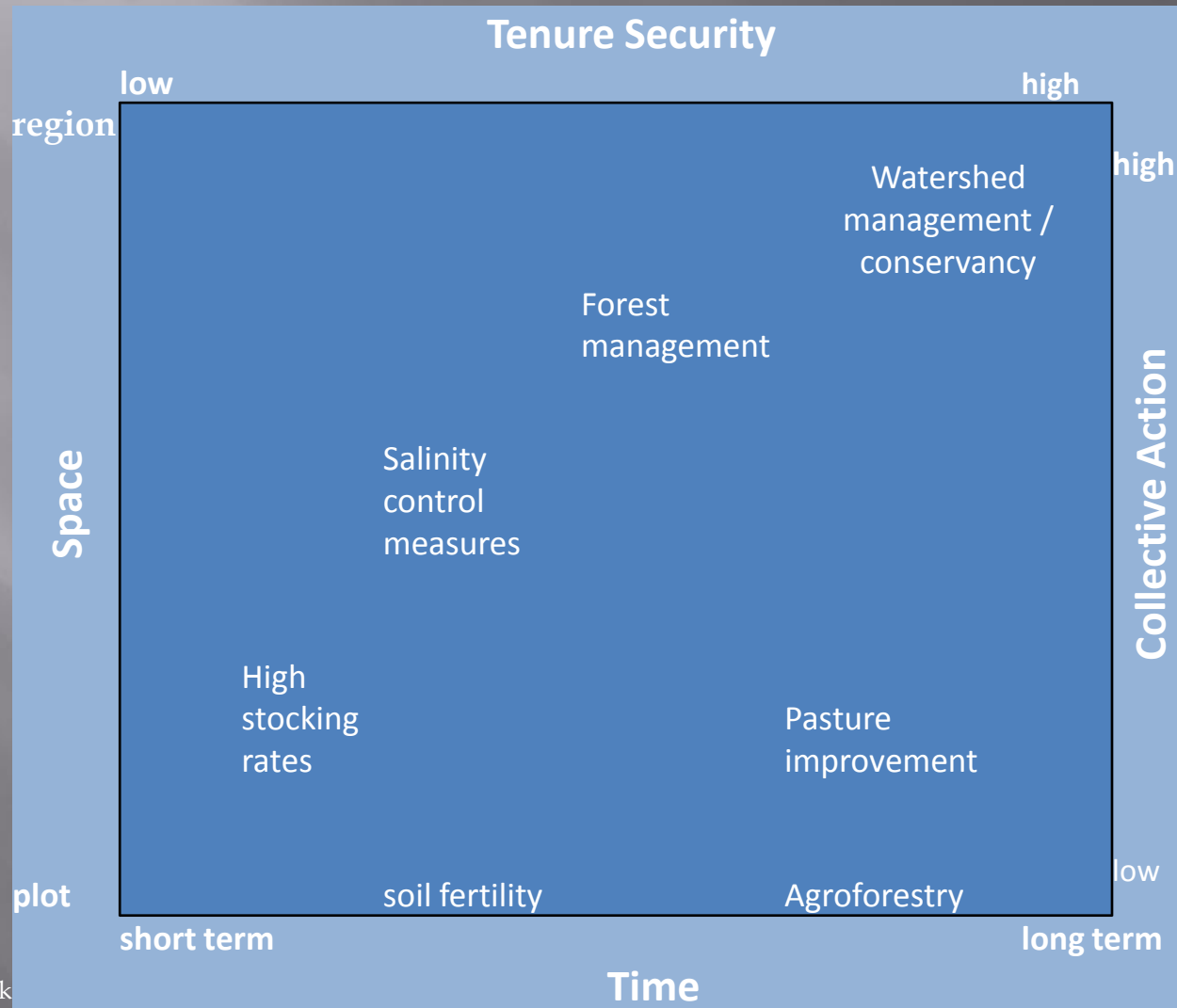




Tenure arrangements should be
context-specific



Relationship among property rights, collective action and land management-hence opportunity for adaptive capacities



In conclusion, a few adaptation issues

- the sensitivity of household livelihoods,
- and their capacity to respond to impacts depend on:

- ▣ Land size and productivity
- ▣ Availability and affordability of agricultural inputs
- ▣ The state of village infrastructure
- ▣ Access to cash income from off farm livelihood activities
- ▣ Connection to family and social networks
- ▣ Access to credit and markets
- ▣ Gender of household head
- ▣ Community or household self-organisation
- ▣ Security of land and resource tenure

The background is an abstract, textured surface. It features a mix of earthy tones: various shades of green (from light sage to dark forest green), brown (from tan to deep chocolate), and a prominent vertical streak of blue and purple. The texture appears rough and layered, with visible brushstrokes or peeling paint, giving it a vintage or artistic feel.

Thank you