South Africa Country Level Policy Outputs

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Policy Output Process

- Scenario workshops - 2018
  - Participatory scenario development
- Integration of modelling & expert knowledge
  - ➢Calibrated and implication statements
  - ➢Scenario summaries
  - ➢Country summaries
  - ➢Emerging commonalities and cross-cutting policy topics
- Policy workshop - November 2021
  - ➢project wide – Malawi, Tanzania, Zambia
  - ➢Hybrid mode
- South African National Dialogue – February 2022

South Africa

Policy Outputs Overview

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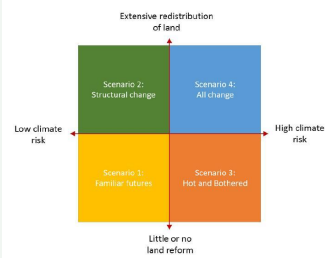
Key Messages for South Africa

iFEED focusses at the national level on:

- Changes to nutrition security and climate-smart agriculture.
- Analysis includes **2050 projections** of:
  - National food production, nutrition security and emissions
  - for four contrasting scenarios,
  - with implications for national food system policy processes.



- Four future scenarios for South Africa, derived from a participatory stakeholder workshop, were characterised by **two critical uncertainties –**
  - the magnitude of climate risks (low = RCP2.6; high = RCP8.5)
  - extent of land reform (low = LT = little; high = HT = extensive).
- Subnational simulations of future climate, crops & emissions underpin projected changes at national level.

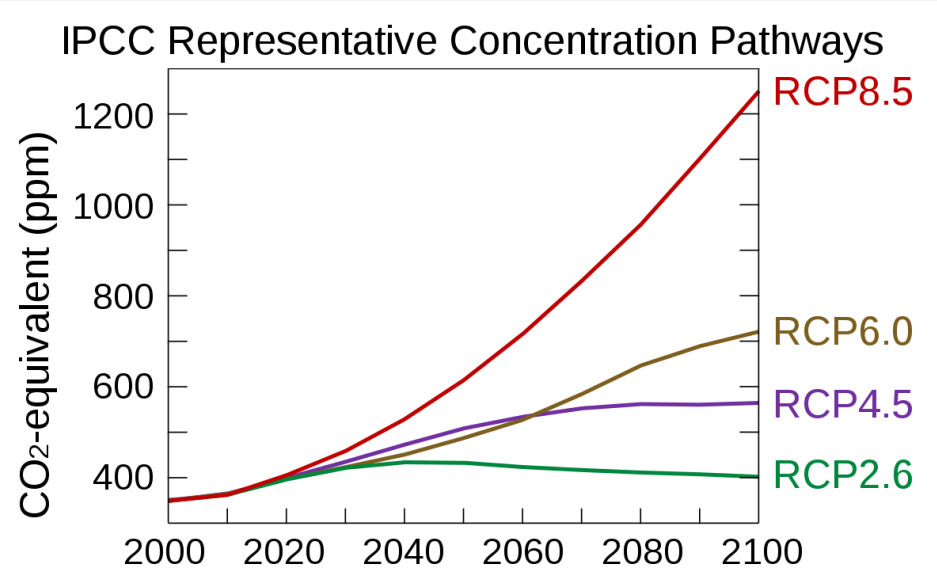
South Africa Scenarios – Land & Climate

Extensive Land Redistribution

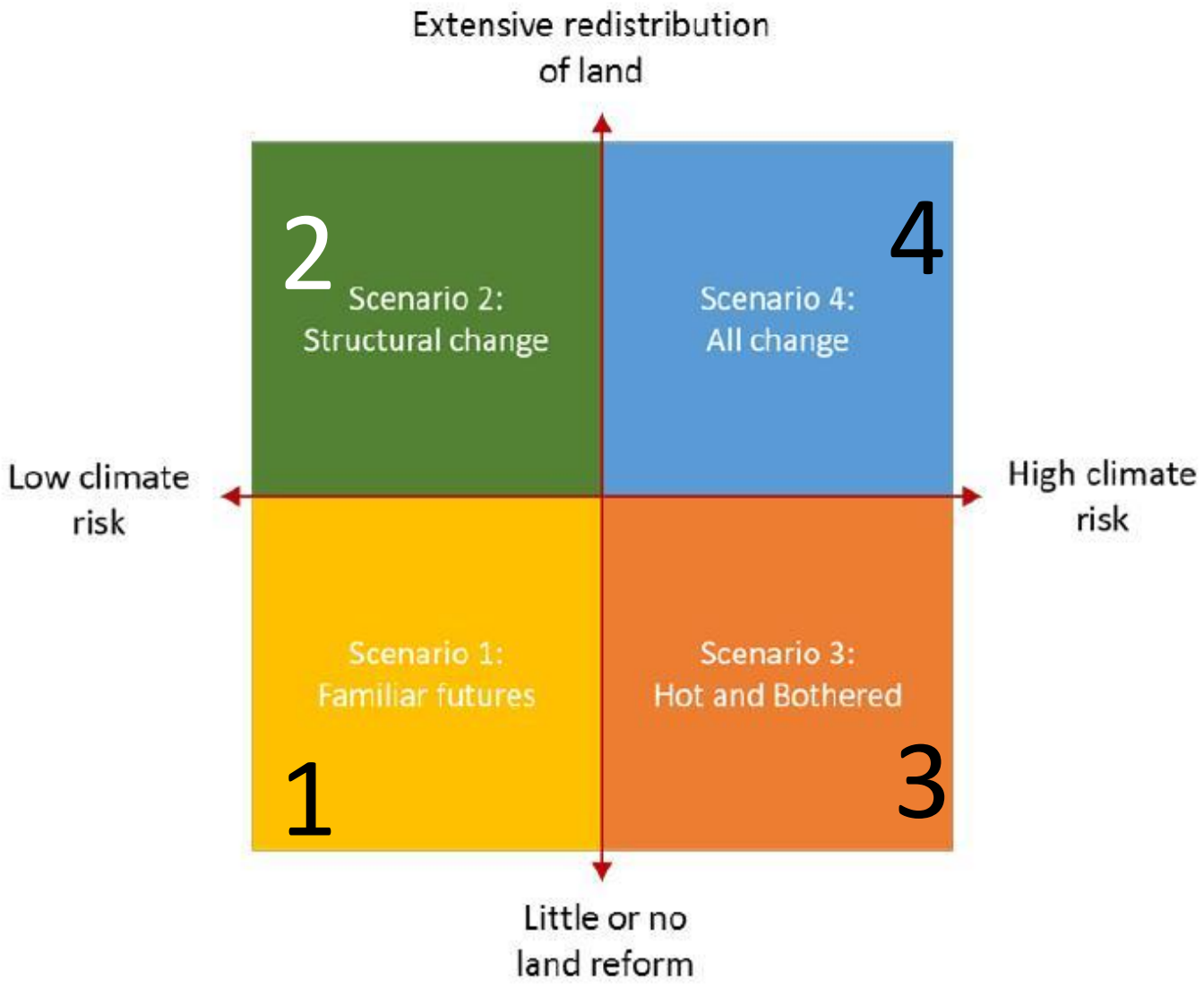
Low Climate Risk(RCP2.6)

High Climate Risk(RCP8.5)

Little or No Land Reform



South Africa Scenarios



1: Familiar futures scenario is characterised by low climate risk (RCP2.6) & insignificant land reform (LT). This future assumes little change to arable crop areas, but increased livestock pasture & crop diversification.

2: Structural change scenario is characterised by low climate risk (RCP2.6) & significant land reform (HT). This future assumes crop diversification, a fall in arable crop areas & increase in livestock pasture areas.

3: Hot and bothered scenario is characterised by high climate risk (RCP8.5) & insignificant land reform (LT). This future assumes crop diversification, an increase in arable crop areas & irrigation expansion, & decrease in livestock pasture areas.

4: All change scenario is characterised by high climate risk (RCP8.5) & significant land reform (HT). This future assumes crop diversification, a fall in agricultural area & irrigation expansion.

Modelling Results for South Africa

1. **Extreme conditions** likely to increase for ALL scenarios,

   => relatively bad years of domestic food production more likely.

2. **Food production:** from 2x to more than 2x from 2000 baseline,

   with increase up to 178% RCP8.5, Low land reform LT for crops

   depending largely on climate scenario.

   Maize remains main crop in ALL scenarios, crop diversity increases 10% low climate risk to 25% in the high risk scenarios.

3. **Low climate risk scenarios -** pasture areas increase.

4. **High Climate Risk & Low Land Reform Scenario (3)** - cropland increases & increased land conflicts & ecosystem degradation.

   High Climate Risk & High Land Reform (4) – Decreased crop(10%) & pasture(15%) leading to expected improvements in ecosystem services.

Modelling Results for South Africa

5. **Crop yields increase on average >> 50% from for ALL scenarios**

   Climate change - **small negative impact on maize, soybean & potato yields** of 4% (RCP2.6) to 14% (RCP8.5), even with incremental adaptation.

6. **Nutrient Supply** improves Across ALL 4 scenarios, on a per capita basis, despite a projected population increase of 68%.

   - Climate risk impact on nutrition security >> Land Reform (better outcomes under RCP8.5 than RCP2.6).

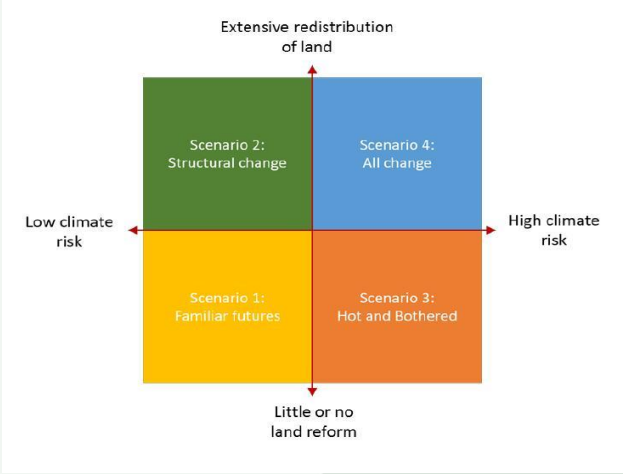
   IF trade is re-orientated to optimise nutrition security, under ALL scenarios domestic produced calories & exported without compromising essential micronutrient supplies for domestic consumption.

7. **Net emissions** (GHG & SOC changes) increase in ALL scenarios,

   from 57% to 60% in low climate risk scenarios (RCP2.6),

   from 128% to 150% in high climate risk scenarios (RCP8.5).

South Africa Country – Key Messages



Food Production, Land Use and Irrigation:

- Crop yields increase on average by 50%+ for ALL scenarios.
- Maize remains main crop but crop diversity increases.
- With **high land reform,** food production increases substantially (crop & livestock) **but**
  - Under **low climate risk,** increases potential for land (& water) conflict (2);
  - Under **high climate risk,** crop and pasture areas decline could improve environmental sustainability (4).
- With **low land reform**, food production increases (crop & livestock)
  - Under **low climate risk,** adaptive measures & expansion irrigation & increases conflict
  - Under **high climate risk,** technology innovations improve crop yields & pasture areas (3)

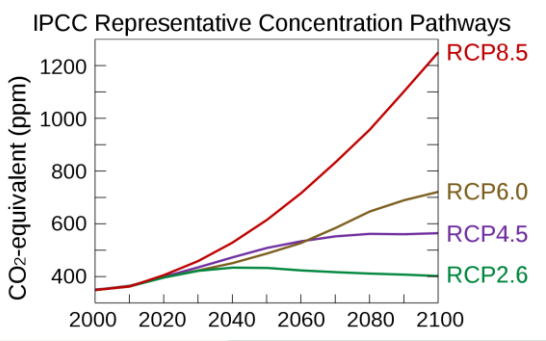
South Africa Country – Key Messages-2

Trade and Nutrition Security = good news

- **Nutrient supply generally improves across ALL scenarios by 2050**;
  - Calcium & Iron remain inadequate.
- Climate has more significant impact that land reform.
- If **nutrition security optimised through trade**, significant amount of calories are exported, without compromising domestic consumption.
- Low import dependence for nutrition security in all scenarios, & potential to re-orientate domestic agriculture to better reflect domestic nutritional requirements.

- Increased food production & crop diversity, **an increased availability of nutritionally-diverse food crops, lower food prices and increased livelihood resilience** might be expected across all four scenarios.

South Africa Country – Key Messages-3



Climate extremes:

- **Extreme conditions likely to increase across all scenarios** including more drought and shortening of rainy season across South Africa.
- Relatively bad years in terms of domestic food production **more likely.**

For Temperatures:

- In **low climate risk** scenarios, average temperatures warm by roughly 1°C by 2050.
  Extremely hot days increase by an average of roughly 1-3 days per month (esp January).
- In **high climate risk** scenarios, average temperatures warm by roughly 2.5°C by 2050.
  Extremely hot days increase by an average of roughly 4-6 days per month (esp January).

For Rainfall:

- **Increased number of months experiencing drought conditions.**
- General **shortening of rainy season** across South Africa.
- **Reduced average rainfall amount** during the wet months of October-April.

South Africa Country – Key Messages-4

Climate Smartness

- **Net emissions increase in ALL scenarios** & non-CO_2 greenhouse gases increase by 50%.
- Soil Organic Carbon losses in ALL scenarios while emissions intensity declines in 3 of 4.

Climate-smart agriculture impacts are mixed across ALL scenarios,

- **Productivity increases thro intensification** of production system are accompanied by emissions increases and soil organic carbon decreases.
- Net production emissions range from 57-60% in low climate risk scenarios to 128-150% in high climate risk scenarios.
- Non-CO2 GHGs increase across ALL scenarios by around 50%.

- **All scenarios, SDGs 2, 3, 13 are likely to be achieved by the production system** but there may be negative impacts on SDG6 and SDG12 (due to higher irrigation).

South Africa: Policy Messages - 1

- **All scenarios require additional policy considerations** to minimise impacts of increased food production on ecosystem degradation & biodiversity loss, and limit conflict over land and water use.

South Africa: Policy Messages - 2

- Crop diversification & irrigation needed to increase productivity & **deal with increasing climate extremes**

- **Land reform** requires modified policy response: e.g. under significant reform, government support will be needed for **successful uptake of new agricultural technologies in newly created medium-sized land reform farms.** Under insignificant reform, increased land conflicts will require management interventions.

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Cross-cutting Policy Topics with other SADC countries

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Priority Policy Topic Areas across 4 Countries

	Zambia	Tanzania	Malawi	South Africa
Diversification	X			
Commercialisation	X	X		X
Irrigation	X			
Malnutrition/food security	X	X	X	
Productivity and Resilience		X		X
Technology		X		
Implementation barriers			X	
Climate risks			X	X
Livestock			X	
Land Use and Reform			X	X

- Agricultural resilience under climate risks
- Agricultural commercialisation under climate risk
- Nutrition and food security under climate risks
- Land use change and reform under climate risks

Summary Implications for South Africa

- **Government support necessary for successful** uptake of new agricultural technologies in newly created medium-sized land reform farms.
  Without government support: productivity declines on land reform farms.
- Low climate risk scenarios: likely **no significant change to pest & disease impacts** UNLESS trade increases or with land reform increase homogeneous agricultural systems=> likely increased pest & disease pressures (RCP2.6, high land reform).
- High climate risk scenarios: **pest & disease impacts likely to worsen** due to climate change (potentially 13% crop yield loss), possible increase reliance on pesticides, & decline in environmental sustainability.
- **Increased food production & crop diversity & increase availability of nutritionally-diverse food crops** => lower food prices & increased livelihood resilience across all 4 scenarios – improving food security outcomes.
- **All scenarios need careful policy considerations to minimise impacts on ecosystem degradation and biodiversity loss, & limit land & water use conflict**.

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Policies for a Food Secure Africa

National Agricultural Marketing Council
providing market access for south african agriculture

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