iFEED

# South Africa – Future Food Scenarios

**iFEED (the integrated Future Estimator for Emissions and Diets) is an extensive evidence base designed to help decision-makers identify policy pathways to a climate-smart, food- and nutrition-secure future for Africa.**

Scenarios for 2050 were developed in collaboration with South African experts, combining low and high climate risk with different outcomes of land reform[1]. Results are compared to a baseline centred on the year 2000.

## Key findings:

**Temperature extremes will occur more frequently by the 2050s under both the low and high-risk climate scenarios.** This includes days with an average temperature above 35°C. Both high and low climate risk scenario show average temperatures warming throughout the year compared to 1990-2010, **by roughly 2.5 °C and 1°C**, respectively.

**There are slight trends towards longer extreme dry spells and shorter extreme wet spells during the October-April period.** The number of months experiencing drought conditions is also projected to increase. These changes are larger in the high climate risk scenarios; however, there is significant disagreement between climate models for projections of rainfall and related quantities.

**Improved crop varieties are needed to avoid an increase in yield shocks (i.e. particularly low-yielding years for crops).** In the absence of effective adaptation, yield shocks typically increase, meaning yields decrease, often in key growing areas.

**Irrigation, drought-resistant varieties, and varieties that keep pace with warming-induced growing season losses are all key to maintaining and increasing crop yields.**

**Climate change preparedness - i.e. action in the face of high climate risk - could improve nutrition security.** In low climate risk scenarios, nutrition security remains broadly the same as the baseline. In high climate risk scenarios, nutrition security is very slightly improved for some nutrients compared to the baseline. This is due to increased irrigation and crop diversity (diversification away from maize and towards other crops, including fruit and vegetables), resulting from climate change preparedness.

**Calcium and iron remain inadequate under both low and high climate risk scenarios.** Apart from this, micronutrient requirements continue to be met in the 2050s, and sufficient calories for food security are achieved in all scenarios.

**GHG emissions increase in all scenarios by about 50%**, although net GHG emissions (accounting for soil organic carbon changes as well as GHG changes) increase more, and more than double in the high climate risk scenarios.

[1] High and low climate risk were characterised by RP2.6 and RCP8.5. Land reform towards equitable redistribution of agricultural land towards smallholders was characterised by higher crop productivity and a decrease in crop area in the scenarios. The degree and even direction of impact depend critically on the effectiveness of land reform implementation and the degree to which this increases or decreases the land area in agricultural production.

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