

Tanzania - Future Food Scenarios

The integrated Future Estimator for Emissions and Diets (iFEED) framework is being used to assess how food secure and climate smart different possible future agricultural scenarios will be in Tanzania. These different possible futures are defined by the scenarios outlined in the participatory scenario workshops conducted in 2018 with national government and international stakeholders, as well as expert inputs from project partners in Tanzania.¹

Key findings:



In the high technology scenarios, sufficient calories and nutrition security are achieved for most nutrients and improve compared to baseline levels (but still marginal for calcium). Future food production increases in the high technology scenarios - by at least 7 times in the case of crop production, and more than tripling livestock production.



For the low technology scenarios, insufficient calories and nutrition security is not achieved for most nutrient (vitamin C and thiamine marginal) and worse than baseline, despite approximately 50% increases in food production. In some cases, nutrients adequate at baseline fall below requirements.



Green house gas emissions intensities (emissions relative to the level of food production) decrease in all scenarios, although more so in the low technology scenarios due to lower increases in emissions relative to food production changes. Net emissions decrease in all scenarios other than the high climate risk and high technology scenario, where emission increases are much larger than increases in soil organic carbon.



Warming of the climate is projected to be higher and extreme climatic conditions more frequent under both high and low climate risk, although worsen with high climate risk.

Precipitation trends - when averaged across the majority of the country - are less robust, however climate models show a tendency toward higher rainfall totals during the wet months of December-April, accompanied by more rainfall on very wet days, increased rainfall intensity and a reduction in the number of rainy days. There are also slight trends towards longer extreme dry spells and shorter extreme wet spells around the start and end of the wet season (i.e. October and April). This is consistent with a shortening of the wet season across much of the country. The number of months experiencing drought conditions is also projected to increase. However, there is significant disagreement between climate models for projections of rainfall and related quantities.



The rate of yield shocks (i.e. low yielding years) is likely to increase in the low technology scenarios, but could decrease with large gains in mean yields projected in the high technology scenarios.



Irrigation and investment in new crop varieties to boost yields (drought-resistant varieties and varieties that keep pace with warming-induced growing season losses) are key to maintaining and increasing crop yields.

¹ iFEED results for food production, nutrition, climate extremes and emissions are based on four contrasting scenarios that explore a range of possible futures - centred on the year 2050 to Tanzanian agriculture. These scenarios are defined by low or high climate risk (RCP2.6 and 8.5 respectively), and low or high technological development. The high technology scenarios are optimistic scenarios, with increases to irrigation, large management and technology improvements to crop yields and optimisation of crop growing areas to maximise crop production. Low technology futures are more similar to the status quo in terms of crop management and varieties, however crop areas and crop diversity still increase.