

# Water and food

## Smallholder farmers need a leg-up to adapt to climate change

*Unless action is taken now to make agriculture more sustainable, productive and resilient, climate change impacts will seriously compromise food production in countries and regions that are already highly food-insecure. This is one of the main messages emanating from the Food and Agriculture Organisation's (FAO's) latest State of Food and Agriculture Report, published earlier this year. This year's report is focused on climate change, agriculture and food security.*



By 2050, global food demand is projected to 60% more than current levels. This constant increasing demand for food is driven by population and income growth, as well as rapid urbanisation. It is anticipated that the highest population increased will be concentrated in regions with the highest prevalence of undernourishment and high vulnerability to the impacts of climate change.

The effects of climate change on agricultural production and livelihoods are expected to intensify over time, and to vary across countries and regions. Beyond 2030, the negative impacts of climate change on the productivity of crops, livestock, fisheries and forestry will become increasingly severe in all regions.

Productivity declines would have serious implications for food security. Food supply shortfalls would lead to major increases in food prices, while increased climate variability would accentuate price volatility. Since the areas most affected would be those with already high rates of hunger and poverty, food price

increases would directly affect millions of low-income people.

While climate change is but one driver of poverty and food insecurity, its impacts are expected to be substantial. In the absence of climate change, and with continuing economic progress, most regions are projected to see a decline in the number of people at risk of hunger by 2050. With climate change, however, the population living in poverty could increase by between 35 and 122 million by 2030 relative to a future without climate change, largely due to its negative impacts on incomes in the agricultural sector.

The increase in the number of poor would be biggest in sub-Saharan Africa, partly because its population is more reliant on agriculture. For the reasons outlined above, food and agriculture must be central to global efforts to adapt to climate change, through policies and actions that address vulnerabilities and risks and promote agricultural systems that are resilient and sustainable.

### Potential impacts of climate change for agriculture in sub-Saharan Africa

- Overall impacts on yields of cereals, especially maize, are negative across the region.
- The frequency of extremely dry and wet years increases.
- Much of southern Africa is drier, but rainfall increases in East and West Africa.
- Rangeland degradation and drought in the Sahel reduce forage productivity.

FAO warns that a “business as usual” approach could put millions more people at risk of hunger compared to a future without climate change. Most affected would be populations in poor areas in sub-Saharan Africa and South and Southeast Asia, especially those who rely on agriculture for their livelihoods. Future food security in many countries will worsen if no action is taken today.

Overhauling farming and food systems will be complex due to the vast number of stakeholders involved, the multiplicity of farming and food processing systems, and differences in ecosystems. Yet, efforts must begin in earnest now as the adverse impacts of climate change will only worsen with time, the report emphasises.

The FAO report underscores that success in transforming food and agriculture systems will largely depend on urgently supporting smallholders in adapting to climate change. Developing countries are home to around half a billion smallholder farm families who produce food and other agricultural products in greatly varying agro-ecological and socio-economic conditions. Solutions have to be tailored to those conditions; there is no one-size-fits-all fix.

The FAO report describes alternative, economically viable ways of helping smallholders to adapt and making the livelihoods of rural populations — often the most exposed to the downside risks of climate change - more resilient. The report provides evidence that adoption of ‘climate-smart’ practices, such as the use of nitrogen-efficient and heat-tolerant crop varieties, zero-tillage and integrated soil fertility management would boost productivity and farmers’ incomes.

Widespread adoption of nitrogen-efficient practices alone would reduce the number of people at risk of undernourishment by more than 100 million, the report estimates. It also identifies avenues to lower emission intensity from agriculture. Water-conserving alternatives to the flooding of rice paddies for example, can slash methane emissions by 45%, while emissions from the livestock sector can be reduced by up to 41% through the adoption of more efficient practices.

FAO’s road map also identifies policies and financing opportunities for the sustainable intensification of agriculture.

### The way forward

Negative global effects of climate change are already being felt in some cereal crop yields. Climate change will likely lead to a loss of nutritional content of some foods, such as declining zinc, iron and protein counts in staple cereals, and trigger new health issues — including diarrhoea for humans and an array of transboundary animal diseases.

Beyond 2030, according to scientific evidence, negative pressures on food production will be increasingly felt everywhere. Until then, adverse impacts of higher temperatures are sharply skewed towards developing countries, pointing to dimmer prospects for their food self-sufficiency.

Helping smallholders adapt to climate change risks is critical for global poverty reduction and food security. Close attention should be paid to removing obstacles they may face and fostering an enabling environment for individual, joint and collective action, according to the report.

FAO urges policy makers to identify and remove such barriers. These obstacles can include input subsidies that promote unsustainable farming practices, poorly aligned incentives and inadequate access to markets, credit, extension services and social protection programmes, and often disadvantage women, who make up to 43% of the agricultural labour force.

The report stresses that more climate finance is needed to fund developing countries’ actions on climate change. International public finance for climate change adaptation and mitigation is growing and, while still relatively small, can act as a catalyst to leverage larger flows of public and private investments.

More climate finance needs to flow to sustainable agriculture, fisheries and forestry to fund the large-scale transformation and the development of climate-smart food production systems.



Adaptation and mitigation of climate change must occur in tandem. Without action, agriculture will continue to be a major contributor to global greenhouse gas emissions. But by adopting climate-smart practices and increasing the capacity of soils and forests to sequester carbon, emissions can be reduced while stepping up food production to feed the world’s growing population, the report said.

Food systems can further contribute by minimising food losses and waste, as well as by promoting healthier diets that also leave a lighter environmental footprint.

To access the report, Visit: [www.fao.org/publications/sofa/en/](http://www.fao.org/publications/sofa/en/)