



## Editorial

# Nature-based climate adaptation solutions and a fresh perspective on the role of farmers are key to improving food security



**Dr. Martin Frick** is the Senior Director for Policy and Programme Coordination in the United Nations Framework Convention on Climate Change. He is a member of the Editorial Board of the Future of Food: Journal on Food, Agriculture and Society.

Agriculture and food systems are strongly influenced by the adverse effects of climate change. At the same time, they hold a great potential for greenhouse gas mitigation. An holistic, people-centred approach that seeks sustainable solutions for climate action encourages farmers to apply nature-based solutions.

Just as the overall costs of climate change will be higher at 2°C than at 1.5°C of global warming, the costs for providing food security are expected to rise significantly once the 1.5°C mark is passed. To reduce future climate risks, the International Panel on Climate Change (IPCC) has called for increased ambition in both climate mitigation and adaptation in its latest report (reference).

Agriculture and food systems, given their cross-cutting nature, offer ample opportunities for both climate mit-

igation and adaptation. On the one hand, agriculture emissions alone contribute 14% of total greenhouse gas emissions (IPCC, 2014), and this number rises if other steps in the food chain are included. These emissions could be considerably reduced if we address food waste, overproduction and food value chains properly and if we transform our food system towards healthier diets with less red meat and sugar consumption (EAT-Lancet Commission, 2019).

On the other hand, climate change undermines the production of major crops like wheat, rice and maize. Climate variability causes more complex, frequent and intense floods, droughts and storms and threatens to reverse the gains made in improving crop yields and fighting hunger and malnutrition.



Climate variability and extremes are key drivers of the recent rise in global hunger and among the main causes of severe food crises. This is particularly true for countries whose agricultural systems are highly sensitive to variations in precipitation and temperature patterns, as well as for regions where a large share of the population depends on agriculture (FAO, IFAD, UNICEF, WFP and WHO, 2018).

Climate change affects availability, quality, access and distribution of food, yields and cultivation areas, pests, food prices and supplies, and thus it has considerable consequences for sustainable development, human health and poverty eradication (IPCC, 2018). As such, the effects of climate change contribute to increased inequality and add to the challenge of fulfilling the central promise of the United Nation's 2030 Agenda for Sustainable Development of leaving no one behind.

We need to prioritize and accelerate actions for the poorest and most marginalized people, including women and girls, vulnerable groups and indigenous people. The primary focus, therefore, should be to increase food security by promoting sustainable climate adaptation measures. Such nature-based adaptation solutions create several benefits and present cost-effective solutions to the challenges posed by a changing climate.

Nature-based solutions sit at the centre of ecosystem management, disaster risk reduction, climate change adaptation and development planning. Agroforestry, for example, has several benefits for climate change-affected communities – if properly adapted to the local context, it has the potential to increase resilience to climate hazards while also fighting poverty and hunger.

A study by Thorlakson and Neufeldt (2012) for example, analysed the opportunities provided by farmer-managed agroforestry projects in Kenya's Nyando District, to reduce vulnerability to droughts, floods and climate variability. They found that agroforestry improved farm productivity and household wealth, as farmers could gain additional income through fruit and seedlings and could reduce soil erosion while increasing soil fertility at the same time.

The opportunities of nature-based solutions have also been recognized by the UN General Assembly through the recent adoption of the UN Decade on Ecosystem Restoration (2021-2030), underlining that restoring ecosystems is a key measure to accelerate the achievement of climate resilience in accordance with the principles and goals of the 2030 Agenda for Sustainable Development (UN Environment, 2019).

In addition, the mitigation benefits of nature-based solutions are substantial, especially if combined with measures to improve soil health and fertility given the increased potential of carbon sequestration. The way mitigation activities are designed and implemented, however, needs to be people-centred to ensure that the people doing the farm work are the ones who receive the benefits. This requires a paradigm shift with regards to the role of farmers: They are the ones who manage the land and thus generate crucial benefits for the broader society.

To ensure that mitigation and adaptation measures improve local people's food security and overall livelihood situation in an equal and sustainable manner, it is helpful to apply holistic thinking and an integrated approach, as suggested in the 2030 Agenda. This means, taking environmental, social and economic perspectives into account to develop strong climate action policies that offer sustainable agricultural choices. It requires an approach beyond silos, and suggests working across sectors and ministries, involving local decision makers like mayors and farmers' associations and cooperatives, the health sector, soil experts and meteorologists. One way to achieve such integrated thinking would be to apply the landscape approach, that considers the relationships between different sectors, e.g., the expansion of agriculture and the emissions from deforestation. Furthermore, the Koronivia Joint Work on Agriculture could serve as a global policy forum addressing high-level questions related to science and implementation, coordination, synergies and experience exchange (UNFCCC, 2019).

A transparent dialogue with farmers is required to ensure the inclusion of their knowledge and expertise. Such an approach would reflect recognition of the interconnectedness of human and ecosystem well-being, because healthy land and water ecosystems are the basis for resilient food systems.

## References

EAT-Lancet Commission (2019). Healthy Diets from Sustainable Food Systems. Food, Planet, Health. Summary Report. Retrieved from [https://eatforum.org/content/uploads/2019/01/EAT-Lancet\\_Commission\\_Summary\\_Report.pdf](https://eatforum.org/content/uploads/2019/01/EAT-Lancet_Commission_Summary_Report.pdf)

FAO, IFAD, UNICEF, WFP and WHO (2018). The state of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome: FAO. Retrieved from <http://www.fao.org/3/I9553EN/i9553en.pdf>



Intergovernmental Panel on Climate Change IPCC (2018): Impacts of 1.5°C of Global Warming on Natural and Human Systems [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15\\_Chapter3\\_Low\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter3_Low_Res.pdf)

Intergovernmental Panel on Climate Change (IPCC) (2014): *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. [Core Writing Team, R.K. Pachauri and L.A. Meyer, eds]. Geneva, Switzerland.

Thorlakson, T. and H. Neufeldt (2012). Reducing subsistence farmers' vulnerability to climate change: Evaluating the potential contributions of agroforestry in western Kenya. *Agriculture & Food Security* 1(15), doi:10.1186/2048-7010-1-15

UN Environment (2019, March 6). New UN Decade on Ecosystem Restoration to inspire bold UN Environment Assembly decisions. Retrieved from <https://www.unenvironment.org/news-and-stories/story/new-un-decade-ecosystem-restoration-inspire-bold-un-environment-assembly>

UNFCCC (2019). Issues related to agriculture. Retrieved from <https://unfccc.int/topics/land-use/workstreams/agriculture>