



Forests, food security and nutrition

Many forest foods are loaded with nutrients and freely available – just two of the ways that forests support food security and nutrition.

With the world's population projected to reach 9 billion people by 2050, the imperative to produce more food — with an emphasis on calories — drives global food policies and plans.¹ Related concerns about the rapid loss of the world's forests are leading to sustainable intensification efforts, which aim to grow more food per hectare.² Nevertheless, experts argue that farming continues to expand at the expense of natural resources, including forests.^{1,2}

Paradoxically, forests and trees make an essential contribution to food security through the biodiversity that they harbor.³ Wild foods provide nutrients for millions of people, and forest ecosystem services and biodiversity are vital to agriculture.¹ Recent figures indicate that forest foods contribute only a small amount (0.6%) of the world's food supply,⁴ but food security is about more than calories.^{5,6}

“ Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life.⁷ ”

Key Facts

Forests and the four pillars of food security

The UN Food and Agricultural Organization points out that food security has four pillars. Forests support all of them.

Food availability

Both wild and cultivated foods rely on good soil quality and pollinators — two of the many ecosystem services supported by forests.

Access to food

Forests are like supermarkets for many of the world's poor, and give millions a means to earn cash — a key resource for increasing access to food.

Stability over time

Forests and their resources are more resilient to climate variability and market fluctuations than farming systems.¹³

Food use

Medicinal forest plants and nutrients in wild food keep many healthy, and fuelwood from forests makes cooking possible.



Forest foods provide essential micronutrients

Foods from forests — leaves, seeds, nuts, fruits, mushrooms, honey, insects and wild animals — are rich in micronutrients. Globally, they tend to contribute only a small amount of caloric energy,⁴ but make an important contribution to diet diversity and nutrition.^{6,8,9} For example, in rural parts of Tanzania, wild foods contribute 2% of energy intake and 19–30% of vitamin A, vitamin C and iron.⁹ In developing countries, where people with micronutrient deficiencies number in the billions,⁵ forest foods contribute to the fight against this so-called “hidden hunger”.

Stable access to food is income sensitive

Cash income can give households greater access to nutritious foods and serve as a buffer when their own food production has gone awry. Forests provide formal employment to 13.2 million people worldwide and a source of income in informal systems to at least another 41 million.⁴ Fuelwood and charcoal production are estimated to contribute to the income of 20% of Africa's population.⁴

Wood energy allows billions to get the most out of available food

In developing countries, 40% of the population relies on fuelwood for cooking, and 784 million of those people use it for boiling water.⁴ Being able to cook expands the variety of foods consumed, which is key to nutrition.¹⁰ Yet overextraction is reducing the availability of fuelwood. In rural areas of developing countries, where people have no alternative energy sources, the lack can reduce the quality and variety of food consumed.^{1,8,10}



A study of 21 African countries showed that children eat a wider variety of foods, including more fruit and vegetables, with increased tree cover.⁶



Feast and famine
The global food paradox
Between 2011 and 2013, 842 million people — 12% of the world's population — were chronically hungry. Millions more were micronutrient deficient.⁵ At the same time, more than 10% of the world's adult population was obese.¹¹

Forests provide stability through resilience and fill gaps

Forest foods are rarely the sole source of caloric energy for families.¹² Yet people eat more wild foods — including those from forests and trees — in seasons when other food is less plentiful.⁹ For some households, forests also provide safety nets in times of scarcity.¹³ Having access to wild foods for both household consumption and sale can increase households' diversification and hence strengthen their resilience to climate variability and external shocks.¹ Globally, forests also hold up to 80% of terrestrial biodiversity, a repository of genetic resources that may prove crucial for adapting to climate change in the future.¹

Many forest ecosystem services underpin food production

Forests protect soil and water, maintain soil quality, help regulate local climates, provide habitats for pollinators and predators of agricultural pests, and are storehouses for biodiversity.^{8, 10} These ecosystem services are crucial for maintaining the sustainability and nutrition sensitivity of farms, and provide a strong case for mosaic landscapes that integrate trees with agriculture.¹

Empowering women can strengthen food security for communities

The roles of women and men in collecting, producing and using tree and forest resources tend to differ, depending on the region.¹⁴ Usually, women's specialist knowledge revolves around household food and nutrition, and is crucial for communities navigating through food crises.¹⁵ Yet women often have limited access to and benefits from forests and trees.⁵ Researchers argue that empowering women in the forestry sector and achieving gender balance in decision-making groups will help increase the contribution of forests to food security.¹⁵

References

- Sunderland T, Powell B, Ickowitz A, Foli S, Pinedo-Vasquez M, Nasi R and Padoch C. 2013. *Food Security and Nutrition: The Role of Forests*. Discussion Paper. Bogor, Indonesia: Center for International Forestry Research. <http://www.cifor.org/online-library/browse/view-publication/publication/4103.html>
- Padoch C and Sunderland T. 2013. Managing landscapes for greater food security and improved livelihoods. *Unasylva No. 241: Forests for Food Security and Nutrition* 64:3–13. <http://www.fao.org/docrep/019/i3482e/i3482e.pdf>
- Sunderland TCH. 2011. Food security: Why is biodiversity important? *International Forestry Review*. 13:265–74. <http://www.bioone.org/doi/abs/10.1505/146554811798293908>
- Food and Agricultural Organization of the United Nations (FAO). 2014. *State of the World's Forests: Enhancing the Socioeconomic Benefits from Forests*. Rome: FAO. <http://www.fao.org/3/a-i3710e.pdf>
- Food and Agricultural Organization of the United Nations (FAO), International Fund for Agricultural Development (IFAD) and United Nations World Food Programme (WFP). 2013. *The State of Food Insecurity in the World 2013: The Multiple Dimensions of Food Security*. Rome: FAO. <http://www.fao.org/docrep/018/i3434e/i3434e.pdf>
- Ickowitz A, Powell B, Salim MA and Sunderland TCH. 2014. Dietary quality and tree cover in Africa. *Global Environmental Change* 24:287–94. doi:10.1016/j.gloenvcha.2013.12.001
- Pinstrup-Andersen P. 2009. Food security: Definition and measurement. *Food Security* 1:5–7. doi:10.1007/s12571-008-0002-y
- Powell B, Ickowitz A, McMullin S, Jamnadass R, Padoch C, Pinedo-Vasquez M and Sunderland T. 2013. The role of forests, trees and wild biodiversity for nutrition-sensitive food systems and landscapes. Expert Background Paper for the International Conference on Nutrition 2. Rome: Food and Agricultural Organization of the United Nations and World Health Organization. http://www.fao.org/fileadmin/user_upload/agn/pdf/Powelletal_ICN21_ForestsandTreesforNutritionSensitive_FINAL_NoEndnote.pdf
- Powell B, Maundu P, Kuhnlein HV and Johns T. 2013. Wild foods from farm and forest in the East Usambara Mountains, Tanzania. *Ecology of Food and Nutrition* 52:451–78. doi:10.1080/03670244.2013.768122
- Mohamed-Katerere JC and Smith M. 2013. The role of ecosystems in food security. *Unasylva No. 241: Forests for Food Security and Nutrition* 64:14–22. <http://www.fao.org/docrep/019/i3482e/i3482e.pdf>
- World Health Organization. 2014. *Obesity and Overweight*. Factsheet No. 311. <http://www.who.int/mediacentre/factsheets/fs311/en/>
- Vincenti B, Termote C, Ickowitz A, Powell B, Kehlenbeck K and Hunter D. 2013. The contribution of forests and trees to sustainable diets. *Sustainability* 5:4797–824. doi:10.3390/su5114797
- Wunder S, Borner J, Shively G and Wyman M. 2014. Safety nets, gap filling and forests: A global-comparative perspective. *World Development*. DOI: 10.1016/j.worlddev.2014.03.005
- Sunderland T, Ickowitz A, Reyes-Perez V, Babimigira R and Achdiawan R. 2014. Challenging perceptions about men, women, and forest resources: Results from the PEN global dataset. *World Development*. DOI: 10.1016/j.worlddev.2014.03.003
- Food and Agricultural Organization of the United Nations (FAO). 2013. *Forests, Food Security and Gender: Linkages, Disparities and Priorities for Action*. Background Paper for the International Conference on Forests for Food Security and Nutrition: Increasing the Benefits for Rural People, 13–15 May. Rome: FAO. <http://www.fao.org/docrep/018/mg488e/mg488e.pdf>

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Mutamba (cover), Aulia Erlangga, Ollivier Girard, Tri Saputro

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