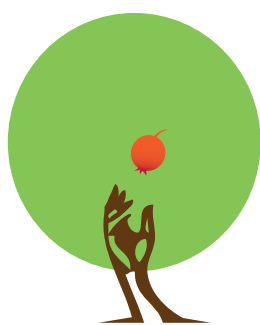


Towards food security
and improved nutrition:
increasing the contribution
of forests and trees



In May 2013, FAO, in partnership with Bioversity International, the Center for International Forestry Research, the World Agroforestry Centre (ICRAF) and the World Bank, hosted the International Conference on Forests for Food Security and Nutrition. This meeting, the first of its kind, was attended by more than 400 participants, comprising experts from governments, civil-society organizations, indigenous and other local communities, donors and international organizations from more than 100 countries. This policy brief has been produced on the basis of the sharing of information and knowledge that took place during the conference, and of the summary produced at its conclusion.

The conference was sponsored by the UK's Department for International Development; Germany's Federal Ministry of Food, Agriculture and Consumer Protection; Norway's Ministry of Agriculture and Food; the United States Forest Service; ICRAF; and the World Bank.



Presentations, background information and the summary can be found at:

www.fao.org/forestry/food-security





What policy-makers need to know and do

● *What they need to know*

- An estimated 840 million people are undernourished globally, most of them – 827 million – in developing countries.
- Millions of people depend on food from forests and trees outside forests to increase the nutritional quality and diversity of their diets. About 2.4 billion people use woodfuel for cooking, mainly in developing countries.
- The harvest of food from forests is an important strategy, especially among the very poor, for coping with periods of food insecurity, such as those caused by natural disasters and war.
- Forests and trees outside forests are essential for agricultural production because they protect soil and water, maintain soil fertility, help regulate climate, provide habitat for wild pollinators and the predators of agricultural pests, and constitute a rich store of biodiversity of potential use in agriculture.
- Greater attention on forests and trees outside forests would therefore strengthen the four pillars of food security (access, availability, use and stability) while facilitating consumption of nutritionally adequate diets (in terms of quantity, variety, diversity and nutrient content).

● *What they need to do*

- Provide secure land and forest tenure and equitable access to resources by applying the principles outlined in the Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security.
- Develop mechanisms for coordination across the agricultural, forestry, livestock, fisheries, energy, mining and other relevant sectors to ensure stronger coherence of food security and nutrition interventions and better policy alignment.
- Promote policies that increase access by smallholders to credit, technology, extension services and insurance, as well as to markets for their forest and tree products and ecosystem services.
- Achieve gender equality in the formulation, implementation and evaluation of food security, nutrition and poverty alleviation policies and investment strategies.
- Strengthen mechanisms for the collection and timely dissemination of data on the contribution of forests and trees to food security and nutrition for use in policy making.



Towards food security and improved nutrition

FAO's 2013 report on the state of food insecurity in the world, estimates that at least 840 million people – 12 percent of the global population – were unable to meet their dietary energy requirements in 2011/13. Thus, one in nine people worldwide has insufficient food for an active and healthy life. The vast majority of the chronically hungry – 827 million – live in developing countries, where the prevalence of undernourishment in 2011/13 is estimated at 14.3 percent.

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food

that meets their dietary needs and food preferences for an active and healthy life. There are four criteria – pillars – that must be met simultaneously to realise food-security objectives: food must be physically available, economically accessible, and usable, and these three conditions must be relatively stable over time. Greater attention to forests and trees outside forests would strengthen these four pillars. To ensure good nutrition, access to an adequate quantity and quality of food must be combined with good care and feeding practices, including access to health services and a healthy environment.

THE BENEFITS OF FORESTS AND TREES OUTSIDE FORESTS

Forests occupy one-third of the Earth's land area, and about another half of the total land area has sparsely scattered trees – usually known as trees outside forests¹. Globally, billions of people depend to varying degrees on forests and trees outside forests for their food security and nutrition – directly through the consumption and sale of foods, medicines and woodfuel derived from forests and trees outside forests, and indirectly through forest-related employment, the provision of forest ecosystem services, and the domestication of forest-derived foods.

Economic, social and health benefits

Income from forests and trees on farms can increase the food security of rural households. For example, 4–5 million women in West Africa earn about 80 percent of their income from the collection, processing and marketing of nuts harvested from naturally occurring shea trees.

Foods obtained from forests and trees outside forests – in the form of leaves, seeds, nuts, honey, fruits, mushrooms, insects and wild animals – have been important in rural diets for thousands of years. Forest and tree foods often have very high nutritional value. Many forest animals are rich in readily absorbed iron, zinc and vitamin B12 as well as proteins and fat, and forests also provide diverse leafy vegetables, fruits, nuts and other plant foods important for the intake of vitamin A, iron, folate, niacin and calcium. In Burkina Faso, for example, where tree foods constitute 30 percent of rural diets, it has been reported that 100 grams of a fruit from the baobab tree contains 100 percent of a child's recommended daily allowance of iron and potassium, 92 percent of a child's recommended daily allowance of copper, and 40 percent of a child's recommended daily allowance of calcium.

The rich diversity of medicinal plants found in forests is important for the well-

being of millions of forest-dependent people and forms the basis of many health products now produced globally. Forests and trees outside forests are important sources of fodder for livestock. Millions of people earn income – and thereby help feed their families – by growing, harvesting, processing and selling wood as a source of domestic energy. An estimated 2.4 billion people use woodfuel for preparing and preserving their food.

Forests and trees outside forests are long-term presences in landscapes and act as buffers against shocks. They provide environmental stability – for example by reducing soil erosion – and add to the capacity of people, especially the poor, to meet their nutritional needs in times of economic, political or environmental crisis.

Environmental benefits

Natural forests are valuable storehouses of biodiversity with huge potential for the discovery, development and improvement of new foods and medicines. There are considerable prospects for using more forest species, especially plants and insects, for large-scale food production.

The ecosystem services provided by forests and trees outside forests often underpin agricultural production and are essential for the well-being of urban and rural communities. For example, forests and trees outside forests protect water and soil resources, assist with soil development, including fertility, regulate climate, and provide habitat for wild pollinators and the predators of agricultural pests.

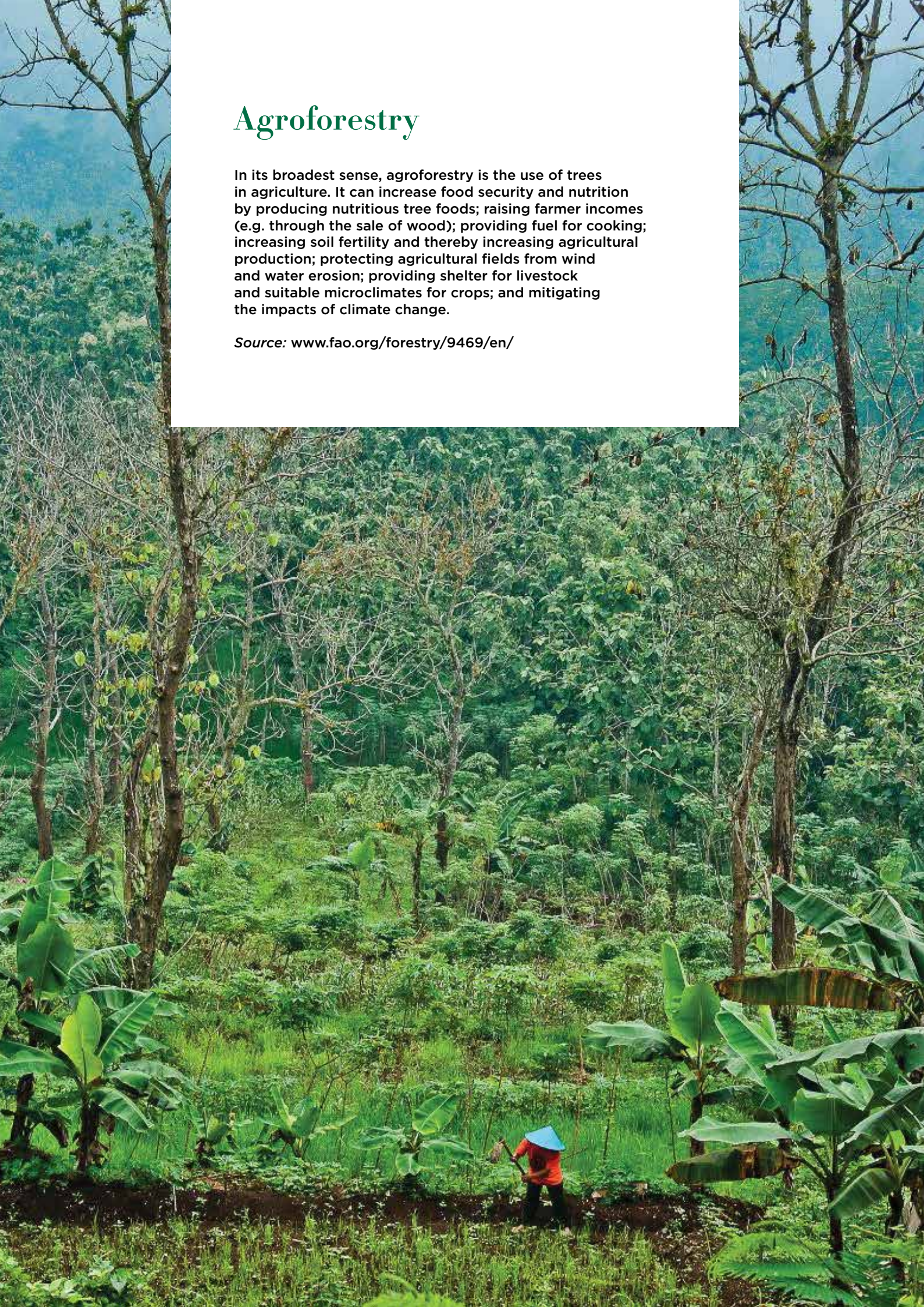
Forested wetlands and mangrove forests help protect coastal areas from flooding, thereby increasing the stability of food production on coastal lands. Forests also play vital roles in river-based and coastal fisheries, which are often particularly important in poor communities. Mountain forests protect valuable water catchments and therefore ensure that downstream communities and agricultural lands receive high-quality, evenly discharged water.

¹ As used in this brief, the term “trees outside forests” encompasses agroforestry systems, other trees on farms, and trees in non-forested rural and urban landscapes.

Agroforestry

In its broadest sense, agroforestry is the use of trees in agriculture. It can increase food security and nutrition by producing nutritious tree foods; raising farmer incomes (e.g. through the sale of wood); providing fuel for cooking; increasing soil fertility and thereby increasing agricultural production; protecting agricultural fields from wind and water erosion; providing shelter for livestock and suitable microclimates for crops; and mitigating the impacts of climate change.

Source: www.fao.org/forestry/9469/en/



Key constraints

Although forests and trees outside forests are critical for global food security and nutrition, their role is still underappreciated. Five key constraints worsen the situation.

Insecure tenure

A lack of secure rights to land discourages farmers, especially the poor, from investing in land management and from protecting and planting local tree species that could help improve food security and nutrition. A lack of equitable and secure access to productive resources such as land, forests and trees, and a lack of clarity on who owns those resources, can lead to conflict and aggravate hunger, food insecurity and malnutrition. Secure tenure rights are particularly important for forestry and agroforestry compared with agriculture because of the relatively long period that may be required to realize benefits.

Lack of intersectoral coordination

A lack of coordination across various sectors and stakeholders is a cause of disjointed and duplicated policy actions that can have serious impacts on land and forest management and consequently on food security and nutrition. In Indonesia, for example, different governmental agencies use different maps when granting land-use permits. In Suriname, decisions on intersectoral coordination made at the district level can be overruled at the national level in the granting of mining, logging and agricultural concessions. The potential is high for confusion, conflict, poor land management and, ultimately, increased food insecurity.

Land-use planning and regulations often segregate agriculture and forests; in other words, they deal with one sector or the other, but not both together, leading to overlaps and inefficiencies. Poor land

management associated with unsustainable forest harvesting, mining and agriculture can impoverish both land and communities. Land and forest degradation leads to food insecurity and malnutrition.

Inadequate services for smallholders

Many smallholder farmers and forest-dwellers find it difficult to obtain the information, technology, finance, market access and other resources they need to improve their land management and build successful enterprises with which to achieve food security and adequate nutrition. Local institutions often lack the capacity to support the management and control of forests and trees outside forests, and the marketing of goods and ecosystem services, by smallholders. National and subnational institutions, policies and programmes rarely offer smallholders and other local people a genuine role in decision-making.

The gender gap

Women and men tend to have differing tasks and responsibilities in the production and provision of food. Many women spend a large amount of time collecting – and have a great deal of knowledge about – forest and tree foods and woodfuel, while men seldom have responsibility for collecting and using natural resources for household use.

Women face gender-specific constraints that cut their productivity and limit their income-earning potential. For example, there are gender gaps in access to land, credit, technology, employment and markets for forest products. Even though they are often primary forest users, women usually participate much less than men in forest management and policy decisions. Cultural, socio-economic and institutional factors have contributed to gender inequality in the forestry sector. They range from the

social perceptions of women's roles and the time women have to spend on domestic responsibilities and childcare to disparities in literacy, education, physical abilities, technical skills and access to training and extension services.

Lack of data, and limited use of existing knowledge

There is a lack of data on the role of forests and trees outside forests in food security and nutrition; for example, the nutritional value of many forest foods is poorly documented. On the other hand, indigenous people and other local communities know a great deal about forest foods and the management of

food-producing species, but this knowledge is usually ignored in land-use strategies and management plans.

Data on the contribution of forests and trees outside forests to national economies and employment are often lacking or unreliable. For example, small-scale forest enterprises are usually underrepresented in survey samples, even though nationally they may employ many thousands of people; data on the production and consumption of woodfuel and other forest products are often underestimated because many such products are collected for household use or sold informally; and specific data on trees on farms are rarely collected.



Policy recommendations

- I** *Provide secure land and forest tenure and equitable access to resources by applying the principles outlined in the Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security.*

The livelihoods of many rural poor are based on secure and equitable access to and control over land and forest resources. These resources are crucial for food security and nutrition and are important in a range of social, cultural and religious practices.

Options for policy action

- Recognize, respect and protect the rights of indigenous people and other local communities in the use and management of forests and trees outside forests.
- Engage vulnerable groups, such as indigenous people, local communities, women, youth and disadvantaged men, in the development of tenure and governance frameworks.
- Safeguard rights by monitoring the application of the principles outlined in the Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security.

TREE TENURE LEADS TO RE-GREENING

Since 1985, farmer-managed natural regeneration has been encouraged in Niger by, among other things, a policy shift that awarded tree tenure to farmers; it has led to the “re-greening” of approximately 5 million hectares. Farmer-managed natural regeneration in the Sahel has led to improvements in sorghum and millet yields, and positive relationships have been observed with dietary diversity and household income.

Source: Dawson, I., Place, F., Torqueblau, E., Malézieux, E., Iiyama, M., Sileshi, G., Kehlenbeck, K., Masters, E., McMullin, S. & Jamnadass, R. 2013. *Agroforestry, food and nutritional security*. Background paper for the International Conference on Forests for Food Security and Nutrition, 13–15 May 2013.

2 *Develop mechanisms for coordination across the agricultural, forestry, livestock, fisheries, energy, mining and other relevant sectors to ensure stronger coherence of food security and nutrition interventions and better policy alignment.*

The coordination of sectors and multiple stakeholders important in delivering food security and nutrition goals is needed to ensure efficiency, coherence and the more effective realization of national food-security and nutritional goals.

Options for policy action

- Encourage intersectoral partnerships and landscape-scale approaches to the sustainable use of forests and trees outside forests as a means of ensuring food security and nutrition.
- Support the inclusion of the forestry sector in the formulation and implementation of policies for food security and nutrition, poverty alleviation and rural development.

INTERSECTORAL LANDSCAPE APPROACHES

Some countries are incorporating intersectoral landscape strategies as central parts of national development policies. In Albania, a project that integrates forest, pasture and agriculture management is showing that with the strong involvement of local communities, entire landscapes can recover, with dramatic results. Improved forest governance, local management, small-scale investments and managed grazing measures have halted unsustainable land use, thereby reducing carbon emissions and protecting key watersheds. Incomes from forestry and agriculture have increased by 50 percent in targeted microcatchment areas.

*Source: Dewees, P. 2013. **Bouncing back: forests, trees and resilient households.** Background paper for the International Conference on Forests for Food Security and Nutrition, 13–15 May 2013.*

3 *Promote policies that increase access by smallholders to credit, technology, extension services and insurance, as well as to markets for their forest and tree products and ecosystem services.*

Smallholder-targeted policies can help ensure that rural communities are able to fully tap the potential of forests and trees outside forests to improve their food security and nutrition.

Options for policy action

- Create policies that support the development of:
 - entrepreneurial, financial and planning skills among small-scale producers to encourage their participation in, and maximize the earnings they receive from, agroforestry, tree-growing, non-wood forest products, wood processing and the provision of ecosystem services;
 - producer associations that can assist small-scale operators to gain access to markets and receive equitable benefits from forests, including through local added-value, fair trade and certification;
 - markets for forest ecosystem services, such as the downstream provision of clean drinking water, and other innovative financing mechanisms to support the role of forests and trees outside forests in food security and nutrition.

SUPPORTING SMALL AND MEDIUM-SIZED ENTERPRISES

Investments that support smallholder agroforestry ventures in marketing their products are yielding encouraging results for both investors and producers. Microloans to small and medium-sized forest enterprises have been shown to lead to rises in family incomes in rural areas and to increases in health, nutrition and quality of life, especially when such microloans are made to women. In many cases, producer associations designed to meet the needs of smallholders and marginalized and excluded people have had a significant impact on improving livelihoods.

Source: International Conference on Forests for Food Security and Nutrition, 13–15 May 2013.

4 *Achieve gender equality in the formulation, implementation and evaluation of food-security, nutrition and poverty-alleviation policies and investment strategies.*

Women and men have particular knowledge, skills and socio-economic roles that can help improve food security if they have equal opportunity to participate in forest-related decision-making and benefit-sharing.

Options for policy action

- Review and revise relevant policies and laws to ensure women's and men's equal access to forest resources, including land ownership and inheritance, access to education, credit services, technology and employment opportunities and active participation in decision-making processes.
- Support the development of methodologies and improved coordination for the collection of gender-disaggregated data in forestry and natural resource management to inform food security and nutrition policy and programme design, implementation, monitoring and evaluation.
- Promote and implement awareness-raising and advocacy programmes and strategies on gender equality in natural resource management.

HELPING RURAL WOMEN TO ORGANIZE IN INDIA

Gum karaya is a vegetable gum produced as an exudate by trees of the genus *Sterculia*. In Gujarat, India, thousands of very poor women rely on gum collection for their incomes, but most do not have collection licences and are forced to sell to local licensed contractors at very low prices. An intervention by the Self Employed Women's Association, a women's union, helped female gum collectors organize into groups. These groups secured collection licences for their members and were able to negotiate higher selling prices with the Gujarat State Forest Development Corporation. Eventually, the women also won the right to sell on the open market, where prices are higher.

Source: Estruch, E. & Rapone, C. 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, 13-15 May 2013.

5 *Strengthen mechanisms for the collection and timely dissemination of data on the contribution of forests and trees to food security and nutrition for use in policy-making.*

Improving the quality and availability of data is a prerequisite for improving decision-making to support the role of forests and trees outside forests in food security and nutrition.

Options for policy action

- Develop policies that support:
 - greater collaboration between institutions, internationally and nationally, to improve data collection for, reporting on, and the monitoring of, non-wood forest products, ecosystem services, wildlife and other forest-related aspects of food security and nutrition;
 - the development of national-level indicators of food security and nutrition that incorporate forests and trees outside forests;
 - participatory research on the sustainable use of wild forest plant species, as well as insects and other animals, to increase the sustainability of food production and nutrition.

PARTICIPATORY TREE DOMESTICATION IN CAMEROON

In the last decade, a participatory approach to the domestication of trees has emerged in Cameroon as a collaborative effort between scientists and farmers. The approach combines scientific advances in knowledge with local communities' experiences to bring a range of valuable indigenous fruit tree species into cultivation. It has had significant impacts. More fruits have been observed in farmers' diets for approximately 50 percent of adopters, and farm cropping systems have become more diverse. Smallholder incomes have increased from the sales of fruits and fruit-tree nursery stock (for planting by other farmers), and there has been a reduction in human migration from rural to urban areas because young people see that there is now a viable future in agroforestry.

Source: Dawson, I., Place, F., Torqueblau, E., Malézieux, E., Iiyama, M., Sileshi, G., Kehlenbeck, K., Masters, E., McMullin, S. & Jamnadass, R. 2013. *Agroforestry, food and nutritional security*. Background paper for the International Conference on Forests for Food Security and Nutrition, 13–15 May 2013.

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