

Forests Food Security Climate Change Bioenergy

Forests and Food Security

Forests play an important role in contributing to food security, both directly and indirectly. An estimated 450 million people worldwide live directly off the food and services forests provide, an estimated 1.2 billion people live indirectly off forests.

Examples of direct contributions:

- staple food such as sago, tubers and bushmeat
- fruits, berries, nuts, honey, and oils
- essential nutrients including proteins, carbohydrates, fats, vitamins
- diet diversity and flavour
- snacks and relishes (fruits, seeds and roots)

Bushmeat is but one example of the importance of forests as a source of food. A recent study in Southern Cameroon revealed that agriculture provided 80% of the carbohydrate intake, while rural Cameroonians received 90% of their protein from bushmeat. In addition, forests serve as a buffer to alleviate seasonal hunger, i.e. during dry spells and monsoons.

Forests also indirectly impact food production. Forests regulate the water cycle, they protect watersheds and provide clean water, and they protect and conserve soils. Trees provide shelter for agricultural crops in mixed cropping systems and agroforestry schemes; they provide fodder for livestock and offer grazing in silvopastoral systems; and they conserve biodiversity.

Many domesticated food crops originate from forests (e.g. the forest palm *Elaeis guineensis*- oilpalm), as do many medicines (e.g. the anti-malaria medicine, chinin, from the bark of the tree *Cinchona spp.*). Forests, with their medicinal plants, are the main “pharmacy” for many people in developing countries.

Forests provide employment and income for people, thus allowing them to buy food.

Forests and Climate Change

The world's forests store 1 200 Gigatons of carbon. This is more carbon than in all remaining oil stocks and twice that in the atmosphere. Growing trees absorb carbon dioxide from the atmosphere and thus contribute to climate change mitigation.

Forests also contribute to greenhouse gas emissions reduction by providing wood fuels to substitute fossil fuels. When wood has been sustainably harvested and processed into final products, wood products store carbon for many years to come. For example, wood building materials have much lower energy-emission balances than competing materials such as plastic, cement or steel. Forests also influence the microclimate for agricultural production in their vicinity.

When converted to other land uses (deforested) or degraded, forests can be a major carbon dioxide emitter. With an annual global deforestation rate of about 13 million hectares (equivalent to the area of Greece), forests contribute about 17.4 percent to annual greenhouse gas emissions. During the period 2000 – 2005, almost half of the area that was deforested was offset by new forests that were planted. However, a majority of planted forests were concentrated in a handful of countries.



Climate change also affects forest health. Increases in extreme weather events such as storms, floods and droughts can severely impact forests. Climate change is leading to an increase in forest fires and to the spread of forest pests and diseases. In Canada alone, an outbreak of mountain pine beetle led to the destruction of 12 million hectares of forests during recent years, and the affected area is still spreading. The outbreak is attributed to warmer winters and wetter summers.

Forests and Bioenergy

Forests provide the oldest of biofuels, fuelwood and charcoal. Traditionally, wood has been used – and is still in use – for cooking and heating, but also for brick baking, tobacco and latex curing, metal smelting, and even for fuelling cars. Globally, every second tree harvested – about 1.2 billion cubic meters per year – is used for fuel. In Sub-Saharan Africa, about 80 percent of the wood harvested is used for energy generation. In rural areas in developing countries, wood is the energy source for a vast majority of cooking; fuelwood is a critical component of food security.

Bioenergy provides 10.6 percent of the world's primary energy supply, and most of it originates from wood. Twenty-five percent of the world's charcoal production – about 10 million tons – are annually used in Brazil for iron production.

The role of forests in biofuel production will be the object of renewed interest, once the so-called second generation biofuels become technically and economically viable. Technological advances suggest that the conversion of cellulosic material to produce liquid biofuels will be far more efficient than using plant materials to produce liquid biofuels.

Conclusion

Forests and trees are major components of food security, both in the protection of agricultural soils and water resources, and in the provision of food, in particular for the most vulnerable. Forests also play an important role in climate change mitigation through carbon conservation (reduced deforestation and forest degradation), carbon sequestration (afforestation and reforestation) and carbon substitution (replacing fossil fuels with wood fuels). Forests provide an important alternative to fossil fuels and still produce the most important biofuel – wood.

These facts enhance the importance of forests in the quest for food security under the threat of climate change. It is important to assess the long-term impacts of forest conversion when land-use changes are considered. Countries should carefully weigh all goods and services forests provide, and the trade-offs between different land-uses, including the impacts on greenhouse gas emissions. The new challenges posed by climate change make it paramount to develop integrated land-use policies and strategies.

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