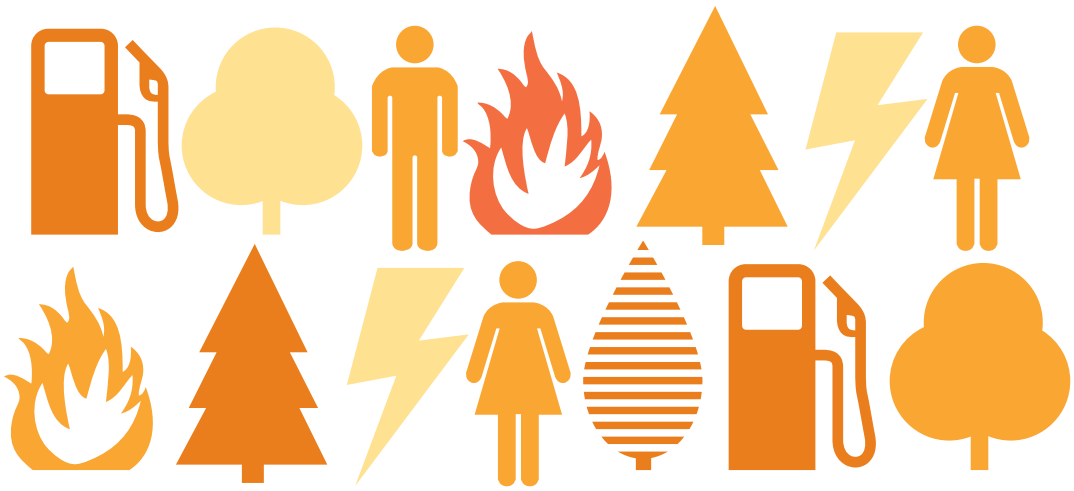
WWF REPORT INT 2011

WWF Living Forests Report: Chapter 2

FORESTS AND ENERGY

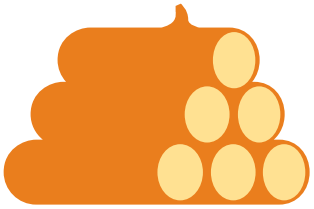
Forests have provided us with wood for cooking and heating for thousands of years – but today the relationship between forests and energy is more critical than ever.



Cheap, easily accessible fossil fuels are running out, and their use releases huge amounts of greenhouse gas into the atmosphere, driving climate change and acidifying oceans. WWF's vision is that, by 2050, 100 per cent of the world's energy will come from sustainable renewable sources – and bioenergy is likely to form a significant part of this.

But there are risks: as the world's population grows and competition for land becomes more acute, producing more bioenergy could increase food and water shortages, and destroy natural habitats. What social and environmental safeguards are needed to manage these risks? And can we produce more energy and still achieve WWF's goal of no overall loss of forest area or forest quality – Zero Net Deforestation and Forest Degradation (ZNDD)?

WHAT IS BIOENERGY?



CAN WE PRODUCE MORE ENERGY AND STILL CONSERVE FORESTS?

Bioenergy describes all energy derived from biomass (living or recently living material). The main sources of biomass are crops, natural forests and tree plantations. In the future, new technologies are likely to produce fuel from a wider range of materials, including algae.

Worldwide, 2.6 billion people use traditional biomass, mainly wood and charcoal, for cooking. In recent years, industrialized countries have begun exploring new technologies that convert biomass into heat, electricity and liquid fuels (biofuels).

Bioenergy can reduce greenhouse gas emissions because the carbon released can be recaptured during plant growth. But it may take decades for emissions from bioenergy to be absorbed, and converting carbon-rich ecosystems to bioenergy production could outweigh any climate benefits.

Bioenergy can be produced from a variety of feedstocks:

- **Wood:** logs and stumps from plantations or forests
- **Oil and fats:** crops (rapeseed, sunflower, palm oil, soy, jatropha, etc.), waste oils, animal fats
- **Sugar and starch crops:** sugarcane, sugar beet, corn, etc.
- **Residues:** harvesting and processing residues from agriculture (stalks, husks, etc.) and forestry (crowns, bark, sawdust, etc.)
- **Waste:** manure, municipal solid waste
- **Algae**

THE LIVING FORESTS MODEL

The Living Forests Model, developed with the International Institute for Applied Systems Analysis, allows us to explore the implications of various land-use scenarios. We used the Model to look at the potential impact of the large increase in bioenergy required by ambitious targets to reduce greenhouse gas emissions.

What the Model shows us

Deforestation: It should still be possible to achieve WWF's goal of ZNDD by 2020 while increasing bioenergy production, assuming ambitious climate change mitigation goals are the driving force behind bioenergy expansion. If bioenergy producers need to avoid land-use changes that cause increased greenhouse gas emissions, bioenergy should not become a major cause of forest loss.

Forest management: To meet anticipated demand for wood, especially for bioenergy, the area of forest that is managed for timber production is projected to increase by over 300 million hectares between now and 2050. While this is preferable to deforestation, the impacts will largely depend on how closely the principles of sustainable forest management are followed.

Tree plantations: Fast-growing tree plantations will continue to increase, largely to meet the demand for bioenergy: around 250 million hectares of new tree plantations are likely to be added between now and 2050. By 2050, the projected expansion rate may be more than 10 million hectares per year.

Other natural ecosystems: As land competition becomes more acute, bioenergy will threaten other diverse natural ecosystems too, such as shrublands and grasslands. Growing demand for bioenergy could become the main driver behind their conversion.

Food consumption and security: Increased demand for bioenergy could drive up food prices and threaten food security. But it is possible to meet the world's food, fibre and energy needs while protecting forests if we move toward a global diet in which people in richer countries reduce calories from animal protein while people in poor countries increase them, improve agricultural efficiency and reduce food waste.

A threat?

Badly managed bioenergy expansion could destroy valuable ecosystems, undermine food and water security, harm rural communities and prolong wasteful energy consumption. Possible negative impacts include:

- Major additional stresses on the planet's land and water resources;
- Unsustainable expansion of fast-growing tree and crop plantations, and extractive forestry in natural forests;
- Forests and other natural ecosystems converted into cropland for food production displaced by bioenergy elsewhere;
- Increased greenhouse gas emissions from deforestation and the energy needed to grow, refine and transport bioenergy.

Or a solution?

Well-managed bioenergy production can provide energy security, rural development, greenhouse gas emission reductions and incentives for good forest stewardship. Measures that could help develop efficient, fair and sustainable bioenergy include:

- A reduction in overall energy demand;
- Changes in consumption patterns, in particular reducing over-consumption and waste of food to reduce the footprint of agriculture worldwide;
- Regulations and standards to ensure bioenergy reduces greenhouse gas emissions and does not negatively affect biodiversity, food security, water resources or people's rights and livelihoods;
- Factoring bioenergy development into strategies to achieve ZNDD and conserve biodiversity;
- Managing more natural forests for bioenergy production, but doing so at sustainable levels;
- Researching new renewable energy technologies that require less land and water.

Read the full report online at panda.org/livingforests.

WWF

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony and nature.

www.panda.org/livingforests