

Benefits of Bioenergy to Canada

Bioenergy is useable energy that is produced from biomass. Biomass, in turn, is simply any organic material that can be converted into energy. It includes forest industry mill residues, forest harvesting residues, agricultural residues (including manure from livestock operations), the organic component of municipal solid waste, and energy crops. About 6% of Canada's energy needs are met by renewable bioenergy, and the level of use could be much higher. The benefits to Canada of using bioenergy are multiple and substantial.



Bioenergy is greenhouse-gas neutral

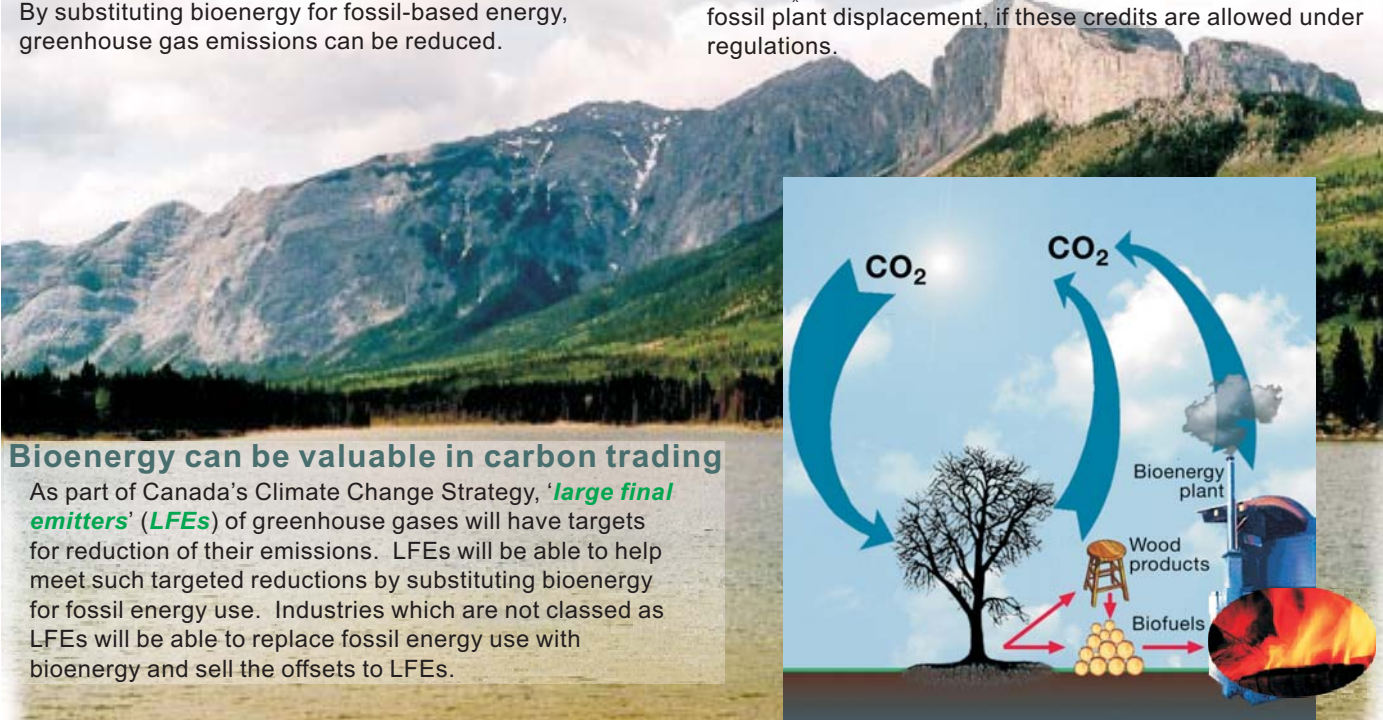
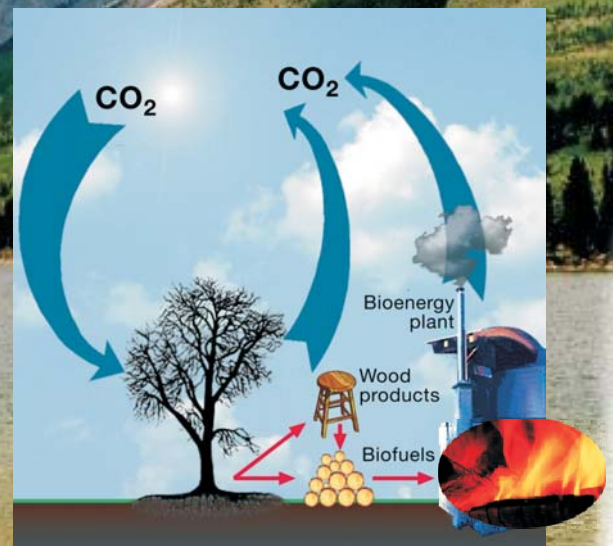
When fossil fuels are converted into energy, they emit greenhouse gases such as carbon dioxide (CO₂). Biomass also **emits** CO₂ when it decays naturally or when it is used to produce energy. The difference is that living biomass in plants and trees **absorbs** CO₂ from the atmosphere through photosynthesis. Thus there is a closed cycle with **no net emission of greenhouse gases**. By substituting bioenergy for fossil-based energy, greenhouse gas emissions can be reduced.

Bioenergy has lower emissions of other gases

Compared with fossil fuels, bioenergy production and use results in lower emissions to the atmosphere of other gases not considered greenhouse gases. It produces less sulphur (SO_x), less nitrogen oxides (NO_x), and somewhat less carbon monoxide and hydrocarbons. The lower emissions of SO_x and NO_x may result in **emission reduction credits** from fossil plant displacement, if these credits are allowed under regulations.

Bioenergy can be valuable in carbon trading

As part of Canada's Climate Change Strategy, '**large final emitters**' (LFEs) of greenhouse gases will have targets for reduction of their emissions. LFEs will be able to help meet such targeted reductions by substituting bioenergy for fossil energy use. Industries which are not classed as LFEs will be able to replace fossil energy use with bioenergy and sell the offsets to LFEs.





Bioenergy creates income from waste

Converting biomass to energy eliminates costly **waste disposal** problems, creating revenue rather than adding to costs. Examples include using residues from wood processing industries to create process heat and power, diverting municipal waste from landfills for energy generation, tapping the gas produced by landfills for power production, using digester gas from sewage treatment plants, or from manure produced by livestock operations, for heat or electricity production.



Bioenergy can help manage energy costs



In some situations, bioenergy can actually cost less than energy from other sources. Biomass can replace fossil fuel for heat production, and allow an industry to create its own electricity, even selling some surplus to the grid. Key factors include the availability of waste biomass and market-based costs for fossil fuels and electricity.

Bioenergy provides energy stability and diversification

Bioenergy produces a steady supply of energy which is '**strategically dispatchable**' to meet fluctuating power needs. It can complement other types of **renewable energy** which depend on the wind blowing or the sun shining. Whereas fossil fuel prices in Canada depend on global price fluctuations, 'home-grown' long-term biomass supply contracts can provide fuel price stability.



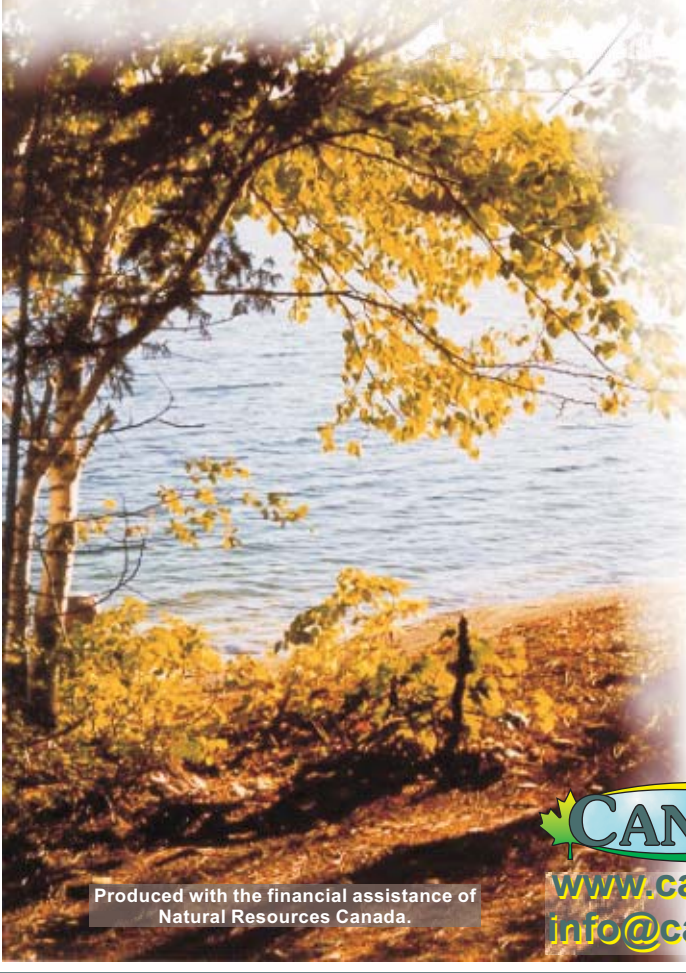
Bioenergy creates jobs

Bioenergy creates more **permanent employment** than other energy sources. For the same capital investment, it creates almost twice as many jobs as other types of renewable energy, and three times as many as fossil energy. These **jobs are local**, often in rural and high-unemployment areas. Through the multiplier effect, they can help small communities to grow and local economies to develop.



Bioenergy is 'green'

The use of bioenergy from sustainable biomass resources can help create a green image for individuals, companies, municipalities and governments. Power produced from bioenergy can be certified as '**green power**' and sold at a premium in the market. It can also be used to meet **renewable portfolio standards** for power production, where such standards are designed to allow it. Given a supportive policy environment, bioenergy can provide a sustainable solution to future energy demands.



CANBIO is a national, industry-driven, non-profit organization of individuals, businesses and non-governmental organizations interested in the development, promotion and use of bioenergy. We work with both government and private-sector partners to promote biomass-based energy solutions, improve recognition of the benefits they provide to Canadians and help expand the use of renewable, sustainable, green bioenergy throughout Canada.



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