

# Biomass Energy

## The Pros and Cons of Producing Energy from Plants

Excerpt from *Powering Our Future: An Energy Sourcebook for Sustainable Living*. The text was modified to fit the website.

Fossil fuel resources have been the lifeblood of the modern society and central to the advancement of human civilizations for the last two centuries. However, since the advent of humankind, biomass has been essential to human survival. Organic matter served as the primary source of energy throughout the world for millennia until dense populations caused widespread deforestation, initiating a movement toward alternative resources. As population densities increased, regional deforestation became increasingly severe and widespread. Today, biomass may seem like a thing of the past. However, biomass is still essential to the survival of nearly a third of the global population for heating and cooking. Many of these individuals, living in developing nations, collect and burn forest products, animal dung, and other organic matter as part of the daily ritual. However, traditional uses of biomass only scratch the surface of what opportunities exist for biomass sources. From powering our vehicles to providing a source of hydrogen for fuel cells, to electricity production, there are few applications where biomass is not a viable energy source.

Biomass offers the advantage of being incredibly versatile with an unlimited range of energy-related applications. More than any other renewable resource, biomass is the most practical and feasible option for supplanting conventional oil in the transportation sector in the near-term. Many nations have ample opportunities to harvest natural biomass resources, providing opportunities to promote self-sufficiency and diversity in national energy mixes. Unfortunately, there are also many nations that are either struggling to provide their citizens with enough food, or they have already degraded the productivity of their agricultural lands. Large-scale harvesting operations for energy production could heighten the severity of these societal and ecological challenges. Biomass benefits individuals and communities by creating employment opportunities and local revenue. Expansion of this industry could also bring higher crop prices to the agricultural community. Unfortunately, biomass applications are often not economically competitive with conventional sources. They remain severely undermined by heavily subsidized, conventional fossil fuels. As technologies advance, the disparity in production costs will hopefully alter this scenario.

Environmentally, the degree of impact caused by biomass varies dramatically depending upon the sustainability of the farming practices, the feedstock, and the pollution control units used. The combination of low efficiency and relatively high environmental impact, as compared to most other renewable sources, has led many environmental groups to avoid encouraging the expansion of biomass sources, particularly starch-based food crops. Most biomass sources emit fewer sulfur dioxide and nitrogen oxide compounds than do coal and oil. However, some environmental groups argue that burning certain bioenergy materials may increase smog formation. A significant advantage over fossil fuels, biomass resources do not emit any more carbon dioxide emissions than they absorb during growth. The fossil fuels burned to produce biomass are the only gains in the emissions of carbon dioxide. Biomass resources are sustainable as long as sound practices are employed. Unfortunately, worldwide, unsustainable farming practices are common, resulting in desertification, erosion, and reduced crop productivity. The biomass industry will inevitably be doomed to a similar fate as fossil fuels if unsustainable practices are employed.