

How can we best establish supply chains for woody biomass while adjusting public perception about harvesting wood for energy?

What Should Be Done?

Invest in biomass production and conversion from forestland and short rotation crops.

Create supply chains to facilitate biomass movement from producers to consumers.

Invest in the R&D to deliver new technologies to harvest, process, and transport biomass that are economical and suitable for Michigan forests.

Provide training opportunities to prepare a new generation of workers for jobs in the biomass industry.

Governments should strengthen policies that will reward investment in biomass development.

On the Other Hand ...

Extracting biomass from the forest is environmentally destructive. It disrupts delicate eco-systems and, distracts us from focusing on more economically beneficial uses of our forests.

Burning biomass is dirty. Building new biomass incinerators will emit toxic chemicals into our air, pollute waterways, and make us sick.

Fallow land may be fallow for cultural reasons rather than economic. Land owners may have no interest in raising energy crops.

Weather and seasonality make the production of biomass unreliable, as do supply limitations.

Large scale bio-refineries owned by out-side interests will not benefit local communities and people.

Such developments will mean importing a new workforce.

Approach 1 Multiple Benefits from Woody Biomass

Proponents of Approach 1 argue that woody biomass will play a critical role in our future as a renewable energy source. They contend that the challenges that lie ahead are not ecological but are more matters of perception and politics. In other words, we can responsibly develop a woody biomass industry, but do we have the will to do so?

A flurry of global development challenges have brought huge changes to the world's energy needs and supply. Growing longevity in industrialized nations and mounting population growth suggests that the world will need more and more energy to meet our global needs. As the human population climbs to 9 billion with many of those in the developing world desiring to achieve a standard of living that is energy-intensive, new fuel sources are vital. In the U.S. alone, we use more than 140 billion gallons of gasoline and almost 40 billion gallons of diesel fuel annually.

Proponents of this approach argue that excessive dependence on fossil fuels, and by extension, Middle Eastern suppliers, makes us vulnerable to potential supply disruption that could come about from market changes. In 2009, the U.S. imported 52% of our crude oil needs. The development of woody biomass can function as a domestic source of energy to protect us from such external threats. Producing our own biomass would also compete with the global price of crude oil lowering the price of imported oil. Here in Michigan, support for biomass is articulated with spatial dimensions. Northern Michigan community residents increasingly express a desire to supply their own power by using local renewable energy as opposed to southern Michigan and regional coal-fired electricity. For all of these reasons, we must diversify our energy sources and reduce our fossil fuel use.

Woody Biomass is 'Green'

Investment and development of woody biomass can wean us from our greedy appetite for oil, making our nation more independent and secure, but it can also protect the environment. Burning wood is a green alternative to fossil fuels because it is 'carbon neutral.' Unlike coal, whose carbon is sequestered within the earth and released only when dug up and burned, the carbon dioxide in trees is taken from the air and released back whether the tree dies naturally or is burned for energy. This process can reduce carbon emissions, slow global warming, and enhance ecosystems.

Advocates of Approach 1 say that over time, using wood for energy can lead to lower atmospheric greenhouse gas levels. A recent study from the Manomet Center for Conservation Sciences showed that while emissions from burning wood are initially higher than from fossil fuels, regrowing forests sequesters carbon, a process that eventually can yield greenhouse gas levels lower than would have resulted from continued burning of fossil fuels.

Top Sources of U.S Oil Imports

Country	Total US imports Thousand barrels per day
Canada	1,876
Saudi Arabia	1,060
Mexico	1,152
Nigeria	642
Venezuela	1,009
Iraq	477
Angola	534
Russia	266
Colombia	256
Algeria	242

Source: Energy Information Administration, 2009
(www.eia.doe.gov/)

With almost 20 million acres of renewable forestland in our backyard we can lead the nation in creating biomass supply chains. Michigan's timberland acreage is the fifth largest in the U.S, providing ample natural resources to fuel our biomass needs. They are also largely located in the northern two-thirds of the state, in regions in dire need of economic stimulus.

Michigan Forests

Much of the Michigan forest is privately owned (65%), creating the opportunity for expanded entrepreneurship. Non-industrial private owners and farmers control 57% of the total timberland acreage. The forest industry controls about 8% of the forest. Public interests control the remaining 35% with the state of Michigan controlling 21% and 14% being federally owned. State Forester Cara Bouchard says that the state removes only about one-third of its growth each year, leaving plenty more to be harvested without harming the forest.

Using our state's public and private forestland holds a number of ecological benefits such as facilitating the removal of invasive woody species, improving the health of remaining trees and improving overall forest health. Using forestland for biomass can also decrease unnaturally severe wildfires within forests, reduce air pollution caused by wildfires, and reduce fire related erosion.

New Markets

Investment in woody biomass can also increase economic opportunities for rural communities. For timber-dependent-communities, market fluctuations can present significant challenges to rural labor markets. Many Michigan rural communities would

benefit from additional avenues in which to market timber. Utilizing forest biomass and siting processing facilities in rural communities will create critical economic gains and enhance local economic development. The development of woody biomass can create new streams of revenue for farmers and rural communities as they put fallow cropland back into production with short rotation bioenergy crops such as willow, poplars, or switchgrass.

Due to the complex infrastructure needed to collect, store, and transport biomass, most development will occur in rural, and often remote, areas most in need of economic diversification. Not only will farmers benefit from the new markets, investors will be needed to develop the upstream segments of the supply chain near the source. Economic value can also be realized when energy costs are decreased by substituting woody biomass for other fuels.

Therefore, barriers to creating a biomass industry are more social and political than biological or ecological. To meet the growing worldwide demand for energy and to address environmental and rural development needs at home, we must develop a place for biomass in our vision for a renewable future.

