

# BIOMASS FACTS



## Our Forests are Not Fuel: Burning Trees for Energy is Destructive and Unsustainable

Forests purify the air we breathe and the water we drink, control erosion, and provide opportunities for people to hike, fish, hunt, camp, and enjoy undisturbed environments. They serve as habitat for wildlife and fish, and play a critical role in protecting and fostering biodiversity. U.S. lands, including our forests, sequestered more than 1 billion metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) in 2009, offsetting about 18.4 percent of total U.S. CO<sub>2</sub>e emissions, or more than the total annual emissions of Germany or Canada.<sup>1,2</sup> Forests, however, are under threat from hazards like invasive species, human development, and now increasingly from the demand for biomass for energy production.

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### WHAT IS BIOMASS?

Biomass is an umbrella term for plant matter that is or recently was alive. It stores energy captured from the sun, which provides the fundamental BTUs in bioenergy, and draws on limited natural resources—land, water, and soil nutrients—when it grows. Biomass can be burned in power plants to produce heat or electricity; fermented to produce fuels, like ethanol, for cars and trucks; digested by bacteria to create methane gas for powering turbines; and “gasified” or broken down into a mix of gases that can be burned for electricity or used to make a range of products, from diesel to gasoline to chemicals.

### DEMAND FOR BIOMASS IS INCREASING FAST

Biomass energy generation is poised to experience rapid and sustained growth, much of which comes from increased co-firing of biomass in existing power plants for the purpose of displacing coal—a category of biomass demand

that, historically, has been met mostly with woody biomass. Electricity generated from biomass is forecast to more than double this decade from 40 to 98 billion kilowatt hours (kWh) and roughly quadruple by 2030 to 153 billion kWh.<sup>3</sup> If sourced entirely from whole trees, this biomass generation would require burning more than 110 million tons of wood and about 1.3 million acres of clear-cutting per year by 2020.<sup>4</sup> This growth results from the state and federal incentives biomass energy receives, as well as the “free pass” on pollution regulations that biomass-burning plants now enjoy.

### SOME BIOMASS MAY BE CARBON NEUTRAL OR EVEN CARBON NEGATIVE, BUT NOT ALL BIOMASS IS CREATED EQUAL

Harvested biomass can grow back and reabsorb carbon from the atmosphere. But the timescale matters. While perennial grasses can grow back in a year, it would take many decades to recapture

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### **Biomass Policy Do's and Don'ts**

We must shape the biomass industry's growth in a way that protects our forests, as well as other natural ecosystems and our farmlands, and directs incentives towards sustainable sourcing.

- Congress must put certain lands completely off limits to biomass harvesting, such as our federal forests, which include roadless areas, wilderness, old growth stands, and wilderness study areas.
- The EPA should continue to count all carbon emissions from major sources of carbon pollution. There are multiple scientific, simple, and precautionary accounting rules the EPA can adopt for biomass carbon.
- Federal and state incentives for biomass systems that burn whole trees must be eliminated.
- Instead, Congress should put in place smart, performance-based policies that help farmers identify and develop broadly sustainable systems for producing biomass and make these better systems economically preferable.

the carbon released from cutting and burning a natural forest. Harvest residues and clean waste products—the unused byproducts of sustainable forestry that would otherwise be burned or rapidly decay—can be good sources of biomass. So can other plant materials whose carbon would quickly end up in the atmosphere anyway. However, much of this material is needed to protect soil quality and wildlife habitat, thereby limiting the amount available for use as fuel. Other sources, such as perennial grasses and short rotation woody crops grown on land that does not compete with food production, can offer a low-carbon supply of energy so long as they are sustainably managed and quickly regrown. Sustainable management requires the protection of native forests and prairies, wildlife habitats, soil quality, and water bodies.

### **BURNING WHOLE TREES FOR POWER CAN RESULT IN MORE CARBON POLLUTION THAN COAL**

Just like coal and other fossil fuels, when trees are burned, the carbon they have accumulated over long periods of time is released. This is carbon that was not in the atmosphere before being turned into energy. Its emission has the same immediate global warming impact as the fossil carbon released when we burn oil or coal. Since wood is moist, it actually burns less efficiently than coal, meaning that more carbon is released per unit of usable energy. Further, for every log burned, additional carbon is released from the soil where it was grown. And unlike coal, growing trees would continue to absorb carbon from the atmosphere if left alone; burning trees thus foregoes this additional sequestration. Counting all the carbon released and not sequestered, burning whole trees in today's power plants will result in even more carbon pollution than coal or other fossil fuels for decades.

### **Forests Become Targets When the EPA Gives Biomass Carbon a "Free Pass"**

The EPA has stated that "all carbon dioxide counts" towards determining whether large power plants must take reasonable steps under the Clean Air Act to reduce how much dangerous pollution they put into the air. But the EPA's recent plan would exempt the carbon pollution emitted from plants that burn biomass for the next three years, creating an incentive for new and expanded power plants to shift from burning coal to burning biomass. This decision means there will be no federal limits on burning even the worst sources of biomass during this period. Because the supply of truly sustainable, low-carbon forestry wastes is extremely limited, expanding biomass power without appropriate safeguards in place—such as requirements that the resulting carbon pollution be counted—means burning more whole trees and losing more forests.

### **USING TREES FOR ELECTRICITY PUTS PRESSURE TO CONVERT FORESTS TO TREE PLANTATIONS**

Big power plants need lots of fuel and do not want to have to pay to ship that fuel very far. If, as predicted, more and more turn to trees for that fuel, this will increase pressure to overharvest. Unfortunately, the market and some government incentives—for example, state renewable portfolio standards that require a certain proportion of power to be produced from renewable sources—currently favor converting forests to intensively-managed, single-age and single-species plantations that resemble a natural forest only on the surface, providing little wildlife habitat and few other "ecosystem services." Converting forests to these types of tree plantations is an environmental disaster, given how much we depend on our natural forests for biodiversity, clean water, and many other important values. No matter how efficient and clean power plants get, they cannot turn unsustainable forest biomass into sustainable energy. Power plants must reduce pollution, but substituting whole trees for coal is not the answer.



<sup>1</sup> EPA 2011 Inventory of Greenhouse Gas Emissions and Sinks

<sup>2</sup> Climate Analysis Indicators Tool (<http://cait.wri.org/cait.php?page=yearly>)

<sup>3</sup> U.S. Energy Information Administration, Annual Energy Outlook 2011

<sup>4</sup> Assumes 32% plant efficiency, wood at 45% moisture content and 85 green tons per forest acre.