WOOD PELLET MANUFACTURING
in the Southeast United States
Robust Sustainable Forestry Practices: The Southeast U.S. has developed a robust system of sustainable forestry practices, including industry-leading certification programs such as the Sustainable Forestry Initiative (SFI), the Forest Stewardship Council (FSC), and The Program for the Endorsement of Forest Certification (PEFC). These practices, developed over decades, ensure that forests are managed sustainably, that the local environment is maintained, and that biodiversity is protected. Biomass companies such as Enviva are using and building upon existing forestry sustainability initiatives such as SFI in their own operations (more details can be found in the “Adding Value Through Certification” section).

Life Cycle of a Wood Pellet from the Southeast U.S.

Transport to Port:
- Barge
- Rail
- Truck

* Utility Facility

LIFE CYCLE OF A WOOD PELLET FROM THE SOUTHEAST U.S.

Biomass sourced from a radius of up to 75 miles / 121 km

Procurement

Chipping

Processing

Chipping

Pelletizing

Drying (Biomass used for Heat Energy)

Pressing

Wood Pellet Processing Plant

Processing

Pressing

Delivered Pellets

Ship to UK

Transport to port

OVER COAL

90% SAVINGS

90% SAVINGS

90% SAVINGS

90% SAVINGS

95% SAVINGS

95% SAVINGS

95% SAVINGS

Transport to coal plant

Pellet plant

Cultivation and harvesting

Cultivation and harvesting

Transport to port

OVER COAL

95% SAVINGS

95% SAVINGS

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Transport to port

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ENSURING THE SUSTAINABILITY OF FORESTS

Responsible management and regular removal of woody biomass maintains a forest's health in many ways. Studies have shown that biomass removal reduces the risk and severity of wildfires, while also providing carbon benefits. The impact of biomass harvesting on soil quality is minimal: If harvested responsibly, there is no significant net impact on the quantity and composition of deadwood, which provides nutrients to the forest floor.

Sound forestry harvest practices include minimizing soil and forest floor disturbance, leaving a safe distance from water bodies and leaving sufficient woody debris in the forest for habitat and nutrient supply. These practices ensure little impact on wildlife and biodiversity.

In addition to the benefits of sustainable harvesting on forests, younger trees absorb a greater amount of carbon than old growth trees. Therefore, methodically replanting trees or cutting trees to encourage new tree regeneration from stumps provides greater carbon benefit than leaving trees untouched.

It is imperative that companies ensure the long-term sustainability and yield of the forests from which they source their raw materials. Enviva achieves this by broadening the practice of sustainable forestry with our suppliers and wood producers to protect soil and water quality. Further details of Enviva’s policies on forest sustainability certification are given in the “Adding Value Through Certification” section.

PUTTING UNDERUSED RESOURCES TO GOOD USE

Enviva produces wood pellets from both processed and unprocessed wood residues. Our processed wood raw materials include chips, bark, and sawdust by-products from wood processing facilities. Unprocessed residues include tree tops, branches, stems, and other forestry debris remaining after the primary biomass (or the tree trunk) has been processed and shipped from the forest. These unprocessed residues would most likely otherwise go unused as a resource. Additional biomass sources currently include low-grade round timber.

The Benefits of Wood Pellets

As an energy-dense, uniform fuel made from high-quality wood materials, wood pellets offer a range of advantages. They...

- are efficient as a source of energy, reliable, and available 24 hours a day, 7 days a week.
- can be manufactured to any size specification and typically have a calorific value of about 17.5MJ/kg vs. 10.9MJ/kg for non-pelleted, non-dried wood.
- have a very low moisture content (5–7% vs. between 40–60% for non-pelleted wood) and low ash (1–2% vs. 5% for non-pelleted wood) that enables them to ship in standard dry bulk vessels. This maximizes economic efficiency and is environmentally preferable because such vessels can be used to ship freight on the return trip as well.
- have significantly lower emissions than fossil fuels and unprocessed woody materials on an energy content basis.
- have a geometric uniform shape that makes for easy and economic transportation.
- are uniform and homogenous, making them an easily tradable commodity, which entices large players and financial institutions to enter the industry as intermediaries.

Example of a sustainable forest thinning in the Southeast U.S. Photo by David Dickens, University of GA, Bugwood.org
Wood pellets offer many advantages; however, if they are not sustainably sourced or produced in a manner that minimizes greenhouse gas emissions and environmental impact, their legitimacy as a renewable fuel is undermined. Enviva is currently in the process of ensuring its operations are certified by multiple industry-leading certification bodies.

Certification schemes help hold wood pellet manufacturers to a common standard of responsible sourcing and production. Forest certification offers many benefits, including economic, environmental, and societal benefits. There are currently four major certification authorities that help ensure the responsible management of forests:

- The Sustainable Forestry Initiative (SFI), which was established by the American Forest and Paper Association (AF&PA) in 1994, and is “responsible for maintaining, overseeing and improving a sustainable forestry certification program that is internationally recognized…” (Source: SFPProgram.org)
- The Forest Stewardship Council (FSC), which was founded in 1993 to coordinate the development of forest management standards throughout the different biogeographic regions of the world, to provide public information about certification and FSC, and to work with certification organizations to promote FSC certification.
- The Programme for the Endorsement of Forest Certification (PEFC), the world’s largest forest certification system. PEFC was formed to transform the way forests are managed globally—and locally—to help shepherd the lasting environmental, social, and economic benefits that forests offer.
- American Tree Farm (ATF) is recognized internationally as a credible forest certification system that works to sustain forests, watershed, and healthy wildlife habitats through the power of private stewardship by offering affordable forest certification for family forest landowners in the United States. Despite an uncertain economic climate within the forest industry sector, forest certification programs have expanded. However, certified wood has yet to achieve critical mass in the marketplace at large. While certification programs have shown promise within the solid wood products marketplace, they still need to be more broadly accepted to extend their advantages. The harmonization of Chain of Custody requirements for multiple certification systems could go a long way toward helping the overall market grow.

Enviva endeavors to meet or exceed widely accepted sustainability standards in the forest industry, and is currently pursuing multiple certifications from these well-respected, independent certification schemes. Enviva received SFI Fiber Sourcing certification in Quarter 1, 2011 and will pursue SFI, FSC, and PEFC Chain of Custody certifications over the course of the remainder of 2011.
For more information on Enviva's sustainability initiatives, please email: sustainability@envivabiomass.com