Forest Bioenergy Certification

FACT SHEET 7.2

Bioenergy produced from woody biomass is considered a renewable source of energy. But that's only true if these forests are managed in a way that ensures the renewal and conservation of environmental, economic, and social values for future generations. Certification programs have been developed that apply to forest management systems and forest products and guarantee they achieve specific performance standards. These programs can be international, national, or regional in scope. Certification programs have not been developed that specifically deal with the production of woody biomass for bioenergy, though programs for conventional forest management schemes should apply to bioenergy production systems. These certification systems may be important in maintaining producer access to markets that are influenced by "green" consumers. They are also useful to forest landowners and managers as tools to help them ensure sustainable stewardship of their lands.

This fact sheet will briefly describe how certification programs have developed over the past decade. It also describes systems currently in use in southern forests.

HISTORY

During the Rio Earth Summit in 1992, world leaders adopted the Statement of Forest Principles and Agenda 21, which recognized the importance of forests to sustainable development throughout the world[1]. After this meeting, several international agreements were initiated.

One agreement with applicability to worldwide temperate and boreal forests, including the U.S., is the Montreal Process, which was adopted in 1994. It includes seven national level criteria and 67 indicators of sustainability[2]. The national level criteria include:

- Conservation of biological diversity
- Maintenance of the productive capacity of forest ecosystems
- Maintenance of forest ecosystem health and vitality
- Conservation and maintenance of soil and water resources
- Maintenance of forest contribution to global carbon cycles
- Maintenance and enhancement of long-term multiple socio-economic benefits
- Legal, institutional, and economic framework for forest conservation and sustainable management

While the Montreal Process does not specifically deal with forest bioenergy production, the criteria used for conventional forest management systems should apply to bioenergy production systems. However, consider additional criteria in the following areas to thoroughly address bioenergy concerns:

- Under environmental criteria, consider the issues of energy balance and carbon neutrality.

Mayfield, C.; C. Smith; B. Lattimore. 2007. Forest Bioenergy Certification. Pages 243–248.
In: Hubbard, W.; L. Biles; C. Mayfield; S. Ashton (Eds.). 2007. Sustainable Forestry for Bioenergy and Bio-based Products: Trainers Curriculum Notebook. Athens, GA: Southern Forest Research Partnership, Inc.

- Extend silvicultural criteria in some areas to address more intensive biomass utilization (e.g., retaining adequate harvesting residues and dead and downed wood, achieving reforestation success, reducing natural disturbances, and protecting natural regeneration).

- Include employment and rural development in social criteria as they relate to bioenergy production systems.

- Consider the competitiveness of forest fuels versus fossil fuels in economic criteria.

CERTIFICATION PROGRAMS

International agreements such as the Montreal Process serve as the historical background and conceptual framework behind existing certification schemes. Five major certification programs are currently being used in the southern United States:

- Forest Stewardship Council (FSC)

- Sustainable Forestry Initiative (SFI)

- International Organization for Standardization (ISO) 14001

- American Tree Farm System

- American Logger Council Certification

Each of these certification systems has its own indicators and criteria. But the goal of all systems is essentially the same. They promote sustainable forest stewardship by ensuring that forest management systems and products, which could include bioenergy, are being produced in a manner that guarantees the environmental, social and economic sustainability of the forest, as defined by specific performance standards.

The Forest Stewardship Council[3,4] was founded in 1993 and is currently applied in 70 countries. The FSC system has 10 principles and 57 criteria. These are accepted globally, but nations are encouraged to adapt the criteria and principles to their local conditions. A pre-interview, field assessment and documentation review are required to gain certification.

Three raw material chain of custody tracking programs are included in the FSC program: the physical separation model; the mixed model; and the batch model. The physical separation model separately tracks certified material from forest to consumer. The batch model covers temporary use of certified materials. The mixed model includes both certified and non-certified materials. This model may be the most appropriate for forest bioenergy certification, as it is likely that feedstock used to produce energy will have come from a mixture of sources, both certified and uncertified.

The FSC system also includes three product labels. Products made with 100 percent certified materials are given the FSC pure label. The recycled label is reserved for products made from 100 percent recycled materials and the mixed label is for products made from at least 10 percent certified materials. To get an FSC product label, raw materials cannot come from production systems using genetically modified trees, ecologically significant forests,

or any illegally obtained materials. For more information about the FSC program, visit the website at www.fscus.org.

SUSTAINABLE FORESTRY INITIATIVE®

Another certification system used to promote sustainable forest stewardship in the South is the Sustainable Forestry Initiative[3,5] overseen by the Sustainable Forestry Board. The SFI standards and procedures have been developed by stakeholders representing the forest industry, conservation groups, and natural resource professionals. SFI consists of nine principles that address environmental, legal, cultural, and economic issues. The initiative's 13 objectives include public reporting, procurement, mitigating illegal logging, sustainable forest management, and continuous improvement. A third party audit is required to complete certification. Annual surveillance audits are required, along with recertification every five years.

The SFI Standard also includes a chain of custody tracking and labeling system. Labels are available for primary and secondary producers. Claims include percent content and fiber sourcing. For more information about the Sustainable Forestry Initiative visit the website at www.aboutsfi.org.

The International Organization for Standardization[6] also has a certification program for environmental management systems. The ISO 14000 series of standards, specifically ISO 14001, relate to Environmental Management Standards. To qualify for certification, an organization must develop and implement procedures and practices that guarantee its environmental management goals are achieved and continually improved. For more information, visit the ISO website at: http://www.iso.org/iso/en/iso9000-14000/index.html

While most certification programs are primarily used by industry and very large landowners, the American Tree Farm System[7] has been developed for private landowners. The goal of the American Tree Farm System is to "promote the growing of renewable forest resources on private lands while protecting environmental benefits and increasing public understanding of all benefits of productive forestry." A certified Tree Farmer must meet a set of guidelines that requires an inspection by an ATFS forester every five years, along with a management plan. More information on this system can be found at www.treefarmsystem.org.

The Certified Logger Program[8] is another certification system in use in the southern United States. Forest landowners interested in bioenergy production who are not participating in land management certification programs should consider contracting with professional timber harvesters who are participating in a state run Master Logger Certification© program, accepted by the American Loggers Council Master Logger Certification committee. Engaging these professionals would ensure that harvesting operations are performed in a sustainable manner to best enhance water quality, wildlife habitat and soil properties on their lands.

Loggers participating in this program are subject to a third party audit of their on-the-ground practices to measure their performance against standards set by state and federal regulations as well as any voluntary programs that are in place. Several southern states have Master Logger programs. The Kentucky master logger website, www.masterlogger.org, contains information relevant to many programs throughout the South.

These certification programs are typically used to certify traditional forest management systems and products. Yet they apply to forest energy products, ranging from firewood and logging residues to biodiesel, heat, and electricity. The chain of custody programs included in most certification programs could also be applied especially to the mixed models. These models include materials from certified and non-certified sources. This is important because chain of custody can be difficult to track for materials such as forest residues. The production of heat, electricity, and fuel will likely involve multiple material sources.

In addition to the certification of sustainable biomass production for bioenergy at the forest level, additional, broader energy certification schemes can be used to track the sustainability of forest bioenergy at various points along the supply chain, including transportation, conversion and waste disposal.A number of green electricity labels currently exist, including Green Power, Eugene, ok-power and Milieukeur. Some of these systems combine the assurance of sustainable feedstocks. In the case of forest bioenergy, this could be accomplished through forest certification through a scheme such as FSC. These systems also have additional criteria for technology used in production and specific plant practices[9].

For forest bioenergy, consider criteria relating to greenhouse gas balances throughout the entire production system.

Certification of bioenergy production systems would reassure consumers that forest biomass was produced in conformance with standards designed to sustain environmental, economic, and social values, whether it was used to produce heat, electricity, or fuel. The general public can be assured that forest bioenergy is a renewable natural energy source, and that the southern forests used to produce this resource are being managed sustainably. More information about forest certification programs can be found at http://www.forestrycertification.info/.

For more information refer to the Encyclopedia of Southern Bioenergy (http://www.forestencyclopedia.com/Encyclopedia/bioenergy) or Forest Bioenergy (http://www.forestbioenergy.net/).

ENDNOTES

1 UN-DSD (United Nations Division for Sustainable Development) 2007. Agenda 21. http://www.un.org/esa/sustdev/documents/agenda21/index.htm. Agenda 21.[Date accessed: January 26, 2007].

2 MPCI. 2005. The Montreal Process. http://www.mpci.org/. The Montreal Process.[Date accessed: January 10, 2006].

3 FCRC (Forest Certification Resource Center) 2005. Introduction to Certification Programs. http://www.metafore.org/index.php?p=Introduction_to_Certification_Programs&s=167. Introduction to Certification Programs. [Date accessed: January 20, 2006].

4 Forest Stewardship Council United States. 2007. http://www.fscus.org/ [Date Accessed: February 8, 2007].

5 Sustainable Forestry Initiative. 2007. http://www.sfiprogram.org/ [Date Accessed: February 9, 2007].

6 International Organization for Standardization. 2007. http://www.iso.org/iso/en/iso9000-14000/index.html [Date Accessed: February 8, 2007].

7 American Tree Farm System. 2007. http://www.treefarmsystem.org/ [Date Accessed: February 8, 2007].

8 Ructor, D. American Loggers Council. Personal communication. February 28, 2007.

9 van Dam J, Junginger M, Faaij A, Jurgens I, Best G, Fritsche U. 2006. Overview of recent developments in sustainable biomass certification Annexes ? Draft for comments. IEA Bioenergy Task 40 paper. Available online at: www.bioenergytrade.org/downloads/ieatask40certificationpaperannexes-draftforcomm.pdf [Accessed February 26 2007]