



Using the Adaptive Forest Management Planning Framework to Achieve Sustainable Bioenergy Production

FACT SHEET 7.1

America's forests are facing ever-increasing pressure to provide all things to all people, ranging from such services as providing timber for building new homes to providing wildlife habitat for endangered species. Using forest materials for energy is yet another demand on these important resources. Forest landowners and managers play the vital role of stewards of these landscapes. The stewardship they provide will determine the ongoing sustainability of southern woodlands. With the number of products and services provided by the forests, they must be managed to be sustainable for years to come.

What role do sustainable management concepts play in the production of woody biomass for bioenergy? For woody biomass to be considered a sustainable, renewable natural energy resource, it must be produced in a manner that ensures the long-term ability of the forest to supply the environmental, economic and social demands of society. Some criteria include forest health, productive capacity of the stand, biodiversity, soil and water, and carbon budgets. Management activities can either positively or negatively impact these criteria.

Consequently, forest stewardship that includes understanding and implementing sustainable management systems is an important concept for today's forest managers and landowners. A sustainably managed forest is one in which forest resources are managed to supply goods and services to meet the current demands of society while renewing and conserving the quality and availability of the resource for future generations.

Adaptive Forest Management¹ (AFM) can be an effective component of sustainable forest stewardship. It is a procedural approach to management that has been developed to enable forest managers to improve the effectiveness of their management systems through formal commitment to performance evaluation standards. This approach creates management procedures that are structured, consistent, and involve auditable practices. This framework also benefits forest stewardship and management through formal commitment to accountability, transparency, and openness. It allows all stakeholders to have a role in the management of a forest. While ideally suited for industrial landowners, AFM can easily be modified for the private landowner in the South. This planning framework is one way to identify

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stewardship options and develop management procedures that sustain our nation's forests for future generations. AFM is compatible with and complementary to the Forest Stewardship Program (FSP), administered through the USDA Forest Service. While FSP focuses on planning and possible monitoring, AFM stresses monitoring, evaluation, adaptation, and reporting. The management approach taken by FSP could be one part of the overall framework of AFM associated with planning and goal setting. Six steps are associated with AFM (*Figure 1*).



Figure 1. Adaptive Forest Management.

STEP 1: PLANNING. This step involves setting management goals and objectives for a particular stand or forest. Openness and transparency are important at this point, so invite all stakeholders to participate in the planning process. For industrial owners, stakeholders could include employees, stock holders, local community residents, as well as company executives. For non-industrial private landowners, stakeholders could include family members, adjacent landowners, or other partners. Individuals working under the auspice of a Forest Stewardship Management Plan have already completed this stage.

STEP 2: OPERATIONAL GUIDELINES. This stage includes implementing management strategies developed through AFM processes. During

this stage, develop procedures and identify responsible individuals to ensure the successful completion of the goals and objectives outlined in the planning process.

STEP 3: MONITORED OUTCOMES. During this management step, measure progress against established standards for environmental, economic and social values associated with sustainable management. International standards have been developed by the Montreal Process, as well as by national and regional certification programs, such as the Sustainable Forestry Initiative, Forest Stewardship Council, the American Tree Farm System, and ISO 14001 (see fact sheet 7.2 Forest Bioenergy Certification). These programs require monitoring of indicators against which management systems can be independently audited. This process measures how sustainable practices are being achieved. While enrollment in a certification program is not necessary for carrying out AFM, measure progress against established standards. These standards could be outlined in a management plan or in the widely published Best Management Practices (BMPs) for a given area.

STEP 4: EVALUATION. During the evaluation step, compare monitoring results with the goals set during the management planning phase. This allows managers to determine how well the goals are being achieved that were set forth during the planning stage.

STEP 5: AGREED RESPONSES. At this critical stage, adapt goals, objectives and procedures of the plan based on the results of the monitoring and evaluation processes. Site changes, new management techniques, and ever-changing stakeholder demands are all reasons to revise a management plan. Managers can ensure that their forest is continually managed in





a sustainable manner by changing the plan based on recommendations developed during monitoring and evaluation stages.

STEP 6: REPORTING TO STAKEHOLDERS.

Compile and report the results of the monitoring, evaluation, and agreed response stages to the stakeholders. Stakeholders can include family members, adjacent landowners, and other partners. This step ensures accountability and maintains the openness and transparency necessary for publicly accepted, successful implementation of AFM planning. Don't overlook this key step.

While reporting is considered the final step in the process, it is by no means the end of the process. AFM seeks continual improvement over time. This planning framework is ever-evolving and seeks ongoing improvement in management practices and forest conditions. Once a report has been compiled and presented to stakeholders, the process essentially starts over with the next plan created during the agreed responses stage.

By using AFM, forest managers can formulate and implement a plan that integrates bioenergy production with management for traditional forest products. At the same time, it ensures the sustainability of essential environmental, economic and social values of our nation's forests. This is important because questions will arise concerning the negative consequences of an intensive harvesting operation in which logging residues are removed from the forest. It is essential to demonstrate that such important forest functions as watershed protection and wildlife habitat can be maintained through implementation of AFM.

The use of woody biomass for energy production will only be successfully deployed

if the material is produced and collected in a sustainable manner. Without achieving sustainable production methods, woody biomass will not be accepted by the public as more beneficial than non-renewable fossil fuels. Landowners and forest managers play a vital role, as stewards of the forest, in seeing that bioenergy production systems ensure the long-term ecological, social and economic sustainability of southern woodlands. By practicing AFM, woody biomass can achieve its potential to be a sustainable, renewable energy source that can enhance the quality of life for consumers and producers alike.

For more information related to Adaptive Forest Management and bioenergy production, please refer to the Encyclopedia of Southern Bioenergy at <http://www.forestencyclopedia.com/Encyclopedia/bioenergy>.

ENDNOTES

- 1 Raison, R. J. 2002. Environmental Sustainability. In: Richardson, J.; Bjorheden, R.; Hakkila, P.; Lowe, A.T.; and Smith, C.T., eds. *Bioenergy from Sustainable Forestry: Guiding Principles and Practice*. Dordrecht, The Netherlands: Kluwer Academic Publishers: 159–164.

