

MODULE 3: UTILIZATION OF BY-PRODUCTS OF ECOSYSTEM MANAGEMENT

Purpose

Small-diameter trees and other woody biomass are sometimes removed or treated in place as part of ecosystem restoration, especially fire hazard reduction. Some rural communities and their agency partners are seeking to use these materials to develop economic opportunity. They have sought to add value to this material by turning small-diameter material into firewood, chips, lumber, or finished products such as flooring and furniture.

This module offers suggestions for monitoring the use of the by-products of ecosystem restoration and the health of the businesses that use this material. It suggests ways to track how much material was removed, whether value was added, and where it was used or processed.

Many communities have found it difficult to develop businesses that make small-diameter material into medium and high value-added products. There are many reasons for these difficulties, and the interview questions may touch on some of them. If one of your goals is to increase value-added processing, it will be important to identify barriers to small-diameter development. Contractors and timber-sale purchasers will likely have some insight into this question; so may economic-development specialists or county-extension agents.

General Approach

When developing a utilization monitoring program, consider your goals for creating and sustaining healthy value-added businesses. To that end, questions you may want to answer include:

- What by-products are available locally?
- How are they being used?
- How much value is added locally?
- How healthy are the local value-added businesses and what needs to be done to meet their needs?

In general, this module suggests that you track material from the landowner to the raw material purchaser and then to the value adding business (whether inside or outside your community). In addition, we suggest that you monitor the health of value-added manufacturing businesses in your local community. This will involve gathering information from landowners (public or private), the people or businesses that harvest the material, and the businesses that use the material.

Suggested Measures

Outcome #1: By-products are used for economic or environmental benefits

No.	Measure	Purpose
1.A	Amount of materials harvested/removed in the local area	Determine potential material available for value-added use
1.B	Amount of materials piled and burned (but not as part of a prescribed burn)	Determine amount that isn't used for value-added purposes
1.C	Amount of materials left for wildlife habitat	Determine amount of material used for wildlife

Outcome #2: Provide raw materials to local firms and add value to local economy

No.	Measure	Purpose
2.A	Percent of removed material that local businesses processed	Local use measure
2.B	Percent of removed material that small businesses processed	Determine the extent to which small businesses are using removed material
2.C	Percent of by-products used to make low, medium-low, medium high, and high value value-added products locally	Determine how much material is being used to add value locally
2.D	Value created by making low, medium-low, medium high, and high value added locally	Determine how much value is being added locally.

Outcome #3: Businesses making value-added products are able to use material and workers from the local area.

No.	Measure	Purpose
3.A	Number of businesses who obtain raw materials from outside the local area	Determine the extent to which local businesses use locally material
3.B	Percent of material harvested that was purchased locally	Measure of the sustainability of small-diameter removal and utilization

Outcome #4: Business making value-added products are strong and growing.

No.	Measure	Purpose
4.A	Number of business reporting that they are processing more material than last year	Determine if material needs are growing
4.B	Number of business reporting that they expect to use more material next year	Determine future demand and desire for expansion outlook
4.C	Number of businesses that reported plant expansion or new products launched	Determine business growth
4.D	Number of businesses that raised (or lowered) wages last year	Determine business growth
4.E	Number of businesses that expanded (or contracted) their staffing	Determine if cash flow a problem
4.F	Number of businesses that report	Determine strength of business
4.G	Number of businesses reporting that the have access to enough money to buy or lease new equipment	Determine business strength
4.H	Number of businesses reporting that they believe that business will be good or excellent in the next year	Gauge business outlook
4.I	Number of businesses reporting that they had adequate access to trained employees	Determine training needs
4.J	Number of businesses reporting that they were able to find trainable workers	Determine workforce needs

Likely Data Sources

Small diameter material and other by-products of restoration can come from public and private lands. Consequently, this module suggests methods for acquiring information about both material from public and private lands and the businesses that use the material. You may decide to track only what happens to material removed from one or the other. Most value-added business will likely use material from both sources.

Tracking Material Removed from Private Lands

Tracking what happens to materials removed from private lands may be difficult. You might want to start by asking local wood-products businesses where they get their material. In addition, you may want to speak with some of the forest landowners in your community to determine what they are doing with this material. Finally, if your state requires harvesting permits, it might keep records that identify local private-land harvests.

Tracking Material Removed from Public Lands

For federal lands, you can make use of data tracking systems to gather information about material removed. The vast majority of material removed from public lands is done so through some sort of timber sale or removal permit. In addition, the occasional service contract involves removal of material. Most of these contracts have an associated bill of sale that indicates volume and price of the sale. Consequently, this information should be entered into the timber sale tracking databases. As a result, you should be able to work

primarily with the timber staff from local federal land management agencies to gather information about removed material.

A word of caution: Be sure to include agency staff such as district rangers, timber-sale administrators, and small-sale administrators early in your monitoring process so that they can help you shape your monitoring to match the available data and make it easier for them to provide you with needed information.

One of your first tasks in gathering information about material removed from public lands will be to decide what types of timber sales you want to consider. Of course, the more you consider, the more complete your analysis could be, but also the more time and energy it could take. Keep in mind that in isolated rural communities, local residents will likely capture the smaller timber sales and non-competitive sales as well as permits for firewood and other uses. Do not neglect these categories just because they seem small. They could be important to your local economy.

The Forest Service sells timber in a number of different ways. If the timber is valued at more than \$10,000, the Forest Service will sell it through a competitive bid process. Less valuable material can be sold without a competitive bidding process. The Forest Service can also issue permits for the removal of firewood or Christmas trees. For each type of sale, the Forest Service must fill out a different type of form. The names of selected forms and their purpose are listed in Fig. 3. Examples of these forms can be found at <http://www.fs.fed.us/r6/nr/fp/FPWebPage/ForestProducts/ForestProducts.htm>. Choose the link for “project forms.” The forms typically include information about the volume being sold, the name and contact information of the purchaser, the purchase price, and the number of bidders (if applicable).

Timber sale size is measured using a number of different units depending on the type of material sold. The size could be measured in board feet, cords, cubic feet, and tons. Volume and weight measures do not readily convert, so you may have to separate totals for different units.

FIGURE 3
Selected Forest Service Timber Sale Forms

FS-2400-3P	Forest products contract for special forest products sales
FS-2400-3T	Timber sale contract for tree measurement sales (non-bid sales, inc. service contract with product removal)
FS-2400-4	Forest products sale contract
FS-2400-6	Timber sale contract (bid sales; scaled after felling)
FS-2400-6t	Timber sale contract (bid sales; scaled before felling)
FS-2400-8	Forest Products Free Use Permit (personal use only)
FS-2400-17	Report of the Timber Sale (has summary of bids and some other useful information. A good first place to start looking)

Using these forms directly will provide you with the most information about the sales. However, if you have more limited time, you should work with agency staff to access databases where the information is compiled.

Tracking Added Value

After you have identified timber-sale purchasers, and volume purchased, you will need to ask the purchasers what they did with the material. Worksheet 5 suggests questions to ask when interviewing timber sale purchasers.

Some timber sale purchasers will add value to the material themselves. Mills often bid on a timber sale and process the material in their own facilities. Similarly, some people harvest small diameter material and make it into posts and poles or firewood themselves. In other instances, purchasers harvest the material and then resell it to other users who process it.

Not all uses of material have the same impact on the local economy. As a general rule, the more the material has been processed, the more value has been added. The table below offers a general guide as to how much value has been added to common wood products.

FIGURE 4 Examples of Value Added Wood Products

Low: chips, bark chips, sawdust, mulch, firewood, posts, poles

Medium: cut stock, dimensional lumber, energy, flooring

Medium-high: veneer, ply-wood, engineered wood products, mass-produced furniture, cabinets, gifts, and accessories, doors, windows, trusses,

High: handmade and made-to-order furniture, musical instruments, fixtures, cabinets, gifts, accessories

Tracking Utilization Businesses

After tracking material and purchasers, you will want to turn your attention to local value-added businesses. Some of these may purchase raw materials directly from the landowner. Others will buy those materials from harvesters, typically loggers who bought the material from the landowner. In addition to determining if they are adding value to local by-products, you may want to monitor the economic health of these businesses and determine what challenges they face in order to make use of the by-products of ecosystem management. Worksheets 4 and 5 offers sample interview questions that correspond to the measure that we suggest below.

To identify businesses to interview, ask the raw material purchasers to whom they sell material. Also, ask them if there are other businesses they know about. Check the phone book, ask around, and ask those you interview. Your goal is to build a list of people and businesses that process wood products from firewood sellers to furniture makers. Make

sure to talk with business that do not purchase material locally to understand why they do not—or cannot—make use of local material.

As you interview people, ask them to explain their answers so that you can identify patterns in your analysis. For most measures, you might use raw numbers rather than percents because you will probably be talking to a small number of businesses.

Tracking Unused Material

If you want to understand how much material is being treated but not removed, work with the people who develop thinning and slash treatment projects that are implemented through service contracts or with in-house crews. These jobs are typically measured by the acres not volume of material. Moreover, they may not systematically report this sort of information so you will have to work with agency staff to develop a tracking system. Fire staff may know how much material they burned in piles or mulched during a year.

Monitoring Details

Outcome #1: By-products are used for economic or environmental benefits

1.A. Amount of materials harvested or removed in the local area

<u>Why monitor</u>	Track volume of material potentially available for local valued-added use.
<u>What you need</u>	Definition of local (see Appendix 1) Volume harvested from public lands Volume harvested from private lands
<u>Where to get it</u>	National Forest total cut and sold volumes are available on the web at http://www.fs.fed.us/r6/nr/fp/FPWebPage/ForestProducts/ForestProducts.htm . Choose link to “cut and sold reports.” For Region 5 (California), go to http://www.r5.fs.fed.us/sales/ and choose the forest in which you are interested. State forestry departments often track private lands harvests.

1.B. Amount of material piled and burned (not as part of a prescribed burn)

<u>Why monitor</u>	Determine the amount that is not used for value-added purposes.
<u>What you need</u>	Estimate of the tons of materials piled and burned
<u>Where to get it</u>	Agency fire staff oversee pile burning and may be able to estimate burnt volumes

1.C. Amount of materials left for wildlife habitat

<u>Why monitor</u>	Determine amount of material used for wildlife.
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<u>What you need</u>	Project by project estimate of the materials left to improve wildlife habitat
<u>Where to get it</u>	Work with wildlife staff to develop estimates of how much material was left behind for wildlife. Consider snags, downed trees, and other types of habitat as wildlife staff suggest.

Outcome #2: Provide raw materials to local firms, add value to local economy

2.A. Percent of removed material that local businesses processed

<u>Why monitor</u>	Track local use of local material
<u>What you need</u>	A definition of local (see Appendix 1) A list of timber sales, volume sold, and purchasers Volume of material sold for processing Location of the businesses processing material
<u>Where to get it</u>	Timber sale information available on the Forest Service the forms as listed in Fig. 3 Interview purchasers to determine where material was sold
<u>How to calculate</u>	Sum volume used locally. Sum total volume sent out of the area. Divide total local volume by the sum of local and non-local. Multiply by 100.

2.B. Percent of removed material that small businesses processed

<u>Why monitor</u>	Determine the extent to which small businesses are using removed material
<u>What you need</u>	A definition of a small business Volume sold to each business using by-products Size of the businesses processing materials
<u>Where to get it</u>	The Small Business Administration defines small manufacturing businesses to have fewer than 500 employees. Another definition may be more appropriate to your needs. Timber sale information is available from the Forest Service the forms as listed in Fig. 3. Interview purchasers to determine which companies processed materials. Interview processing businesses to determine business size.
<u>How to calculate</u>	Sum volume processed by small businesses. Divide that by the sum of the volume sold to small and big businesses. Multiply by 100.

2.C. Percent of by-products used to make low, medium-low, medium-high, and high value-added products locally

<u>Why monitor</u>	Determine how material is used to add value locally.
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<u>What you need</u>	A definition of local (see Appendix 1) Definitions of low/medium-low/medium-high/high valued added products (see Fig. 4) List of volume sold and purchasers Volume processed locally by use (e.g. chips, molding, flooring, etc)
<u>Where to get it</u>	Interview raw material purchasers and processing businesses to determine use of material using Worksheets 4 and 5.
<u>How to calculate</u>	Sum the volume in each category. Divide that amount by the total volume.

2.D. Total value created by making low, medium-low, medium-high, and high value-added products locally

<u>Why monitor</u>	Determine how much value is added locally.
<u>What you need</u>	A definition of local (see Appendix 1) Definitions of low/medium-low/medium-high/high valued added products (see Fig. 4) Names of local value added businesses Gross sales of each producer in each value-added category (making low, medium-low, medium-high, and high value-added)
<u>Where to get it</u>	Interview raw material purchasers and processing businesses to determine use of material using Worksheets 5.
<u>How to calculate</u>	Sum the volume in each category. Divide that amount by the total volume.

Outcome #3: Businesses making value-added products are able to use materials and workers from the local area.

Outcome #4: Businesses making value-added products are strong.

Note: The measures related to outcomes #3 and #4 draw directly upon survey questions listed in Worksheet 5. Calculation involves summing responses across interviews. Consequently, we do not provide a measure-by-measure description of how to proceed.

Worksheet 4: Sample Survey of Raw Material Purchasers

The purpose of this interview is to get information about where material harvested locally is processed and how much value is added. If the person you are interviewing also processes material, also ask them the questions on Worksheet 5.

Prior to conducting the interview explain:

- Who you are
- Whom you represent
- Why you are asking these questions and
- What you plan to do with the answers
- How you will protect their confidentiality
- Ask them if they have any questions before you start

Ask these questions about each timber sale that the person you are interviewing purchased. Begin by describing the specific timber sale that you are interested in.

Timber Sale and Value Added Information

- Q 1)** Please note timber sale name or number.
- Q 2)** How much material was removed in the timber sale? Which species? What diameter classes?
- Q 3)** Did you sell any of the raw materials that you purchased?
- Q 4)** If yes, to whom?
- Q 5)** Where was the buyer/s located?
- Q 6)** How much and what type of material went to each buyer?
- Q 7)** What products were going to be made with the material you sold them?
(Note: you will need to verify this with the actual processor).

Q 8) Did you process any of the material yourself? (Note: if they answer yes here, you will also have to ask them many of the questions from Worksheet 5)

Q 9) If yes, how much?

Q 10) Where did you process the material?

Q 11) What kinds of products did you make?

Q 12) Where were these products sold?

Q 13) Do you have any additional comments, questions, or suggestions?

Worksheet 5: Survey of Wood Products Businesses

The purpose of this interview is to understand the health of value added forest products businesses and the opportunities and challenges they face.

Prior to conducting the interview explain:

- Who you are
- Whom you represent
- Why you are asking these questions and
- What you plan to do with the answers
- How you will protect their confidentiality
- Ask them if they have any questions before you start

Business Information

Q 1) How many years has this business been in operation?

Q 2) How many year-round employees did you have last year?

Q 3) What were most and least number of employees you had over the past year?

Business Focus

Q 4) What products does your business make?

Q 5) If multiple products, about what percentage of your total production does each product make up? (To clarify, you could ask, "For example, what percent of your business is flooring?")

Q 6) What were your gross sales last year?

Q 7) What percentage of your sales were in the following value added categories?
(Interviewer: give examples of each category)

low value added

medium value added

high value added

Use of Local Natural and Human Resources

Q 8) What type of wood/materials do you use in your business?

Q 9) Where does your supply come from?

If supply comes from outside the community, move to Q10. If not proceed to Q12.

Q 10) What factors contribute to this decision? For example, lack of availability, lack of consistent supply, price, and/or quality.

Q 11) How much material did you purchase last year?

Q 12) How much material did you purchase from the local area last year?

Workforce and Training Issues

Q 13) Over the last year, did the number of employees at the business increase, decrease, or remain the same? Please explain any changes.

Q 14) If you had openings, did you get qualified applicants for the positions?

Q 15) If not, do you have access to training programs or resources to train new employees?

Q 16) Do you have a need to training for existing employees?

Q 17) If yes, how does that training need get met?

Business Growth and Expansion

- Q 18)** Over the last year, has the amount of material processed at your facility increased, decreased, or remained the same?
- Q 19)** Please explain any changes in the amount of material processed.
- Q 20)** Over the next year, do you expect to process more, less, or about the same amount of material?
- Q 21)** Please explain any expected changes in the amount of material to be processed next year.
- Q 22)** Did your production increase, decrease or stay the same over the last year? (While similar to the previous question, it is slightly different. Increased efficiency could lead to improved production.)
- Q 23)** Please explain any changes in your production over the last year.
- Q 24)** During the past year, did you lease or buy any new equipment?
- Q 25)** What equipment did you lease?
- Q 26)** What equipment did you buy?

Q 27) Did you sell any major equipment over the past year?

Q 28) If yes, what?

Q 29) Does your business have a line of credit or other access to short-term capital?
If so, is this sufficient for your current needs?

Q 30) Do you sufficient access to capital to expand or diversify?

Q 31) What are the prospects for your business in the next year?

Q 32) Do you have any additional comments, questions, or suggestions?