FOREST MANAGEMENT 101

A handbook to forest management in the North Central Region

This guide is also available online at:

http://ncrs.fs.fed.us/fmg/nfgm

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Economic Considerations

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Whether its stocks, bonds, mutual funds, or savings accounts, as an investor you are interested in getting the greatest return on each dollar invested. Forest land is no exception. Many landowners, however, overlook the potential opportunity to increase the return on their forest land investment. In addition to providing important wildlife, recreation, and aesthetic values, investing in forest management can add to your forest's bottom line. Because management is a long-term proposition, the investments you make need to be carefully considered. When properly applied, modest investments in management early in a life of a forest stand can have a substantial impact on financial returns through increased forest growth, improved wood quality, and greater economic yields in the future. In addition, investing in forest management often compliments many other reasons individuals own forests such as improving wildlife habitat.

While forest management investments are, by their very nature, site specific, the cumulative impact of making these investments across a large forest area can be substantial, both economically and ecologically. Economically, investments in forest management repeatedly made across large areas can significantly increase the area's forest productivity and yield. In addition to providing a higher return on an owner's investment in forest land, significant investments in productivity have the potential to increase regional economic activity. Ecologically, increasing regional forest productivity through forest management means the same volume of wood can be produced from a smaller land base, enabling greater acreage to be used for non-economic purposes.

There are a number of factors to consider when making an investment in forest land management. These include:

Tolerance for risk - Due to the long-term nature of forest land management, investing in forest management often carries with it a large degree of uncertainty that an anticipated return on the investment will be fully realized. This includes uncertainty about future prices for your products (e.g., What markets will exist when my products are ready for sale?), management costs (e.g., What will be my annual property tax liability for the property?), and future forest conditions (e.g., Will forest growth increase in response to management as expected? Will the forest be susceptible to insect or disease infestation or wildfire?).

Investment timelines - Landowners need to consider the timeframe associated with many forest management investments. These investments may not be realized for years or even decades. In some cases, it may be your heirs that realize the investments you make today in your forests.

Portfolio diversification - For many individuals, investing in forest land management provides added diversification that compliments an existing investment portfolio.

Stand and ownership analysis for potential practices - The existing conditions of your forest (e.g., tree types, sizes, ages) will often dictate the opportunities to invest in forest management, as well as the specific practices that can be applied.

Financing - Depending on the access you have to capital to fund your investment in forest management, you may need to secure outside funding. The terms of outside financing (i.e., the interest rate charged by the lending institution, repayment period, amount of the investment financed) can vary considerably and have substantial impact the financial feasibility of the investment.

When to sell your products - How will you know when your timber and other forest products are ready for harvest? What criteria will you use to make this determination? From a strictly financial perspective, you will want to sell your products when they no longer increase in value at a rate that exceeds your next best investment opportunity (e.g., your opportunity cost). For example, if you could invest the proceeds from the sale of your forest products into an account earning an eight percent annual return, you would want to let your forest grow until its value increases at a rate that is less than eight percent per year.

Marketing - When your forest products are ready for sale, there will likely be costs associated with preparing your stand for sale and finding a market for the products. Many landowners use consulting foresters to oversee the sale of forest products, who typically collect a fee that represents a percent of the gross sale value.

Taxes - Property taxes are usually the single largest recurring annual cost of forest land management. What are the expectations about the future level of property taxes? Additionally, how will federal and state income tax provisions (e.g., treatment of timber income and management expenses) affect the performance of my investment?

Record keeping - Important, but often overlooked is keeping complete and detailed records of your forest management activities. These records are not only important for tax purposes, but they also enable you to better document the timing and types of treatments applied to your stand.

Government and other support or incentive programs - There are several government-sponsored programs that provide technical and/or financial assistance to forest landowners interested in making investments in forest land management. This includes cost-share funds to help with certain management practices such as tree planting or other silvicultural activities. A consulting forester or your local DNR office can help you identify the programs applicable for your forest management needs.

Key Economic Concepts

Time value of money - Financial analyses compare investment costs to expected returns. When these costs and returns are realized at different points in time, adjustments need to be made so the two can be correctly compared. Consider a simple project that consists of an investment cost of $100 and produces a return also equaling $100. If the project's cost and return occurred at the same time you would be indifferent about the whether to undertake the project. The $100 cost completely offsets the $100 revenue, leaving you with a net gain of $0. However, if the $100 return wasn't realized for five years, you probably wouldn't want to undertake the project. Why? If you invested that $100 in a savings account earning 3 percent annual interest, your account would be worth almost $116 after five years - considerably more than the $100 return expected from the project. When you take the earning power of your investment costs into account, it quickly becomes apparent that time does matter when it comes to analyzing investment opportunities.

The long period of time it takes to grow a forest means many investments in forest management that are made today often aren't going to be fully realized for many years (possibly decades) into the future. Even though the projected revenue from selling your timber in the future might look substantial, keep in mind what your investment could've earned if it had been invested elsewhere during the time your forest is growing. To correctly compare future returns from forest management to the cost of forest management investments, one has to consider how much your initial investment would have grown in value had it been invested elsewhere.

Opportunity cost - Opportunity cost is the value of a foregone opportunity. For example, if you had $100 that you did not plan to spend for the foreseeable future and had the option of: a) keeping the $100 in your wallet; b) investing the $100 in a bank account and earn 2 percent interest, or c) purchasing a savings bond that earned 4 percent interest annually, you'd likely buy the savings bond. The opportunity cost of buying that savings bond is the value of next best opportunity that was not taken. In this case, it's earning 2 percent in a bank account.

Opportunity cost is an important consideration in analyzing any potential investments in forest management. By investing your time and financial resources (i.e., money) in forest management, you are not able to use these resources elsewhere. Financial and economic analyses use terms like "discount rate" or "interest rate" to represent the opportunity cost of undertaking a project. For example, a landowner's opportunity cost of investing in forest management may be the return that could be realized if these resources were invested in the stock market…the next best investment opportunity. For another landowner, the alternative to forest management investment may be quit different such as a savings account. Depending on the value placed on an individual's time and financial resources and tolerance for risk, the opportunity costs for a given project can vary considerably among individuals. Consequently, an analysis of the same project can produce very different results if different discount rates are used. It is important that when analyzing forest management investments, you take into account the true cost of your time and resources. Don't assume these costs will necessarily be the same for you as they are for your neighbor - they depend on your individual circumstances.

Economic decision rules - Many economic decision rules are used to analyze the financial feasibility of investment opportunities. The more common ones that are used in financial analyses include: benefit-cost ratio (B/C), a ratio of discounted project benefits to discounted project costs; internal rate of return (IRR), the rate of return on a project's investment; and net present value (NPV), the difference between a project's discounted benefits and discounted costs. Projects are considered financially sound if the B/C is greater than one, the IRR is greater than the rate of return that would be generated if the investment was made in the next best investment alternative to the project (i.e., the project's opportunity cost), and the NPV is positive.

While no single economic decision rule is perfect, the one that is the most reliable and widely accepted is NPV. NPV is a straightforward measure of a project's financial attractiveness. It's also easy to understand. A positive NPV indicates that a project is a better use of your resources when compared to the rate of return you could get from your next best investment opportunity.

For example, if a landowner needs to earn an 8 percent return on an investment in forest management, all future returns and costs associated with this investment would be discounted back to present day terms (e.g., a $108 return or cost next year is only worth $100 today using an 8 percent discount rate). After discounting all of the project's returns and costs back to present day values, these discounted costs and benefits are summed. The sum of all discounted returns less discounted costs is the project's NPV. If the project's NPV is positive (the discounted benefits exceed the discounted costs), then the project is worth undertaking based solely on its financial performance.

It's also important to keep in mind what NPV doesn't indicate. NPV doesn't say anything about the size of the investment that is needed for a project, the timing of costs and benefits over the life of a project, or how long a project will last. It also doesn't take into account any project costs or benefits that can't be quantified in monetary terms.

Assumptions - The results of any economic analysis are heavily influenced by the assumptions that are made about the project being considered. In analyzing the financial attractiveness of an investment in forest management, a number of important assumptions need to be considered. These include

assumptions about future timber prices, forest management costs, rates of tree growth, property taxes and insurance costs, inflation, and interest rates. While no one can predict with complete certainty these factors, steps can be taken to increase the likelihood your assumptions are "in the ball park". This includes using only sources that are known for providing objective and reliable information, consulting more than one source to determine how greatly the factors you are considering can vary from one source to another, and reviewing existing financial analyses of forest management investments. Government and university publications, professional consulting services, and economic and market reviews are good starting points. Additionally, the Internet provides access to many sources of useful information that, until recently, were not widely distributed or known.