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Department of Agricultural and Resource Economics, Fort Collins, CO 80523-1172  
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## A SOCIAL BENEFIT COST FRAMEWORK TO ANALYZE THE COMMUNITY ECONOMICS OF COMMUNITY FORESTRY

Andrew Seidl,<sup>1</sup> and Elizabeth Myrick<sup>2</sup>

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- *Economic benefits and costs can be consumptive (e.g., boards, poles) or nonconsumptive (e.g., hiking) in use.*
- *Existence (e.g., preservation of endangered species), bequest (e.g., preservation of wildlands) or option (e.g., reserving the option to cut trees in the future) values may be significant.*

### Introduction

Community Based Forestry (CBF) implies commitment to the long term ecological, economic and social well being of forest dependent communities. CBF, or community scale sustainable forestry, constitutes a departure from industrial forestry due to this commitment to the preservation of the ecological integrity of the forest ecosystem in perpetuity and to the maintenance or improvement in the quality of life in the host or gateway community in addition to seeking profits from forest products sales.

One important question facing funding agencies and community organizations is whether or not, or to what extent and under what conditions, are communities better off where there is a community-based forestry organization (CFO). The initial query is followed by questions of just what is meant by “better off” and against what alternative states of reality community forestry should be measured. Since the appropriate economic development path will, of course, depend upon the objectives of the community and the actual implications of any chosen path will vary due to local conditions, deriving community specific recommendations or results based upon more general findings is inappropriate. Moreover, it is misleading to extrapolate case study results to infer a broad understanding of the relative efficacy of available forest resource management alternatives across locations or communities.

In brief, CBF and CFOs present a substantial analytical challenge. Here, we propose analytical framework from which the role of CFOs in the economic development of resource dependent communities might be viewed. We identify the potential sources of economic benefit derived from forest related activities and how they may tend to vary across management alternatives.

<sup>1</sup> Contact author. Seidl is Associate Professor and Extension Specialist, Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, CO, 80523-1172. T: 970-491-7071. E: [Andrew.seidl@colostate.edu](mailto:Andrew.seidl@colostate.edu). F: 970-491-2067.

<sup>2</sup> Myrick is Graduate Research Assistant, Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, CO, 80523-1172.

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This analysis simulates the perspective of a hypothetical forest dependent community facing an uncertain future. It attempts to systematically address the question of the appropriate economic development path for a community to follow when faced with the following potential alternatives: industrial forestry, community based forestry led by a private cooperative or nongovernmental organization, or community scale natural resource based development without attempts at private coordination (i.e., no management).

Social benefit cost analysis provides the analytical lens for the study. SBCA helps us to properly frame the economic development question in terms of the forest management alternatives available to forest resource dependent communities. We spend a substantial amount of time discussing the great number of issues that should be considered, not because we will fully explore the answers to each of them here, but rather so that resource dependent communities can learn to ask the right questions in assessing the economic development decisions they face.

### **Community Scale Forestry Management Alternatives**

For our purposes, industrial forestry is a management system that views forest resources as private property (whether they are found on public or private lands) and is motivated by firm level profits alone. Community forestry is seen as a management regime motivated by long term ecosystem health and economic development at the community scale, not simply profits. No management is viewed as the management alternative that is neither industrial, nor community.

Due to the power of financial incentives, it is most likely that community forestry and no management are the actual management alternatives facing a commu-

nity. It is not likely that community forestry and industrial forestry are, in fact, choices that communities have. It is more likely that community forestry evolves from a situation where industrial forestry was not ever or is not currently sufficiently profitable to attract industrial forestry and where the “no management” alternative is present immediately prior to the decision to move forward with a community solution. Financial incentives may be driven directly by market forces, by ecological factors, the legal or social context, and/or by federal, state or local policies. In essence, we are trying to set up an investigation of what is gained or lost in those communities where these three development alternatives may be available, yet only one path can be chosen in a particular place and time.

We envisage that forest stewardship will differ across two institutional dimensions: ownership (i.e., public or private) and management (i.e., industrial, community, and no management) (Table 1), resulting in a broad typology of six potential stewardship arrangements. We, thereby, define stewardship as a combination of ownership and management dimensions wherein “good” stewardship implies ecological, economic and distributional objectives are likely to be met.

Although these calculations will certainly result in a partial depiction of the role of CBF in the economic development of forest dependent communities, they will provide a more complete picture than currently exists and point to specific areas of informational need in order to complete the economic analysis. Since we are analyzing CBF, an economic approach will provide only one part of an overall understanding of the implications of community development decisions made in forest dependent communities. Ecological and institutional pieces of the analysis, though not lacking in economic implications, are discussed elsewhere.

Table 1. Management and ownership dimensions of forest resources

Management Style	Ownership	
	(A) Public	(B) Private
(1) Industrial Forestry (private property)	1A	1B
(2) Community Forestry (common property)	2A	2B
(3) Idle/unmanaged (Status Quo) (open access)	3A	3B

### **Analytical Approach: Social Benefit Cost Analysis**

Our analysis takes the Capitals Framework as a jumping off point, focusing on the development and transformation of scarce and valuable human, social and natural capital into valuable economic outputs. We frame the alternatives in terms of Social Benefit Cost Analysis (SBCA), which we hope will facilitate an understanding of the likely tradeoffs among community development alternatives over time. At this point, we provide a common analytical framework within which we hope to characterize focal case communities in order to eventually generate a more robust statistical understanding of the predictive and descriptive features of economic development alternatives in forestry dependent communities. To date, the approach provides a case study illustration informed by the available literature on the topic.

### ***Standing***

Having identified three potential community economic development alternatives for forest dependent communities, the next step is to define standing, or whose benefits and costs matter to our analysis. The analysis of all three alternatives must proceed at the same social and geographic scale and the scale chosen should at minimum reflect where both costs and benefits are concentrated.

CBF is found under two distinct land tenure designations; private and public. The narrowest possible definition of standing in this case would be the owners of private nonindustrial or industrial forestlands within a particular location or community. Financial project analyses are often undertaken from this narrow perspective where profit-making is the sole objective of the client.

However, when CBF is found in communities characterized by private non-industrial forestlands, some sort of cooperative structure commonly evolves to manage these lands on behalf of the cooperative's membership, or landowners. To the extent that the landowners have broader community interests, these interests may weigh into their decision-making in addition to ecological management of their holdings and profit from their sales. In addition, these landowners purchase productive inputs (labor, machinery) from members of a community or communities and use public infrastructure and other facilities, often pay taxes to a community (as well as the state or nation), so it is likely that the minimum acceptable scale of analysis across alternatives should be the local community.

When CBF is found in gateway communities to federal or state forestlands, a private nongovernmental organization (NGO) typically evolves to facilitate economic development features of forestry activities on public lands. The activities of these NGOs could be only to serve the contributors to or participants in the organization, but are more often observed to have broader social interests, in line with the tenets of CBF.

When the "owner" of the land is the state or federal government, it is tempting to ascribe standing to the citizens, or perhaps residents, of the appropriate jurisdiction. The standard argument is that if the people of the United States are taxed to manage the land, they must be benefiting from their ownership and have a stake in land management alternatives. The counter argument is that people in gateway communities stand to gain or lose the most (gains or losses are concentrated) by resource management decisions made by government agencies, that these gains or losses would be overwashed by miniscule per capita gains or losses (they are diffuse) at the national level. It has become a matter of policy for federal agencies to take local implications of their decisions into account. As a result, we adopt this convention, ascribing formal standing only to the gateway community or jurisdiction (often the county), and note only the type and likely direction of impacts at the broader state or federal scale.

### ***Discount rate and analytical time scale***

Since the benefits and costs of the economic development alternatives accrue and vary over time, our ability to compare current with future benefits and costs can be facilitated by the assignment of a discount rate. A discount rate, or rate of time preference, allows us to compress cost and benefit information over an extended time period to a single metric called present value. The higher the discount rate, the greater the preference for current benefits relative to future benefits. The lower the discount rate, the greater the influence of future opportunities on current decisions.

For a strictly financial analysis, the appropriate discount rate is the expected return to private investment capital. This would be the most appropriate discount rate from the perspective of a private non-industrial forestland or industrial forestry project or a CBF project that competes in the private sector marketplace. That is, the development alternative must generate a financial return of at least as much as the next best option for

investing private capital, since profit is the motive. Often a private bank lending rate is used (i.e. 5-8% in 2006).

For an investment in public infrastructure, education, or other socially motivated programs, the rate of return, thus the discount rate, needs to meet or exceed the public borrowing/lending rate, since cost recovery is often the minimum standard for acceptance in the absence of known positive external effects. This would be most appropriate for training and education programs conducted by cooperatives or CBFs, where the expected returns are longer term and not necessarily profit motivated. Often the US Treasury bond rate is used (i.e., 1.5-4% in 2006).

Alternatively, a weighted average of the private and the public rate can be assumed where the alternative demonstrates both private and public benefits. This is most likely the appropriate approach here given the degree of internal variation in activities and motivations.

The length of the study, or time horizon, may also have important implications for the relative attractiveness of one alternative or another. The shorter the time horizon, the more likely a project that is strong on financial returns, but weaker on social or ecological benefits, will be preferred. Private economic feedback is quicker than public or social economic feedback, which is probably quicker than ecological feedback in many cases. In this case, it makes sense to push the time horizon to at least the length of a typical forest rotation, perhaps longer. Beyond about 20-30 yrs, however, the effect of extending the time horizon of the project tends to be trivial due to discount rates. For example, at a 6% discount rate, \$1.00 of benefit 30 yrs from now has a present value of about \$0.17, and about \$0.05 at 50 yrs. In addition, our ability to make meaningful predictions into the distant future is rather imprecise. As a result, we suggest a 25 yr time horizon across all economic development alternatives discussed here. Among the most important calculations will be the "salvage value" of the stock of forest resources at the end of the project analysis period.

#### ***Economic costs and benefits associated with forest dependent rural communities***

The next task is to identify the potential sources of costs and benefits across alternatives. Economic benefits and costs can be consumptive (e.g., boards, poles) or nonconsumptive (e.g., hiking) in use. In addition,

existence (e.g., preservation of endangered species), bequest (e.g., preservation of wildlands) or option (e.g., reserving the option to cut trees in the future) values may be significant. Finally, quasi-option value is the value of not making an irreversible decision in the face of uncertainty. For example, a forest slated for residential development may be better used for recreation in the short term, until the full economic and ecological implications of development are understood. Recreational use preserves the ability to impose more intensive residential development. The obverse does not hold.

Many of the important benefits and costs across the alternatives have to do with economic activities on the forest land:

- The most obvious benefits of forests are wood products. Potential products include wood for construction, paper, furniture, fencing and many others. The type, quantity and value of forest products will vary over time and by alternative. These are consumptive use values of renewable resources.
- Non-timber products may also be produced under one or more of the forest management alternatives. They include medicinal products, mushrooms, nuts and berries. These are also consumptive use values of renewable resources.
- Recreational opportunities on forested lands for local people and for tourists may vary across alternatives. They include hunting, camping, climbing, skiing, horseback riding, wildlife viewing, ATVs, snowmobiles, and many others. These are mostly nonconsumptive use values. Hunting is a consumptive use value and some of these activities can cause environmental damage, so they might be considered consumptive uses under certain circumstances.
- The quality and quantity of wildlife habitat may vary by alternative. This will affect consumptive uses, such as hunting, nonconsumptive uses, such as photography, and existence or bequest values of unique habitats or endangered species, primarily accruing to nonresidents (who do not have standing).
- The degree to which water and soil quality are affected by run off and nutrient deposition will vary across alternatives. This will affect consumptive uses through changes in land productivity and water quality (turbidity) (e.g. fishing, costs of water treatment) and nonconsumptive use values (e.g., hiking quality, catch and release fishing).

- Fire risk may vary across alternatives. Fire risk influences economic impact in at least two ways; through the five variable categories addressed above and through employment impacts, dealt with below. Higher fire risk implies lower productivity of forested land over time, as fire risk translates into a 1 in X chance of catastrophic loss in any given year. However, to a certain extent, more fire risk means more temporary jobs in fighting fires. Housing and feeding firefighters from outside the region (without standing) or employing local firefighters may be an important source of income for some strata of society, but is probably not a good substitute for less variable work and income from more traditional productive activities. Moreover, an analysis of the relative benefits of one economic development alternative over another that did not distinguish between short term (e.g., construction, fire fighting) and longer term (e.g., furniture maker, outfitter) income and employment effects would be a misrepresentation.

Many forest dependent communities are struggling to come to terms with high levels of unemployment and a labor force lacking the training needed to fill the employment opportunities that do exist or are generated as a result of activities on the land. As a result, it is common, if not universal, for CFOs to engage in job training programs.

- Skill development always “counts” in SBCA, as it increases the productivity of labor, thereby increasing the wage rate commanded in the marketplace, and typically, increases the number of hours worked.
- Job creation “counts” in communities where there is persistent unemployment because it can be expected that a new job will be taken by someone who has standing and that this job will not cause another job to go unfilled in the community.

Finally, but not least importantly, there are broader community implications of adopting one economic development path over another.

- In addition to the absolute size of economic costs and benefits from forest resource use, if the flow of economic benefits and costs is more or less variable over time, there may be social implications of one choice over another. The extreme case of this income variation is in seasonal employment where people from outside a region are hired to fulfill labor demands that cannot be absorbed locally. Tourism and agriculture provide examples of

industries typified by strong seasonal variation in labor demand and, therefore, income. In forestry the local employment cycle may or may not be annual, depending on the chosen alternative.

- Community welfare indicators other than the number and quality of jobs and tax base may vary across development alternatives. Changes in some measures of community welfare provide indicators of important, but difficult to measure, improvements or declines in individual or family well being. If one or another alternative can be shown to result in fewer social problems (e.g., alcoholism, suicide, crime, poverty, school drop outs, vandalism) or more social benefits (e.g., volunteerism, altruism, enhanced community networks, enhanced community services), it may imply that individuals and families within the community have a greater sense of hope, power, influence, responsibility, connection to the land and the community. Evidence of improvements in these measures across community development paths would be preferred to other alternative paths *ceteris paribus*.

### Concluding remarks

The intended outcomes of Community Based Forestry may be largely agreed upon by communities who choose to pursue this alternative for economic development. However, the chosen means to the commonly envisaged end vary substantially. Analytically, CBF is not simply an alternative means of producing the same forest products produced by industrial forestry. Rather, it is a distinctly different collection of ways to manage forest lands. These distinct approaches to land management imply different values and objectives of the managers. Such potentially strong philosophical differences in how the land is viewed may render an economic comparison between industrial style forestry, CBF, and the “no management” option a moot point. However, to approach the management of private and public forestlands through the lens of a SBCA does help to highlight the likely differences and tradeoffs evident in adopting one approach over another. We hope that this approach will help communities facing similar choices to make better informed decisions appropriate to their needs and aspirations.

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### Resources

Seidl, A., and E. Myrick, "Summarizing the community economic impact of the Public Lands Partnership, Delta and Montrose Counties, Colorado," Department of Agricultural and Resource Economics, Cooperative Extension, Colorado State University. March 2007. EDR 07-01. <http://dare.agsci.colostate.edu/csusagecon/extension/pubstools.htm#EconDev>

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