Accounting for Resources in the Foothills Model Forest

Mike Patriquin

Michelle Spence

Bill White

Canadian Forest Service

Social Science Research Group

Overview

- Introduction to Natural Resource Accounting
  - Human welfare and the environment
    - Deficiencies in current accounting frameworks
    - Indicators of sustainability
- Example of Regional Level Application
  - Northern Alberta example
- The FMF NRA
  - Adapting the northern study and following Panel guidelines
- Uses
- Implications

Introduction to Natural Resource Accounting

- The natural features of the FMF offer significant environmental and economic benefits to the region and the province.

- Current and future generations rely on the benefits generated from the landscape.

  - Example: Forests provide commercial timber, recreation opportunities and a variety of ecosystem services

- The principles of sustainable development require that we maintain a sustainable level of these benefits over time…and so began natural resource accounting.

Human Welfare and the Environment

- The environment as natural capital acts as a source of materials and energy, and as a recipient of wastes.
    - Natural capital creates a flow of services used by humans
- The flow of services generated from natural capital affect humans populations.
    - Example: Changes in air quality, recreation, and food gathering opportunities
- Size of the initial stock of natural capital is also important.
    - The stock may affect future flows

What is a Natural Resource Account?

❧ Natural resource accounts can be expressed in terms of physical quantities and/or the economic values associated with the stock and flow of natural resources and environmental services on the landscape.

Statistical Accounting Frameworks

ॐ Based on the United Nations System of National Accounts.

ॐ The conventional measure for economic activity is Gross Domestic Product (GDP).

A Problem

- Standard statistical accounting frameworks were developed before the time that resource scarcity became a predominant issue.

- They are completely focused on the need to address business cycles of unemployment and inflation.

- There are several perceived deficiencies with conventional measures and accounting frameworks.

Perceived Deficiencies

- As an economic indicator of well-being, conventional accounts may behave perversely.
  - Environmental degradation and changing stocks of natural resources
- Conventional accounts treat different forms of wealth inconsistently.
  - Produced capital versus natural capital
- Conventional accounts give an incomplete picture of the full scope of economic activity.
  - Environmental assets such as air, water, and ecosystem services are "free".

Responses

- In response to these deficiencies:

  - Many nations have developed "satellite" accounts that include natural capital

  - In 1999 a US committee of experts released their consensus findings with respect to natural resource accounting
    - Agreed that standard accounts should be augmented
    - Included methodological guidelines

Regional Applications

- Preliminary natural resource accounts were developed for Alberta in the 1990's.

- A regional natural resource account was developed by Haener for the a region of public forest land in northern Alberta in 1999.
  - Regional forest resource account

- The FMF project was initiated as part of phase III.
  - Ties in with LLI and IRM

FMF Natural Resource Account

🔗 Follows the work done in northern Alberta, extends it, and follows the guidelines set out by the US expert committee.

🔗 Unlike the previous work, the FMF natural resource account will include subsurface mineral resources.

FMF Natural Resource Account

- The account will examine commercial and non-commercial activities including forestry, minerals, agriculture, and recreation.

- The account will also examine various non-market components including recreation, subsistence use, and environmental control services.

Northern Example

- Adapted from Haener and Adamowicz (2000)
  - Commercial Activities
    - Standard Accounting = $92.18M
    - Natural Resource Accounting = $144.48M
  - Why?
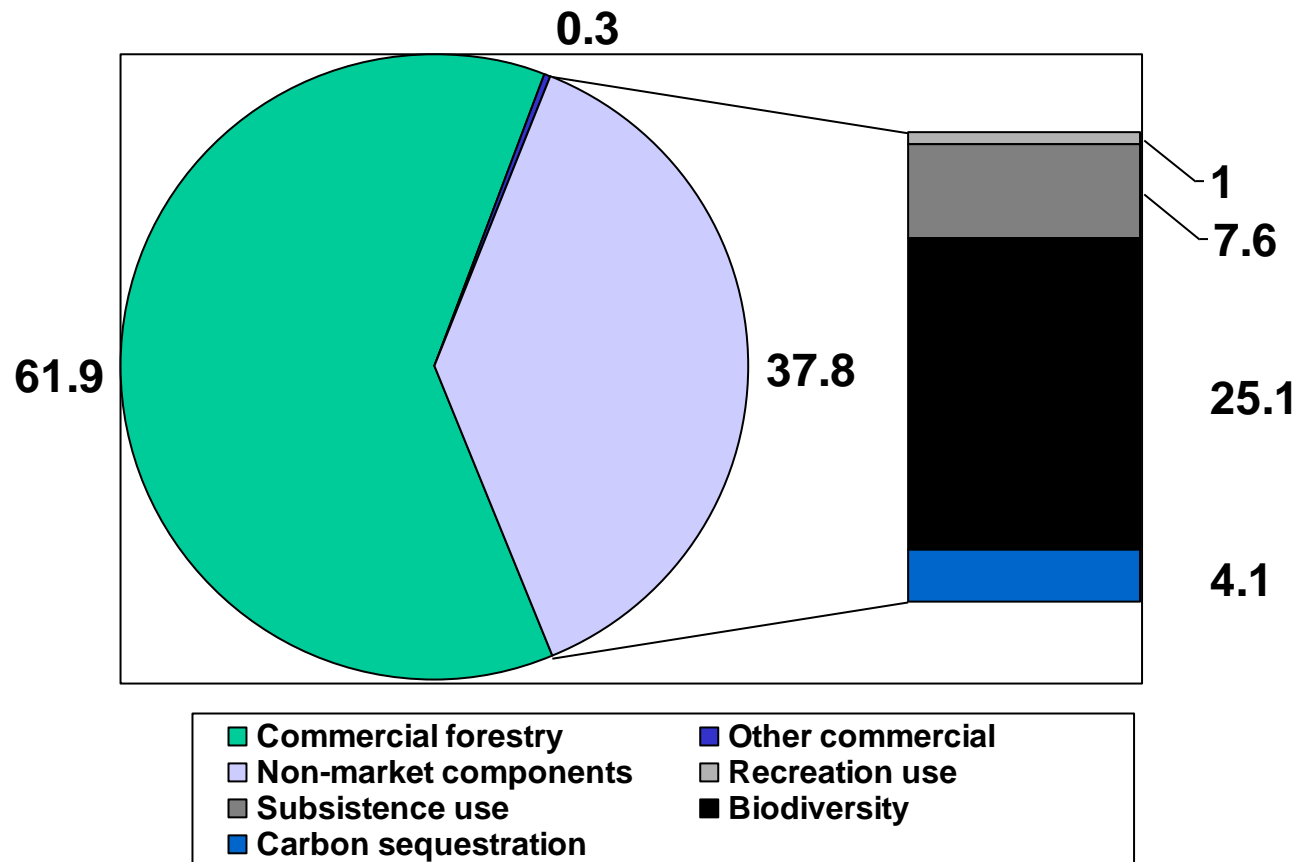 - Merchantable timber stock appreciated by an estimated $52.3M

  - Non-markets components valued at an additional $87.9M

- Augmented accounts yield net income of $232.39M compared to the 92.18M under standard accounting.

Northern Example

> Adapted from Haener and Adamowicz (2000)

Legend:
- **Commercial forestry**
- **Non-market components**
- **Subsistence use**
- **Carbon sequestration**
- **Other commercial**
- **Recreation use**
- **Biodiversity**

Uses

- Framework for organizing biophysical and economic indicators.
- Provides a more consistent indicator of the net income resulting from economic activity.
- Provides data to inform natural resource management policy
  - May be an ideal tool for IRM
  - Help set realistic prices for public assets

Implications

- Government
    - Inform policy
        - Demonstrates relative importance of natural resource services
        - Help determine values of public assets like the forest
        - Examine sustainability
- Industry
    - Inform investment decisions
    - Management planning
    - Data source
- Public
    - Demonstrates environment/economy linkages
    - Preferences change

Questions?