

Measuring Economic impacts in agriculture, the environment, and society

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RESOURCE ECONOMICS AND ENVIRONMENTAL SOCIOLOGY STUDENTS'
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RED DEER, ALBERTA

APRIL 30, 2015



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Economic Performance Alberta

798,000 hits

RBC predicts 'anemic' growth for Alberta economy in 2015

The bank's latest Provincial Outlook, released Thursday, forecasts annual real GDP growth of 0.6 per cent in the province for 2015.

Indicator	Latest Month	Value	Change year-over-year (y/y)
Employment (thousands)	February	2,300	+1.6%
Unemployment Rate	February	5.3%	+0.9 p.p.
CPI Inflation (unadjusted)	February	0.9%	-1.5 p.p.
Retail Sales	January	\$6.3 B	-2.3%
Housing Starts (annualized)	February	44,400	+25.5%
Rigs Drilling (unadjusted)	March	99	-64.8%
Manufacturing Shipments	January	\$5.9 B	-8.5%
Exports (unadjusted)	January	\$9.0 B	-16.0%

Source: Statistics Canada, CAODC, CMHC. p.p.= percentage points.



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Sustainability of Alberta Economy

798,000 hits



Highlights of the Alberta Economy 2012

During the past 20 years, Alberta's economy has led the nation in average annual economic growth, and is poised to lead again in economic growth in 2012 and 2013.

Goals of this presentation

1. To introduce the concept of wealth creation and relate it to sustainability
2. Describe a comprehensive wealth accounting framework as an alternative indicator of policy impact and economic performance

Economic Impact Analysis & Policy

- ▶ Economic policy assessment is typically based on economic flows—Gross Domestic Product and jobs—rather than accumulation
- ▶ Jobs is an especially inappropriate indicator
- ▶ GDP measures some of the 'positives' but few of the 'negatives'

PP

Gross National Happiness
is more important than Gross
National Product.

99

By: H.M. Jigme Singye Wangchuk.

Time to leave GDP behind

Gross domestic product is a misleading measure of national success. Countries should act now to embrace new metrics, urge **Robert Costanza** and colleagues

16 JANUARY 2014 | VOL 505 | NATURE | 283



Suggested alternatives to GDP

Index of Sustainable Economic Welfare (ISEW)

- ▶ Herman Daly & John B. Cobb, 1989

Genuine Progress Indicator (GPI)

- ▶ Center for Sustainable Economy and Institute for Policy Studies

System of Environmental-Economic Accounting

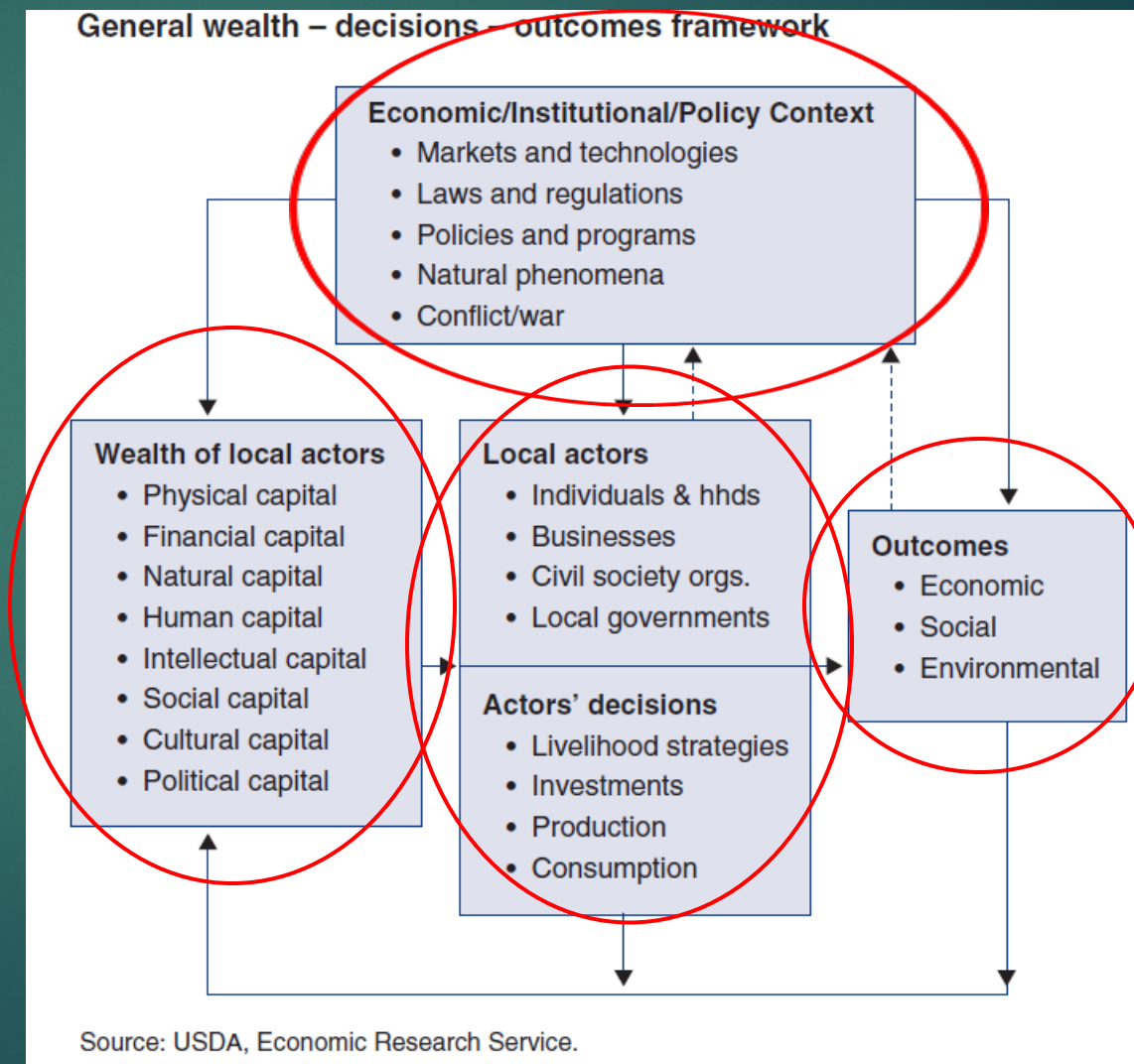
- ▶ European Commission, Food and Agriculture Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank, 2012

Sustainability and the measurement of wealth

- ▶ Arrow, K.J., P. Dasgupta, L.H. Goulder, K.J. Mumford, and K. Oleson. *Environment and Development Economics* **17**(3). 2012

What is Comprehensive Wealth?

- ▶ Multiple forms of wealth
- ▶ Investment decisions by individuals and governments
- ▶ Policy strategies
- ▶ Comprehensive measurement



Recent focus on wealth

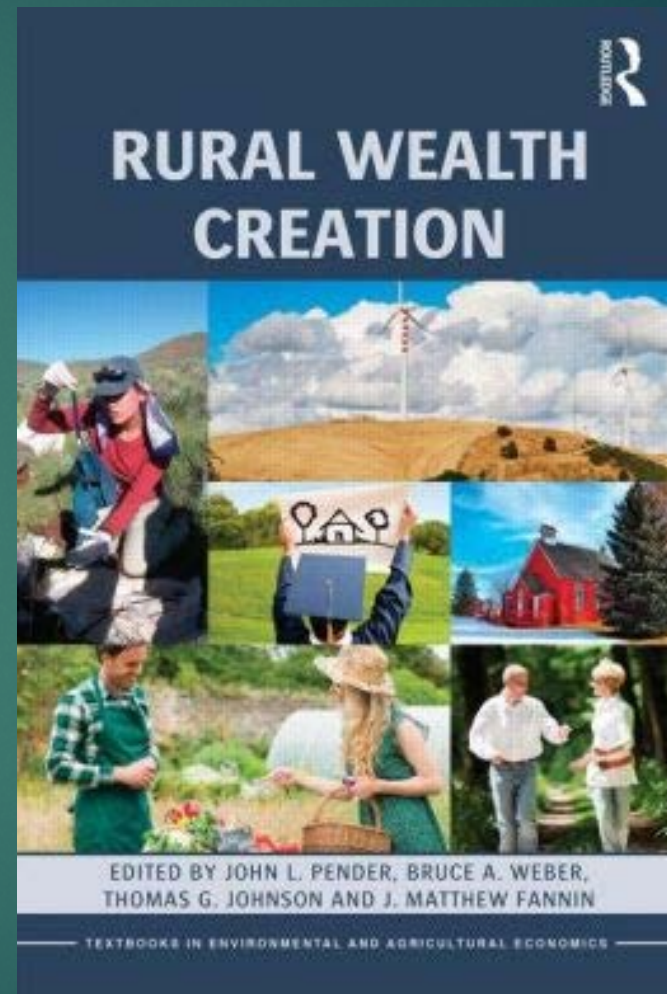


Wealth Accounting and Valuation of Ecosystem Services (WAVES)

VALUING THE ENVIRONMENT. MAKING BETTER DECISIONS.



Especially Rural Wealth



Four Reasons for Measuring Performance with Wealth

4. **Wealth** is a long term indicator that provides a better indicator of our performance over time;
3. **Aggregate wealth** indicates our ability to produce income in the future;
2. **Comprehensive wealth** includes intangible capital such as human, social, environmental, and cultural capital; and
1. Rising **comprehensive wealth** is an indicator of sustainability.

Wealth and Sustainability

- ▶ Fisherian Income: “the equivalent of a consumption annuity...the maximum amount of resources that could be consumed in the current period while still allowing for at least as much consumption in each successive period. (Fisher, 1906)
- ▶ The flow of value from Fisherian Wealth
- ▶ Fisherian Wealth includes all productive intangible assets—comprehensive wealth

Multi-Capital Wealth Accounting

An ideal wealth accounting system

1. Records the level and changes in all types of capital
2. Reflects the interaction between types of capital
3. Records the changing ownership as well as location of capital
4. Records both privately and publicly owned capital

Multi-Capital Wealth Accounting

- ▶ How would we develop a wealth accounting system?
 1. Start with our System of National Accounts (current accounts)
 2. Add a capital account (or accounts)
 3. Expand definition of flows to include resource extraction, environmental change, and human capital investments
 4. Expand definition of stocks to include natural, human and other forms of capital
 5. Employ residence-based entries so that both people-based and place-based wealth indicators are possible

Is Comprehensive Wealth Accounting Feasible at the Provincial Level?

- ▶ Complete accounting of wealth may never be fully achieved
- ▶ Wealth accounting may never be precise—some forms of capital defy measurement
- ▶ Wealth accounting will be controversial

But

- ▶ Approximate accounting of wealth is feasible
- ▶ Even imprecise and incomplete accounting will improve decisions
- ▶ And if we measure it, we will value it

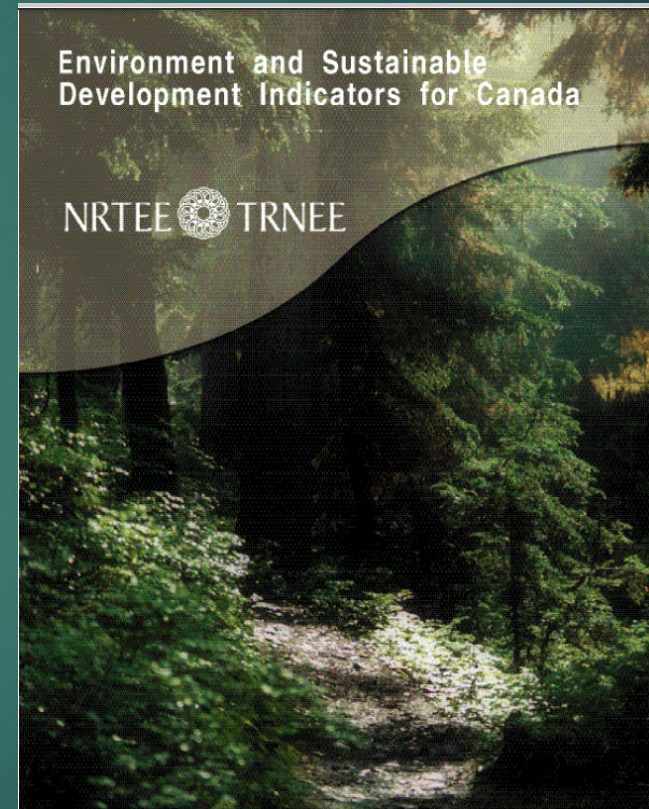
Advances in Comprehensive Wealth Accounting



Canada's Wealth Accounting System

2003

National Round
Table on the
Environment and the
Economy called for
the development of
an *Environment and
Sustainability
Development Index*.



Canada's Wealth Accounting System

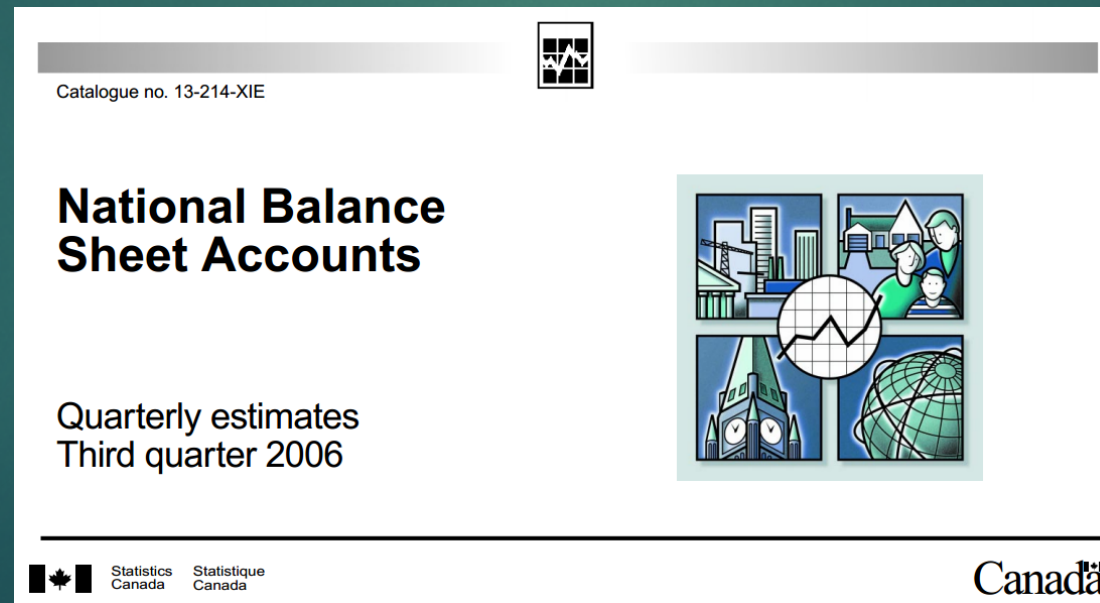
Canadian Financial Flow Accounts (FFA)

Quarterly estimates of the acquisition of financial **assets** and the incurrence of financial **liabilities** by major sector (household, governments, etc.)

Canada's Wealth Accounting System

National Balance Sheet Accounts (NBSA)

The market value of all **assets** and **liabilities**



Canada's Wealth Accounting System

- ▶ Statistics Canada also includes estimates of **natural capital** in the NBSA.
- ▶ The Canadian System of Environmental and Resource Accounts (CSERA) links physical and monetary estimates of natural resources and environmental protection **investments** to the system of national accounts.



Canada's Wealth Accounting System

- ▶ Canada is also committed to developing **human capital**, and **social capital** accounts and to generating a comprehensive national wealth indicator.

Estimates of Human Capital in Canada: The Lifetime Income Approach

by Wulong Gu and Ambrose Wong

Economic Analysis Division
18-F, R.H. Coats Building, 100 Tunney's Pasture Driveway
Telephone: 1-800-263-1136



Canada's Wealth Accounting System

- ▶ These accounts are not disaggregated to the regional or provincial level, but they could be with modest additional investments.

Policy Implications

- ▶ A superior basis for assessing economic performance
 - ▶ Includes benefits and costs of non-market effects
 - ▶ Includes the returns to investment in the environment, education, health, intellectual property and social capital
- ▶ Clarifies the concept of sustainability
 - ▶ Sustainability is growth in comprehensive wealth
- ▶ Recognizes the complementarity among types of capital
 - ▶ Environment and health, natural capital and intellectual capital, for example

Policy Implications

- ▶ Wealth accounting quantifies the returns to
 - ▶ Research
 - ▶ Saving
 - ▶ Investment
- ▶ Suggests rural development strategies based on local assets
- ▶ Draws attention to the returns to investment in public assets
 - ▶ Relationship between public investment and private wealth creation

Policy Implications

- ▶ Regional level wealth accounting will:
 - ▶ demonstrate the degree to which urban residents and businesses depend on rural wealth for their wealth and prosperity
 - ▶ Indicate the return on investment in rural people and place enjoyed by all residents of the province and nation.
 - ▶ This is especially true of rural investments on human capital which are frequently lost to urban areas when rural youth migrate to the city.

Policy Implications

- ▶ Importance of policies to encourage
 - ▶ Education and good health
 - ▶ Research
 - ▶ Saving
 - ▶ Investment
- ▶ Development strategies based on local assets
 - ▶ Place-based wealth
- ▶ Attention to the distribution of income and wealth
 - ▶ Across groups and places
- ▶ Attention to the returns to investment in public assets
 - ▶ Relationship between public investment and private wealth creation

Final Thoughts

Rather than valuing rural by the annual flow of raw materials, energy and food products, we should ***measure***, and thus ***value***, the changing wealth of rural people and places.

We should ask, 'is rural wealth rising and thus promising a ***sustainable and prosperous*** future?'

Thank you

Appendix

Why is this Important for Rural Regions?

1. Wealth of rural regions are skewed in favor of forms of capital that are not valorized (natural resources)
2. Rural wealth is often controlled by non-residents;
3. Rural areas produce the foundations of urban wealth (water, food, energy);
4. Rural to urban migration is a “gift of human capital, financial capital, and intellectual capital to urban areas”

Characteristics of Comprehensive Wealth

Comprehensive wealth and multiple forms of capital

1. Financial capital

Cash, deposits, stocks, bonds, futures contracts

Claims on assets held by others

2. Built capital

Buildings, machines, roads, bridges, parks, dams, transmission lines,

Characteristics of Comprehensive Wealth

Comprehensive wealth and multiple forms of capital

3. Natural capital

Air, water, soil, forests, animals, minerals, etc.

4. Human capital

Education, health, skills, experience, etc.

5. Social capital

Social organization, networks, trust, markets, etc.

Characteristics of Comprehensive Wealth

Comprehensive wealth and multiple forms of capital

6. Intellectual capital

Knowledge, books, patents, music, etc.

7. Political capital

Political networks, and trust and access in these networks, etc.

Standard Social Accounting Matrix

		Commodities	Activities	Factors	Households	Enterprises	Governments	Combined Capital accounts	Rest of world	Totals
Production	Commodities		Inter-mediate Inputs		Household consumption		Government purchases	Fixed Capital formation	Exports	Demand for products
	Activities	Domestic sales								
Factors			Factor payments						Net factor income from ROW	Factor income
Institutions	Households			Labor income		Distributed profits	Transfers payments to HH		Transfers from ROW	Household income
	Enterprises			Income to capital			Transfers to enterprises		Transfers from ROW	Enterprise receipts
	Governments		Indirect taxes		Direct taxes	Direct taxes			Transfers from ROW	Gov t. receipts
Combined Capital Accounts					Household savings	Enterprise savings	Government savings	Borrowing & lending	Borrowing from ROW	Capital account receipts
Rest of World		Imports		Imported factors				Lending		Aggregate outlay to ROW
Total		Aggregate supply	Cost of producing	Factor income	Current household expenditures	Current enterprise expenditures	Current enterprise expenditures	Capital outlays	Aggregate receipts from ROW	

[illegible]

How Might we Measure Rural Wealth?

"With the wealth of economic, environmental, social, quality of life indicator data in Canada, we believe there [sic] a relevant and comprehensive account or "portrait" of sustainability would emerge that would guide decision makers to assess and debate the "conditions of well-being" that contribute to not only sustainability outcomes but quality of life."

Mark Anielski. *A Sustainability Accounting System for Canada: An Assessment of the State of Sustainable Development Accounting and Indicator Reporting at the National, Provincial, Municipal-Community and Corporate Level*. Prepared for: National Round Table on the Environment and the Economy. Pembina Institute, November 5, 2002.