

Emerging Issues in Land Use and Conservation

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UNIVERSITY OF
ALBERTA

ALBERTA LAND INSTITUTE

Presentation Objectives

1. Provide background on the Alberta Land Institute (ALI)
2. Provide an overview of ALI's Strategic Plan and current research initiatives.
3. Present a few initial research highlights and potential new research directions.



Alberta Land Institute Background

- Donation made to University of Alberta in 2011 to establish a multi-disciplinary research institute to address land-use issues.
- Formal planning for Institute started in late 2011.
- Stakeholder consultation was conducted to seek input and confirm strategic focus.
- Official Launch – September 2012
- Housed in the Vice-President (Research) Office at the University of Alberta



ALI Strategic Plan 2012-2015

Vision

- An internationally recognized research institute that provides evidence-based policy options to resolve land-use issues, support dialogue and identify new approaches to secure Alberta's prosperity through transformational land management.

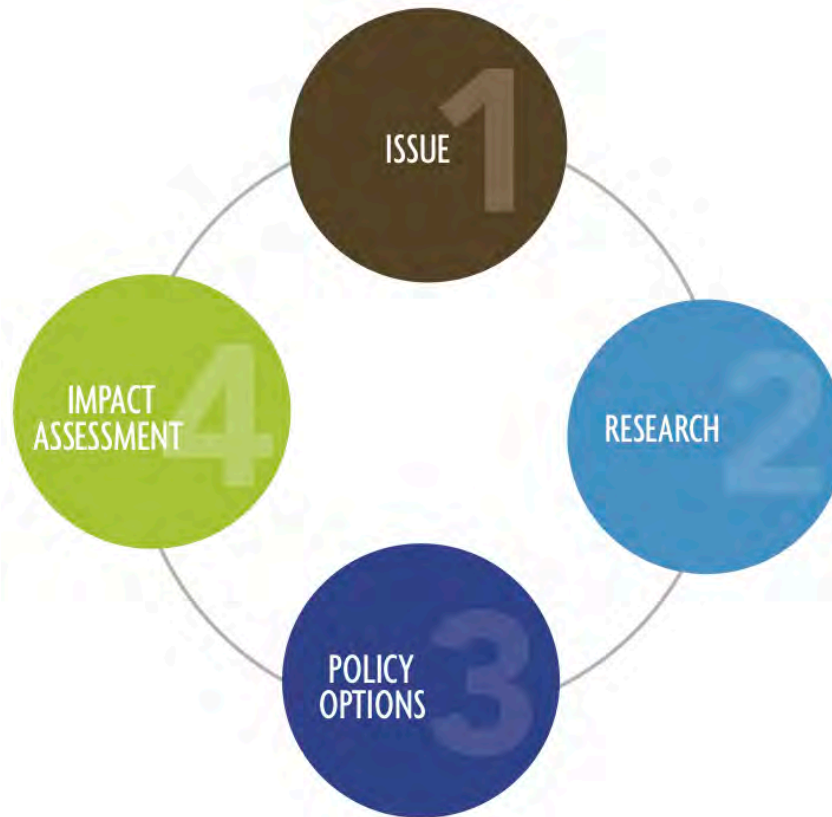
Mission

- Working with policy makers and land-users, develop, design, evaluate and support the implementation of innovative and informed land-use policy by leveraging the multi-disciplinary research capacity of the University of Alberta and other partners.



ALI Strategic Plan 2012-2015

Our Approach to Research and Policy Option Development



ALI Strategic Plan 2012-2015

Initial Areas of Study

- **Agriculture:** Support economic and social viability while increasing environmental performance.
- **Municipal Development:** Support more efficient planning of commercial, industrial and residential infrastructure.
- **Water:** Support better land management for watershed protection and to maintain and enhance water quality and quantity.
- **Governance and Regulation:** Identify potential enhancements to the governance and regulatory framework to increase land stewardship.



ALI Community Advisory Board

- **Dr. Lorne Babiuk, Chair**
- **Mr. David Bissett**
- **Ms. Kelly Hall**
- **Mr. Colin Jeffares**
- **Dr. F.L. (Ted) Morton**
- **Mr. Gerald Rhodes**
- **Mr. Greg Shyba**
- **Mr. Todd N. Zimmerling**
- **Mr. Mel E. Benson**
- **Mr. Peter Woloshyn**
- **Ms. Beverly Yee**



Research Outputs

- Interaction with policy makers and stakeholders at the project level (advisory committees)
- Workshops and Conferences
- Print, Web, Social Media



**ALBERTA
LAND TRENDS**

UNIVERSITY OF ALBERTA LAUNCHES NEW LAND INSTITUTE

Anyone can dream about land. It is the rare person who thinks about how that land is used and how to save it.

That unique person is David Elmetz, and on September 5, 2012, with the launch of the Alberta Land Institute (ALI), the Calgary financier and philanthropist realized a long-time dream.

"I wanted to create something truly visionary to help preserve what we have now for our children and grandchildren tomorrow. This Institute will address gaps in our understanding and response to land-use issues facing Alberta, Canada and the world." — (David Elmetz, President, ALI)



2012-13 Research Initiatives: Property Rights

Eran Kaplinsky and David Percy, Faculty of Law, University of Alberta

- Analyze the constitutional, legal and regulatory frameworks that demarcate private property rights in land in Alberta;
- Describe the present scope of Alberta's property rights system and to identify key issues arising from recent land use initiatives;
- Develop a nontechnical summary of the above to serve as a resource for stakeholders, policy makers, and land users in general.



2012-13 Research Initiatives: Wetland Restoration and Retention

Peter Boxall, University of Alberta

- Build a multi-disciplinary research program to identify policy options for wetland restoration and retention in Alberta.
- Identify methods for measuring the ecological functions of wetlands, and methods for designing and evaluating incentive mechanisms for encouraging wetland retention and restoration.
- Developing a plan to implement “living laboratories”, where regions of the province with similar wetland and landowner profiles will serve as test sites to evaluate the impacts of different tools for encouraging wetland retention and restoration.



2012-13 Research Initiatives: The Irrigation Sector over the next 25 years

Evan Davies, University of Alberta

- Identify the relationships between irrigated agriculture and economic, environmental, social and policy factors,
- To identify and assess the impacts of alternative management options for the irrigation sector and the province over the next 25 years.
- Identified options will then be evaluated using a decision-support tool that considers near- and long-term economic, environmental and social impacts associated with the implementation of each option.



2012-13 Research Initiatives: Fragmentation and Conversion of Agricultural Land

Scott Jeffrey (PI), University of Alberta

- What have been the key non-agricultural drivers influencing demand on the agriculture land base over the past 15-20 years?
- What has been the annual rate of loss of agricultural land?
- What social, economic and environmental factors should be considered in evaluating agricultural land-use change?
- What policy tools exist in Alberta and other jurisdictions to address fragmentation and conversion of agricultural land?
How effective have these policy tools been?



Farmland Conversion and Fragmentation: A Case Study of Alberta, Canada

Feng Qiu

Larry Laliberte

Brent Swallow

Scott Jeffrey

University of Alberta

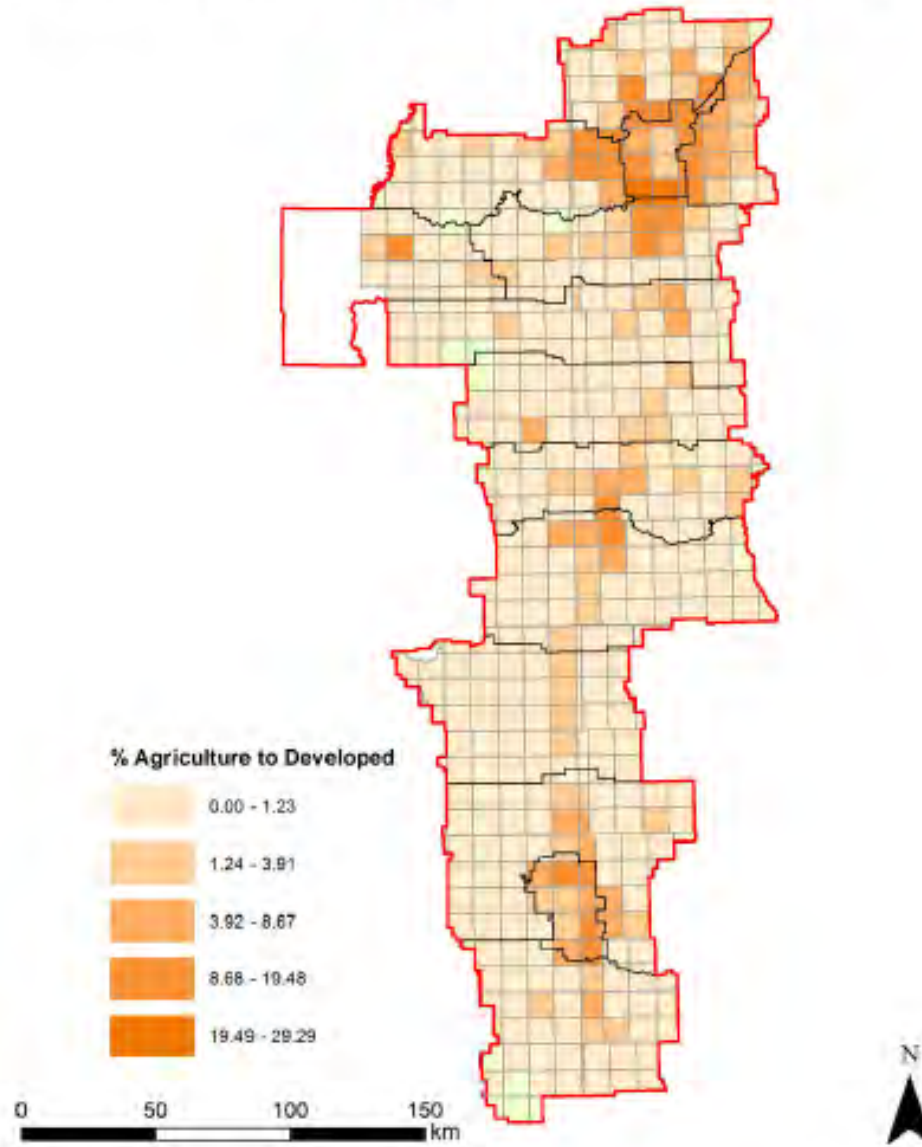


UNIVERSITY OF ALBERTA
DEPARTMENT OF RESOURCE ECONOMICS
AND ENVIRONMENTAL SOCIOLOGY

Data

- Land Cover for Agricultural Regions of Canada, circa 2000, AAFC
- Annual Space-Based Crop Inventory for Canada, 2012, AAFC
- Land Suitability Rating System (LSRS), AARD
- DA level population information, Statistics Canada

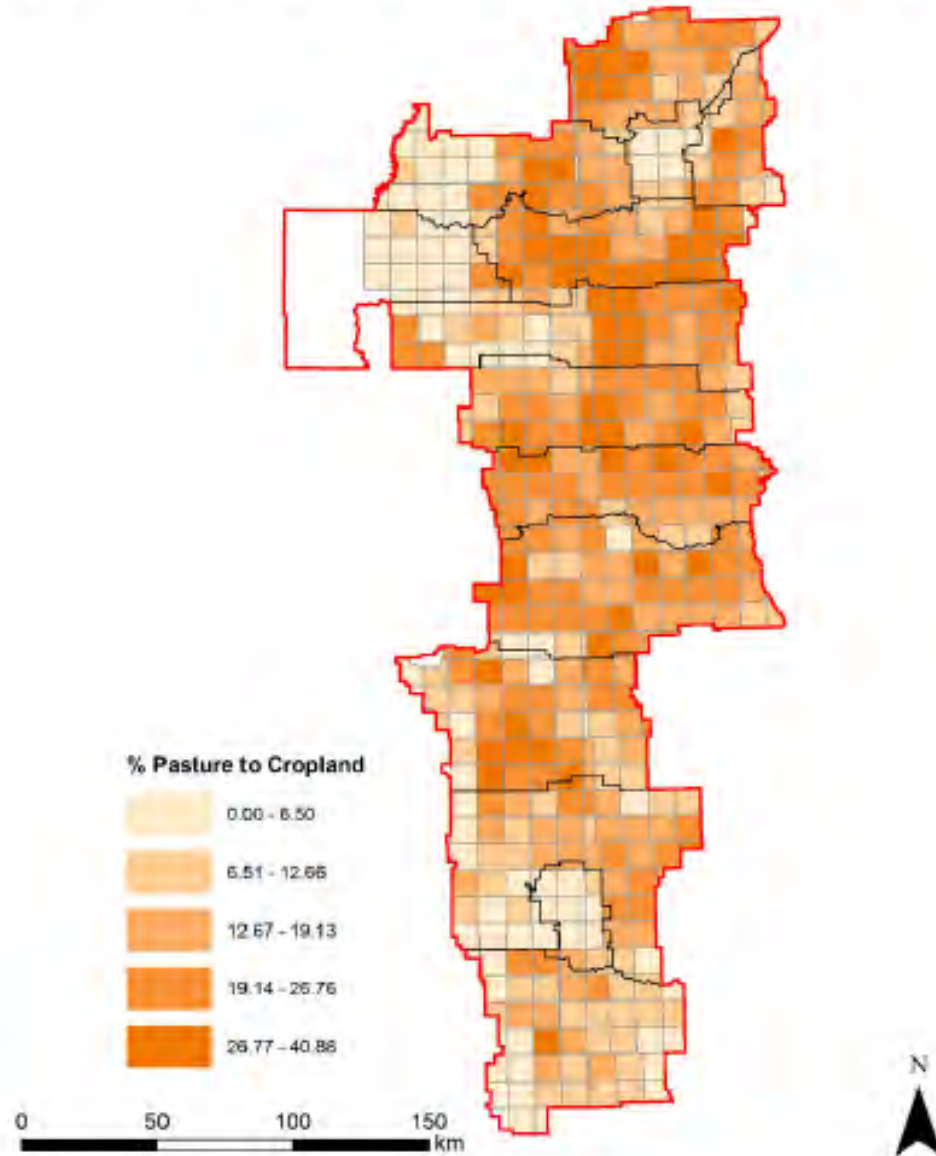
Edmonton-Calgary Corridor Agriculture to Developed as a Percent of Township 2000 - 2012



Qiu et al, 2013.

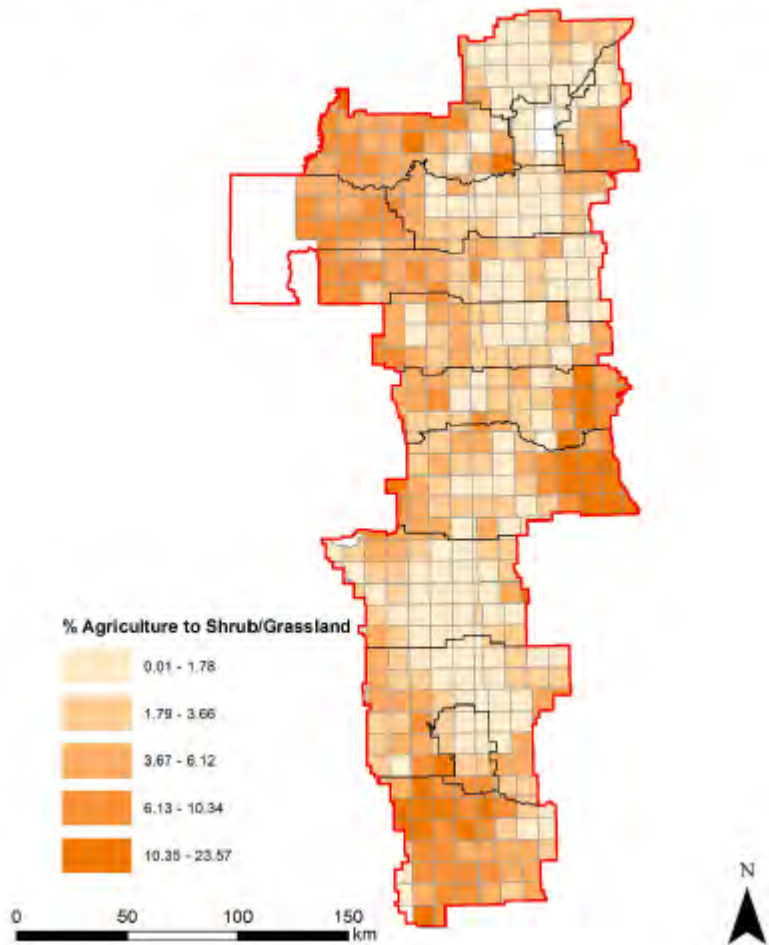
Edmonton-Calgary Corridor

Hay/Pasture to Cropland as a Percent of Township 2000 - 2012

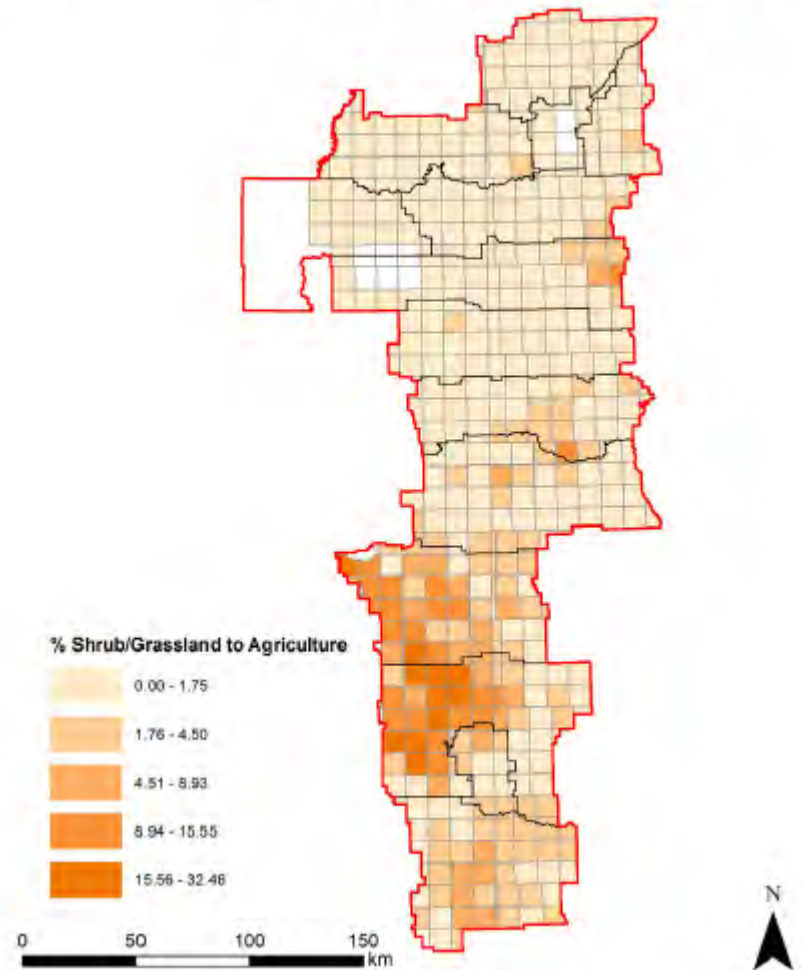


Qiu et al, 2013.

Edmonton-Calgary Corridor
Agriculture to Shrub/Grassland as a Percent of Township 2000 - 2012



Edmonton-Calgary Corridor
Shrub/Grassland to Agriculture as a Percent of Township 2000 - 2012



Results: Ag to Developed, 2000-2012

	LCLU 2000 (Ha)	LCLU 2000 (%)	LCLU 2012 (Ha)	LCLU 2012 (%)	Net Change (Ha)	Net Change as % of Total Land	Net Change as % of Own Class
Total Land	3,963,873	100	3,963,873	100	0	0	0
Agriculture	2,665,735	67.25	2,487,227	62.74	-178,508	-4.50	-6.7
Developed	158,941	4.01	221,478	5.59	62,536	1.58	39.35

- In 2000, total developed area was about 159 thousand ha; and in 2012, the number increased to more than 221 thousand ha
- 83.2% of new developed land is converted from agriculture.

Land conversion (Ag to Developed) by land suitability

- Class 2 & 3: 47,928 ha (90%)
- Class 4, 5, 6, & 7: 5,372 ha (10%)

Summary

- The Edmonton Calgary Corridor area 2000 to 2012:
- Farmland conversion
 - Lost 178,508 ha; 90% was LSRS 2&3 (not including Edmonton and Calgary)
 - Cropland area increases significantly: 473,205 ha;
 - Hay/pasture decreases dramatically: 651,713 (50% gone)
 - Conversions around Edmonton and Calgary are highly clustered

Pressures on Agricultural Land

- Pressures on land for food production
 - Population, Income, Changing Diet
- Pressure on land for fuel (energy resources)
 - Access to energy, Bioenergy, GHG management
- Pressure on land for housing, industry, etc.
- Pressure on land for nonmarket ecosystem services
 - Wetlands, threatened species habitat, etc.
- But increases in productivity, Ag-to-Ag changes occur, etc.
- Is our “productive capacity” being affected?



Sustainable Agriculture?

- Focus on Natural Capital and Wealth Accounting
 - Movement away from GDP, related metrics
 - Examine depreciation or appreciation of natural capital
- Management to sustain / enhance natural capital

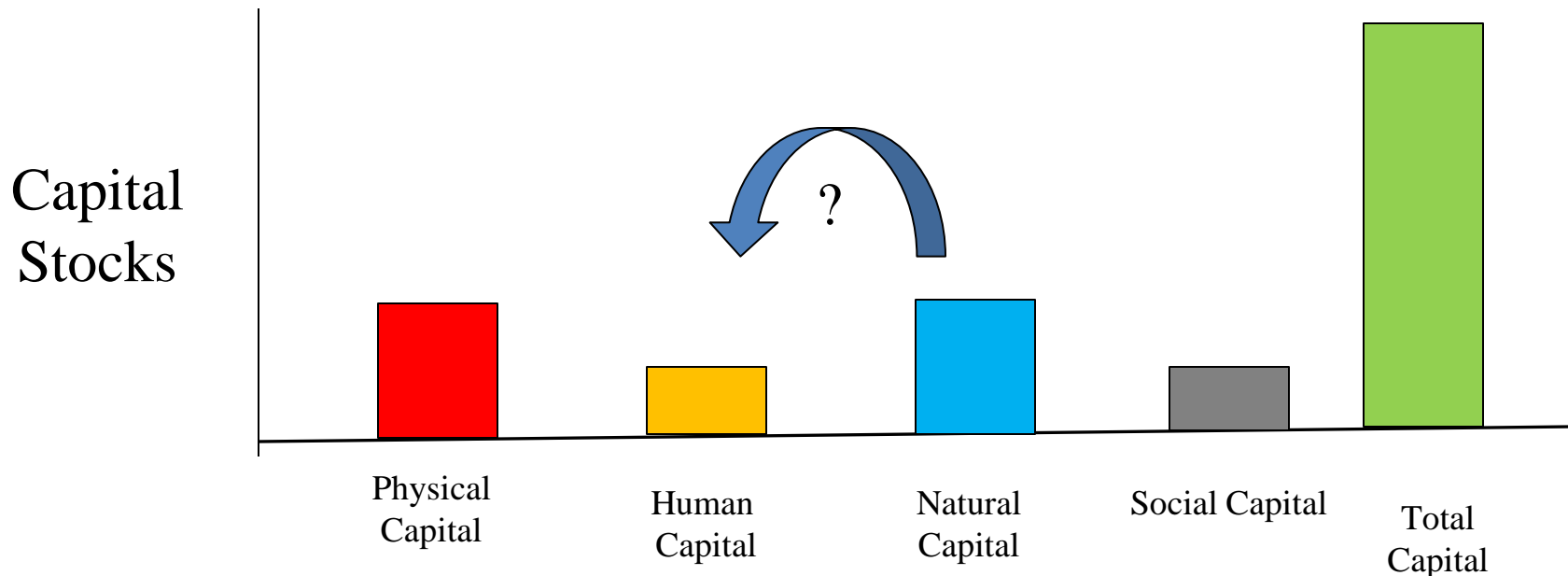


Wealth Accounting *and the*
Valuation of Ecosystem Services

<http://www.wavespartnership.org/waves/>

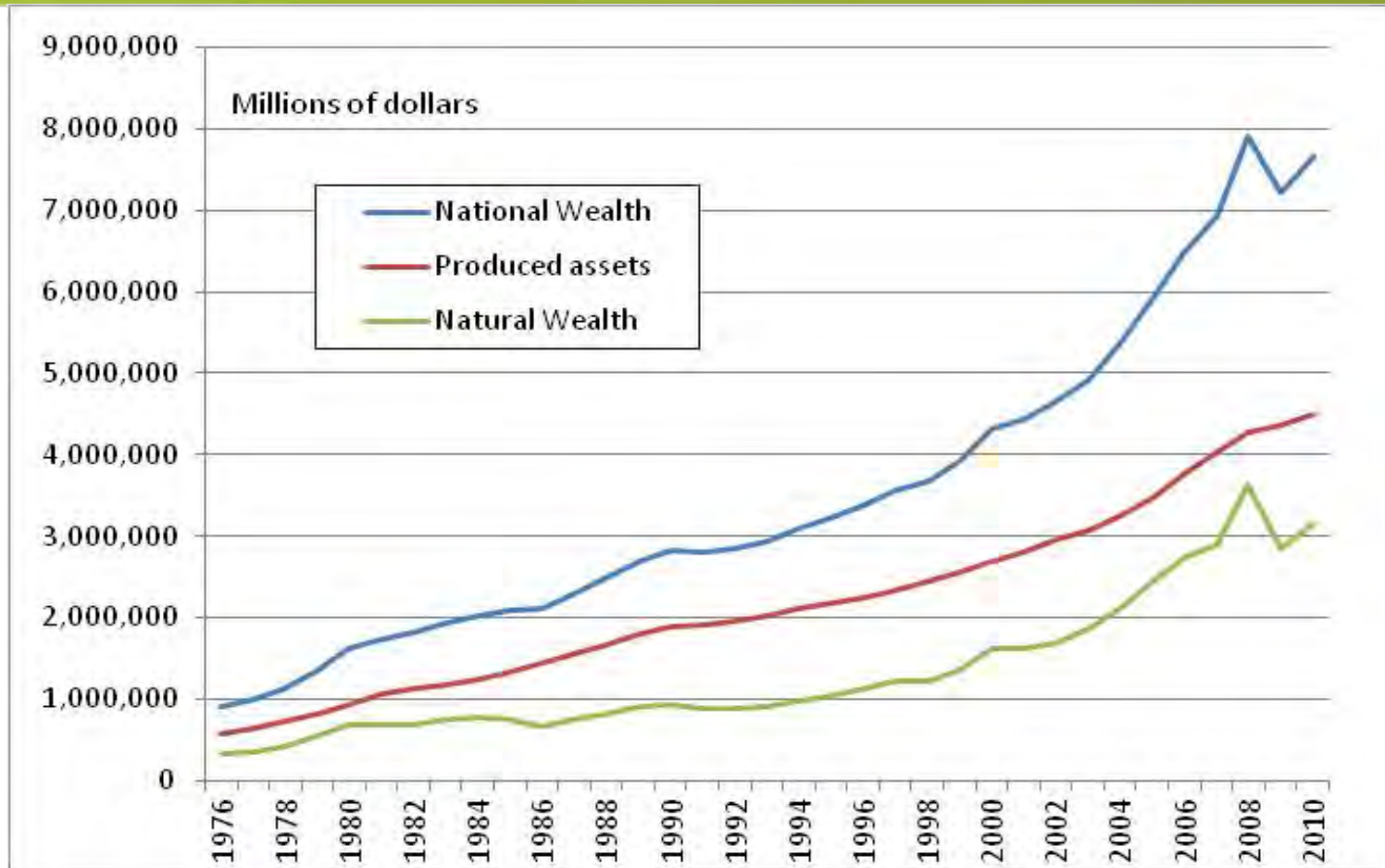


Wealth Accounting: Weak versus Strong Sustainability



- *Weak Sustainability*: Value of any single capital stock can be reduced, as long as total capital does not decline
- *Strong Sustainability*: Value of natural capital stocks must be maintained (non-decreasing) over time.
- *Environmental sustainability*: maintain physical flows of ecosystem services over time

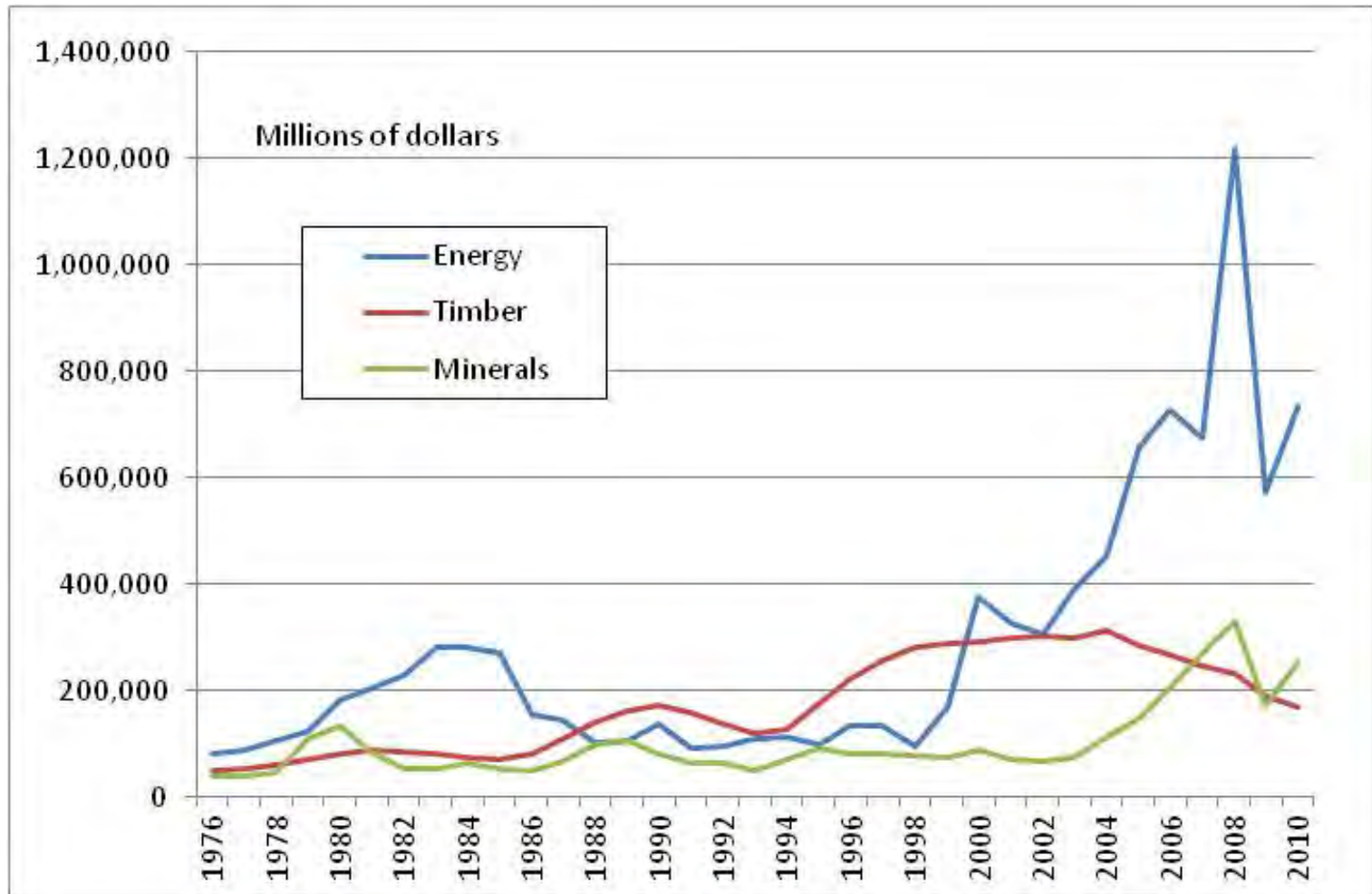
Illustration: Canada's Natural Resource Assets and National Wealth



Source: Olewiler, 2013. The art and practice of creating national capital accounts.



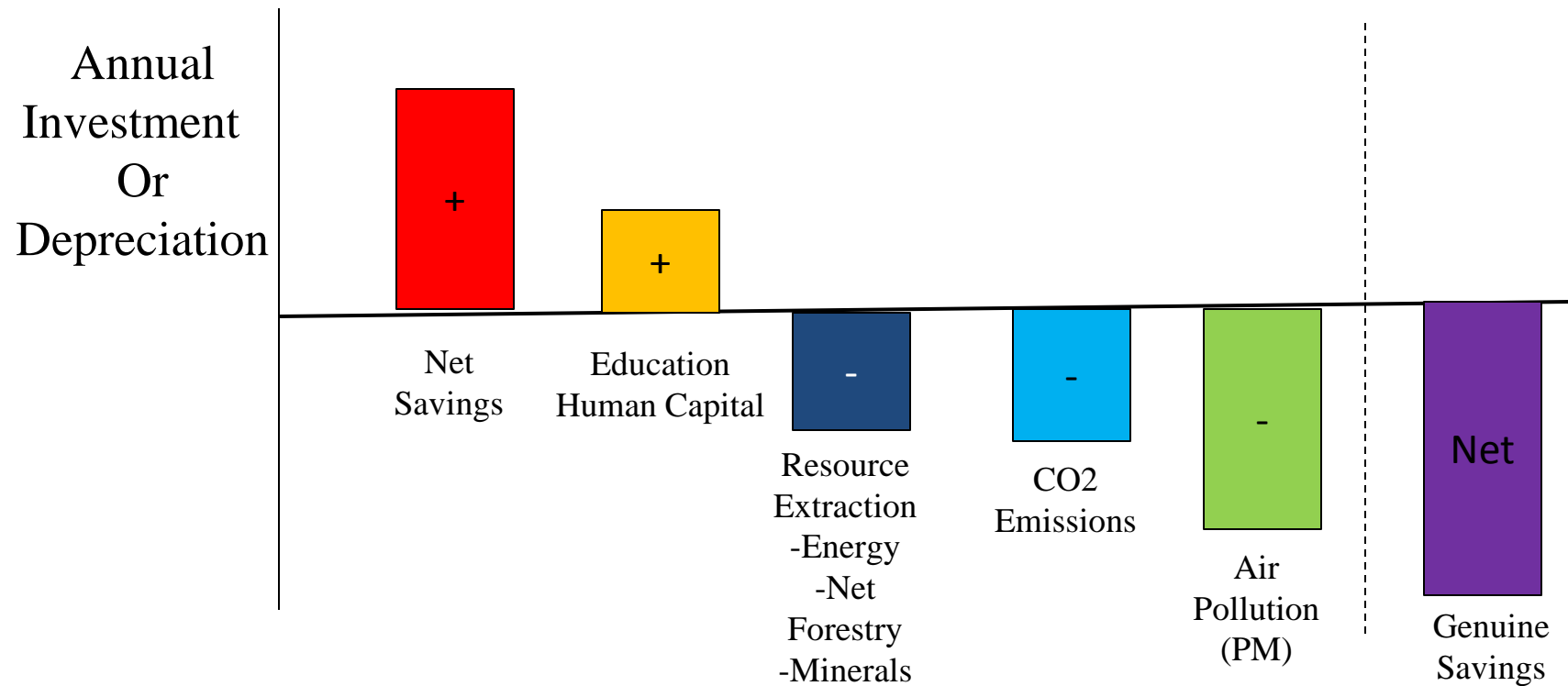
Canada's Natural Resource Wealth for Nonrenewable Energy, Timber, Minerals



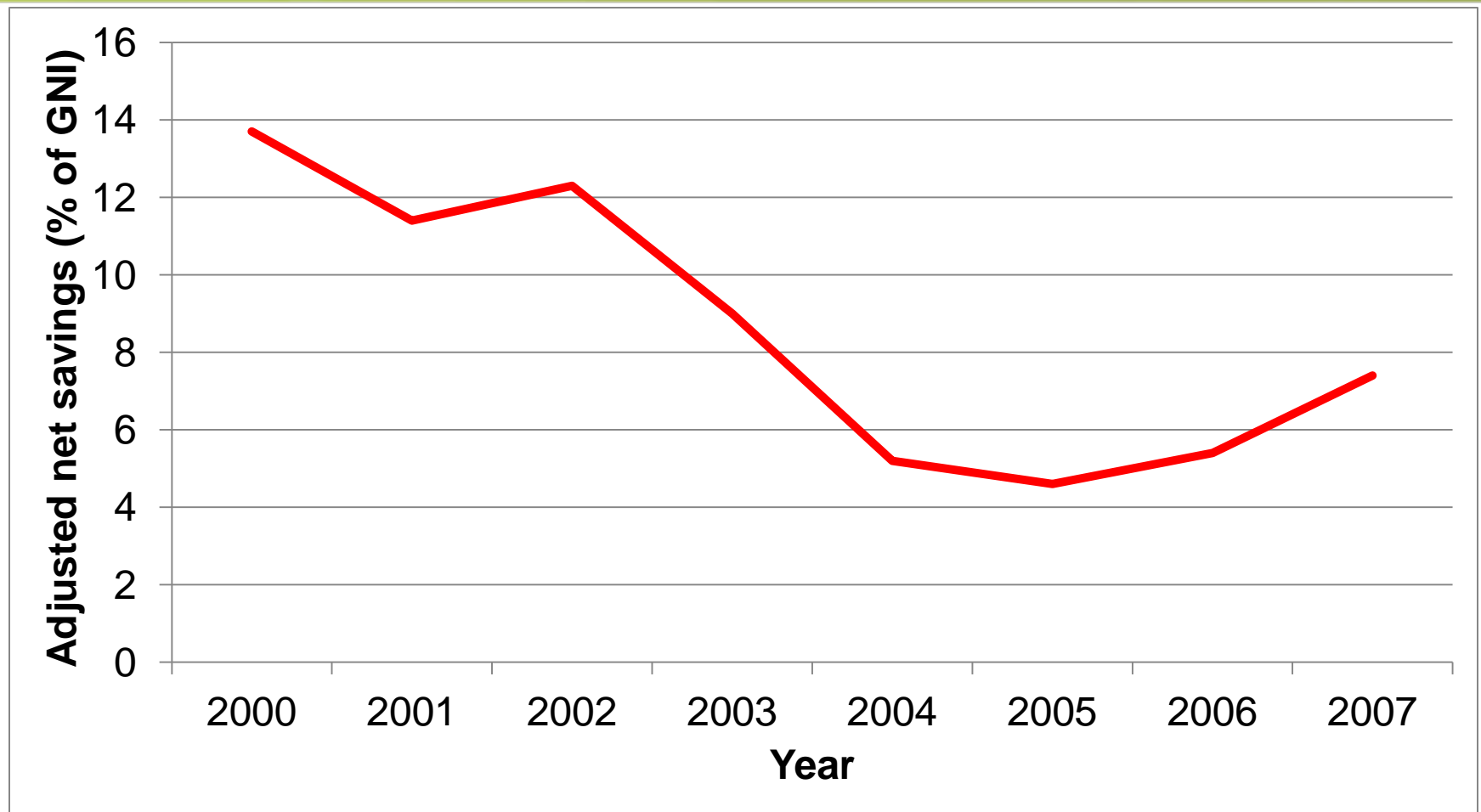
Source: Olewiler, 2013. The art and practice of creating national capital accounts.



Adjusted Net (Genuine) Savings – in Practice



Adjusted net savings, time series, Canada



Natural Capital in Agriculture

- Agricultural production
 - Area losses, quality land converted,
 - But, Productivity improvements
- Open space
- Local food
- Culture
- Amenities / nonmarket ecosystem services values
- Irreversibility of agricultural land conversion
- Untangling the valued components of natural capital

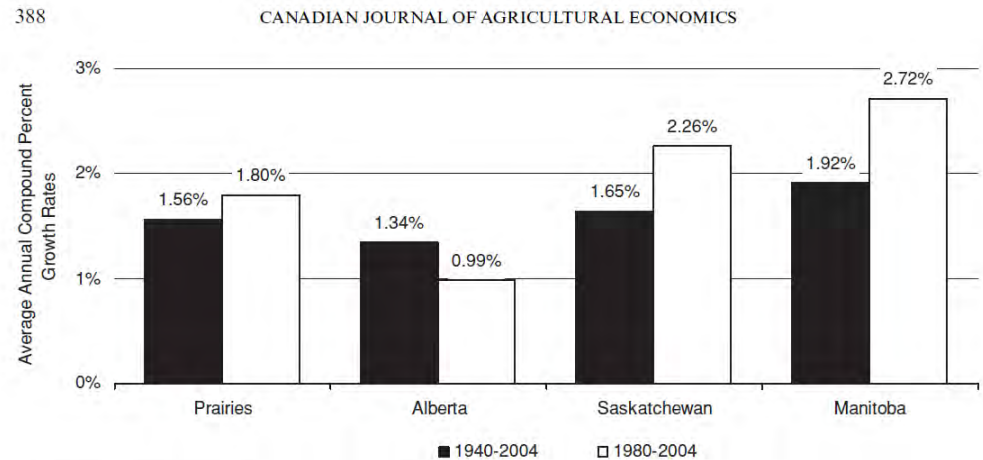


Figure 1. Prairie agriculture TFP growth rates

Stewart, Veeman and Unterschultz, Can. J. Ag. Econ. 2009. Page 388



Questions for the Group

1. What research topics or specific research questions should ALI consider investigating?
2. How best does ALI collaborate with policy makers to add value to the policy and program development process?





LAND USE 2014

May 7 & 8, 2014
Westin Edmonton

- ✓ Urbanization & Loss of Agricultural Land
- ✓ What Makes Wetland Policy Effective
- ✓ If It Pays, It Stays: Paying for Ecosystem Services on Private Land

Visit LandUse2014.ca for
more information or to
register



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Land Use 2014: May 7/8, 2014 Edmonton

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