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Towards sustainable tourism indicators:

Linking the Canadian Tourism Satellite Account with the Canadian System Environmental-Economic Accounts

For Session 4: Dimensions of Sustainable Tourism

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Teaser - Tourism activities

Tourism GVA	Jobs	Energy use	GHG emissions	Water use
2.0%	3.8%	3.5%	6.2%	0.1%

Presentation outline

- Why link the Canadian Tourism Satellite Account and Canadian System of Economic-Environmental Accounts

- Purpose of study

- Data Sources

- Methods

- Results

- Considerations

- Conclusion

Why link Canadian Tourism Satellite Account and Canadian System of Economic-Environmental Account

- To develop a Statistical Framework for Sustainable Tourism
- Obtain credible, consistent and international comparable measures of tourism and the environment

- **Economic information**

- Canadian Tourism Satellite Account (CTSA)

- **Environmental information**

- Canadian System of Environmental-Economic Accounts (CSEEA)

Both of these Accounts are anchored in the traditional Canadian System of Macroeconomic Accounts

Purpose of Study

- Extends previous exploratory study by Statistics Canada

- Full link of all tourism activity in Canada
- National data for 2012

- Determine and understand complexities of linking two accounts

- Develop exploratory estimates

Data Sources

- ## Canadian Tourism Satellite Account
  - ### Tourism supply, GDP and employment, tourism demand
    - Supply and Use tables, business surveys, various administrative data
    - Travel surveys, both domestic and international

- ## Canadian System of Environmental-Economic Accounts
  - ### Water use, Energy use, Greenhouse gas emissions
    - Various surveys and administrative data

Canadian Tourism Satellite Account

- The goal of the Canadian Tourism Satellite Account is to measure the economic importance of tourism

- By highlighting the economic transactions that are recorded (implicitly or explicitly) in the CSMA related to tourism

- Tourism is not an industry or a commodity identified within the "traditional" classifications
  - tourism spending embedded in the CSNA
  - the tourism and non-tourism components of industries

Canadian System of Environmental-Economic Accounts

- Comprehensive framework for relating the economy and the environment
  - United Nations System of Environmental-Economic Accounting 2012- Central Framework

- Ecosystem Accounting
- Asset accounts
- Physical Flow Accounts
- Environmental Activity Accounts
- Various includes applications and extensions

Physical Flow Account

- Measures the physical supply and use of natural resources, products and residuals between the Canadian economy and the environment

- Accounts have been developed for water use, energy use and greenhouse gas emission

Water Use by Industry

- Water intake: either self-supplied (i.e. direct abstraction from the environment) or supplied from municipal systems

- Estimates of water use are available by industry and household every two years beginning with reference year 2009 to 2013

Energy Use by industry

- Consumption of energy products for energy purposes

- Covers: coal, natural gas, motor gasoline, diesel, aviation fuel, light fuel oil (including kerosene), heavy fuel oil, refinery fuel gas, coke oven gas, liquefied petroleum gases (including natural gas liquids), electricity, coke, steam, wood, and spent pulping liquor

- Estimates are available by industry and household annually, beginning with reference year 2009 to 2014

Greenhouse Gas Emissions by industry

- Emissions to air of the three main greenhouse gases (namely, carbon dioxide, methane, and nitrous oxide). It covers releases from both combustion (e.g. the use of fossil fuels), and industrial processes (e.g. venting of natural gas by pipelines

- Estimates of greenhouse gas emissions are available annually by industries and households beginning with reference year 2009 to 2014

- All greenhouse gas emissions are reported as carbon dioxide equivalents

Methodology

- CTSA and the CSEEA follow the same industry classification

- Tourism GVA ratio - tourism's share of each industry in the economy
  - tourism GVA of industry X / Total GVA of industry X (including tourism and non-tourism activities).

Methodology for tourism industries

- To get environmental measures of tourism for tourism industries

- Water use industry Y * Tourism GVA ratio of industry Y

- Assumption: the share of industry value added directly attributable to tourism equals the share of industry gross output due directly to tourism

Methodology for other industries

- To get environmental measures of tourism for other industries
  - goods and service purchased by visitors but produced by non tourism industries

- Tourism spending on these goods and services is assigned to their producing industry
- Tourism spending by industry * share of primary inputs
- Tourism GVA ratio is obtained for each industry

- Water use industry X * Tourism GVA ratio of industry X

Key assumption of this method

- Share of industry water use, energy use and GHG emissions due to tourism is same as the tourism share of GVA

- Rate of use of the water, and energy as well as greenhouse gas emissions are the same in both the tourism and non-tourism activities of within a given industry

Preliminary results – Economic Measures

Industry	Tourism GVA	Jobs attributable to tourism
	(millions of dollars)	(thousands)
Total tourism industries	24,384	536
Other industries	9,262	142
Total tourism activities	**33,646**	**677**
Total non-tourism activities	1,672,390	17,087
Total economy	**1,706,036**	**17,764**
Tourism activities as share of total economy (%)	**2.0**	**3.8**

Preliminary results – Environmental Measures

	Energy use	Share of total economy
	(terajoules)	%
Total transportation	214,728	2.5
Air transportation	184,197	2.1
All Other transport	30,531	0.3
Accommodation and Food and Beverage	22,624	0.3
All other tourism industries	4,578	0.1
Total tourism industries	241,931	2.8
Other industries	60,847	0.7
Total tourism activities	**302,778**	**3.5**
Total non-tourism activities	8,447,723	96.5
Oil and gas extraction	1,650,009	18.9
Truck transportation	339,199	3.9
Total economy (excludes households)	**8,750,501**	100.0

Preliminary results – Environmental Measures

	GHG emissions	Share of total economy
	(Kt of CO2-e)	%
Total transportation	29,765	4.9
Air transportation	25,526	4.2
All Other transport	4,239	0.7
Accommodation and Food and Beverage	1,347	0.2
All other tourism industries	175	0.0
Total tourism industries	31,286	5.1
Other industries	6,703	1.1
Total tourism activities	**37,989**	**6.2**
Total non-tourism activities	570,049	93.8
Oil and gas extraction	143,266	23.6
Truck transportation	23,967	3.9
Total economy (excludes households)	**608,038**	100.0

Preliminary results – Environmental Measures

	Water use	Share of total economy
	(thousands of cubic metres)	%
Total transportation	3,893	0.0
Air transportation	1,043	0.0
All Other transport	2,850	0.0
Accommodation and Food and Beverage	15,327	0.0
All other tourism industries	1,296	0.0
Total tourism industries	20,515	0.1
Other industries	11,104	0.0
Total tourism activities	**31,619**	**0.1**
Total non-tourism activities	31,980,080	99.9
Oil and gas extraction	348,648	1.1
Paper manufacturing	1,448,139	4.5
Total economy (excludes households)	**32,011,699**	**100.0**

Considerations

- Used tourism share of industry GVA for total tourism demand but can use domestic and exports

- Non-market production of accommodation and transportation

- SNA "production boundary" to spatial phenomenon (GHG emissions)

Conclusion

- Linkage between TSA and SEEA is possible however the resulting framework needs to be looked at as linkages and assumption may need to be fine-tuned.

- May want to consider indirect effects

- Must also consider the positive effects of tourism on the environment – conservation and preservation of historical sites, creation of national parks or wildlife sanctuaries.