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Physical Flow Accounts

Workshop on the System
of Environmental-
Economic Accounting
Central Framework and
Sustainable
Development Goals
indicators

26-29 March 2018
Amman, Jordan

Joe St. Lawrence
Statistics Canada



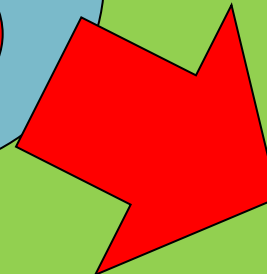
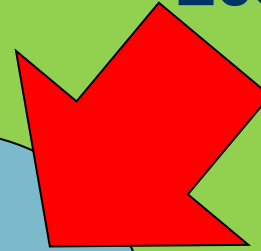
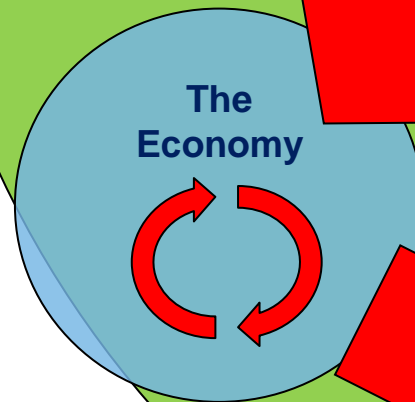
The Economy and The Environment

Stocks

Flows

Expenditures

- Natural Resources
- Ecosystem Services



-Residuals



Uses of physical flow accounts

Material consumption

Material productivity

Energy use analysis

Energy policy

Emissions analysis

Environmental assessment

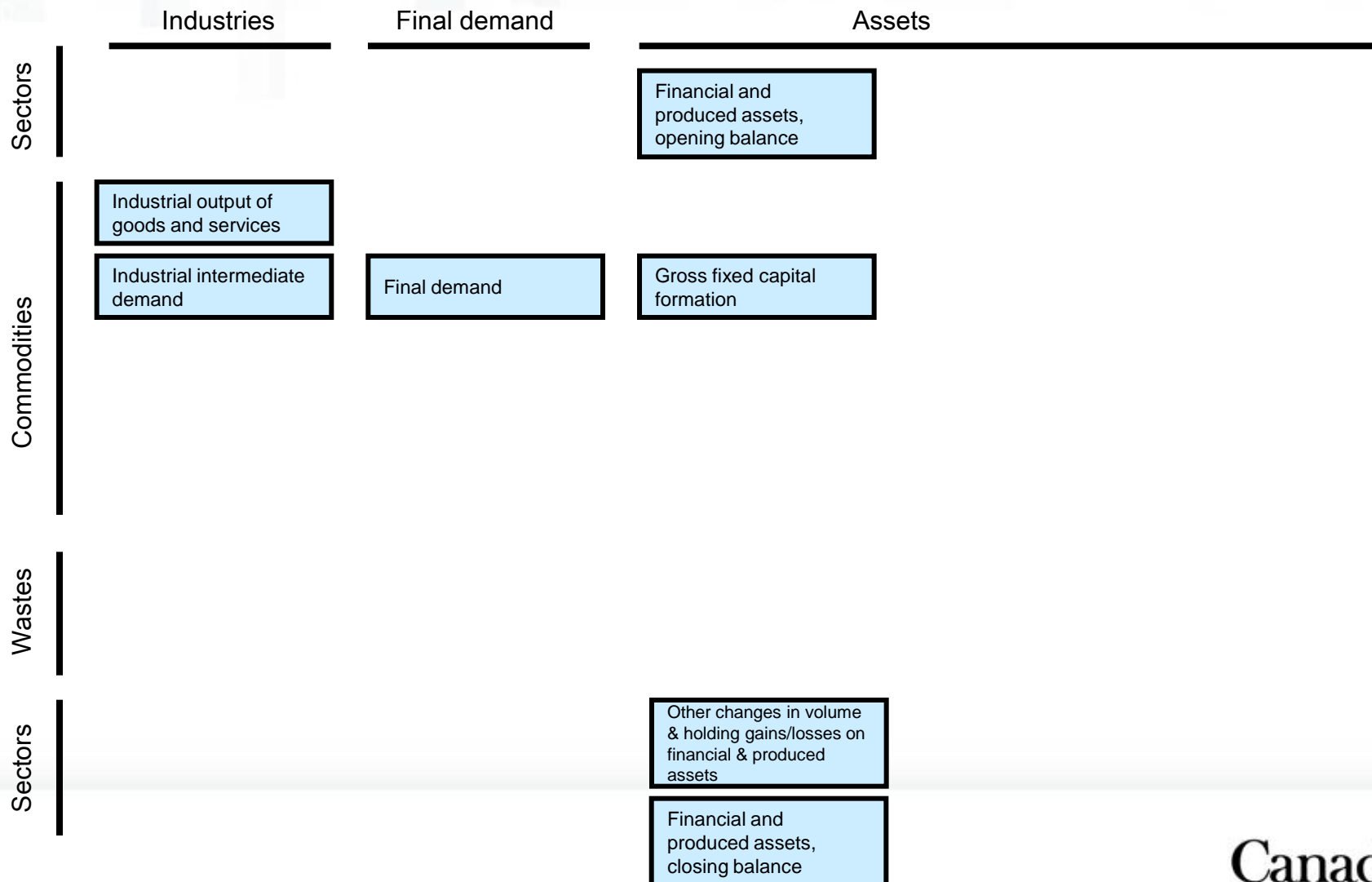
Natural resource management

Multi-factor productivity

Footprint calculations

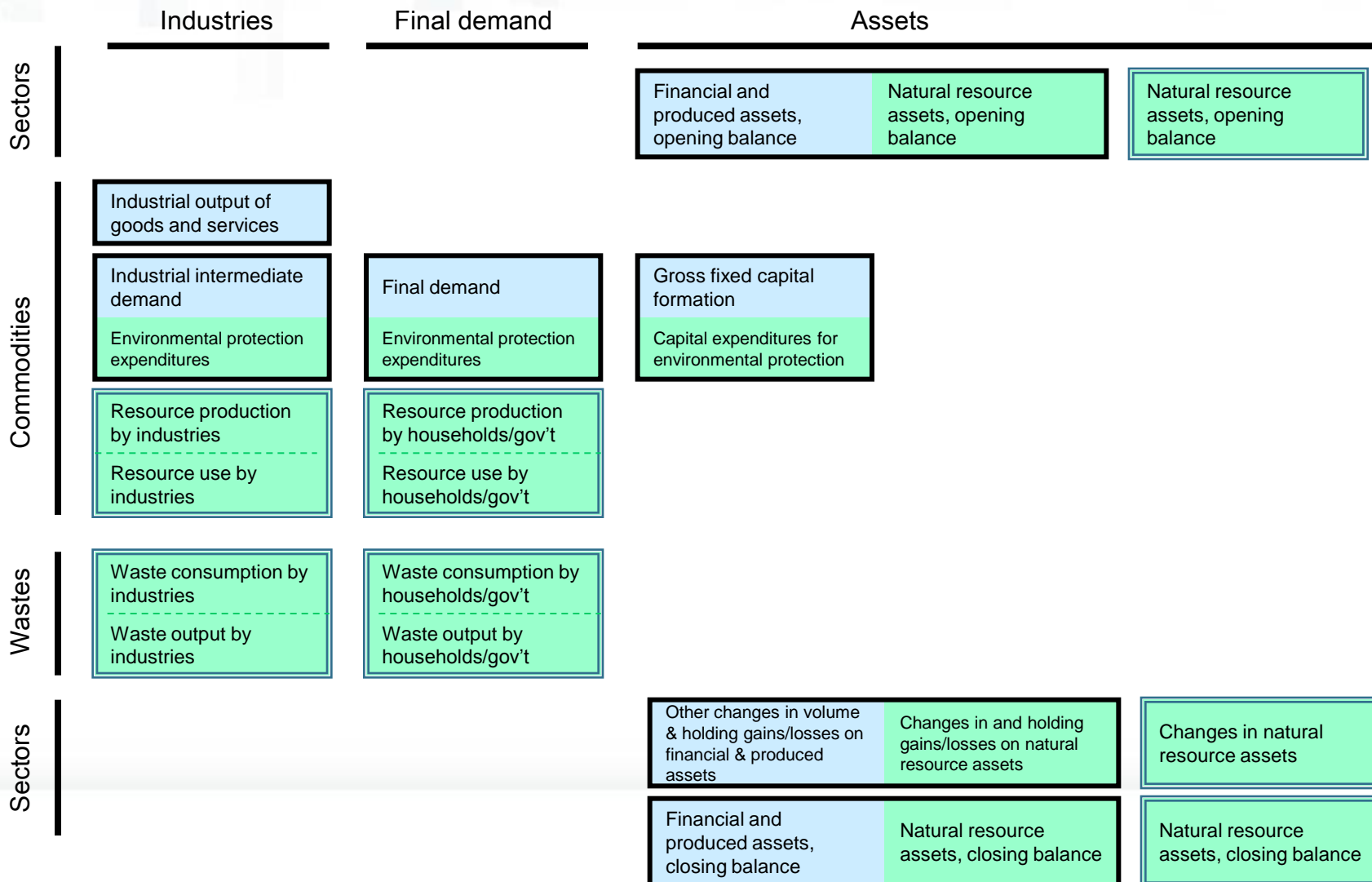


SNA framework





SEEA framework



Flow Accounting: Supply Tables

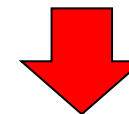


Table 3.1
General physical supply and use table

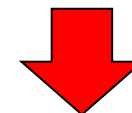
Supply table

	Production; generation of residuals		Accumulation			Total
	Production; generation of residuals by industries (including household production on own account), classified by ISIC	Generation of residuals by households	Industries —classified by ISIC	Flows from the rest of the world	Flows from the environment	
Natural inputs					A. Flows from the environment (including natural resource residuals)	Total supply of natural inputs (TSNI)
Products	C. Output (including sale of recycled and reused products)			D. Imports of products		Total supply of products (TSP)
Residuals	I1. Residuals generated by industry (including natural resource residuals) I2. Residuals generated following treatment	J. Residuals generated by household final consumption	K1. Residuals from scrapping and demolition of produced assets K2. Emissions from controlled landfill sites	L. Residuals received from rest of the world	M. Residuals recovered from the environment	Total supply of residuals (TSR)
Total supply						

United Nations, 2012, System of Environmental-Economic Accounting: Central Framework, New York.



Flow Accounting: Use Tables



Use table

	Intermediate consumption of products; use of natural inputs; collection of residuals		Final consumption ^a		Accumulation		Total
	Industries—classified by ISIC		Households	Industries—classified by ISIC	Flows to the rest of the world	Flows to the environment	
Natural inputs	B. Extraction of natural inputs B1. Extraction used in production B2. Natural resource residuals						Total use of natural inputs (TUNI)
Products	E. Intermediate consumption (including purchase of recycled and reused products)	F. Household final consumption (including purchase of recycled and reused products)	G. Gross capital formation (including fixed assets and inventories)	H. Exports of products			Total use of products (TUP)
Residuals	N. Collection and treatment of residuals (excluding accumulation in controlled landfill sites)		O. Accumulation of waste in controlled landfill sites	P. Residuals sent to the rest of the world	Q. Residual flows to the environment		Total use of residuals (TUR)
					Q1. Direct from industry and households (including natural resource residuals and landfill emissions) Q2. Following treatment		
Total use							

^a No entries for government final consumption are recorded in physical terms. All government intermediate consumption, production and generation of residuals is recorded against the relevant industry in the first column of the PSUT.

Classifications: Natural Inputs

3.45 Natural inputs are all physical inputs that are moved from their location in the environment as a part of economic production processes or are directly used in production.

Table 3.2
Classes of natural Inputs

1	Natural resource inputs	2	Inputs of energy from renewable sources
1.1	Extraction used in production	2.1	Solar
1.1.1	Mineral and energy resources	2.2	Hydro
1.1.1.1	Oil resources	2.3	Wind
1.1.1.2	Natural gas resources	2.4	Wave and tidal
1.1.1.3	Coal and peat resources	2.5	Geothermal
1.1.1.4	Non-metallic mineral resources (excluding coal and peat resources)	2.6	Other electricity and heat
1.1.1.5	Metallic mineral resources	3	Other natural inputs
1.1.2	Soil resources (excavated)	3.1	Inputs from soil
1.1.3	Natural timber resources	3.1.1	Soil nutrients
1.1.4	Natural aquatic resources	3.1.2	Soil carbon
1.1.5	Other natural biological resources (excluding timber and aquatic resources)	3.1.3	Other inputs from soil
1.1.6	Water resources	3.2	Inputs from air
1.1.6.1	Surface water	3.2.1	Nitrogen
1.1.6.2	Groundwater	3.2.2	Oxygen
1.1.6.3	Soil water	3.2.3	Carbon dioxide
1.2	Natural resource residuals	3.2.4	Other inputs from air
		3.3	Other natural inputs n.e.c.



Classifications: Products

3.64 Following the SNA, *products are goods and services that result from a process of production in the economy.*

North American Product Classification System (NAPCS) Canada 2012 Version 1.1

Classification structure

111 Live animals
112 Wheat
113 Canola (including rapeseed)
114 Fresh fruit, nuts and vegetables
115 Other crop products
116 Other animal products
121 Fish, shellfish and other fishery products
131 Logs, pulpwood and other forestry products
141 Crude oil and crude bitumen
142 Natural gas
143 Natural gas liquids and related products
144 Other energy products
145 Electricity
146 Natural gas distribution
151 Iron ores and concentrates
etc...



Classifications: Residuals

3.73 Residuals are flows of solid, liquid and gaseous materials, and energy that are discarded, discharged or emitted by establishments and households through processes of production, consumption or accumulation.

Table 3.4

Typical components for groups of residuals

Group	Typical components
Solid waste (includes recovered materials) ^a	Chemical and health-care waste, radioactive waste, metallic waste, other recyclables, discarded equipment and vehicles, animal and vegetal wastes, mixed residential and commercial waste, mineral wastes and soil, combustion wastes, other wastes
Wastewater ^a	Water for treatment and disposal, return flows, reused water
Emissions to air	Carbon dioxide, methane, dinitrogen oxide, nitrous oxides, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, carbon monoxide, non-methane volatile organic compounds, sulphur dioxide, ammonia, heavy metals, persistent organic pollutants, particulates (e.g., PM10 dust)
Emissions to water	Nitrogen compounds, phosphorus compounds, heavy metals, other substances and (organic) compounds
Emissions to soil	Leaks from pipelines, chemical spills
Residuals from dissipative use of products	Unabsorbed nutrients from fertilizers, salt spread on roads
Dissipative losses	Abrasion (tyres/brakes), erosion/corrosion of infrastructure (roads, etc.)
Natural resource residuals	Mining overburden, felling residues, discarded catch

^a This list of typical components for groups of residuals can also be applied to certain flows defined as products.



Compilation

Data sources:

Survey data

Administrative data

Existing statistics

Issues:

Correcting for residence principle

Disaggregating information to ISIC

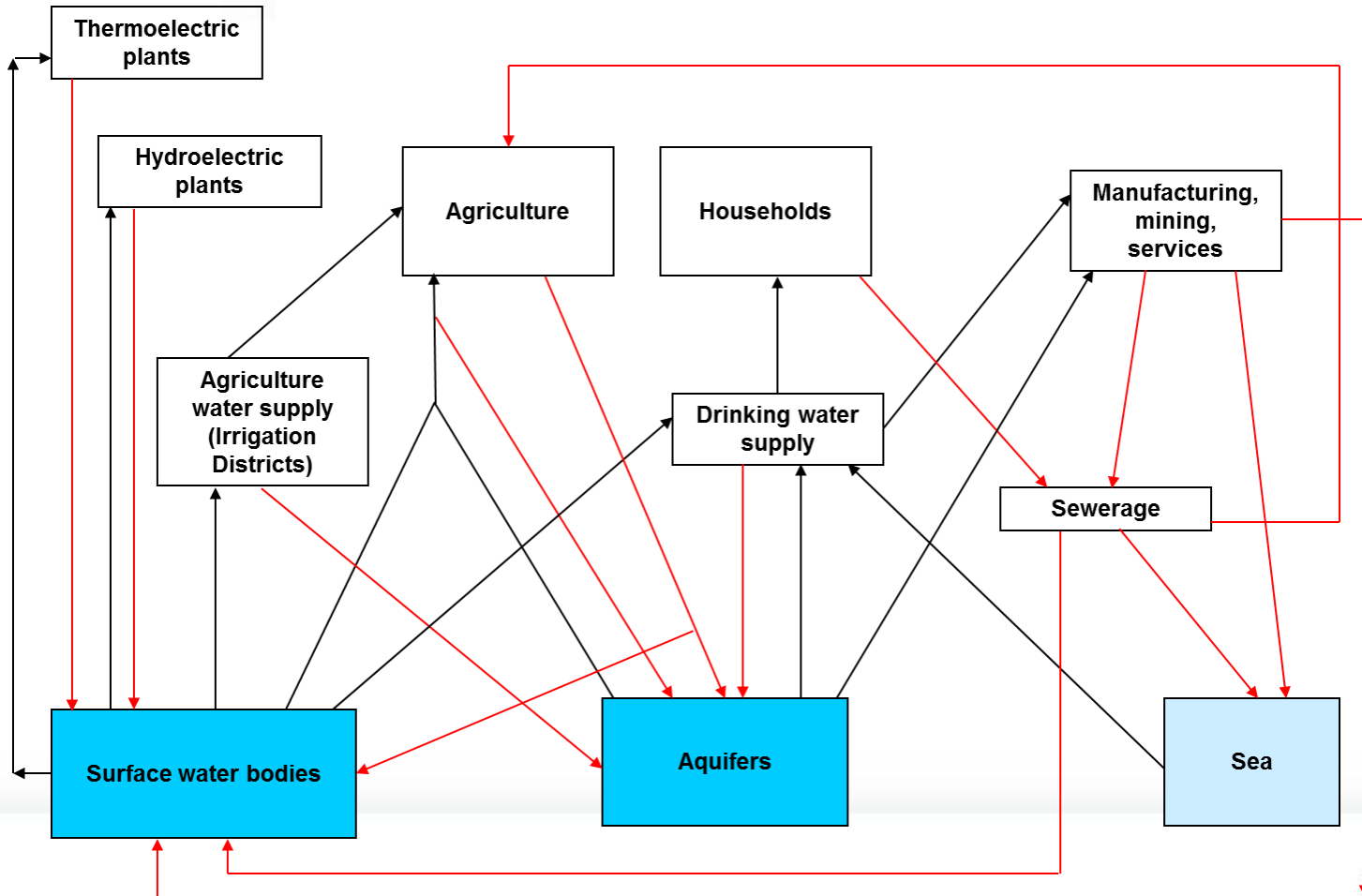
Consistency with National Account concepts

Compiling time series



Compilation exercise

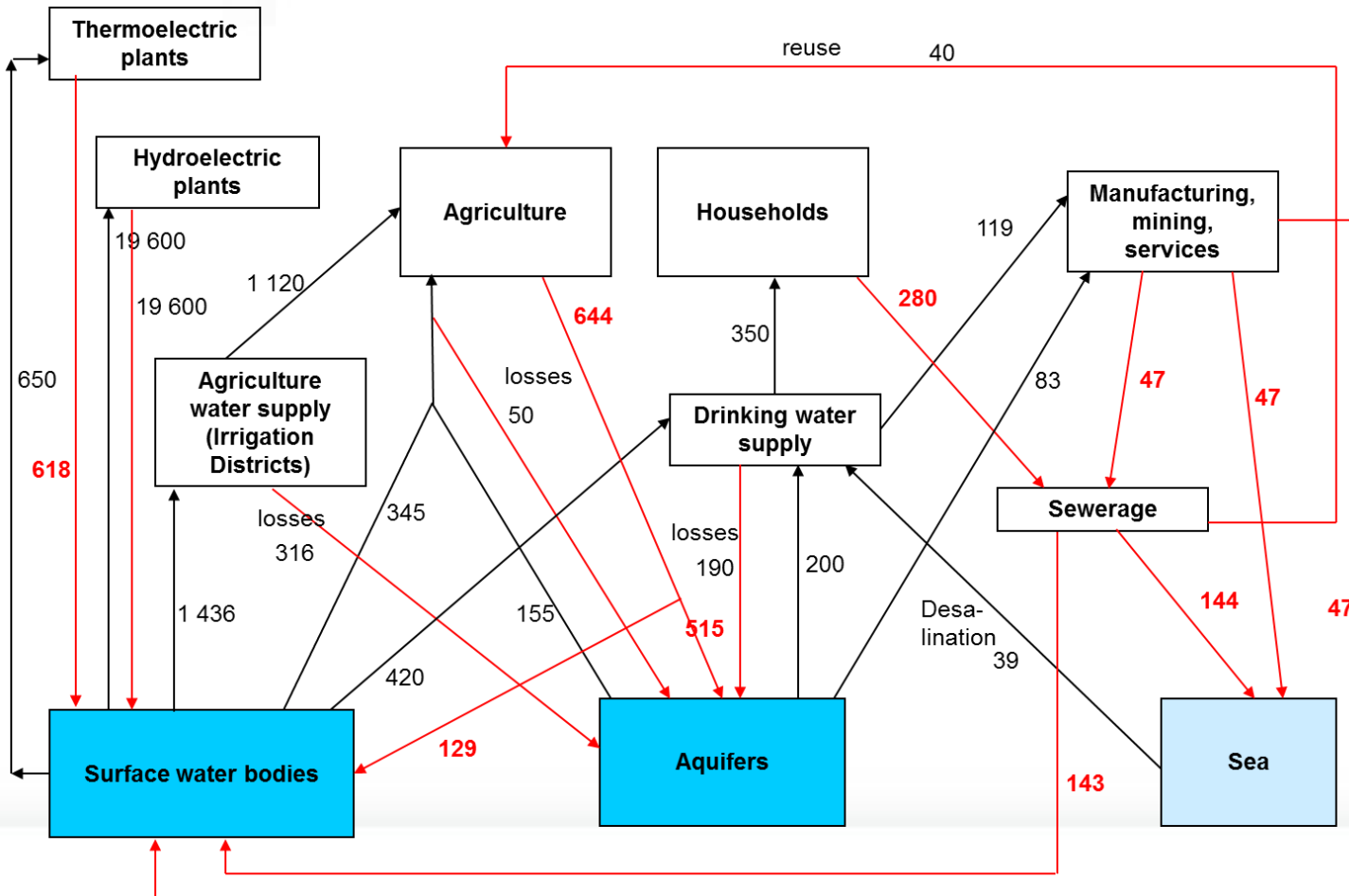
Complete a water flow diagram based on the data provided.





Compilation exercise

Complete a water flow diagram based on the data provided.





Building supply and use tables

- Mining of oil resources by mining industry (100 mln kg)
- Supply of crude oil to refinery (100 mln kg)
- Refining of crude oil → production of petrol (80 mln kg)
- Export of petrol (50 mln kg)
- Use of petrol by Households (30 mln kg)

- With thanks to Statistics Netherlands!



Mining of oil resources by mining industry (100 mln kg)

Supply		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Import	Environment	TOTAL
Natural inputs	Oil resources					100	100
	O2						0
Products	Crude oil						0
	Petrol						0
Residuals	CO2						0
TOTAL		0	0	0	0	100	100

Use		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Export	Environment	TOTAL
Natural inputs	Oil resources	100					100
	O2						0
Products	Crude oil						0
	Petrol						0
Residuals	CO2						0
TOTAL		100	0	0	0	0	100



Supply of crude oil to refinery (100 mln kg)

Supply	Mining (ISIC 6)	Refinery (ISIC 19)	Households	Import	Environment	TOTAL
Natural inputs	Oil resources				100	100
	O2					0
Products	Crude oil	100				100
	Petrol					0
Residuals	CO2					0
TOTAL	100	0	0	0	100	200

Use	Mining (ISIC 6)	Refinery (ISIC 19)	Households	Export	Environment	TOTAL
Natural inputs	Oil resources	100				100
	O2					0
Products	Crude oil		100			100
	Petrol					0
Residuals	CO2					0
TOTAL	100	100	0	0	0	200



Refining of crude oil → petrol (80 mln kg) & Export of petrol (50 mln kg)

Supply		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Import	Environment	TOTAL	
Natural inputs	Oil resources						100	100
	O2							0
Products	Crude oil	100					100	
	Petrol		80				80	
Residuals	CO2						0	
TOTAL		100	80	0	0	100	280	

Use		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Export	Environment	TOTAL
Natural inputs	Oil resources	100					100
	O2						0
Products	Crude oil		100				100
	Petrol			30	50		80
Residuals	CO2						0
TOTAL		100	100	30	50	0	280



CO2 emissions by refineries

Supply		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Import	Environment	TOTAL
Natural inputs	Oil resources					100	100
	O2						60
Products	Crude oil	100					100
	Petrol			80			80
Residuals	CO2					80	80
TOTAL		100	160	0	0	160	420

Use		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Export	Environment	TOTAL
Natural inputs	Oil resources	100					100
	O2					60	60
Products	Crude oil						100
	Petrol			30	50		80
Residuals	CO2						80
TOTAL		100	160	30	50	80	420



CO2 emissions by households

Supply		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Import	Environment	TOTAL
Natural inputs	Oil resources					100	100
	O2						150
Products	Crude oil	100					100
	Petrol			80			80
Residuals	CO2			80	120		200
TOTAL		100	160	120	0	250	630

Use		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Export	Environment	TOTAL
Natural inputs	Oil resources	100					100
	O2			60	90		150
Products	Crude oil			100			100
	Petrol			30	50		80
Residuals	CO2					200	200
TOTAL		100	160	120	50	200	630



Check the accounting identities!

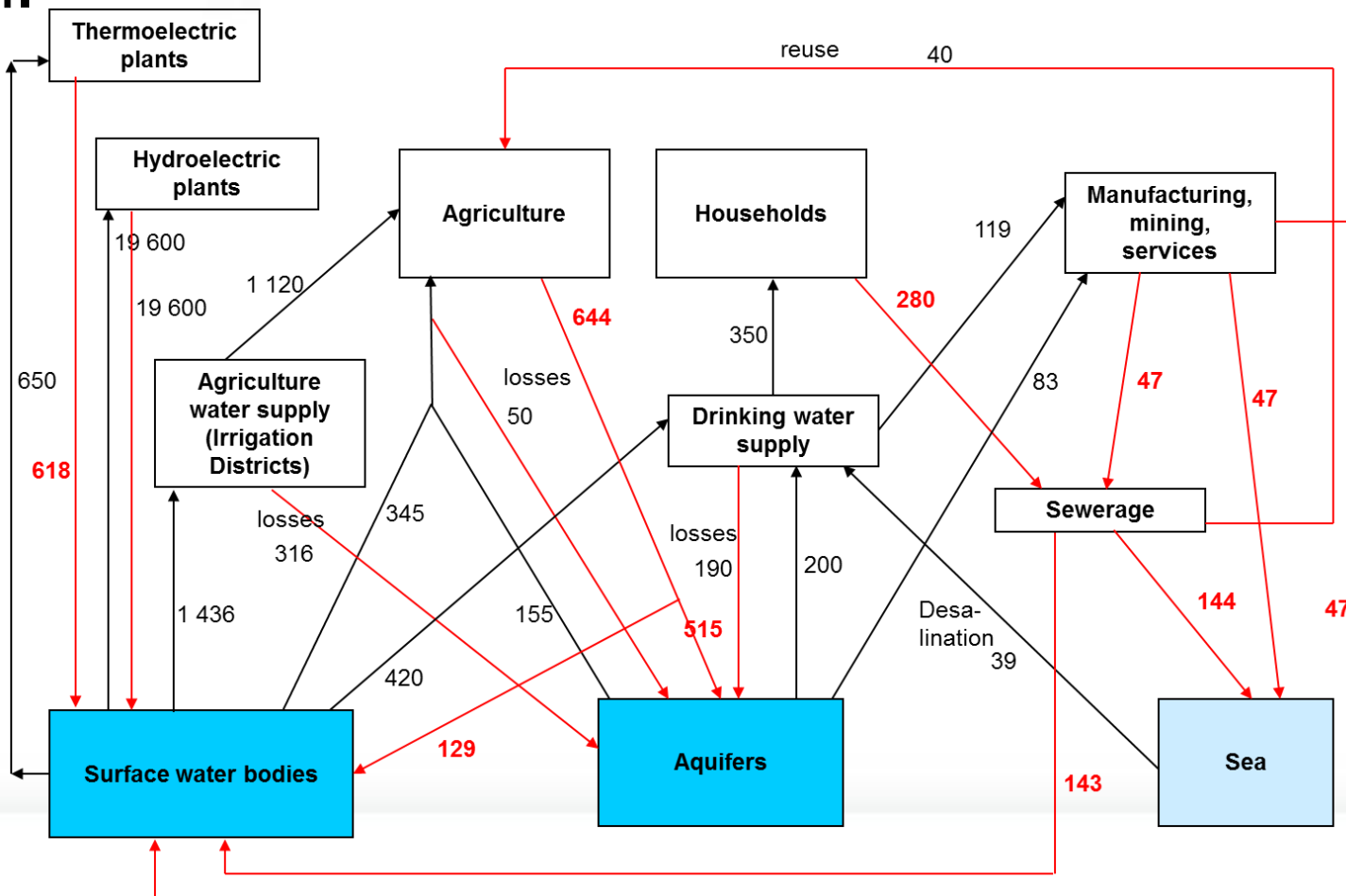
Supply		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Import	Environment	TOTAL	
Natural inputs	Oil resources						100	100
	O2						150	150
Products	Crude oil	100					100	
	Petrol		80				80	
Residuals	CO2		80	120			200	
TOTAL		100	160	120	0	250	630	

Use		Mining (ISIC 6)	Refinery (ISIC 19)	Households	Export	Environment	TOTAL
Natural inputs	Oil resources	100					100
	O2		60	90			150
Products	Crude oil		100				100
	Petrol			30	50		80
Residuals	CO2					200	200
TOTAL		100	160	120	50	200	630



Compilation Exercise continued...

Use the water flow diagram to compile a supply and use table for water.





Compilation Exercise: solution

SUPPLY	Agriculture (ISIC 01-03)	Industry (ISIC 05-99 less 3510, 36, and 37)	Hydro-electricity (ISIC 3510)	Thermal Electricity (ISIC 3510)	Water Supply: drinking water (ISIC 36-A)	Water Supply: irrigation (ISIC 36-B)	Sewerage (ISIC 37)	Households	Environment	Total
Surface water									22,451	22,451
Ground water									438	438
Sea water									39	39
Water, drinking (CPC 18-A)					469					469
Water, irrigation (CPC 18-B)						1,120				1,120
Reuse water							40			40
Losses	50				190	316				556
Wastewater	644	141	19,600	618			287	280		21,570
Evaporation, transpiration, included in products	966	61		32				70		1,129
Total	1,660	202	19,600	650	659	1,436	327	350	22,928	47,812



Compilation Exercise: solution

USE	Agriculture (ISIC 01-03)	Industry (ISIC 05-99 less 3510, 36, and 37)	Hydro-electricity (ISIC 3510)	Thermal Electricity (ISIC 3510)	Water Supply: drinking water (ISIC 36-A)	Water Supply: irrigation (ISIC 36-B)	Sewerage (ISIC 37)	Households	Environment	Total
Surface water	345		19,600	650	420	1,436				22,451
Ground water	155	83			200					438
Sea water					39					39
Water, drinking (CPC 18-A)		119						350		469
Water, irrigation (CPC 18-B)	1,120									1,120
Reuse water	40									40
Losses									556	556
Wastewater							327		21,243	21,570
Evaporation, transpiration, included in products									1,129	1,129
Total	1,660	202	19,600	650	659	1,436	327	350	22,928	47,812



Water Accounts (natural inputs)

Table 153-0116 [1](#), [2](#), [3](#), [4](#), [6](#), [7](#), [8](#), [9](#), [10](#), [11](#), [12](#)

Physical flow account for water use
every 2 years (cubic metres x 1,000)

[Data table](#) [Add/Remove data](#) [Manipulate](#) [Download](#) [Related information](#) [Help](#)

The data below is a part of CANSIM table 153-0116. Use the [Add/Remove data](#) tab to customize your table.

Selected items [\[Add/Remove data\]](#)

Geography = Canada

Sector	2009	2011	2013
Total, industries and households	38,788,670	35,517,933	37,910,769
Total, industries	35,200,016	32,011,699	34,671,607
Crop production [BS111]	1,266,057	942,159	1,069,461
Animal production [BS112]	1,100,057	866,357	937,352
Forestry and logging [BS11300]	346	585	647
Fishing, hunting and trapping [BS11400]	..	..	..
Support activities for agriculture and forestry [BS11500]	..	..	..
Oil and gas extraction [BS21100]	292,562	348,648	401,725
Coal mining [BS21210]	20,966	33,632	91,903
Metal ore mining [BS21220]	319,054	260,066	373,172
Non-metallic mineral mining and quarrying [BS21230]	103,073	123,732	134,303
Support activities for mining and oil and gas extraction [BS21300]	9	26	34
Electric power generation, transmission and distribution [BS22110]	26,213,561	23,715,875	25,635,244



Energy Accounts (products)

Table 153-0113^{1, 2, 3}

Physical flow account for energy use
annual (terajoules)

- [Data table](#)
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The data below is a part of CANSIM table 153-0113. Use the [Add/Remove data](#) tab to customize your table.

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Geography= Canada

Sector	2009	2010	2011
Total, industries and households	10,796,554	11,028,558	11,270,959
Total, industries	8,222,637	8,498,566	8,674,591
Crop and animal production	207,799	242,016	266,477
Forestry and logging	20,359	23,025	22,028
Fishing, hunting and trapping	7,154	8,723	9,529
Support activities for agriculture and forestry	12,815	13,233	12,368
Oil and gas extraction	1,406,705	1,459,208	1,484,357
Coal mining	17,716	22,949	21,442
Metal ore mining	73,703	80,354	82,968
Non-metallic mineral mining and quarrying	39,477	45,131	61,332
Support activities for mining and oil and gas extraction	102,202	107,759	102,002



Emissions Accounts (residuals)

Table 153-0114 [1](#), [2](#), [3](#), [4](#), [5](#), [9](#), [10](#), [11](#), [12](#)

Physical flow account for greenhouse gas emissions
annual (kilotonnes)

- [Data table](#)
- [Add/Remove data](#)
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Geography = Canada

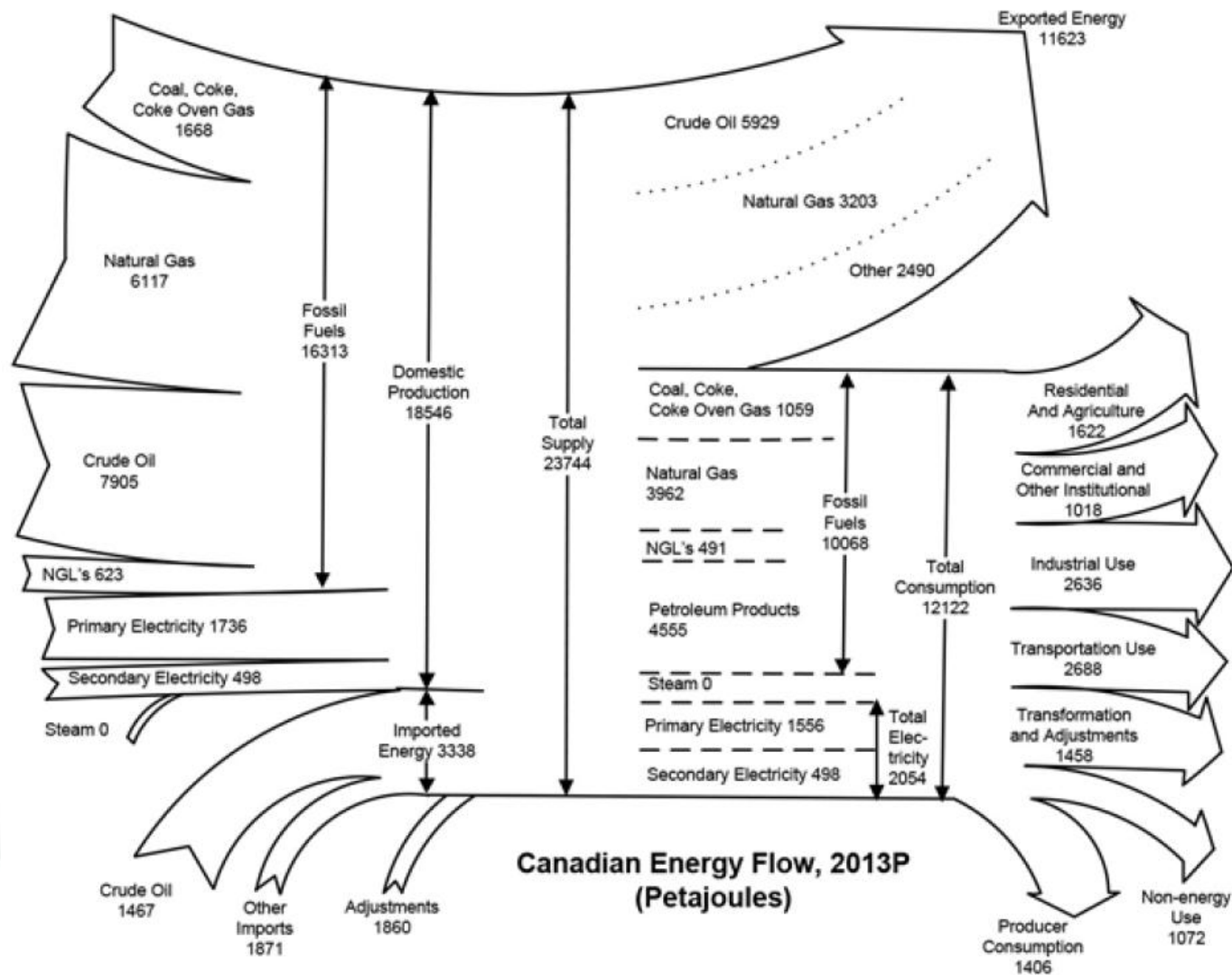
Sector	2009	2010	2011	2012	2013
Total, industries and households	727,389	741,235	747,567	755,139	769,734
Total, industries	585,665	597,536	599,394	610,653	620,698
Crop and animal production [BS11A00]	68,427	70,016	70,612	71,916	74,870
Forestry and logging [BS11300]	9,663	9,985	9,668	9,959	9,852
Fishing, hunting and trapping [BS11400]	545	633	644	593	620
Support activities for agriculture and forestry [BS11500]	949	897	779	754	815
Oil and gas extraction [BS21100]	129,139	131,880	133,308	143,440	147,654
Coal mining [BS21210]	2,537	3,162	3,176	2,729	3,127
Metal ore mining [BS21220]	2,906	3,262	3,339	4,348	4,183
Non-metallic mineral mining and quarrying [BS21230]	2,063	2,252	3,069	2,910	3,403
Support activities for mining and oil and gas extraction [BS21300]	6,644	6,185	6,680	7,904	7,145
Electric power generation, transmission and distribution [BS22110]	102,318	102,890	95,249	88,626	87,368



Energy Accounts



Energy Supply and Demand: Flow Diagram





Overview of main data sources

Energy Supply and Demand Balances

Control totals, producer consumption, non-energy use etc.

Industrial Consumption of Energy Survey

Fuel use in manufacturing.

Annual Census of Mines

Fuel use in mining industries.

Transportation Surveys

Fuel use in transportation industries.

Input-output Tables

Fuel input expenditures for energy users not surveyed above



Energy Supply and Demand Balances: Source Surveys

Coke Monthly

Coal Monthly

Monthly Oil Pipeline Transport

Gas Utilities/Transportation and Distribution Systems (Monthly)

Monthly Refined Petroleum Products

Monthly Electricity

Natural Gas Disposition – Annual

End-Use of Refined Petroleum Products – Annual

Monthly Oil Pipeline Statement

Electricity Supply and Disposition – Annual

Electric Power Thermal Generating Station Fuel Consumption

Monthly Crude Oil and Natural Gas

Annual Industrial Consumption of Energy Survey

Annual Survey of Secondary Distributors of Refined Petroleum Products



Energy Supply and Demand: Classification (1)

Table 1-1
Primary and secondary energy, natural units — Canada

	Total coal, primary energy	Crude oil, primary energy	Natural gas, primary energy	Gas plant natural gas liquids (NGL's), primary energy	Primary electricity, hydro and nuclear, primary energy	Steam, primary energy	Coke, secondary energy	Coke oven gas, secondary energy	Total refined petroleum products, secondary energy	Secondary electricity, thermal, secondary energy
	kilotonnes	megalitres	gigalitres	megalitres	GWH	kilotonnes		gigalitres	megalitres	GWH
Supply and demand characteristics										
Production	67,671.3	213,407.5	164,102.6	30,074.4	492,034.9	.	x	1,198.1	x	135,649.6
Exports	x	165,411.0	77,966.4	6,489.2	59,455.6	.	..	.	x	.
Imports	x	40,276.2	21,891.5	666.9	12,120.6	.	975.2	.	x	.
Inter-regional transfers	x	0.0	0.0	0.1	0.0	.	.	.	0.0	.
Stock variation	710.9	709.2	1,739.5	1,064.3	.	.	x	.	1,112.5	.
Inter-product transfers	.	..	-2,701.5	.	.	.	.	.	-4,916.7	.
Other adjustments	252.0	17,470.9	3,233.6	-2,798.7	.	.	..	.	23,998.6	.
Availability	42,309.7	105,034.4	106,820.4	20,389.2	445,140.0	..	3,007.6	1,198.1	120,222.9	135,649.6
Stock change, utilities and industry	..	.	.	.	.	.	..	.	..	.
Transformed to other fuels										
Electricity by utilities	36,030.7	.	9,504.7	.	.	.	.	.	1,486.0	.
Electricity by industry	..	.	5,465.8	.	.	.	.	14.9	402.4	.
Coke and manufactured gases	3,034.5	.	.	.	.	.	.	.	.	.
Refined petroleum products	.	105,635.3	921.4	1,212.9	.	.	.	.	.	.
Steam generation	..	.	696.9	.	.	-12,945.3	.	2.2	2.6	.
Net supply	3,244.5	.	90,231.7	19,176.3	445,140.0	12,945.3	3,007.6	1,181.0	118,332.0	135,649.6
Producer consumption	0.1	.	16,892.0	566.8	61,491.6	.	.	.	13,750.2	...
Non-energy use	1,337.3	.	3,330.9	15,916.7	.	.	433.3	.	13,094.2	...



Energy Supply and Demand: Classification (2)

Energy use, final demand	1,860.9	.	76,093.7	20,997.5	491,217.7	12,945.3	2,747.2	1,181.0	87,382.7
Total industrial	1,746.6	.	38,363.3	2,609.6	211,029.7	12,752.9	2,747.2	1,181.0	7,102.8
Total mining and oil and gas extraction	68.2	.	19,379.9	1,890.9	39,938.9	.	x	.	3,335.3
Total manufacturing	1,678.4	.	18,532.7	x	171,090.8	12,752.9	x	1,181.0	1,446.9
Pulp and paper manufacturing	..	.	1,902.5	.	36,661.4	x	.	.	328.5
Iron and steel manufacturing	x	.	x	.	x	.	x	1,181.0	x
Aluminum and non-ferrous metal manufacturing	x	.	x	.	x	.	x	.	x
Cement manufacturing	830.7	.	223.0	.	2,095.9	.	x	.	x
Refined petroleum products manufacturing	.	.	1,611.3	.	5,157.7	.	.	.	x
Chemicals and fertilizers manufacturing	..	.	5,598.9	.	19,597.5	4,915.6	.	.	91.4
All other manufacturing	x	.	6,141.1	x	46,534.2	x	x	.	548.5
Forestry and logging and support activities for forestry	.	.	..	.	.	.	.	.	550.5
Construction	.	.	450.7	x	.	.	.	.	1,770.2
Total transportation	.	.	4,135.4	377.0	4,925.2	.	.	.	69,817.2
Railways	.	.	.	.	.	.	.	.	2,523.3
Total airlines	.	.	.	.	.	.	.	.	6,688.9
Canadian airlines	.	.	.	.	.	.	.	.	5,829.1
Foreign airlines	.	.	.	.	.	.	.	.	859.7
Total marine	.	.	.	.	.	.	.	.	2,124.7
Domestic marine	.	.	.	.	.	.	.	.	1,722.9
Foreign marine	.	.	.	.	.	.	.	.	401.8
Pipelines	.	.	4,035.1	.	3,686.3	.	.	.	10.0
Road transport and urban transit	.	.	44.4	377.0	1,238.8	.	.	.	11,380.1
Retail pump sales	.	.	55.9	.	.	.	.	.	47,090.2
Agriculture	.	.	994.3	304.5	9,390.1	0.4	.	.	5,299.1
Residential	36.0	.	18,852.8	528.1	161,568.1	0.4	.	.	1,869.8
Public administration	.	.	608.5	..	15,882.2	100.5	.	.	1,289.4
Commercial and other institutional	x	.	13,139.4	1,261.6	88,422.4	91.1	.	.	2,004.4
Statistical difference	x	.	..	185.0	..	0.0	.	.	x



Challenges

Integration of data from many sources/providers

Concepts and definitions may be different: be careful of double counting.

Some data include foreign purchases of domestic fuel.

Some data include producer consumption, some do not.

Source data are not all collected using the same classification systems.

Input data are not always in a useful format.

Data gaps

Improve household and services sectors (less surveyed).

Supplementary information required when two sources yield different pictures.



Quality control

Coherence, time series, etc.

% changes in energy use from current year to previous year, per industry, per fuel.

Implicit price ($\$$ paid/TJ) and intensity (TJ/ $\$$ output), per industry, per fuel.

GHG account output

Coherence analysis of the GHG account provides feedback to the energy account.

Bridge tables

to explain visually how we go from the total energy consumed to the energy flow account.



Bridge tables

Line #	MEFA fuel #3 - Natural gas, 2006p (TJ)	RESO fuel type	MEFA fuel type	Impact of other data sources										Net adjustment due to other data sources	Re-allocation of activities			Accounting adjustments			Total final adjustment	Benchmark	Final MEFA		
S-		Natural gas	Natural gas	ICE (fuel use)	ICE (non-fuel use)	Pet Report and I/O Prov	Thermal Plants Survey	Census of Mines	Transportation Surveys	Input-Output expenditure allocation		Energy transformation	Producer consumption	Transportation	Foreign use of fuels	Stock change	Other adjustments								
1	Production	7,190,199	7,190,199																						
4	Exports	3,898,248	3,898,248																						
5	Imports	368,569	368,569																						
6	Inter-regional transfers	0	0																						
7	Stock variation	-28,499	-28,499																						
8	Inter-product transfers	-75,367	-75,367																						
9	Other adjustments	-210,967	-210,967																						
10	Availability	3,399,789	3,399,789		-157,044																		3,210,867		
11	Stock change	0	0																						
12	Transformed to electricity by utilities	233,518	233,518																				233,518	233,518	
13	Transformed to electricity by industry	82,028	82,028							-82,028		-82,028													
14	Transformed to coke and manufactured gases	0	0																						
15	Transformed to refined petroleum products	29,308	29,308																						
16	Transformed to steam generation	19,547	19,547																						
17	Net supply	3,035,387	3,035,387																						
18	Producer consumption	629,691	629,691																						
19	Non-energy use	157,044	157,044																						
20	Energy use, final demand	2,248,657	2,248,657		-157,044																				
21	Total industrial	952,876	952,876																						
22	Total mining and oil and gas extraction	258,814	258,814	10,294				-185,063	-107	109,101		-65,782				629,691						563,909	822,723	822,723	
23	Total manufacturing	675,344	675,344																						
24	Pulp and paper manufacturing	63,954	63,954																				11,830	75,384	75,384
25	Iron and steel manufacturing	64,192	64,192																				8,492	72,684	72,684
26	Aluminum and non-ferrous metal manufacturing	25,944	25,944																				10,991	36,935	36,935
27	Cement manufacturing	2,471	2,471																				186	2,658	2,658
28	Refined petroleum products manufacturing	49,495	49,495																				63	49,518	49,518
29	Chemicals and fertilizers manufacturing	120,968	120,968																				26,280	147,149	147,149
30	All other manufacturing	348,860	348,860																						
31	Forestry and logging and support activities for forestry	0	0		5																				
32	Construction	18,718	18,718																						
33	Total transportation	190,299	190,299																						
34	Railways	0	0																						
35	Total airlines	0	0																						
36	Canadian airlines	0	256																						
37	Foreign airlines	0	0																						
38	Total marine	0	0																						
39	Domestic marine	0	233																						
40	Foreign marine	0	0																						
41	Pipelines	188,420	188,420																						
42	Road transport and urban transit	1,878	1,878																						
43	Retail pump sales	0	0																						
44	Agriculture	20,474	20,474		2,317																				
45	Residential	617,441	617,441																						
46	Public administration	21,822	21,822		10,309																				
47	Commercial and other institutional	445,745	445,745																						
48	Statistical difference	-6	-6		7,649																				
49																									
	Balanced totals																						3,210,867	3,210,867	



Energy Accounts Uses

Calculation of GHG emissions accounts

Impact analysis for International Trade

CGE modelling

Input-Output modelling

Energy use and intensity analysis

Etc...



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Questions?

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