

Physical Flow Accounts: Energy

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Statistics Canada





The Economy and The Environment

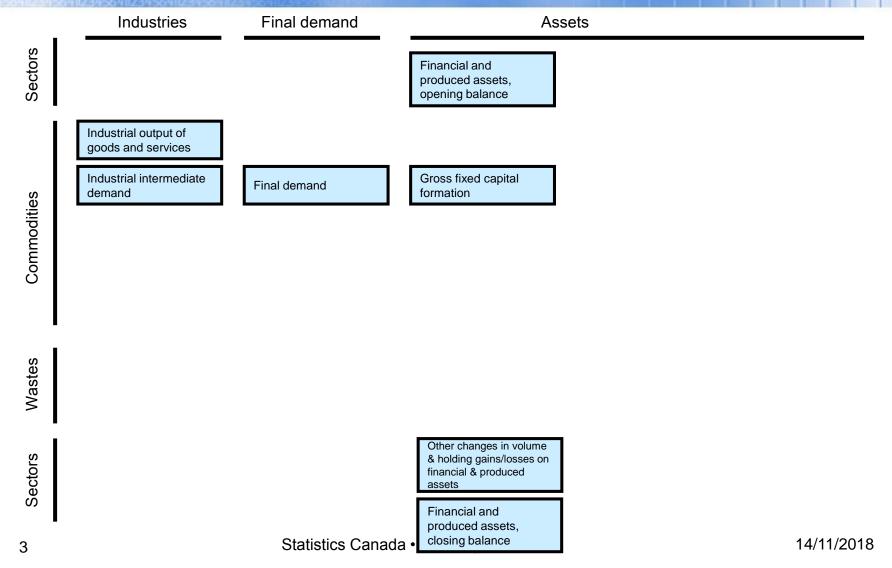
Stocks

Flows

Expenditures

-Natural Resources **-**Ecosystem Services The **Economy** -Residuals

System of National Accounts framework



System of Environmental-Economic

Accounts (SEEA) framework Industries Final demand **Assets** Sectors Financial and Natural resource Natural resource produced assets. assets, opening assets, opening opening balance balance balance Industrial output of goods and services Industrial intermediate Gross fixed capital Final demand demand formation Commodities Environmental protection **Environmental protection** Capital expenditures for expenditures expenditures environmental protection Resource production Resource production by households/gov't by industries Resource use by Resource use by industries households/gov't Waste consumption by Waste consumption by Wastes households/gov't industries Waste output by Waste output by industries households/gov't Other changes in volume Changes in and holding Changes in natural Sectors & holding gains/losses on gains/losses on natural financial & produced resource assets resource assets assets Financial and

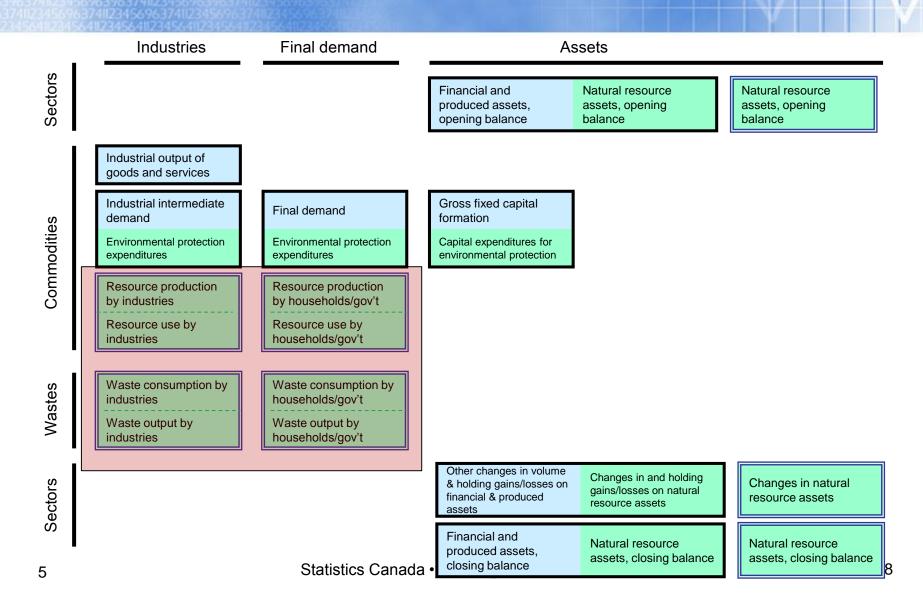
produced assets,

closing balance

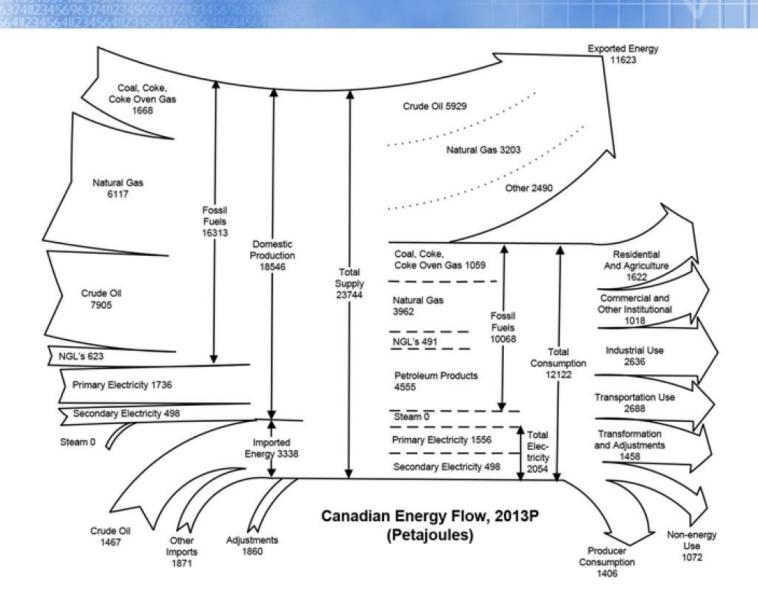
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Natural resource assets, closing balance Natural resource assets, closing balance

Physical Flow Accounting



Energy Supply and Demand: Flow Diagram



Physical Flow Accounts: Basic Tables

Table 3.2.1 General physical supply and use table

Supply table						
	Production; Generation	of residuals	Accumulation	Flows from the rest of the world	Flows from the environment	Total
	Production; Generation of residuals by industries (incl. household production on own account) - classified by ISIC	Generation of residuals by households	Industries - classified by ISIC			
Natural inputs					A. Flows from the environment (incl. natural resource residuals)	Total Supply of Natural Inputs (TSNI)
Products	C. Output (incl. sale of recycled and reused products)			D. Imports of products		Total Supply of Products (TSP)
Residuals	II. Residuals generated by industry (incl. natural resource residuals)	J. Residuals generated by household final consumption	K1. Residuals from scrapping and demolition of produced K2. Emissions from	L. Residuals received from rest of the world	M. Residuals recovered from the environment	Total Supply of Residuals (TSR)
	I2. Residuals generated following treatment		controlled landfill sites			
Total supply Use table						
Use table	Intermediate consumption of products; Use of natural inputs; Collection of residuals	Final consumption*	Accumulation	Flows to the rest of the world	Flows to the environment	Total
	Industries - classified by ISIC	Households	Industries - classified by ISIC			
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 (incl. purchase of recycled and reused products)	F. Household final consumption (incl. purchase of recycled and reused products)	G. Gross Capital Formation (incl. fixed assets and inventories)	H. Exports of products		Total Use of Products (TUP)
Residuals	N. Collection and treatment of residuals (excl accumulation in controlled landfill sites)		O. Accumulation of waste in controlled landfill sites	P. Residuals sent to the rest of the word	Q. Residual flows to the environment	Total Use of Residuals (TUR)
					Q1. Direct from industry and households (incl. natural resource residuals & landfill emissions) Q2.Following treatment	
Total use						

^{7 *}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.

Energy Accounts in the SEEA: Supply

Table 3.4.1 Physical supply and use table for energy (joules – net calorific units)

Physical supply table for energy											
	Pr	roduction (i	ncluding househo	old production on	own-account); Gen	eration of resi	duals	Accumulation		Flows from	Total supply
									from the rest of the	the environment	
	Agriculture, forestry and fishing	and quarrying		Electricity, gas, steam and air conditioning supply	Transportation and storage	Other industries	Households		Imports		
T. C. L.	ISIC 01	ISIC 02	ISIC 03	ISIC 04	ISIC 08						
Energy from natural inputs											
Natural resource inputs										1 161.0	1 161.0
Mineral and energy resources											
Timber resources										5.0	5.0
Inputs of energy from renewable sources											
Solar										20.0	20.0
Hydro										100.0	
Wind										4.0	4.0
Wave and tidal											
Geothermal											
Other heat and electrical											
Other natural inputs											
Energy inputs to cultivated biomass										2.0	
Total energy from natural inputs										1 292.0	1 292.0
Energy products											
Production of energy products by SIEC class											
Coal									225.0		225.0
Peat and peat products											
Oil shale/ oil sands											
Natural gas (extracted)		395.0									395.0
Natural gas (distributed)				369.1							369.1
Oil (e.g. conventional crude oil)		721.0									721.0
Oil (oil products)			347.0						930.0		1 277.0
Biofuels	5.3		0.2								7.0
Waste	39.0		54.5						16.9		110.4
Electricity				212.0					22.0		234.0
Heat				78.5							78.5
Nuclear fuels and other fuels nec											
Total energy products	44.3	1 116.0	401.7	661.1					1 193.9		3 417.0
Energy residuals											
Losses during extraction		45.0									45.0
Losses during distribution				12.0							12.0
Losses during storage			6.0								6.0
Losses during transformation			7.0	204.4							211.4
Other energy residuals	50.3	3.2					240.0				1 530.8
Total energy residuals	50.3	48.2	431.7	307.0	632.0	96.0	240.0				1 805.2
Other residual flows											
Residuals from end-use for non-energy purposes			51.0								51.0
Energy from solid waste								93.5			93.5
Total supply	94.6	1 164.2	884.4	968.1	632.0	96.0	240.0	93.5	1 193.9	1 292.0	6 658.7

Note: Dark grey cells are null by definition.

Energy Accounts in the SEEA: Use

Table 3.4.1 (cont.) Physical supply and use table for energy (joules – net calorific units)

Physical use table for energy											
	Intern	ediate cons	umption; Use of	energy resources; l	Receipt of energy	losses	Final	Accumulation		Flows to the	Total use
							consumption		the rest of the world	environment	
	Agriculture,		Manufacturing	Electricity, gas,	Transportation	Other	Households		Exports		
	forestry and fishing	and quarrying		steam and air conditioning	and storage	industries					
	ISIC 01	ISIC 02	ISIC 03	supply ISIC 04	ISIC 08						
Energy from natural inputs	151C 01	ISIC 02	1SIC 03	ISIC 04	151C 08						
Natural resource inputs	5.0	1 161.0									1 16
Inputs of energy from renewable sources				124.0							12
Other natural inputs	0.3		0.2								
Total energy from natural inputs	5.3	1 161.0	0.2								1 29
Energy products			0.2	223.5							
Transformation of energy products by SIEC class											
Coal				223.0							22
Peat and peat products				223.0							22
Oil shale/ oil sands											
Natural gas (extracted)				395.0							39
Natural gas (distributed)				87.0							8
Oil (e.g. conventional crude oil)			360.0								36
			360.0	16.0]
Oil (oil products)				16.0							1
Biofuels				21.0							3
Waste				31.0							2
Electricity											
Heat											
Nuclear fuels and other fuels nec											
Total transformation of energy products			360.0	752.0							1 11
End-use of energy products by SIEC class											
Coal	2.0	0.1	17.0				1.0	- 21.0	1.9		
Peat and peat products											
Oil shale/ oil sands											
Natural gas (extracted)											
Natural gas (distributed)	2.0		39.0	0.1		12.0	26.0	2.0	201.0		28
Oil (e.g. conventional crude oil)									361.0		36
Oil (oil products)	34.0	2.0	326.0		621.0	49.0	102.0	- 3.0	80.0		1 21
Biofuels	0.3		0.2	1.5			5.0				
Waste	3.0	0.1	4.0	37.0		1.0	33.0	0.3	1.0		7
Electricity	7.0	1.0	22.0	50.0	10.0	15.0	29.0		100.0		23
Heat	2.0		10.5	2.0	1.0	19.0	44.0				7
Nuclear fuels and other fuels nec											
Total end-use for energy purposes	50.3	3.2	418.7	90.6	632.0	96.0	240.0	- 21.7	744.9		2 25
End-use of energy products for non-energy purposes	30.3	2.2	51.0		032.0	70.0	210.0	22.7	7 1 1.2		5
Energy residuals			51.0								
Losses during extraction										45.0	4
Losses during distribution										12.0	1
Losses during distribution Losses during storage										6.0	
Losses during transformation										211.4	21
Other energy residuals										1 530.8	1 53
										1 530.8	1 53
Total energy residuals										1 805.2	1 80
Other residual flows								C1 0			
Residuals from end-use for non-energy purposes								51.0			5
Energy from solid waste	39.0		54.5								9
Total use	94.6	1 164.2	884.4	968.1	632.0	96.0	240.0	29.3	744.9	1 805.2	6 65

Energy Accounts in Canada

Table 3.4.1 (cont.) Physical supply and use table for energy (joules – net calorific units)

	Interm	ediate cons	umption; Use of	energy resources; l	Receipt of energy l	losses	Final consumption	Accumulation		Flows to the environment	Total u
	Agriculture, forestry and fishing	and quarrying		Electricity, gas, steam and air conditioning supply	and storage	Other industries	Households		Exports		
	ISIC 01	ISIC 02	ISIC 03	ISIC 04	ISIC 08						
nergy from natural inputs											
Natural resource inputs	5.0	1 161.0									1.1
Inputs of energy from renewable sources				124.0							1
Other natural inputs	0.3		0.2								
Total energy from natural inputs	5.3	1 161.0	0.2	225.5							1 2
nergy products								_			
ansformation of energy products by SIEC class											
Coal				223.0							2
Peat and peat products											
Oil shale/ oil sands											
Natural gas (extracted)				395.0							3
Natural gas (distributed)				87.0							_
Oil (e.g. conventional crude oil)			360.0								3
Oil (oil products)			500.0	16.0							
Biofuels				10.0							
Waste				31.0							
Electricity				31.0							
Heat											
Nuclear fuels and other fuels nec											
Total transformation of energy products			360.0	752.0							11
nd-use of energy products by SIEC class											
Coal	2.0	0.1	17.0				1.0	- 21.0	1.9		
Peat and peat products											
Oil shale/ oil sands											
Natural gas (extracted)											
Natural gas (distributed)	2.0		39.0	0.1		12.0	26.0	2.0	201.0		2
Oil (e.g. conventional crude oil)									361.0		3
Oil (oil products)	34.0	2.0	326.0		621.0	49.0	102.0	- 3.0	80.0		1.2
Biofuels	0.3		0.2	1.5			5.0				
Waste	3.0	0.1	4.0			1.0	33.0	0.3	1.0		
Electricity	7.0	1.0	22.0		10.0		29.0	0.5	100.0		2
Heat	2.0	2.0	10.5		1.0		44.0		200.0		-
Nuclear fuels and other fuels nec	2.0		10.5	2.0	1.0	15.0	-17.0				
Total end-use for energy purposes	50.3	3.2	418.7	90.6	632.0	96.0	240.0	- 21.7	744.9		2.2
ad-use of energy products for non-energy purposes	50.5	3.2	51.0		032.0	90.0	240.0	- 21.7	744.9		
			31.0								
nergy residuals										45.0	
Losses during extraction											
Losses during distribution										12.0	
Losses during storage										6.0	
Losses during transformation										211.4	2
Other energy residuals										1 530.8	1.5
Total energy residuals										1 805.2	1.8
ther residual flows											
Residuals from end-use for non-energy purposes								51.0			
Energy from solid waste	39.0		54.5								
otal use	94.6	1 164.2	884.4	968.1	632.0	96.0	240.0	29.3	744.9	1 805.2	66

Energy Accounts in Canada: Basic table

Energy	Use by Sector and Fuel Type														
									Liquified				Spent		
			Natural	Motor	Jet	Diesel	Light fuel	Heavy fuel	petroleum				Pulping	Purchased	
		Coal	gas	gasoline	fuel	fuel	oil	oil	gases	Electricity	Coke	Wood	Liquor	Steam	Total
								ter	ajoules						
BS11A00	Crop and animal production														
BS11300	Forestry and logging														
BS11400	Fishing, hunting and trapping														
BS11500	Support activities for agriculture and forestry														
BS21100	Oil and gas extraction														
BS21210	Coal mining														
BS21220	Metal ore mining														
BS21230	Non-metallic mineral mining and quarrying														
BS21300	Support activities for mining and oil and gas extraction														
BS22110	Electric power generation, transmission and distribution														
BS221A0	Natural gas distribution, water, sewage and other systems														
BS23A00	Residential building construction														
BS23B00	Non-residential building construction														
BS23C10	Transportation engineering construction														
BS23C20	Oil and gas engineering construction														
BS23C30	Electric power engineering construction														
BS23C40	Communication engineering construction														
BS23C50	Other engineering construction														
BS23D00	Repair construction														
BS23E00	Other activities of the construction industry														
BS31110	Animal food manufacturing														
BS31130	Sugar and confectionery product manufacturing														
BS31140	Fruit and vegetable preserving and specialty food manufac	turing													
BS31150	Dairy product manufacturing														
BS31160	Meat product manufacturing														
BS31170	Seafood product preparation and packaging														
BS311A0	Miscellaneous food manufacturing														
BS31211	Soft drink and ice manufacturing														
BS31212	Breweries														
BS3121A	Wineries and distilleries														
BS31220	Tobacco manufacturing														
BS31A00	Textile and textile product mills														
BS31B00	Clothing and leather and allied product manufacturing														
BS32100	Wood product manufacturing														
BS32210	Pulp, paper and paperboard mills														
	Converted paper product manufacturing														
	Printing and related support activities														
	Petroleum and coal product manufacturing														
	Basic chemical manufacturing														

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

Report on Energy Supply and Demand in Canada - 2013 Preliminary

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	megaltres	GWH	klioton	nes	gigaltres	megaltres	GWH
Supply and demand characteristics										
Production	68,675.4	200,882.5	157,445,4	28,475.5	482,212.9		2,479.6	1,307.2	×	138,231,4
Exports	x	150,682.0	82,449.8	6,891.3	67,114.1				29,040.3	
Imports	x	37,273.1	26,698.4	716.5	17,111.3		672.9	-	×	
inter-regional transfers Stock variation	-465.2	-0.5 8.9	0.0 -3.893.9	769.0	0.0		-137.4		0.0 -443.7	
nter-product transfers	400.2	0.3	-2.632.2	765.0			-127.4		-2.806.7	
Other adjustments	440.0	17,728.8	-966.0	2.076.4					23,651.0	
Availability	41,411.2	106,192.9	101,989.7	23.608.1	432,210,2		3.289.8	1.307.2	122,276.8	138,231,4
Stock change, utilities and industry	41,411.2	100, 102.0	101,000.7	20,000.1	402,210.2	-	-,	1,007.2	122,210.0	100,201.4
	-						-		-	
Transformed to other fuels Electricity by utilities	×		9.666.1						1,295.3	
Electricity by utilities Electricity by industry	×		5,284.8					15.9	1,295.3	
Coke and manufactured gases	3.634.8		3,204.0					13.3	505.1	
Refined petroleum products	-	105,656.7	1,038.7	2,779.2						
Steam generation	1.9	-	810.6		-	-9,776.8		2.3	4.1	
Net supply	1,940.9		85,189.6	20,828.8	432,210.2	9,776.8	3,289.8	1,289.0	120,471.4	138,231.4
Producer consumption	0.2		15,974.3	632.7	56,325.7				14,161.2	
Non-energy use	272.6		4,287.9	17,120.9			408.2		14,338.2	
Energy use, final demand	2,030.2		69,513.7	22,612.1	481,517.4	9,776.8	2,524.4	1,307.2	87,487.6	_
Total Industrial	1,914.7		34,797.4	2,784.4	209,744,2	9,761,3	2,624.4	1,307.2	7,300.1	
Total mining and oil and gas extraction	x		16,067.0	1,991.8	39,784.8		63.4		3,158.1	_
Total manufacturing	x		18,280.0	x	169,959.4	9,761.3	2,461.0	1,307.2	1,748.6	-
Pulp and paper manufacturing iron and steel manufacturing	×		2,057.1		36,864.0 x	578.6	ż	1,307.2	373.1	
Aluminum and non-ferrous metal			•				•	1,307.2		
manufacturing	×		×		×		×		×	
Cement manufacturing	635.3		214.4		2,051.3		×		x	
Refined petroleum products										
manufacturing			1,646.3		5,247.1				×	-
Chemicals and fertilizers manufacturing			5.144.5		16,615,2				147.4	
All other manufacturing	x		6,468.3	×	49,765.6	×	×	-	625.9	
Forestry and looging and support			0,400.3	•	40,700.0	•	•		023.3	
activities for forestry									551.3	
Construction			450.5	x					1,842.1	-
Total transportation			3,300,4	412.0	4.706.7				69.657.8	_
Rallways			-		4,100				2,454.6	
fotal airlines									6,599.9	-
Canadian airlines									5,633.1	-
Foreign airlines									966.8	
Total marine Domestic marine								-	2,221.9 1.764.6	-
Foreign marine									457.3	-
Pipelines			3.262.2		3,495,4			- 1	12.0	
Road transport and urban transit			38.3	412.0	1,210.3				11,072.9	
Retail pump sales	- 1								47,296.6	
Agriculture			991.9	324.3	9.957.9	0.0			5.238.5	
Residential	42.3		17,639.1	577.9	157,333,4	0.0			1,970.9	
Public administration			537.5	_	15,197.2	0.0			1,371.4	_
Commercial and other institutional	x		12,247.3	1,382.6	84,578.9	15.5			1,958.9	
Statistical difference				0.0		0.0			x	

Note(s): See "Data quality, concepts and methodology — Explanatory notes for tables" section.

Report on Energy Supply and Demand in Canada - 2013 Preliminary

Refined petroleum products, natural units — Canada

	Refinery liquefied petroleum : gases (LPG's), secondary energy	Stil gas, secondary energy		Kerosene and stove oil, secondary energy	Diesel fuel oil, secondary energy	Light fuel oil, secondary : energy	Heavy fuel oil, secondary energy	Petroleum coke, secondary energy	Aviation gasoline, secondary energy		Non-energy products, secondary energy	refine petroleu product seconda energ
						meg	alltes					
supply and demand characteristics												
Production	2,713.9	9,392.8	x	x	x	x	x	2,542.8	x	x	14,681.7	
Exports	1,107.7		×	x	4,445.0	x	x	x	x	x	x	29,040
mports	636.0			×	×	x	x	×	0.3	x	1,920.6	
nter-regional transfers Stock variation	77.3		-255.2	0.0	0.0 -325.9	x	-62 Z	-1.5	×	x	0.0	-443
ster-product transfers	-39.0	-	542.0	×	365.1		-253.4	0.4			-3.113.5	-2.806
	1,227.2	393.4	9.722.8	37.4	3,771.4	239.2	535.9		6.5	348.7		23,65
Other adjustments	1,227.2	393.4	9,722.8	31.4	3,771.4	239.2	535.9	117.5	5.5	348.7	7,251.1	23,65
ivallability	3,353.0	9,788.2	44,441.5	842.0	30,750.9	2,684.2	3,831.6	4,245.8	81.1	7,245.1	16,634.3	122,27
tock change, utilities and industry							-	-				
ransformed to other fuels												
lectricity by utilities		125.3	27.2		108.5	36.8	390.9	606.5				1,29
lectricity by industry		268.1			107.1	0.7	74.5	54.8				50
loke and manufactured gases												
lefined petroleum products												
team generation		0.2		×		0.3	3.5					
let supply	3,353.0	9,382.6	44,414.3	842.0	30,636.4	2,548.4	3,162.7	3,684.6	61.1	7,245.1	16,634.3	120,47
roducer consumption ion-energy use	94.8	9,392.8	0.7		838.0	3.5	213.0	2,163.7 604.3	0.1	0.0	1,454.6 13,555.6	14,16 14,33
nergy use, final demand	_		44,211.2	239.2	29,883.6	2,790.8	2,483.7	686.2	85.8	7,238.6		87,48
otal Industrial	_		1,006.1	48.2	4,484.2	428.2	730.2	585.2	x	x	_	7,30
otal mining and oil and gas extraction			×	21.8	2,258.9	67.3	185.6	4.4	x	×		3,15
otal manufacturing			×	16.2	306.6	311.8	440.4	580.7	×	×	-	1,74
Pulp and paper manufacturing			×	×	×	x	215.1			×	_	37
iron and steel manufacturing Aluminum and non-ferrous metal	-		×		×	×	×	×			_	
manufacturing					×	×		_				
Cement manufacturing				×	ž	×	×	384.4				
Refined petroleum products	-			•	•			204.4				
manufacturing									×	×		
Chemicals and fertilizers											_	
manufacturing					×	×						14
All other manufacturing	-		x	13.5	228.6	100.5	123.9	89.6	×	×		62
orestry and logging and support activities				13.5	220.0	100.5	1200	03.0			_	-
for forestry					457.2	6.0	31.3					55
construction		- 1	· ×	7.9	1,441,4	43.1	72.9	- 1	0.0	×		1,84
otal transportation			40.829.9		20,747.4	×	1,388.9		×	6,688.3		69,66
Railways	_				2,429.5		1,000.0					2.45
kaliways Otal airlines	_		×		-,	-	-		27.2	6.561.6	_	5,59
Canadian airlines			×		-	x			27.2	5,551.b 5,594.8	_	5,53
Foreign airlines									27.2	966.8	_	96
btal marine					773.4	×	1.366.8		-	200.0 X		2 22
Domestic marine			÷		736.9	Ŷ	955.8			÷		1.76
Foreign marine	-				36.5		411.0					45
Poelines					20.5		411.0					- 7
load transport and urban transit			1.921.3		9.109.5							11.07
Retail pump sales	-		38,865.8	- 1	8,418.4	- 1	- 1					47,29
ariculture			1,747.0	0.2	3,163.6	61.6	266.1		×	x		5.23
Residential	_		1,1-41.E	69.6	2, 102.5	1.894.2	7.1		-	-		1.97
ubilic administration	-		287.3	10.3	723.3	153.2	39.7		0.5	157.1		1.37
					785.1	233.5	73.8		37.3	374.5		1.99
commercial and other institutional	-		341.8	112.9							-	

Note(s): See "Data quality, concepts and methodology — Explanatory notes for tables" section.

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

Availability ²
Transformed to electricity by utilities
Transformed to electricity by industry
Transformed to refined petroleum products
Transformed to steam generation
Net supply ⁸
Producer consumption ⁹
Non-energy use ¹⁰

Energy Supply and Demand: Classification 2

Energy use, final demand ¹¹
Total industrial
Total mining and oil and gas extraction ¹²
Total manufacturing
Pulp and paper manufacturing ¹³
Iron and steel manufacturing ¹⁴
Aluminum and non-ferrous metal manufacturing ¹⁵
Cement manufacturing ¹⁵
Refined petroleum products manufacturing 17
Chemicals and fertilizers manufacturing ¹⁸
All other manufacturing ¹⁹
Forestry and logging and support activities for forestry ²⁰
Construction ²¹

Total transportation ²²
Pipelines ²⁵
Road transport and urban transit ²⁵
Retail pump sales
Agriculture ²⁷
Residential ²⁸
Public administration ²⁹
Commercial and other institutional ³⁰
Statistical difference

Energy Supply and Demand: Control total

Table 128-0016^{1, 2, 3}

Supply and demand of primary and secondary energy in terajoules

annual (terajoules)

Data table Add/Remove data Manipulate Download Related information Help

The data below is a part of CANSIM table 128-0016. Use the Add/Remove data tab to customize your table.

Selected items [Add/Remove data]

Geography= Canada Fuel type= Natural gas

Supply and demand characteristics	2009	2010	2011	2012	2013
Production	6,229,253	6,020,842	6,082,288	6,054,359	6,116,753
Exports	3,660,092	3,682,104	3,575,422	3,420,358	3,203,174
Imports	793,925	871,342	1,208,000	1,213,086	1,037,235
Inter-regional transfers ⁴	0	0		0	0
Stock variation	-215,170	-311,315	-118,073	-46,644	-151,279
Inter-product transfers⁵	-91,271	-89,948	-90,276	-107,538	-102,263
Other adjustments [§]	2,882	155,043	118,924	-30,941 ^r	-37,527
Availability ²	3,489,867	3,586,489	3,861,588	3,755,252	3,962,302
Transformed to electricity by utilities	290,681	367,657	432,667	414,665	375,526
Transformed to electricity by industry	136,008	141,405	147,551	180,640 ^r	205,315
Transformed to refined petroleum products	27,255	37,199	39,500	42,147 ^r	40,353
Transformed to steam generation	18,277	18,208	20,927	29,307 ^r	31,491
Net supply ⁸	3,017,647	3,022,021	3,220,943	3,088,492 ^r	3,309,617
Producer consumption ²	553,242	537,204	545,454	578,877 ^r	620,601
Non-energy use ¹⁰	138,248	138,799	158,259	161,627 ^r	166,586
Energy use, final demand ^{±±}	2,326,394	2,345,928	2,518,002	2,541,994 ^r	2,700,607



Manufacturing industries

Industrial consumption of energy survey

- terajoules (TJ) unit and NAICS classification
- non-energy and energy consumption
- coal, natural gas, electricity, HFO, LPG and coke

Petroleum report (provincial \$/litre) and provincial Input Output expenditure

- derive number of litres bought and transform it into TJ
- diesel, motor gasoline and light fuel oil
 - ~ 20% of total energy consumption



Mining industries

Annual Census of mines

- conducted by Natural Resources Canada
- census of all mines for various fuel use (except coal)
- physical units and SIC classification

~ 2% of total energy consumption

The control of the co



Various industries

Report on Energy Demand and Supply

- Aggregated demand categories (no NAICS, SIC or IO structure), and energy and non-energy use.
- amounts are moved into their appropriate industries (non-energy, producer consumption and conversion)

Electric Power Thermal Generating Station Fuel Consumption Survey

- Own production of electricity
 - ~ 40% of total energy consumption





Transportation industries

Annual Air Carrier, Trucking, Passenger Bus and Urban Transit, and Rail surveys

physical units and NAICS classification

~ 13% of total energy consumption

PARRISES A CYTER SERVICES
TRAVEL & ENTRE ANABERT

TRAVEL & ENTRE ANABERT

K. WILLEAME ORGANIZATIONS

1. C. WILLEAME EDUCATIONAL SERV.

1. C. WILLEAME EDUCATIONAL SERV.





<u>Industries not surveyed above</u>

Residual allocation based on input-output expenditures and unused availability

~ 25% of total energy consumption



Final Output: Energy Use

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

Physical flow account for energy use

annual (terajoules)

Data table

Add/Remove data

Manipulate

Download Related information

Help

The data below is a part of CANSIM table 153-0113. Use the Add/Remove data tab to customize your table.

Selected items [Add/Remove data]

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
Connect activities for mining and all and one outstation	100 200	07 750	102.00

Final Output: Energy Intensity

Table 153-0115^{1, 2, 3, 4, 5, 6}

Direct plus indirect energy and greenhouse gas emissions intensity, by industry

annual (data in thousands)

Add/Remove data Manipulate Download Related information

The data below is a part of CANSIM table 153-0115. Use the Add/Remove data tab to customize your table.

Selected items [Add/Remove data]

Geography= Canada

Intensity = Direct plus indirect energy intensity (gigajoules per thousand current dollars of production)

Sector	2009	2010
Total, industries	5.24	5.11
Crop and animal production	12.00	12.60
Forestry and logging	8.26	8.47
Fishing, hunting and trapping	8.33	8.67
Support activities for agriculture and forestry	10.92	10.76
Oil and gas extraction	17.29	15.27
Coal mining	6.57	6.81
Metal ore mining	11.57	6.03
Non-metallic mineral mining and quarrying	7.00	5.99
Support activities for mining and oil and gas extraction	9.14	6.94
Electric power generation, transmission and distribution	28.32	27.37

Final Output: Demand-based perspective

Table 153-0129^{1, 2, 5}

Physical flows by final demand category

annual

Data table Add/Remove data Manipulate Download Related information Help

The data below is a part of CANSIM table 153-0129. Use the Add/Remove data tab to customize your table.

Selected items [Add/Remove data]

Geography= Canada

Flow = Energy use by final demand category (terajoules)2

Sector	2009	2010	2011
Total, industries and households	10,353,292	10,547,712	10,780,442
Personal expenditure (households) ⁴	4,902,659	4,888,088	4,965,688
Non-profit institutions serving households' consumption expenditure	122,127	113,261	121,665
Government net current expenditure	796,762	824,216	841,656
Gross fixed capital formation	991,948	1,086,842	1,093,907
International exports	3,539,796	3,635,304	3,757,526

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 - Analysis

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.

Quality control - Bridge Tables

-	Α	В	D		G	Н		J	K	L	М	N	(P	Q		9 T	U	٧	V X	Z	AB A
1			RESD fuel type	MEFA fuel type		Impact of other data sources					Re-	allocation of activ	ities	Acc	ounting adju:	tments			Final MEFA		
	ine# S- Plus	MEFA fuel #3 - Natural gas, 2006p (TJ)	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	Net adjustment due to other data sources	Energy transformation	Producer consumption	Transportation	Foreign use of fuels	Stock change	Other adjustments	Total final adjustmant	Benchmark	Energy Use Account
3		Production	7,190,199	7,190,199																	
4		Exports	3,898,248 368,569	3,898,248																	
0		Imports	368,569	368,569																	
b 2		Inter-regional transfers Stock variation	-28,499	-28,499																	
-		Inter-product transfers	-28,499 -75,367	-28,499 -75,367																	
0		Other adjustments	-213.857	-213.857																	
10		Availability	3,399,789	3,399,789		-157,044					-31,878									3,210,867	
11		Stock change	0,000,100	0,000,100		101,011					0,010									0,210,001	
12	10	Transformed to electricity by utilities	233,518	233,518																233,518	233,518
13	11	Transformed to electricity by industry	82,028	82,028							-82,028	-82.028							-82,028	200,010	200,010
14	12	Transformed to coke and manufactured gases	02,020	02,020							-02,020	-02,020							-02,020		
15		Transformed to refined petroleum products	29,308	29,308							-29,308	-29.308							-29,308		
16		Transformed to steam generation	19,547	19,547							-19,547	-19,547							-19,547		
17	15	Net supply	3,035,387	3,035,387																	
18	16	Producer consumption	629,691	629,691										-629,691					-629,691		
19	17	Non-energy use	157,044	157,044		-157,044						-157,044							-157,044		i -
20		Energy use, final demand	2,248,657	2,248,657																	
21		Total industrial	952,876	952,876																	
22		Total mining and oil and gas extraction	258,814	258,814	10,294				-185,069	-107	109,101	-65,782		629,691					563,909	822,723	822,723
23		Total manufacturing	675,344	675,344																	
	22	Pulp and paper manufacturing	63,554	63,554	11,830							11,830							11,830	75,384	75,384
25	23	Iron and steel manufacturing	64,192	64,192	8,492							8,492							8,492	72,684	72,684
26 27		Aluminum and non-ferrous metal manufacturing	25,944 2,471	25,944 2,471	10,991 186							10,991							10,991 186	36,935 2,658	36,935 2,658
28		Cement manufacturing Refined petroleum products manufacturing	49,455	49,455	63							186							63	49,518	49,518
29	27	Chemicals and fertilizers manufacturing	120,868	120,868	26,280							26,280							26,280	147,149	147,149
	28	All other manufacturing	348,860	348,860	-122,646							-122,646							-122,646	226,214	226,214
31	29	Forestry and logging and support activities for forestry		340,000	5				21		55	122,040							81	81	81
32	30	Construction	18,718	18,718	267				1.053	-3	-16,069	-14,752							-14,752	3,966	3,966
33		Total transportation	190,299	190,299					4										1.10		
34		Railways	,	0	37				145		390	572							572	572	572
35	33	Total airlines		Ö																	
36		Canadian airlines		0	256				1,010	-3	2,710	3,973							3,973	3,973	3,973
37		Foreign airlines		0																	
38		Total marine		0																	
39		Domestic marine		0	233				921	-2	2,471	3,622							3,622	3,622	3,622
40		Foreign marine	400	0																	
41		Pipelines	188,420	188,420	555				2,193 5,465	-6	5,885 14,667	8,627							8,627	197,047	197,047
42 43		Road transport and urban transit	1,878	1,878	1,384				5,465	581	14,667	22,097							22,097	23,975	23,975
		Retail pump sales Agriculture	20,474	20,474	2,317				9,150	-24	4,083	15.526							15,526	36,000	36,000
		Agriculture Residential	617,441	617,441	2,317				3,150	-24	4,083	10,026							10,026	617,441	617,441
46		Public administration	21,822	21,822	10,309				40,716	-107	87,445	138.363							138,363	160,186	160,186
		Commercial and other institutional	445,745	445,745	31,498				124,400	-328		43.670							43,670	489,416	489,416
		Statistical difference	-6	-6	7,649				-6	-020	169	7.813							7.813	7,807	7,807
49	.,		·		1,010				·		100	1,010						Balanced tota		3,210,867	3,210,867
50																		Dululloca (Ott		0,210,001	0,2.10,001

Energy Accounts Uses

Calculation of GHG emissions accounts

Impact analysis for International Trade

CGE modelling

Input-Output modelling

Energy use and intensity analysis

Etc...

Energy Accounts Uses: Exercise

Calculate a GHG emissions account based on the provided energy supply and use tables.

SUPPLY TAB	LE									
				Electricity	Other					
	UNIT: Petajoule (10 ¹⁵)	Agriculture and forestry	Mining	supply	industries	Households	Inventories	Imports	Environment	Total
Natural inpu	uts Extraction of coal								200	200
	Electricity from solar panels and wind mills								36	36
	Wood								20	20
Products	Coal		198							198
	Gasoline							40		40
	Electricity			156						156
	Fuel wood	20								20
Residuals	Losses during extraction (coal)		2							2
	Losses during distribution (electricity)			9						9
	Losses during transformation			66						66
	Other losses (due to end use)									
	gasoline	15	3	1	14	12				45
	electricity	4	5		77	24				110
	fuel wood					20				20
Total supply	of energy	39	208	232	91	56	0	40	256	922

USE TABLE

				Electricity	Other					
	UNIT: Petajoule (1015)	Agriculture and forestry	Mining	supply	industries	Households	Inventories	Exports	Environment	Total
Natural inputs Extraction of coal			200							200
	Electricity form solar panels and wind mills			36						36
	Wood	20								20
Products	Coal			195			3			198
	Gasoline	15	3	1	14	12	-5			40
	Electricity	4	5		77	24		46		156
	Fuel wood					20				20
Residuals	Losses during extraction (coal)								2	2
	Losses during distribution (electricity)								9	9
	Losses during transformation								66	66
	Other losses (due to end use)									
	gasoline								45	45
	electricity								110	110
	fuel wood								20	20
Total use of	energy	39	208	232	91	56	-2	46	252	922

Questions?

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