



What data across sectors?

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Identifying priorities for data collection



SUPPLY AND CONSUMPTION	Million tonnes of oil equivalent										Total
	Coal	Crude oil ¹	Oil products	Natural gas	Nuclear	Hydro	Geotherm./Solar/etc.	Biofuels/Waste	Electricity	Heat	
Production	6.96	124.69	-	30.43	2.75	2.64	4.32	8.67	-	-	180.46
Imports	5.64 e	0.51	42.81	35.55	-	-	-	-	0.19	-	84.70
Exports	-0.00	-65.73	-9.33	-0.02	-	-	-	-	-0.17	-	-75.25
Intl. marine bunkers	-	-	-0.90	-	-	-	-	-	-	-	-0.90
Intl. aviation bunkers	-	-	-3.71	-	-	-	-	-	-	-	-3.71
Stock changes	-0.21 e	-0.13	-0.02	0.22	-	-	-	-	-	-	-0.15
TPES	12.38	59.34	28.85	66.18	2.75	2.64	4.32	8.67	0.02	-	185.16
Transfers	-	-6.07	7.08	-	-	-	-	-	-	-	1.01
Statistical differences	-0.40	0.05	1.83	-3.67	-	-	-0.00	0.00	0.97	-	-1.22
Electricity plants	-9.01 e	-	-7.50	-31.67	-2.75	-2.64	-4.08	-1.40	26.09	-	-32.96
CHP plants	-	-	-0.65	-4.54	-	-	-	-0.34	1.45	-	-4.08
Heat plants	-	-	-	-	-	-	-	-	-	-	-
Blast furnaces	-0.73 e	-	-	-	-	-	-	-	-	-	-0.73
Gas works	-	-	-0.33	0.23	-	-	-	-	-	-	-0.09
Coke/pet. fuel/BKB/PB plants	-0.01 e	-	-	-	-	-	-	-	-	-	-0.01
Oil refineries	-	-53.41	51.52	-	-	-	-	-	-	-	-1.89
Petrochemical plants	-	0.06	-0.07	-	-	-	-	-	-	-	-0.00
Liquefaction plants	-	-	-	-	-	-	-	-	-	-	-
Other transformation	-	0.04	-	-	-	-	-	-	-	-	0.04
Energy industry own use	-0.38 e	-	-5.50	-12.28	-	-	-	-	-1.85	-	-20.01
Losses	-	-	-	-	-	-	-	-	-3.44	-	-3.44
TFC	1.85	-	75.24	14.26	-	-	0.24	6.92	23.25	-	121.76
INDUSTRY	1.77	-	7.07	12.75	-	-	0.01	0.91	12.55	-	35.06
Iron and steel	0.72 e	-	0.11	3.01	-	-	-	-	0.46	-	4.30
Chemical and petrochemical	-	-	0.44	2.85	-	-	-	-	0.51	-	3.80
Non-ferrous metals	-	-	-	-	-	-	-	-	0.07	-	0.07
Non-metallic minerals	0.17	-	3.05	1.34	-	-	-	-	1.00	-	5.57
Transport equipment	-	-	0.02	0.12	-	-	-	-	0.23	-	0.37
Machinery	-	-	0.05	-	-	-	-	-	-	-	0.05
Mining and quarrying	-	-	0.35	0.21	-	-	-	-	0.97	-	1.53
Food and tobacco	-	-	0.22	0.37	-	-	-	0.79	0.20	-	1.57
Paper, pulp and printing	-	-	0.27	0.70	-	-	-	-	0.29	-	1.25
Wood and wood products	-	-	-	-	-	-	-	-	-	-	-
Construction	-	-	0.27	-	-	-	-	-	0.05	-	0.32
Textile and leather	-	-	-	-	-	-	-	-	0.01	-	0.01
Non-specified	0.88	-	2.29	4.16	-	-	0.01	0.12	8.77	-	16.23
TRANSPORT	-	-	52.82	0.02	-	-	-	-	0.10	-	52.94
Domestic aviation	-	-	0.01	-	-	-	-	-	-	-	0.01
Road	-	-	51.28	0.02	-	-	-	-	-	-	51.28
Rail	-	-	0.67	-	-	-	-	-	0.10	-	0.77
Pipeline transport	-	-	-	-	-	-	-	-	-	-	-
Domestic navigation	-	-	0.88	-	-	-	-	-	-	-	0.88
Non-specified	-	-	-	-	-	-	-	-	-	-	-
OTHER	-	-	10.55	0.98	-	-	0.23	6.01	10.60	-	28.37
Residential	-	-	5.81	0.73	-	-	0.14	6.01	5.07	-	17.76
Comm. and public services	-	-	1.56	0.25	-	-	0.09	-	2.06	-	3.97
Agriculture/Forestry	-	-	0.43	-	-	-	-	-	0.03	-	0.44

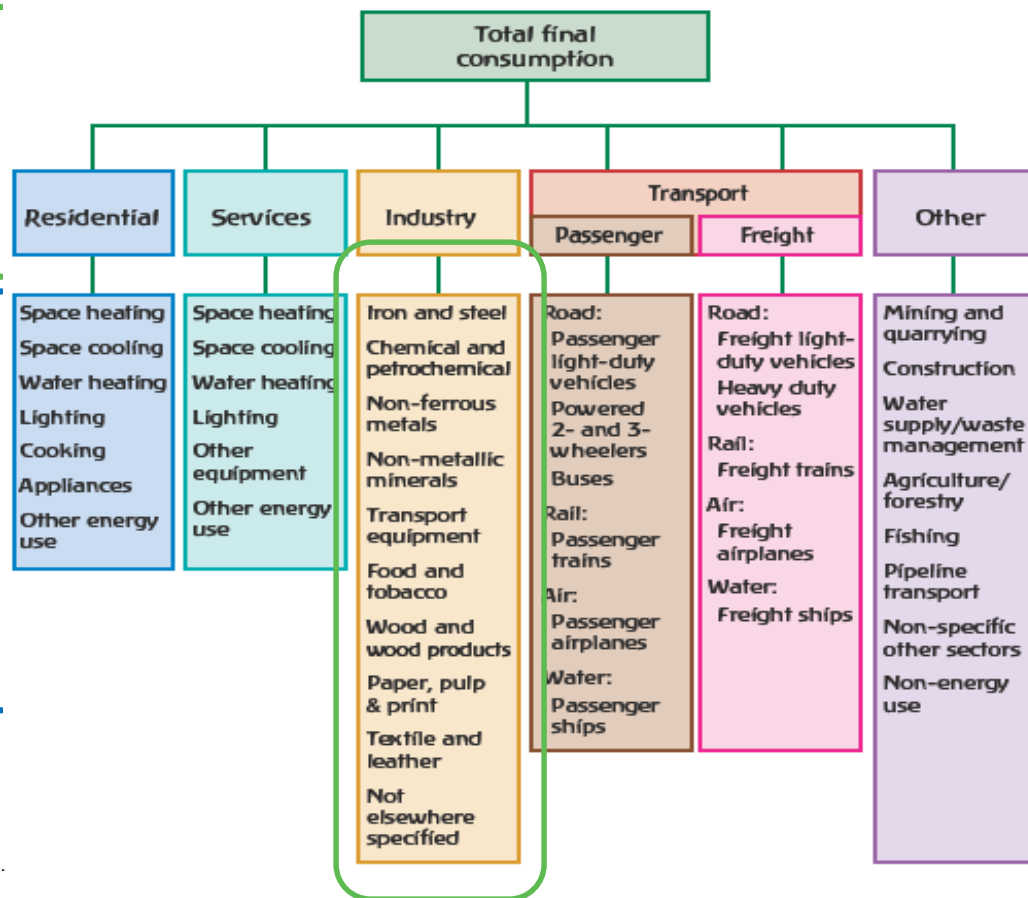
Mexico energy balance for 2016

Source: IEA World Energy Balances 2018, based on data submitted by SENER

Understanding end-uses across sectors

Energy balances:
Sectoral consumption

Energy efficiency:
End-use consumption



IEA Energy Efficiency Indicators:
Fundamentals on Statistics, 2014

The end-use data collected and disseminated by the IEA



Sector		End use	Energy product	Energy indicator
Residential		Space heating	Oil	Per capita energy intensity (GJ/cap)
		Space cooling	Natural Gas	Per dwelling energy intensity (GJ/dw)
		Water heating	Renew. & waste	Per floor area energy intensity (GJ/m2)
		Cooking	Heat	Per unit equipment energy intensity (GJ/unit)
		Lighting	Electricity	Per services employee energy intensity (GJ/employee)
		Appliances	Electricity	Per VA energy intensity (GJ/USD PPP 2010)
		Other	Other	Per physical output energy intensity (GJ/t)
Services		Space heating		Fuel intensity (liters/100 vkm)
		Space cooling	(...)	Passenger-kilometer energy intensity (MJ/pkm)
		Lighting		Tonne-kilometer energy intensity (MJ/pkm)
		Other		Vehicle-kilometer energy intensity (MJ/pkm)
Industry		Textiles		Other
		Chemicals		
		Paper		
		Textiles		
		Basic metals		
		Other		
Transport		Passenger cars		
		Buses		
		Passeng. trains		
		Trucks		
		Passeng. trains		
		Other		

Typical questions

- What **end-use** consume most of the energy (cooking/heating...)?
- What is the **share of LPG** used for cooking?
- Are we using energy for **space heating** more efficiently over time?

Key data

Energy end-use data:

- Space heating*
- Space cooling*
- Water heating
- Cooking
- Lighting
- Appliances energy consumption:
 - Refrigerator
 - Freezer
 - Dishwasher
 - Clothes washer
 - Clothes dryer
 - TV
 - Computers

* Temperature corrected, using HDD & CDD

Activity data:

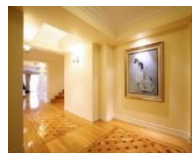
- Population
- Number of dwellings
- Residential floor area
- Appliances stock



of people



of dwellings



surface



of appliances

Typical questions

- What are the **shares of passenger and freight**?
- How much **energy** is spent to transport **one passenger on a distance of one kilometer**?
- Is it **more intensive** to travel in my country – by bus, car or train?

Key data

Energy end-use data:

- Transport segment
 - passenger
 - freight
- Transport modes
 - road,
 - rail,
 - air,
 - water,
 - etc.

Activity data

- Vehicle stocks
- Passenger-kilometers
- Tonne-kilometers

Passenger-km or tonne-km



Occupancy



Load factor



Vehicle
stock



Distance
travelled

Typical questions

- **How much energy is used** to produce the main types of goods ?
- Why is the average **manufacturing energy intensity** in my country so high/low?
- How did the **energy intensity** in key sub-sectors **change** over time?

Key data

Energy consumption data

(major ISIC sub-sectors):

- Chemical
- Iron and steel
- Non-ferrous metals
- Aluminum
- Non-metallic minerals
 - Cement
 - Clinker
- Pulp and paper
 - Pulp
 - Paper
- etc.

Activity data:

- Value added
- Physical production



Volume



Value added

Data detail depends on priority

Industry

Figure 6.6 • Pyramid of industry sub-sectors indicators

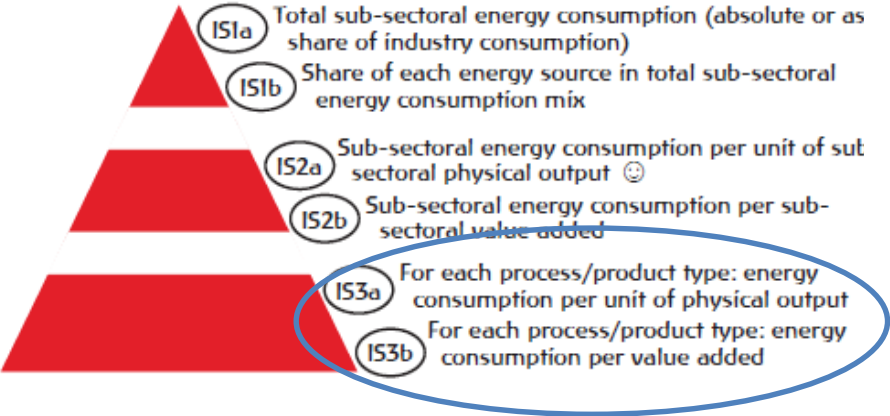


Table 6.1 • Examples of typical processes or product types for selected industry sub-sectors

Sub-sector	Processes/product types	Sub-product
Iron and steel	Basic Oxygen Furnace (BOF) Electric Arc Furnace (EAF) Direct Reduced Iron (DRI)	
Chemical and petrochemical	Ethylene Propylene Benzene, toluene, xylene (BTX) Ammonia Methanol Butadiene	
Non-ferrous metals	Aluminium Copper	Bauxite Alumina Primary Recycled
Non-metallic minerals	Cement Clay brick and tile Building ceramics Glass Lime	Clinker (wet and dry) Cement
Pulp, paper and print	Pulp Recovered paper Paper and paperboard	Chemical pulp Mechanical pulp Household and sanitary paper Newsprint Printing, writing paper Wrapping, packaging paper, paperboard

Data detail depends on priority - Services

Figure 5.8 • Pyramid of services water heating indicators

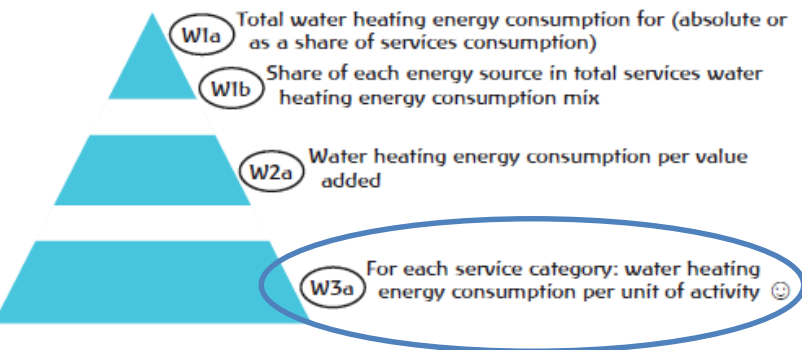


Table 5.1 • Examples of categories within the services sector and respective units of activity

Service category	Unit of activity
Schools	Number of students, number of occupants
Hospitals	Bed capacity, number of occupied beds
Hotels	Number of rooms, number of nights, number of employees, floor area
Restaurants	Number of meals
Offices	Number of employees, floor area
Retail	Number of employees, floor area

Figure 7.9 • Pyramid of freight transport indicators

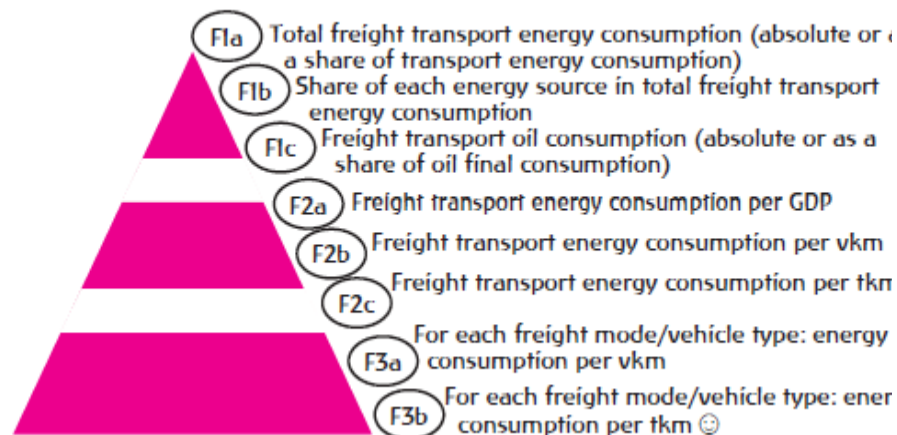
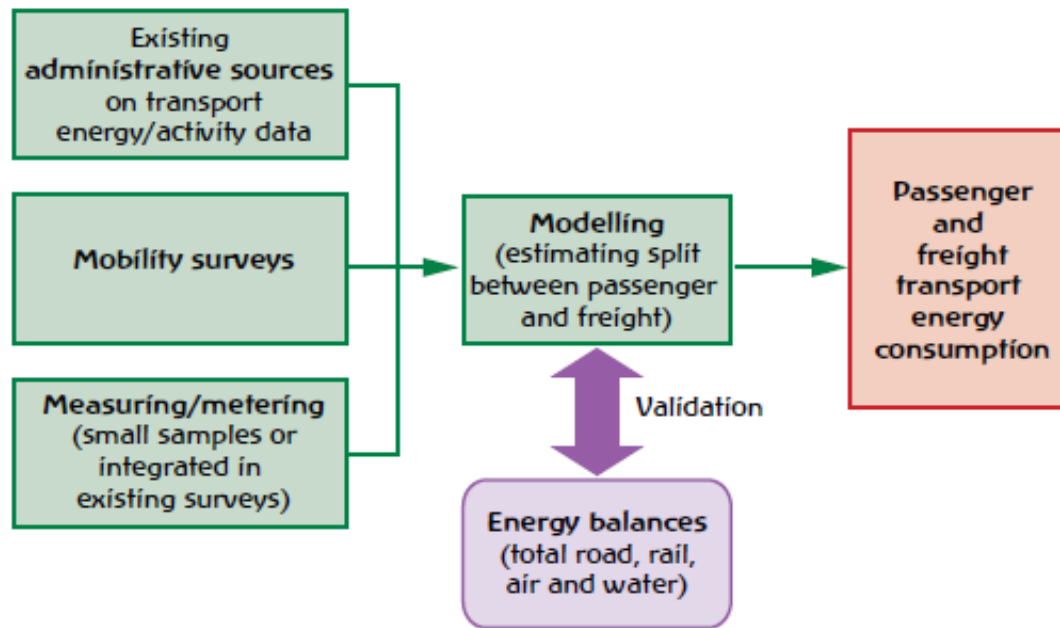


Table 7.1 • Selected modes/vehicle types by segment and sub-sector

Segment	Passenger	Freight
Sub-sector		
Road	Powered 2- to 4- wheelers Passenger light-duty vehicles (PLDVs) Buses	Freight light-duty vehicles Heavy-duty vehicles (HDV) Other
Rail	Passenger trains	Freight trains
Air	Passenger airplanes	Freight airplanes
Water	Passenger ships	Freight ships

For each vehicle type, a further disaggregation into fuel type can be performed, for example into gasoline and diesel (but biofuels, CNG and electricity are also possible) for cars; gasoline and diesel for light freight, electricity and diesel for trains, etc.

Figure 3.7 • *Schematics of a transport model: Sources, output and validation*



What are the priority indicators to be developed in each sector?

How can we strengthen end-use and activity data to develop such indicators?

What potential synergies between statistics and policy experts, as well as across institutions could enhance outcomes?



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