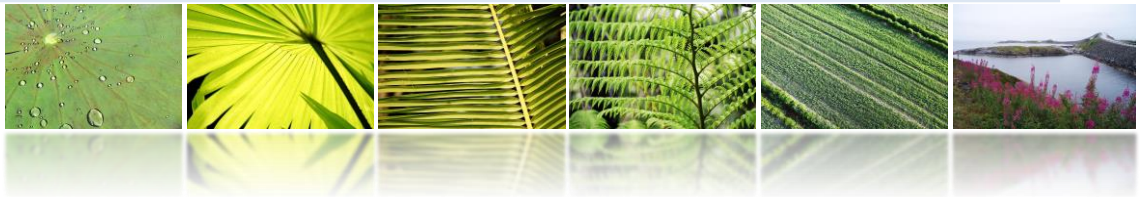
United Nations
Statistics Division

Data sources

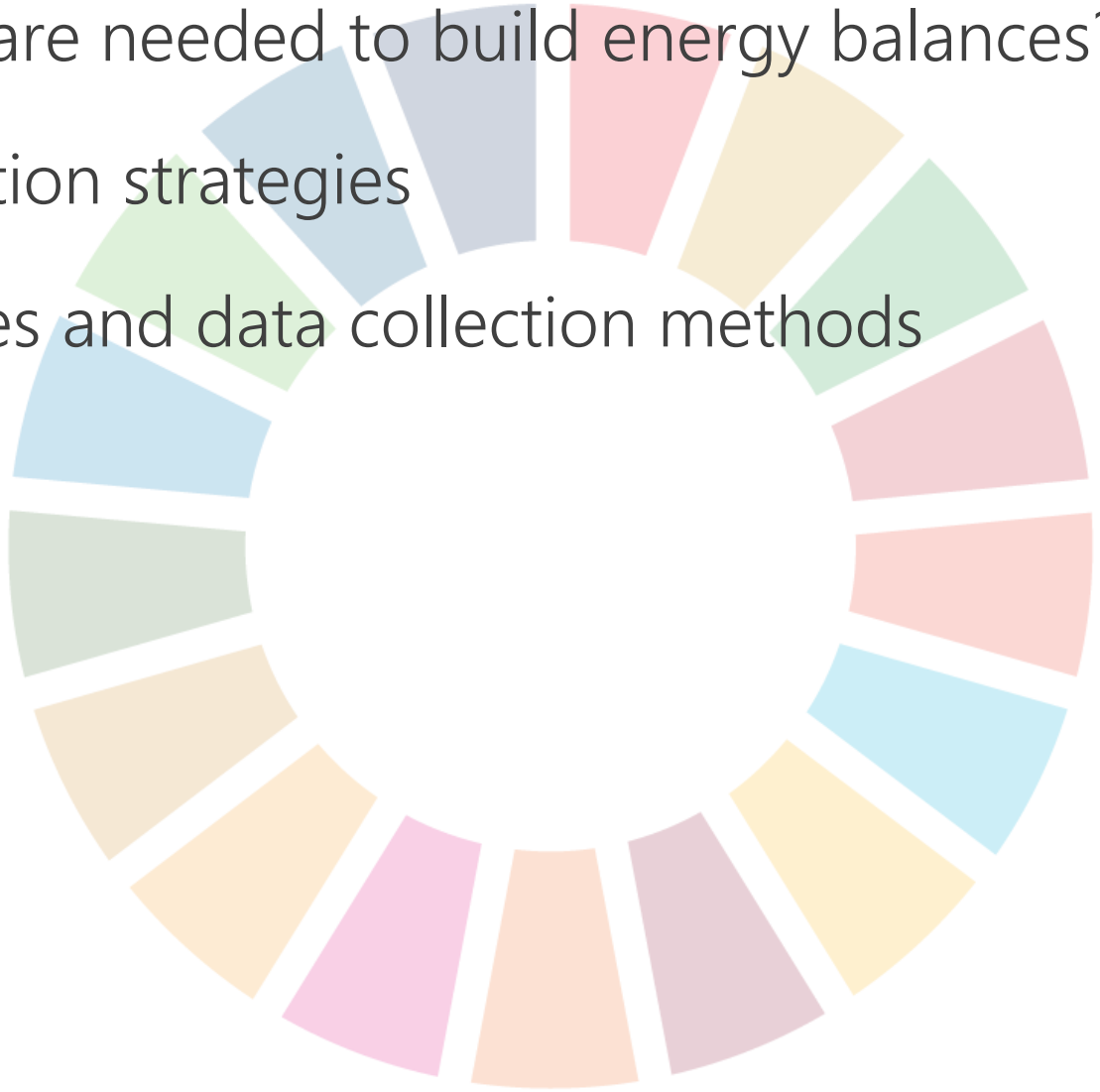


UNSD

Beirut, Lebanon, 2 July 2019
UNSD/ESCWA Technical Assistance to Lebanon

Content

- What data are needed to build energy balances?
- Data collection strategies
- Data sources and data collection methods



Introduction

The collection of energy data must take into account:

- Scope of data items (products and flows)
- Selection of data sources;
- Coverage of statistical units;
- Organization of data collection processes;
- Reliability of collection methods.

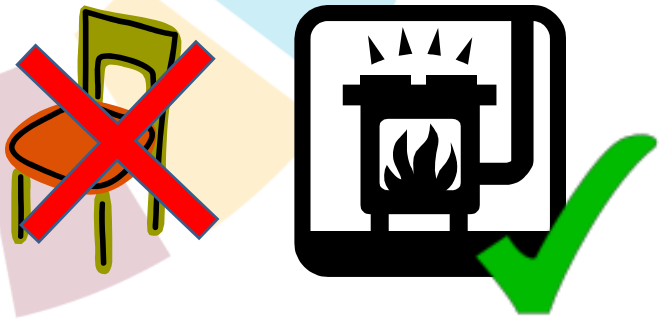
What data are needed to build energy balances?

Energy products

- *IRES 2.9: "Energy products" refers to products exclusively or mainly used as a source of energy. Biomass, waste etc. included only when used for energy purposes*

Practically:

- *Wood, or ethanol excluded when not used as an energy product.*
- *Lubricants (fossil non-energy products) included (allowing refinery balance checks)*



Energy products

- Oil (gas diesel, motor gasoline, jet kerosene, LPG, bitumen, etc.).
- Coal (hard coal, brown coal, coal products, peat and peat products).
- Gases (natural gas, manufactured gases)
- Biofuels and waste
- Solid biofuels (Fuelwood, Charcoal, Animal waste, Olive cake, etc.)
  - Liquid biofuels (biogasoline, biodiesel, bio jet kerosene)
  - Biogases
  - Industrial and municipal waste
- Electricity and heat
  - (from combustible fuels; hydro, solar thermal, solar PV etc.)
  - (private, public producers, households)

What flows are collected annually?

Production
- from plants/from refinery
- electricity and heat by source and type of plants

Receipt from other sources

Import and Export

Marine Bunkers

Stock Changes

=Total Energy Supply

Transfers and recycled products

Statistical Differences

Transformation Sector (21 sub-sectors)

Energy industries own use (17 sub-sectors)

Distribution Losses

Final Consumption =

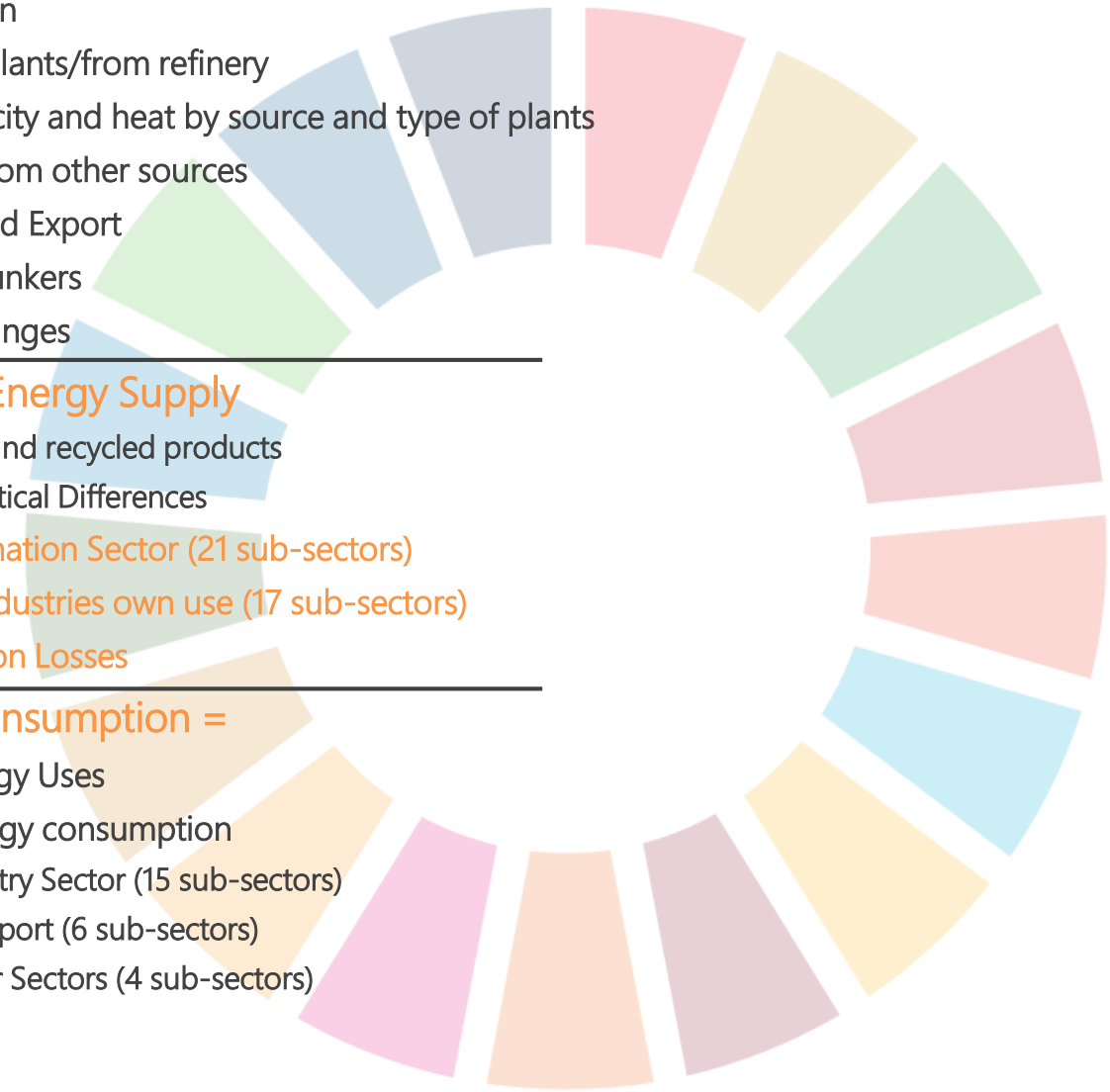
Non Energy Uses

Final energy consumption

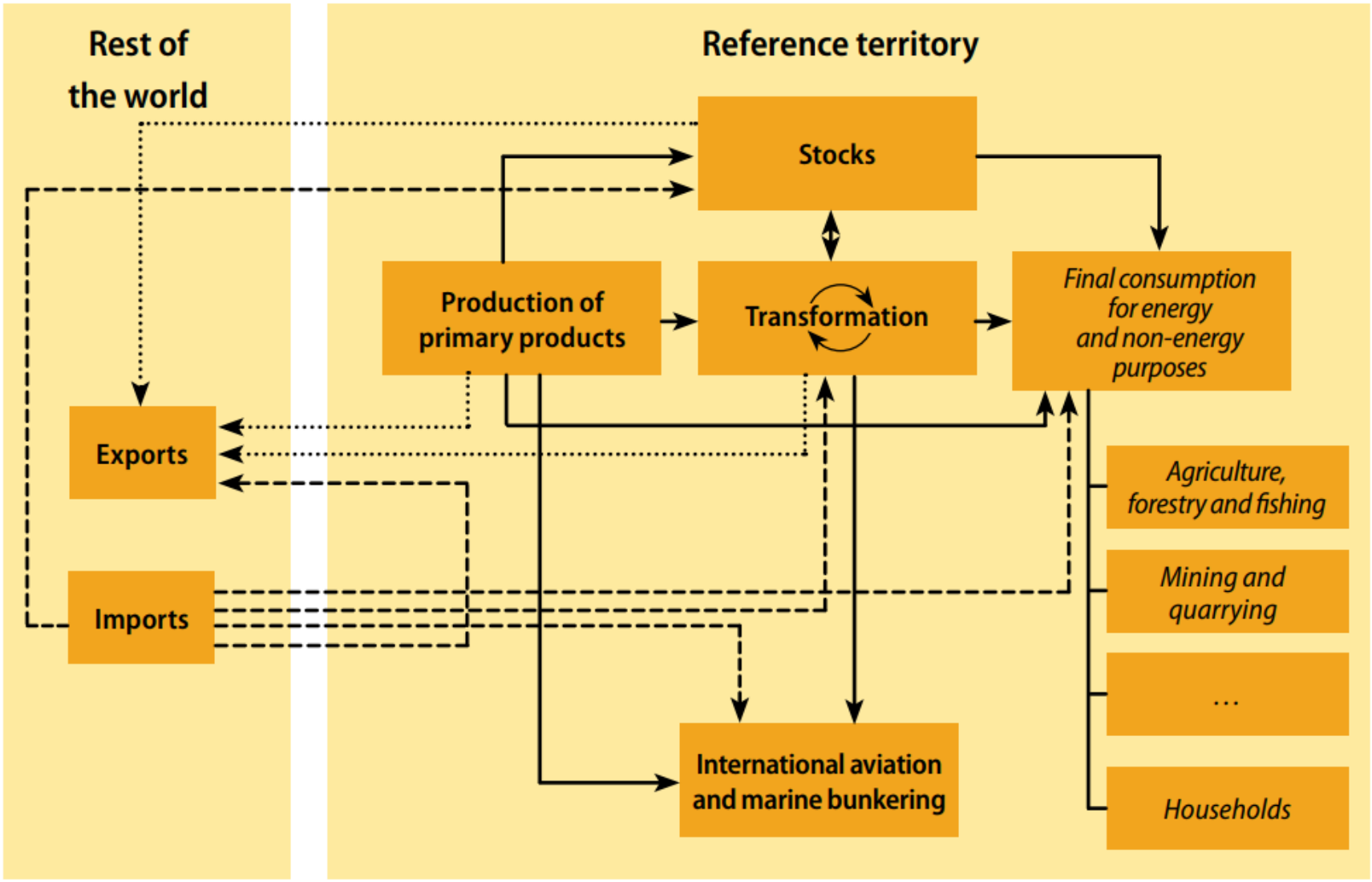
Industry Sector (15 sub-sectors)

Transport (6 sub-sectors)

Other Sectors (4 sub-sectors)



Energy flows



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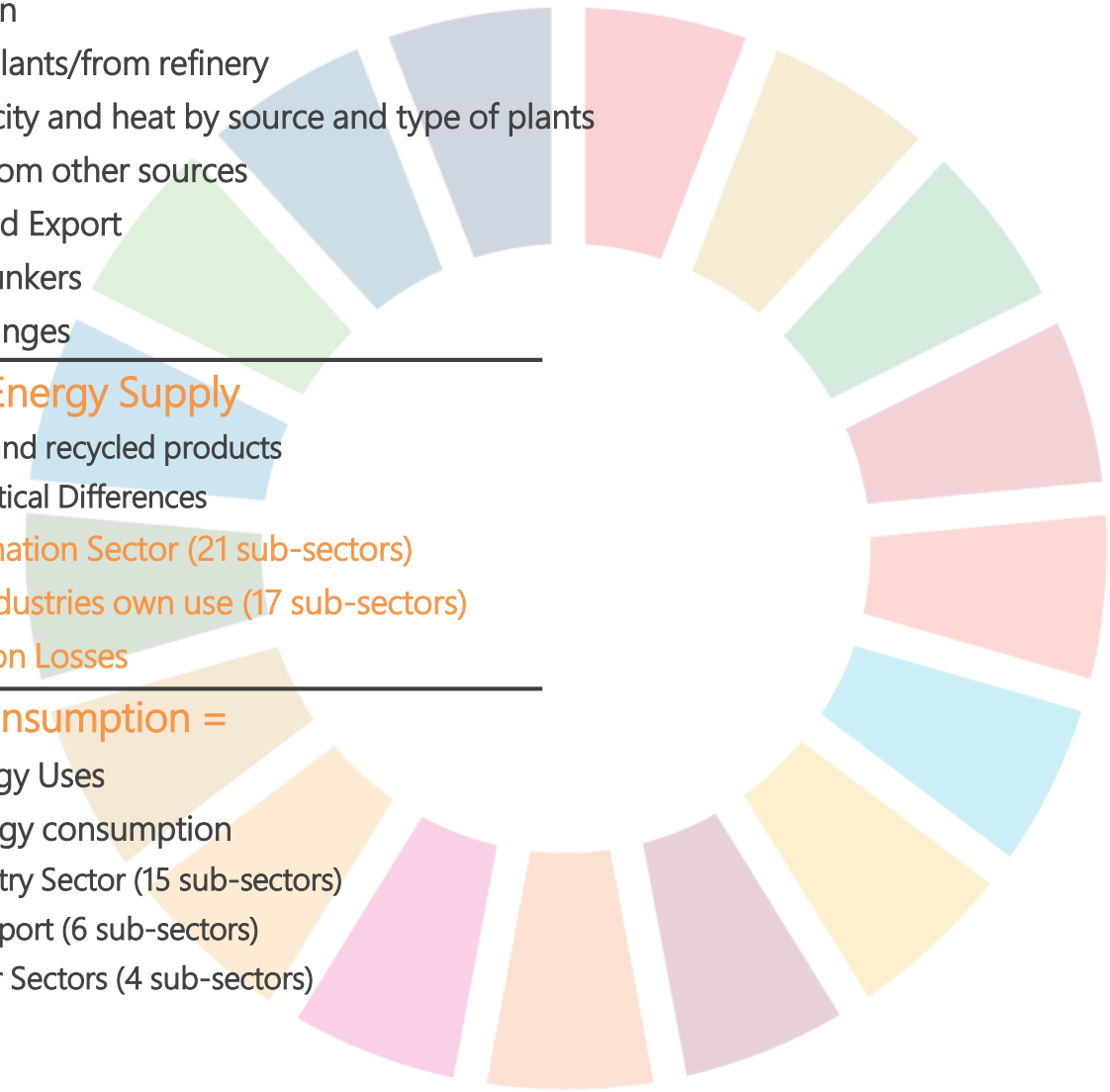


Commodity balances and CVs

Commodity balances - basic energy statistics

- combinations of products and flows
- flows grouped under the commodity header

Limitations of commodity balances

- different units/calorific values - commodities incomparable
- production double counted

Motor Gasoline; Metric tons, thousand	2014	2015
Production	3627	3939
Receipts from other sources	206	238
Imports	371	363
Exports	672	762
Stock changes	-56	-22
Total energy supply	3588	3800
Final consumption	3577	3800
Final energy consumption	3577	3800
Transport	3572	3796
Road	3572	3796

Natural Gas ; Terajoules	2014	2015
Production	173349	171329
Imports	451673	464842
Exports	2880	2112
Total energy supply	623574	640849
Transformation	83409	96802
Energy industries own use	53212	55607
Losses	1259	1237
Final consumption	484232	493534
Non-energy uses	95888	98600
Final energy consumption	388344	394934

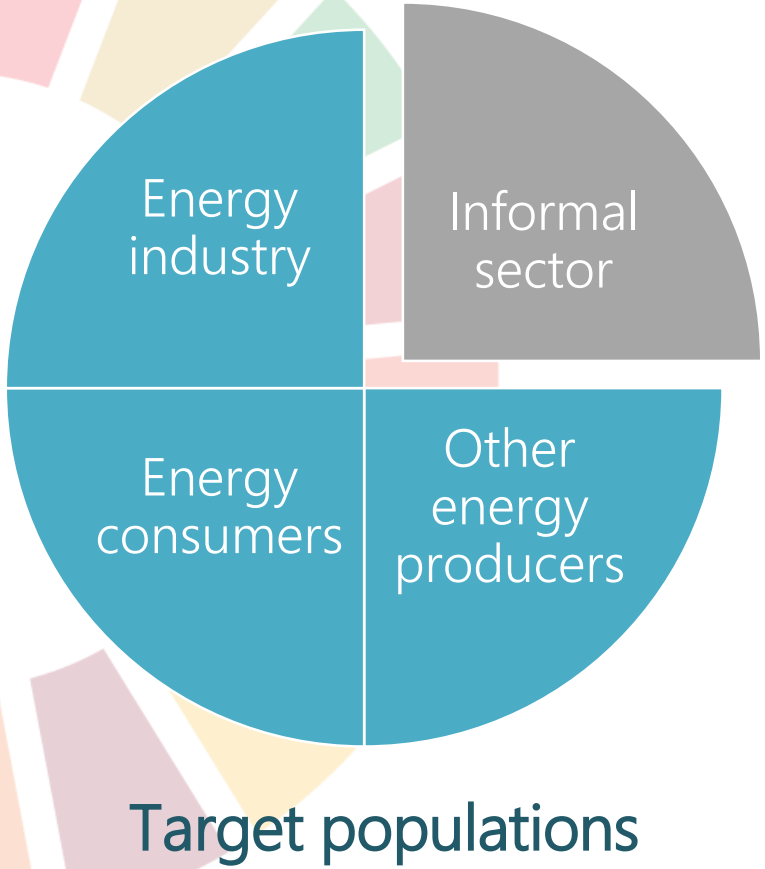
Fuelwood ; Cubic metres, thousand	2014	2015
Production	22044	22388
Total energy supply	22044	22388
Transformation	4657.8	4776.5
Transformation in electricity and heat	4657.8	4776.5
Final consumption	17386	17611
Non-energy uses		
Final energy consumption	17386	17611
Households	11544	11544

Data collection strategies

Data collection strategies

Scope and coverage of energy data collection involve:

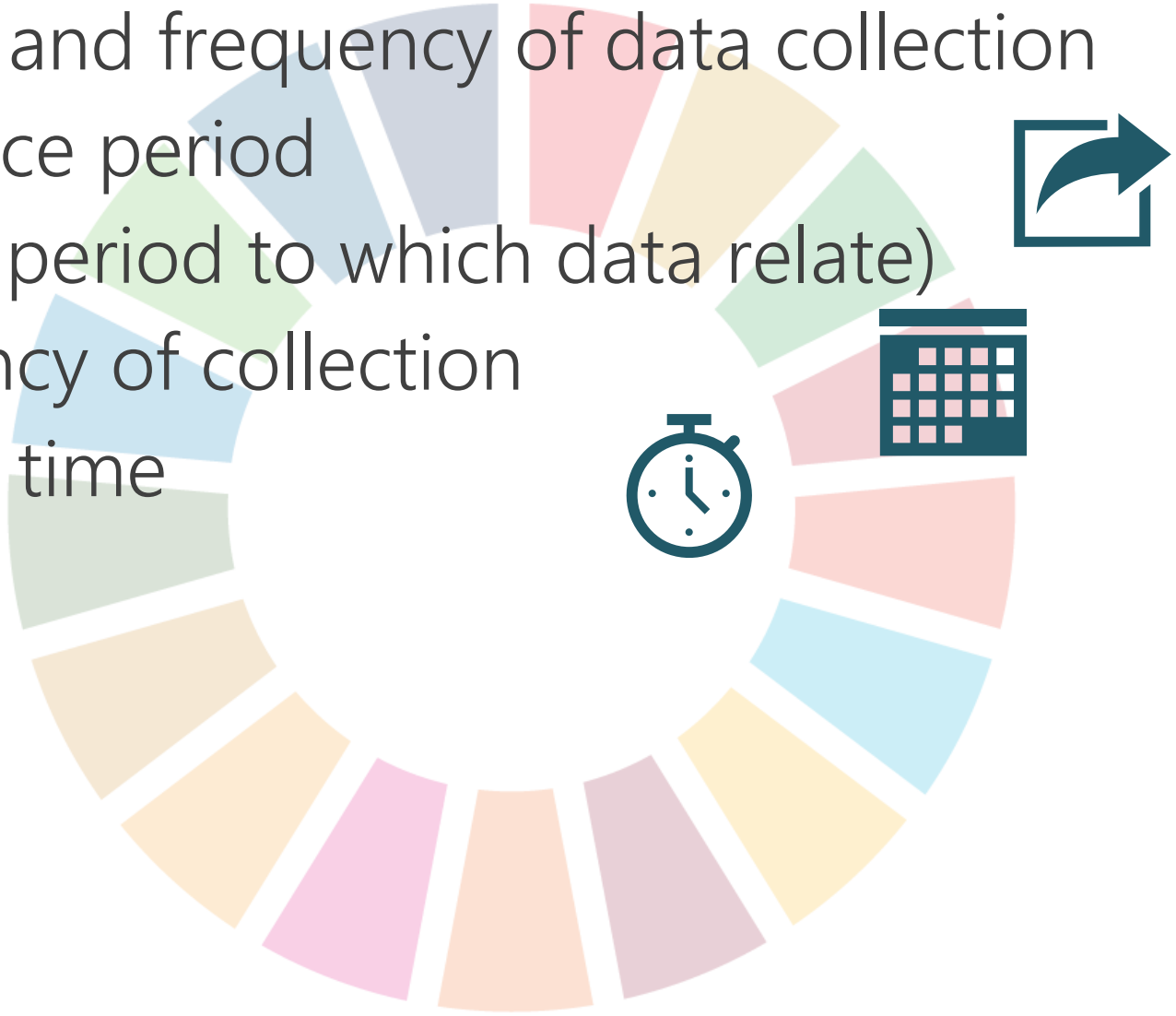
- Conceptual design;
- Target populations;
- Geographical coverage.



Data collection strategies

Periodicity and frequency of data collection

- Reference period
  (time period to which data relate)
- Frequency of collection
- Point in time



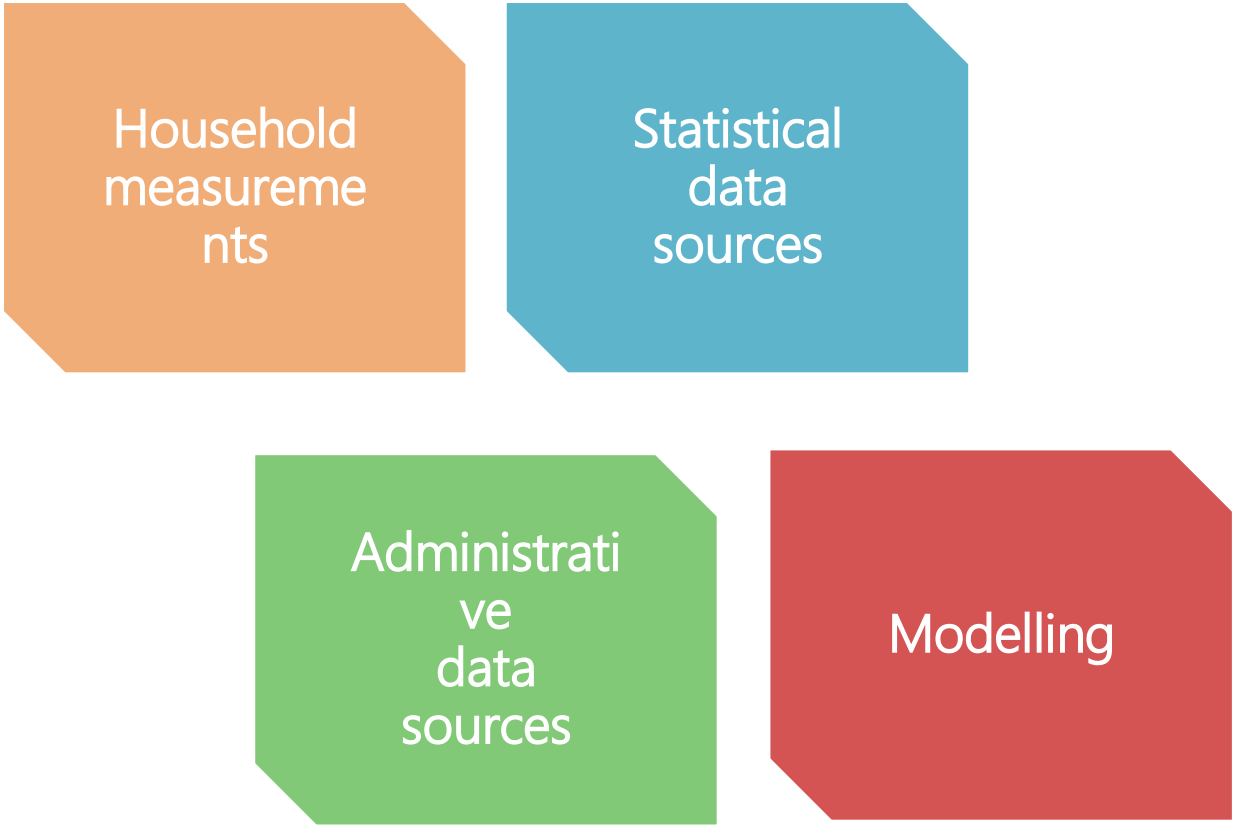
Organization of data collection

Fundamental steps in producing energy statistics:

- Identify the production, supply, transformation and consumption flows for each fuel product;
- Assess the potential data sources for each stage of the energy chain;
- Consider the most appropriate collection methods.

Data sources and data collection methods

Data sources and data collection methods



Data collection – administrative data sources

Public sector data

- Energy monitoring;
- Regulatory policies and audits;
- Assessment of policies, programmes, initiatives
- Taxes

Privately-owned data collected

- Trade associations;
- Energy research institutes.

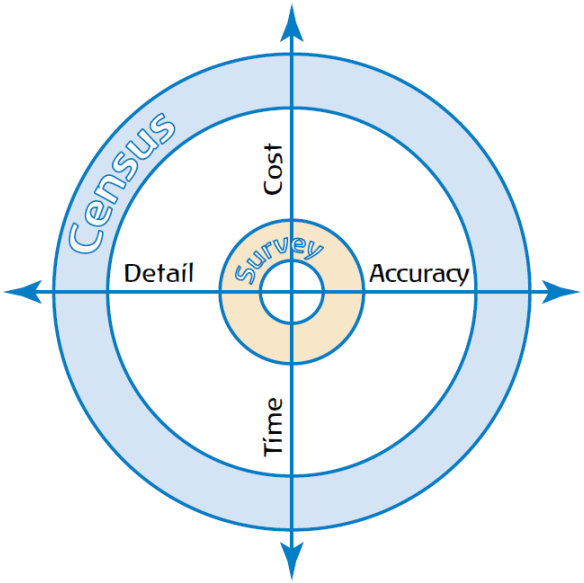
Data collection – statistical data sources

Sample surveys

- Enterprise surveys
- Household surveys
- Household-enterprise surveys

Census

- Enumerates all the targeted units in the universe.



Trade-off between survey and census

Source: IEA, Energy Efficiency Indicators: Fundamentals on Statistics

Data collection – survey rules

- Surveys are an important source of data, but they are costly, so collect only what is necessary.
- Limit collecting data to what is needed but collect it.

Data collection – adding to an existing survey

Adding questions to an existing survey is a good choice when:

- Information required is specific and restricted in volume;
- The complexity of the data is low and questions are self-explanatory;
- The survey targets a specific group.

Advantages of using an existing survey are:

- Less expensive than a new survey;
- Respondent burden is normally lower.

Data collection – survey rules

If no existing survey can be used for data collection, the second option is to create a 'new survey'.

Surveys are an important source of data, but they should be subject to certain rules:

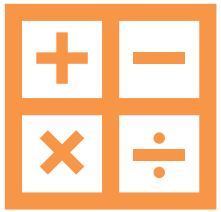
- Surveys are costly
- Good survey needs a proper design
- Think about respondents
- Plan ahead

Data collection – modelling

Reduces cost, lower survey frequency, reduces extent and complexity of data collection.

Modelling can be used for:

- Conversion to calendar years
- Extrapolation (e.g., using coefficients)
- Estimation of non-metered consumption or non-marketed fuels
- Estimation of consumption of biofuels
- Calculation of useful heat.

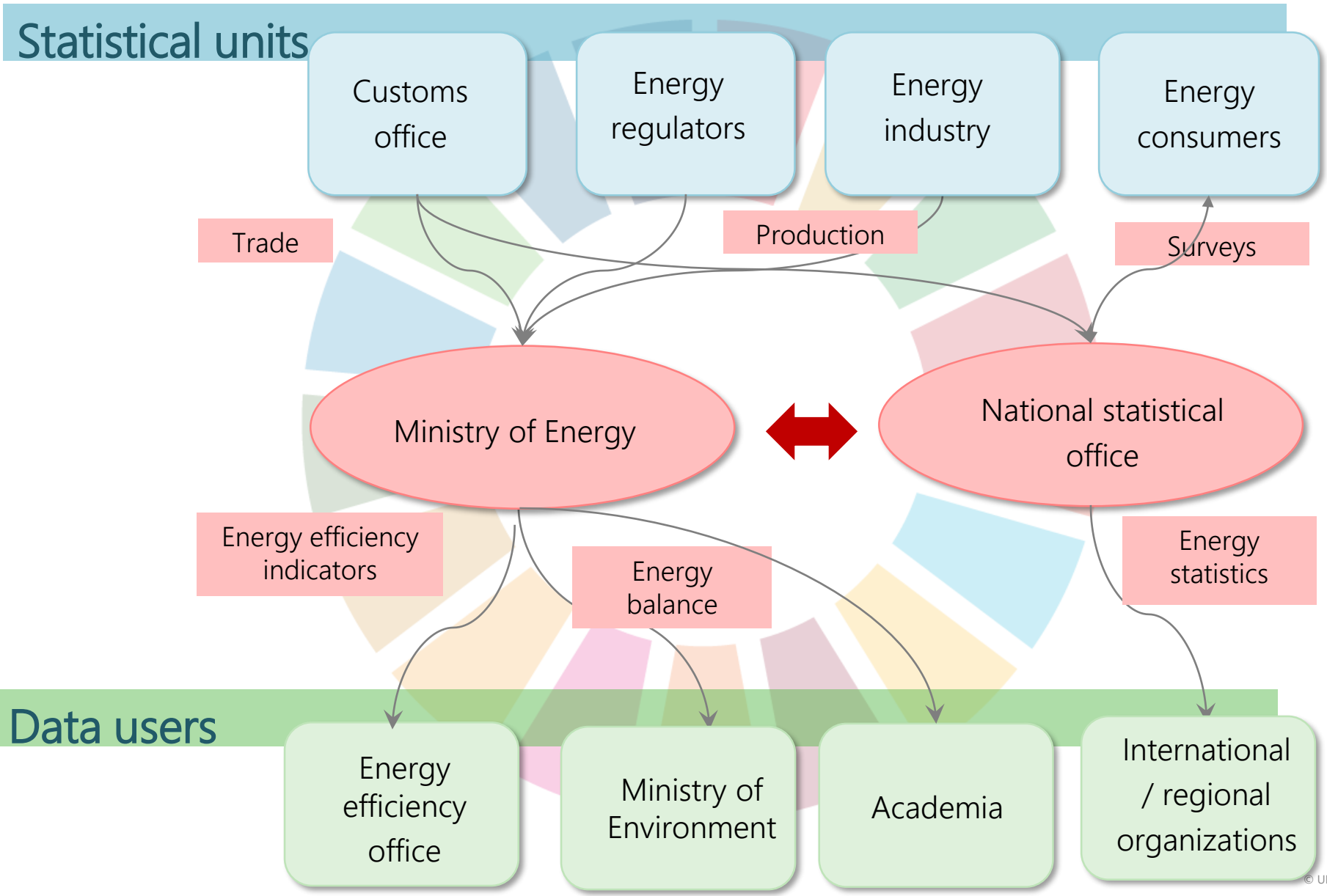


Data collection – household measurements

Characteristics of household measurements:

- Energy consumption data for households
- Applicable to energy products delivered through a grid (electricity, gas)
- Expensive (but maybe the electricity/gas distributor is already collecting these data)
- Only possible way to collect data on energy consumption by purpose (cooking, lighting, heating – important for energy efficiency indicators).

Energy data collection system – an example



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