

➤ Webinar 2: Producing climate change-related indicators on energy and emissions from the System of Environmental-Economic Accounting (SEEA) and other sources

➤ EFTA/UNECE Webinars on Climate Change-related Statistics for EECCA countries

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# ENERGY-RELATED INDICATORS

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## Energy-related DRIVERS indicators

Unece Energy-related DRIVERS indicators				
Sub-area	ID	Indicator	Tier	SEEA
National total	1a	Total energy use by the national economy	II	Energy
	1b	Total primary energy supply (TPES)	I	
	2a	Share of fossil fuels in total energy use by the national economy	III	Energy
	2b	Share of fossil fuels in total primary energy supply (TPES)	I	
	4	Total support for fossil fuels in relation to GDP	III	Transactions
Production	5a	Total energy intensity of production activities of the national economy	II	Energy
	6a	Total CO <sub>2</sub> intensity of energy used in production activities of the national economy	II	Energy Air emissions
Consumption	8a	Energy use by resident households per capita	I	Energy

*focus of this presentation*

Other energy-related indicators within EMISSIONS and MITIGATION indicators

# UNECE CCRI on energy - 1a - metadata

ID - Tier	1a - I
Indicator	Total energy use by the national economy
Indicator definition and description	This indicator represents <b>the amount of energy that is end used by resident units of a given economy.</b> End use refers to the final transformation stage of human energy use, i.e. afterwards the energy is no longer available for human use in the respective accounting period.
Unit of measure	Petajoule (PJ)
Coverage	All economic activities (production, consumption, accumulation) undertaken <b>by resident units</b>
Spatial aggregation	<b>National economy</b>
Policy context and rationale	Suitable indicator for national and international energy- and climate-related policies. <b>Due to its coherence with national accounts it is better suited than 'primary energy supply' to be related to GDP.</b> Moreover, it can be related to gross value added of production activities; i.e. used to compile energy intensities of NACE (or ISIC) industries which is not feasible with 'primary energy supply'.
Methodology for indicator calculation	This indicator is derived from PEFA Table A (physical supply table). It is the sum of supply by production and consumption activities of two specific residuals classes, namely - R30 'Energy losses all kinds of (during extraction, distribution, storage and transformation, and dissipative heat from end use)' and - R31 'Energy incorporated in products for non-energy use'. This indicator is automatically calculated in Table D: PEFA_IND06 "Net domestic energy use".

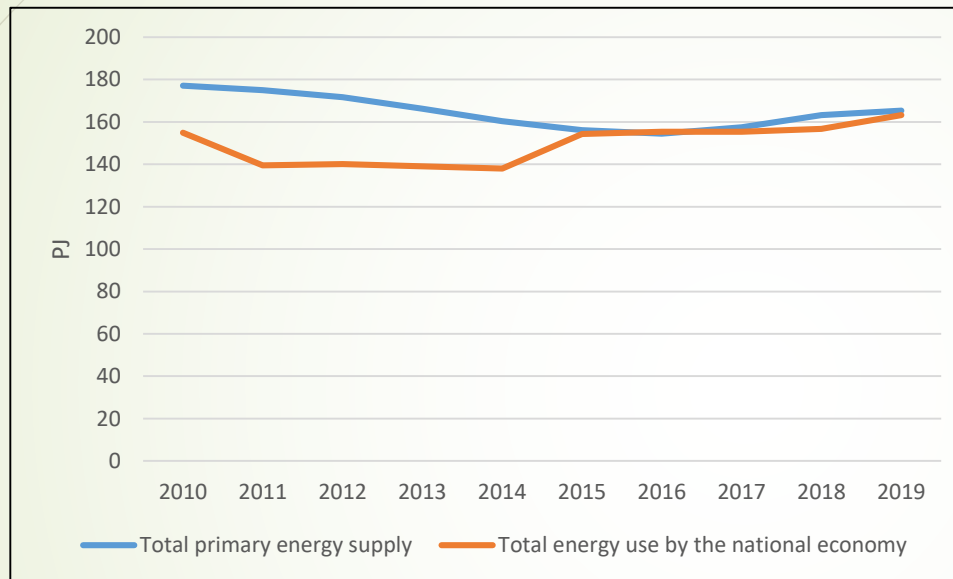
# UNECE CCRI on energy – 1b - metadata

ID - Tier	1b - I
Indicator	Total primary energy supply (TPES)
Indicator definition and description	This indicator represents <b>the amount of energy available for use in a country.</b>
Unit of measure	Petajoule (PJ)
Coverage	All economic activities (production, consumption, accumulation) undertaken <b>by resident units</b>
Spatial aggregation	<b>National territory</b>
Policy context and rationale	Key indicator for almost all national and international energy- and climate-related policies
Methodology for indicator calculation	This indicator is calculated as production + imports - exports - bunkers - stock changes. Bunkers include maritime bunker and international aviation

# Indicator 01a $\neq$ Indicator 01b

Total energy use by the national economy	Total primary energy supply (TPES)
National economy	National territory
End use	Primary supply
Can be compared to GVA	Cannot be compared to GVA

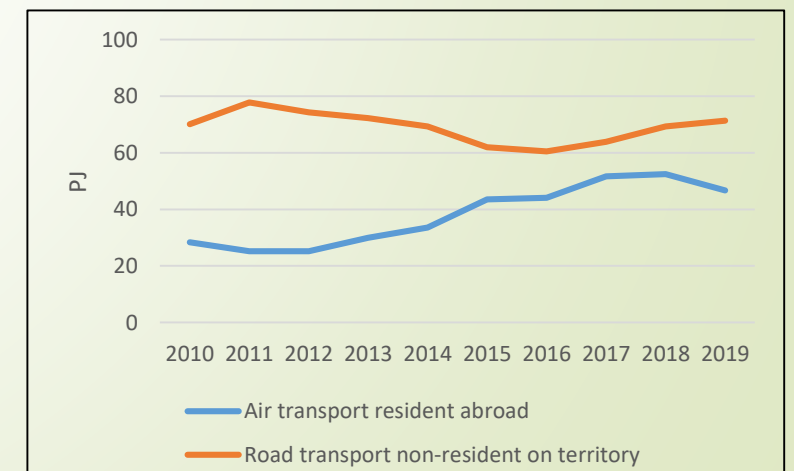
# Indicator 01a $\neq$ Indicator 01b



Differences can be significant for :

- Small open economy
- Economy with large international companies
- Economy with tax advantages on energy products

<b>Luxembourg (PJ)</b>	<b>2019</b>
Total energy use by the national economy	163,2
- Energy use by resident units abroad (mainly Air transport)	46,4
+ Energy use by non-residents on the territory (mainly Road transport)	72,7
Gross inland consumption (GIC)	189,5
- International aviation	23,7
Total primary energy supply (TPES)	165,8



# UNECE CCRI on energy - 5a - metadata

<b>ID - Tier</b>	<b>5a - II</b>
<b>Indicator</b>	<b>Total energy intensity of production activities of the national economy</b>
Indicator definition and description	Energy use by production activities (total ISIC industries) of a national economy per unit of gross domestic product (real GDP: adjusted for inflation, by means of constant prices or chain-linked prices)
Unit of measure	Terajoule (TJ) / monetary unit (national currency)
Coverage	Production activities
Spatial aggregation	National economy
Policy context and rationale	International and National Energy efficiency targets.  The indicator measures the energy intensity of production activities only (excluding households), in terms of energy consumption by GDP. It is therefore different from the SDG indicator 7.3.1
Related SDG indicator	7.3.1 Energy intensity measured in terms of primary energy and GDP (similar but not identical)
<b>Methodology for indicator calculation</b>	This indicator is calculated as intermediate consumption of energy products of total ISIC Industries (01-99) in TJ divided by gross domestic product (in PPP, constant prices)



## UNECE CCRI on energy - 5a possible alternative calculation

Indicator 05a 'Total energy intensity of production activities of the national economy':

NUMERATOR: *Net domestic energy use for energy purposes*

Source: Physical Energy Flow Accounts (Eu Regulation on economic environmental accounts)

Indicator IND06a (Table D, row 7)

DENOMINATOR: Gross Domestic Product (in PPP, constant prices)

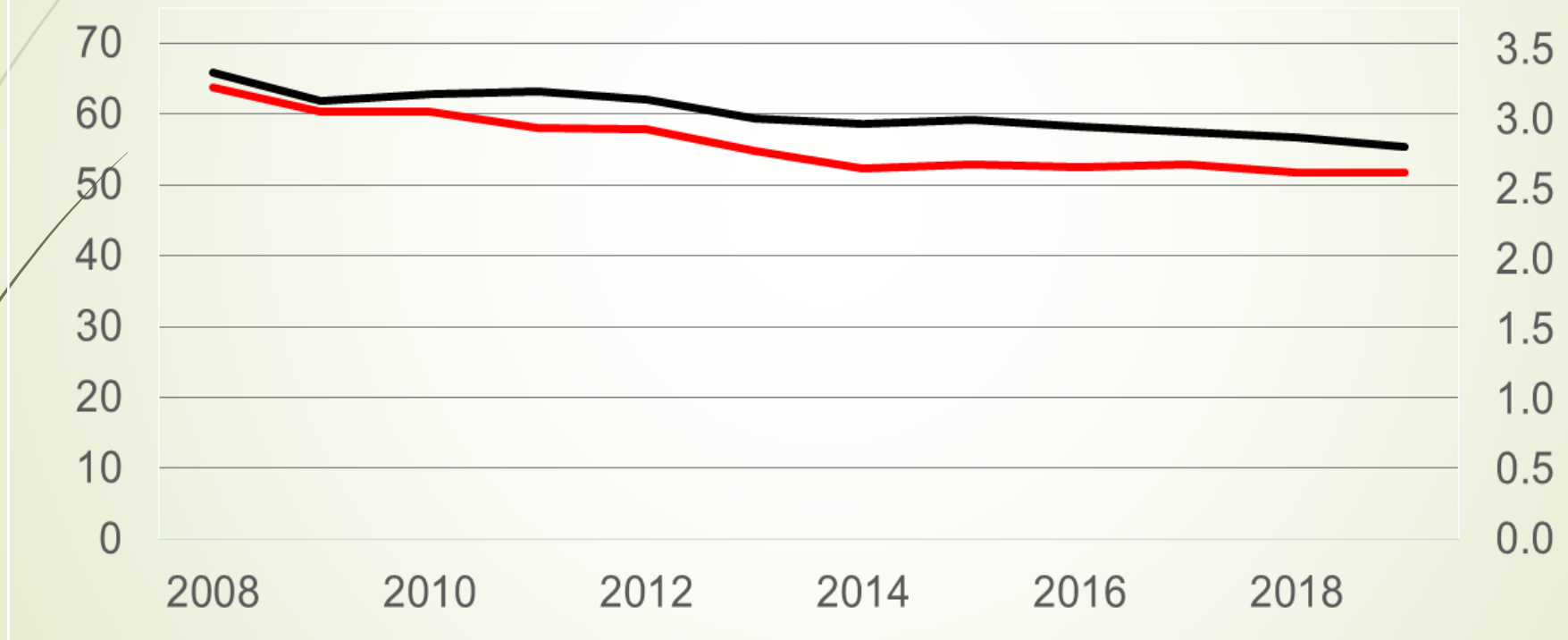
## UNECE CCRI on energy - 6a - metadata

<b>ID - Tier</b>	<b>6a - II</b>
<b>Indicator</b>	<b>Total CO2 intensity of energy used in production activities of the national economy</b>
Indicator definition and description	CO2 emissions per unit of energy used in production activities (total ISIC industries) of national economy
Unit of measure	Kilotonnes (kt) of CO2/Terajoule (TJ)
Coverage	Production activities
Spatial aggregation	National economy
Policy context and rationale	One possible mechanism to reduce the CO2 emissions is to change the energy mix of production processes. Relevant to climate change mitigation policies and measures implemented under the UNFCCC, its Kyoto Protocol and the Paris Agreement under the UNFCCC.
<b>Methodology for indicator calculation</b>	This indicator is calculated as CO2 emissions (without emissions from biomass used as a fuel) from total ISIC Industries (01-99) in kilotonnes divided by the intermediate consumption of energy products of total ISIC Industries (01-99) in TJ
Comments	This indicator differs from similar indicators produced by the World Bank and the International Energy Agency as it excludes households

# Presenting the indicators: example with Italian data

Total CO<sub>2</sub> intensity of energy used in production activities of the national economy (000 tons/terajoule)

Energy intensity of production activities of the national economy (terajoule/million euro - chain linked values)





*Thank you for your attention!*

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