



MATERIAL FLOW ACCOUNTS: year 2021

The Hellenic Statistical Authority (ELSTAT) announces data on Material Flow Accounts, for the year 2021.

Economy-wide material flow accounts (EW-MFA) describe the physical interaction between the natural environment and the economy in terms of flows of materials and resources.

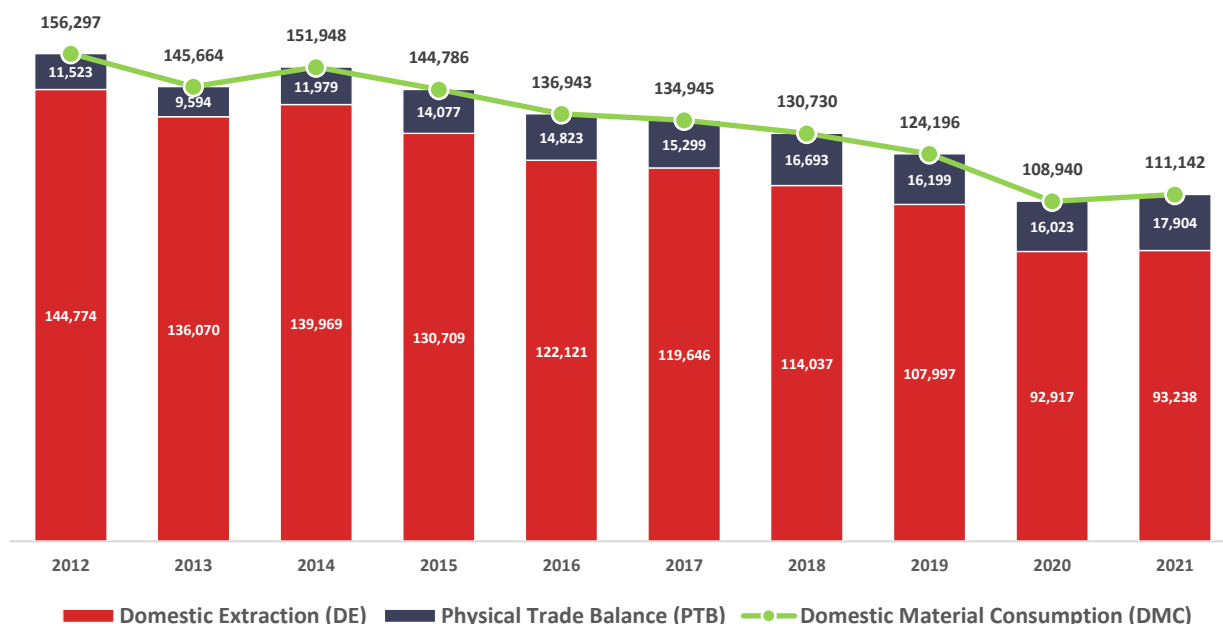
The data presented in the announcement, refer to:

- ▶ Domestic material consumption (DMC), in thousand tonnes
- ▶ Domestic extraction (DE), in thousand tonnes
- ▶ Physical trade balance (PTB), in thousand tonnes
- ▶ Resource productivity (RP), in euros per tonne
- ▶ Material import dependency (MID), percentage (%)

Domestic Material Consumption (DMC)

Domestic Material Consumption amounted to 111,142 thousand tonnes in 2021, 2.0% higher compared to 2020 (108,940 thousand tonnes). Domestic Extraction (DE) was the main component of DMC with 93,238 thousand tonnes and a share of 83.9%. Physical Trade Balance (PTB) amounted to 17,904 thousand tonnes representing a remaining share of 16.1% (Tables 1-2, Graph 1).

Graph 1. Domestic Material Consumption (DMC) and components in thousand tonnes, 2012 – 2021



Information on methodological issues:

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Domestic Extraction (DE)

Domestic extraction amounted to 93,238 thousand tonnes in 2021, 0.3% higher compared to 2020 (92,917 thousand tonnes). Extraction of non-metallic minerals accounted for 53,295 thousand tonnes (57.2% of total DE), followed by biomass with 25,089 thousand tonnes (26.9%) and fossil energy materials with 12,460 thousand tonnes (13.4%). Finally, metal ores extraction amounted to 2,394 thousand tonnes with a share of 2.6% of total DE (Tables 1-3, Graphs 1-2).

Physical Trade Balance (PTB)

Physical trade balance exhibited a positive value of 17,904 thousand tonnes in 2021. Imports amounted to 66,415 thousand tonnes and exports to 48,511 thousand tonnes. Compared to 2020, PTB was increased by 11.7% (Tables 1-2, Graph 3).

The category of fossil energy materials was the main component of imports in 2021 with 44,395 thousand tonnes and a share of 66.8% of total imports. Biomass and metal ores contributed with 9,556 and 6,210 thousand tonnes and respective shares 14.4% and 9.4% (Table 3, Graph 4).

Regarding exports in 2021, fossil energy materials amounted to 23,946 thousand tonnes (49.4% of total exports) followed by non-metallic minerals and biomass with 10,418 (21.5%) and 7,410 (15.3%) thousand tonnes respectively (Table 3, Graph 4).

Resource Productivity (RP)

Resource productivity reached the value of 1,632 euros per tonne in 2021, compared with 1,535 euros per tonne in 2020, increased by 6.3% (Table 4, Graph 5).

Material Import Dependency (MID)

The overall material import dependency was 41.6% in 2021, increased by 1.6 percentage points compared to 2020 (40.0%).

Fossil energy materials exhibited the highest import dependency (78.1%) followed by metal ores (72.2%). MID of Biomass was 27.6% while the less import-dependent material type was the category of non-metallic minerals with a MID of 6.0% (Table 5, Graph 6).

Table 1. Components of the Domestic Material Consumption in thousand tonnes and percentage (%) of total, 2012 – 2021

Thousand tonnes	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic Material Consumption (DMC)	156,297	145,664	151,948	144,786	136,943	134,945	130,730	124,196	108,940	111,142
Domestic Extraction (DE)	144,774	136,070	139,969	130,709	122,121	119,646	114,037	107,997	92,917	93,238
Physical Trade Balance (PTB)	11,523	9,594	11,979	14,077	14,823	15,299	16,693	16,199	16,023	17,904
Imports (IMP)	45,171	45,954	49,884	54,694	58,691	61,103	64,927	63,780	61,915	66,415
Exports (EXP)	33,648	36,360	37,905	40,617	43,868	45,804	48,234	47,581	45,892	48,511
Share (%)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic Extraction (DE)	92.6%	93.4%	92.1%	90.3%	89.2%	88.7%	87.2%	87.0%	85.3%	83.9%
Physical Trade Balance (PTB)	7.4%	6.6%	7.9%	9.7%	10.8%	11.3%	12.8%	13.0%	14.7%	16.1%

Table 2. Annual change of the components of the Domestic Material Consumption (DMC), 2012 – 2021

Annual change (%)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic Material Consumption (DMC)	-	-6.8%	4.3%	-4.7%	-5.4%	-1.5%	-3.1%	-5.0%	-12.3%	2.0%
Domestic Extraction (DE)	-	-6.0%	2.9%	-6.6%	-6.6%	-2.0%	-4.7%	-5.3%	-14.0%	0.3%
Physical Trade Balance (PTB)	-	-16.7%	24.9%	17.5%	5.3%	3.2%	9.1%	-3.0%	-1.1%	11.7%
Imports (IMP)	-	1.7%	8.6%	9.6%	7.3%	4.1%	6.3%	-1.8%	-2.9%	7.3%
Exports (EXP)	-	8.1%	4.2%	7.2%	8.0%	4.4%	5.3%	-1.4%	-3.6%	5.7%

Table 3. Components of the Domestic Material Consumption (DMC) by type of material in thousand tonnes and percentage (%) of total, 2021

2021	Biomass		Metal ores		Non-metallic minerals		Fossil energy materials		Other products and waste		Total materials	
	Thousand tonnes	Share (%)	Thousand tonnes	Share (%)	Thousand tonnes	Share (%)	Thousand tonnes	Share (%)	Thousand tonnes	Share (%)	Thousand tonnes	Share (%)
Domestic Material Consumption (DMC)	27,235	24.5%	4,716	4.2%	46,261	41.6%	32,909	29.6%	21	0.0%	111,142	100%
Domestic Extraction (DE)	25,089	26.9%	2,394	2.6%	53,295	57.2%	12,460	13.4%	0	0.0%	93,238	100%
Imports (IMP)	9,556	14.4%	6,210	9.4%	3,384	5.1%	44,395	66.8%	2,869	4.3%	66,415	100%
Exports (EXP)	7,410	15.3%	3,889	8.0%	10,418	21.5%	23,946	49.4%	2,849	5.9%	48,511	100%

Table 4. Resource Productivity (RP) in euros per tonne and annual changes, 2012 – 2021

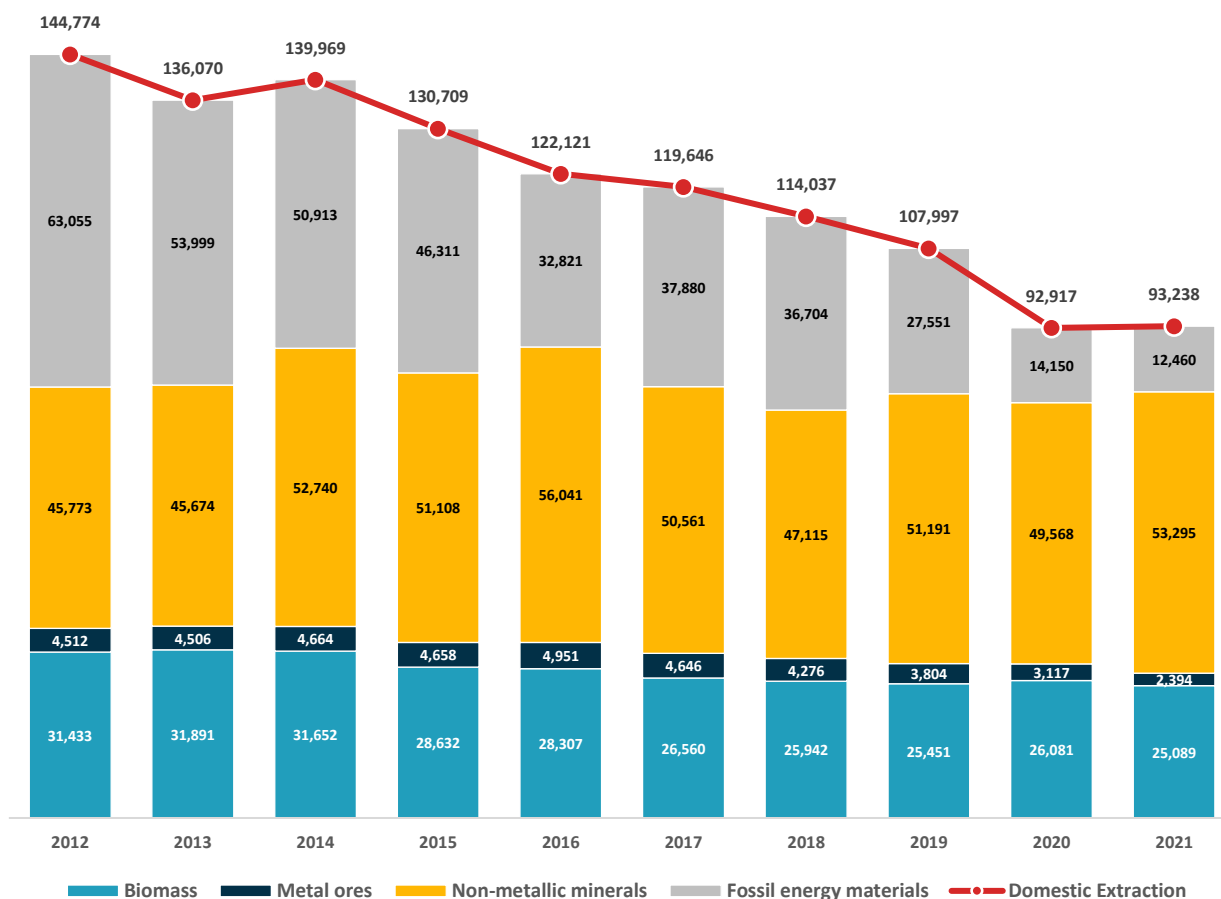
Resource Productivity	2012	2013	2014	2015	2016	2017	2018	2019	2020*	2021*
Euros per tonne	1,154	1,207	1,163	1,218	1,282	1,315	1,380	1,480	1,535	1,632
Annual change (%)	-	4.6%	-3.7%	4.7%	5.2%	2.6%	4.9%	7.2%	3.7%	6.3%

* Provisional data

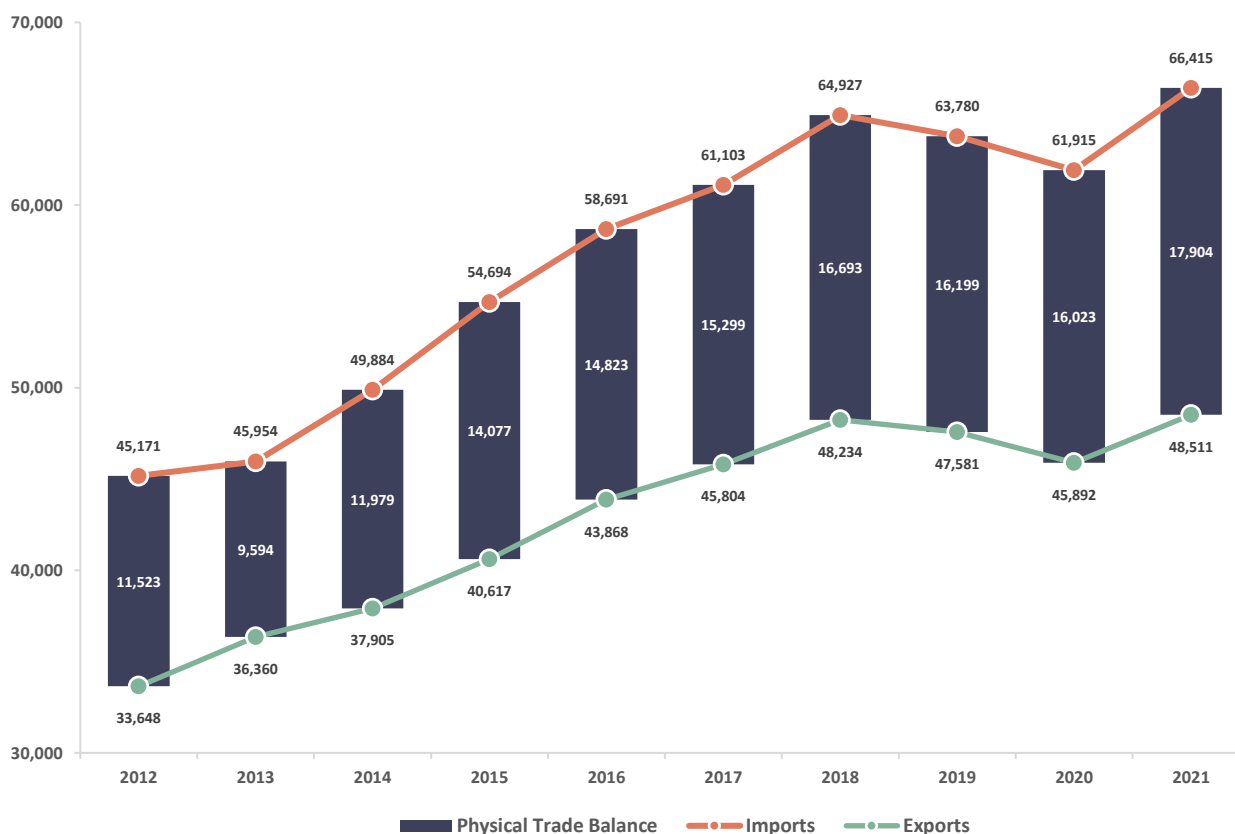
Table 5. Material Import Dependency (MID), percentage (%) by type of material, 2012 – 2021

Percentage (%)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total materials	23.8%	25.2%	26.3%	29.5%	32.5%	33.8%	36.3%	37.1%	40.0%	41.6%
Biomass	18.2%	18.4%	18.7%	22.0%	23.8%	25.7%	26.7%	27.5%	25.3%	27.6%
Metal ores	39.4%	40.3%	43.0%	45.2%	48.4%	51.0%	56.7%	59.2%	63.2%	72.2%
Non-metallic minerals	4.3%	4.9%	4.4%	5.3%	5.0%	5.7%	6.5%	6.0%	6.0%	6.0%
Fossil energy materials	33.4%	37.1%	40.8%	45.1%	55.0%	52.5%	54.6%	60.8%	74.8%	78.1%

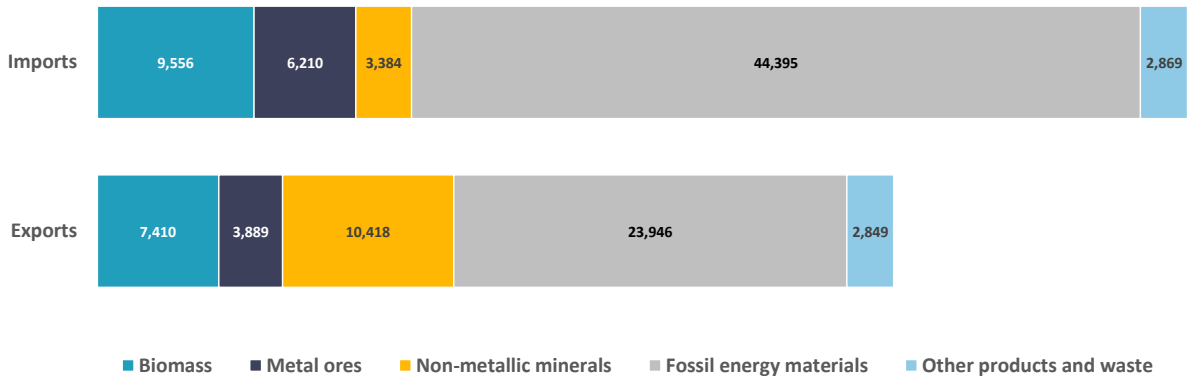
Graph 2. Domestic Extraction (DE) by type of material in thousand tonnes, 2012 – 2021



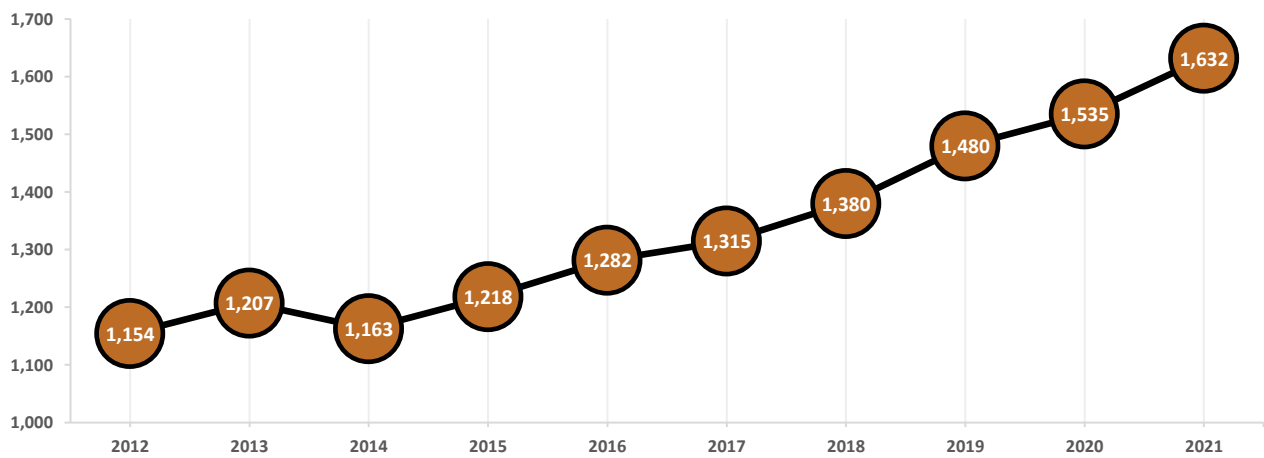
Graph 3. International trade (imports. exports. physical trade balance) of materials in thousand tonnes, 2012 – 2021



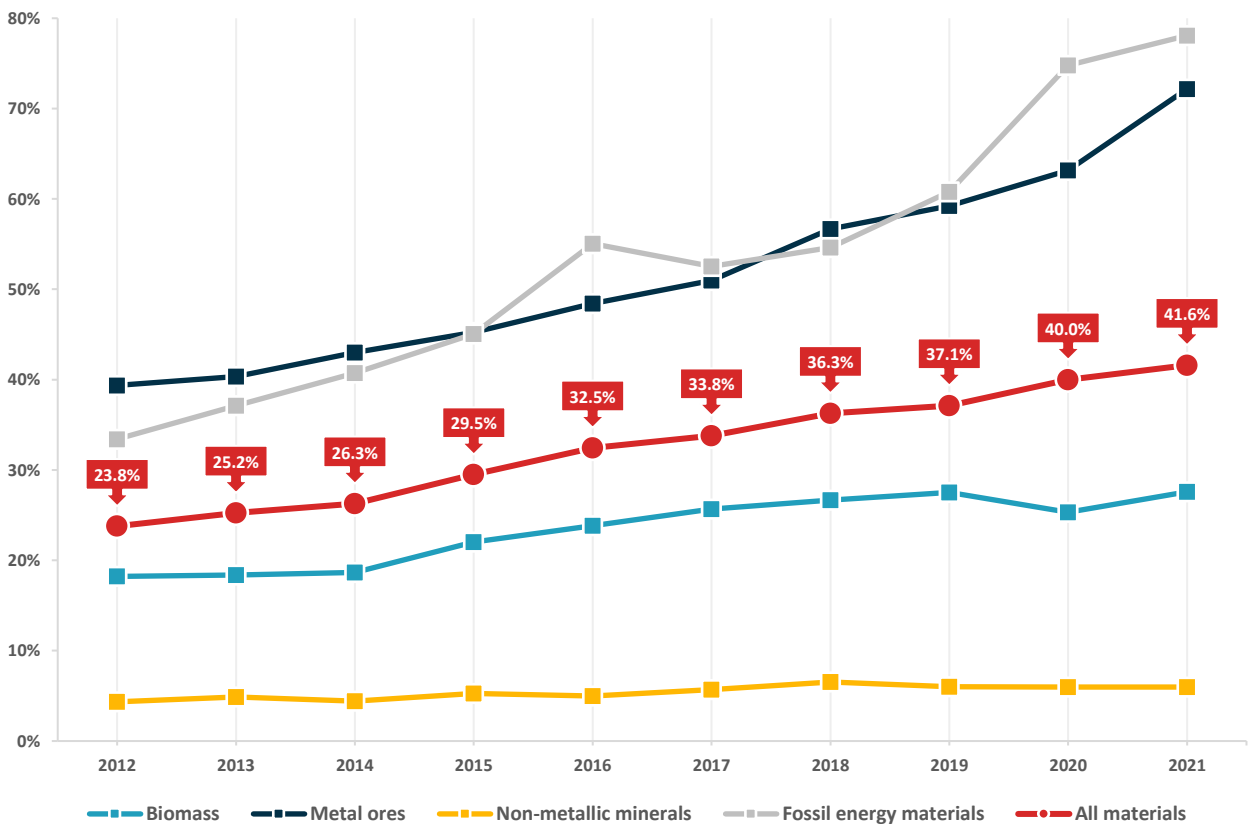
Graph 4. Imports and exports by type of material in thousand tonnes, 2021



Graph 5. Resource Productivity (RP) in euros per tonne, 2012 – 2021



Graph 6. Material Import Dependency in % by type of material, 2012 – 2021



EXPLANATORY NOTES

- Legal framework:** The Material Flow Accounts are compiled pursuant to Regulation 691/2011 of the European Parliament and of the Council (Section 1) which provides for and lays down the methodological frame for the compilation of Material Flow Accounts.
- Methodology:** The main sources of primary data for the compilation of Material Flow Accounts are (a) data from administrative sources e.g. the Ministry of Rural Development and Food, the Ministry of Environment and Energy etc. (b) surveys of official ELSTAT statistics such as "Production and Sales of Manufacturing Products". "International Trade Statistics" etc. and (c) statistical estimations procedures.
Data are presented by type of flow and type of material. Flows refer to "Domestic Extraction". "Imports" and "Exports" while materials are classified to four main categories i.e. "Biomass". "Metal ores". "Non-metallic minerals" and "Fossil energy materials/carriers". An additional category of materials is added to the flows of Imports and Exports concerning "Other products and waste".
Possible small deviations in sums are due to rounding.
- Concepts and Definitions:**
1. **Domestic Material Consumption (DMC):** corresponds to the total amount of materials used within an economy and is comprised of Domestic Extraction (DE) plus Physical Trade Balance (PTB). [DMC = DE + PTB]
 2. **Domestic extraction (DE):** represents the amount of extracted natural materials that have been transferred from the environment to the economy.
 3. **Physical Trade Balance (PTB):** represents the difference between imports (IMP) and exports (EXP) of materials and products. [PTB = IMP - EXP]
 4. **Resource Productivity (RP):** it is defined as the ratio of Gross Domestic Product (GDP) over Domestic Material Consumption (DMC) in euros per tonne. It expresses the amount of GDP that is generated from the materials that are directly used in the national economy [RP = GDP / DMC]. GDP refers to chain linked volumes 2015.
 5. **Material Import Dependency:** provides the ratio of imports (IMP) over the sum of imports and domestic extraction in percentage. It shows the extent to which an economy relies upon imports in order to meet its material needs. [MID = IMP / (IMP + DE).
- Resident Principle:** Material Flow Accounts follow the resident principle for fuels bunkered (Imports: by resident units abroad and Export: by non-residents units domestically). In contrast with the territory principle, the residence adjustment is applied to record the amount of fuels purchased from a) resident units abroad (imports) and b) non-residents on the national territory (exports).
- References:** Complete datasets and metadata information are available in ELSTAT's portal (www.statistics.gr), at the following link:
<http://www.statistics.gr/en/statistics/-/publication/SOP09/>