HELLENIC REPUBLIC
HELLENIC STATISTICAL AUTHORITY

Piraeus, 18 September 2025

MATERIAL FLOW ACCOUNTS: year 2023

The Hellenic Statistical Authority (ELSTAT) announces data on Material Flow Accounts, for the year 2023.

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.

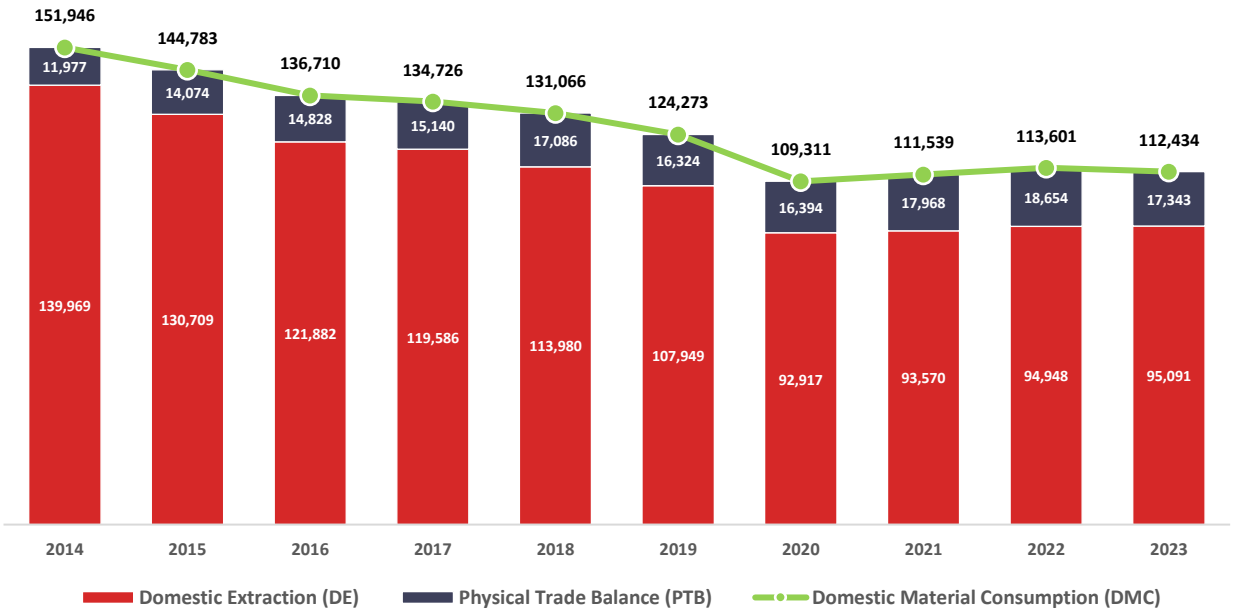
The data presented in the announcement, refer to:

- 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 112,434 thousand tonnes in 2023, 1.0% lower compared to 2022 (113,601 thousand tonnes). Domestic Extraction (DE) accounts for 84.6% of Domestic Material Consumption with 95,091 thousand tonnes and the Physical Trade Balance (PTB) accounts for 15.4% with 17,343 thousand tonnes (Tables 1-2, Graph 1).

Graph 1. Domestic Material Consumption (DMC) and components in thousand tonnes, 2014 – 2023



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Domestic Extraction (DE)

Domestic extraction amounted to 95,091 thousand tonnes in 2023, 0.2% higher compared to 2022 (94,948 thousand tonnes). Extraction of non-metallic minerals accounted for 58,172 thousand tonnes (61.2% of total DE), followed by biomass with 24,619 thousand tonnes (25.9%) and fossil energy materials with 10,823 thousand tonnes (11.4%). Finally, metal ores extraction amounted to 1,476 thousand tonnes with a share of 1.6% of total DE (Tables 1-3, Graphs 1-2).

Physical Trade Balance (PTB)

Physical trade balance exhibited a positive value of 17,343 thousand tonnes in 2023. Imports amounted to 62,895 thousand tonnes and exports to 45,552 thousand tonnes. Compared to 2022, PTB decreased by 7.0% (Tables 1-2, Graph 3).

The category of fossil energy materials was the main component of imports in 2023 with 42,376 thousand tonnes and a share of 67.4% of total imports. Biomass and metal ores contributed with 9,113 and 5,943 thousand tonnes and respective shares 14.5% and 9.4% (Table 3, Graph 4).

Regarding exports in 2023, the leading category was fossil energy materials that amounted to 24,231 thousand tonnes (53.2% of total exports) followed by non-metallic minerals and biomass with 8,728 (19.2%) and 6,721 (14.8%) thousand tonnes respectively (Table 3, Graph 4).

Resource Productivity (RP)

Resource productivity reached the value of 1,763 euros per tonne in 2023, compared with 1,705 euros per tonne in 2022, increased by 3.4% (Table 4, Graph 5).

Material Import Dependency (MID)

The overall material import dependency was 39.8% in 2023, decreased by 0.3 percentage points compared to 2022 (40.1%).

Metal ores exhibited the highest import dependency (80.1%) followed by fossil energy materials (79.7%). MID of Biomass was 27.0% while the less import-dependent material type was the category of non-metallic minerals with a MID of 4.9% (Table 5, Graph 6).

Table 1. Components of the Domestic Material Consumption in thousand tonnes and percentage (%) of total, 2014 – 2023

Thousand tonnes	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Domestic Material Consumption (DMC)	**151,946**	**144,783**	**136,710**	**134,726**	**131,066**	**124,273**	**109,311**	**111,539**	**113,601**	**112,434**
Domestic Extraction (DE)	139,969	130,709	121,882	119,586	113,980	107,949	92,917	93,570	94,948	95,091
Physical Trade Balance (PTB)	11,977	14,074	14,828	15,140	17,086	16,324	16,394	17,968	18,654	17,343
Imports (IMP)	49,886	54,698	58,697	60,976	62,721	61,311	59,683	63,861	63,477	62,895
Exports (EXP)	37,910	40,624	43,869	45,837	45,635	44,986	43,289	45,892	44,824	45,552
Share (%)	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Domestic Extraction (DE)	92.1%	90.3%	89.2%	88.8%	87.0%	86.9%	85.0%	83.9%	83.6%	84.6%
Physical Trade Balance (PTB)	7.9%	9.7%	10.8%	11.2%	13.0%	13.1%	15.0%	16.1%	16.4%	15.4%

Table 2. Annual change of the components of the Domestic Material Consumption (DMC), 2014 – 2023

Annual change (%)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Domestic Material Consumption (DMC)	**-**	**-4.7%**	**-5.6%**	**-1.5%**	**-2.7%**	**-5.2%**	**-12.0%**	**2.0%**	**1.8%**	**-1.0%**
Domestic Extraction (DE)	-	-6.6%	-6.8%	-1.9%	-4.7%	-5.3%	-13.9%	0.7%	1.5%	0.2%
Physical Trade Balance (PTB)	-	17.5%	5.4%	2.1%	12.9%	-4.5%	0.4%	9.6%	3.8%	-7.0%
Imports (IMP)	-	9.6%	7.3%	3.9%	2.9%	-2.2%	-2.7%	7.0%	-0.6%	-0.9%
Exports (EXP)	-	7.2%	8.0%	4.5%	-0.4%	-1.4%	-3.8%	6.0%	-2.3%	1.6%

Table 3. Components of the Domestic Material Consumption (DMC) by type of material in thousand tonnes and percentage (%) of total, 2023

2023	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)	**27,012**	**24.0%**	**4,084**	**3.6%**	**52,453**	**46.7%**	**28,968**	**25.8%**	**-84**	**-0.1%**	**112,434**	**100.0%**
Domestic Extraction (DE)	24,619	25.9%	1,476	1.6%	58,172	61.2%	10,823	11.4%	0	0.0%	95,091	100.0%
Imports (IMP)	9,113	14.5%	5,943	9.4%	3,008	4.8%	42,376	67.4%	2,454	3.9%	62,895	100.0%
Exports (EXP)	6,721	14.8%	3,335	7.3%	8,728	19.2%	24,231	53.2%	2,537	5.6%	45,552	100.0%

Table 4. Resource Productivity (RP) in euros per tonne and annual changes, 2014 – 2023

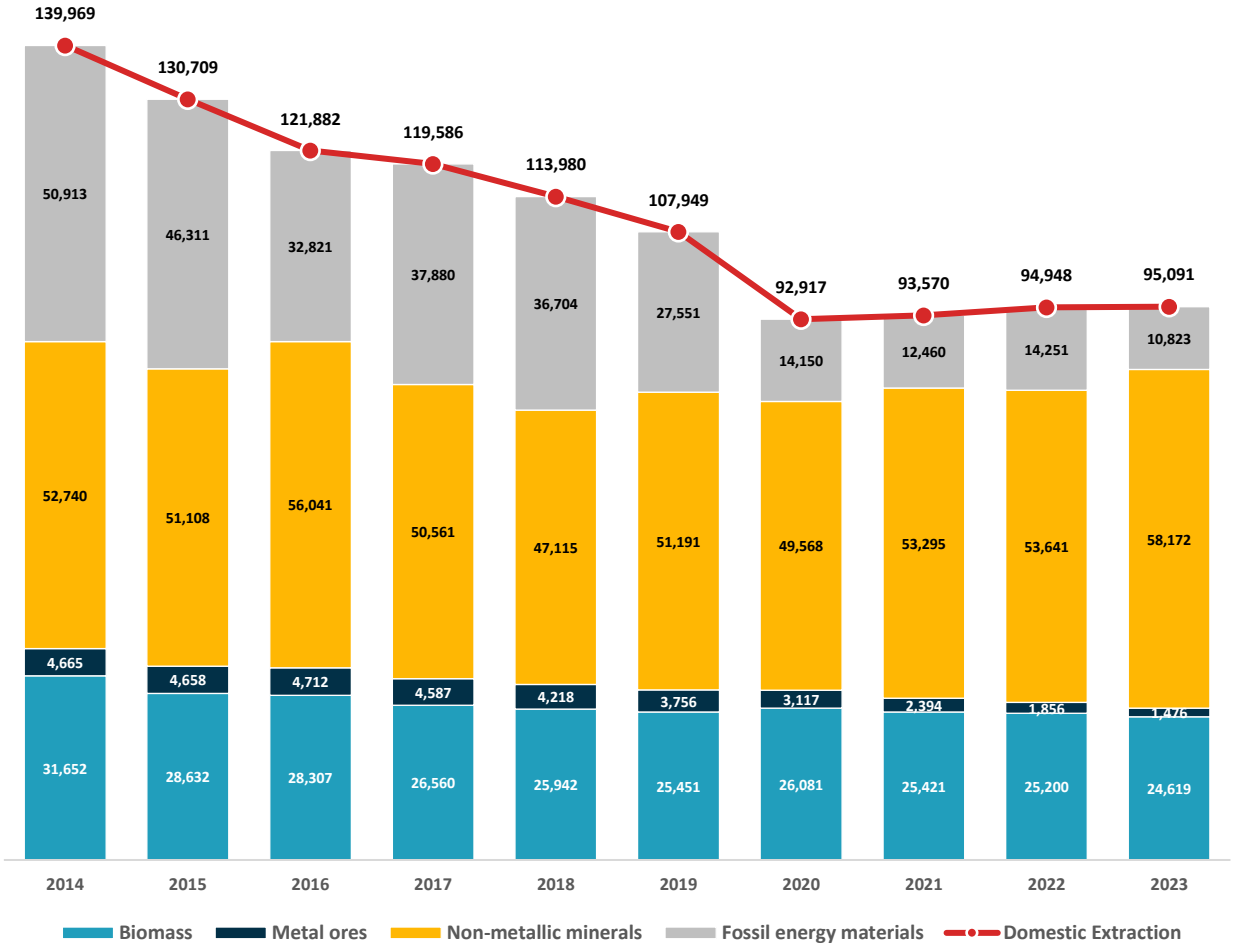
Resource Productivity	2014	2015	2016	2017	2018	2019	2020	2021	2022*	2023*
Euros per tonne	1,157	1,211	1,282	1,320	1,385	1,494	1,543	1,643	1,705	1,763
Annual change (%)	-	4.7%	5.9%	3.0%	4.9%	7.9%	3.2%	6.5%	3.8%	3.4%

** Provisional data*

Table 5. Material Import Dependency (MID), percentage (%) by type of material, 2014 – 2023

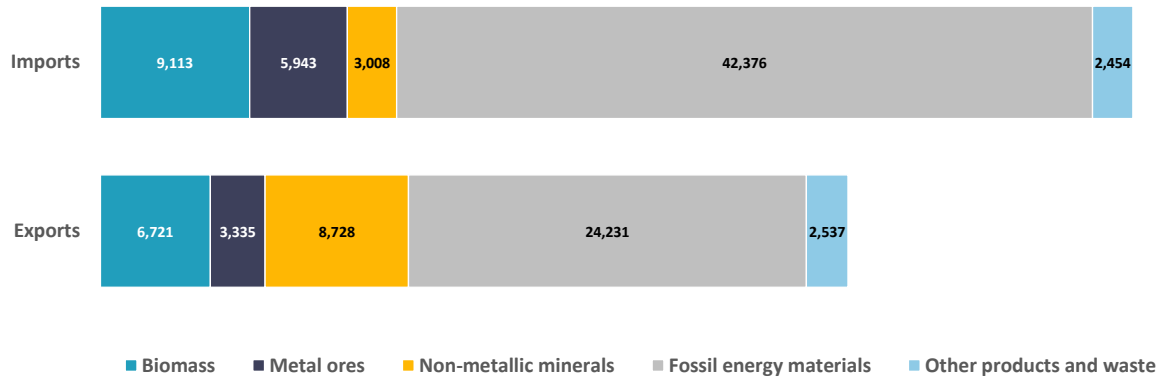
Percentage (%)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total materials	**26.3%**	**29.5%**	**32.5%**	**33.8%**	**35.5%**	**36.2%**	**39.1%**	**40.6%**	**40.1%**	**39.8%**
Biomass	18.7%	22.0%	23.8%	25.7%	25.0%	25.9%	23.9%	25.9%	26.6%	27.0%
Metal ores	43.0%	45.2%	49.7%	51.3%	54.9%	57.3%	61.3%	70.6%	76.0%	80.1%
Non-metallic minerals	4.4%	5.3%	5.0%	5.7%	5.7%	5.3%	5.3%	5.2%	5.7%	4.9%
Fossil energy materials	40.8%	45.1%	55.1%	52.5%	54.5%	60.6%	74.6%	77.9%	74.9%	79.7%

Graph 2. Domestic Extraction (DE) by type of material in thousand tonnes, 2014 – 2023

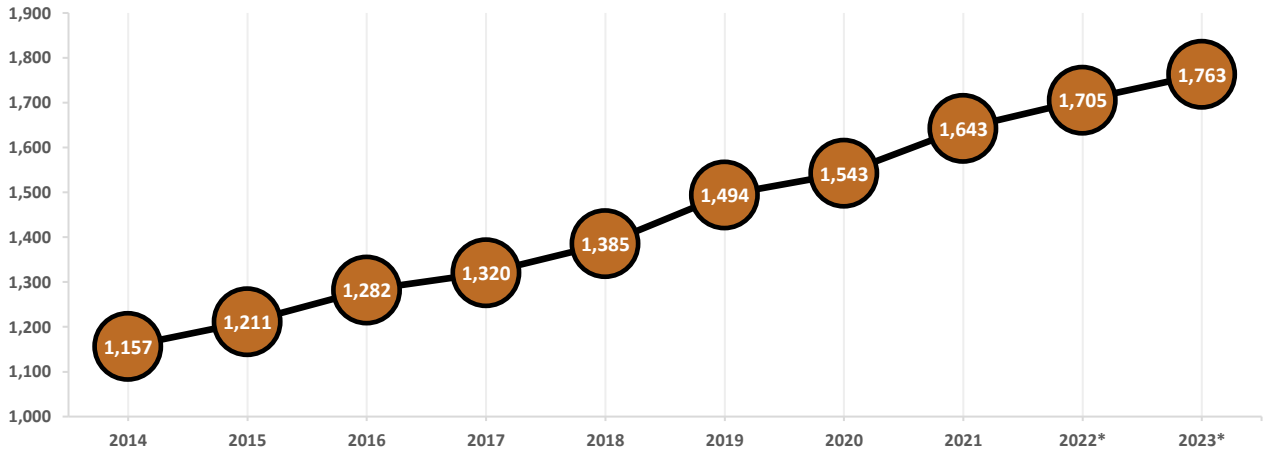


Graph 3. International trade (imports, exports and physical trade balance) of materials in thousand tonnes, 2014 – 2023

Graph 4. Imports and exports by type of material in thousand tonnes, 2023

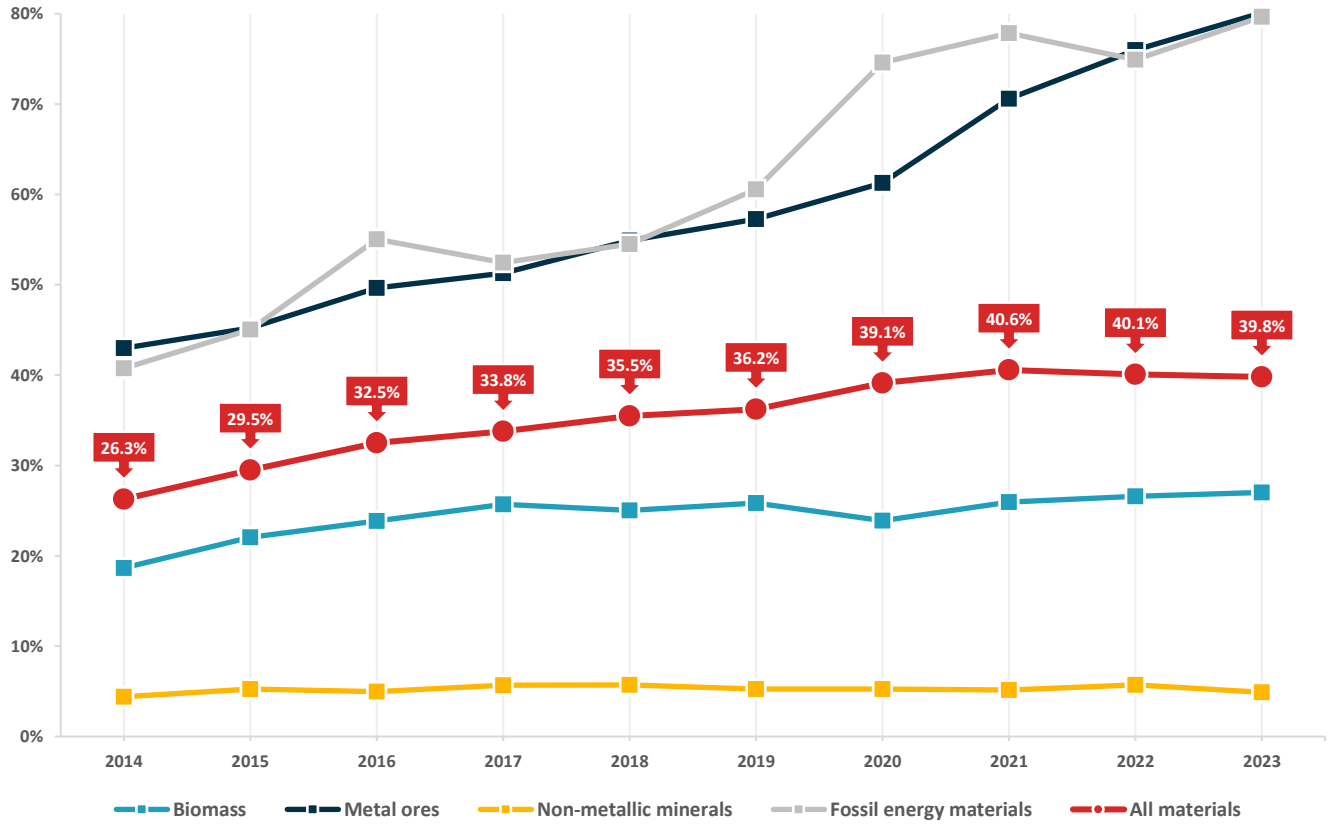


Graph 5. Resource Productivity (RP) in euros per tonne, 2014 – 2023



*Provisional data

Graph 6. Material Import Dependency in % by type of material, 2014 – 2023



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 on ELSTAT's portal (www.statistics.gr), at the following link:
http://www.statistics.gr/en/statistics/-/publication/SOP09/-