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ECONOMY AND ENVIRONMENT: MAIN INDICATORS | YEARS 2023–2024

Lower emissions and energy consumption; higher environmental expenditure and taxes

In 2024, alongside real GDP growth of +0.7%, Energy consumption, Greenhouse gas emissions, and Domestic material consumption decreased by 2.1%, 2.8%, and 1.8%, respectively.

In 2023, GDP growth (+1%) was accompanied by a more pronounced decline in physical indicators: Energy consumption fell by 4.8%, Greenhouse gas emissions by 5.9%, and Domestic material consumption by 5.4%.

In 2023, the **value of goods and services for environmental protection** remained stable: €214.7 billion in output (+0.4% compared with 2022). **Environmental protection expenditure** amounted to €52.9 billion (+2.8%), and **Environmental tax revenue** reached €54.4 billion (+19.6%), with a further increase of 11.2% in 2024.

53,8

Emission intensity of energy consumption in 2024 (tons of CO_2 per terajoule)

Stable in 2024, -2.8% in 2023 compared with 2022

+5,5%

The increase in value added generated by energy efficiency activities in 2023 (current values)

These activities account for 50% of total value added of the environmental goods and services sector

79%

Share of energy taxes in total environmental taxes in 2024

Increasing from the 2022 low (75%)

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Physical flows of energy, materials and emissions decline.

In 2024, the downward trend in the physical indicators provided by the Environmental Economic Accounts continues: in an economic context where GDP increases (+0.7% in volume), Net domestic energy use decreases by 2.1% and Greenhouse gas emissions by 2.8%. In 2023, GDP growth of 1.0% was accompanied by more pronounced contractions in Energy consumption (-4.8%) and Greenhouse gas emissions (–5.9%), as well as a 5.4% decline in Domestic material consumption.

The reduction in energy consumption and greenhouse gas emissions in 2023 largely reflects, on the one hand, lower electricity demand and, on the other, an increasing share of electricity generation from renewable sources. Specifically, the use of hydropower increased while natural gas and coal use decreased. Further, lower gas use for heating, due to unusually mild weather conditions together with improvements in energy efficiency in the residential sector are also sources of reductions in consumption and emissions. Households recorded sharper reductions in consumption and emissions for domestic uses (–8.2% and –11.7%, respectively) than for own-account transport (–0.7% and -1.4%). Provisional estimates of Net domestic energy use for 2024 indicate a decrease by 4.1% for productive activities, and an increase by 2.2% for households, both for domestic uses (+1.1%) and own-account transport (+3.7%). Similarly, Greenhouse gas emissions decline by 4.5% in productive activities and increase by 2.2% among households.

Increased environmental expenditure and environmental taxes

Trends in environmental tax revenue can be interpreted in light of specific policy measures introduced in recent years. The 19.6% increase in environmental tax revenue in 2023 is attributable to the end of energy cost containment measures introduced in the previous year. In particular, the reinstatement of excise duties on mineral oils and – starting from the second quarter – of general system charges on electricity significantly affected the increase in energy tax revenue, amounting to 42.4 billion, which accounts for 78% of total environmental taxation. In 2024, environmental tax revenue rose to €60.6 billion (+11.2%), mainly due to the increase of 4.7 billion in the revenues from electricity use (including system charges).

In 2023 the environmental goods and services sector (a.k.a. ecoindustries) recorded a moderate growth, reaching €214.7 billion in output at current prices (+0.4%) and €80 billion in value added (+2.2%). Activities related to energy efficiency improvements increase by €2.1 billion – the largest absolute increase within the sector's various activity types, mostly due to the maintenance of measures aimed at improving energy efficiency in buildings (notably the tax incentives known as "Superbonus 110%").

The increase in National environmental protection expenditure in 2023 amounts to +2.8% in current prices. The rise in expenditure by corporations was more marked (+5,6%), mainly driven by higher spending on consumption and investment in the waste management sector.

ENVIRONMENT AND ECONOMY: MAIN INDICATORS. Years 2022-2024, absolute values, values per unit of GDP(a) and percentage change.

INDICATORS	Unit of measure	2022		2023			2024		
		Absolute values	Values/GDP (a)	Absolute values	Valori/Pil (a)	%Change on 2022	Absolute values	Values/GDP (a)	% Change on 2023
Net domestic energy use – Ndeu	Thousands of terajoule	6,543	3.4	6,232	3.2	-4.8%	6,104	3.1	-2.1%
Greenhouse gases in CO_2 equivalents	Million tons	422	221	397	206	-5.9%	386	199	-2.8%
Domestic material consumption	Million tons	524	275	496	258	-5.4%	487	251	-1.8%
Value added of environmental goods and services	Billion euros	78.3	3.9%	80.0	3.7%	+2.2%	n.d.	n.d.	n.d.
Revenue from environmental taxes	Billion euros	45.5	2.3%	54.4	2.5%	+19.6%	60.6	2.8%	+11.2%
Expenditure on environmental protection	Billion of euros	51.5	2.6%	52.9	2.5%	2.8%	n.d.	n.d.	n.d.

(a) Ratios of physical indicators to GDP in millions of euros at chain linked prices with reference year 2020 (Ndeu: Tj/mln of euros, Greenhouse gases: Tons/mln of euros, Dmc: Tons/mln of euros); ratios of monetary indicators to GDP in billions of euros at current prices. Source: Istat, Environmental Accounts.

In 2024, the reduction in energy consumption and greenhouse gas emissions continues

In 2024, Italy's total energy requirement, measured by the Net domestic energy use (NDEU), declined to 6.1 million terajoules (Tj), recording a decrease of 2.1%, less pronounced than the 4.8% drop observed in 2023. At the same time, Greenhouse gas emissions amounted to 386 million tons of CO_2 equivalent (tCO_2eq) in 2024, decrease by 11 million tons compared with the previous year. The contraction (–2.8%) was also less marked than that recorded in 2023 (–5.9%) (Fig. 1).

The contraction in energy consumption (–4.8%) and greenhouse gas emissions (–5.9%) in 2023 is mostly due to the decline in electricity demand and the reduced use of natural gas and coal while the use of renewable sources, particularly hydropower, increased. The reduction in consumption and emissions was further supported by lower gas use for heating purposes, due to exceptionally mild weather conditions.

In 2023, productive activities consumed 4.2 million TJ, 4.6% less than in 2022, reducing emissions by 5.9%. Among them, the industry sector, representing more than 60% of both energy consumption and emissions, records the most significant decrease in both cases. Particularly relevant are the reduction in Electricity, gas, steam and air conditioning supply (–17.7% in energy use and–23.7% for emissions), Manufacture of other non-metallic mineral products (–13.0% and –7.3% respectively) and Chemical industry (–9.9% and –15.8% respectively).

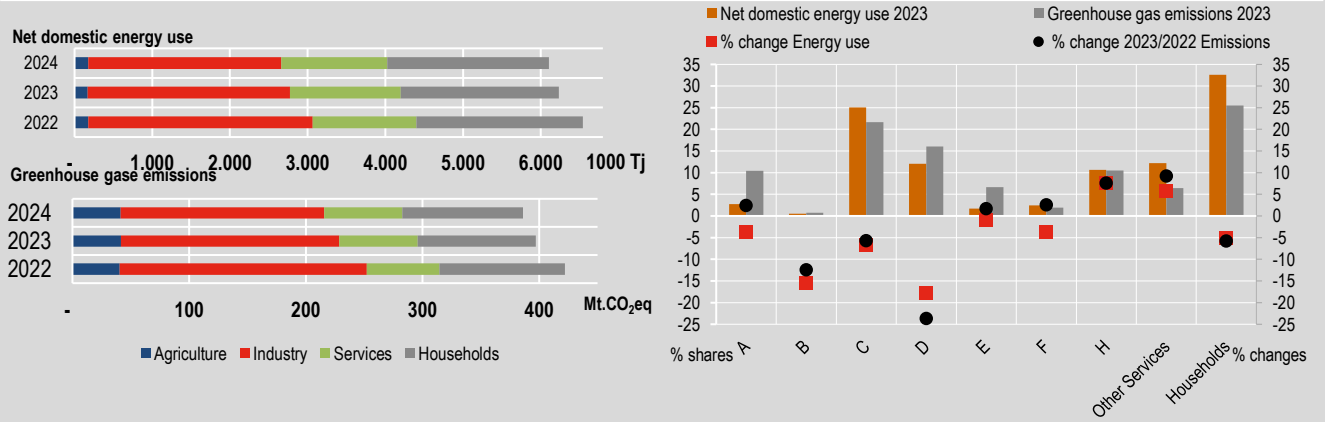
Agriculture, despite a 3.7% reduction in energy consumption, recorded an overall increase in greenhouse gas emissions of 2.5%[i]. By contrast, the Services sector showed an overall increase in energy consumption and emissions (6.6% and 8.2% respectively), driven mainly by Transport activities, especially Water and air transport +20.0% and +17.2% for emissions.

Finally, households recorded a more marked contraction in domestic uses (–8.2% in consumption and –11.7% in emissions) than in own-account transport (–0.7% in consumption and –1.4% in emissions).

Around 80% of greenhouse gas emissions, – largely CO_2 – are the direct result of the combustion of energy sources required to meet the energy needs of the economic system[ii].

Non-energy-related greenhouse gas emissions recorded a slight overall decrease in 2023 compared with the previous year (–0.6%), although sectoral trends were highly heterogeneous: Agriculture, forestry and fishing +4.1%; Sewerage and waste management +0.5%; Manufacture of other non-metallic mineral products –5.1% (Fig. 1).

FIGURE 1. "NET DOMESTIC ENERGY USE" (NDEU) AND GREENHOUSE GAS (GHG) EMISSIONS BY ECONOMIC SECTOR AND HOUSEHOLDS. Years 2022-2024, thousands of terajoules, $Mt.CO_2eq$., Shares and percentage changes



Legend: A – Agriculture, forestry and fishing; B – Mining and quarrying; C – Manufacturing; D – Electricity, gas, steam and air conditioning supply; E – Water supply; sewerage, waste management and remediation activities; F – Construction; H – Transportation and storage. Source: Istat, Environmental Accounts – Physical Energy Flow Accounts and Air Emissions Accounts

The use of renewable sources in energy production increases

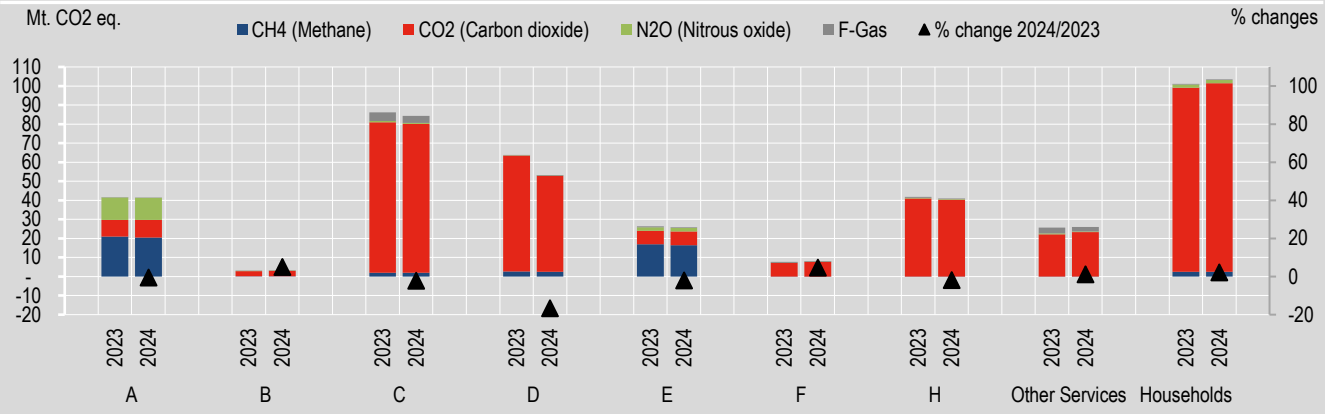
In 2024, the reduction in Energy consumption (–2.1%) and GHGs emissions (–2.8%) of resident units continues.

Productive activities made a significant contribution to the overall decrease in greenhouse gas emissions between 2023 and 2024 (Fig. 2). In particular, Electricity, gas, steam and air conditioning supply recorded a contraction in emissions of 10.6 million tCO_2eq (-16,7%), despite the increase in electricity demand observed in 2024. This trend is mainly attributable to changes in the energy mix used for electricity generation. During 2024, electricity production from renewable sources – particularly hydropower – increased, supported by abundant rainfall throughout the year. At the same time, a marked reduction in coal use was observed, partly replaced by natural gas due to improved competitiveness following the decline in gas prices over the course of 2024.

Particularly noteworthy is also the reduction in emissions from Manufacturing industries (–2.2%), with a strong contribution from the Manufacture of coke and refined petroleum products. In the Services sector, the main contribution to the reduction came from Water transport while most of the other tertiary productive activities recorded an increase in their emissions.

Households recorded an increase in their emissions of 2.3 million tons of CO_2 equivalent (+2.2%).

FIGURE 2. GREENHOUSE GAS EMISSIONS BY POLLUTANT, ECONOMIC SECTOR AND HOUSEHOLDS. Years 2022–2024, Mt. CO_2eq. and percentage change



Legend: A – Agriculture, forestry and fishing; B – Mining and quarrying; C – Manufacturing; D – Electricity, gas, steam and air conditioning supply; E – Water supply; sewerage, waste management and remediation activities; F – Construction; H – Transportation and storage.
Source: Istat, Environmental accounts – Air emissions accounts.

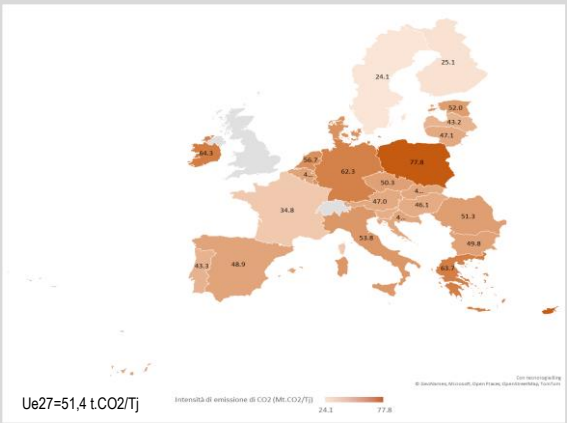
The CO_2 emission intensity of energy consumption in the Eu

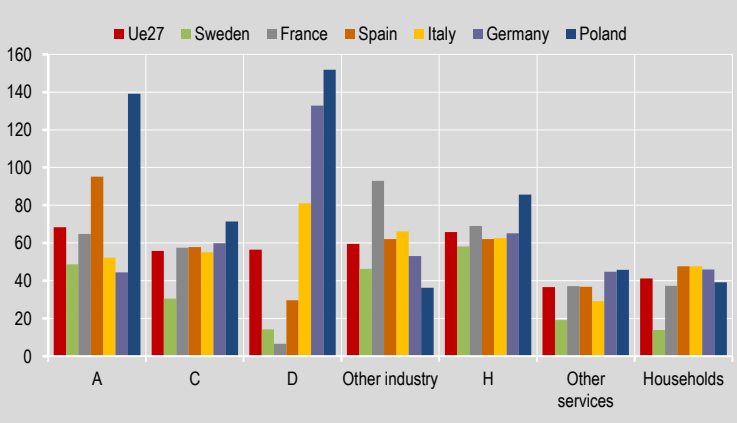
In 2024, the CO_2 emission intensity of energy consumption energy intensity is stable at 53.8 tCO_2 per terajoule, the same level of 2023, when a 2.8% decrease had been recorded[iii]. The unchanged value compared with 2023 results from heterogeneous sectoral dynamics: efficiency improvements in industry, driven mainly by electricity generation, were offset by less favorable developments in other sectors and by household energy consumption patterns.

In 2023, Italy's CO_2 emission intensity of energy consumption (53.8 tCO_2/TJ) was higher than the European average (51.4 tCO_2/TJ), similar to Germany (62.3 tCO_2/TJ), while Poland recorded the highest value (77.8 tCO_2/TJ). Sweden, by contrast, showed the lowest intensity (24.1 tCO_2/TJ) (Fig. 3).

A comparison across economic sectors highlights marked differences among the countries analysed, mainly attributable to the different composition of the energy mix used to meet national energy demand. The Electricity, gas, steam and air conditioning supply sector shows the widest disparities: Poland and Germany record the highest values, whereas France – and especially Sweden – display significantly lower levels, consistent with the higher share of renewable and nuclear sources in their energy mix. Italy records intermediate values but above the European average in Electricity supply, in non-manufacturing industry, and in the household sector.

FIGURE 3. CO_2 EMISSION INTENSITY OF ENERGY CONSUMPTION BY COUNTRY, ECONOMIC SECTOR AND HOUSEHOLDS. Year 2023, Mt.CO_2/Tj.





Legend: A – Agriculture, forestry and fishing; C – Manufacturing; D – Electricity, gas, steam and air conditioning supply; E – Water supply; sewerage, waste management and remediation activities; H – Transportation and storage. Source: Istat, Environmental Accounts – Physical Energy Flow Accounts and Air Emissions Accounts; Eurostat (Istat calculations).

Domestic material consumption declines in the two-year period 2023–2024

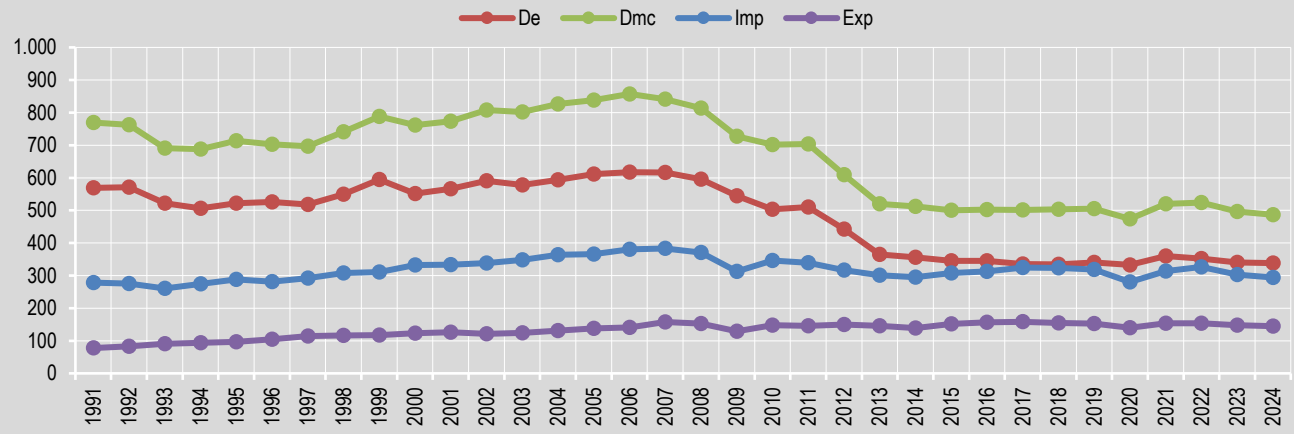
In 2023, Domestic material consumption (DMC) decreased compared with the previous year by approximately 28.3 million tons (Mt), (-5.4%), reaching 496 Mt[iv]. According to preliminary estimates, DMC in 2024 amounts to around 487 million tons (–1.8%).

The 2023 decline is attributable for 17.2 Mt to Net flows from abroad (Physical trade balance, PTB; -9.9%) and for the remaining 11.2 Mt (–3.2%) to Domestic extraction. The reduction in Domestic extraction is almost entirely attributable to the decrease in extraction of non-energy minerals, which fell from 229.8 Mt in 2022 to 219.3 Mt in 2023 (–4.5%), while the extraction of energy minerals decreased by 0.5 Mt (–7.3%) and biomass extraction remained unchanged.

Material consumption per unit of GDP declined from 274.9 tons per million euro (chain-linked volumes, reference year 2020) in 2022 to 257.6 tons per million euro in 2023.

In absolute terms, Italy's DMC remained the fifth highest in the EU-27 in recent years. However, Italy's DMC per capita, equal to 8.1 tons in 2023, and its DMC per unit of GDP are among the lowest in the EU, with Luxembourg and the Netherlands reaching levels similar to those recorded by Italy.

FIGURE 4. MAIN INDICATORS OF ITALY'S MATERIAL FLOWS. UPDATED TIME SERIES AFTER THE 2025 GENERAL REVISION. Years 1991–2024, million tons.



Legend: De: Domestic extraction; Dmc: Domestic material consumption (DMC). Source: Istat, Environmental accounts – Economy-wide material flow accounts.

Energy taxes drive the increase in environmental taxes

In 2024, environmental tax revenue in Italy amounts to over €60 billion (6.5% of total taxes and social contributions and 2.8% of GDP), up 11.2% compared with 2023.

The overall increase is mainly driven by energy taxes (+13%), representing more than 79% of total environmental tax revenue. In the context of energy taxes, the main driver of the revenue increase is the full reinstatement of the pre-2022 fiscal framework.

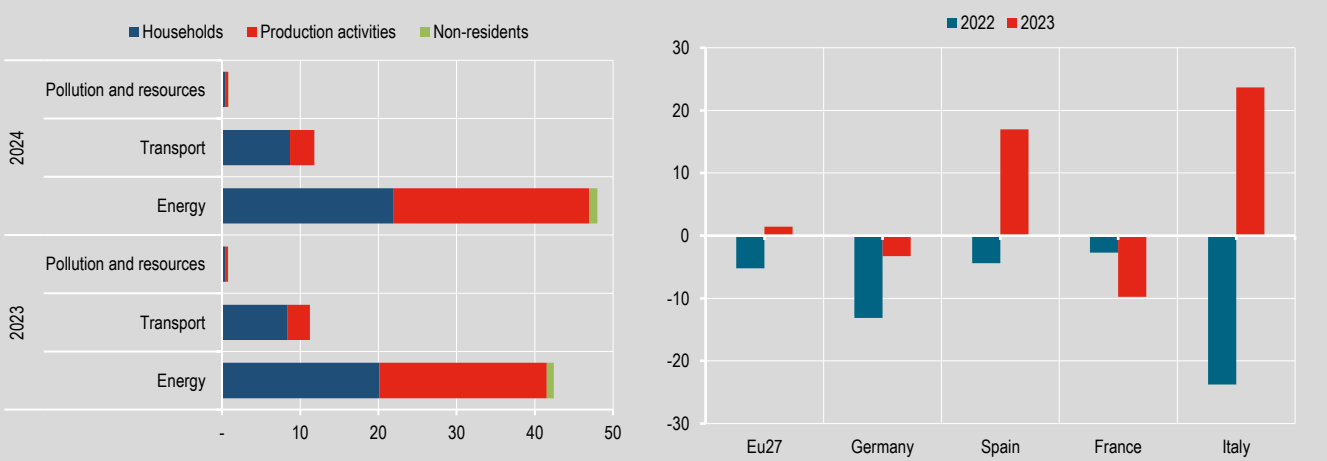
“Pollution and resources” taxes recorded a 3.8% increase in total revenue in 2024, while transport taxes grew by 5% compared with the previous year.

A large share, 62.2%, of the total increase of environmental tax revenue in 2024 is attributable to higher payments by productive activities, estimated at €3.8 billion more than in 2023. Households paid over €2 billion more in taxes than in 2023. Economic activities and resident households’ contribution to total revenue are, respectively 46.9% (€28.4 billion) and 51.3% (€31 billion).

In 2023, the revenue paid by economic activities was mainly generated by Manufacturing (21.9%), followed by Other services (20.9%) and Transport (15.6%). Most sectors increase their payments reflecting the termination of energy price containment measures in force in 2022. The largest increases can be found in Other services (+88.3%), Trade (+59.8%), Manufacturing (+39.5%) and Agriculture (+37.8%). By contrast, Electricity, gas, steam and air conditioning supply paid less taxes (–58%) due to the phase out in 2023 of the tax on extra profits.

In 2023, environmental taxes in Italy accounted for 2.5% of GDP and 6.2% of total taxes and social contributions – shares higher than the EU average (2% and 5.2%, respectively) and higher than in several major EU countries such as France (1.8% and 4%), Germany (1.7% and 4.4%) and Spain (1.6% and 4.5%). In the same year, growth in energy taxes was stronger in Italy (+23.7%) than in the main European countries and the EU average.

FIGURE 5. REVENUE FROM ENVIRONMENTAL TAXES BY CATEGORY AND PAYING UNIT – Years 2023–2024, billions of euros and **REVENUE FROM ENERGY TAXES, EU27.** Years 2022 and 2023, percentage



Source: Istat, Environmental accounts – Environmental taxes by economic activity; Eurostat

The eco-industries sector remained stable in 2023

In 2023, the value at basic prices of the production of environmental goods and services (eco-industries sector), amounts to €214.7 billion (+0.4%), with a value added of €80 billion (+2.2%). The positive trend in value added in 2023 was more moderate than that of GDP (+7.2% at current prices), resulting in a decline in the sector's share of the overall economy: in value-added terms, from 3.9% in 2022 to 3.7% in 2023.

Growth concerned most areas of the eco-industries sector. The largest increase in absolute terms was recorded in activities aimed at improving energy efficiency (+€2.1 billion). In 2023, sectoral growth was largely attributable to the tax incentive scheme commonly known as "Superbonus 110%", whose effects began in 2021 and were still evident in 2023.

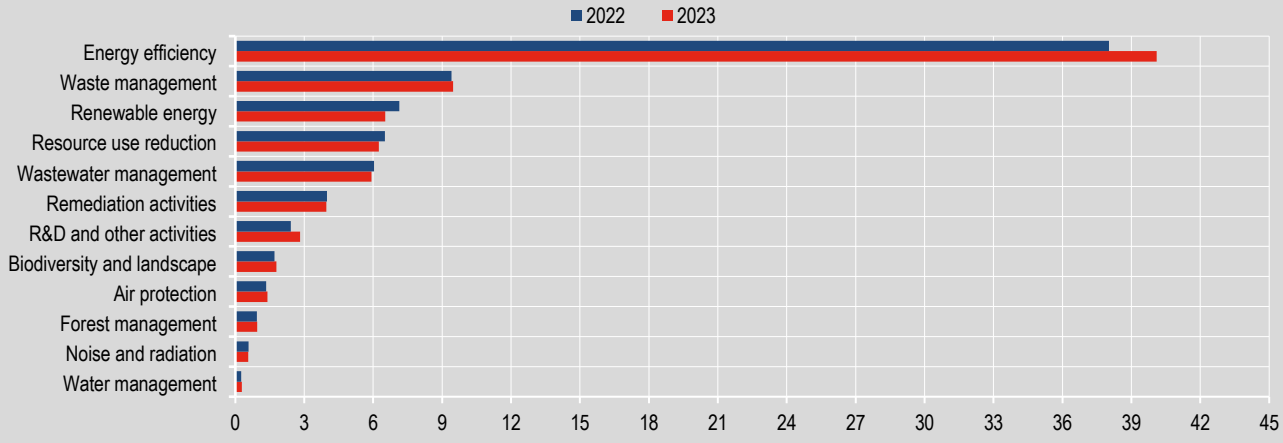
In the same energy domain, an opposite trend was observed for renewable energy production, which declined in value (–8.7%). This occurred despite an increase in the quantity produced, due to the reduction in the unit basic price affecting the energy sector as a whole.

Energy-related activities continued in 2023 to account for the largest share of total value added generated by the eco-industries sector. Energy efficiency interventions and renewable energy production together represented 58.3% of the sector in 2023, a higher share than in the previous year (57.7%).

In 2023, the importance of wastewater treatment services, waste management, and resource use reduction (including materials recovery activities) was also confirmed. Together, these three areas accounted for more than one quarter of the value added generated by the eco-industries sector.

At the European level, in 2022 (latest available data), Italy ranked among the countries with the highest share of the eco-industries sector in GDP (3.9%, compared with the EU-27 average of 3.3%).

FIGURE 6. VALUE ADDED BY ENVIRONMENTAL PURPOSE. Years 2022–2023, billions of euros



Source: Istat, Environmental Accounts – Environmental Goods and Services Account

In 2023, environmental protection expenditure up by 2.4%

In 2023, total expenditure aimed at preventing and reducing pollution and any other form of environmental degradation amounts to €52.9 billion, up 2.8% compared with 2022. As environmental protection expenditure grew more slowly than the overall economy (nominal GDP increased by 7.2%), its share of GDP declined to 2.5% (from 2.6% in 2022).

The overall trend in environmental protection expenditure reflects differentiated developments across environmental domains: a moderate increase in wastewater management (+0.7%), growth below the average for waste management (+2%), while other environmental protection activities show a more pronounced increase (+5.8%). The rise in "other activities" is mainly attributable to expenditure on remediation of contaminated soil (+7.8% in 2023), research and development for environmental protection (+10.7%), and biodiversity and landscape protection (+6.5%).

The various sectors of the economy contributing to environmental protection expenditure also display heterogeneous trends: households spent €10.2 billion (+2.6% compared with 2022), corporations €29.2 billion (+5.6%), and general government €13.6 billion (–2.8%).

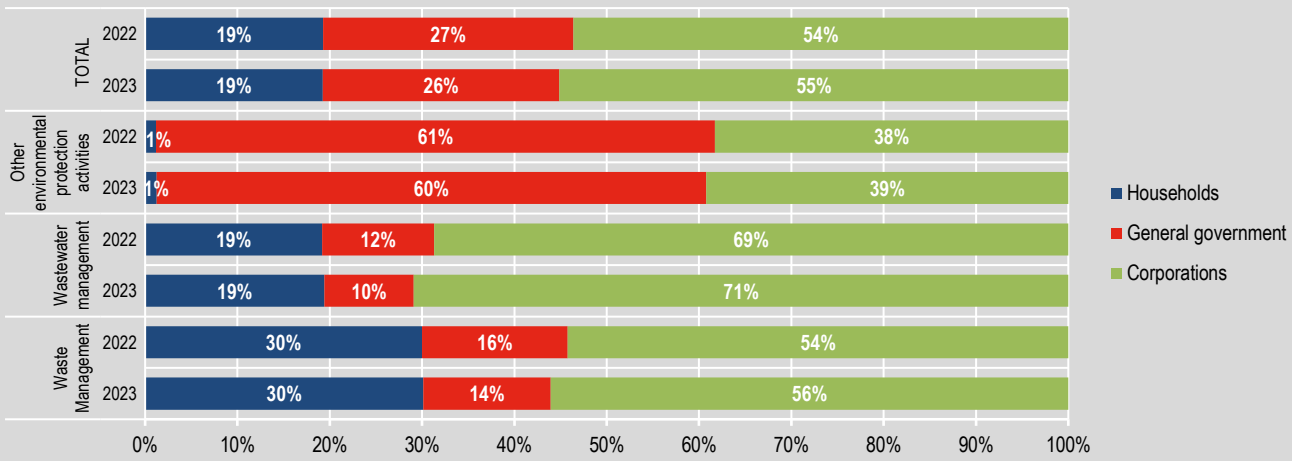
More specifically, households' share is stable in both areas where their expenditure is concentrated: waste management services (30% of the total economy expenditure) and wastewater treatment (19%).

In the same environmental domains, the share of expenditure borne by corporations also increases – from 54% to 56% in waste management and from 69% to 71% in wastewater management – reflecting both higher investment by firms providing these services and higher expenditure by firms using them. The corporate share also increased in other environmental protection domains (from 38% to 39% in 2023), mainly driven by higher spending on soil remediation.

Environmental protection expenditure by general government – comprising purchases of environmental services, investment by public operators, and collective consumption – increases overall in the category of other environmental protection activities, confirming the predominant role of public administrations which, with expenditure of €8.9 billion (+€345 million), accounts for nearly 60% of total spending in this area. Conversely, general government expenditure declines in environmental domains where corporations and households play a predominant role, namely wastewater treatment (where general government spent €1.3 billion, equal to 10% of the total, –€313 million) and waste management (€3.4 billion, equal to 14% of the total, –€418 million).

With environmental protection expenditure amounting to 2.5% of GDP, Italy ranks above the EU-27 average, estimated by the European statistical office at 2.0% of GDP in 2023.

FIGURE 7. NATIONAL EXPENDITURE ON ENVIRONMENTAL PROTECTION BY ENVIRONMENTAL PURPOSE AND INSTITUTIONAL SECTOR. Years 2022–2023, billions of euros



Source: Istat, Environmental Accounts – Environmental Protection Expenditure Account

Glossary

Economic activity: An activity involving the production of goods or services that takes place when resources such as labour, capital goods and raw materials are combined to produce goods or deliver services. An economic activity is characterised by the use of production factors, a production process and one or more outputs (goods or services). For statistical purposes, economic activities are classified according to Ateco 2007 (consistent with the European classification NACE Rev. 2).

Biomass and biomass-based products: Include biomass for human consumption, feed for livestock, animals and fish, processed products, wood and wood-based products, and other products consisting predominantly of biomass.

CEP classification (Classification of Environmental Purposes): A classification of environmental purposes covering all activities, products and expenditure whose objective is environmental protection (i.e. prevention, reduction and elimination of pollution and any other environmental degradation) or resource management (i.e. conservation, maintenance and enhancement of the stock of natural resources and thus protection against depletion). The main environmental purposes covered by environmental accounts correspond to groups (4-digit level) or groupings of groups within CEP: Air and climate (including reduction and control of greenhouse gases and of other air pollutants), Renewable energy, Energy management and saving, Wastewater management, Water saving and management of natural water resources, Waste management, Materials recovery and saving, Protection of soil, surface water and groundwater, Biodiversity and landscape protection, Forest resource management, Noise and radiation (including protection against noise and vibrations and against radiation), R&D for environmental protection, R&D for resource management, and Cross-cutting and other environmental protection activities (including environmental education and training, general environmental administration, management, regulation, communication and advisory services, and other environmental protection activities). The CEP, adopted by the United Nations Statistical Commission in 2024, replaces the previous CEPA (Classification of Environmental Protection Activities and Expenditure) and CReMA (Classification of Resource Management Activities).

Net domestic energy use (NDEU): An indicator derived from the Physical Energy Flow Accounts (PEFA) that measures the effective energy use of resident units at the total economy level. It represents energy use net of the energy incorporated in transformation processes into derived products (thus avoiding double counting), i.e. energy consumed and no longer available for further energy use. It includes all dissipated energy (through combustion and other processes), all types of energy losses and the amount of energy used for non-energy purposes.

Domestic material consumption (DMC): An aggregate of the economy-wide material flow accounts equal to Domestic extraction plus Imports minus Exports.

Environmental goods and services account (EGSS): Records and presents data on production activities generating environmental products. Environmental products include goods and services produced for environmental protection and resource management purposes. Environmental protection covers all activities and actions whose primary objective is the prevention, reduction and elimination of pollution and other forms of environmental degradation. Resource management covers the conservation, maintenance and improvement of the stock of natural resources and thus protection against depletion (see CEP classification).

Economy-wide material flow accounts (EW-MFA): Record and present measurements of physical exchanges (in mass units) between the Italian socio-economic system and the natural environment and the rest of the world. All materials except water and air are included. Primary products resulting from domestic extraction and all products – raw, semi-manufactured and finished – imported and exported are classified by material type.

Physical energy flow accounts (PEFA): Record and present energy flows from the environment to the economy, within the economy and from the economy to the environment, expressed in terajoules, distinguishing natural energy inputs, energy products and energy residuals. For each energy flow, supply (resources) is recorded by origin and use (uses) by destination through a matrix framework consistent with the Supply and Use Tables of national monetary accounts.

Environmental protection expenditure accounts (EPEA): Record and present data on the economic resources devoted by resident units to environmental protection, broken down according to the following CEP categories: Air and climate; Wastewater management; Waste management; Protection of soil, surface water and groundwater; Biodiversity and landscape protection; Noise and radiation; R&D for air emission reduction and control, wastewater management, waste management, protection of soil, surface water, groundwater and biodiversity, and noise and radiation; Cross-cutting and other environmental protection activities (environmental protection component) (see “CEP”).

Air emissions accounts: Record and present emissions of greenhouse gases, acidifying substances, tropospheric ozone precursors, particulate matter and heavy metals generated by resident production activities and households in Italy, according to the classification of economic activities used in the national Supply and Use Tables.

Environmental economic accounts / environmental accounting: A system of satellite accounts representing interactions between the economy and the environment, consistent with national accounts and the principles set out in the international statistical standard "System of Environmental-Economic Accounting" (SEEA 2012). Under Regulation (EU) No 691/2011 on European environmental economic accounts (as amended), EU Member States are required to compile environmental accounts. Nine environmental modules are foreseen, six of which – covered in this statistical report – are regularly compiled and disseminated by Istat: three in physical units (material flows, physical energy flows, air emissions) and three in monetary units (environmental protection expenditure, environmental taxes revenue, environmental goods and services). In December 2025, Istat compiled for the first time the account of environmental subsidies and similar transfers which, together with forest accounts and ecosystem accounts, was introduced into the Regulation in 2024.

Greenhouse gases (GHG): Certain gases present in the atmosphere, of both natural and anthropogenic origin, absorb and emit infrared radiation at specific wavelengths, giving rise to the phenomenon known as the "greenhouse effect". These include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).
Greenhouse gases allow solar radiation to pass through the atmosphere while hindering the escape into space of part of the infrared radiation emitted by the Earth's surface, thereby contributing to global warming. Each of these gases has its own specific global warming potential.
To calculate total greenhouse gas emissions, emissions of individual gases are converted into "tons of CO_2 equivalent" by multiplying the emissions of each gas by its Global Warming Potential (GWP), expressed relative to the warming potential of carbon dioxide. The following coefficients are applied: 1 for CO_2; 265 for N_2O; 28 for CH_4; and gas-specific factors for HFCs, PFCs, SF_6 and NF_3.

Exports (material flows): Include materials exported to other territories or economies. They comprise the weight of goods crossing the national border and – at national level only – direct purchases in Italy by non-resident units.

Domestic extraction: An aggregate of material flow accounts including natural resources extracted within the national territory and directly used.

Physical trade balance (PTB): An aggregate of material flow accounts equal to Imports minus Exports.

Waste management: According to the CEP classification, includes activities for the prevention of waste generation; collection, transport and treatment of waste; and monitoring, control, regulation, administration, information and communication related to waste.

Wastewater management: According to the CEP classification, includes activities for the prevention of water pollution; collection and treatment of wastewater; and monitoring, control, regulation, administration, information and communication related to wastewater.

Imports (material flows): Include materials imported from other territories or economies. They comprise the weight of goods crossing the national border and – at national level only – direct purchases abroad by resident units in Italy.

Tax: a compulsory, unrequited payment to general government, not proportional to the benefit received by the individual from government activities.

Environmental taxes: Environmental taxes: taxes whose tax base is a physical unit (or a proxy of it) that has a proven and specific negative impact on the environment. Revenue from environmental taxes is classified into four categories – energy, transport, pollution and resources – and by the paying economic sector: resident producers, resident households and non-resident units.

CO_2 emission intensity of energy use: It is the ratio between the amount of CO_2 emitted and energy consumption, as measured by the Net Domestic Energy Use (NDEU) of resident units for energy purposes.

Energy intensity: Measured as the ratio of Net domestic energy use (in terajoules) to GDP in chain-linked volumes (reference year 2020).

Energy minerals and derived products: Include coal, oil, natural gas, other fossil fuels and products consisting predominantly of energy minerals.

Metal ores and derived products: Include iron, copper, lead and other metal ores, and products consisting predominantly of metal ores.

Non-metallic minerals and derived products: Include construction minerals, industrial minerals and products consisting predominantly of non-metallic minerals.

Basic price: The price that the producer receives from the purchaser for one unit of a good or service produced, minus any taxes payable on that unit as a consequence of its production or sale (i.e. taxes on products), but including any subsidies receivable on that unit as a consequence of its production or sale (i.e. subsidies on products).Transport charges invoiced separately by the producer are excluded, whereas transport margins charged by the producer on the same invoice are included, even if shown as a separate item.

Gross domestic product at market prices (GDP): It represents the final result of the production activity of resident producer units. It is equal to total output of goods and services less intermediate consumption plus VAT and other taxes on imports. It is also equal to the sum of gross value added at basic prices of all economic activities plus taxes on products (including VAT and import taxes) minus subsidies on products.

Output (Production): the result of economic activity carried out in the country by resident units over a given period of time. Different concepts of output exist. Standard national accounts frameworks distinguish between: Market output of goods and services intended for sale, which is exchanged on the market and therefore gives rise to the formation of a market price; and Non-market output, which is not exchanged on the market (including output for own final use, collective services provided by general government, and services supplied by non-profit institutions serving households).

Institutional sector: A grouping of institutional units with similar economic behaviour. The institutional sectors are: Non-financial corporations, Financial corporations, General government, Households, Non-profit institutions serving households (NPISH), and the Rest of the world. In Italy, households are subdivided into consumer households and producer households.

Household final consumption expenditure: The value of expenditure by households on goods and services acquired to satisfy individual needs. For the households sector as a whole, it includes the final consumption expenditure of non-profit institutions serving households (NPISH).

National expenditure on environmental protection: measures the resources devoted by resident units to the prevention, reduction and elimination of pollution and any other form of environmental degradation (net of financing received from the Rest of the World). The aggregate is the result of the sum of four main types of expenditure by economic agents:expenditure by households, enterprises and general government on the purchase of environmental protection services (such as waste management or wastewater treatment); investments undertaken by producers of environmental protection services supplied to third parties; expenditure by enterprises on equipment and machinery, goods and services, and compensation of employees for environmental protection activities carried out in-house; transfers paid to the Rest of the World, for example within the framework of international agreements on environmental protection.

Non-resident units (environmental taxes): A category including both non-resident households and non-resident economic activities. Both may pay environmental taxes, for example when purchasing energy products for transport in Italy.

Gross value added at basic prices: the difference between the value of output of goods and services and the value of intermediate consumption incurred in the production process. Output is valued at basic prices (i.e. excluding taxes on products and including subsidies on products), while intermediate consumption is valued at purchasers' prices. It corresponds to the sum of compensation of employees, gross operating surplus/mixed income and consumption of fixed capital (depreciation).

Methodological note

Introduction: Environmental accounts – an integrated reading of the economy and the environment

Environmental accounting describes the relationships between the economy and the environment by integrating the conceptual categories and classifications of the System of National Accounts (SNA) and the European System of Accounts (ESA) with those of ecological science.

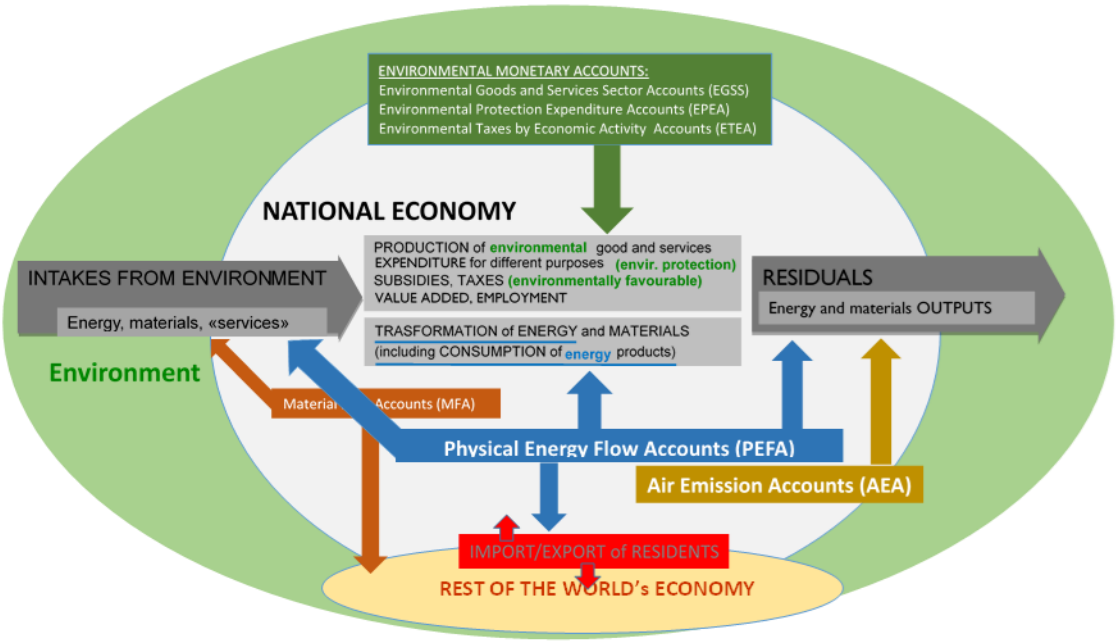
This integration is represented through:

- **Descriptions of the physical dimension of the socio-economic system**, i.e. its structure, functioning and relationship with the natural environment, in terms of stocks of materials and energy, land use, flows of natural resources and residuals to and from nature, and flows of products between economic units. These descriptions are based on scientific knowledge and address the drivers of environmental pressures, the pressures themselves, the state of the natural system (resources and ecosystems) and changes therein. The economic units involved in physical flows are defined and aggregated as in the national accounts. This allows a joint representation of the contributions of different activities to environmental pressures and to economic flows.

- **Descriptions of economic flows**, already included in the national accounts – such as output, value added, labour input, imports, exports, intermediate and final consumption, investment and taxes – at levels of detail suitable for analysing the relationships between the natural environment and the socio-economic system. This makes it possible, for example, to identify the monetary flows activated by the economic system as measures to prevent environmental damage or to manage natural resources, as responses to environmental challenges.

The environmental satellite accounts are produced by Istat in accordance with the international statistical standard *System of Environmental-Economic Accounting* (SEEA 2012). The SEEA is consistent with the concepts, standards and classifications of the national accounts as defined by the 2008 SNA and ESA 2010. Not all accounts envisaged by the SEEA are currently compiled in Italy or in other countries. Istat regularly produces six integrated environmental-economic accounts required under Regulation (EU) No 691/2011 and subsequent amendments[1] on European environmental economic accounts and subsequent amendments. Three accounts concern physical quantities (mass, energy, climate and air quality impact potentials), and three concern economic transactions and are therefore expressed mainly in monetary terms. In addition to the SEEA and the Regulation, Istat refers operationally to the methodological manuals prepared by Eurostat for each specific account and to guidance developed within the working groups of the European Statistical System, to which Italy regularly contributes.

THE ECONOMY-ENVIRONMENT SYSTEM AND ENVIRONMENTAL ACCOUNTS



Physical environmental accounting produced by Istat

The **Physical flow accounts** are devoted to measuring the "socio-economic metabolism" of the national anthropogenic system, i.e. the transformations and circulation of matter and energy, in terms of exchanges between economic activities and the natural system, with the Rest of the world and among economic activities themselves. Exchanges with the natural system consist of withdrawals of natural resources (transformed into products) and returns to the environment of degraded matter, while exchanges with the Rest of the world and among economic activities cover the entire range of material products and energy, from raw materials to more complex finished products. All flows connected to the activities of resident units are recorded, regardless of the geographical location in which they occur. The partition of the anthropogenic system follows economic criteria and is implemented through the use of definitions and classifications of National Accounts, with a flow representation based on the architecture of the Supply and Use Tables of the monetary accounts, extended as necessary to allocate flows between the environment and the economy. For this reason, physical flow environmental accounts are particularly suitable for integrated environmental, energy and economic analysis. The flows described, measured in physical units, provide supplementary information to that of the National Accounts, with which they remain consistent in terms of concepts, definitions, accounting principles and classifications. This approach constitutes the distinctive feature of environmental accounts and differentiates them from other

[1] See the entry "Environmental economic accounts / environmental accounting" in the Glossary for further details.

environmental data sources – on which the accounts are based, particularly as regards energy and emissions statistics – which generally follow the geographical territory principle and use classifications different from those applied in economic analysis. Within the framework of physical flow environmental accounts, Istat regularly produces Material Flow Accounts, Physical Energy Flow Accounts and Air Emissions Accounts.

By determining the total mass – excluding air and water – of materials used in a country's production process, the **Material Flow Accounts** (MFA) provide a holistic measure of the anthropogenic pressure exerted on the environment. The materials recorded originate either from the domestic natural environment (domestic extraction) or from abroad (imports, which by definition consist of products). All flows are classified by material category (biomass, minerals and composite products, by type). Exports (the only flow recorded on the destination side of the outputs resulting from transformations within the national economy) and imports are also classified by stage of processing, whereas domestically extracted materials are, by definition, those incorporated into primary products. The compiled data do not directly cover returns to the natural environment; however, by virtue of the law of conservation of matter – whereby materials used as inputs are necessarily transformed into outputs such as emissions, effluents, waste accumulation, capital formation and durable goods – they provide significant indications of pressures exerted on the atmosphere, water, soil and ecosystems. Moreover, developments over time in material flows help to highlight the key characteristics of a country's economic development. Data are available at national level, as required by the European Regulation, as well as at regional level.

For the specific category of energy materials, the **Physical Energy Flow Accounts** (PEFA) enable a detailed analysis of the energy metabolism of the socio-economic system and of the interactions between the natural system and the anthropogenic system related to the supply, transformation and use of energy. They provide a comprehensive description not only of exchanges between the natural environment and the economic system, but also of flows within the economy (energy products and certain non-energy products used for energy purposes). Flows are measured in energy units (terajoules).

Flows are first distinguished by origin (extraction of natural energy resources from the environment or imports) and by destination (residuals to the environment, exports and accumulation within the economy). More specifically, flows are classified into 31 categories (7 for natural energy resources, 20 for energy products, 2 for non-energy products used for energy purposes, and 2 for energy losses and other energy residuals), reflecting the specific physical and commodity characteristics of energy or of the materials in which it is embodied.

For each type of flow, origin and destination are broken down by producing industries, households, accumulation, Rest of the world and environment. Production activities are classified into 63 economic activity branches (according to the Ateco classification), while household consumption activities are divided into three categories by purpose of use (heating/cooling, transport, other uses).

The PEFA framework also allows the calculation of indicators, including "Energy use by resident units" (also known as NDEU – Net domestic energy use), used in the data presented in this Statistical Report, as well as the reconciliation between this indicator and "Gross inland energy consumption" (GIEC) derived from the National Energy Balance (which follows the geographical territory principle). Data are available at national level.

Materials extracted for use by the economy are returned to the natural environment in various forms. The **Air Emissions Accounts** (AEA – formerly known as NAMEA-type accounts) describe a specific form of return of materials to the natural environment, namely their release into the atmosphere as volatile substances. Emissions are attributed to their origin in production activities, classified according to the Ateco classification, or in household activities (heating, transport and other uses). Data are available at national level for 24 substances and three derived aggregates relating to the main environmental themes. Emissions directly attributable to natural phenomena and to ecosystem functioning are excluded, even when induced by environmental transformations resulting from anthropogenic action (for example, climate change). Production activities generate emissions directly through processes characteristic of their principal activity, as well as through secondary and ancillary activities such as heating and own-account transport[2]. Enterprises generate emissions through production processes that transform materials and products, largely as a result of the combustion of energy products. Households generate atmospheric emissions through the use of fuels for private transport, gardening, heating and cooking, as well as through the use of solvents and paints.

Thanks to the methodological consistency of PEFA and AEA data with the principles of national accounts, it is possible to compare the contribution of production activities to socio-economic aggregates (output, value added, employment) with their contribution to the generation of energy flows and emissions, which represent significant potential and actual pressures of human activities on the natural environment. The accounts also enable the calculation of indicators reflecting the efficiency of production activities, such as energy intensity and emission intensity (e.g. energy use/output, emissions per full-time equivalent unit of labour); the higher the value of the indicator, the lower the efficiency of the production activity.

[2] For a given production unit, the principal activity is the one whose value added exceeds that of any other activity carried out within the same unit. A secondary activity is an activity undertaken in addition to the principal activity. An ancillary activity consists of support functions (such as purchasing, sales, marketing, data processing, transport, storage, etc.) carried out in order to create the appropriate conditions for performing the principal or secondary activities.

An interpretation based on environmental accounts expressed in physical units encompasses both the environmental and the economic spheres, capturing flows in both directions (extractions from and returns to the environment) and, in the case of energy flows, also internal flows (transformations and final uses).

Monetary environmental accounting produced by Istat

Unlike physical accounts, the flows described in the **monetary environmental accounts** are entirely within the economic sphere. They describe the actions undertaken by the economic system for environmental protection or the management of natural resources, through the production of goods and services serving these purposes and the incurrence of expenditures for the same objectives.
In this context, the analysis of the relationship between the natural environment and the socio-economic system consists of identifying, within the national accounts, the components of labour input, output, value added, consumption, investment and external trade that serve environmental purposes. Environmental purposes include the conservation of nature and the reduction and prevention of pressures exerted by the socio-economic system on the natural environment (for example, biodiversity protection, wastewater treatment and waste management), as well as the management of natural resources through their conservation, maintenance and safeguarding (for example, materials recovery activities, energy efficiency measures and the production of energy from renewable sources). More specifically, the main environmental purposes covered by the accounts are defined according to the reference classification: the *Classification of Environmental Purposes* (CEP), at the level of groups (4-digit) or group aggregates, namely: Air and climate (including reduction and control of greenhouse gases and reduction and control of other air pollutants); Energy from renewable sources; Energy management and saving; Wastewater management; Water saving and management of natural water resources; Waste management; Recovery and saving of materials; Protection of soil, surface water and groundwater; Protection of biodiversity and landscape; Management of forest resources; Noise and radiation (including protection against noise and vibration and protection against radiation); R&D for environmental protection; R&D for resource management; and Cross-cutting and other environmental purposes (including environmental education and training; general environmental administration, management, regulation, dissemination and consultancy; and other environmental protection activities). The CEP classification, adopted by the United Nations Statistical Commission in 2024, replaces the previous CEPA (Classification of Environmental Protection Activities and Expenditure) and CReMA (Classification of Resource Management Activities) classifications.

With regard to fiscal flows, environmental taxes are not identified on the basis of the intended environmental use of the revenue. Instead, the selection criterion concerns the tax base and includes those bases that have a proven and specific negative impact on the environment, such as energy products. Through their effect on product prices, such fiscal instruments can potentially steer producers' and consumers' choices towards more environmentally sustainable behaviour. Within the framework of the monetary environmental accounts, Istat regularly compiles the Environmental Goods and Services Sector accounts, the Environmental Protection Expenditure Accounts, and Environmental Taxes by economic activity, and from 2025 onwards also the accounts on environmental subsidies and other transfers.

The **Environmental Goods and Services Sector** (EGSS) account records and presents data on production activities that generate environmental products. Also referred to as the eco-industry account, despite this denomination the account does not identify only producers specialised in environmental production; rather, it covers all goods and services with an environmental purpose, irrespective of the producer.

An activity is considered "environmental" when it results in the production of **environmental products**, i.e. goods and services that directly contribute to environmental protection or resource management purposes.

In order to define and harmonise the scope of the account, Eurostat has developed an *Indicative Compendium*[3], consisting of a list of environmental goods and services and of the economic activities that produce them. The list is indicative in nature, as it does not exclude the possibility that some of the listed products may not be relevant in certain countries, nor that other environmental goods, services and economic activities of national relevance may exist.

According to the criterion whereby environmental products and activities must be specifically aimed at environmental protection or natural resource management, production activities that use as inputs products derived from recovered materials – such as paper produced from recycled paper or aluminium produced from scrap – are excluded from the scope of the Environmental Goods and Services account. In such cases, the production itself does not directly contribute to reducing the use of natural resources; this reduction occurs upstream, at the stage of material recovery and the production of secondary raw materials. Data are available at national level for the following variables: output, exports of national origin (i.e. products produced within the economic territory, of which as a share of output), value added and employment. For all variables, a breakdown is provided by economic activity according to NACE Rev. 2 (aggregation level A*21 as defined in ESA 2010) and by groups of the *Classification of Environmental Purposes* (CEP), aggregated as follows: Air and climate; Energy from renewable sources; Energy management and saving; Wastewater management; Water saving and

[3] See Commission Implementing Regulation (EU) 2024/1769 of 26 June 2024 on the indicative compendium of environmental goods and services.

management of natural water resources; Waste management; Recovery and saving of materials; Protection of soil, surface water and groundwater; Protection of biodiversity and landscape; Management of forest resources; Noise and radiation; R&D for the reduction and control of air emissions, for wastewater management, for waste management, for soil, surface water, groundwater and biodiversity, and for noise and radiation; R&D for energy, water resources, recovery and saving of materials and forest management; and Cross-cutting and other environmental purposes.

The estimates released in this Statistical Report refer to the total economy, including not only market production but also non-market production (general government and non-profit institutions serving households) and own-account production carried out by economic operators (including households in their capacity as producers) and intended either for intermediate use within the production process (for example, recovery activities for materials to be reintroduced into production) or for own final consumption (for example, solar energy produced and consumed within households).

The **Environmental Protection Expenditure Accounts** (EPEA) measure the economic resources devoted to environmental protection purposes, according to the groups of the Classification of Environmental Purposes (CEP), aggregated as follows: Air and climate; Wastewater management; Waste management; Protection of soil, surface water and groundwater; Protection of biodiversity and landscape; Noise and radiation; R&D for the reduction and control of air emissions, for wastewater management, for waste management, for soil, surface water, groundwater and biodiversity, and for noise and radiation; and Cross-cutting and other environmental purposes (environmental protection component). To date, the data available in Italy and in the EU do not include expenditure for natural resource management purposes, an area instead covered by production estimates. The EPEA describe the main stages of the environmental expenditure cycle, including the formation of supply and demand for environmental services, investments for the provision of such services, and transfers through which General Government and the Rest of the World finance the environmental expenditure of other entities. Transactions are broken down by CEP classes (or groupings of classes) and also distinguish both the institutional sector carrying them out – General Government and Non-profit Institutions Serving Households, Corporations, Households – and the role it plays in environmental protection: producer of environmental services, user of environmental goods and services, financier of environmental expenditure incurred by other operators (only for General Government and the Rest of the World), or beneficiary of transfers related to environmental protection. From the EPEA, the aggregate “national expenditure on environmental protection” is derived and disseminated in this Statistical Report. It is defined as the sum of: final consumption of environmental protection services by resident units; intermediate consumption of environmental protection services by resident units, excluding specialised producers; gross fixed capital formation for environmental protection activities; transfers for environmental protection not corresponding to the previous aggregates; minus financing from the Rest of the World.

Through their effect on product prices, fiscal instruments can steer consumers towards less environmentally harmful behaviour, regardless of whether the legislator explicitly pursues environmental objectives. For this reason, environmental accounts measure the revenue paid by the various economic agents in relation to fiscal instruments levied on environmentally harmful tax bases, within the broader set of socio-economic responses to environmental challenges. **Environmental taxes**, as part of the broader system of taxation, are compulsory, unrequited payments not linked to the individual benefits received from General Government. According to international guidelines, a tax is considered environmental if its tax base is “a physical unit (or a proxy thereof) that has a proven and specific negative impact on the environment.” Tax bases include, for example, the use of energy products or emissions of pollutants. Since the identification of environmental taxes does not depend on the objective stated in the legal act introducing the tax, the category includes both taxes explicitly introduced for environmental purposes and taxes whose environmental intent is not evident in their legal formulation. Data disseminated by Istat distinguish environmental tax revenue by the economic agent paying the tax and by tax category (according to a classification defined in European guidelines). Economic agents include resident producers of goods and services (broken down by economic activity according to NACE Rev. 2), household consumers, and non-resident units (including foreign households and non-resident producers operating within the Italian territory). Tax categories include energy, transport, pollution and resources.

Energy taxes include all taxes on energy products used both for transport purposes (mainly petrol and diesel) and for stationary uses (mainly fuel oils, natural gas, coal and electricity). Transport taxes mainly include taxes related to the ownership and use of vehicles. Taxes on other means of transport and transport services (for example aircraft) are also included, provided they comply with the general definition of environmental taxes. Pollution and resource taxes include taxes on air emissions or effluents, waste management, noise and the extraction of natural resources; the CO_2 tax is an exception, as it is classified under energy taxes.

Reference population

Environmental accounts refer to production activities carried out by resident units, defined – in line with the system of national accounts – as units whose predominant centre of economic interest is located in the economic territory of the country, that is, when they engage in economic activities in that territory for a long period (one year or more) (ESA 2010, § 1.61).

An exception to this principle concerns the material flow accounts, for aggregates relating to international trade, where the mere transfer of economic ownership is not sufficient; instead, the physical crossing of national borders is required. In addition, these accounts apply the so-called "harvest approach" for recording harvested cultivated biomass. A strict application of ESA principles would instead require recording the flows of substances entering and leaving cultivated plants, since these are considered part of anthropogenic stocks.

Main data sources

Material flow accounts**.** The main sources used are: Estimate of areas and production of agricultural crops; Survey on the structure and production of agricultural holdings; Structure and production of the main woody agricultural crops; Farm Register areas; province-level specific parameters derived from Enea and Ispra studies and from the above-mentioned Istat surveys (for used crop residues); Economic accounts for agriculture; data on fish catches from the Ministry of Agricultural and Forestry Policies; provincial data from the beekeeping register of the Ministry of Health; regional administrative data; Istat survey "Anthropogenic pressures and natural hazards – Extractive activities from quarries and mines"; industrial production indices; Istat estimates on undeclared employment; administrative data from the Revenue Agency relating to sector studies; administrative data from the Ministry of Enterprises and Made in Italy (Mise), Directorate-General for Mineral and Energy Resources; Enea regional energy balances; foreign trade microdata; freight transport microdata.

Physical energy flow accounts**.** The basic information for compiling the Pefa mainly comes from two sources, used jointly: the National Energy Balance (Ben) and the IEA/UNECE/Eurostat Energy Questionnaires. The Ben and the Questionnaires are integrated with other sources to ensure consistency with the National Economic Accounts and to provide more accurate estimates of certain aggregates, while respecting the residence principle and allowing a breakdown by economic activity and by type of use of the energy flows measured by the Pefa. In particular, the following sources are used:

- the Survey on international trade in goods and services (Coe), the Air Transport Survey, the Supply and Use Tables, and the Economic Accounts for Agriculture (components of the National Economic Accounts), produced by Istat;
- the Survey on International Tourism in Italy and the Survey on International Freight Transport, by the Bank of Italy;
- the Survey on Final Consumption of Energy Products by Enterprises (Coen), conducted with reference to 2011 consumption;
- the Electricity Balance and data on Electricity Consumption by economic sector, provided by Terna;
- the Vehicle Fleet Register, provided by Aci (Automobile Club d'Italia);
- the Vehicle Inspection Archive of the Ministry of Infrastructure and Transport;
- the Vehicle Registration Register, provided by Unrae (National Union of Foreign Motor Vehicle Representatives);
- the publication "Economic, energy and petroleum statistics" by the Italian Petroleum Union;
- the National Emissions Inventory of Ispra (Institute for Environmental Protection and Research).

Air emissions accounts (Aea)**,** formerly known as Namea-type accounts, are compiled mainly from the National Air Emissions Inventory prepared annually by Ispra, from which the data reported by Italy at international level under the United Nations Framework Convention on Climate Change (Unfccc) and the Convention on Long-range Transboundary Air Pollution (Clrtap) are derived. The relationship between emissions in the Aea accounts and those calculated by Ispra under the two above-mentioned conventions is described in these notes and quantified in the "Reconciliation between total Namea and total Unfccc/Clrtap". Remaining statistical discrepancies are largely due to the use of the most recent data kindly provided by Ispra, updated after the latest official submissions.

Additional data sources include annual information regularly produced by Istat within the framework of the National Economic Accounts and the Environmental Economic Accounts, in particular the Physical Energy Flow Account (Pefa).

Environmental goods and services sector accounts. The main data sources used to estimate the aggregates of the environmental goods and services sector accounts are both statistical and administrative:

- survey data: Prodcom; Structural Business Statistics (investments and current expenditure for environmental protection collected through the Sci – Business Accounts System and Pmi – Small and Medium-sized Enterprises and self-employed professions surveys);
- administrative data: vehicle inspection archive; Aci vehicle fleet archive; Ispra archive of Emas (Eco-Management and Audit Scheme) certifications;
- other statistical data: economic, financial and environmental reports of specific companies; reports and statistical data for the renewable energy sector produced by Gse, trade associations and other bodies.
- Further sources include annual information produced by Istat within the National Economic Accounts and Environmental Economic Accounts:
- investments by industry, Economic Accounts for Agriculture, exports by product, value added and labour units by industry, Supply and Use Tables;

- the Physical Energy Flow Account (Pefa).

Environmental protection expenditure accounts**.** The main data sources used to estimate the aggregates of the environmental protection expenditure accounts are:

- National Economic Accounts – mainly the Supply and Use Tables, General Government accounts by function (Cofog), and investments by owning industry;
- survey data: investments and current expenditure for environmental protection collected through the Sci (Business Accounts System) and Pmi (Small and Medium-sized Enterprises and self-employed professions) surveys. For the estimation of certain environmental protection expenditure aggregates, ad hoc methodologies are implemented to ensure consistency between survey data and National Economic Accounts data.

Environmental tax accounts**.** Data on environmental taxes originate from the calculations carried out within the framework of national accounting for the compilation of the Accounts and Economic Aggregates of General Government. In some cases, the revenue from a single tax can be identified separately in the accounts; in other cases, it is included within broader aggregates**.**

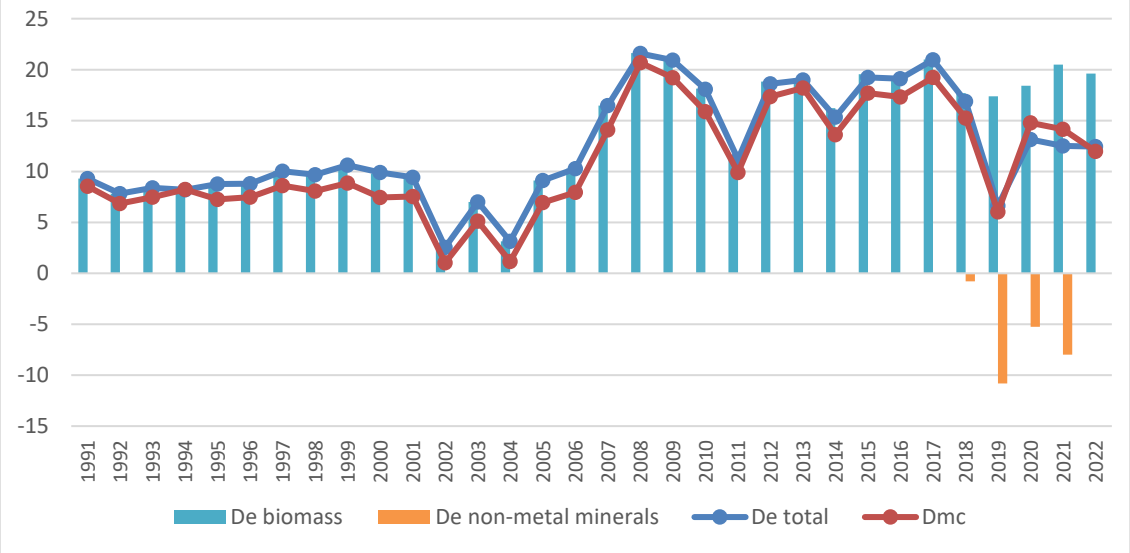
Dissemination and revision policies

Detailed estimates of the environmental accounts are released once a year (year *t*) through the IstatData database, with the exception of environmental tax aggregates, for which two releases are scheduled, according to the following timetable: February: Environmental protection expenditure accounts and Environmental goods and services sector aggregates (time series up to year *t–3*), May: Material flows (time series up to year *t–2*); July: Environmental taxes; October/November: Physical energy flows and air emissions (time series up to year *t–2*), as well as the update of the environmental tax series released in May. Time series are updated annually to incorporate revisions to input data and are revised when methodological changes occur, including general revisions of the national accounts.

The environmental account indicators disseminated in this Statistical Report are consistent with the 2024 general revision of the national accounts. Specifically, the 1991–2022 time series of the Economy-wide Material Flow Accounts were revised in October 2025. The estimate of DMC is, on average, 11 Mt per year higher (+1.6% of the average level), while total Domestic extraction (DE) is, on average, 12.3 Mt per year higher (+3.9% of its average level). Estimates increased on average by 13.3 Mt per year for biomass (mainly due to the revision of fuelwood data) and decreased, for the years 2018–2022 only, by 6.4 Mt per year for non-energy minerals, revised using the Istat survey on quarries and mines (see the following Figure).

For the entire 1991–2022 time series, the total quantity of non-energy minerals extracted domestically has also been redistributed across material categories: sand and gravel decrease on average by 30 Mt per year, reallocated to marble and building stones (+14.8 Mt per year), limestone (+7.3 Mt per year), dolomite (+5.5 Mt per year), and other materials.

MAIN INDICATORS OF MATERIAL FLOWS - ITALY. IMPACT OF THE 2025 GENERAL REVISION. Years 1991-2022, Mtons.



Aggregations of economic activities used in the Statistical Report

1. A*3 aggregation (according to the ESA 2010 transmission programme) and correspondence with Ateco (NACE Rev. 2) sections

Name	Ateco Section	DESCRIPTION
Agricolture	A	Agriculture, forestry and fishing
Industry	B, C, D, E e F	Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities; construction
Services	G, H, I, J, K, L, M, N, O, P, Q, R, S, T e U	Services

2. Aggregazione A*21 (secondo il programma di trasmissione del Sec2010): sezioni della classificazione Ateco (Nace Rev.2) e raccordo con le divisioni

Sezioni	Divisioni	DESCRIZIONE
A	01-03	Agriculture, forestry and fishing
B	05-09	Mining and quarrying
C	10-33	Manufacturing
D	35	Electricity, gas, steam and air conditioning supply
E	36-39	Water supply; sewerage, waste management and remediation activities
F	41-43	Construction
G	45-47	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	49-53	Transportation and storage
I	55-56	Accommodation and food service activities
J	58-63	Information and communication
K	64-66	Financial and insurance activities
L	68	Real estate activities
M	69-75	Professional, scientific and technical activities
N	77-82	Administrative and support service activities
O	84	Public administration and defence; compulsory social security
P	85	Education
Q	86-88	Human health and social work activities
R	90-93	Arts, entertainment and recreation
S	94-96	Other service activities
T	97-98	Activities of households as employers of domestic personnel; undifferentiated goods- and services-producing activities of households for own use
U	99	Activities of extraterritorial organisations and bodies

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[i] This dynamic is attributable to growth in non-energy-related emissions, particularly nitrous oxide (N_2O), associated with increased use of nitrogen-based fertilisers and manure, which more than offset the reduction in emissions from energy combustion.

[ii] In 2023, GHG emissions caused by activities other than energy combustion amount to 80.5 million tonnes of CO_2 equivalent (tCO_2eq),. Over three quarters of these emissions are concentrated in three economic sectors: Agriculture, forestry and fishing (40.3%), which mainly produces methane (CH_4) and nitrous oxide (N_2O) from enteric fermentation in livestock and from the use of fertilisers and organic and nitrogen-based manure; Sewerage, waste collection, treatment and disposal activities, materials recovery, remediation activities and other waste management services (23.7%), with emissions mainly consisting of methane; and Manufacture of other non-metallic mineral products (12.1%), whose emissions – primarily CO_2 – derive from lime and cement production.

[iii] The indicator CO_2 emission intensity of energy consumption is defined as the ratio of CO_2 emissions to the Net Domestic Energy Use for energy purposes. Its stability indicates the absence of decoupling between consumption and emissions, even when other intensity indicators calculated with respect to GDP decline.
[iv] The data presented here are consistent with the new time series released in October 2025. See the Methodological Note for details on the revision.