



# STATE OF THE ENVIRONMENT REPORT 2025

## HIGHLIGHTS





# ENVIRONMENT AND ECONOMY

Circular economy – material resources

Environmental management tools

Environmental Impact Assessment

Strategic Environmental Assessment

Integrated pollution prevention and control

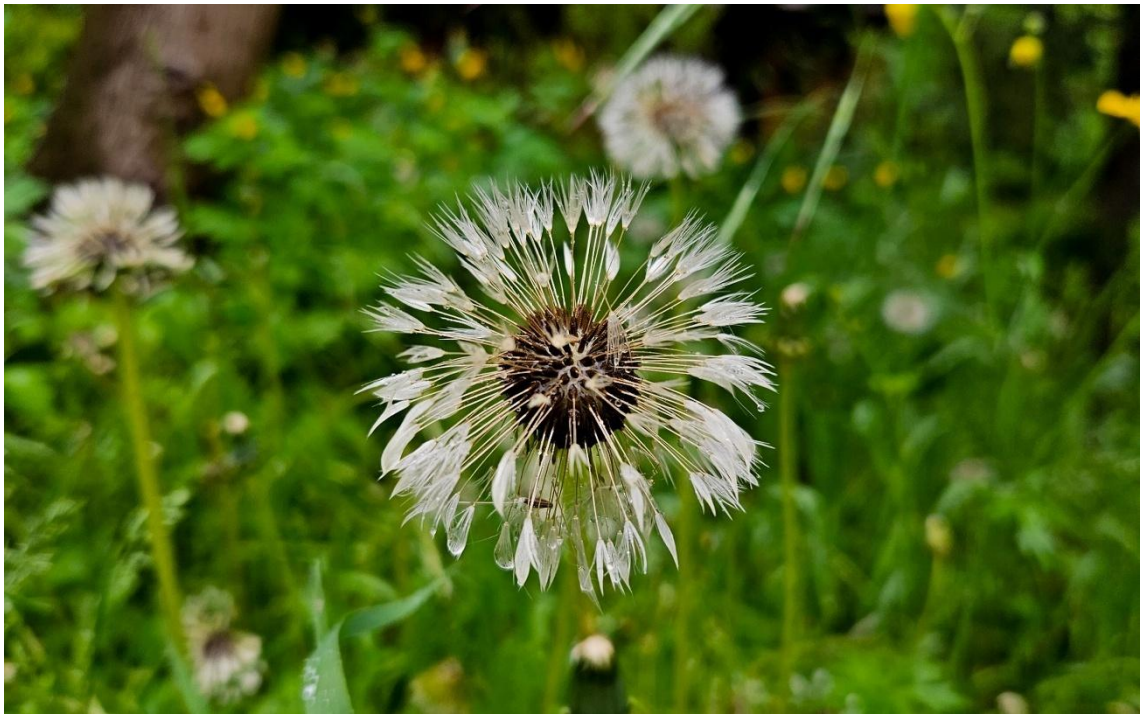
Single environmental license

“Green” patents

Environmental Non-Governmental Organisations

Public participation – *PARTICIPA* Portal

Environmental taxes



## CIRCULAR ECONOMY – MATERIAL RESOURCES

- **Domestic material consumption** (**DMC**) reached a total of **160.1 million tonnes** in **2023**, an increase of 1.7% compared to 2022, corresponding to an increase of 0.4% compared to the average value for the 2013–2022 decade.
- With regard to **DMC per inhabitant**, Portugal's consumption, in **2023**, was **15.9 tonnes per inhabitant**, while the **EU-27** consumed up to **13.9 tonnes per inhabitant.**
- In **2023**, the **Direct Material Input** in the portuguese economy reached **200.8 million tonnes**, an increase of 1.3 million tonnes (0.7%), compared to 2022.
- In **2022** (year of the latest data available), the **material footprint decreased** by **8.9%**, compared to 2021, largely due to the reduction in the material footprint associated with non-metallic minerals.
- In **2023**, **resource productivity** increased by 0.8%, compared to 2022, reaching the **135 index** (reference year - 1995), representing a 12.1% increase, compared to the average value for the decade 2013-2022.
- In **2023**, Portugal achieved a **circular material use rate** of **2.8%**, 0.5 p.p. below the rate registered in 2022, deviating from the **EU-27** rate (**11.8%**).
- In the same year, Portugal achieved an economic growth with **relative decoupling from resource consumption**, having achieved absolute decoupling in the previous year.

## ENVIRONMENTAL MANAGEMENT TOOLS

- In **2024**, Portugal had **two new registrations** and **one withdrawal** from **the EU Eco-Management and Audit Scheme** (**EMAS**); moreover, two activity sites, already registered, were integrated into a single registration, maintaining a total of **43 registered organisations**.
- In Portugal, the number of **organisations certified** to **ISO 14 001** in **2024** reached **1,482**, representing a decrease of 1.1%, compared to the previous year.
- As of **31 December 2024**, there were **31 companies with products and services** that had been granted at least one licence to use the **European Union Ecolabel**, totaling **7,094 certified products**. It should be noted that, in that year, it was granted, in Portugal, the first licence for the use of the EU Ecolabel to a product of the "Furniture" category.

## ENVIRONMENTAL IMPACT ASSESSMENT

- Between **2019** and **2024**, projects related to the **production and transport of energy**, **infrastructures**, and **natural resource extraction** were the most significant among the projects subject to **Environmental Impact Assessment** (**EIA**).
- Between 2019 and 2023, **87%** of **EIA processes** resulted in the issuing of a **conditioned favourable Environmental Impact Statement** (**EIS**) (which imposes a set of conditions to be fulfilled by the project promoter for the purposes of its licensing or authorization). The remaining processes (**13%**) closed with an **unfavourable decision**.
- Whenever a project is likely to have negative impacts on another EU Member State, the EIA procedure includes a **cross-border consultation**. In **2024**, **Spain** initiated a consultation with Portugal on **two processes** (a thermoelectric power plant and a wastewater treatment plant) and **Portugal** initiated a consultation with Spain on **two** other processes (an energy production infrastructure project and a water collection and supply project).

## STRATEGIC ENVIRONMENTAL ASSESSMENT

- Between **June 2007** and **30 April 2025**, **1,215** procedures of **Strategic Environmental Assessment** (**SEA**) **of Plans and Programmes** were submitted to the Portuguese Environment Agency, of which this Agency received **394 Environmental Declarations** (32%), after SEA procedures were completed.
- Of these, **339 Environmental Declarations** (86%) were related to **Territorial Management Instruments** (**TMI**), **40** to **Sectoral Plans and Programmes** (10%) and **15** to **other types of Plans and Programmes, including Operational Programmes**.
- The registered TMI correspond to **Municipal Master Plans** (**185**), **Urbanisation Plans** (**41**) and **Detailed Plans** (**111**), which may also occur as **Rural Intervention Plans**.

## INTEGRATED POLLUTION PREVENTION AND CONTROL

- In **2023**, **797 Annual Environmental Reports** (**AER**) were submitted to the Portuguese Environment Agency, of which **563 were analysed**, representing an increase of 7% and 24%, respectively over the previous year.
- Under the Recovery and Resilience Plan **(PRR)**, **88 IPPC facilities** received funding in the categories of Industry Decarbonisation, Renewable Hydrogen and RePowerEU, representing a **total investment** of **506.6 million euros**, with particular emphasis on the following sectors: stell, cement, chemicals, pulp and paper.

## SINGLE ENVIRONMENTAL LICENSE

- In **2024**, **23,176 simulations** were conducted to identify the framework for a given project or activity under the applicable environmental regimes, resulting in the submission of **6,698 licensing processes** in the **Single Environmental License Module**.
- In the same year, of the **6,698** processes submitted, **70%** were **approved**, **5%** were **rejected**, **10%** were **closed**, and **15%** are **under analysis**.

## "GREEN" PATENTS

- In **2024**, **10 national applications** for "green" patents and utility models were registered, **7 "green" patents** and utility models were granted, and **50 European "green" patents** were validated in Portugal.
- Considering the **last six years**, it is possible to observe that, in **national patent and utility model applications**, "green" technologies related to the **technical areas of energy** prevail over the other thematic areas.
- In the same period, similar trend is observed for **patents and utility models**, standing out the"green" technologies related to the technical areas of **energy**.
- It should also be noted that, in recent years, the technical areas related to **energy** are also those with the highest representation in **European "green" patents validated in Portugal**, followed by those related to agriculture.

## ENVIRONMENTAL NON-GOVERNMENTAL ORGANISATIONS

- As of 31 December **2024**, there were **116 Environmental Non-Governmental Organisations** (**ENGOs**) with active registration in the National Register of ENGOs, 8.4% more than in 2023.
- Of these, **17** are **national** ENGOs (14.7%), **13** are **regional** (11.2%), **36** are **local** (31.0%), **23** are ENGOs **without defined scope** (19.8%) and **27** are **equivalent to ENGOs** (23.3%).

## PUBLIC PARTICIPATION –*PARTICIPA* PORTAL

- In **2024**, there were **273 public active consultations** in the ***PARTICIPA.PT* Portal**, representing an increase of 7.9%, compared to 2023.
- In the same year, the number of **responses submitted** on this Portal was **8,664**, continuing the growth trend seen in previous years up to 2023.

## ENVIRONMENTAL TAXES

- In **2023**, the **environmental taxes** in Portugal amounted to **5.4 billion euros**, which corresponds to an increase of **15.7%,** compared to 2022, while the total revenue from taxes and social contributions increased by 9.1%.
- In **2023**, as in previous years, **energy taxes** were the most representative of the environmental taxes, representing **73.8%**. **Taxes on transport** ranked second, with **24.3%**.
- That year, the **environmental taxes** corresponded to **5.6%** of Portugal's total revenue from taxes and social contributions, higher than the **EU-27** average (**5.2%**).
- These taxes represented **2.0%** of Portugal's **GDP**, equal to the **EU-27** average.

# AIR

Anthropogenic emissions

Air Quality Index

Air pollution

Radon, an indoor air pollutant

## ANTHROPOGENIC EMISSIONS

- Between **1990 and 2023**, **emissions of acidifying and eutrophying substances decreased by 66%**, mainly due to a **91% reduction in sulphur dioxide** (**$SO_2$**) **emissions**.
- For the same period, **emissions of nitrogen oxides** (**$NO_x$**) and **ammonia** (**$NH_3$**), measured in terms of acid equivalent, also **decreased by 51%** and **22%,** respectively.
- The **Tropospheric Ozone Formation Potential**, resulting from aggregate emissions of $NO_x$ and NMVOCs (Non-Methane Volatile Organic Compounds), **decreased 46%** since 1990, reaching, in **2023**, a value of **299 kt NMVOC equivalent**.
- In **2023**, anthropogenic **$PM_{2.5}$** emissions into the atmosphere reached 43.0 kt, representing a **23.4% reduction**, compared to 2005, meeting the 15% reduction target set from 2020.
- In **2023**, regarding the commitments for the reduction of these substances, established for 2020 and 2030: i) **$SO_2$** emissions were **below** the target for 2020 and already 0,8% below the emission threshold set for 2030; ii) **$NO_x$** emissions were **below** the target, requiring a further reduction of **26 kt**, over the next 6 years, in order to reach the target set for 2030; iii) total ammonia emissions (**$NH_3$**) exceeded the target by **2 kt** meaning that an additional reduction of **6 kt** by 2030 is required to meet the established target; iv) **NMVOC** emissions were **152 kt**, meeting the emission limit (18% reduction from 2005, that corresponds to 153 kt), although an additional reduction of 29 kt is still required to meet the 2030 target.
- The target of reducing, from 2020 to 2029, the anthropogenic **$PM_{2.5}$** emissions by 15%, compared to 2005 levels, has already been achieved. However, to comply with the 2030 target of a 53% reduction, also compared to 2005 levels, the emissions must continue to decrease, **requiring an additional reduction of more than 16.6 kt**, compared to 2023.

## AIR QUALITY INDEX

- In **2023**, the **dominant class of the Air Quality Index** (**AQI**) was **"Good"**, maintaining the record of previous years.
- In the same year, there was an **increase** of **3.9%** in the number of days rated with air quality of **"Very Good"** and **"Good"**, compared to the previous year, and a **decrease of 2.2%** in the percentage of days classified as **"Poor"** and **"Bad"**, indicating an improvement in air quality in Portugal, compared to 2022.
- Between 2002 and 2023, there was an **overall downward trend in the percentage of days rated "Poor" and "Bad"**, with a maximum of 16.8% in 2005 and 1.1% in 2023.

## AIR POLLUTION

- In **2023**, **exceedances of the annual limit value** (**LV**) **for nitrogen dioxide** (**$NO_2$**) - 40 µg/m³ - continued to be observed in the **agglomerations of the Lisbon North Metropolitan Area** and **Entre Douro e Minho**, with levels of 46 µg/m³ and 41 µg/m³, respectively. It should be noted that during a period between 2020 and 2021, no exceeding values were registered. In the Porto Litoral agglomeration, compliance with the annual LV was maintained, as observed in 2022.
- The **hourly LV of 200 µg/m³**, which should not be exceeded more than 18 times per year, was **confirmed in all zones and agglomerations in Portugal**, in line with previous years.
- In **2023**, the 55 stations monitoring tropospheric ozone ($O_3$) registered **40 events in which the public information threshold** was exceeded, representing a 70% reduction, compared to the previous year. This was partly due to fewer heatwave periods. **No exceedances of the alert threshold were recorded.**
- In **2023**, the average of the **annual maximum ozone concentrations** decreased in rural and urban and suburban background stations, when compared to 2022 levels, with an 8% reduction in both categories, reaching average values of **137 µg/m³** and **136 µg/m³**, respectively. This indicates a closer alignment with the long-term objective of 120 µg/m³.
- In **2023**, the **average levels of $PM_{2.5}$ particles,** measured at air quality stations, remained **stable,** compared to the previous year. A slight decrease was observed in the **$PM_{2.5}$ Average Exposure Indicator**, which is assessed annually based on a three-year rolling average, that made it possible to verify **compliance** with the national exposure reduction target.

## RADON, NA INDOOR AIR POLLUTANT

- In **2024**, **10 additional entities** declared their commitment to comply with the "***Guide for the Provision of Services in Radon Measurement Using Passive Detectors in Indoor Air of Buildings***," prepared by Portuguese Environment Agency. Following this, the total number of committed entities are 29, representing an increase of 52.6%, compared to the previous year.
- In the same year, **5,832 radon measurements** were reported to Portuguese Environment Agency, under the commitment to the Guide, representing an increase of 184.6%, compared to 2023.

# C CLIMATE

Greenhouse gas emissions

Precipitation and temperature

## GREENHOUSE GAS EMISSIONS

- In **2023**, **Greenhouse Gas (GHG) emissions**, excluding the emissions from "Land Use, Land-Use Change and Forestry" (LULUCF), were estimated at **53.2 Mt $CO_2$eq**., a **decrease of 9.6%** compared to **1990** and **38.1%**, compared to **2005**.
- Including the LULUCF sector, total estimated GHG emissions were **51.2 Mt $CO_2$eq.**, corresponding to a reduction of **19.1%**, compared to **1990**, and **43.4%**, compared to **2005**.
- The sectors "**Energy"**, **"Agriculture"**, **"Waste" and "Industrial processes and product use**" accounted, respectively, for 66.5%, 13.1%, 10.6%, and 9.8% of the total national emissions in **2023**.
- In **2023**, the emissions from the "Energy" sector were distributed as follows: "**Transport**" – 34.3%, "**Industry combustion**" – 11.2%, "**Energy production and transformation**" – 11.0%, "**Other**" – 7.8%, and "**Fugitive emissions**" – 2.1% of total national emissions.
- In **2023**, the **carbon intensity** was **0.25 kg $CO_2$eq/€ GDP**.
- GHG emissions per unit of GDP indicate that, **since 2005**, **Portugal's economy has undergone a process of "decarbonization"**, meaning that the national economy has begun emitting less carbon per unit of wealth produced.

## PRECIPITATION AND TEMPERATURE

- The year **2024** registered the **fourteenth lowest precipitation value since 2000**.
- **70%** of the year's precipitation occurred in four months (January, February, March, and October).
- **2024** was the **fourth warmest year since 1931**, with an average air temperature 0.94 °C higher than the 1981–2010 normal value (15.55 °C).
- Considering the available data since 1931, **2024** has registered the **fourth highest maximum air temperature** and the **third highest minimum air temperature**.
- There were **64 new maximum air temperature extremes** and **177 new minimum air temperature extremes**.
- In **2024**, there were **8 heatwaves** in mainland Portugal: two in winter, four in spring, and two in summer.
- The total number of **heatwave days** recorded on the mainland, in 2024, was **720 days**, corresponding to the second highest value since 1941 (in 2022, 929 heatwave days were recorded).

# SOIL AND BIODIVERSITY

National Classified Areas System

Nutrien balance (nitrogem and phosphorus) in agricultural soil

Plant protection products

Agricultural area under organic farming

## NACIONAL SYSTEM OF CLASSIFIED AREAS

- The **National System of Classified Areas** (NSCA) is composed of the protected areas included in the National Network of Protected Areas (NNPA), the classified areas included in the Natura 2000 Network, and other classified areas under international commitments undertaken by the Portuguese State.
- In mainland Portugal, the NNPA comprises **55 Protected Areas** (33 with national scope, 18 of regional/local scope and 4 Private Protected Areas), covering a total area of **815,655.4 hectares**. This includes a **marine area** of around **69,305.1 hectares** and a **terrestrial area** of **746,350.3 hectares** (about **8.9%** of the mainland area).
- The **Natura 2000 Network** comprises **108 areas** designated under the **Habitats Directive** (63 in mainland Portugal and 45 in the Autonomous Regions) and **62 Special Protection Areas** (SPAs) designated under the **Birds Directive** (42 in mainland Portugal and 20 in the Autonomous Regions), covering **21.8%** of the **total mainland terrestrial area**, plus **10.7% of marine area** (including inland maritime waters, the territorial areas up to 12 nautical miles, and the Exclusive Economic Zone, up to 200 miles).

## NUTRIENT BALANCE (NITROGEN AND PHOSPHORUS) IN AGRICULTURAL SOIL

- In **2023**, the **nitrogen balance** showed an unfavourable evolution compared to the previous year, with an **increase of 10.0%**, but favourably compared to the last five years, with a reduction of 11.5%. From 1997 to 2023, the decrease was 21.1%.
- The **phosphorus balance** showed an unfavourable trend in 2023, compared to the previous year, with an **increase of 9.1%,** and, compared to the last five years, with an increase of 4.6%. From 1997 to 2023, the decrease was 66.4%.
- The **apparent consumption of inorganic fertilisers** (nitrogen, phosphorus and potassium) **increased 40.0%** in **2023**, compared to 2022. Over the last five years, the reduction was 8.7%, and from 1995 to 2023 the decrease was 47.5%.
- Portugal confirmed a downward trend in nutrient losses (nitrogen and phosphorus) and in the use of inorganic fertilisers, showing a **favourable trend** towards the achievement of the EU's Farm to Fork Strategy targets for 2030.

## PLANT PROTECTION PRODUCTS

- In **2023**, the **total consumption of plant protection products** in Portugal was **7,857 tonnes**, showing a significant loss in sales compared to 2011 (44.0%), placing Portugal among the EU countries with the greatest reduction in consumption over this period.
- At the national level, "**fungicides and bactericides**" and "**herbicides**" were the most consumed, accounting, in **2023**, for **61.2%** and **23.7%** of total consumption, respectively. Between 2011 and 2023, consumption of these products decreased by 51.8% and 6.7%, respectively.
- The **sales of plant protection products per utilised agricultural area** (UAA) decreased by 47.1% between 2011 and 2023, reaching **2.03 kg of active ingredient per hectare** in the latter year, which corresponds to an 11.7% decrease compared to 2022.
- Portugal confirms a downward trend in the use of plant protection products and associated risks and registers a **favourable trend** towards the achievement of the EU's Farm to Fork Strategy target for 2030.

## AGRICUTURAL AREA UNDER ORGANIC FARMING

- In **2023**, the **total agricultural area under organic farming** was **860,878 hectares**, representing **22.3% of utilised agricultural area** (**UAA**), corresponding to a fourfold increase over the last five years monitored.
- Portugal registered an **increase** in the agricultural area under the organic farming for all crop groups, with a gradual prevalence of "**permanent meadows and pastures**", which, in **2023**, represented **50.5% of the total organic farming area.**
- Portugal confirmed an **increasing trend in organic farming** and ranked among the EU countries with the highest proportion of agricultural area under organic farming in 2023 (above the EU average), having already surpassed the target set in the National Strategy for Organic Agriculture for 2027 (12%) and showing a **favourable trend** towards the achievement of the EU's Farm to Fork Strategy target for 2030 (25%).

# WATER

Annual water availability

Nitrates from agricultural sources in surface and groundwater

Urban wastewater

Acessibility and connection to wastewater manegement services

Drinking water

Water efficiency – urban sector

Bathing waters

## ANNUAL WATER AVAILABILITY

- The **2023/2024 hydrological year** ended with surface water reserves above the average, in nine of the fifteen river basins analysed. However, the Sado, Mira and Ribeiras do Algarve (Barlavento and Sotavento) river basins were in hydrological drought.
- This hydrological year was characterised by **high inflows** in the **river basins in the North and Centre of Portugal**, as well as in the **Tejo and Guadiana river basins**. However, **inflows were very low** in the remaining **river basins in the south of Portugal.**
- In **April 2024**, there was an **improvement** in reservoir storage levels compared to the beginning of the hydrological year, namely in the **Ribeiras do Oeste and Tejo, Sado and Guadiana river basins**.

## NITRATES FROM AGRICULTURAL SOURCES IN SURFACE AND GROUNDWATER

- Regarding **groundwater**, in the period of **2020–2023**, a significant percentage of stations registered **nitrate concentrations above 50 mg/L** in the shallowest groundwater levels (phreatic type), mainly up to 15 m depth. The situation remained similar to that registered in the previous period (2016–2019).
- The designated **vulnerable zones** remain a concern, with a significant number of stations recording nitrate concentrations above 50 mg/L in the shallowest water levels.
- With regard to **surface waters**, the most problematic situations relate to the **eutrophication of some reservoirs**.

## URBAN WASTEWATER

- Considering the number of **urban public wastewater treatment plants** (WWTP) that serve an equivalent population of 2,000 or more, it can be concluded that, in **2022,** the majority of these WWTP were equipped with **secondary treatment** (**57%**), **42%** with **advanced treatment** and the remaining **1%** with **primary treatment**.
- The compliance with the Urban Wastewater Directive in Portugal has been very positive. Since **December 2012**, 99.9% of the **load generated** in agglomerations with an equivalent population of 2,000 or more has been **collected by drainage systems**, reaching **100.00% in 2020**. In **2022**, the compliance rate with the Directive reached **95%** in terms of treated load.

## ACESSIBILITY AND CONNECTION TO WASTEWATER MANAGEMENT SERVICES

- In **2023**, the **physical accessibility of wastewater collection and drainage service** through fixed and mobile networks was rated **"good"** for all types of housing, for the fourth consecutive year.
- In this year, **connection to the fixed network wastewater service** remained rated as "**unsatisfactory**". Effective connections to wastewater service, as required by law, should be promoted, with a view to improving the quality of life of citizens and public health in general.

## DRINKING WATER

- In **2023**, the percentage of **safe water at the consumer's tap** (controlled water and of good quality) reached **98.77%**, in mainland Portugal.
- **The national target for safe water** (99%), defined in PENSAAR 2030 for 2030, was achieved in **2015**, complying since then.
- In **2023**, as in the previous year, **71%** of the water consumed by the Portuguese population originated from **surface sources** and **29%** from **groundwater**.
- The trend of maintaining an excellent level for the "**safe water" indicator** continues for most municipalities in mainland Portugal, with **52 municipalities** recording **100%** safe water and only **one** municipality registering a performance level below 95% safe water.

## WATER EFFICIENCY – URBAN SECTOR

- In **2023**, the **"non-revenue water"** indicator in the retail service was classified as "**average"**, with a positive evolution compared to the previous year.
- In the same year, the assessment of the **"real water losses"** indicator was: i) "**average", for the retail service with a branch density equal to or greater than 20 per kilometre of network**, with a negative evolution compared to the previous year; and ii) "**good", for the retail service with a branch density below 20 per kilometre of network**, maintaining the pattern of the last six years.

## BATHING WATERS

- In **2024**, **673 bathing waters** were identified and monitored, of which **512** (76.1%) are **coastal and transitional waters** and **161** (23.9%) are **inland bathing waters**.
- Of the 673 monitored bathing waters, **556** (**82.6%**) had **"excellent" quality**, **73** (**10.8%**) **"good" quality**, **15** (**2.2%**) **"acceptable" quality** and **9** (**1.3%**) **"poor" quality**. There were **20** bathing waters **"without classification"** (**3.0%**) which, despite being monitored, did not have sufficient data for a qualitative assessment.
- Of the 673 bathing waters identified in 2024, **244** are associated with **bathing areas** classified as **accessible** [220 in mainland Portugal, 17 in the Azores Autonomous Region (Eastern and Central Group) and 7 in the Madeira Autonomous Region]. Of the accessible bathing areas, 182 are coastal and 62 are inland.
- The number of bathing areas awarded with **Blue Flag**, in 2024, was **398**, of which **349** were in coastal or transitional bathing areas and **49** were inland beaches.

# Marine and Coastal Environment

Eroded coastline

Sustainable use of fishing stocks

Aquaculture production

Marine litter on beaches

## ERODED COASTLINE

- **50%** of the **low and sandy coastline** of mainland Portugal (approximately **425 km** long out of a total of 987 km) shows a **long-term erosion trend** (**1958-2023**).
- The coastal sections between **Ofir – Cedovém, Cortegaça – Furadouro and Cova-Gala – Costa de Lavos** show a **long-term erosion** trend, with a slight acceleration in the medium- and short-term in the values of coastline narrowing.
- The coastal sections between **Costa Nova – Praia de Mira (north), Costa de Caparica and Praia de Faro**, despite the long-term erosion trend, show a **decrease** in **erosion rates** and some relative stability in the medium- and short-term.
- Between **1958 and 2023**, it is estimated that mainland Portugal lost approximately **13.8 km²** (1,380 ha) of **coastal territory**.
- **Artificial beach nourishment** is currently one of the main coastal protection/defence measures used and being considered an adaptation measure tailored to the consequences of climate change (e.g. rise in average sea level), aiming at mitigating coastal erosion and overtopping, which are expected to worsen in the near future.
- Due to the intensity of the erosion phenomenon and the associated risk, most of the **investment** made in the **coastline** over the **last decade and a half**, totalling around **350 million euros**, was allocated to **coastal protection and defence measures**.

## SUSTAINABLE USE OF FISHING STOCKS

- Over the last decade, significant progress has been made in the management of fishery resources, as stated in the assessments of the International Council for the Exploration of the Sea (ICES). Currently, **all fishing stocks** exploited and under assessment, in Portugal, are **within safe biological limits**.
- Some stocks are very important for Portugal, either for economic or cultural reasons, or due to total abundance questions.
- **Sardine**, **monkfish**, **hake** and **lobster** stocks are among the most important, for economic reasons, while **horse mackerel** stock is one of the most important, in terms of total abundance.
- The Sardine Management Plan enabled a rapid **recovery of biomass** and an **increase in recruitment**, allowing sardine to recover the **sustainable fishery certification**, suspended in early 2012.
- The European Commission, within the framework of the Common Fisheries Policy, has created Multi-Annual Management Plans, whose objective is to fairly manage species groups, aiming at optimising a relative abundance among them, and not only to achieve maximum sustainable yield. This type of management provides the establishment of abundance ranges within which, each species balances with the others.
- **Hake** and **monkfish** are among the species managed under the Management Plan for Western Waters. In recent years, the **biomass of stocks** of both species has **increased steadily**, reaching historical highs for monkfish, and a significant recovery for hake.

## AQUACULTURE PRODUCTION

- In **2022**, **total aquaculture production increased** by **4.8%** compared to 2021, reaching **18,822 tonnes**, with sales generating revenues of **159.75 million euros**, representing a **decrease of 8.2%** compared to the previous year.
- Analysing the **production in transitional and marine waters**, which accounted for **97.8% of total aquaculture production**, **clams** (23.1%), **sea bream** (17.8%) and **mussels** (16.9%) were the **main species produced** in **2022**, followed by **oysters** (13.1%), **turbot** (11.0%) and **sea bass** (5.3%), and, to a lesser extent, **sole** (1.1%) and **cockles** (0.7%).
- At the end of **2022**, there were **1,290 licensed aquaculture establishments** for inland, marine and transitional waters (38 more than in 2021).
- Considering the exploitation regimes, by type of water: i) in inland waters, aquaculture production remained exclusively **intensive**, in line with the trend of recent years; and ii) in marine and transitional waters, the **extensive** regime remained the predominant regime, followed by the intensive regime and, lastly, the semi-intensive regime.

## MARINE LITTER ON BEACHES

- In **2024**, the assessment of the abundance and composition of macro litter on beaches in mainland Portugal revealed that, in order to achieve the EU limit value of 20 items/100 m (median), Portugal will have to reduce the total amount of waste on its beaches by 95%.
- In **2024**, **marine litter** on beaches consisted of **plastic** (**89.5%**), **sanitary items** (**5.8%**), **paper and cardboard** (**1.3%**), **metal** (**1.0%**), as well as **wood**, **medical items, glass, clothing/textiles, rubber, clay and ceramics.**
- As in **2023** and based on the source matrix used by the OSPAR Convention, it was not possible to attribute a source to **83%** of the marine litter reported. For the remaining **17%**, the following sources were identified: **tourism and recreational activities** (50%), **sanitation** (36%) and **fishing and aquaculture** (10.5%).

# ENERGY

Energy production and consumption

Energy intensity of the economy

Renewable energies

## ENERGY PRODUCTION AND CONSUMPTION

- In **2023**, the **energy import balance** (15.20 Mtoe*) **decreased** by **8.8%** compared to 2022, while **domestic energy production increased** by **9.6%** compared to the previous year, reaching **7.43 Mtoe***, mainly due to increased hydroelectric production.
- **Final energy consumption** in **2023 increased** by **1.7%** compared to 2022, mainly due to the contribution of petroleum products (up 3.6%), biomass (up 3.1%) and electricity (up 1.8%).
- In **2023**, **energy dependence** on foreign sources reached **66.7%**, 4.5 p.p. less than in 2022, mainly due to the decrease in natural gas import balance.

* Mtoe – million tones of oil equivalent.

## ENERGY INTENSITY OF THE ECONOMY

- In **2023**, Portugal had an **energy intensity of the economy**, in terms of primary energy, of **76.5 toe/M€$_{(current\ prices)}$**, above the **EU-27** average, **73.4 toe/M€$_{(current\ prices)}$**.
- In the same year, Portugal presented a **0.4% increase** in **gross domestic energy consumption** compared to the previous year, while the EU-27 registered a 1.0% decrease compared to 2022.

## RENEWABLE ENERGIES

- In **2023**, **renewable energy production** stood at **7,281 ktoe***, of which **42.5%** originated from **biomass**, followed by **electricity** (from **hydro, wind, photovoltaic and geothermal** sources) which accounted for **39.4%**, **heat pumps** with **12.7%** and **solar thermal** with **1.6%**.
- **Electricity production from Renewable Energy Sources** (RES), in **2023**, was **37,181 GWh** (29,910 GWh in 2022), with **RES** contributing with **35.2%** to **gross final energy consumption**, and with **63.0%** to **electricity production**.
- This incorporation allowed **Portugal** to **remain**, **for the fifth consecutive year** (since 2019), as **the fourth EU Member State** with the **highest incorporation of RES in electricity production**.
- This production originated from **hydro** (40.0%), **wind** (35.4%), **photovoltaic** (13.9%), **biomass** (10.2%) and **geothermal** (0.6%) sources.

* ktoe – kilo tonnes of oil equivalent.

# TRANSPORT

Vehicle fleet

Passenger transport

Transport of goods

## VEHICLE FLEET

- In **2023**, the motorisation rate in Portugal was **550 light passenger cars per 1,000 inhabitants**, maintaining the growth registered since 2013.
- The **average age of light passenger cars** presumably in circulation* increased to **14.2 years,** and the average age of goods vehicles stood at 18.4 years.
- **Vehicles with 10 or more years** accounted for **63.1%** of all **light passenger cars** and **59.0%** of **heavy passenger vehicles**.
- **The light passenger car fleet** was mainly divided into vehicles whose main fuel is **diesel** (63.0%) or **petrol** (31.1%). For **heavy passenger vehicles**, the main fuel is **diesel** (91.3%).
- By **2023**, **129,299 electric vehicles** had been registered, representing an **increase of 61.1% over the previous year**. Of these, **90.4%** were **light passenger and goods vehicles**.
- In **2022**, the **Electric Mobility Network** achieved total coverage of the national territory (**308 municipalities**).

* Vehicles that attended, at least, to one of the last two mandatory inspections.

## PASSENGER TRANSPORT

- In **2023**, **passenger transport for hire or reward grew** in terms of number of passengers **for all means of transportation**, reaching 2019 levels for air, waterway and rail transport.
- In **2023**, the **road** continued to be **the most used mode of transport**, with **547.676 million passengers. Rail transport** carried **463.5 million passengers** (**200.3 million** on urban/suburban trains and **263.1 million** on the three metro systems in Lisbon, Porto and South Tagus); air transport carried **79.7 million passengers**; and **waterway transport** carried **23.4 million passengers**.
- In terms of passenger-kilometres, in **2023**, compared to the previous year, **metropolitan transport** recorded the sharpest **growth**, **22.3%**; **air transport** increased by 17.1%; **rail transport** increased by 8.9%; and only **road transport** registered a decreased (3.5%).
- In **2022**, both in Portugal and in the EU-27, **light passenger cars** (individual transport) continued to **dominate**, reaching **88.4%** and **83.4%**, respectively.

## TRANSPORT OF GOODS

- The modal split of transport of goods in Portugal is dominated by **road transport**, which, in **2023**, accounted **for 85.9%**, 7.8 percentage points (p.p.) more than in the EU-27.
- In **2023**, **rail transport** accounted for **16.9%** of transport of goods in the EU-27, while in Portugal it stood at **14.1%,** representing a decrease of 0.1 p.p. compared to 2020.
- In Portugal, **road transport** continued to be the predominant mode of **transport of goods**, reaching **130.7 million tonnes** in **2023** (less 8.8% than the previous year); **maritime transport** reached **75.6 million tonnes** (less 2.9% than in 2022); **rail transport** moved **8.6 million tonnes** (more 2.2% when compared to 2022) and **air transport** remained the least significant, registering **441,000 tonnes** at national airports (more 42.7% compared to the previous year).

# WASTE

Municipal waste

Recycling – specific waste streams

Non-municipal waste

Radioactive waste

## MUNICIPAL WASTE

- In **2023**, **5.06 million tonnes of municipal waste** (**MW**) were produced in mainland Portugal, corresponding to **502 kg/(inhabitant/year)**, below the European average of **511 kg/(inhabitant/year)**.
- In recent years, there has been a **positive trend** in **selective collection of waste**, including bio-waste, and a further increase is expected in the coming years.
- In **2023**, the physical accessibility to the **multi-material selective collection** service provided by management entities (ME) for **bulk** service, is rated as **"average"** in **predominantly urban** and **predominantly rural areas**, and **"unsatisfactory"** in **moderately urban areas.** The service provided by ME for **retail** is rated as **"good"** in **predominantly urban areas** and **"average"** in **moderately urban** and **predominantly rural areas**.
- Portugal remains at some distance from the targets for **preparation for reuse and recycling** and **municipal waste landfill disposal**, although with an upward convergence trend.
- In terms of destination of waste, **landfill** remains prominent, accounting for **59%** of the MW produced in mainland Portugal, in **2023**.

## RECYCLING – SPECIFIC WASTE STREAMS

- The recycling rate for **glass packaging** (56.9%) did not reach the target of 60.0% in **2022**.
- In **2022**, the recycling rates for **paper and cardboard packaging** (**64.4%**), **plastic** (**37.3%**), **metal** (**52.1%**) and **wood** (**79.5%**) exceeded their respective targets of 60.0%, 22.5%, 50.0% and 15.0%.
- In the same year, the recycling rate for **used lubricating oils** was **88.0%**, exceeding the national target of 75.0% (only oils framed within the integrated used oils management system were considered).
- In the same year, the rate of preparation for reuse and recycling of **used tyres** was **73.0%**, exceeding the target of 65.0% set in the integrated system management entity licence.
- The rate of preparation for reuse, recycling and recovery of **construction and demolition waste** was **90.0%** in **2022**, exceeding the target of 70.0%.
- In that year, the rate of preparation for reuse and recycling of **waste electrical and electronic equipment** in each category, compared to the target, were: cat.1 – **78.0**% (80.0%); cat.2 – **79.6%** (70.0%); cat.4 – **48.2%** (80.0%); cat.5 – **46.4%** (55.0%) and cat.6 – **50.3%** (55.0%), and recycling in cat.3 – **39.8%** (80.0%). Cat. 2 exceeded the target and cat. 1, 5 and 6 approached the established target.
- In **2022**, the **battery recycling yield** was **73.0%** for the lead-acid batteries, **90.0%** for nickel-cadmium and **72.0%** for the remaining chemical systems, exceeding the minimum legal requirements of 65.0%, 75.0% and 50.0%, respectively.
- The reuse and recycling rate for **end-of-life vehicles** in **2022** was **89.0%**, exceeding the target of 85.0%.

## NON-MUNICIPAL WASTE

- **2023** was the year with the highest production of **non-municipal waste (NMW)**, since 2008, with a total of **15 million tonnes**.
- In that year, **non-hazardous waste** accounted for more than **90%** of the total NMW produced in Portugal.
- From **2018 to 2023,** there was a **downward trend in the production of hazardous waste,** with a 26% reduction over that period.
- The **construction**, **waste collection and treatment**, and **trade sectors** were the **three main sectors of activity** in terms of NMW production, accounting for **66%** of the total produced in **2023**.
- In **2023**, **91%** of total treated **NMW** underwent recovery operations.
- Regarding the **export of waste from Portugal through the "Orange List"**, in **2023**, there was a **12% increase** compared to 2022. As for **waste imports**, the downward trend observed since 2019 continued, with a **46% reduction** in 2023, compared to 2022.
- Still, regarding **the "Orange List"**, in relation to **the entry of waste destined for disposal operations**, in **2020**, there was a sharp reversal of the growth trend observed until that year, with a 99% decrease in 2022 compared to 2019. In **2023**, the **growth** trend observed in the previous year was maintained, representing **5.2%** of the amount of waste that entered Portugal for disposal, compared to 2020.
- Regarding **the movement of waste through the "Green List"**, in **2023**, 1 million tonnes of waste were sent for recovery in other countries, thus returning to the levels registered between 2016 and 2021. Regarding **waste import**, the figures reached **2 million tonnes**, corresponding to an increase of 17%, compared to 2022.

## RADIOACTIVE WASTE

- The centralised radioactive waste management facility (**Radioactive Waste Pavilion**) had an **occupancy rate** of **75%**.
- At the **end of 2022**, the implementation of the measure "Encourage the return of sealed radioactive sources to the original supplier or manufacturer" of the National Programme for the Management of Irradiated Fuel and Radioactive Waste (PNGCIRR) had the following impact on the management of sealed radioactive sources:
  - **100%** of **new sources** are now covered by **return contracts with the manufacturer**;
  - **50% reduction**, on average, **in the number of characterization procedures** for sources no longer in use as radioactive waste;
  - **27% reduction**, on average, **in the number of sources effectively classified** as radioactive waste.

# ENVIRONMENTAL RISKS

Drought and floods

Rural fires

Placing on the market and use of chemical substances and products

Use of genetically modified organisms and microorganims

Prevention of major accidents

Radiological control of the environment

## DROUGHT AND FLOODS

- Over the past 10 years, there have been occurring long periods of **meteorological drought** in the Southern region of Portugal, especially in **Baixo Alentejo** and **Algarve**.
- In **2024**, these regions experienced for **10 out of 12 months of the year, meteorological drought** conditions according to the PDSI index, and between **July and August** many locations were in **severe drought** category.
- According to the SPI index (at the SPI 6 months scale), at the end of the **2023/2024 hydrological year** the river basins located south of Tejo river, were classified as **meteorological drought**, with **Guadiana** and **Ribeiras do Algarve** basins classified in **extreme drought**.
- **Lima, Cávado, Ave, Douro, Vouga, Mondego, Sado** and **Guadiana** basins were in **normal** conditions.
- Regarding **groundwater**, the precipitation events that occurred between October and December 2023, allowed restoring some of the water bodies in the North and Centre of the country, and an improvement of the water bodies **under surveillance**. However, the number of water bodies in **critical situation** remained unchanged due to existing uses and low precipitation, not allowing for effective recharge, keeping the groundwater levels low, particularly south of the Tejo river.
- In mainland Portugal, **63 Areas of Significant Potential Flood Risk** have been identified, 46 of which are of fluvial/pluvial origin and 17 of coastal origin.
- In the **2023/2024 hydrological year**, **154 flood events** were recorded, of which 45% were of coastal origin, 38% of fluvial/pluvial and 17% exclusively with pluvial.
- In **2024**, **four events** of intense precipitation were registered, causing **flooding** in some areas of the country (Northwest Region, Alentejo and Algarve).

## RURAL FIRES

- In **2024**, a total of **6,255 rural fires** occurred, resulting in **137,651 hectares of burned area**, including forest stands (82,009 hectares), scrubland and natural pastures (46,089 hectares), and agricultural areas (9,553 hectares).
- That year recorded the **lowest number of rural fires** but it was the **3rd highest in terms of burnt area,** since 2014.
- In **2024**, **6,164 rural fires were investigated** and had their cause investigation process concluded (correspond to 99% of the total number of fires, responsible for 89% of the total burned area). Of these, the investigation **attributed a cause to 4,354 fires** (71% of the fires investigated, responsible for 80% of the total burnt area), with the **most frequent causes** being **arson (34%)** and **burning of forest or agricultural waste** (13%). The latter, together with the various types of **burning**, represent **32%** of the total identified causes.
- In **2024**, **3,572 hectares** of rural areas burned in the National Network of Protected Areas (NNPA), resulting in an impact rate of approximately 0.5%. The Regional Protected Landscape of the Serras do Porto Park stands out as the largest burned area (2,011 hectares, which represents 56% of the total burned area of the NNPA).

## PLACING ON THE MARKET AND USE OF CHEMICAL SUBSTANCES AND PRODUTS

- As of **30 April 2025**, there were **22,998 substances** with active registrations*, and a total of **109,177 active registrations** under the **REACH Regulation.**
- Of the substances with active registrations, **336** were registered by Portuguese companies, representing 1.46% of the total substances registered with ECHA.
- The identification of **substances of very high concern** (**SVHC**) and their inclusion in the list of candidate substances continues, which totalled **247** by **May 2025**. **Seven entries** were added in **2024**, and **five** more were included in **2025 up until May**.
- Similarly, the number of **substances/groups of substances with harmonized classification and labelling** (**CLH**) has been increasing, as well as **substances subject to restriction**. By **May 2025** these figures reached **4,728 substances/groups of substances with CHL**, and **74 substances/groups of substances subject to restriction**; the number of substances/groups of substances subject to authorization remained the same (59).
- Since the revision of the **Prior Informed Consent (PIC)** Regulation in 2012, there has been an overall upward trend in the number of validated export notifications over the years, as well as in the number of destination countries, which has intensified especially since 2020.

* 26,865 substances have been registered with ECHA. Some of these registrations have been cancelled due to the implementation of risk management measures. Each substance may have multiple registration dossiers, so the number of substances with active registrations is consequently lower than the number of active registrations.

## USE OF GENETICALLY MODIFIED ORGANISMS AND MICROORGANISMS

- Since **2016**, applications for genetically modified organisms (GMOs) trials have focused on clinical trials with medicines for human use, as a result of the increasing use of GMOs in the treatment of certain pathologies. A total of **12 clinical trials** with these GMOs were **authorized** (one in 2024).
- The cultivation of **genetically modified maize MON810** in Europe **remains restricted** to **Portugal** and **Spain**. In **2024**, there was a decrease in the **area occupied by the cultivation of this maize** in Portugal (**906 hectares**, which corresponds to a **52% reduction**, when compared to 2023).
- Contrary to the previous years, the **Centre region** of Portugal had the **largest** genetically modified maize **cultivation area** in 2024, with **565 hectares** (**62%** of the cultivation in mainland Portugal).
- Since 2015, there was a considerable increase in applications for authorization for the confined use of genetically modified microorganisms (GMOs), resulting in the authorization of between **five to eight confined use activities per year**. In **2024 seven authorizations** were granted.

## PREVENTION OF MAJOR ACCIDENTS

- In January **2025**, in mainland Portugal, **184 establishments** were covered by the **major accidents prevention** regime, involving dangerous substances.
- Most of these establishments are located on the coast between the municipalities of **Sines** and **Matosinhos**.
- **40% of upper-tier establishments** are located in the municipalities of **Matosinhos**, **Ílhavo**, **Setúbal** and **Sines**.

## RADIOLOGICAL CONTROL OF THE ENVIRONMENT

- **Between 2010 and 2024**, the annual gamma radiation dose rate values present expected values for the natural radioactive background, which vary depending on local geology and altitude.
- The Environmental Radiation Alert Network (**RADNET**) has currently **33 monitoring stations**, continuously monitoring radiation in the environment.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