



PORTUGUESE
ENVIRONMENT
AGENCY

EXECUTIVE SUMMARY



STATE OF
ENVIRONMENT
REPORT
PORTUGAL
2017

EXECUTIVE SUMMARY

Portugal's State of the Environment Report (REA) celebrates in 2017 thirty years of environmental assessment in Portugal – an annual exercise in identifying the progress made, but also the main challenges vis-à-vis the commitments and goals undertaken in this area.

The 2017 edition starts with the usual **national socio-economic framework**, followed by a chapter updating the **macroeconomic scenarios** included in the report since 2013. These are two contrasting scenarios (High and Low) for the possible evolution of the Portuguese economy up to 2050, as well as two international scenarios (High and Low) for global GDP and European Union GDP. The purpose of the scenarios component is to provide context to the evolution of the state of the environment in Portugal.

The following chapters present **41 thematic fact sheets**, grouped into eight environmental areas: Economy and Environment, Energy and Climate, Transport, Air and Noise, Water, Soil and Biodiversity, Waste and Environmental Risks. To make the report less lengthy and simpler to read, in the 2017 edition, the fact sheets were designed in a short format, presenting solely the main findings for each theme and referring to the [State of the Environment Portal](#) for a more detailed analysis of the evolution of each indicator.

On the “Economy and Environment” area, the **domestic material consumption** (DMC) reached a peak in 2008, and then showing a downward trend until 2014, when it was interrupted. However, in 2016, the DMC decreased again by 1.3% compared to 2015, standing at 161.1 million tonnes. The productivity associated with the use of materials – **resource productivity**, increased by 2.8% in 2016, maintaining the upward trend observed since 2008, except for 2014.

Where **environmentally related taxes** are concerned, a revenue of 4.796 billion was obtained in 2016, the fourth consecutive year in which revenues increased, thus reversing the downward trend observed between 2007 and 2012 (with the exception of 2010).

As an indirect indicator of economic activity, the number **environmental impact assessment** processes, which went from 202 in 2008 to 61 in 2016, reflected a downward trend in the number of evaluation processes over the past few years.

In the “Energy and Climate” area, **energy imports** in 2016 decreased 4% from the previous year, while **domestic production** rose 12.7%, a trend that has been observed in recent years, increasing from 3.51 Mtoe in 2005 to 5.90 Mtoe in 2016. This year, **primary energy consumption**

decreased by 1.2%, but **final energy consumption** increased by 1.0%, mainly due to consumption of oil products and electricity. The **high energy intensity of the economy** (133.9 toe/M€ of GDP in 2015), is therefore maintained, although it has been declining since 2005 (except in 2009, 2013 and 2015). On the other hand, the **dependence on foreign energy** has decreased again in the last year, standing at 74.8% in 2016 (it was 88.8% in 2005).

Regarding **renewable energy**, Portugal showed, in 2016, a rate of 62.0% of electricity production from renewable sources (for the purposes of the RES Directive it was 54.1%), confirming the upward trend observed in the last decade. In 2015, the most recent year available at Eurostat, Portugal had a 52.6% share of renewables in the electricity sector, which was the third highest rate in the European Union.

In 2015, the total amount of **Greenhouse Gas (GHG) emissions**, excluding land use, land-use change and forestry (LULUCF), was estimated at about 68.9 million tonnes of CO₂ equivalent, representing an increase of 15.7% compared to 1990 and 7.1% over 2014. In terms of emissions by activity sector, and similarly to previous years, the energy sector was the largest contributor in 2015 (70%), with the energy production and processing and transport being the most important subsectors (27% and 24% of the total, respectively). Considering GHG emissions in non-ETS sectors, all sectors, except agriculture, are in line with the sectoral reduction targets set out in the PNAC 2020/2030.

In mainland Portugal, 2016 was hot year in terms of **air temperature** and “normal” in terms of the amount of **rainfall**, and the 2016 spring was the rainiest of the last 15 years and the 14th with the highest amount of rainfall since 1931.

The “Transport” area continues to be among those with the highest energy consumption, accounting for 36.5% of total primary energy consumption in 2015. This sector is also a major source of GHG emissions, accounting for 24% of total national emissions in the same year.

In 2016, the **passenger vehicle fleet** reached 4.8 million, 2.1% more than in the previous year, which corresponds to a motorisation rate of 470.5 passenger cars per 1 000 inhabitants, the highest rate in the last four years. On the other hand, the use of **public passenger transport** increased for the second consecutive year. In 2016, maritime transport had an increase of 11.3% and light rail transport of 5.3%. Rail and inland waterway transport showed an increase of 2.7% and 2.2%, respectively. In that year, 54.3% of national exports were carried out by

maritime transport, as were 60.6% of imports, showing that **freight** in Portugal is still carried out predominantly by maritime transport.

Considering the “Air and Noise” area, in what concerns **air quality**, “Good” was the predominant rating of the air quality index (IQA_r) in recent years, a trend that continued in 2016. Another positive aspect is the significant reduction in the number of days rated “Medium”, “Weak” and “Bad” in the last few years.

With respect to **inhalable particle pollution**, there is a clearly decreasing trend in the average annual concentration of PM₁₀ between 2001 (45.3 µg/m³) and 2016 (17 µg/m³), and all annual values are below the threshold imposed by law (40 µg/m³).

In the case of **air pollution from nitrogen dioxide** (NO₂), in 2016 there was an increase in the average concentration of NO₂ in stations influenced by traffic, while the other typologies remained the same.

Regarding **precursors of tropospheric ozone** (nitrogen oxides and non-methane volatile organic compounds), the value of the potential formation of tropospheric ozone, which gives us the aggregate emissions of these compounds, decreased approximately 31% since 1990. Once again, both the industry and the transport sectors contributed the most to the formation of ozone in the troposphere, with respectively 42% and 28% in 2015. The **emissions of acidifying and eutrophying substances** (such as SO₂, NO_x and NH₃) have decreased globally about 61% between 1990 and 2015. The decline in SO₂ emissions (-88% in this period), contributed especially for this reduction.

With regard to **environmental noise**, there is a positive evolution, between 2013 and 2017, in the delivery of strategic noise maps of major road, rail and air transport infrastructures, as well as agglomerations. However, it is clear from the analysis of these documents that the number of people exposed to nocturnal noise levels above the critical threshold has been increasing, and it is estimated that about 430,000 people are exposed to night-time noise levels that are harmful to human health.

In the “Water” area, the quality of **drinking water** remains excellent (99% of safe water in the consumer’s tap in 2016), as well as the quality of monitored **bathing waters**, which continues to show compliance levels close to 100%.

The indicator **surface and groundwater availability** enables the assessment of whether the year was wet, medium or dry. Analysing data from the hydrological year 2016/17, the surface water storage (reservoirs) measured was generally lower than the average in all mainland regions. Concerning the groundwater resources, there is a general worsening of groundwater level throughout

the hydrological year, as the low occurrence of rainfall did not allow for the recharge of the aquifers.

Since water is a scarce resource, its sustainable management involves the licensing of activities that have a significant impact on the state of water. The **use of water resources** is analysed in terms of submitted applications and respective titles issued. In the 2013-2016 period, 78.6% of the total titles issued were related to water abstractions and 12.7% to wastewater rejection.

The “Soil and Biodiversity” area discloses the population’s interest in the conservation and sustainable use of biodiversity, reflected in the consistent increase in the total number of **visitors in protected areas**, which amounted to 341,727 in 2016 (+ 15.1% than the last year). In Portugal, the **Natura 2000 Network** is composed of 107 designated areas under the Habitats Directive and 62 Special Protection Areas designated under the Birds Directive, distributed throughout the Mainland and the Autonomous Regions. In total, this network covers about 22% of land area and about 39,000 Km² of marine area.

A great effort has been made to support agricultural and forestry practices that contribute to improving the environment and the preservation of resources. This has resulted, among other things, in the considerable increase in **agricultural area under organic farming**, which rose 21% from 2010 to 2016. Another positive aspect was the reduction of the **sales of plant protection products** per Utilised Agricultural Area unit, with the value of 2.7 kg per hectare in 2015, (-21% compared to 2014).

An important issue associated with agricultural practices concerns the use of **genetically modified organisms** (GMO) in cultivation areas. In Portugal, the genetically modified corn production area reached a peak in 2012, presenting a downward trend since then (except in 2014). In 2016, it decreased 12% when compared to the previous year, totalling 7,057 hectares.

Aquaculture hasn’t, to the present day, been able to establish itself as an alternative to the fishing activity. In 2015, the national aquaculture production amounted to no more than 5.4% of fish unloaded in port, reaching 9,561 tonnes (-14.8% than the previous year). The main species produced are the turbot (26.5%) and clams (26.5%).

In the “Waste” sector we witnessed, at the beginning of this decade, a period of decline in **municipal waste** production. However, since 2014, municipal waste production has been increasing, reaching 4.64 million tonnes in 2016 in mainland Portugal (+2.6% compared to 2015), which corresponds to a daily production of 1.29 kg *per capita*. This year, the rate of preparation for reuse and recycling of municipal waste was 38%, maintaining the upward trend observed in the last decade. Disposal of **biodegradable municipal waste** in landfills was 41%

(45% in 2015), with annual reductions being observed since 2010.

Regarding the **recycling of specific waste streams** (packaging and packaging waste, used lubricating oils, used tires, electrical and electronic equipment waste, batteries and accumulators, end-of-life vehicles and construction and demolition waste), the recycling rates achieved in 2016 met the overall targets defined in the legislation, except for end-of-life vehicles, which are estimated to have been 1% below the target set for 2015 (85%).

Specifically analysing the **packaging waste** stream, approximately 1.57 million tonnes were produced in 2016, resulting in a recycling rate of 62%, the highest rate since 2013, which exceeds the set target of 55%. The packaging of paper and cardboard, plastic and wood presented recycling rates equal to or higher than the established targets. Glass, as in previous years, did not reach its target by a 1% difference.

The production of **hazardous waste** in Portugal reached a peak in 2016, about 832 thousand tonnes, which corresponds to an increase of more than 80% compared to the minimum registered in 2014, mainly due to the treatment of industrial liabilities and contaminated soils. Most of the hazardous waste produced in Portugal originated from waste collection, treatment and disposal activities (43.7%), commerce and services (17.5%) and the metallurgical industry and metal products (12.3%).

Given the specialisation in the treatment of specific waste, it is sometimes transferred between countries to be subjected to appropriate recovery or disposal – **transboundary movement of waste**. For non-hazardous waste destined for recovery operations (Green List), there is some stability in the quantities of waste entering Portugal in the last biennium (2014-2016) and an increase, from the first half of 2016, of the quantities that left Portugal for recovery. In the case of waste destined for recovery or disposal operations and which movement requires the prior written notification and consent procedure (Orange List), there is a decreasing trend of the total outbound waste in the last three years. In terms of inbound waste for disposal and recovery, there is a strong upward trend since 2013.

In 2016, the total income of the waste management companies, resulting from the visible fees – **ecovalor** – incurred by the producer for the environmental impacts associated with the respective products, was around 84 million euros, representing a reduction of 17% from the previous year and coming close to the income registered in 2014. In 2016, the waste management companies invested 3.4 million euros in awareness and communication and 518 thousand euros in research and development.

Where environmental risks are concerned, the **drought** fact sheet evaluates the occurrence of periods of reduction of water availability, considering different definitions of drought: meteorological, agricultural, agrometeorological and hydrological. On the last day of September 2017, the end of the hydrological year 2016/2017, 88% of the national territory was in severe or extreme meteorological drought (the second highest value after the 97% reached in 2005). At the time, assessing the hydrological drought amongst the 60 monitored surface water reservoirs, 3 had water availability higher than 80% of the total volume and 23 had less than 40% of the total volume. On the other hand, the groundwater levels recorded were significantly lower than the monthly mean values of the historical series, with values below the 20 percentile being observed in several water bodies.

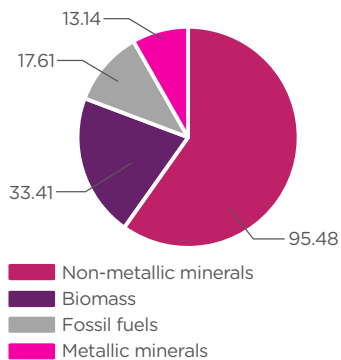
In 2017 (provisional data), there were 17,516 occurrences in Portugal (13,079 in 2016), of which 21% corresponded to **forest fires** and 79% to hot flushes (occurrences with an area of under 1ha), resulting in about 456,209 hectares of burnt area (160,490 hectares in 2016). Such value more than quadruples the average of the last ten years (+437%).

Regarding the use and manufacture of **chemicals**, there has been increasing awareness of the chemical substances placed on the EU market in recent years. The number of chemicals exported by Portugal under the Rotterdam Convention has increased in recent years, reaching five substances in 2016, while imports remained constant (five in 2016).

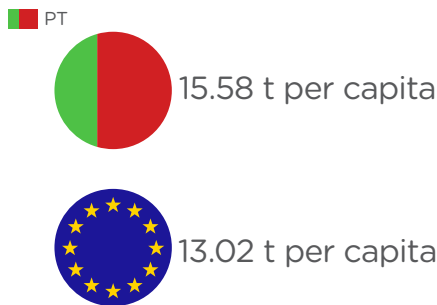
As in the 2015 edition, REA 2017 includes, in addition to the **infographics** summarising the key values of the evolution of the analysed indicators, the publication of **articles on environmental issues**, seeking to address some of the current developments in environmental policy. The 11 articles, presented in a separate document, but an integral part of this report, cover such diverse issues as the drought of 2017, spatial planning, municipal climate change adaptation strategies, the Roadmap for Carbon Neutrality, the Circular Economy, electronic waste declaration forms, Sustainable Development Goals, conservation and sustainable management of the ocean, marine litter, the single platform for the inspection and supervision of agriculture, sea and environment, and the National Environmental Education Strategy.

DOMESTIC MATERIAL CONSUMPTION

Domestic material consumption, 2016e
(million tonnes)

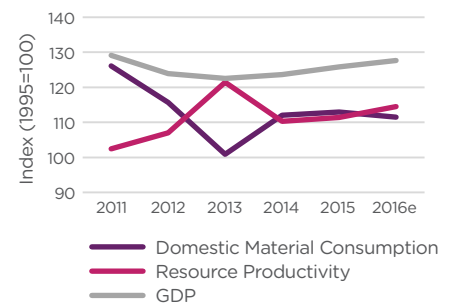


DMC per capita, 2016e



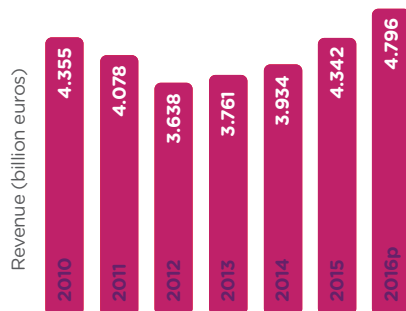
e - estimated data

Evolution of GDP (by volume), DMC and Resource productivity (GDP/DMC) (1995=100)

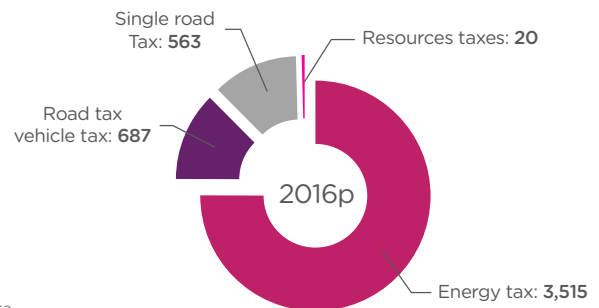


ENVIRONMENTAL TAXES

Evolution of environmental taxes revenue in Portugal



Environmental taxes in Portugal (million euros)



p - provisional data

ENVIRONMENTAL MANAGEMENT TOOLS



PT
55
Registered organisations
(May 2017)

EU 28
3,963
Registered organisations
(April 2017)



2016
1,123
Certified organisations
In Portugal



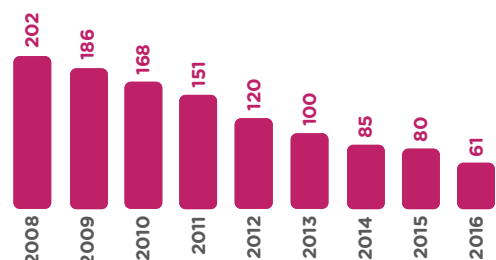
14 Certified companies
18 licensed products
in Portugal
(June 2017)

ENVIRONMENTAL IMPACT ASSESSMENT

Projects subject to EIA by type
2008-2016

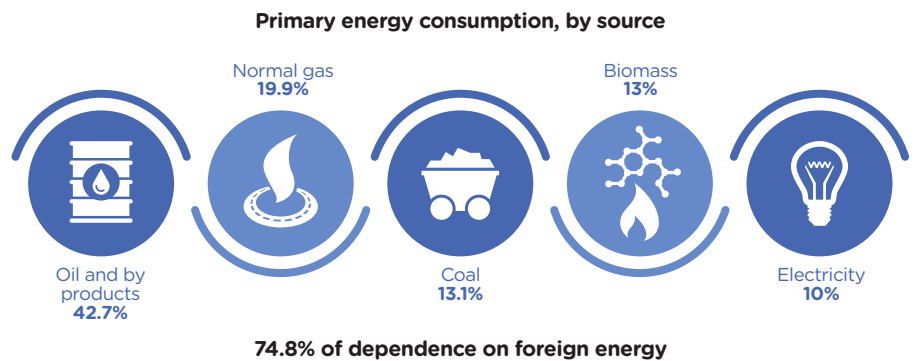
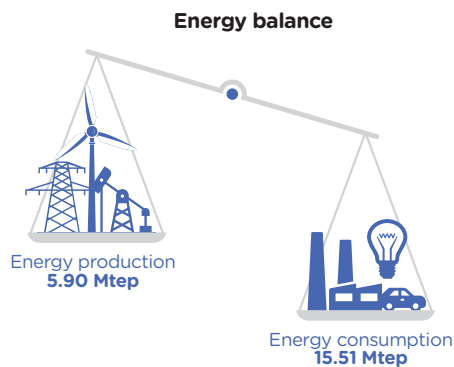


Assessment processes conducted
between 2008 and 2016



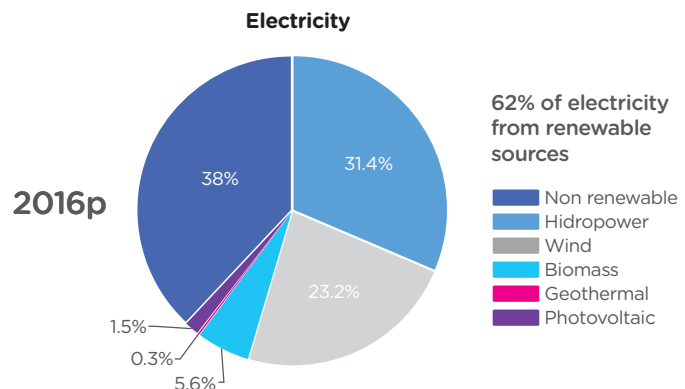
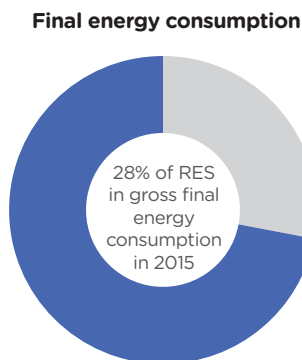
ENERGY AND CLIMATE

ENERGY PRODUCTION AND CONSUMPTION 2016p



p - provisional data

RENEWABLE ENERGIES



p - provisional data

ENERGY AND CARBON INTENSITY OF THE ECONOMY

Energy intensity

Toe*
GDP

133.9



PT

120.4



EU 28

0.401

0.319

Carbon intensity

KgCO₂ eq
GDP

* tonne of oil equivalent

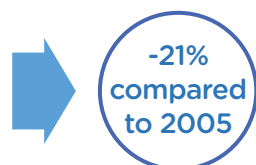
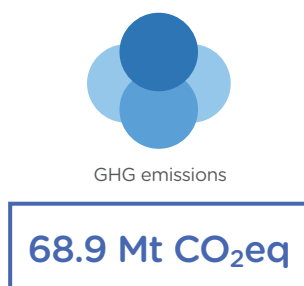
Toe / M€ GDP in 2010 prices

Kg CO₂eq. / € GDP in 2010 prices

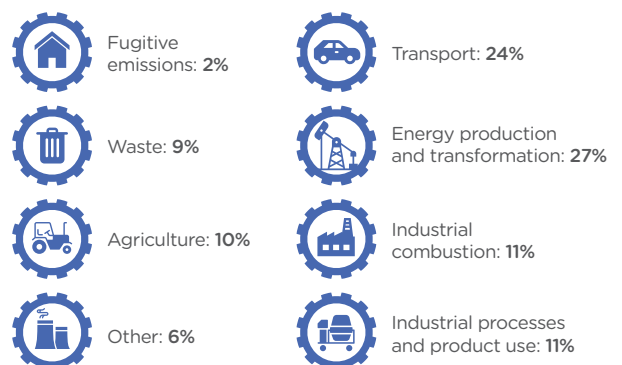
GREENHOUSE GAS (GHG) EMISSIONS

Total emissions without LULUCF* in 2015

* Land Use, Land-Use Change and Forestry



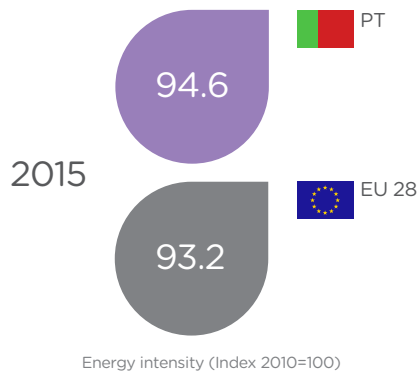
CO₂eq emissions by sector in 2015



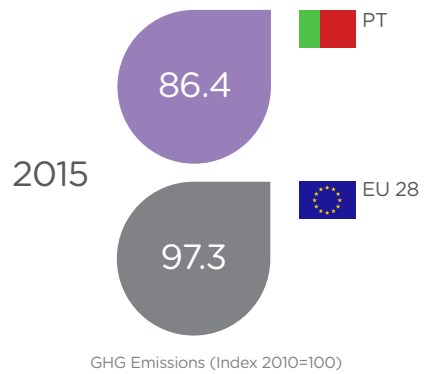
TRANSPORT

ENERGY AND CARBON FOOTPRINT IN TRANSPORT

Energy intensity in the transport sector

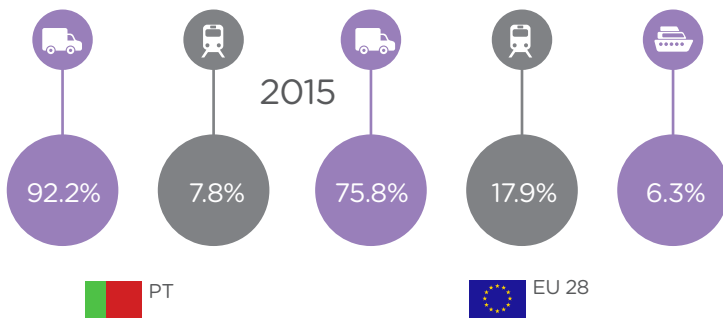


GHG emissions in the transport sector



FREIGHT TRANSPORT

Modal distribution of freight transport



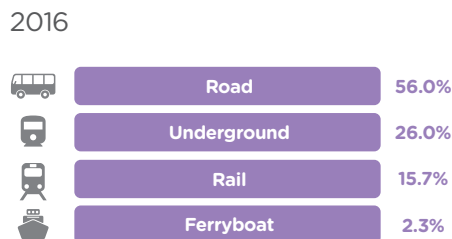
Imports

Exports

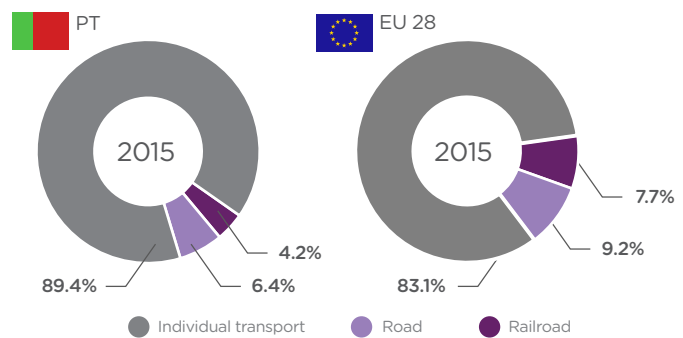


PASSENGER TRANSPORT

Passengers per mode of public transport



Modal distribution of passenger transport

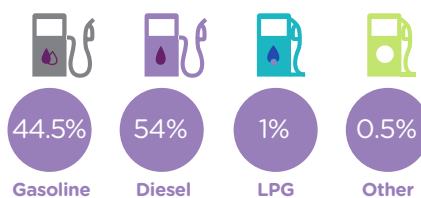


PASSENGER VEHICLE FLEET

Motorisation rate in 2016

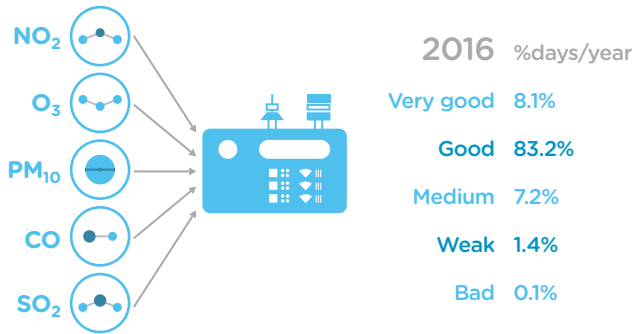


Distribution of passenger cars by type of fuel in 2016



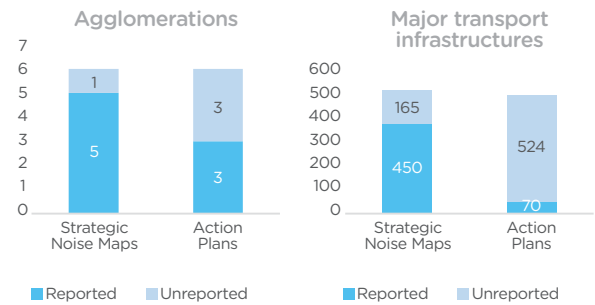
AIR AND NOISE

AIR QUALITY INDEX

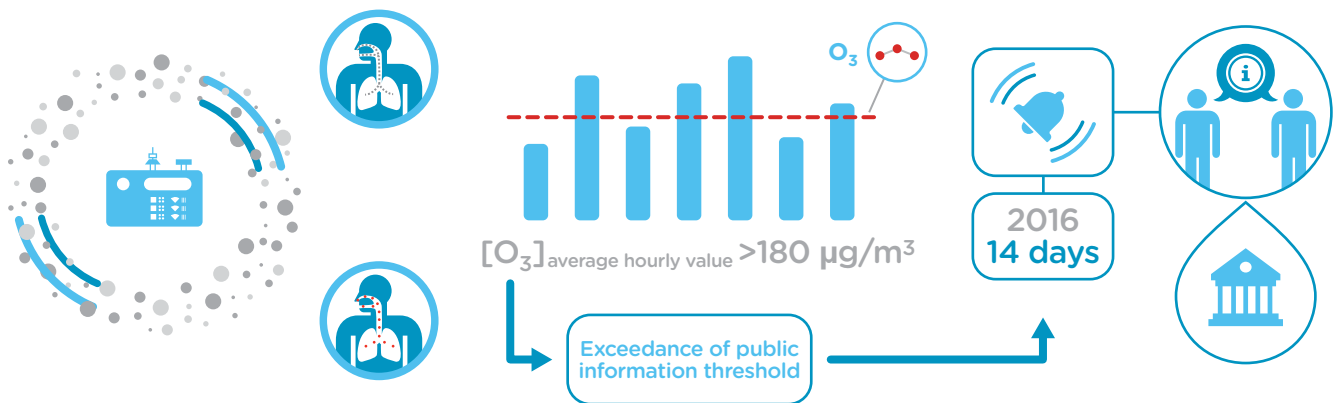


ENVIRONMENTAL NOISE

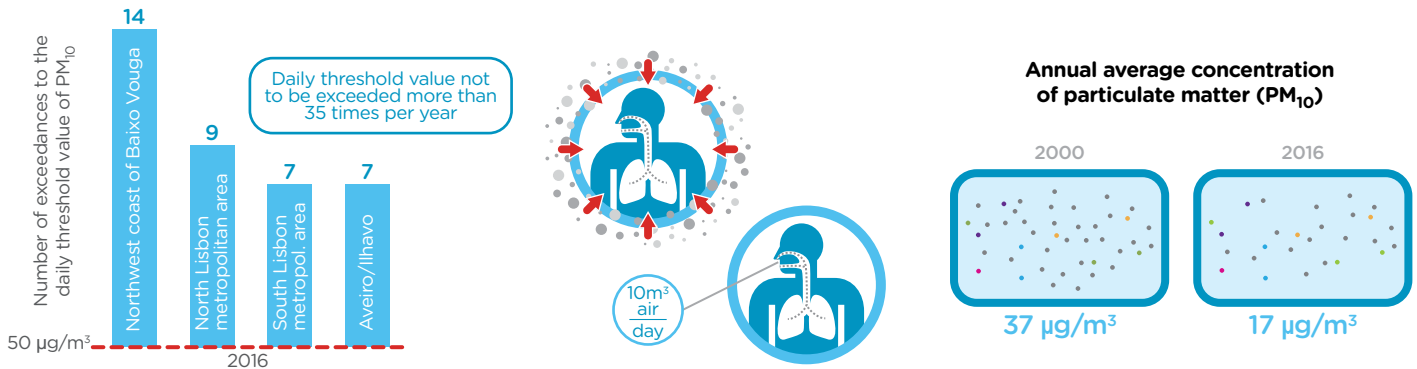
Strategic Noise Maps and Action Plans reported up to July 31st 2017



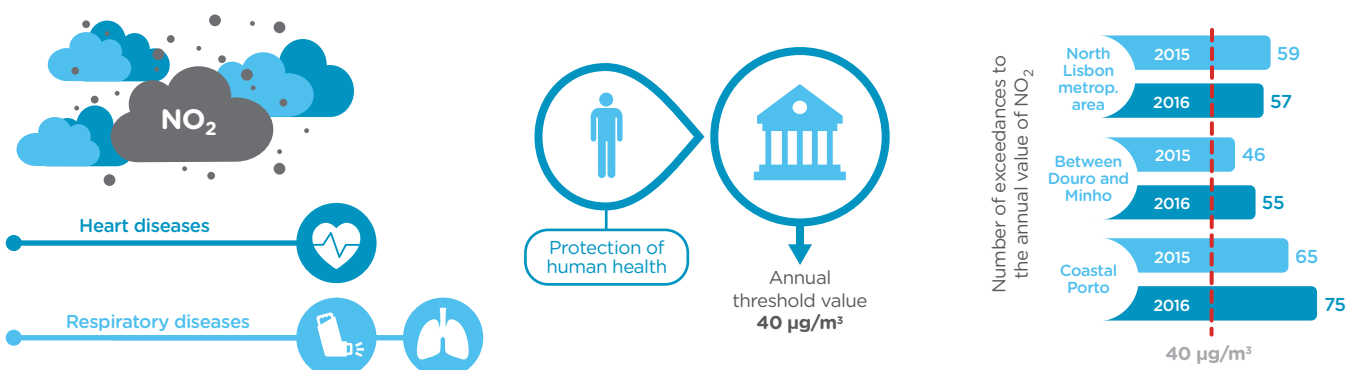
EPISODES OF TROPOSPHERIC OZONE POLLUTION



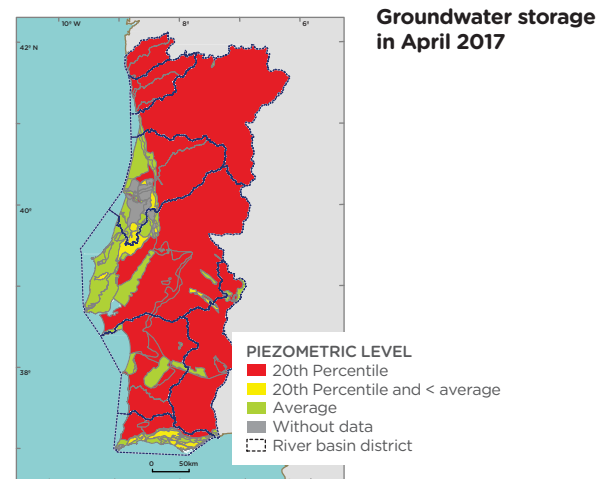
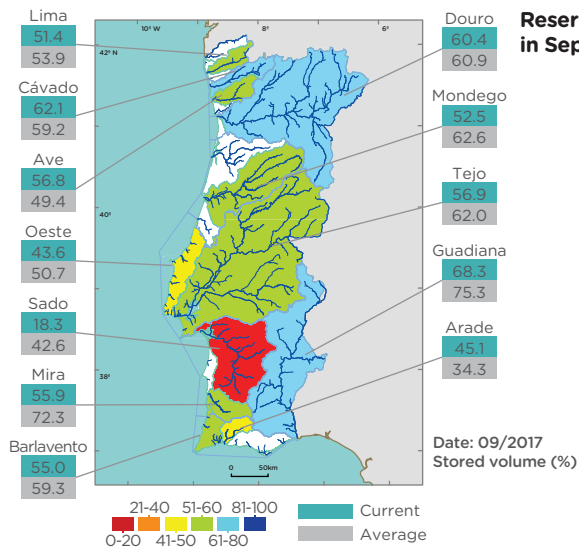
INHALABLE PARTICLE POLLUTION



NITROGEN DIOXIDE AIR POLLUTION

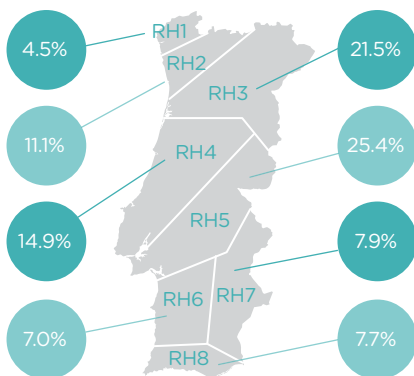


SURFACE AND GROUNDWATER AVAILABILITY



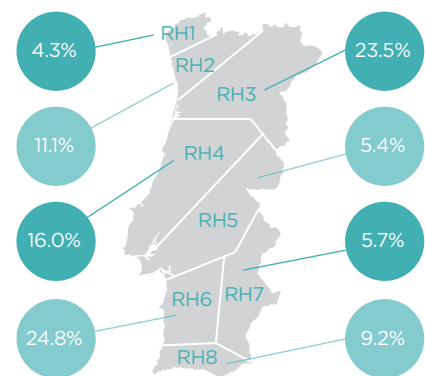
USE OF WATER RESOURCES

% of submitted applications by river basin district in 2017 (up to Sept 30th)



- RH1 - Minho e Lima
- RH2 - Cávado, Ave e Leça
- RH3 - Douro
- RH4 - Vouga, Mondego e Lis
- RH5 - Tejo e Ribeiras do Oeste
- RH6 - Sado e Mira
- RH7 - Guadiana
- RH8 - Ribeiras do Algarve

% of issued permits by river basin district in 2017 (up to Sept 30th)



BATHING WATER

Coastal and transitional waters in 2016

Excellent	89%
Acceptable, Good or Excellent	97.8%
Bad	0.9%
Unclassified	1.3%

1993
336

Bathing waters identified and subjected to quality control

Interior waters in 2016

Excellent	69.6%
Acceptable, Good or Excellent	93.9%
Bad	0%
Unclassified	6.1%

2016
579

Blue flag in 2017



360 beaches
14 marinas and harbors
5 ecotourism boats

DRINKING WATER QUALITY

% of carried out tests defined by law



2016
99.92%

% of compliance with parametric values by water on the consumer's tap



2016
98.77%

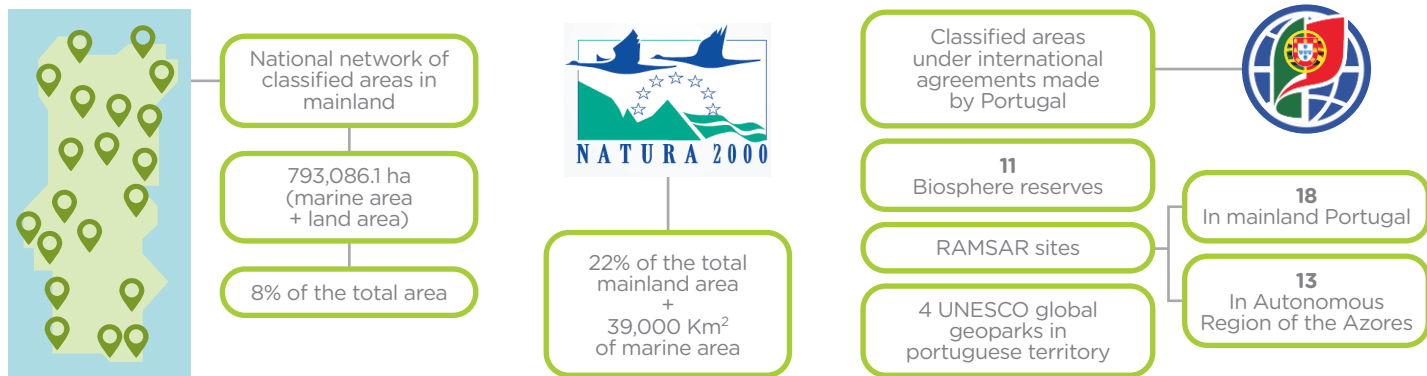
% of safe water on the consumer's tap



2000 2016
77.35% 98.69%

SOIL AND BIODIVERSITY

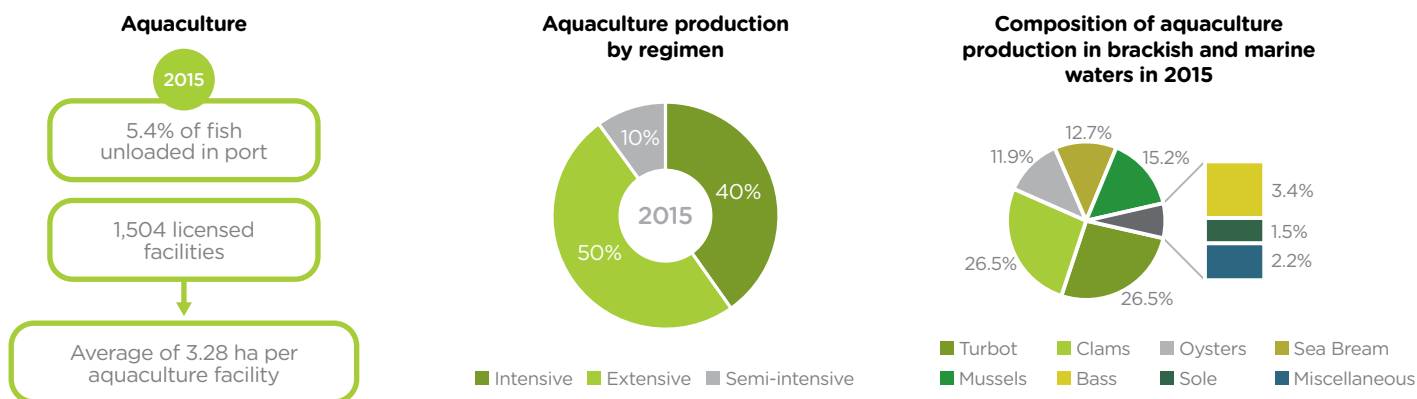
NATIONAL SYSTEM OF CLASSIFIED AREAS



VISITATION OF PROTECTED AREAS

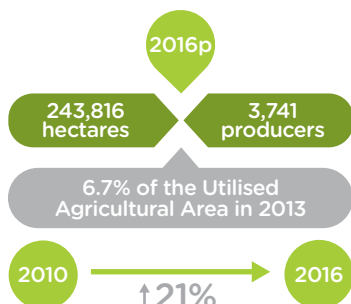


AQUACULTURE PRODUCTION

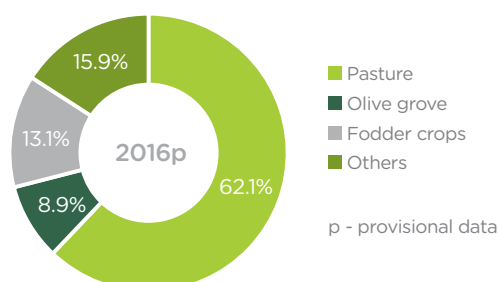


ORGANIC FARMING

Area under organic farming and producers in mainland Portugal



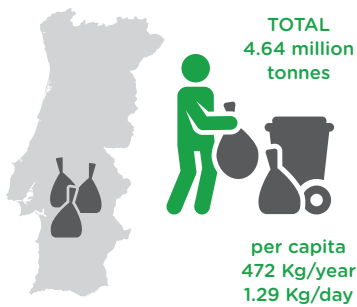
Area under organic farming by crop in mainland Portugal



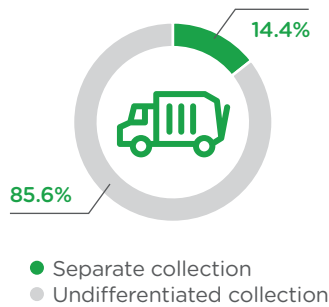
WASTE

MUNICIPAL WASTE (MW) PRODUCTION AND MANAGEMENT

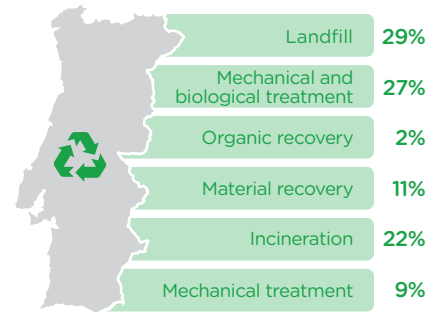
MW production in mainland Portugal in 2016



MW collection in 2016



MW management in 2016



RECYCLING OF PACKAGING WASTE

Packaging waste recycling rate of 62% in 2016

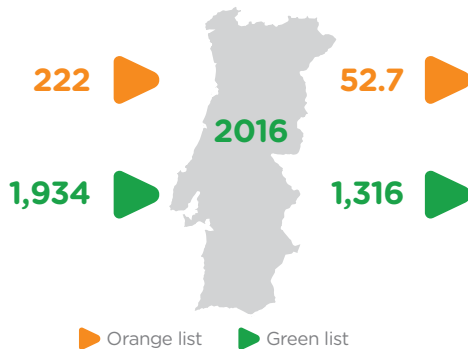


Recycling rate of packaging waste in 2016

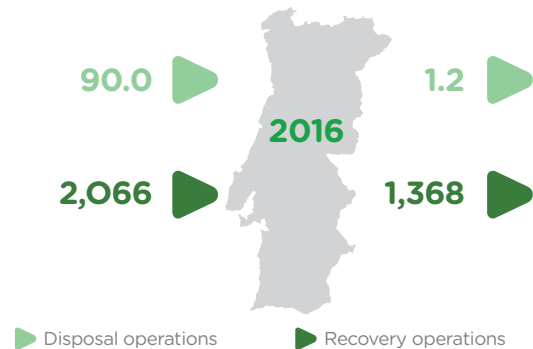


TRANSBOUNDARY MOVEMENT OF WASTE

Waste transferred TO and FROM Portugal (thousand tonnes)

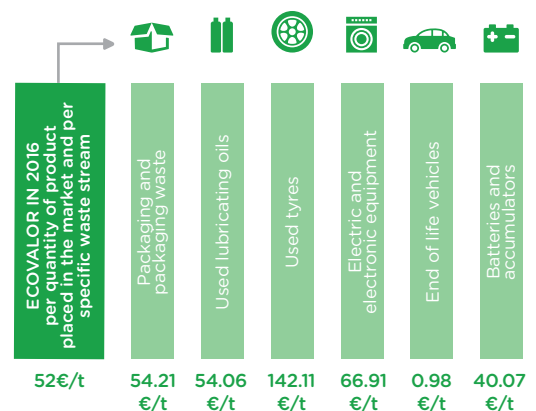


Recovery and disposal operations of transferred waste (thousand tonnes)



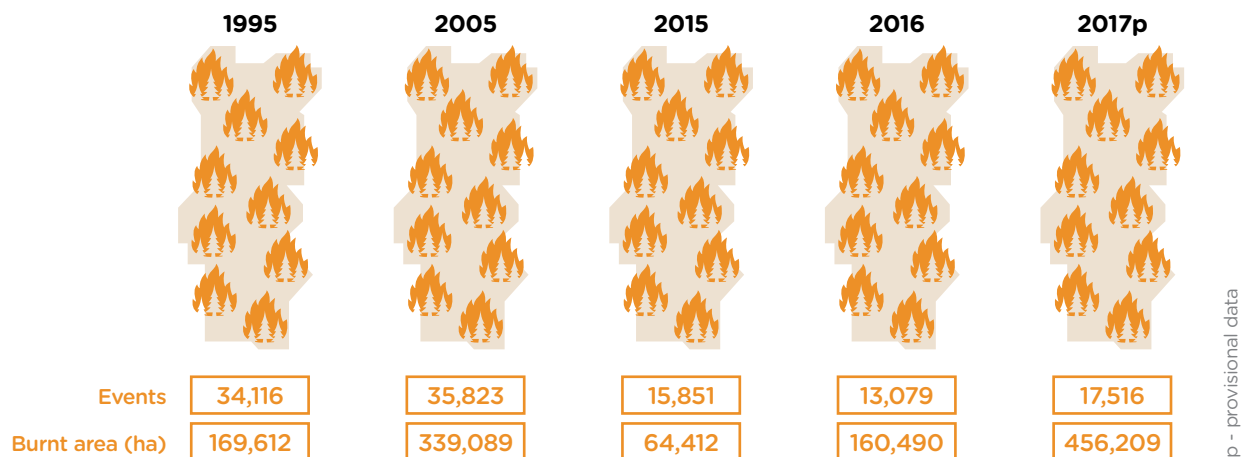
ECOVALOR (VISIBLE FEES)

Evolution of income from ecovalor and financial benefits

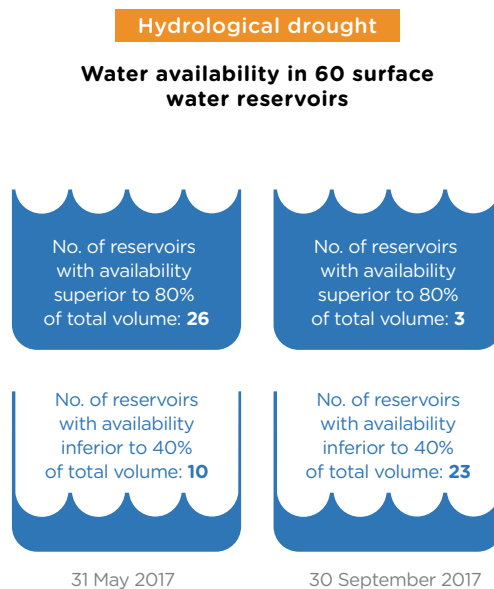
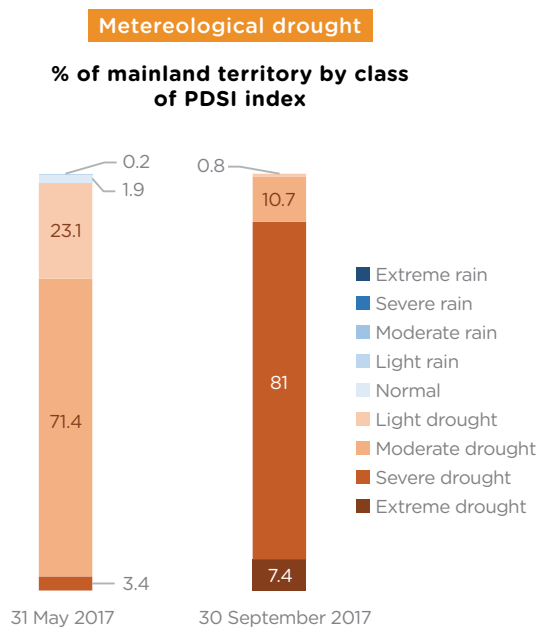


ENVIRONMENTAL RISKS

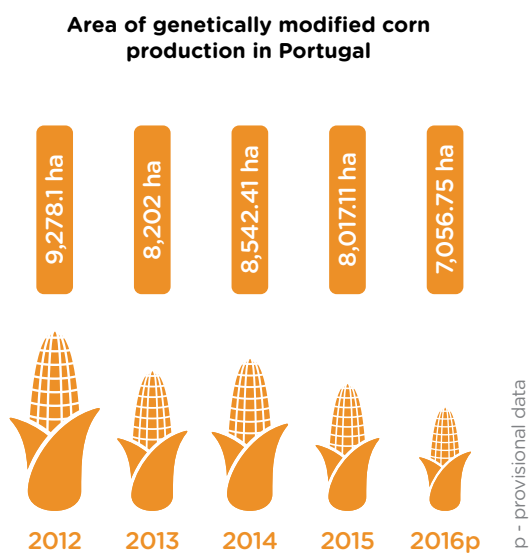
FOREST FIRES



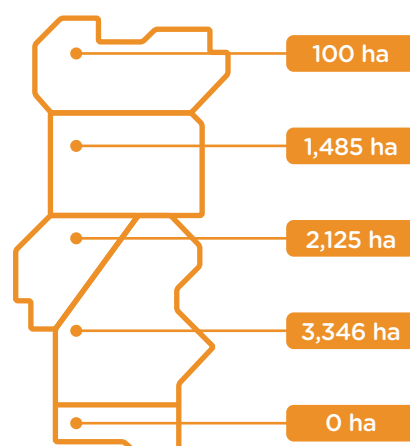
DROUGHT



GENETICALLY MODIFIED ORGANISMS



Regional share of genetically modified corn production areas in mainland Portugal, in 2016 (provisional data)





**STATE OF
ENVIRONMENT
REPORT
PORTUGAL**

2017