

Embracing new challenges towards green transition *The Portuguese Perspective*

Pimenta Machado
President (APA)



Portugal in the world



Portugal in Europe





Climate change - Impacts

What do we (already) know?

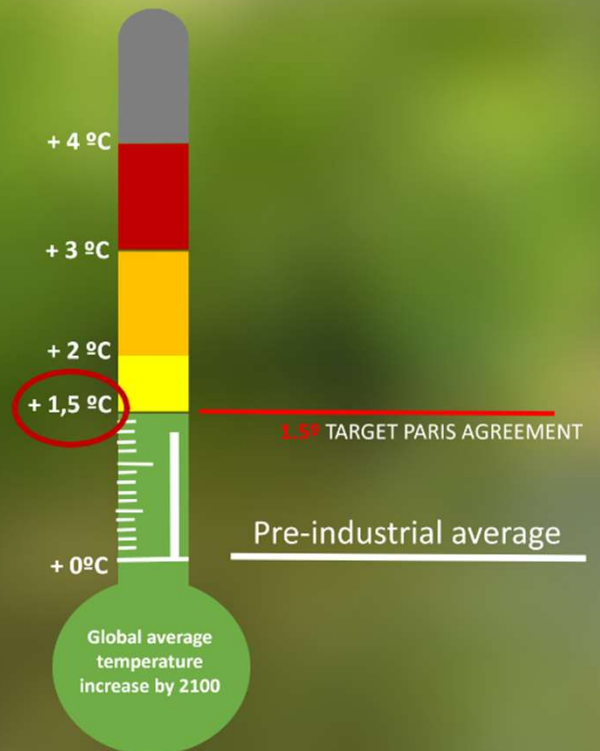
- **Population and economies growing** >> increase in **greenhouse gas emissions**
- **Action, mitigation, and adaptation** required!

Climate crisis "has opened the gates of hell," says UN chief

Despite the multiplication and intensification of extreme weather events, greenhouse gas emissions continue to rise.

desse do efeito estufa seguem aumentando

apesar da multiplicação e intensificação dos eventos climáticos extremos, as emissões de



MONDEGO RIVER



Mondego Floods (2019)



One country,
two realities



Drought Algarve (2019/24)



Algarve Water Efficiency Plan

Mainland Portugal

coastal

987 km
length of coast

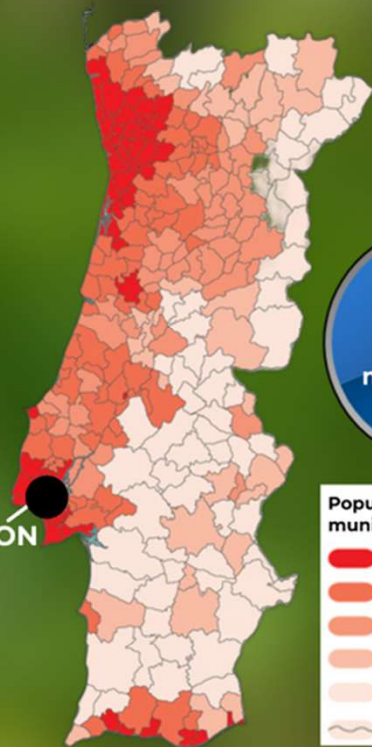
75%
population

85%
GDP*

*Gross Domestic Product

26 %
occupation
with
buildings
urban, tourist and
industrial

LISBON



10
million
inhabitants

278
municipalities

Population density by
municipality (hab/km2)





Portugal and its commitment to **climate action**

PORTUGUESE ENVIRONMENT AGENCY (APA)



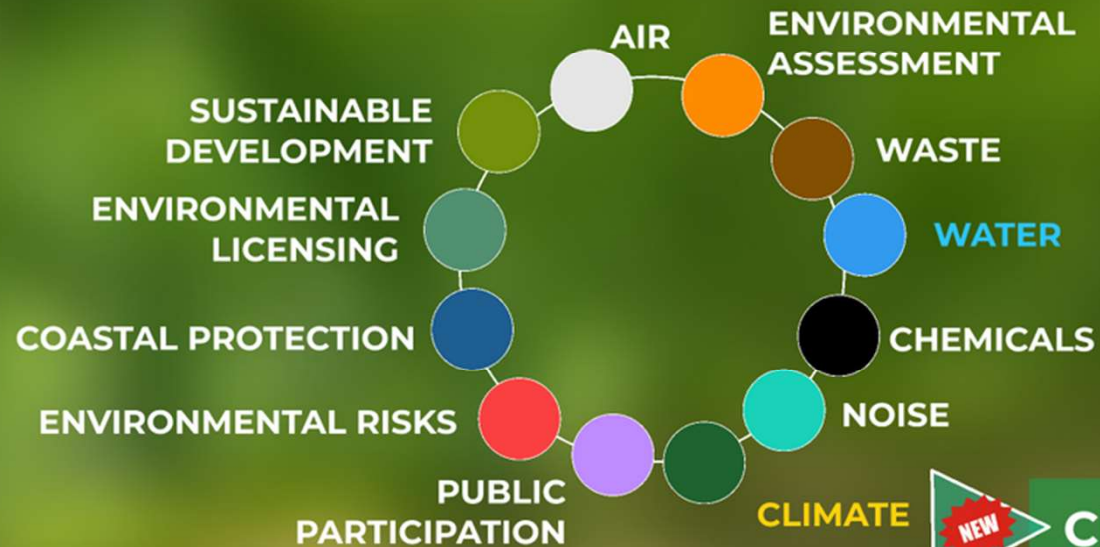
- responsible for the **implementation of environmental policies** in **Portugal**
- contribute to a **high level of environmental protection and valorization**

42% in Portugal 65% in Spain

Shared basins



Main areas of activity



WATER
MANAGEMENT



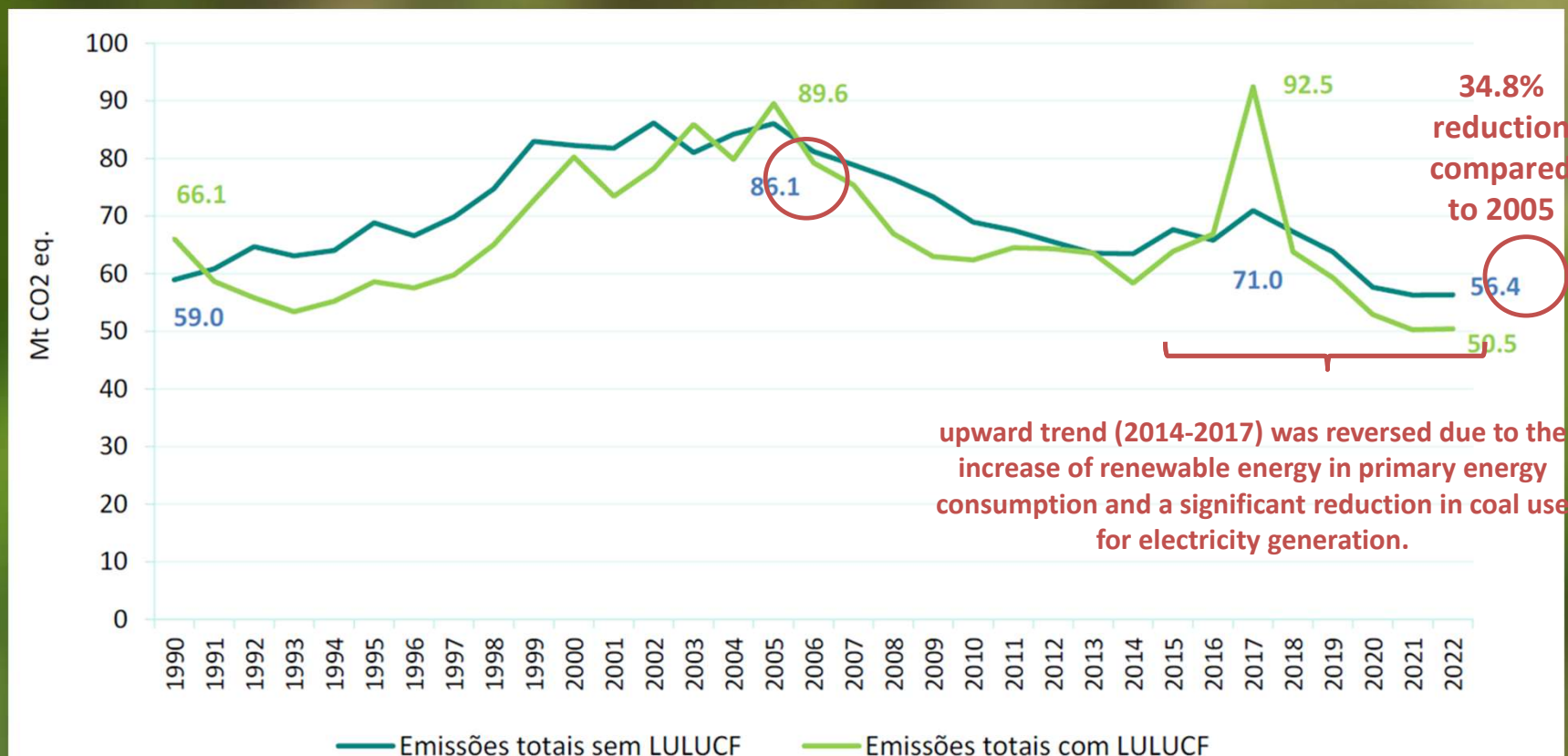
(5 Water Basin Districts)

NEW

Climate Agency*

* competences on Climate related issues are being transferred from the Portuguese Environment Agency to a newly created Agency dedicated to Climate Action

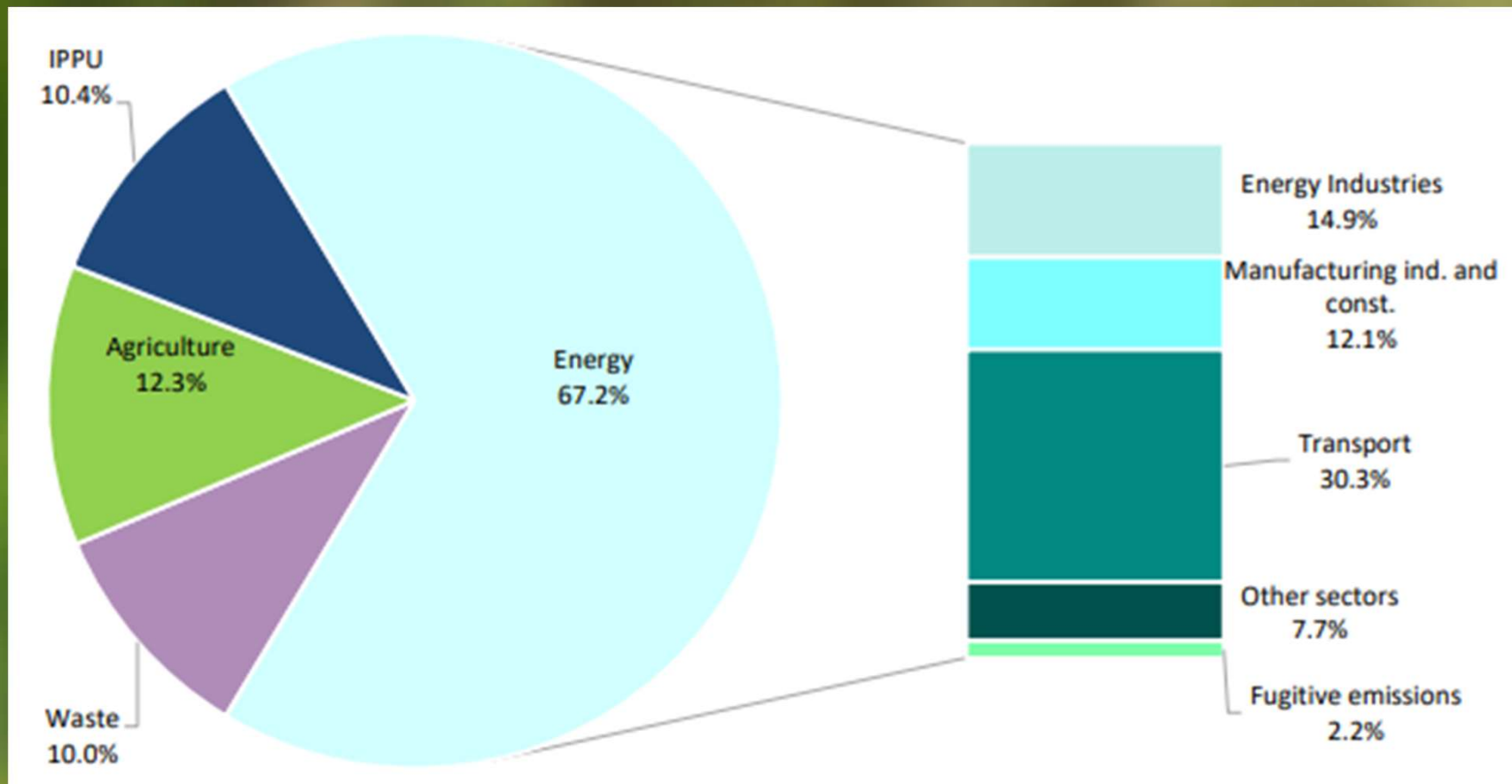
Evolution of Greenhouse Gas Emissions in Portugal



Sectors	2022	Reduction (baseline 2005)
Total without LULUCF (Mt CO2e)	56.4	34.8%
Total with LULUCF (Mt CO2e)	50.4	43.7%

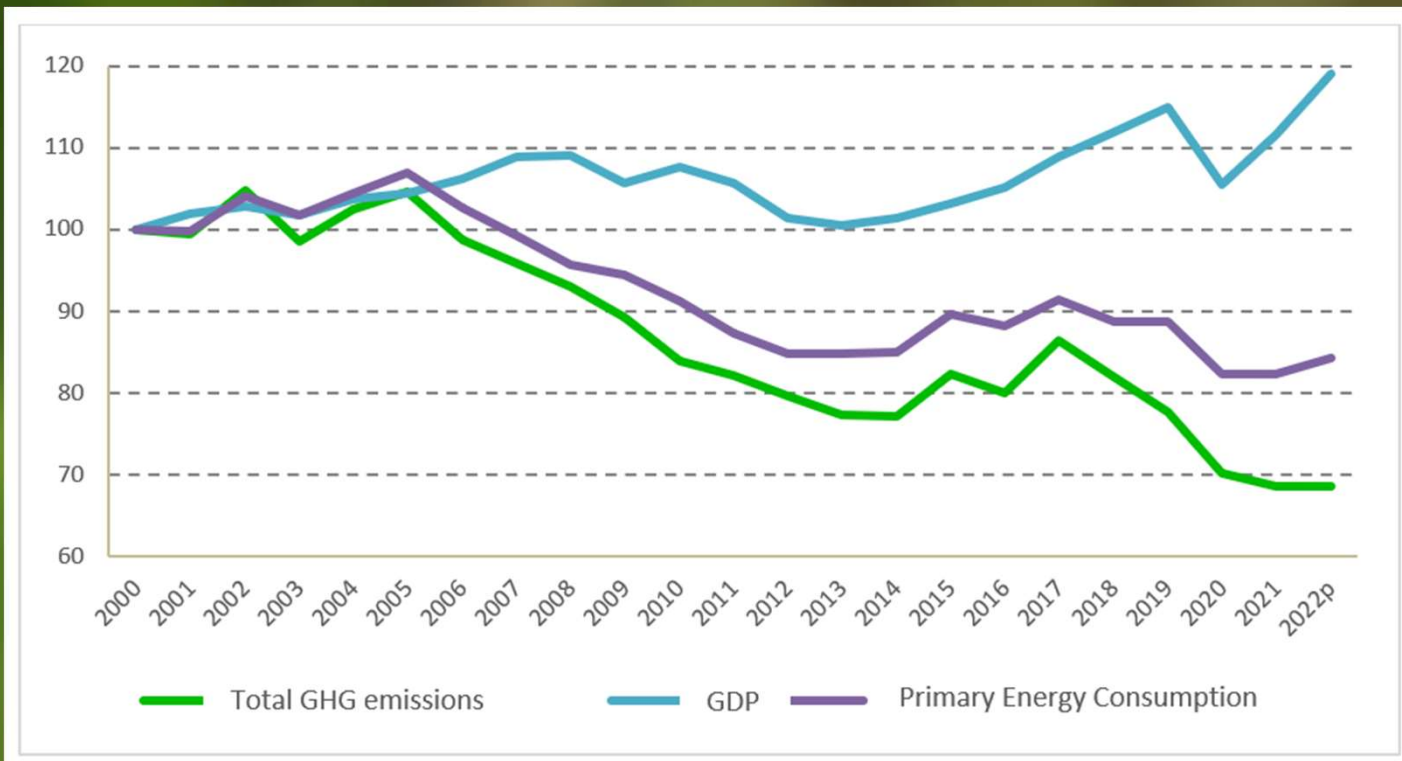
Note: LULUCF –Land Use, Land Use Change and Forestry

Evolution of Greenhouse Gas Emissions in Portugal



2022 GHG emissions by sector (LULUCF excluded)

Evolution of Greenhouse Gas Emissions in Portugal



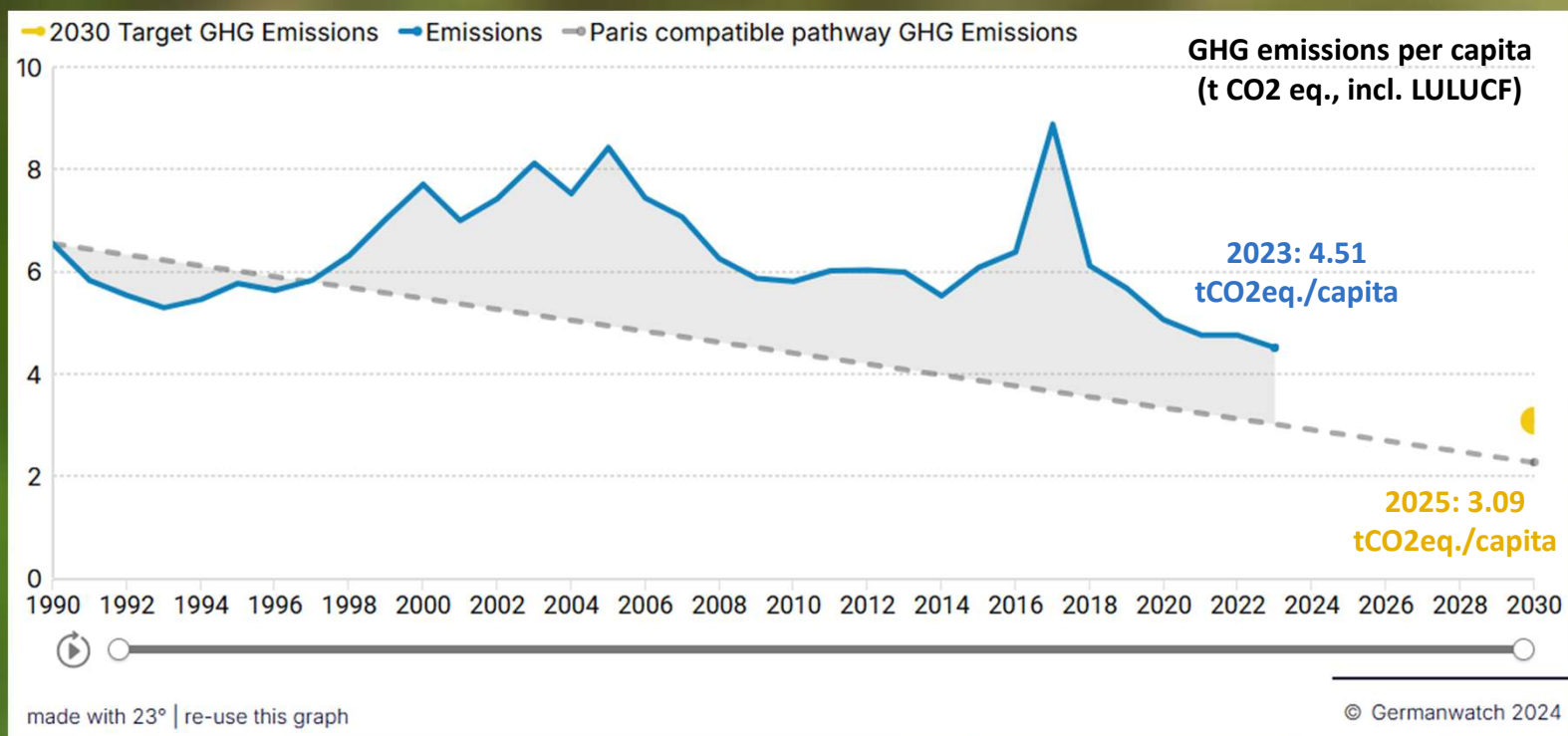
Several factors contributed to this progress:

- Significant growth in energy produced from **renewable energy sources**.
- Implementation of **energy efficiency** measures.
- **Closure of coal-fired power plants**.

The carbon intensity of emissions in 2022 decreased approx. 40% compared to 2005 (0.27 kt CO₂e/M€)

Portugal managed to **decouple economic growth from GHG emissions and primary energy consumption**, a trend that continued in 2022, confirming that it is possible to have **ECONOMIC GROWTH** and, at the same time, **LESS emissions**

Climate Change Performance Index 2025 (CCPI)

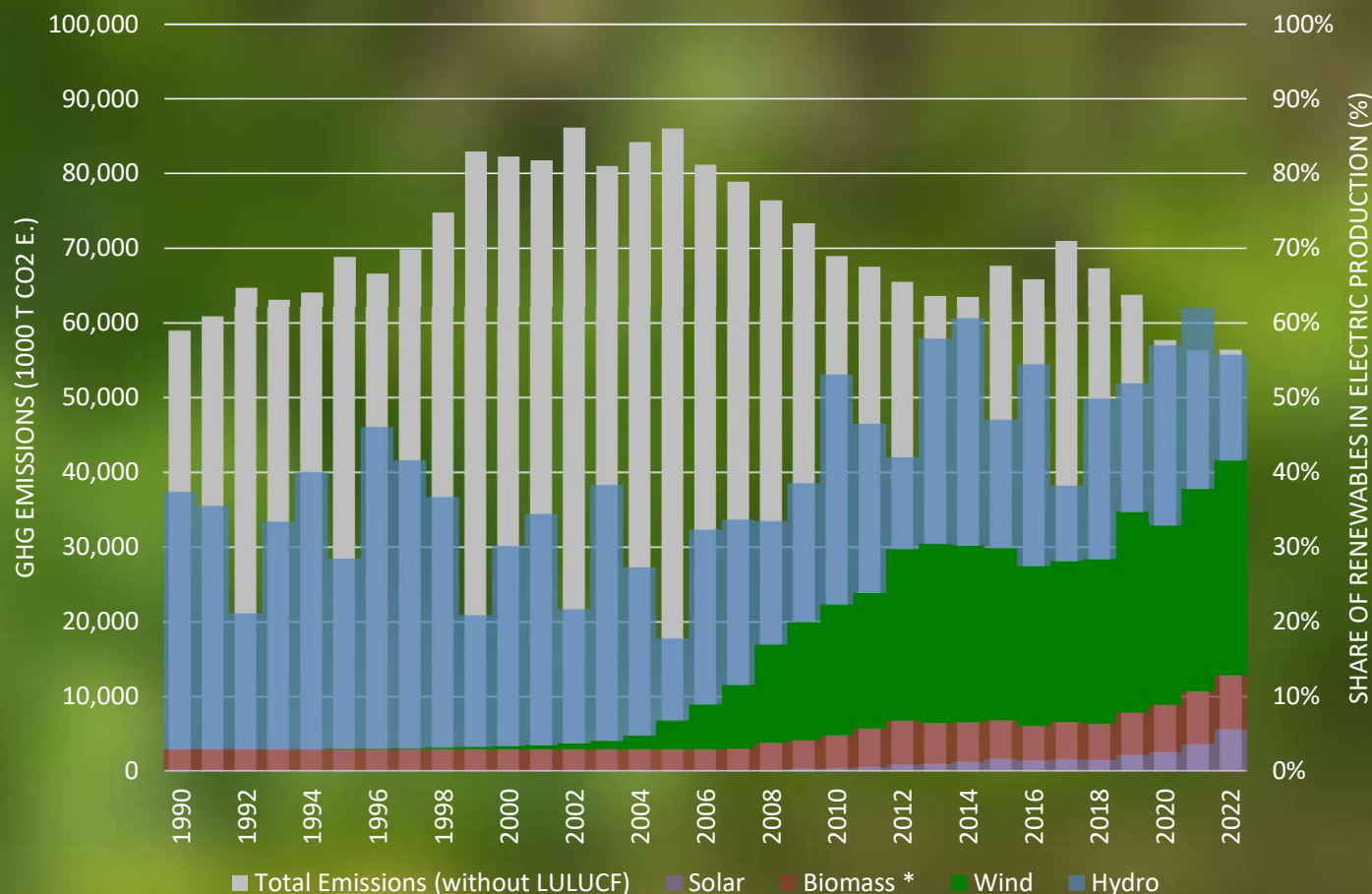


Key Indicators



Portugal continues to demonstrate a **strong commitment to climate action**, reflected in its **position in the Climate Change Performance Index 2025 (CCPI)**, where Portugal ranks **15th** out of 63 countries, remaining in the group of countries with a “**high**” rating

Renewable Energy in Portugal



Portugal has been a leader in the decarbonization process

- Portugal became the **4th European country phase-out of coal-fired power generation** (closed its last remaining coal plant in 2021)

Share of renewables in electricity production:

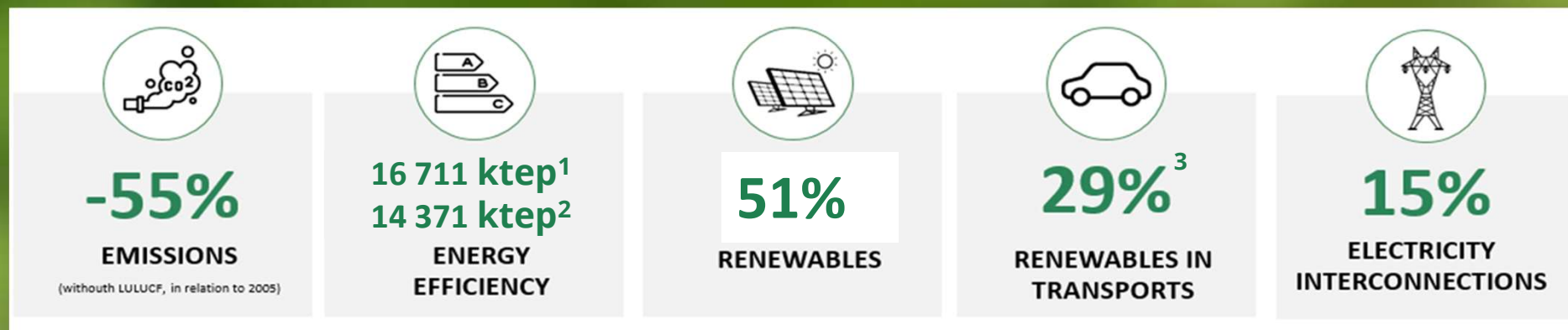
- 1990 – 37%
- 2005 – 18%
- 2022 – 56%

The investment in **wind energy** allowed a lower dependence of renewables on **dry hydrological years**. In 2017, despite the low precipitation, the share of electricity production from renewable sources was 39%.

Carbon Neutrality trajectory – Portugal Policy Framework update



NECP 2030 targets align with the EU and anticipation of the **climate neutrality target for 2045**



- (1) Target for primary energy consumption (according to the methodology of the revised Energy Efficiency Directive (EED - (EU) 2023/1791);
- (2) Indicative target for final energy consumption in 2030 (according to the methodology of the revised EED)
- (3) This target considers a share of biofuels and biogas produced from raw materials listed in Part B of Annex IX of the Renewable Energy Directive (EU) 2023/2413 of at least 1.9%;

Path to Carbon Neutrality | A Green City Model

ALIGNMENT FOR SUSTAINABLE DEVELOPMENT



- INTEGRATED POLICIES
- RESILIENT BUILDINGS
- SUSTAINABLE TRANSPORT
- REDUCE DEATHS, LOSSES DUE TO DISASTERS
- REDUCE CITY ENVIRONMENTAL IMPACT
- PROVIDE ACCESS GREEN PUBLIC SPACES

MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE,
SAFE, RESILIENT AND SUSTAINABLE



- STRENGTHEN RESILIENCE TO CC-HAZARDS & DISASTER
- INTEGRATE CLIMATE CHANGE MEASURES IN POLICY
- IMPROVE CAPACITY ON CLIMATE CHANGE

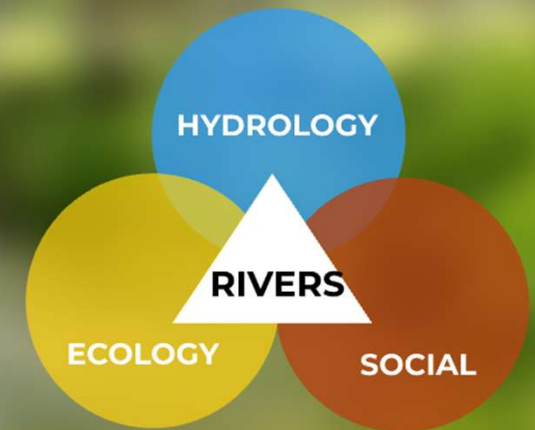
PREPARING THE CARBON NEUTRALITY | CLIMATE ACTION

Restoration Strategy for Portuguese Rivers: Nature-Based Solutions



Lines of innovation

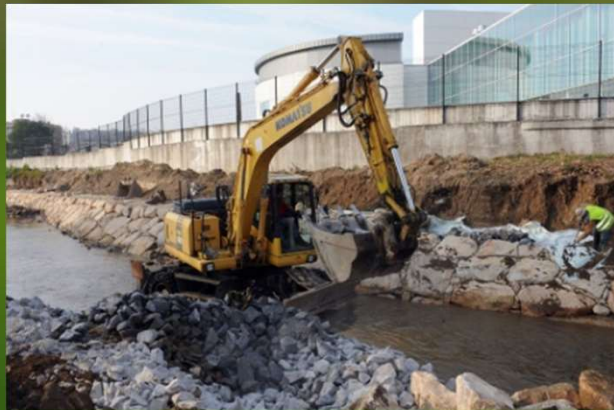
- **integrated** and **multidisciplinary solutions**
- generate **direct positive environmental impact**
- **capture** of **CO2**
- **locally-generated interventions** with **local materials**
- **nature-based solutions**



**PUBLIC
PARTICIPATION**

Restoration Strategy for Portuguese Rivers: Nature-Based Solutions

RENATURALIZATION OF THE ESTE RIVER(Braga)



MONDEGO RIVER (Coimbra)



RIA DE AVEIRO



JARDIM RIVER(Albergaria-a-Velha)





**Embracing new challenges
towards green transition**
The Portuguese Perspective

Key Drivers of Portugal's Green Transition & NQPF & Inclusive Green Growth (IGG)

- **EU ETS** as an Incentive for **Modernization** and **Sustainability**
- Support from **EU R&D&I** Strategies such as **European Strategic Energy Technology Plan (SET Plan)** and the **Strategic Technologies Platform for Europe (STEP)**
- **Industry 4.0**: Technological Integration for Modernization
- Public-Private Partnerships for **Industrial Decarbonisation**
- Collaborative Innovation via **Technology and Innovation Centers (CTI)** and **Collaborative Laboratories (CoLAB)**

Portugal's decarbonisation efforts were shaped by collaboration, innovation, and targeted support



Projects in the pipeline with the STEP Seal

→ To improve access to funding on high quality strategic projects

Under “Clean and resource-efficient technologies”

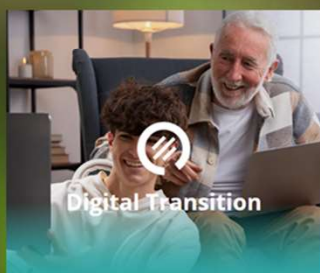
- **BigBATT** - Large-Scale Battery Deployment In Generation Platform
biggest deployment (50MW/360MWh) of a Battery Energy Storage System (BESS) in Europe, proving the feasibility of scalable, flexible, and innovative solutions for emission reduction towards a zero-emissions energy grid
- **GRAMMIS** – [Production of 98,500 t/year] Green Ammonia In Sines
- **Hy-MeOH** – [Production capacity of 80 kt/year of] Hybrid Methanol
- **Madoquapower2x**: Large-Scale Green Hydrogen And Ammonia Production In Portugal
- **SLICE** – [Plant for] Sustainable Lithium Conversion For European Green Transition



BigBATT project

Additional opportunities for funding STEP projects are being explored

SUSTAINABLE BIOECONOMY – PORTUGAL CIRCULAR



Bioeconomy at Textiles



Innovation and empowerment of the footwear industry for a sustainable bioeconomy



Innovation in the Natural Resin Sector to Strengthen the National Bioeconomy

SUSTAINABLE BIOECONOMY – PORTUGAL CIRCULAR



Society
Empowering responsible consumption



Biomaterials
Sustainable materials redefining industry standards



Circularity
Sustainable cycles maximizing resource efficiency



Sustainability
Driving zero-waste, efficiency, and traceability



SUSTAINABLE BIOECONOMY – PORTUGAL CIRCULAR

**Circular
Economy**



**Ecologic
footwear**



Biomaterials



**Bio
shoes
4all**



**Advanced Production
Technologies**



**Capacity Building
and Promotion**

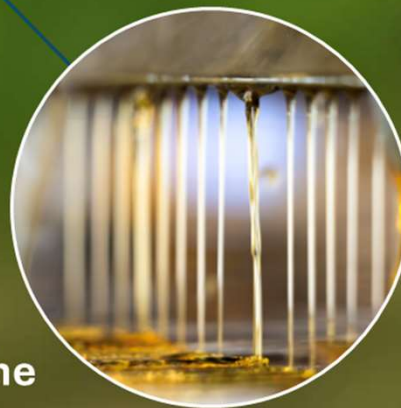
SUSTAINABLE BIOECONOMY – PORTUGAL CIRCULAR



**Production of national
Natural Resin**



**Positive differentiation of Natural
Resin and derived products**



**Sustainability of the
processing industry**



apa

agência portuguesa
do **ambiente**

THANK YOU

OBRIGADO

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