Portugal

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Summary of main findings

<table>
<tr><th>Metric</th><th>Value</th><th>Further information</th></tr>
<tr><td>Overall goal of the LTS</td><td>Carbon neutrality by 2050</td><td>• The goal does not specify whether it includes all main greenhouse gases.
• The goal covers all sectors. It does not specify if it includes national and international aviation.
• Remaining emissions in 2050 can be compensated by national carbon sinks.
• The use of international carbon credits is excluded.</td></tr>
<tr><td>Scenarios presented in the LTS</td><td colspan="2">• The LTS presents three alternative macro-economic scenarios by 2050:
– “Off-track”: retains economic structure and current trends as well as the decarbonisation policies already adopted.
– “Peloton”: socio-economic developments and new technologies compatible with carbon neutrality, but not enough to significantly change either the production structures or the population’s lifestyles. Modest adoption of circular economy models. Population concentrated in cities.
– “Yellow Jersey”: socio-economic developments compatible with carbon neutrality, with structural change in production chains. More effective adoption of circular economy models. Growth of medium-sized cities.</td></tr>
<tr><td>GHG reductions</td><td>Modelling results:
GHG emission reductions by 2050 compared to 2005 (excluding removals):
-85% to -90%
(i.e. under carbon neutrality scenarios)
Targets:
No indicative milestones for 2040 and 2050.</td><td>Emission projections by sectors:
<table><tr><th>Mio.tCO2 eq</th><th>2030</th><th>2050</th></tr><tr><td>Power</td><td>(1.9, 2.2)</td><td>(0.35, 0.36)</td></tr><tr><td>Industry</td><td>(9.48, 8.72)</td><td>(4.99, 5.11)</td></tr><tr><td>Transport</td><td>(10.61, 11.18)</td><td>(0.47, 0.42)</td></tr><tr><td>Buildings</td><td>(3.07, 2.9)</td><td>(0.09, 0.11)</td></tr><tr><td>Agriculture</td><td>(6.3 , 6.02)</td><td>(6.11, 3.98)</td></tr><tr><td>Waste</td><td>(3.32, 3.26)</td><td>(1.75, 1.55)</td></tr><tr><td>LULUCF</td><td>(-9.14, -10.57)</td><td>(-11.84, -13.42)</td></tr></table>Notes: (1) GHG emission values under ‘Peloton’ and ‘Yellow Jersey’ scenarios. (2) Power sector includes power generation and refining. (3) Building includes both residential and service. (4) Agriculture includes also agriculture lands and pastures.</td></tr>
<tr><td>Renewable Energy Sources</td><td>Modelling results:
Share of renewables in gross final energy consumption in 2050:
86% to 88%
(i.e. under low carbon neutrality scenarios)</td><td>Main drivers and features:
• Electricity production from 100% renewable sources by 2050.
• Solar and wind energy to supply 50% of the electricity generated in 2030 and 70% in 2050.
• Renewables in the transport sector: 35% in 2030 and 90% in 2050.
• Renewables in the building sector: 66% in 2050.</td></tr>
<tr><td>Energy Efficiency</td><td>Modelling results:</td><td>Main drivers and features:
• Reduction in the energy intensity of passenger[2] and freight[3] transport, respectively, from -81% to -84% and -73% to -75% of -84% and -75%, by 2050 compared to 2015.</td></tr>
</table>

[2] Energy consumed per passenger transported – pkm.
[3] Energy consumed per tonne of goods transported – tkm.

Metric	Value	Further information
	FEC: 10.9 to 11.4 Mtoe in 2050 (i.e. 36%-35% reduction to 2005[1]) PEC: 11.8 to 12.5 Mtoe in 2050 (i.e. 53%-50% reduction to 2005[1])	• Reduction of energy intensity in industry by -52% to -64% by 2050, compared to 2015.[4] • Reduction of energy intensity of buildings respectively from -7% to -20% and from -42% to -43% by 2050, compared to 2015. • Reinforcing the perspectives of the circular economy and resource efficiency.
Estimated investment needs	€ 85 billion (additional to achieve carbon neutrality, cumulative 2016-2050)	• Annual investment to achieve carbon neutrality around 1.2% of GDP in addition to BAU scenario. • Both private and public financing mechanisms are identified in the LTS. It includes corporate and sovereign green bonds, green loans and sustainable investment funds. • About 40% of investment needs in mobility and transport sector.
Socio-economic impacts of transition	GDP in 2050: +0.5% to +0.9% compared to BAU. Employment in 2050: +0.1% compared to BAU.	• Positive impact also on private consumption (2.0% to 3.4% compared to *business as usual*). • Adoption of low carbon materials and renewable sources contribute to fight against energy poverty. • Co-benefits of carbon neutrality linked to improved air quality, with positive effects on human health.
Adaptation Policies and Measures	Limited	• The LTS refers to the Climate Change Adaptation Action Program (P-3AC) with a 2030 time horizon. No information in the LTS on adaptation policies for the period 2030-2050.
Public consultation	Limited	• A public consultation has been conducted but the LTS does not provide a feedback summary.
Legal status of the LTS and targets	No	• There is currently no law that includes the LTS. • The carbon neutrality target is not legally binding.

Overall completeness of the LTS

- The LTS defines a clear goal for Portugal, aiming to be carbon neutral by 2050, although it is not clearly specified if the target includes international aviation and maritime.
- In general, the strategy is developed in detail and projections have been completed up to 2050.
- The LTS includes most of the mandatory contents. Gaps in mandatory elements are:
    a) GHG intensity and CO2 intensity of GDP;
    b) Limited information on strategies related to research, development and innovation;
    c) Summary of the public consultation;
- The LTS includes most of the non-mandatory contents (e.g. projections for renewable energy, energy consumption, industry, transport and agriculture, drivers for energy use, industry policies and measures, transport decarbonisation options and emission reduction options for agriculture). However, there is no overarching adaptation strategy or plan for 2050 and the LTS does not include links to rural development policies.

[1] Calculation based on data in the LTS supplemented, as required, with data from other Member State reporting under the EU Regulation on Governance of the Energy Union and Climate Action.
[4] Industries of coke manufacturing and petroleum products and electricity and gas production not included.