

Climate Dialogues 2020

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Session ends: 03-11-2020 23:59:59 [GMT+1]



Multilateral Assessment

A compilation of questions to - and answers by -
Portugal
exported on 05 November 2020
by the UNFCCC secretariat

Question by United States of America at Monday, 07 September 2020

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Projection methods

Portugal's projections relied on the TIMES_PT model for emissions from the energy, transport, and industry and industrial processes sectors, and spreadsheets based on inventory methodology for the agriculture, LULUCF, and waste and wastewater sectors. For fluorinated gases, emission projections were based on the implementation of the relevant EU regulations. Portugal indicates that these more simplified models are not based on a cost-benefit analyses, which can be considered as a disadvantage. Does Portugal have plans to develop more integrated modeling analysis that would allow for cost benefit analysis and interactions across sectors (e.g., biofuel use impacting agricultural and energy sectors)?

Answer by Portugal

At the time being no new developments are foreseen. The modelling exercise performed in the scope of the 2050 Carbon Neutrality Roadmap will be revised in due course in order to adapt to new objectives and targets, new technologies or new policies and measures developments when applicable.

Question by United States of America at Monday, 07 September 2020

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Livestock emission measures

Portugal's report mentions the need for research into animal diets in order to reduce agriculture needs. Are there any specific study designs or dietary alternatives in mind so far for this research?

Answer by Portugal

The projections included changes in proportions of existing feed alternatives (pasture, fodder and concentrates), changes in animal productivity and changes in manure management systems to achieve emissions reductions in animal production.

Research in this area would necessarily have to focus on refining emission factors for our local breeds and animal husbandry conditions, but also the effects of new feed additives (e.g. algae) or precision farming (e.g. matching the feed intake to the needs of individual animals).

In the context of future modelling exercises we will contemplate the possibility of developing further work or integrating results from research already existing.

Question by Republic of Korea at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

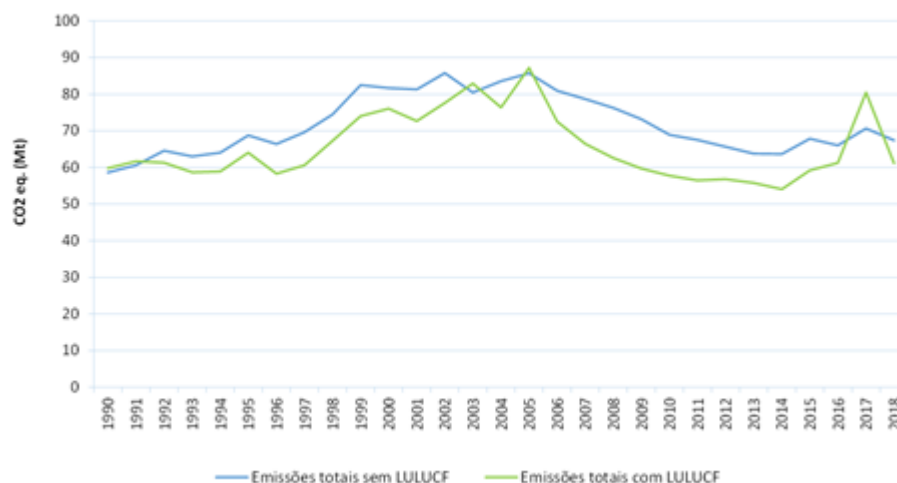
Title: Mitigation actions

What are the lessons learned from the decrease of renewable energy generation and the temporary increase in GHG emissions due to natural disasters in 2017, and what are the Portugal's precautions for disaster situation?

Answer by Portugal

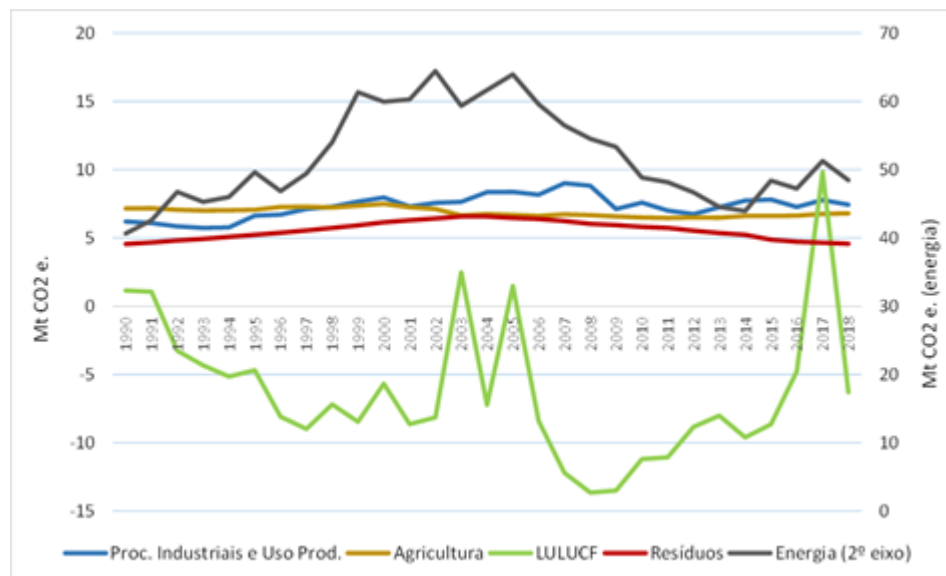
In 2018 total emissions considering the Land Use, Land Use Change and Forests (LULUCF) sector are estimated at 61.1 MtCO₂e, an increase of 2.2% compared to 1990 and a reduction of 24.0% compared to 2017. This reduction is related to the sharp change of -163.9% in LULUCF emissions between 2017 and 2018.

This huge drop is related to the tragic, exceptional events in relation to the forest fires that occurred in 2017, as a result of a particularly dry year, associated with high temperatures and unusually strong winds, such as hurricane Ophelia that swept the coast of the Iberian Peninsula in October 2017.



After the 7.0% increase in national emissions in 2017 compared to 2016, largely explained by the strong reduction in hydroelectric production in 2017 due to the very unfavourable availability of hydro (IPH = 0.47), total emissions in 2018 decreased 4.6% compared to 2017. This reduction is associated with the decrease in emissions from various sectors, and particularly from the "energy

industries", which recorded a significant drop -14.1% compared to 2017, reflecting the better conditions in terms of water availability (IPH = 1.05) in 2018 and the increase in hydroelectric production and the consequent drop in emissions.



LULUCF sector estimates show that this category, usually a carbon sink, changes to a net emitter during periods of severe forest events (2003 and 2005). In 2017, this sector became a net emitter again, with a total of 9.8 MtCO₂e, representing 12% of the country's total emissions for the reasons mentioned above. In 2018 the sector is again estimated as a sink (-6.3 Mt CO₂e).

In order to prevent the impacts of disaster situations, the focus has been on reinforcing the complementarity of different renewable energy sources, in particular hydro, solar, wind. We are also exploring the use of renewable gases such as hydrogen as a mean to store excess renewable power production.

In addition, more policies and measures have been planned and are being implemented to promote fire prevention, improve firefighting capabilities, fight desertification and improve organic matter in the soil, namely:

- Implementation of landscape plans to promote the diversity of species and multi-functionality in forests to increase the resilience of the landscape to rural fires and reduce their occurrence;
- Support afforestation and improve the environmental value of forests, increase its resilience, conserving and recovering of habitats and forest areas with high natural value, maintaining and conserving riparian galleries, using species that are better adapted, raising support for areas subject to forestry management plans and improving the economic value of forest populations;
- Conserve, restore and improve agricultural and forest lands and prevent erosion through actions to install, conserve and recover riparian galleries and operations to improve fertility and the structure of the soil and the use of crops/species that are suited to soil characteristics;

- Continue to support and develop Programmes of Ecosystem Services Remuneration in Rural Spaces, which provide greater competitiveness for rural territories and ensure a model for greater environmental sustainability, with lower exposure to risks, particularly fires.

Adding to the above, the Climate Adaptation Action Programme fosters the implementation of the following actions:

- Support the economic valuation of biomass by establishing regional systems for collection and interim storage of residual biomass from forestry and agriculture activities;
- Reconversion and reconfiguration of electric lines (e.g. underground cables, changes of route) and telecommunications networks;
- Improvement of surveillance systems to spot and track forest fires.

Establishment of bands and areas of discontinuity through (re)forestation with fire resilient species, control of excessive densities of post-fire natural regeneration, agricultural mosaic, grazing areas to control spontaneous vegetation, and shrub removal in areas adjacent to road, rail and built structures (mutual function of protection of structures and reduction of the ignition risk).

Question by Australia at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Renewable gas infrastructure

Portugal has highlighted the focus on production and incorporation of renewable gases as a source of energy consumption, identifying hydrogen and bio methane as key gases. What opportunities and challenges does Portugal's current natural gas infrastructures bring in enabling this transition to renewable gas consumption?

Answer by Portugal

The current natural gas infrastructure will play a key role enabling the introduction, distribution and consumption of hydrogen, and maintaining the available thermoelectric capacity by ensuring the necessary backup to the grid, incorporating increased percentages of hydrogen.

Currently, it is already possible, without substantial additional investment, to use a mixture of up to 5% hydrogen in natural gas in thermoelectric power plants.

Our gas infrastructure is relatively recent and can be adapted to distribute hydrogen, which:

- a) reduces costs and barriers to the introduction of hydrogen into the system;

- b) avoids idle assets in the future;
- c) allows the immediate integration of hydrogen in the national energy system as it uses a system in operation;
- d) allows immediate use by the end user without the need to replace equipment (e.g. stoves, water heaters, etc.).

At the moment, the main challenge is to achieve an incorporation mix that does not damage the transport network and does not compromise the calorific power of the gas circulating in the network. It is assumed that from a theoretical point of view it is possible to incorporate about 22% of hydrogen in natural gas, without changing its characteristics. So further research and technical studies and assessments are needed to determine the maximum levels of hydrogen incorporation in the future.

Question by Australia at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Hydroelectric power generation

The Fourth Biennial Report noted a decrease in energy generation from hydroelectric power. How does Portugal see hydroelectric power generation fitting into a future energy mix for the nation?

Answer by Portugal

The decrease in energy generation from hydro is mostly explained due to a very unfavourable year in terms of water availability.

Thus, we see estimates of reduced water availability in the future as a risk in terms of resource use for electricity production. For this reason, we are also making a bet on wind (repowering), and in the next decade, on solar, which will be the main renewable sources to be used in the future.

We are also exploring the use of renewable gases such as green hydrogen as a mean to store excess renewable power production. This will help us prevent the impacts of water availability and reinforce the complementarity of different renewable energy sources making our power system more resilient.

[Question by Japan](#) at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Outreach on policies and measures progress on Climate Change

Japan recognizes that the dissemination of information on the progress of each policy and measure towards achieving the 2020 and 2030 emission reduction targets, as reported in the BR, is very important from the perspective of raising awareness about climate change. Please share any outreach measures you are implementing to publish and communicate the progress of main policies and measures towards the target in 2020 and 2030. Also, if you publish the information online, please provide the URLs of them.

[Answer by Portugal](#)

As mentioned in 4BR, a platform is being developed to monitor and report the impacts of policies and measures, but at the moment we do not yet have more information that we can provide.

[Question by Japan](#) at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Programs aiming to reduce risks from fires

According to Portugal's BR, severe forest fires occurred in 2003, 2005 and 2017, which led to significantly increase national total GHG emissions. It also states that Portugal will initiate some new programs such as the Rural Space Ecosystem Services Remuneration Program, which aim to reduce risks from forest fires. Please provide additional information on how such programs will contribute to reduce the negative impacts of forest fires.

[Answer by Portugal](#)

The adoption of these programmes aims to provide rural and forest areas more competitive, ensuring greater environmental sustainability, restoring, valuing and protecting forest areas, through an appropriate occupation and management that enhance the provision of ecosystem services in the medium and long term, ensuring that these territories are valued and achieve greater resilience in the face of erosion, hydrological variability and to fire susceptibility.

It should be noted that the objective of adopting these programmes is to prevent and reduce the occurrence of forest fires.

Some of these programmes have multiple benefits and should be assessed in a holistic way. It's relevant to note that most of the Portuguese forest is privately-owned and often is poorly managed

as many owners leave the rural areas where the income and livelihood is less attractive. In this sense it is of great relevance to fix population in those areas by providing opportunities of remuneration while internalizing externalities such as the reduction of wildfire risk. The following measures are in place to achieve that objective: subsidies for (re)forestation with fire resilient species, the control of excessive densities of post-fire natural regeneration, the support of agricultural mosaic and the support of grazing areas to control spontaneous vegetation.

The Portuguese Environmental Fund launched a call in 2019 for a pilot on the remuneration of ecosystem services, which will test ways and metrics to remunerate land owners for services provided in erosion control, carbon sequestration and regulation of the hydrological cycle, conservation of biodiversity, reduction of susceptibility to fire and improvement of landscape quality.

Question by Japan at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Platform for monitor and report the impacts of cross-sectoral policies and measures on cli

On page 36 of the BR4, it stated that Portugal intends to undertake further analysis of the specific mitigation impact of concrete measures through the establishment of a platform for monitoring and reporting the impacts of cross-sectoral policies and measures on climate change and energy transition from 2020 onwards. Could Portugal provide us with the detailed information about the platform such as contents, functions and progress of the preparation?

Answer by Portugal

The development of the platform is still in a preliminary stage, so we do not yet have more detailed information that we can provide.

Question by Canada at Monday, 07 September 2020

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Quantifying the impact of changes in management and technology in projections for the Agri

What are the challenges in integrating changes to Agricultural management or technology in Portugal's projections?

Answer by Portugal

For the preparation of projections in the area of agriculture, the following measures were taken into account: mitigating measures, which reduce emissions, associated with the digestibility of animal feed, with the manure management and with precision agriculture; sequestration measures, which increase carbon sequestration, associated with conservation and regenerative (or regenerative) plant and animal production systems; and measures to promote circularity related to organic production and precision and conservation agriculture.

There were 3 main challenges in developing projections:

- (1) limitations of information about the sector itself (e.g. how certain practices are already practiced by farmers);
- (2) lack of information about the impact of certain practices on emissions and removals; and
- (3) and the development of scenarios for agriculture and forestry that are consistent and coherent with the overall scenarios for the other sectors.

Question by New Zealand at Monday, 07 September 2020

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Analysis to produce a 'without measures' scenario

What progress has Portugal made towards developing analysis to produce a 'without measures' (WOM) scenario and estimating the emissions impact of policies and measures?

Answer by Portugal

Portugal will use the National System for Policies and Measures to assess the fulfilment of established policies and measures.

The National System establishes the monitoring of policies and measures and its effects on emissions reduction and also the assessment of compliance with international commitments and national targets, including sectorial targets.

As mentioned in BR4, the impact of policies and measures will be analysed through a platform that is under development.

The National System also outlines that new policies and measures or reformulation of the existing ones can be proposed and enacted in case of its ineffectiveness or noncompliance with emission reduction targets.

Question by New Zealand at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

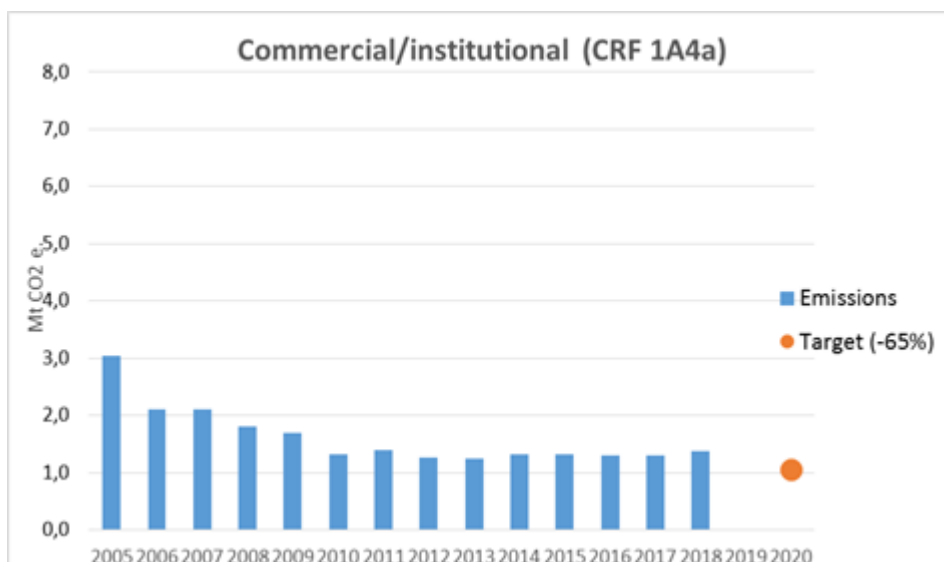
Type: Before 07 September

Title: Services sector emissions reduction target

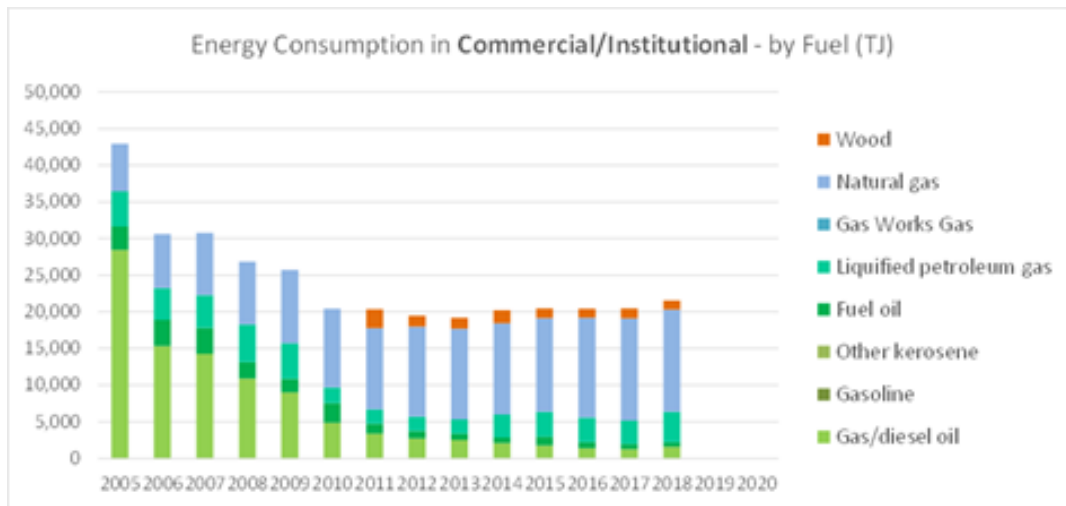
In its BR4, Portugal noted its 2020 target to reduce GHG emissions in the services sector by 65 per cent. Can Portugal please elaborate on the policies and measures that have contributed most towards emissions reductions in this sector, and if Portugal is on track to meet this target?

Answer by Portugal

As shown in the figure below, emissions in the service sector (commercial/Institutional) have been decreasing since 2005.



This decrease is explain by different factors, such as the consumption of less polluting fuels. The consumption of fuels such as Gas/diesel oil, gasoline, fuel oil have been replaced by natural gas and electric heating solutions since 2005. This electrification trend also lead to a small increase of the cogeneration in this sector. Furthermore, and particularly since 2011, biomass is also used in the Food and beverage service activities.



The main policies and measures that most contribute for the 2020 target in the service sector were:

Establishment and implementation of the Energy Efficiency Programme in Public Administration (ECO.AP) that promotes relevant energy efficiency measures in Public Administration Services, namely at the level of energy management, thermal comfort, lighting, hot water and renewable energy. This programme introduced a financing model to support the implementation of energy efficiency measures without initial investment by the services and public administration body and which converts into the implementation of "Energy Efficiency Management Contracts", for the acquisition of low-carbon goods and services, which through appropriate technical solutions reduce the energy bill and improve energy efficiency.

- Increase in the energy efficiency;
- Electrification of consumption;
- The use of more efficient appliances and equipment, by updating the equipment fleet, through direct replacement or/and discouraging the purchase of new equipment with significant lower energy and better environment performance.

Question by New Zealand at Monday, 07 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

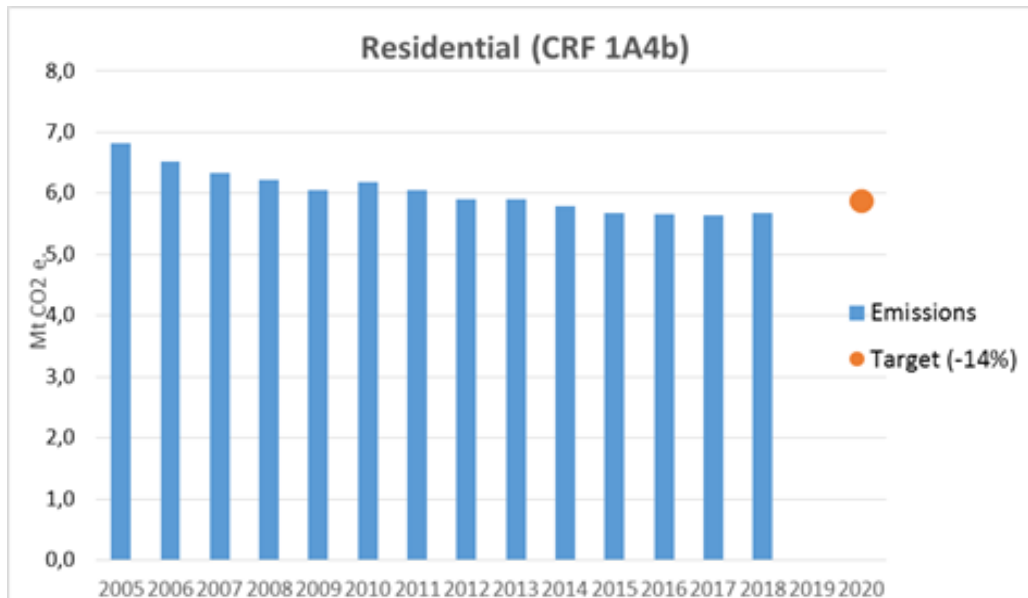
Title: Building sector contribution towards 2020 target

Page 38 of the BR4 indicates that decarbonisation of buildings and industry will be more intense, respectively, in the decades of 2030-2040 and 2040-2050. What contribution has the building sector played in reducing emissions in the 2020 target, and were there any difficulties in accounting approach to measure emissions? Are there any lessons for avoiding locking in emissions from the built environment knowing population (especially in cities) is expected to rise?

Answer by Portugal

1. What contribution has the building sector played in reducing emissions in the 2020 target, and were there any difficulties in accounting approach to measure emissions?

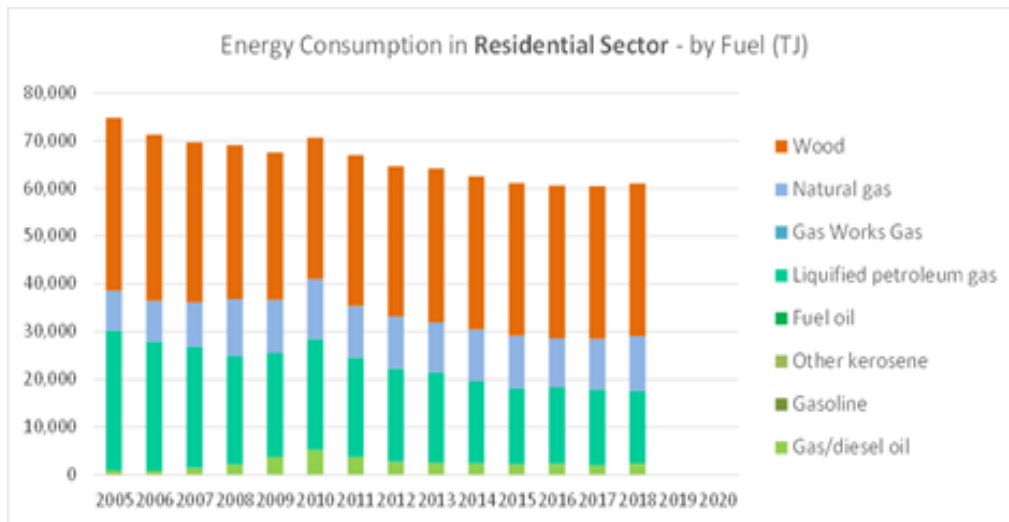
Emissions in the Residential sector have been decreasing since 2005.



In the Residential sector, solid biomass and LPG are the main fuel consumed. With LPG being mainly used for the purpose of cooking, and the solid biomass being used for heating both water and space.

The trend of decreasing energy consumption is due in majority to electrification of this sector, which also explains the reduction of importance of wood consumption, since nowadays, the Portuguese population uses more electrified equipment for space heating.

Natural Gas represents also a significant part of the energy consumption in this sector, having gained market share as it covers the entire spectrum of thermal solutions (space heating, water heating and cooking).



2. Are there any lessons for avoiding locking in emissions from the built environment knowing population (especially in cities) is expected to rise?

Cities have been active agents in the decarbonisation of the economy, and it is essential to take advantage of this dynamic to create low carbon cities. This requires further strengthening the role of buildings as a key part for meeting the objective of reducing emissions and achieve carbon neutrality by 2050, by promoting measures that contribute to decarbonisation in the building sector and increase its energy efficiency, namely:

- Ensuring that new buildings, as well as the renovation of buildings, are translated into NZEB buildings;
- Prioritise urban renovation and increased energy efficiency in buildings, promoting progressive electrification of the sector and the use of more efficient equipment, and tackling energy poverty;
- Intensify the promotion of the use of further energy-efficient materials and raw materials, such as wood and cork;
- Continue to invest in the efficient insulation of buildings, increasing their thermal comfort, thus reducing energy consumption;
- Promoting energy communities and individual and collective self-consumption;
- Increase society's involvement in the transition to a carbon neutral society, contributing to increasing individual and collective action, the adoption of sustainable behaviours and changing consumption patterns in favour of sustainability, namely through environmental education and awareness.

Question by New Zealand at Monday, 07 September 2020

Category: All emissions and removals related to its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Impacts on transport emissions for 2020 reporting period

As both the Transport Tariff Reduction Programme and the National Active Mobility Strategies were approved in 2019, what impacts does Portugal expect to see with respect to transport emissions in the 2020 reporting period? How do the 'other policies and measures' contribute to modal shift?

Answer by Portugal

Given the pandemic caused by COVID-19 virus and the emissions reduction in the transport sector that occurred during the confinement period, it will be somewhat difficult to verify the real impact that these measures have had on reducing emissions.

One year after the Transport Tariff Reduction Programme went into operation, there was an increase of over 18% in the total number of users in 2019 compared to the same period of the previous year. Also in the same period, in the Lisbon metropolitan area, the number of passengers increased by 32% and in the Porto metropolitan area, in February 2020, there was an increase of 38% in the number of passes sold compared to the same month of the previous year.

However the impact of policies and measures will be analysed through a platform that is under development, as mentioned in BR4.

Regarding the 2nd question, the modal shift are promoted through the following measures: i) Tariff Reduction Support Programme, ii) Expansion of public transport networks and equipment throughout the territory and iii) Promotion of multimodal interurban public transport.

These measures aim to make public transport more attractive and encourage intermodality, reduce urban congestion and achieve more efficient and clean mobility, providing greater comfort, speed and quality of life with lower energy consumption.

The aim is to promote modal shifts by improving the offer and access to public transport, decreasing the dependence on individual transport in daily journeys.

In addition to policies and measures, the "Public Transport Tariff Reduction Support Program" and the "National Strategy for Cyclic Active Mobility (EMNAC) 2020-2030" and also the "Transport and Infrastructure Strategic Plan (PETi3 +) for 2014-2020", contributes to the promotion of modal shifts by setting out a development and reform programme covering public transport companies, road infrastructure, the maritime-port sector, logistics and goods and the air and airport sector, with the aim of achieving a more efficient transport network covering the whole territory, meeting the travel needs of the Portuguese and companies.

Question by New Zealand at Monday, 07 September 2020

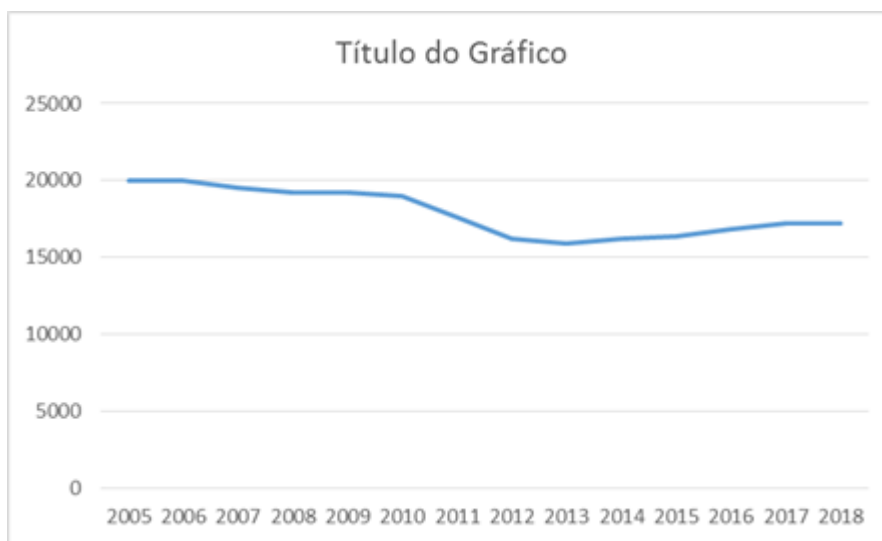
Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Progress towards transport target

What progress has Portugal made towards meeting its 2020 transport target of a 14 per cent reduction in emissions? What assumptions and drivers in decreasing transport emissions underpin this target?

Answer by Portugal



Portugal registered a 14 % reduction in GHG emissions in the transport sector between 2005 and 2018, as a result of the emission reductions in the road transport sub-sector.

The drivers that underpin the target are:

- Reduced use of individual transport;
- Increased use of public transport;
- Expansion of multimodal public transport networks and equipment;
- Increased efficiency, associated with shared mobility and the use of autonomous vehicles (car sharing, bike sharing, car pooling and other types of shared services);
- Active and smooth mobility (walking, cycling);
- Fleet renewal (public and private) for low or zero-emission vehicles (hybrid, electric and green hydrogen);
- Increase in the number of electric charging stations and green hydrogen filling stations;
- Decreased use of fossil fuels;
- Increased use of advanced Biofuels (in some sectors, e.g. shipping, aviation);

- Promotion of LNG in the port system.

Despite these measures, the reduction observed between 2005 and 2018 was mainly due to the decrease in the use of fossil fuels and the increase in the use of Advanced Biofuels, since 2006, so this is one of the sectors where shifts occur at a slower pace than desired due to the extended life time of the fleet.

Question by New Zealand at Monday, 07 September 2020

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Sectoral greenhouse gas reduction targets for agriculture

The sectoral greenhouse gas reduction targets for agriculture are stated as -8 per cent by 2020 and -11 per cent by 2030. Can Portugal provide additional information on a) the reference year for these targets, and b) any measures intended through the National Program for Climate Change (PNAC) and the National Energy and Climate Plan (NECP) to make up the difference between the lower projected reductions from agriculture and the sectoral targets?

Answer by Portugal

1. The reference year is 2005.
2. The agriculture sector is one of the most challenging sectors to achieve emissions reductions, as this cannot be achieved by applying just new technologies.

The evolution of emissions associated with agriculture and forests is highly dependent on the introduction of structural changes and the types of management used.

The National Energy and Climate Plan (NECP), seeks more effective climate action and better protection of the environment and biodiversity by the agricultural sector. In order to promote broader emissions reductions, one of the focus was on green schemes that translates into more equitable payments to farmers, oriented towards the environment, climate change and the country. Also, there is potential for achieving emissions reduction in the livestock sector, through improvements in feed digestibility and the livestock effluent management systems.

[Question by China](#) at Friday, 04 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Hydrogen development

[1]. In its BR4, Portugal reports to develop a green hydrogen production industry. Could Portugal provide more information on its hydrogen road-map and foreseeable contribution to the carbon neutrality goal?

[Answer by Portugal](#)

The NECP 2030 establishes as one of its strategic objectives the "promotion of an innovative and competitive industry", defining as one of the lines of action associated with this objective the "decarbonisation of industry" through the bet on the use of renewable resources, energy storage, electrification and renewable gases, in particular hydrogen, which has the potential to be used as a fuel, replacing fossil fuels in the production of electricity or heat, or as a raw material.

The growing recognition of the importance of renewable gases, in particular green hydrogen, is based on the fact that it allows energy storage and the preparation of other renewable-based fuels, contributing to enhance the fulfilment of national targets of incorporating renewable sources into final energy consumption and for the decarbonisation of consumptions, with particular emphasis on industry. The development of a green hydrogen industry can also contribute to the achievement of climate targets towards carbon neutrality.

The current characteristics of the national energy system, determined the selection of a set of strategic configurations for the hydrogen value chain, which include:

- POWER-TO-GAS (P2G): Green hydrogen can be injected directly into natural gas networks or by converted into synthetic methane via a methanation process;

This value chain is aimed at the decarbonisation of the current natural gas system, preserving the investment already made in infrastructure even in a context of greater electrification of the economy, and thus providing an alternative for the decarbonisation of some sectors of the economy. The approach involves, in a first phase, blending renewable gases with natural gas, and in the medium to long term the gas networks will be able to transport only fuels of renewable origin, allowing the decarbonisation of the gas system.

- POWER-TO-INDUSTRY (P2I): Replacing natural gas for hydrogen in the industrial sector contributes more quickly to reducing its GHG emissions.

Optimization of industrial processes through the optimization of combustion in industrial units through the injection of locally produced hydrogen. The basic principle of the technology is the injection of small amounts of hydrogen (H₂) and oxygen (O₂) into the combustion system. H₂ is produced locally (1 to 10 m³/h), in dedicated units adapted for the use of various types of energy sources.

- POWER-TO-POWER (P2P): Excess renewable electricity can be converted to hydrogen, stored and then reconverted back to electricity via fuel cells or gas plant turbines suitably adapted and converted for this purpose;
- POWER-TO-SYNFUEL (P2FUEL): The use of green hydrogen has great potential to decarbonise fuel production and replace it with synthetic fuels from renewable sources.

Synthetic fuels are usually produced via steam reforming of methane and gasification of biomass. Different technologies (e.g. Fischer-Tropsch) can be used for the production of synthetic fuels.

Portugal could become a reference European producer with a high potential to export green hydrogen to the main consumption centres, either by sea (port of Sines) or by land, through the gas pipelines that connect the Iberian Peninsula to the rest of Europe.

The national strategy for hydrogen production will involve a combination of large-scale centralised production (e.g. Sines project) and decentralised production on a variable scale and ideally close to consumption sites.

A large scale industrial green hydrogen production anchor project is key to creating a hydrogen economy in Portugal, with the ability to simultaneously integrate the dimensions of industrial scale production, processing, storage and transport, and internal and external consumption through export.

In addition, green hydrogen may also be transported, or produced locally, to provide vehicle filling stations (POWER-TO-MOBILITY (P2M)). This value chain focused on mobility and transport considers the installation of fuel cells on board vehicles, with particular focus on heavy vehicles (goods and passengers), railways (on non-electrified lines), light vehicles (taxis, company fleets and shared mobility) and ships.

The National Strategy for Hydrogen, has already been approved and published through Council of Ministers Resolution n.º 63/2020, of 14th August, and can be consulted on the following link: <https://dre.pt/home/-/dre/140346324/details/maximized>

Question by China at Friday, 04 September 2020

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: SPeM operation

As reported, Portugal applies a platform under 'SPeM' for monitoring and reporting the impacts of energy and climate-related cross-sectoral PaMs. Considering the aggregated impacts of cross-sectoral PaMs, how can the platform precisely reflect the individual contribution of each PaM or PaM groups?

Answer by Portugal

The platform is in a preliminary stage of construction so we do not have more detailed information that we can provide.

Question by China at Friday, 04 September 2020

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 07 September

Title: Target ambition

In its BR4, Portugal changes its 2030 target from 30%-40% below the 2005 level to 45%-55% below the 2005 level. What would be the key driving factors for Portugal to meet its ambition in line with NECP 2030?

Answer by Portugal

To achieve the targets set for 2030, joint action is required in several strategic areas, with priority to:

- Decarbonisation of consumption and energy production;
- Strong impulse on electrification ;
- Increase on renewable energy and energy efficiency;
- Transition to a circular economy ;
- Reduction of the carbon intensity of the building sector;
- Incentive public transport, electric mobility, active mobility and mobility sharing services;
- Industry decarbonisation through digitalization, circular economy and technological innovation;
- Reduction of waste production and promotion of recycling;
- Promotion of R&D projects for a low carbon economy.

The main drivers for energy sector (including buildings, industry and transport s) are:

- Electrification of economy and consumptions;
- Increase renewable installed capacity for electricity production;
- Strong impulse on decentralized electricity production;

- End of electricity production based on coal by 2021 and 2023 and, in a second phase, end of electricity production based on natural gas after 2040;
- Storage promotion, namely Batteries and Hydrogen;
- Reinforcement and optimization of transport and distribution networks and increase of interconnections capacity in electricity;
- Promotion of renewables in heating and cooling;
- Greater network intelligence and flexibility;
- Promotion of efficiency in the equipment's, products and services;
- Reinforcement of energy efficiency in the industrial sector promoting the competitiveness of companies;
- Innovation and new business models (e.g. bio-refineries);
- Promote Industrial symbioses and resource reuse;
- Strong commitment to the requalification and renovation of buildings;
- Continuity in the promotion of energy efficiency in public administration;
- Focus on the energy poverty reduction;
- Strong diffusion of the electric vehicle, advanced biofuels and other sustainable and active mobility solutions;
- Greater efficiency and reinforcement of public transport systems;
- Active and low-impact mobility;
- Greater efficiency, associated to shared mobility and autonomous vehicles.

The main drivers for agriculture, forests and other land uses sector are

- Biological, conservation and precision farming;
- Biodiverse pastures;
- Improved digestibility of animal feed;
- Improved livestock effluent management;
- Reduced use of synthetic fertilisers and their replacement with organic compost;
- Reduction of burned area;
- Improved forest productivity.

The main drivers for the waste and wastewater sector are:

- Reduction of waste production per capita;
- Reduction of the organic portion of municipal waste due to improved selective collection and reduced food waste;

- Elimination of municipal waste disposal in landfills, through:
 - o Collection of bio-waste and priority of biological treatment, with compost production;
 - o Increased separated multi-material collection and development of recycling activities.

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