

**GREENPEACE**

# **Spanish Climate Action: Highest Ambition is Necessary and Possible**

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Greenpeace Spain report. Technical analysis by

**Wendel Trio - 10 June 2024**

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# 1. Summary

Climate change is happening and all European countries are facing its consequences. In particular Southern European countries are hardest hit and these countries would benefit the most if the world would be able to achieve the 2015 Paris Agreement objective to limit global average temperature rise to 1.5°C. Unfortunately we are not on track to do so as countries' efforts to reduce greenhouse gas emissions are not aligned with what is needed to achieve the 1.5°C objective. Hence all countries agreed they urgently need to do more.

This also applies to the European Union and its Member States, including Spain. Different evaluations of the EU's target to reduce its net greenhouse gas emissions by at least -55% by 2030, make it clear that this is not yet enough to ensure the EU provides its fair share of the effort to reach 1.5°C.

Spanish emissions are currently at more or less the same level as in 1990, which compares badly to overall EU emissions that are currently -32% lower than 1990. In particular emissions from sectors such as transport, agriculture and buildings have not been reduced and measures need to be urgently taken to bring them in line with what is needed. Spain has a binding target under existing EU legislation to reduce emissions from these sectors by one third, compared to 2005 levels (when Spanish emissions were more or less at its peak). These specific target needs to contribute to the overall proposed Spanish target of reducing emissions by -32% by 2030, as compared to 1990. In doing so, the national government is supported by its Autonomous Communities, several of which have set much more ambitious targets, up to reducing greenhouse gas emissions by -55%. Others, in particular the bigger ones, show less ambition and even plan to increase emissions by up to 50% by 2030, thereby leaving a serious gap between what the national government is planning and what the Autonomous Communities collectively aim to do.

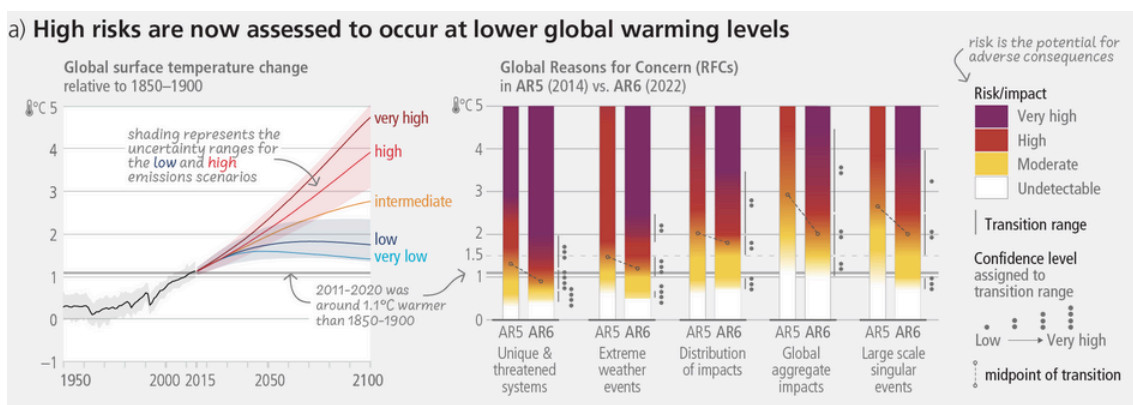
While -32% by 2030 may sounds ambitious, it is not. With this target, Spain ranks at the bottom of the 27 EU Member States with only Malta and Cyprus aiming for less. Comparing Spain and Portugal, one can see both countries have a similar emissions trajectory between 1990 and 2020, but Portugal's 2030 target is much more ambitious.

Based on a division of the remaining carbon budget across countries' size of the population, Spain's latest draft National Energy and Climate Plan would overshoot its available budget by more than half. In order to be aligned with fair share

pathways that provide a reasonable chance to limit temperature rise to 1.5°C, Spain would need to reduce its gross greenhouse gas emissions by -55% by 2030 (compared to 1990) and reach net zero already by 2040. This sounds and is challenging, but is not impossible, as several studies, scenarios and pathways are showing. To achieve it, it is necessary to put in place very ambitious measures, which will demonstrate a clear and great climate ambition, and will allow Spain to be positioned as a clear global climate leader.

# 2. Urgency of Limiting Temperature Rise to 1.5°C

The World Meteorological Organisation's (WMO) latest 'State of the Global Climate 2023' report<sup>1</sup> of March 2024 sounds yet another alarm bell on the climate crisis we are facing. Or in the words of Celeste Saulo, Secretary-General of the WMO: “Never have we been so close – albeit on a temporary basis at the moment – to the 1.5°C lower limit of the Paris Agreement on climate change. The WMO community is sounding the Red Alert to the world.” A message strengthened by UN Secretary-General Antonio Guterres who stated: “Sirens are blaring across all major indicators... Some records aren’t just chart-topping, they’re chart-busting. And changes are speeding-up.”<sup>2</sup>



**Figure 1: Risk assessment of impacts on different indicators with changing levels of temperature rise (source: IPCC AR6 Synthesis Report<sup>3</sup>). It shows that impacts of climate change occur earlier and with greater intensity than estimated in previous studies. The most recent studies show that the impacts will be of greater intensity and frequency, and will occur with smaller increases in global average temperature than previous studies concluded.**

A message well noticed in the European Union as reflected in the March 2024 “Council Conclusions on EU Green Diplomacy”<sup>4</sup> in which all EU Member States agreed to: “reiterate the gravity of the accelerating, deepening and mutually reinforcing triple planetary crisis of climate change, biodiversity loss and pollution, posing a global and existential threat and aggravating existing security concerns.”

<sup>1</sup> WMO: State of the Global Climate 2023. March 2024. <https://wmo.int/publication-series/state-of-global-climate-2023>

<sup>2</sup> WMO. Press Release: Climate change indicators reached record levels in 2023. March 2024. <https://wmo.int/news/media-centre/climate-change-indicators-reached-record-levels-2023-wmo>

<sup>3</sup> IPCC. Synthesis Report of the Sixth Assessment Report. March 2023. [www.ipcc.ch/ar6-syr](http://www.ipcc.ch/ar6-syr)

<sup>4</sup> Council of the European Union. Council Conclusions on Green Diplomacy. March 2024. [www.consilium.europa.eu/media/70777/st07865-en24.pdf](http://www.consilium.europa.eu/media/70777/st07865-en24.pdf)

At COP28, **countries reiterated that the long-term target for climate action is to limit temperature rise to 1.5°C<sup>5</sup>. This target is crucial**, and it is not just a political target, but a physical threshold, because there are good reasons for that as holding warming to 1.5°C, rather than the 2°C limit previously agreed, could mean 11 million fewer people exposed to extreme heat, 61 million fewer people exposed to drought, and 10 million fewer people exposed to the impacts of sea level rise. In addition to these human benefits, it could also halve the number of animal and plant species facing severe range loss by the end of the century. And studies show that limiting warming to 1.5°C could also shield us from severe global economic losses. An overview of the differences between 1.5°C and 2°C of temperature rise is shown in figures 1 and 2.

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<sup>5</sup> UNFCCC. 1/CMA.5. Outcome of the first global stocktake. December 2023. [https://unfccc.int/sites/default/files/resource/cma2023\\_16a01\\_adv\\_.pdf?download](https://unfccc.int/sites/default/files/resource/cma2023_16a01_adv_.pdf?download): “4. Underscores that the impacts of climate change will be much lower at the temperature increase of 1.5 °C compared with 2 °C and resolves to pursue efforts to limit the temperature increase to 1.5 °C. 5. Expresses serious concern that 2023 is set to be the warmest year on record and that impacts from climate change are rapidly accelerating and emphasizes the need for urgent action and support to keep the 1.5 °C goal within reach and to address the climate crisis in this critical decade.”

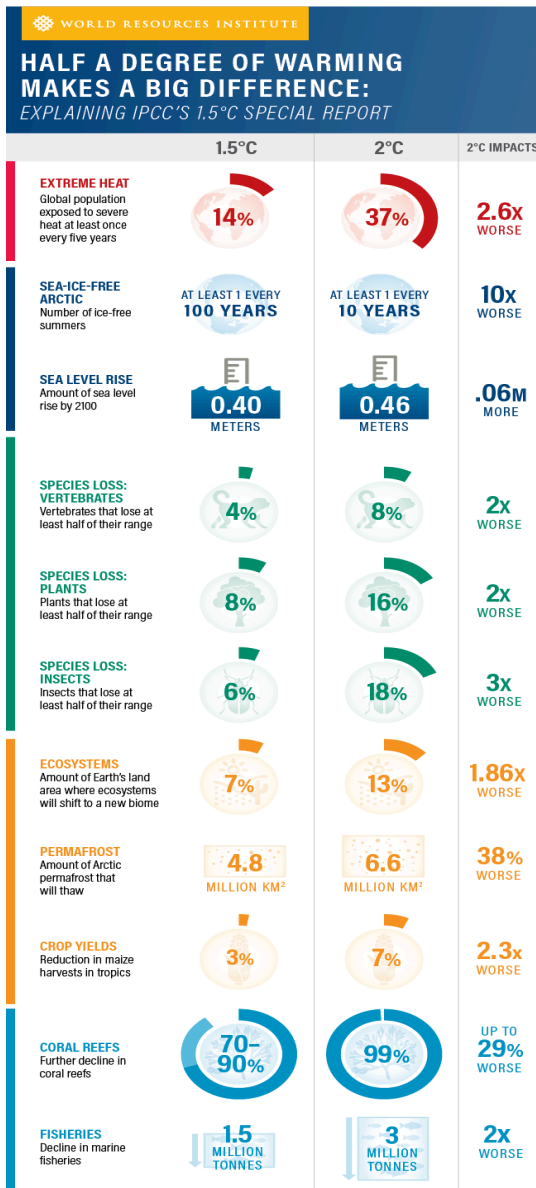


Figure 2: Comparing different impacts of 1.5°C and 2°C of global temperature rise (source: World resources Institute<sup>6</sup> - based on IPCC's Special Report on Warming of 1.5°C)

Furthermore, there are global climate and ecosystem processes for which there is uncertainty about their tipping points, that could be reached if the 1.5°C is surpassed, and that could trigger even more worrying global changes. Figure 3 shows the location of climate tipping elements in the cryosphere (blue), biosphere (green), and ocean/atmosphere (orange), and global warming levels at which their tipping points will likely be triggered. Pins are coloured according to our central global warming threshold estimate being below 2°C, i.e., within the Paris Agreement range (light orange, circles); between 2 and 4°C, i.e., accessible with current policies (orange, diamonds); and 4°C and above (red, triangles).

<sup>6</sup> Kelly Levin. Half a Degree and a World Apart: The Difference in Climate Impacts Between 1.5°C and 2°C of Warming. October 2018. [www.wri.org/insights/half-degree-and-world-apart-difference-climate-impacts-between-15c-and-2c-warming](http://www.wri.org/insights/half-degree-and-world-apart-difference-climate-impacts-between-15c-and-2c-warming)

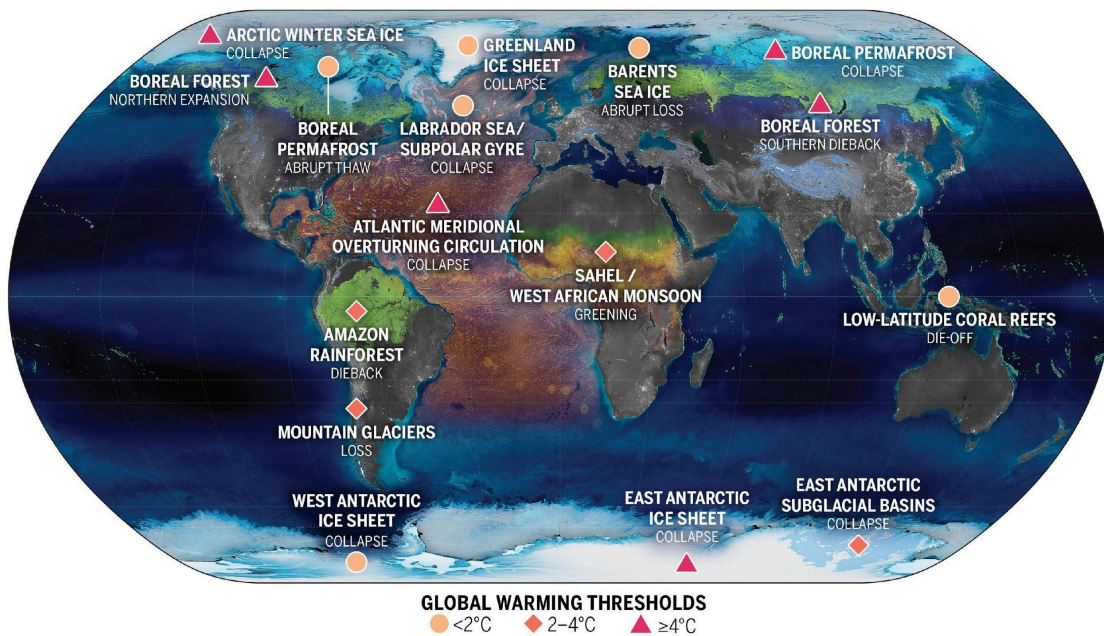


Figure 3: Tipping points indicating irreversible impacts occurring at different levels of temperature increase (source: McKay ea.<sup>7</sup>)

Also in March 2024 the European Environment Agency (EEA) published its first European Climate Risk Assessment<sup>8</sup>. The report clearly identifies Southern Europe as the hotspot for multiple climate risks, as this region can expect considerable declines in overall rainfall and more severe droughts. These events, combined with environmental and social risk drivers, pose major challenges. Specifically, they compromise food and water security, energy security and financial stability, and the health of the general population and of outdoor workers. In turn, this affects social cohesion and stability, with vulnerable social groups particularly affected.

Examples include mega-droughts leading to water and food insecurity, disruptions of critical infrastructure, and threats to financial markets and stability. **Southern Europe is and will be particularly affected by heat and prolonged drought with increasing impacts on agricultural production, outdoor work, summer tourism and fires** (Figure 4). Within southern Europe, rural areas and local economies dependent on ecosystem services are particularly at risk. Furthermore, risks related to wildfires are rated as critical,

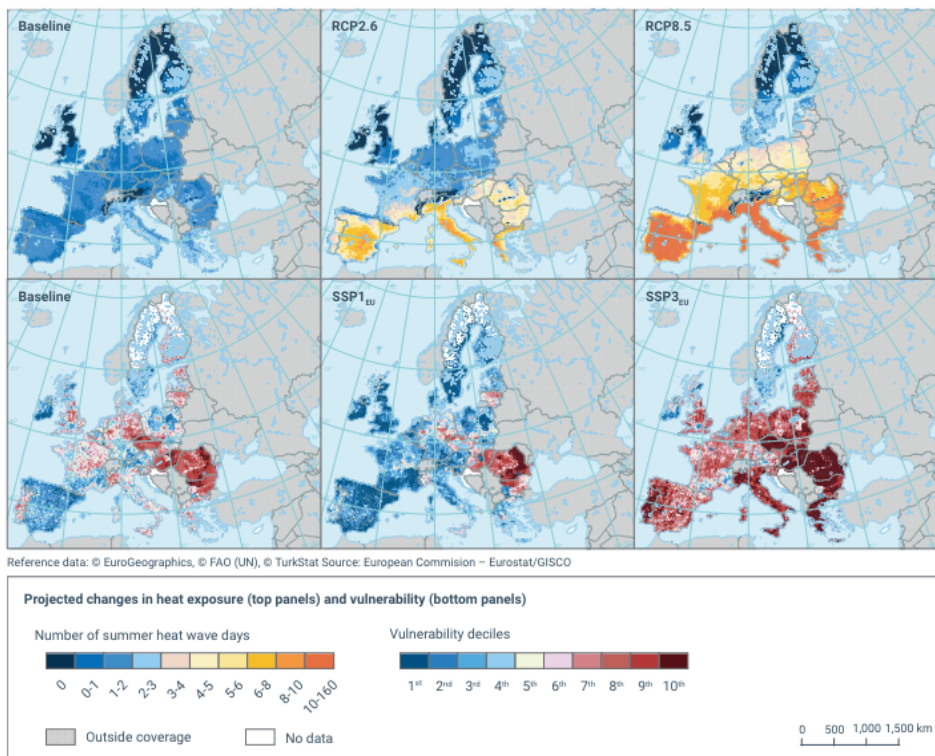
<sup>7</sup> McKay ea. Exceeding 1.5°C global warming could trigger multiple climate tipping points. Science. September 2022. [www.science.org/doi/10.1126/science.abn7950](http://www.science.org/doi/10.1126/science.abn7950)

<sup>8</sup> EEA. European Climate Risk Assessment. Marzo 2024. [www.eea.europa.eu/publications/european-climate-risk-assessment](http://www.eea.europa.eu/publications/european-climate-risk-assessment)



needing very urgent action, while risk severity for crop production is already at a critical level in southern Europe.

The EEA Risk Assessment sends yet another clear signal that achieving the Paris Agreement's objective to limit temperature rise to 1.5°C is crucial if we are to reduce the many risks that the people, the economy and the environment of Spain are facing due to increased climate change. All of this confirms that Spain is already among the countries in the world suffering the most from the impacts of climate change, as evidenced in the Greenpeace report: [“Carrera climática contrarreloj: cambio climático y eventos meteorológicos extremos en España”](#). The report, based on a review of existing scientific publications, details the trends and forecasts of future impacts of climate change and extreme weather events in Spain. As the rate of warming in Spain is, and will continue to be, faster than the world average, warming of 2°C is expected over the next 20 years unless immediate and severe reductions in global greenhouse gas emissions are made.



**Notes:** Top panels: mean number of summer heatwave days (HWDs) for the baseline (1986-2005) and future (2041-2060) conditions under two Representative Concentration Pathways (RCPs) (ensemble median). Bottom panels: vulnerability index in Europe for the baseline socio-economic conditions (2015) and for the year 2050 under the two Shared Socioeconomic Pathways (SSPs). The vulnerability index measures socio-economic vulnerability to heat stress determined by income, education, ageing, artificial surfaces, social isolation and pre-existing medical conditions (Table 1, (Rohat et al., 2019)).

**Figure 4: Projected changes in heat exposure and vulnerability in Europe (source: [EEA Climate Risk Assessment](#), page 214)**

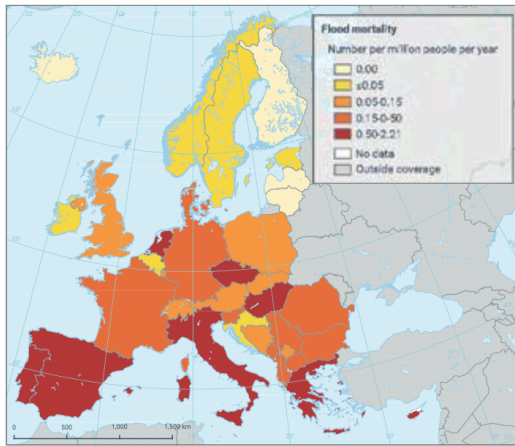


Figure 5: Flood events by type and mortality per year (source: [EAA Risk Assessment](#), page 227)

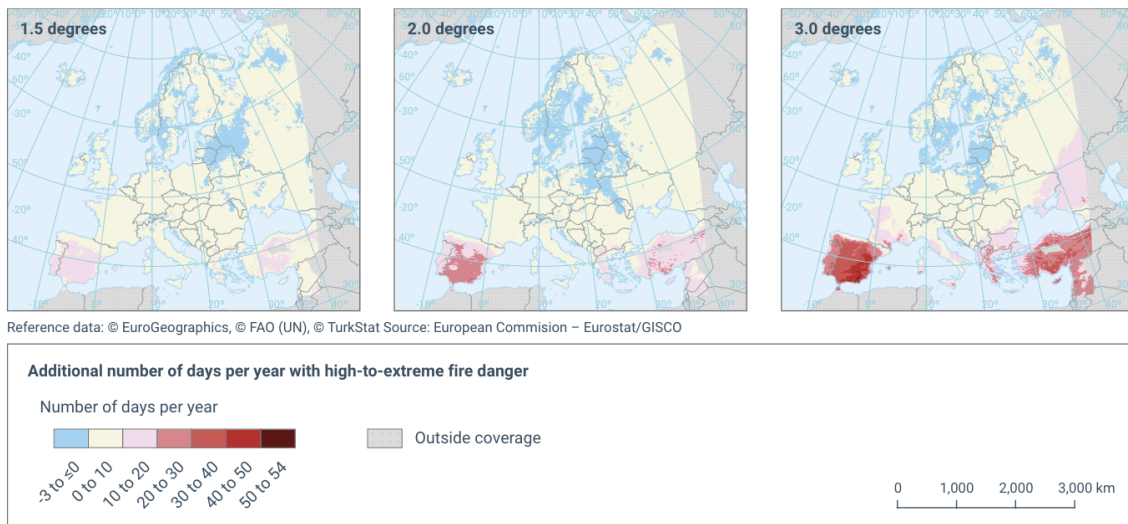


Figure 6: Additional number of days with high-to-extreme fire danger compared to present (source: EEA Climate Risk Assessment)

Note: High-to-extreme fire danger defined as daily Fire Weather Index  $\geq 30$ , for different levels of warming (local warming trends) compared to the present (1981-2010). These estimates are not strictly based on different emission scenarios but rather resulting warming levels. Nevertheless, they show that fire danger will increase with different levels of warming, which will lead to larger burnt areas and thus higher emission levels. It follows that emission reductions, e.g. avoiding 3°C warming and aiming at 1.5°C warming would considerably decrease these risks (compare right and left panel).

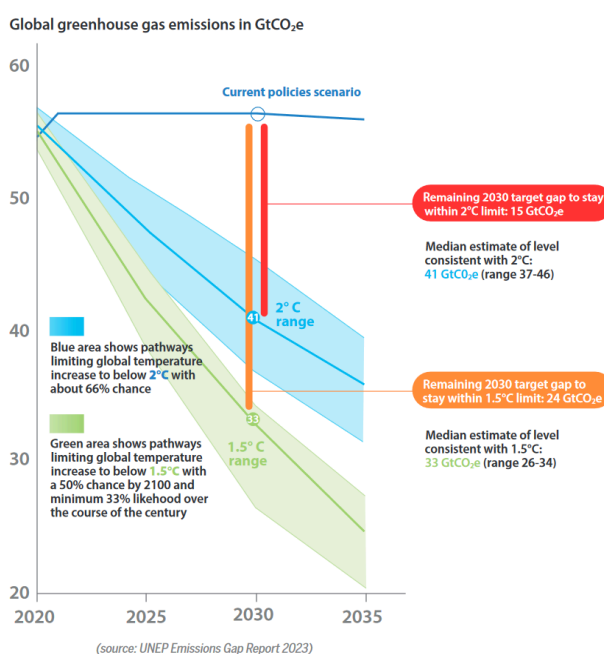
# 3. Global Action not Aligned with 1.5°C

Unfortunately the world is not on track to achieve the goals of the Paris Agreement. Assessment reports from the United Nations Environment Programme (UNEP)<sup>9</sup>, the UN Framework Convention on Climate Change (UNFCCC)<sup>10</sup> and the International Energy Agency (IEA)<sup>11</sup> all show that the world's governments are collectively failing to set and implement greenhouse gas emission reduction targets and policies in line with the objective to limit global average temperature rise to 1.5°C.

In reaction, all governments including the European Union and its Member States have

repeatedly committed to revise and upgrade their 2030 climate targets at the Ministerial climate summits of COP26 (Glasgow, November 2021<sup>13</sup>), COP27 (Sharm El-Sheikh, November 2022<sup>14</sup>) and COP28 (Dubai, December 2023<sup>15</sup>). The

**Figure 7: Comparing current pledges with 1.5°C and 2°C aligned pathways (source: UNEP Emissions Gap Report 2023<sup>12</sup>), showing the gap between current policies of all countries (upper blue line) and what is needed to limit temperature rise to 2°C (vertical red line) or 1.5°C (vertical orange line)**



<sup>9</sup> UNEP. Emissions Gap Report. [www.unep.org/resources/emissions-gap-report](http://www.unep.org/resources/emissions-gap-report)

<sup>10</sup> UNFCCC. 2023 NDC Synthesis Report. November 2023. <https://unfccc.int/ndc-synthesis-report-2023>

<sup>11</sup> IEA. World Energy Outlook 2023. October 2023. [www.iea.org/reports/world-energy-outlook-2023](http://www.iea.org/reports/world-energy-outlook-2023)

<sup>12</sup> UNEP. Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). November 2023. [www.unep.org/resources/emissions-gap-report-2023](http://www.unep.org/resources/emissions-gap-report-2023)

<sup>13</sup> UNFCCC. 1/CMA.3: Glasgow Climate Pact.

[https://unfccc.int/sites/default/files/resource/cma3\\_auv\\_2\\_cover%2520decision.pdf](https://unfccc.int/sites/default/files/resource/cma3_auv_2_cover%2520decision.pdf) : “29. Recalls Article 3 and Article 4, paragraphs 3, 4, 5 and 11, of the Paris Agreement and requests Parties to revisit and strengthen the 2030 targets in their nationally determined contributions as necessary to align with the Paris Agreement temperature goal by the end of 2022, taking into account different national circumstances”.

<sup>14</sup> UNFCCC. 1/CMA.4: Sharm el-Sheikh Implementation Plan.

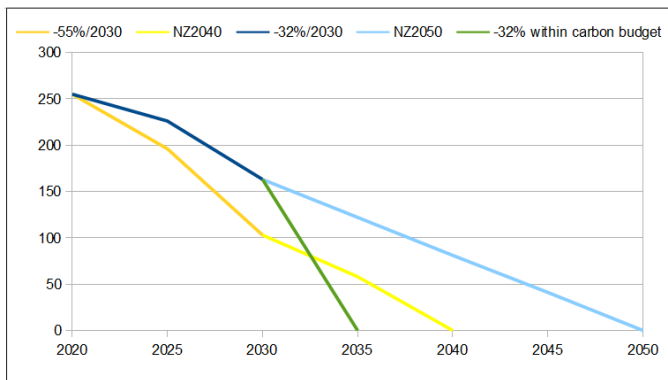
[https://unfccc.int/sites/default/files/resource/cma2022\\_10\\_a01E.pdf](https://unfccc.int/sites/default/files/resource/cma2022_10_a01E.pdf) : “23. (...) requests Parties that have not yet done so to revisit and strengthen the 2030 targets in their nationally determined contributions as necessary to align with the Paris Agreement temperature goal by the end of 2023, taking into account different national circumstances”.

<sup>15</sup> UNFCCC. 1/CMA.5. Outcome of the first global stocktake. December 2023.

contribution of the EU and its Member States to this revision has not been enough. In so-called Nationally Determined Contributions (NDCs), governments describe the emission reduction efforts they plan to make in contribution to the overall objectives of the Paris Agreement. The EU's third and latest NDC<sup>16</sup>, submitted to the UN in October 2023, does not include a new target for 2030 (sticking to the -55% target agreed in 2020), despite the fact that, as the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) showed in 2022, what happens between now and 2030 will determine the chances to achieve the Paris Agreement's 1.5°C objective<sup>17</sup>.

As greenhouse gas emissions build up in the atmosphere, and stay there for over thousands of years (in particular CO<sub>2</sub> emissions), the earlier we reduce emissions, global warming will be smaller. In terms of cumulative emissions, postponing stringent emission reductions to a later date (eg. after 2030), the more difficult it will become to reduce cumulative emissions to acceptable levels: more gases will be in the atmosphere, the concentration of gases will continue to grow, and so will global warming. Figure 8 shows different scenarios and how they relate to the limited budget of cumulative emissions for Spain, in line with a fair share approach to limit temperature rise to 1.5°C (see more in section 11).

**Figure 8: Impact of slow emission reductions pre 2030 in Spain (source: own calculations)**



| Cumulative emissions under different pathways |                                |                                |                                    |
|---|--------------------------------|--------------------------------|------------------------------------|
|   | -32% by 2030 and net zero 2050 | -55% by 2030 and net zero 2040 | -32% by 2030 compatible with 1.5°C |
| 2020-2025                                     | 1.51                           | 1.44                           | 1.51                               |
| 2026-2030                                     | 0.94                           | 0.71                           | 0.94                               |
| 2031-2035                                     | 0.69                           | 0.36                           | 0.35                               |
| 2036-2040                                     | 0.49                           | 0.10                           | 0                                  |
| 2041-2045                                     | 0.28                           | 0                              | 0                                  |
| 2046-2050                                     | 0.08                           | 0                              | 0                                  |
| <b>TOTAL</b>                                  | <b>4.0 Gt</b>                  | <b>2.6 Gt</b>                  | <b>2.8 Gt</b>                      |

[https://unfccc.int/sites/default/files/resource/cma2023\\_16a01\\_adv\\_.pdf?download](https://unfccc.int/sites/default/files/resource/cma2023_16a01_adv_.pdf?download): "37. (...) requests Parties that have not yet done so to revisit and strengthen the 2030 targets in their nationally determined contributions as necessary to align with the Paris Agreement temperature goal by the end of 2024, taking into account different national circumstances".

<sup>16</sup> European Union. The update of the nationally determined contribution of the European Union and its Member States. October 2023. <https://unfccc.int/sites/default/files/NDC/2023-10/ES-2023-10-17%20EU%20submission%20NDC%20update.pdf>

<sup>17</sup> IPCC. Synthesis Report of the Sixth Assessment Report. March 2023. [www.ipcc.ch/ar6-syr](http://www.ipcc.ch/ar6-syr)

In Figure 8, the yellow lines (dark till 2030 and bright after 2030) represent the Greenpeace scenario for Spain (-55% gross emission reductions by 2030 and net zero by 2040). Yearly emissions under this scenario (anything to the left of the yellow lines) accumulate to a total budget of around 2.7 GtCO<sub>2</sub>-e. The blue lines (dark till 2030 and bright after 2030) represent the Government scenario (-32% gross emission reductions by 2030 and net zero by 2050). Yearly emissions under this scenario (anything to the left of the blue lines) accumulate to a total budget of around 4.0 GtCO<sub>2</sub>-e. As emissions under the Spanish target of -32% by 2030 will almost fully consume the remaining per capita greenhouse gas budget for Spain, in order to stay within a fair 1.5°C compatible budget for Spain of 2.8 Gt, a -32% target for 2030 would need to be followed by emissions going to net zero before 2035 (green line) which seems rather unrealistic.

## 4. Overview of EU climate Targets

The EU's current climate policies are guided by two top line climate targets, as agreed by the European Council (EU Heads of State and Government):

- reducing net domestic greenhouse gas emissions by at least 55% by 2030 (as compared to 1990 emissions)<sup>18</sup> and
- reducing domestic greenhouse gas emissions to net zero by 2050<sup>19</sup>.

The -55% by 2030 target formed the basis for the first revision of the original -40% by 2030 NDC (which was submitted in March 2015<sup>20</sup>). It is important to note that the original -40% NDC focused on reducing gross emissions without taking into account land-based carbon removals while the revised -55% NDC includes removals from the LULUCF (Land Use, Land Use Change and Forestry) sector (see Box below). The Commission has assessed that the EU's revised NDC would aim for a gross emission reduction of approximately 52.8%<sup>21</sup>.

### Box: gross vs. net climate targets

**Targets can be divided between those that only relate to emissions, usually referred to as gross emission reduction targets, and those that take into account emissions and also removals (which refer to the absorption of CO<sub>2</sub> by ecosystems such as forests, wetlands or grasslands), usually referred to as net emission reduction targets. In this report, any unspecified reference to emissions does refer to gross emissions.**

**Within the EU, there is also a distinction between economy-wide targets, including all sectors, and the so-called Effort Sharing (or non-ETS) targets that only include sectoral emissions from transport, agriculture and buildings (which are not included in the Emissions Trading System, which applies to the power and industry sectors only). In this report, any unspecified reference to targets does refer to economy-wide targets.**

**Thirdly, targets can be expressed against different baselines. In most cases emission levels in 1990 form the basis upon which targets are expressed, but countries can freely choose their own baseline year. Furthermore, within the EU, for targets related to ETS and non-ETS emissions, 2005 emissions are used as the baseline. This is due to the fact that the ETS came into effect in 2005 and data are only available from that date onwards.**

<sup>18</sup> European Council. Conclusions. December 2020. [www.consilium.europa.eu/media/47296/1011-12-20-euco-conclusions-en.pdf](http://www.consilium.europa.eu/media/47296/1011-12-20-euco-conclusions-en.pdf)

<sup>19</sup> European Council. Conclusions. December 2019. [www.consilium.europa.eu/media/41768/12-euco-final-conclusions-en.pdf](http://www.consilium.europa.eu/media/41768/12-euco-final-conclusions-en.pdf)

<sup>20</sup> Note that the first NDC, submitted prior to the adoption of the Paris Agreement was referred to as an INDC (Intended Nationally Determined Contribution) which transformed into an NDC after the ratification of the Paris Agreement. Also note that this first NDC referred to the EU28. See: Latvian Presidency of the Council of the European Union. The INDC of the European Union and its 28 Member States. March 2015. <https://unfccc.int/sites/default/files/adpeu.pdf>

<sup>21</sup> European Commission. Commission Staff Working Document. Impact Assessment. Accompanying the document: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Region. [https://eur-lex.europa.eu/resource.html?uri=cellar:749e04bb-f8c5-11ea-991b-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:749e04bb-f8c5-11ea-991b-01aa75ed71a1.0001.02/DOC_1&format=PDF). See Table 6

The 2030 and 2050 targets, cemented into law in June 2021 through the EU Climate Law<sup>22</sup>, also form the basis for the 'Fit for 55' legislative package<sup>23</sup> under the European Green Deal, which consists of:

- the Emissions Trading System Directive (ETS)<sup>24</sup> reducing industry and power sector emissions by -62% by 2030 (as compared to 2005 emission levels);
- the Effort Sharing Regulation (ESR)<sup>25</sup> reducing emissions from agriculture, buildings, transport and waste -40% by 2030 (compared to 2005);
- the Land Use, Land Use Change and Forestry Regulation (LULUCF)<sup>26</sup> increasing land-based carbon removals to 310 MtCO<sub>2</sub>-e by 2030, of which a maximum of 225 Mt can be used to achieve the -55% reduction target;
- the Renewable Energy Directive (RES)<sup>27</sup> increasing the share of renewable energy in total energy consumption to (originally) 40% by 2030;
- the Energy Efficiency Directive (EED)<sup>28</sup> reducing final energy demand by (originally) 9% as compared to 2020 projections of final energy demand in 2030.

The Package is further complemented by a whole range of initiatives which focus on specific gases (e.g. f-gases<sup>29</sup>, methane<sup>30</sup>) or on specific sectors (e.g. cars<sup>31</sup>, carbon removal<sup>32</sup>). It is assumed that the full implementation of all these policies would allow the EU to reduce its net greenhouse gas emissions by at

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<sup>22</sup> European Union. Regulation establishing the framework for achieving climate neutrality ('European Climate Law'). June 2021. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1119>

<sup>23</sup> European Union. Fit for 55: how the EU will turn climate goals into law. <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition>

<sup>24</sup> European Commissions. EU Emissions Trading System (ETS). [https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets\\_en](https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en)

<sup>25</sup> European Commission. Effort sharing 2021-2030: targets and flexibilities. [https://climate.ec.europa.eu/eu-action/effort-sharing-member-states-emission-targets/effort-sharing-2021-2030-targets-and-flexibilities\\_en](https://climate.ec.europa.eu/eu-action/effort-sharing-member-states-emission-targets/effort-sharing-2021-2030-targets-and-flexibilities_en)

<sup>26</sup> European Commission. Land Use Sector. [https://climate.ec.europa.eu/eu-action/land-use-sector\\_en#eu-rules-on-land-use-land-use-change-and-forestry-lulucf](https://climate.ec.europa.eu/eu-action/land-use-sector_en#eu-rules-on-land-use-land-use-change-and-forestry-lulucf)

<sup>27</sup> European Commission. Renewable Energy Directive. [https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive\\_en](https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en)

<sup>28</sup> European Commission. Energy Efficiency Directive. [https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive\\_en](https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en)

<sup>29</sup> European Commission. Guidance on the EU's F-gas Regulation and its legal framework. [https://climate.ec.europa.eu/eu-action/fluorinated-greenhouse-gases/eu-legislation-control-f-gases\\_en](https://climate.ec.europa.eu/eu-action/fluorinated-greenhouse-gases/eu-legislation-control-f-gases_en)

<sup>30</sup> European Commission/ Methane Emissions. [https://energy.ec.europa.eu/topics/oil-gas-and-coal/methane-emissions\\_en](https://energy.ec.europa.eu/topics/oil-gas-and-coal/methane-emissions_en)

<sup>31</sup> European Commission. CO<sub>2</sub> emission performance standards for cars and vans. [https://climate.ec.europa.eu/eu-action/transport/road-transport-reducing-co2-emissions-vehicles/co2-emission-performance-standards-cars-and-vans\\_en](https://climate.ec.europa.eu/eu-action/transport/road-transport-reducing-co2-emissions-vehicles/co2-emission-performance-standards-cars-and-vans_en)

<sup>32</sup> European Commission. Carbon Removal Certification. [https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/carbon-removal-certification\\_en](https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/carbon-removal-certification_en)

least 57%<sup>33</sup>. On top of this, through the May 2022 REPowerEU proposal<sup>34</sup>, the EU adopted new targets for renewable energy (42.5%) and energy efficiency (-11.7%), which could increase the overshoot further beyond -57%.

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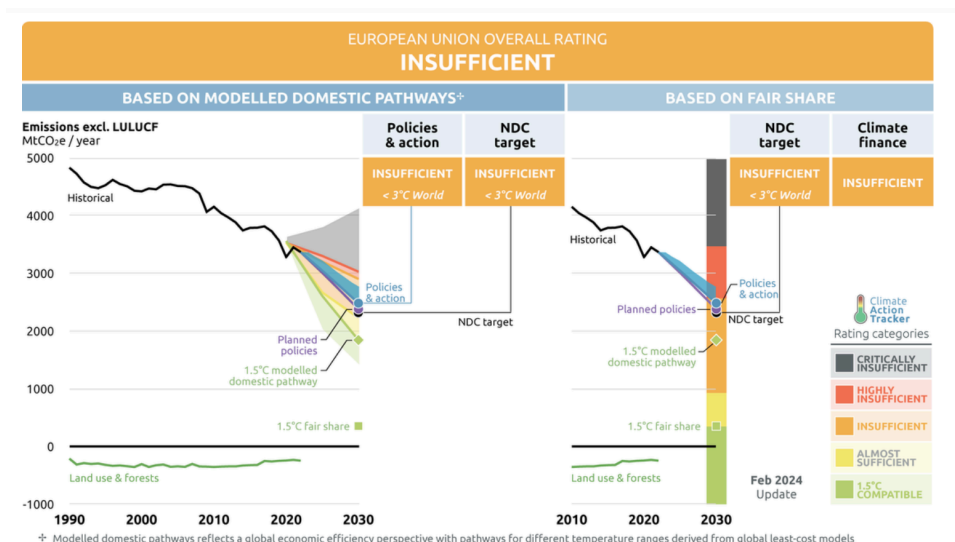
<sup>33</sup> European Commission. La Comisión se congratula de la finalización de la legislación clave «Objetivo 55», que pone a la UE en vías de superar los objetivos para 2030. Octubre 2023. [https://ec.europa.eu/commission/presscorner/detail/es/IP\\_23\\_4754](https://ec.europa.eu/commission/presscorner/detail/es/IP_23_4754)

<sup>34</sup> European Commission. REPowerEU at a glance. [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en)



# 5. EU Action not Aligned with 1.5°C

Assessing individual countries' and regions' contributions to the collective target of the Paris Agreement is challenging and depends on how to apply the concept of equity whereby countries' contributions are assessed based on their (historical) responsibility and capacity to act (see Chapter 11). Different institutions base their assessments on different models, pathways and methodologies. Nevertheless there is a large agreement that the EU's 2030 climate target is not aligned with equitable pathways towards 1.5°C. In the next paragraphs, some of the most representative assessments are presented.



**Figure 9: Summary EU Assessment (source: Climate Action Tracker)**

Figure 9 compares the EU target as well as the EU's planned policies (which are not in line with the target yet) with 1.5°C pathways, as represented by IPCC scenarios (most of which are based on cost-efficiency rather than fairness) and with scenarios that would be based on a fair division of the global effort across countries.

The Climate Action Tracker consortium<sup>35</sup> in its June 2023 assessment of the EU, rates the EU's 2030 target as insufficient: “When measured against a fair share

<sup>35</sup> The Climate Action Tracker: <https://climateactiontracker.org/about>

emissions allocation, we rate the EU's NDC target as "Insufficient". The "Insufficient" rating indicates that the EU's NDC target in 2030 needs substantial improvement to be consistent with limiting warming to 1.5°C. Some of these improvements should be made to the domestic emissions target itself, others could come in the form of additional support for emissions reductions achieved in developing countries. If all countries were to follow the EU's approach, warming would reach up to 3°C." <sup>36</sup>

Also the European Scientific Advisory Council on Climate Change (established by the EU Climate Law) in its 'Scientific advice for the determination of an EU-wide 2040 climate target and a greenhouse gas budget for 2030–2050'<sup>37</sup> made it clear that the EU's current 2030 and 2050 climate targets would not allow the EU to keep its cumulative carbon budget within the limits of a minimalistic (per capita) fair share approach. The report states: "Additional efforts to increase the ambition beyond 55% (up to 70% or more by 2030) would considerably decrease the EU's cumulative emissions until 2050, and thus increase the fairness of the EU's contribution to global mitigation." Furthermore, in a preparatory study for the Advisory Board<sup>38</sup>, scientists from IIASA show how a -55% reduction by 2030 fails to stay within even a minimalistic per capita carbon budget limit, while a -65% reduction, as supported by NGOs<sup>39</sup>, scientists<sup>40</sup> and Members of the European Parliament<sup>41</sup> based on -65% by 2030 and net zero by 2040 targets would (see figure 6).

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<sup>36</sup> Climate Action Tracker. EU. February 2024. <https://climateactiontracker.org/countries/eu>

<sup>37</sup> European Scientific Advisory Board on Climate Change. Scientific advice for the determination of an EU-wide 2040 climate target and a greenhouse gas budget for 2030–2050. June 2023. <https://climate-advisory-board.europa.eu/reports-and-publications/scientific-advice-for-the-determination-of-an-eu-wide-2040-climate-target-and-a-greenhouse-gas-budget-for-2030-2050.pdf/@@display-file/file>

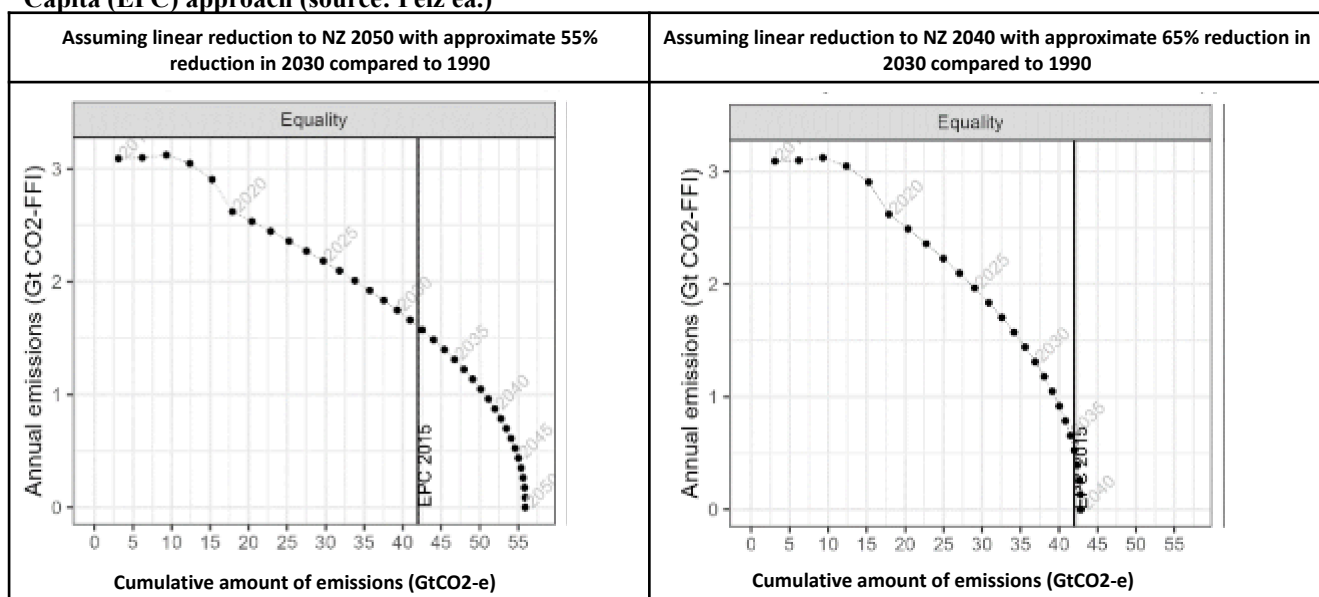
<sup>38</sup> Pelz ea. Evaluating equity in European climate change mitigation pathways for the EU Scientific Advisory Board on Climate Change. June 2023. [https://pure.iiasa.ac.at/id/eprint/18830/1/report\\_equity\\_iiasa\\_euab%20\(1\).pdf](https://pure.iiasa.ac.at/id/eprint/18830/1/report_equity_iiasa_euab%20(1).pdf)

<sup>39</sup> see Climate Action Network (CAN) Europe's positions: Position on Long-term Climate Targets. September 2018. <https://caneurope.org/content/uploads/2018/10/CAN-Europe-position-paper-on-long-term-targets.pdf> and: Position on EU Climate Targets and an Equitable Greenhouse gas Emission Budget for the EU. June 2023. <https://caneurope.org/content/uploads/2023/10/2023.06.22-Position-Paper-on-EU-climate-targets-and-equitable-GHG-budget.docx.pdf>

<sup>40</sup> see for example: Climate Analytics. 1.5°C Pathways for Europe: Achieving the highest plausible climate ambition EU27, Denmark, France, Germany, Italy, Poland, Portugal, Romania, Spain, Sweden. October 2021. [https://ca1-clm.edcdn.com/assets/1-5pathwaysforeurope\\_2.pdf?v=1679477760](https://ca1-clm.edcdn.com/assets/1-5pathwaysforeurope_2.pdf?v=1679477760)

<sup>41</sup> see for example: European Greens. Green campaign: from climate emergency to climate neutrality <https://europeangreens.eu/resolutions/greencampaign-climate-emergency-climate-neutrality>

**Figure 10: Comparing different EU pathways with limited greenhouse gas budgets under an Equal Per Capita (EPC) approach (source: Pelz et al.)**



In both boxes in Figure 10, the vertical axis represents the amount of annual gross GHG emissions, while the horizontal axis represents the cumulative amount of gross GHG emissions. The vertical line (EPC2015) represents the maximum gross GHG budget of the EU, starting from 2015, in line with an equal per capita division of the global remaining GHG budget. The dotted lines indicate the emissions pathways for two scenarios, one based on a -55% by 2030 and net zero by 2050 pathway, and an alternative one based on a -65% by 2030 and net zero by 2040 pathway. In the first scenario, the cumulative emissions (represented by the dotted line) runs up to 55 GtCO<sub>2</sub>-e in 2050, far overshooting the EPC2015 budget of around 42 Gt. In the second (alternative/NGO) scenario, cumulative emissions in 2050 (represented by the dotted line) end up a little bit beyond the approximately 42 Gt equitable GHG budget.

Climate Analytics, in its landmark '1.5 Pathways for the EU27'<sup>42</sup> report finds that, to be 1.5°C compatible, the EU27 would need to cut its domestic emissions faster than currently planned: “1.5°C compatible pathways assessed in this report, and filtered to meet sustainability constraints, show that the EU27 can feasibly reduce its greenhouse gas (GHG) emissions between 63-73% below 1990 levels excluding Land Use, Land Use Change and Forestry (LULUCF). Accounting for LULUCF, this corresponds to a 66-77% reduction by 2030, relative to 1990 levels.”

<sup>42</sup> Climate Analytics. 1.5°C Pathways for the EU27: accelerating climate action to deliver the Paris Agreement. September 2022. <https://ca1-clm.edcdn.com/assets/1-5pathwaysforeu27-2022.pdf?v=1697120728>

**Figure 11: Comparing EU targets with 1.5°C compatible pathways for the EU (source: Climate Analytics 1.5°C Pathways for the EU27)**

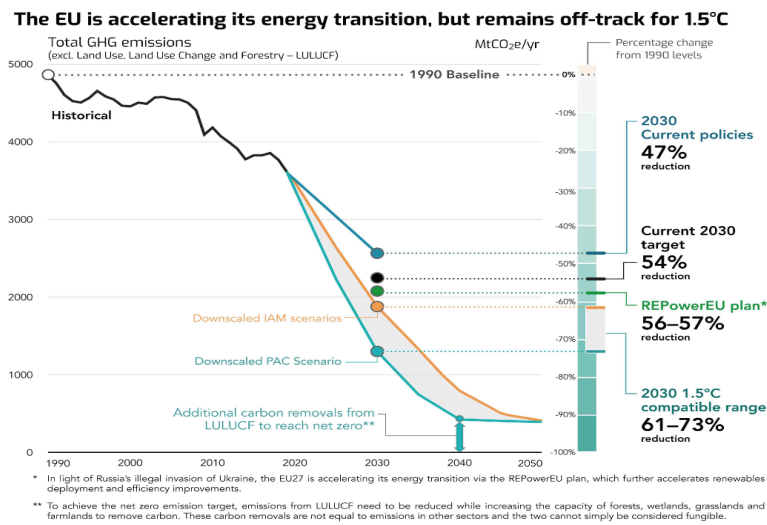
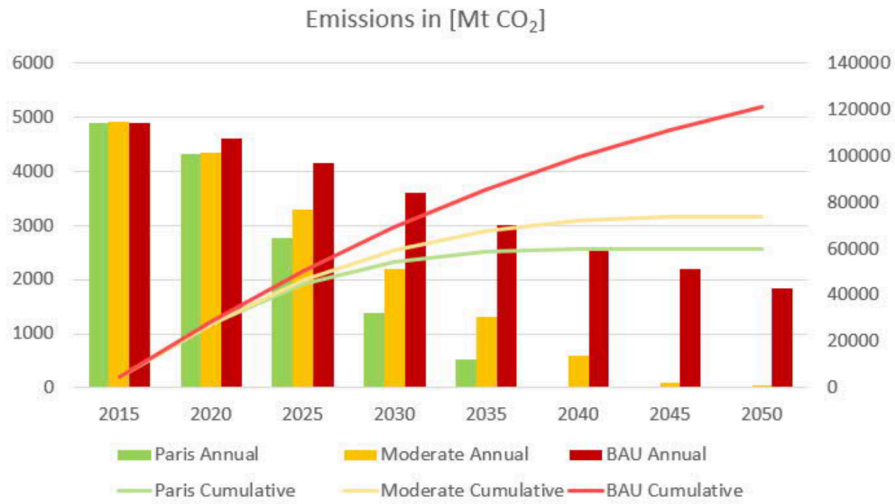


Figure 11 compares different levels of 2030 gross greenhouse gas emissions, including a current policies scenario (based on existing and announced measures at national level); a current target scenario (assuming gross emissions will need to be at -54% to achieve the -55% net target); a REPowerEU scenario (assuming increased ambition regarding the deployment of renewable energy and efforts to reduce energy consumption); an IAM scenario, based on global IPCC scenarios downscaled to the EU level; and the PAC (Paris Agreement Compatible) scenario developed by CAN Europe ea. Only the last two scenarios are to be considered compatible with the 1.5°C temperature target (and together they provide a range of emission reduction targets that can be considered 1.5°C aligned). The three first (EU policies and targets) scenarios fail to fit within the 1.5°C compatible range.

The 'Make the European Green Deal Real – Combining Climate Neutrality and Economic Recovery' study<sup>43</sup> by DIW (German Institute for Economic Research) which focuses on how climate policies can actually help economic development (in line with the US Inflation Reduction Act) states that “even under these optimistic assumptions, an increase of the greenhouse gas emission reductions (“ambition level”) is necessary for 2030 and 2040, to reach climate neutrality. An appropriate target for 2030 is in the range of 60% to 65% reduction (basis: 1990)”. “Scenarios in line with these emission reductions can be considered as a cost-efficient contribution to the economic recovery process.”

<sup>43</sup> Hainsch ea. Make the European Green Deal Real – Combining Climate Neutrality and Economic Recovery. DIW Berlin. 2020. [www.diw.de/documents/publikationen/73/diw\\_01.c.791736.de/diwkompakt\\_2020-153.pdf](http://www.diw.de/documents/publikationen/73/diw_01.c.791736.de/diwkompakt_2020-153.pdf)

**Figure 12: EU Emission pathways under different reduction scenarios (source: DIW: Make the European Green Deal Real – Combining Climate Neutrality and Economic Recovery)**



**Figure 12 uses the following scenarios: the Paris scenario assumes emission reductions of 60%-65% by 2030 and achieving net zero by 2040; the moderate scenario assumes emissions reductions of -55% by 2030 while achieving net zero by 2050; and the BAU scenario assumes emission reductions of -40% by 2030. All numbers are based on Auer et al. (2020)<sup>44</sup> and Oei et al. (2019)<sup>45</sup>.**

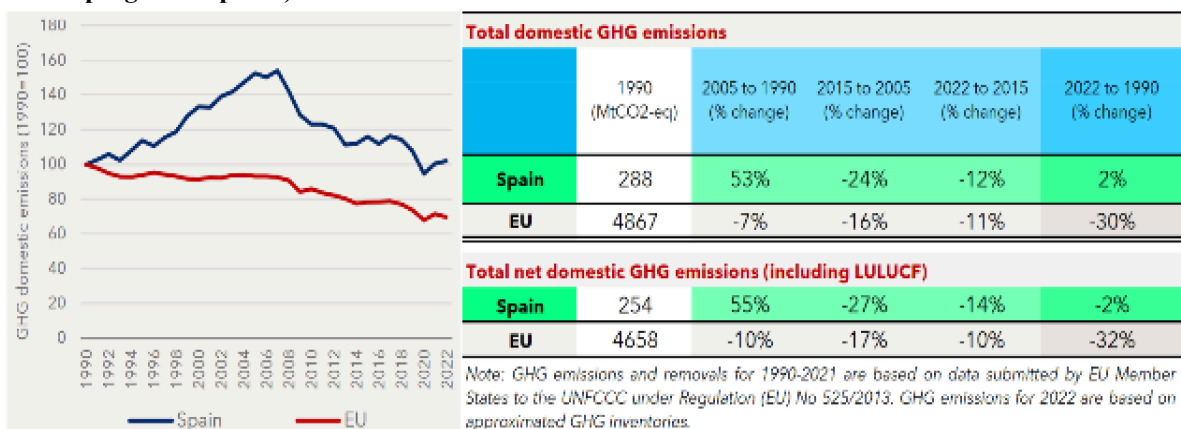
<sup>44</sup> Open entrance. Quantitative Scenarios for Low Carbon Futures of the Pan-European Energy System. 2020. <https://openentrance.eu/wp-content/uploads/openENTRANCE-D3.1.pdf>

<sup>45</sup> Oei et al. A New Climate for Europe: 2030 Climate Targets Must Be More Ambitious. DIW. 2019. [www.diw.de/documents/publikationen/73/diw\\_01.c.683026.de/dwr-19-40-1.pdf](http://www.diw.de/documents/publikationen/73/diw_01.c.683026.de/dwr-19-40-1.pdf)

# 6. Spain's Greenhouse Gas Emissions

While Spain has seen some substantial reductions in greenhouse gas emissions since 2005 (in 2022 greenhouse gas emissions were 33% lower than emissions in 2005), the country's emission reductions compared to 1990 are far below the EU average. In fact, greenhouse gas emissions have (only) peaked in 2007 (as evidenced in the graph below), have been reduced since then and are currently close to 1990 levels, but still were 2% higher in 2022 than in 1990. This contrasts to EU average greenhouse gas emissions that have been reduced by 30% between 1990 and 2022 (see Figure 13).

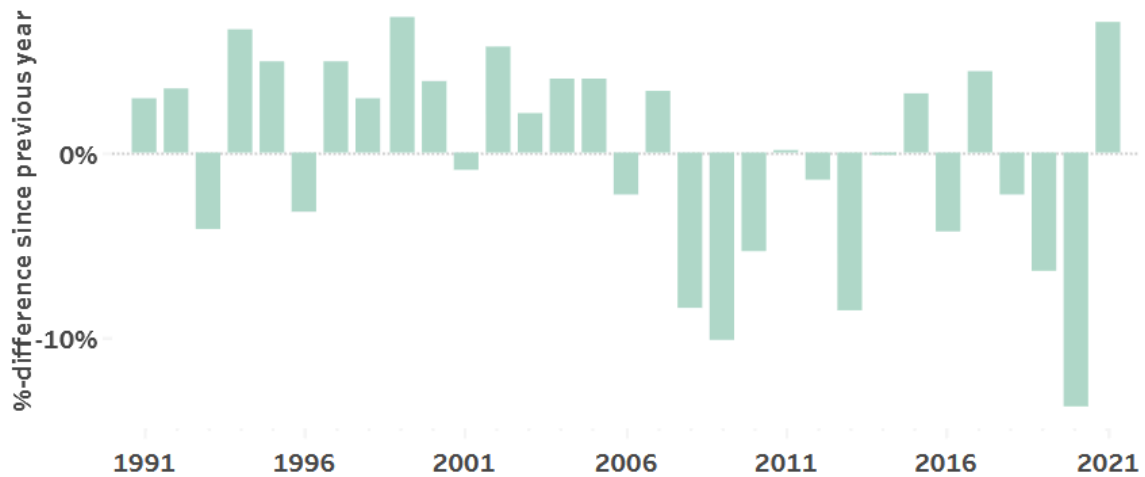
**Figure 13: Comparing greenhouse gas emissions trajectories from Spain and the EU (source: Climate Action progress Report<sup>46</sup>).**



Spain's greenhouse gas emissions have fluctuated substantially with highs and lows, including years with annual reductions around or even beyond -10% as shown in figure 14 below, thereby indicating that it is perfectly possible for Spain to have substantial emission reductions if efforts are contained over a number of years.

<sup>46</sup> European Commission. Climate Action Progress Report 2023. October 2023. [https://climate.ec.europa.eu/document/download/60a04592-cf1f-4e31-865b-2b5b51b9d09f\\_en](https://climate.ec.europa.eu/document/download/60a04592-cf1f-4e31-865b-2b5b51b9d09f_en)

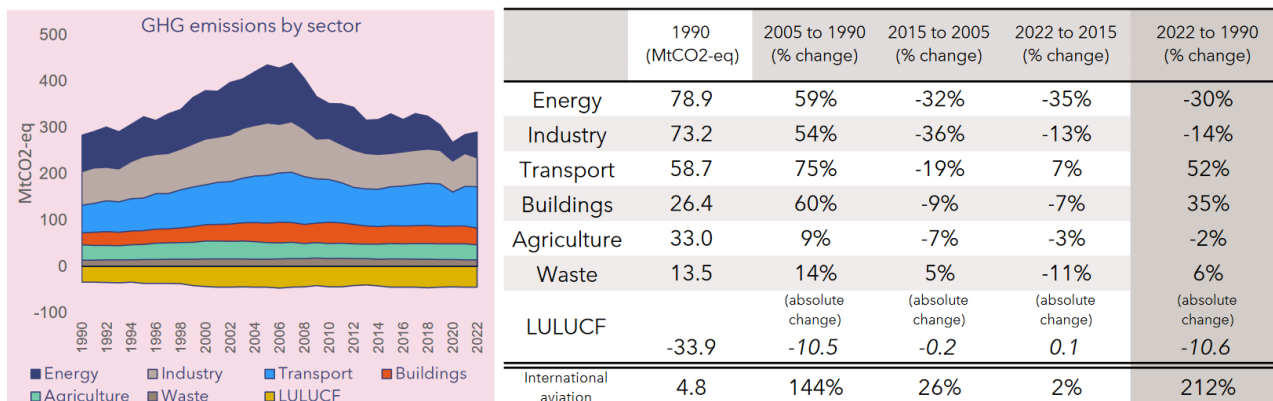
**Figure 14: Annual percentage change of greenhouse gas emissions in Spain (source: EEA GHG data viewer<sup>47</sup>)**



The energy and industry sectors have traditionally seen the highest levels of emissions but have been surpassed by (domestic) transport emissions since 2010. This evolution is a consequence of the fact that emissions in the industry and energy sectors have seen a certain level of reductions since the start of the EU Emissions Trading System which in particular addresses emissions from these sectors. This has also been achieved thanks to the large increase in renewable electricity installations, especially wind and solar. On the other hand, emissions from the sectors that fall outside the ETS (transport, agriculture, buildings and waste) have seen only small reductions in the last 20 years. When compared to 1990 levels, emissions from transport, buildings and waste have not been reduced but rather have increased (Figure 15), indicating really substantial action still needs to be taken.

<sup>47</sup> EEA greenhouse gases - data viewer. [www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer](http://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer)

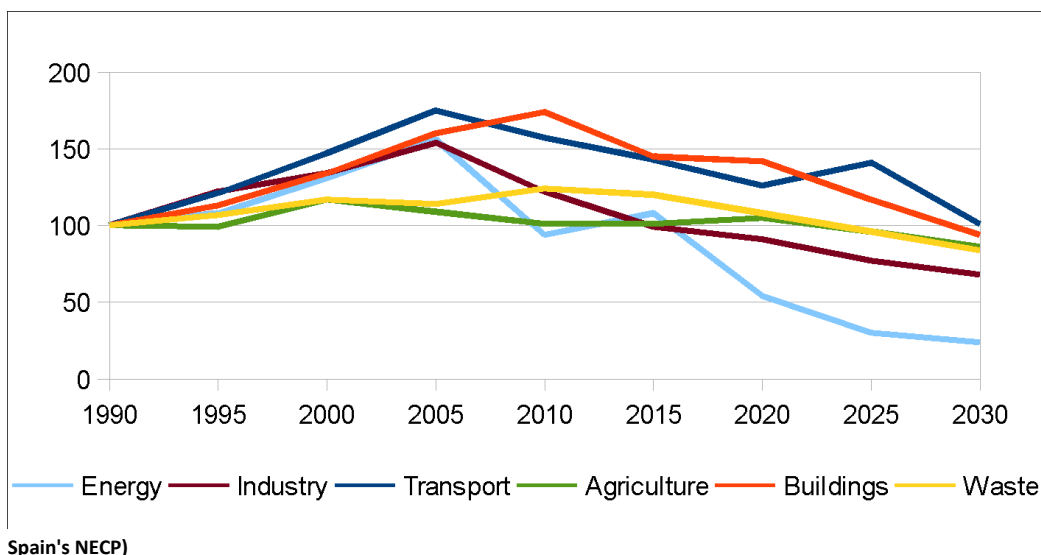
**Figure 15: Spain's greenhouse gas emissions by sectors (source: Climate Action progress report)**



Notes: (1) Energy sector refers to electricity and heat production and petroleum refining. (2) Industry includes fuel combustion in manufacturing and construction and emissions in industrial processes and product use. (3) Buildings includes emissions from energy use in residential and tertiary buildings, and energy use in agriculture and fishery sectors. (4) For LULUCF, the table reports differences between the given years in absolute values (MtCO<sub>2</sub>-eq). Negative values indicate a reduction of net emissions or an increase in net removals.

Even more worrying is that Spain's NECP plans to continue putting the biggest efforts in the energy and industry sectors, while the measures for the rest of the economic sectors are clearly insufficient. For example, the transport sector will not even be required to reduce its emissions in the next decade compared to the 1990 emissions (and this refers only to domestic transport, not even to emissions from international shipping and aviation). Therefore, substantial additional policies and measures are needed to further reduce emissions in the transport, buildings, agriculture and waste sectors, while recognising that also emissions from energy and industry can be further reduced beyond what is already proposed in the latest draft NECP.

**Figure 16: comparing Spain's past and projected emissions by sector between 1990 and 2030 (source: EEA GHG data viewer and Spain's NECP)**





**Table 1: Projected emission reductions between 2020 and 2030 for different sectors (source: NECP)**

|                    | <b>2022/1990</b> | <b>2030/2020</b> | <b>2030/1990</b> | <b>Share of total Spanish emissions (2022)<sup>48</sup></b> |
|--------------------|------------------|------------------|------------------|---|
| <b>Energy</b>      | -30%             | -55%             | -75%             | 15%   |
| <b>Industry</b>    | -14%             | -25%             | -32%             | 19%   |
| <b>Transport</b>   | +52%             | -20%             | +1%              | 30%   |
| <b>Buildings</b>   | +35%             | -18%             | -14%             | 8%  |
| <b>Agriculture</b> | -2%              | -34%             | -6%              | 11%   |
| <b>Waste</b>       | +6%              | -23%             | -16%             | 5%  |

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<sup>48</sup> NOTA INFORMATIVA SOBRE EL AVANCE DE EMISIONES DE GASES DE EFECTO INVERNADERO CORRESPONDIENTES AL AÑO 2022. [https://www.miteco.gob.es/content/dam/miteco/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei/avance\\_GEI\\_2022.pdf](https://www.miteco.gob.es/content/dam/miteco/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei/avance_GEI_2022.pdf)

# 7. Overview of Spain's climate targets

Spain has multiple climate targets. It has both binding targets defined through EU legislation, in particular through the Effort Sharing Regulation and the LULUCF Regulation, and has voluntary nationally defined targets, which are set in the National Climate Law, and in the 2021-2030 National Energy and Climate Plan, that will be updated in the next version of the National Energy and Climate Plan, whose draft was presented in June 2023 (2023-2030 National Energy and Climate Plan<sup>49</sup>).

## 7.1. Spanish targets under EU legislation

- **Emissions Trading System**

The EU's Emissions Trading System covers emissions from 10.000 companies in the energy and industry sectors across the whole of the European Union. All companies are allowed a certain level of greenhouse gas emissions. These allowances can be traded between companies that need more or less than the allowances they receive. The overall volume of allowances under the ETS is reduced year on year by over 4% each year, aiming to reach a reduction of -62% by 2030 (compared to emissions in 2005). As these allowances and reductions directly apply to companies across the EU, there are no specific EU Member State targets under the ETS legislation, though some Member States have set their own, voluntary, targets for emissions covered by the ETS. Spain for example has, in its National Energy and Climate Plan, set a target to reduce emissions in the ETS sectors by 70% by 2030, as compared to 2005 levels.

- **Effort Sharing**

Spain's target under the Effort Sharing Regulation is to reduce greenhouse gas emissions in the transport, buildings, agriculture and waste sectors by -37.7% by 2030 as compared to 2005 emissions. This target has been developed by the European Commission (and agreed by all countries) based on a number of criteria (which are included in the Effort Sharing Regulation). The main criterion used is based on country's Gross Domestic Income, which ensures richer EU Member States get higher targets.

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<sup>49</sup> Government of Spain. Draft Update of the Integrated National Energy and Climate Plan 2023-2030. June 2023.

[https://commission.europa.eu/document/download/9ea170ec-fdce-49cb-9424-4ee95db33a4a\\_en?filename=EN\\_SPAIN%20DRAFT%20UPDATED%20NECP.pdf](https://commission.europa.eu/document/download/9ea170ec-fdce-49cb-9424-4ee95db33a4a_en?filename=EN_SPAIN%20DRAFT%20UPDATED%20NECP.pdf)

Furthermore these targets are adjusted to reflect cost-effectiveness. This methodology has resulted for Spain's official Effort Sharing target to be more or less in the middle of the 27 EU Member States (see table 2).

However, Spain's new draft NECP aims to achieve a reduction of -44.7% by 2030 in the non-ETS sectors, thereby overachieving on its binding targets. The country joins a range of other countries who are also projected to overachieve on their ESR targets (this includes Sweden, Luxembourg, Greece, Portugal, Slovenia and Hungary).

Table 2: Ranking Member States according to their official ESR targets (source: Effort Sharing Regulation)

| Rank | Country     | Target | Rank | Country   | Target |
|------|-------------|--------|------|-----------|--------|
| 1    | Sweden      | -50.0% | 15   | Slovenia  | -27.0% |
| 2    | Luxembourg  | -50.0% | 16   | Czechia   | -26.0% |
| 3    | Finland     | -50.0% | 17   | Estonia   | -24.0% |
| 4    | Denmark     | -50.0% | 18   | Greece    | -22.7% |
| 5    | Germany     | -50.0% | 19   | Slovakia  | -22.7% |
| 6    | Netherlands | -48.0% | 20   | Lithuania | -21.0% |
| 7    | Austria     | -48.0% | 21   | Malta     | -19.0% |
| 8    | France      | -47.5% | 22   | Hungary   | -18.7% |
| 9    | Belgium     | -47.0% | 23   | Poland    | -17.7% |
| 10   | Italy       | -43.7% | 24   | Latvia    | -17.0% |
| 11   | Ireland     | -42.0% | 25   | Croatia   | -16.7% |
| 12   | Spain       | -37.7% | 26   | Romania   | -12.7% |
| 13   | Cyprus      | -32.0% | 27   | Bulgaria  | -10.0% |
| 14   | Portugal    | -28.7% |      |           |        |

- **Land Use, Land Use Change and Forestry (LULUCF)**

Spain's target under the EU LULUCF Regulation is to remove by 2030 up to -43,6 Mt CO<sub>2</sub>-e through land-based activities. This target is substantially higher than Spain's carbon removals in 1990 which were at -33,9 Mt but is less than the removals reported in the last three years (2020 to 2022) as they were all above 44 Mt.

This means that the LULUCF Regulation does not request any increase of carbon removals from Spain this decade, and leaves it to other countries to contribute to the needed collective increase of removals in the EU (from a total of -241 Mt in 2020 to a total of -310 Mt in 2030). Despite the fact that Spain is not asked to increase its carbon removals, the European Commission's assessment of Spain's NECP indicates that Spain is not on track to achieve its LULUCF target of -43,6 Mt as it is projected that Spain's carbon removals in 2030 will only be at -34 Mt (mainly due to the impact of climate change which will decrease the rate of tree growing and increase the risk of forest fires). Hence the Commission is recommending Spain to take additional efforts to increase land-based carbon removals<sup>50</sup>.

<sup>50</sup> European Commission. Spain's Draft Updated National Energy and Climate Plan. An important step towards the more ambitious 2030 energy and climate objectives under the European Green Deal and REPowerEU. December 2023. [https://commission.europa.eu/document/download/9f680d66-a702-4dd1-8bff-5d942d68901b\\_en?filename=Factsheet\\_Commissions\\_assessment\\_NECP\\_Spain\\_2023.pdf](https://commission.europa.eu/document/download/9f680d66-a702-4dd1-8bff-5d942d68901b_en?filename=Factsheet_Commissions_assessment_NECP_Spain_2023.pdf)

## 7.2 Voluntary national Spanish targets

Besides these European targets, Spain has set a number of targets through its National Energy and Climate Plan (NECP), the development of which is obligatory for all EU Member States by the EU Governance Regulation<sup>51</sup>.

Spain's first NECP from January 2020<sup>52</sup> set an economy-wide gross greenhouse gas emission reduction target of -23% by 2030, compared to 1990. In its draft revised Plan of June 2023, the Spanish government increased this economy-wide target up to -32%. This target, which corresponds to a -55% reduction compared to 2005 emission levels, is to be achieved by:

- a 43 % emission reduction by 2030 in the non-ETS sectors, compared to 2005; and
- a 70 % emission reduction in the ETS sectors, also compared to 2005.

**Table 3: Overview of Spain's climate targets (source: Spanish NECP and EEA GHG data viewer)**

| Greenhouse gas emissions   | 1990<br>(MtCO <sub>2</sub> -e) | 2005<br>(MtCO <sub>2</sub> -e) | EU binding<br>2030 targets | 2030 draft<br>NECP targets<br>(MtCO <sub>2</sub> -e) | 2030 draft<br>NECP targets<br>vs. 1990 | Greenpeace<br>2030 targets<br>vs. 1990 | 2030 draft<br>NECP targets<br>vs. 2005 |
|--|--------------------------------|--------------------------------|----------------------------|--|--|--|--|
| <b>Economic wide (Gross: excl. LULUCF &amp; excl. international transport)</b> | 288                            | 439                            | NA                         | 196  | <b>-32%</b>                            | <b>-55%</b>                            | -55%                                   |
| <b>ESR emissions</b>   | NA*                            | 242                            | -37.7% (2005)              | 138  | NA                                     | -                                      | -43%                                   |
| <b>ETS emissions</b>   | NA*                            | 197                            | (-62%)**                   | 59   | NA                                     | -                                      | -70%                                   |
| <b>LULUCF removals</b>   | -34                            | -45                            | -43.6 Mt                   | -34  | 0%                                     | -                                      | +24%                                   |
| <b>Net economic wide (incl. LULUCF) &amp; excl. international transport</b>    | 254 Mt                         | 394                            | NA                         | 152  | -37%                                   | -                                      | -59%                                   |

\* Greenhouse gas emission inventories only started recording emissions from the ETS and non-ETS sectors from 2005 (the start date of the ETS) onwards

\*\* EU-wide target

<sup>51</sup> European Commission. Governance of the Energy Union and Climate Action.

[https://climate.ec.europa.eu/eu-action/climate-strategies-targets/governance-energy-union-and-climate-action\\_en](https://climate.ec.europa.eu/eu-action/climate-strategies-targets/governance-energy-union-and-climate-action_en)

<sup>52</sup> Government Of Spain. Plan Nacional Integrado de Energia y Clima 2021-2030. January 2020.

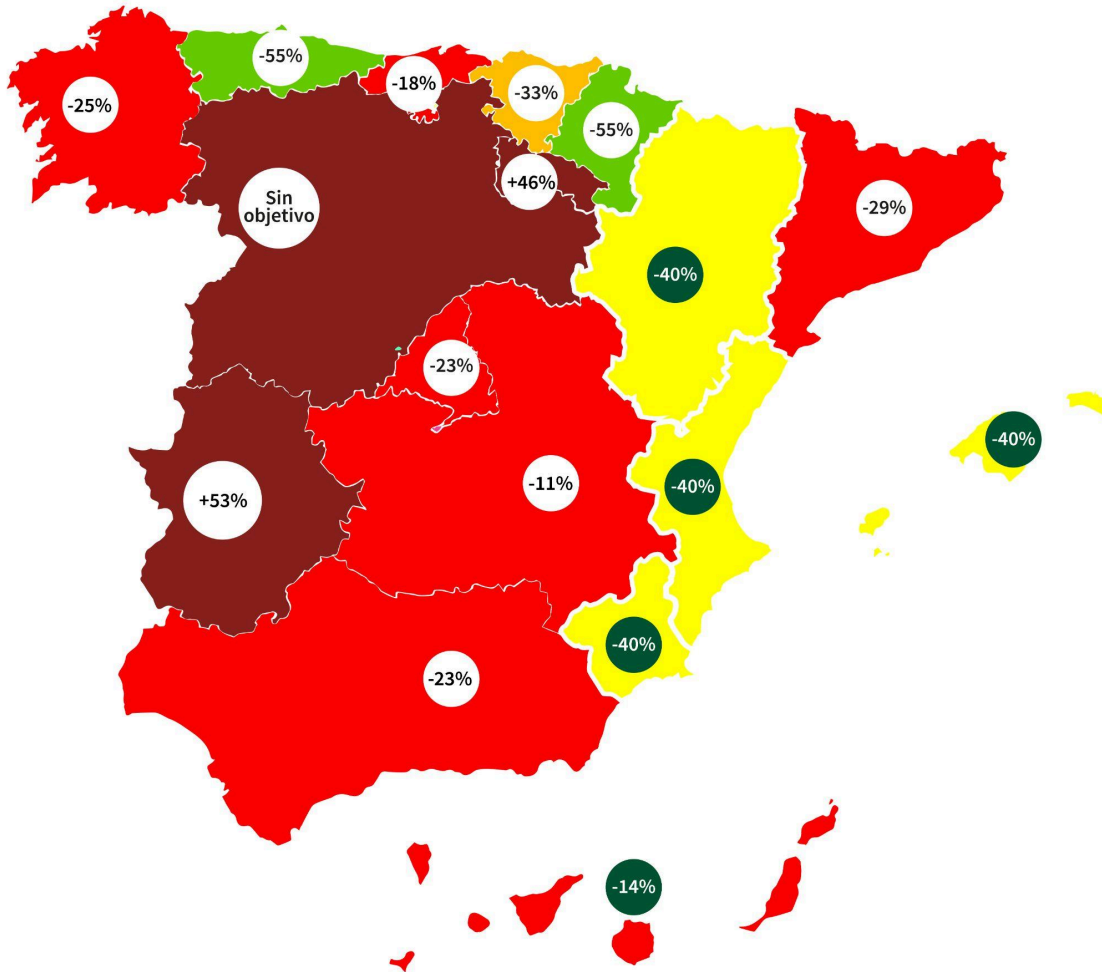
[https://energy.ec.europa.eu/system/files/2020-04/es\\_final\\_necp\\_main\\_es\\_0.pdf](https://energy.ec.europa.eu/system/files/2020-04/es_final_necp_main_es_0.pdf)

# 8. Overview of Climate Targets of Spain's Autonomous Communities

Almost all of Spain's 17 regions, officially called Autonomous Communities, have set 2030 climate targets. Several of them are quite ambitious and go well beyond the national target though it is not always clear how these ambitious targets will be achieved. But there is a huge diversity in targets, ranging from -55% in Asturias and Navarra to +46,5% in Extremadura. While several regions aim to go (well) beyond the average national target, a majority of regions do the opposite. Remarkably, four out of 5 regions with the highest share of Spanish greenhouse gas emissions (in particular Andalusia, Catalonia, Madrid and Valencia) have rather unambitious targets, as shown in Table 4. Hence, the implementation of all regional targets would lead to only -29% of emission reductions, below the -32% national target.

In addition to the objectives set in the regulation of each region, the rigour of the objectives must also be taken into account, since a very ambitious objective may be accompanied by very poorly detailed plans or with clearly insufficient measures to achieve them. Another key aspect to take into account is the fact that there are autonomous communities with a large presence of highly energy-consuming industries, other communities with high energy consumption but low production, and others with low consumption but high production. For example, autonomous communities with the presence of large coal-based electricity production plants, can reach higher emission reductions easier than other regions if those plants are closed. These plants have been closing in recent years throughout Spain due to a set of circumstances, one of the main ones being the high greenhouse gas emissions they produce.

**Figure 17.**  
**Climate ambition of each autonomous community according to its emissions reduction target for 2030 compared to 1990 emissions.**



**Table 4: Overview of climate targets of Spain's Autonomous Communities (source: own research of relevant Plans and Strategies and Ministerio para la Transición Ecológica y el Reto Demográfico<sup>53</sup>)**

| Region                     | Target (base year) | Target (1990 base year) | Share of total Spanish emissions (2021) | Climate ambition                  |
|----------------------------|--------------------|-------------------------|---|-----------------------------------|
| Principado de Asturias     | -55% (1990)        | -55%                    | 7.5%                                    | In line with 1.5°C                |
| Comunidad Foral de Navarra | -55% (1990) (Net)  | -55% (Net)              | 2.0%                                    | In line with 1.5°C                |
| Aragón                     | -40% (1990)        | -40%                    | 3.9%                                    | Higher ambition than Spanish NECP |
| Islas Baleares             | -40% (1990)***     | -40%***                 | 2.8%                                    | Higher ambition than Spanish NECP |

<sup>53</sup> Ministerio para la Transición Ecológica y el Reto Demográfico. Emisiones de GEI por Comunidades Autonomas a Partir de Inventario Español - Serie 1990-2021. [www.miteco.gob.es/content/dam/miteco/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/emisiones-gei-por-ccaa-serie-1990\\_2021\\_tcm30-560615.pdf](http://www.miteco.gob.es/content/dam/miteco/es/calidad-y-evaluacion-ambiental/temas/sistema-espanol-de-inventario-sei-/emisiones-gei-por-ccaa-serie-1990_2021_tcm30-560615.pdf)

|                      |                    |           |       |                                    |
|----------------------|--------------------|-----------|-------|------------------------------------|
| Comunidad Valenciana | -40%<br>(1990)***  | -40%***   | 9.7%  | Higher ambition than Spanish NECP  |
| Región de Murcia     | -40% (1990)        | -40%      | 3.9%  | Higher ambition than Spanish NECP  |
| Pais Vasco           | -33% (1990)        | -33%      | 6.0%  | Similar ambition than Spanish NECP |
| Cataluña             | -29% (1990)        | -29%      | 14.4% | Lower ambition than Spanish NECP   |
| Galicia              | -24.6%<br>(1990)** | -25%      | 3.8%  | Lower ambition than Spanish NECP   |
| Comunidad de Madrid  | -23% (1990)        | -23%      | 9.0%  | Lower ambition than Spanish NECP   |
| Andalucía            | -39%<br>(2005)*    | -21%      | 14.6% | Lower ambition than Spanish NECP   |
| Cantabria            | -26%<br>(2005)*    | -18%      | 2.1%  | Lower ambition than Spanish NECP   |
| Canarias             | -14% (1990)        | -14%      | 5.1%  | Lower ambition than Spanish NECP   |
| Castilla-La Mancha   | -26%<br>(2005)*    | -11%      | 5.4%  | Lower ambition than Spanish NECP   |
| La Rioja             | -43%<br>(2005)*    | +46%      | 0.7%  | Increase of emissions or no target |
| Extremadura          | +52.55%<br>(1990)  | +53%      | 2.6%  | Increase of emissions or no target |
| Castilla y León      | No target          | No target | 6.4%  | Increase of emissions or no target |

\* Some regions do only provide the target for non-ETS sectors, being therefore the reference year 2005. The comparison to 1990 has been re-calculated from those data.<sup>54</sup>

\*\* In Galicia there is a reiterated verbal commitment to -55% but the Galician climate change strategy has not yet been updated. [El Gobierno gallego impulsa la tramitación de la Ley del clima para darle rango legal al compromiso de conseguir una Galicia neutra en emisiones en el horizonte del año 2050.](#)

\*\*\*\*"These objectives will be binding for non-ETS emissions and indicative for ETS emissions."

<sup>54</sup> Methodological explanation: For the regions with only an ESR target, we assumed that their ETS related emissions would evolve between 2005 and 2030 in a similar way as the Spanish average. In this way, we assumed each region would reach a 70% reduction of ETS emissions between 2005 and 2030 and then we added the projected ESR emissions based on the stated targets. The total projected (ETS and ESR) emissions in 2030 were then compared to total emission levels in 1990.

# 9. Spanish Action not Aligned with 1.5°C

As indicated in Chapter 5 above, assessing individual countries' and regions' contributions to the collective target of the Paris Agreement is challenging and depends on how to apply the concept of equity. Moreover, most assessments focus on the EU's overall target as that is the only official target that is contributed to the UN. There are however a number of assessments of Spain's previous (-23%) and new (-32%) 2030 targets available. They all indicate that Spain's targets are not aligned with the country's fair share within 1.5°C aligned pathways, as it occurs with the EU target (Figure 11). Some of them are included below.

- Climate Analytics in its '1.5°C Pathways for Europe' project assessed Spain's (current, -23%) greenhouse emission reduction target as not compatible with 1.5°C. In its analysis it states that to be aligned with the Paris Agreement, Spain's 2030 target would need to be in the range of -41% to -62%<sup>55</sup>.

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<sup>55</sup> Climate Analytics. Country Factsheet: 1.5°C Pathways for Europe: Spain. October 2021. <https://ca1-clm.edcdn.com/assets/spain.pdf>



**Figure 18: Comparing 1.5°C Pathways for Spain (source: 1.5°C Pathways for Europe)**

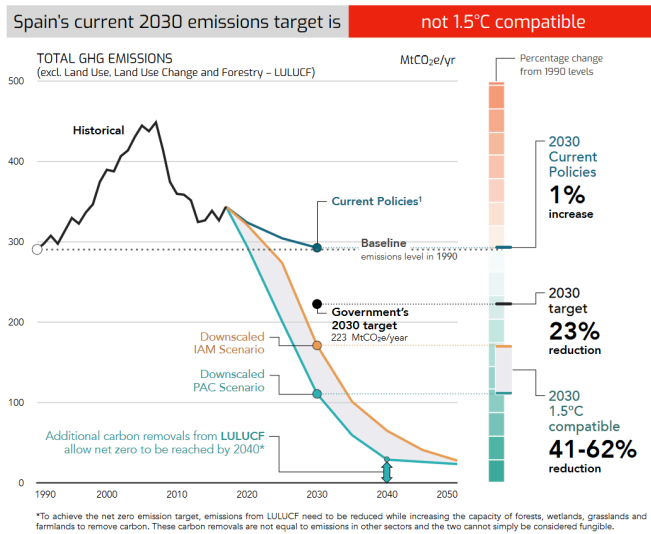


Figure 18 compares different levels of 2030 gross greenhouse gas emissions, including a current policies scenario (based on existing measures); a 2030 target scenario (based on the previous Spanish target/NECP); an IAM scenario, based on global IPCC scenarios downscaled to the Spanish level; and the PAC (Paris Agreement Compatible) scenario developed by CAN Europe ea. Only the last two scenarios are to be considered compatible with the 1.5°C temperature target (and together they provide a range of emission reduction targets that can be considered 1.5°C aligned). The two first (national policies and targets) scenarios fail to fit within the 1.5°C compatible range.

- Germanwatch's 2023 Climate Change Performance Index clearly indicates that Spain is off track from a 1.5°C compatible pathway while also its 2030 target (23% is not aligned with the pathway).<sup>56</sup>
- The Paris Equity Check project provides an assessment of global temperature rise when all countries take up the same level of ambition, based on a self interest approach to equity where each country can choose to apply the least stringent of three equity concepts (one based on dividing the remaining carbon budget by size of the population, another based on historical emissions and a last one on a country's wealth) - thereby reconciling the bottom-up architecture of the Paris Agreement with its top down temperature increase objective.<sup>57</sup> Taking

<sup>56</sup> Germanwatch. Climate Change Performance Index 2024. Spain. December 2023. <https://ccpi.org/country/esp>

<sup>57</sup> Paris Equity Check. How much global warming is each pledge aligning with? <https://paris-equity-check.org/warming-check.html>

this approach and applying the Spanish level of ambition to all countries would lead to a temperature rise of 2.6°C.

- The “Together for 1.5” project<sup>58</sup> also assesses Spain's NECP as not aligned with 1.5°C. It concludes: “The draft projects a 2030 economy-wide target of -32% compared to 1990 levels and a 2030 non-ETS target of -43% compared to 2005 levels – which is higher than in the 2019 NECP (-39%) but also higher than the (unambitious) target set in the Effort Sharing Regulation (-37.7%). These targets are not binding, but represent the outcome of the projected decarbonisation impacts of policies and measures (PAMs) laid out in the plan. Also, they are in line with climate neutrality by 2050 and the EU targets, but still not in line with a 1.5°C trajectory that should take into account Spain’s (and the EU’s) historical responsibility and capacity to act.”

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<sup>58</sup> CAN Europe. NECP Country Analysis. Spain. October 2023.  
[https://1point5.caneurope.org/wp-content/uploads/2023/10/NECPs\\_Report\\_Spain.pdf](https://1point5.caneurope.org/wp-content/uploads/2023/10/NECPs_Report_Spain.pdf)

# 10. Comparing Spain's target and efforts with other EU Member States

Though not part of the EU's climate policy framework, many EU Member States have, similar to Spain, set economy-wide climate targets, either formally through legislation or as part of the development of their National Energy and Climate Plans (NECPs). While a number of countries do not mention specific economy-wide targets in their NECPs, through the European Commission's assessment of the impact of their existing and announced policies and measures, we can calculate the ambition of all EU Member States.

While many of these targets are different in nature (different base years, different end years, economy-wide or sector-specific, with or without removals), all targets were transposed (based on available information) into comparable numbers, following the European Commission's approach in their NECP assessment, while focusing on gross emission reduction targets (following the Spanish approach to their national target). The below tables thus compile national targets for each Member State based on economy-wide greenhouse gas emissions excluding both international transport and land-based carbon removals.

Table 5 and Figure 19 below give an overview of these national economy-wide climate targets. For those countries that have not set such targets, we converted the assumed reductions that countries would achieve by fully implementing the existing and announced policies referred to in their NECPs, based on the latest European Commission's NECP assessment, and ranks all countries on the basis of these (policy) targets based on both 1990 and 2005 baselines.

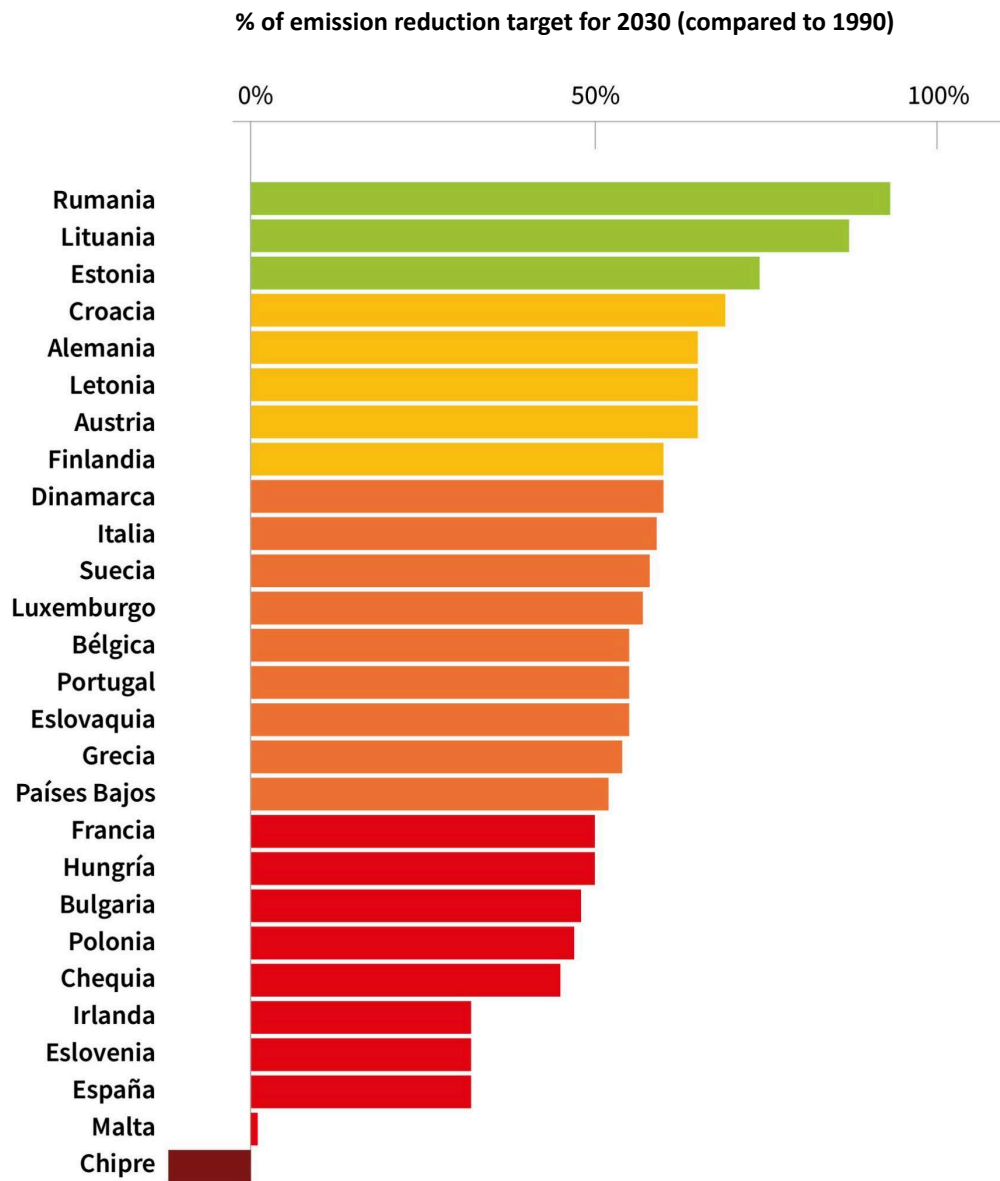
**Table 5: EU Member States climate targets for gross greenhouse gas emissions excluding international transport emissions and land-based removals through LULUCF (source: own calculations based on the Commission's NECP Assessment<sup>59</sup> and the EEA GHG data viewer)**

| Country     | National target (or policy objective) | Target/policy objective compared 1990 | Target/policy objective compared to 2005 | NECP assessment compared to 1990 |
|-------------|---------------------------------------|---------------------------------------|--|----------------------------------|
| Austria     | net zero by 2040                      | -62%                                  | -68%                                     | -15%                             |
| Belgium     | -55% by 2030 (1990)                   | -55%                                  | -55%                                     | -43%                             |
| Bulgaria    | based on Commission's NECP assessment | -48%                                  | -17%                                     | -48%                             |
| Croatia     | based on sectoral targets in NECP     | -69%                                  | -67%                                     | -25%                             |
| Cyprus      | based on Commission's NECP assessment | +12%                                  | -32%                                     | +12%                             |
| Czechia     | based on Commission's NECP assessment | -45%                                  | -27%                                     | -45%                             |
| Denmark     | -70% (net) by 2030 (1990)             | -60%                                  | -57%                                     | -67%                             |
| Estonia     | -21,3% net by 2030 (2005)             | -74%                                  | -46%                                     | -75%                             |
| Finland     | -60% gross by 2030 (1990)             | -60%                                  | -59%                                     | -68%                             |
| France      | -50% gross by 2030 (1990)             | -50%                                  | -51%                                     | -50%                             |
| Germany     | -65% gross by 2030 (1990)             | -65%                                  | -56%                                     | -63%                             |
| Greece      | -54% gross by 2030 (1990)             | -54%                                  | -65%                                     | -56%                             |
| Hungary     | -50% gross by 2030 (1990)             | -50%                                  | -38%                                     | -40%                             |
| Ireland     | -51% net by 2030 (2018)               | -32%                                  | -47%                                     | -5%                              |
| Italy       | based on sectoral targets in NECP     | -59%                                  | -64%                                     | -40%                             |
| Latvia      | -65% by 2030 (1990)                   | -65%                                  | -17%                                     | -66%                             |
| Lithuania   | -70% net by 2030 (1990)               | -87%                                  | -73%                                     | -68%                             |
| Luxembourg  | based on Commission's NECP assessment | -57%                                  | -57%                                     | -57%                             |
| Malta       | based on Commission's NECP assessment | -1%                                   | -13%                                     | -1%                              |
| Netherlands | -55% (net) by 2030 (1990)             | -52%                                  | -50%                                     | -46%                             |
| Poland      | -35% net by 2030 (1990)               | -47%                                  | -37%                                     | -20%                             |
| Portugal    | -55% gross by 2030 (1990)             | -55%                                  | -69%                                     | -35%                             |
| Romania     | -78% net by 2030 (1990)               | -93%                                  | -88%                                     | -68%                             |
| Slovakia    | based on Commission's NECP assessment | -55%                                  | -35%                                     | -55%                             |
| Slovenia    | -55% by 2033 (2005)                   | -32%                                  | -37%                                     | -65%                             |
| Spain       | -32% gross by 2030 (1990)             | -32%                                  | -55%                                     | -34%                             |
| Sweden      | -85% gross by 2040 (1990)             | -58%                                  | -55%                                     | -57%                             |

Figure 19 below shows that Spain's -32% target for 2030 is among the lowest of the whole EU, when compared to 1990 levels.

<sup>59</sup> European Commission. EU wide assessment of the draft updated National Energy and Climate Plans An important step towards the more ambitious 2030 energy and climate objectives under the European Green Deal and REPowerEU. December 2023.  
[https://eur-lex.europa.eu/resource.html?uri=cellar:bb8fb395-9d9c-11ee-b164-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:bb8fb395-9d9c-11ee-b164-01aa75ed71a1.0001.02/DOC_1&format=PDF)

Figure 19: Ranking of EU Member States, based on their national (policy) targets (all targets relate to gross greenhouse gas emissions excluding international transport and land-based removals) against a 1990 baseline (source: own calculations based on EEA GHG data viewer)



Spain has seen a substantial increase of greenhouse gas emissions between 1990 and 2005, similar to some other Southern European countries such as Greece and Portugal. Nevertheless these countries have far more ambitious targets than Spain. For Greece that can be explained by the fact that they have started substantial emission reductions from 2010 onwards. Portugal's 2020 emissions however are at similar levels as those of Spain, when compared to 1990, while Portugal's 2030 greenhouse gas emission reduction target is at -55% compared to Spain's -32%.

# 11. A 1.5°C Aligned Climate Target for Spain

There are many ways to set and develop climate targets. One way, proposed by the [European Court of Human Rights](#), is to use the remaining global carbon budget to identify the maximum amount of emissions the world can still afford, and then divide this budget across different countries, on the basis of specific effort sharing formulas. The carbon budget concept is based on the direct relationship between the total amount of CO<sub>2</sub> in the atmosphere and global temperature rise. The carbon budget then refers to the total amount of cumulative CO<sub>2</sub> emissions that can be released before reaching a certain temperature limit. In its Sixth Assessment Report the IPCC indicates that the total carbon budget for limiting temperature rise to 1.5°C (with a 67% likelihood) would be 2.790 GtCO<sub>2</sub> of which 85% has already been used up to 2020. The remaining carbon budget for achieving the 1.5°C target for the period 2020 to 2050 would then be 400 GtCO<sub>2</sub>.

**Table 7: Remaining global carbon budget (source: IPCC AR6 WGI<sup>60</sup>)**

Table SPM.2 | Estimates of historical carbon dioxide (CO<sub>2</sub>) emissions and remaining carbon budgets. Estimated remaining carbon budgets are calculated from the beginning of 2020 and extend until global net zero CO<sub>2</sub> emissions are reached. They refer to CO<sub>2</sub> emissions, while accounting for the global warming effect of non-CO<sub>2</sub> emissions. Global warming in this table refers to human-induced global surface temperature increase, which excludes the impact of natural variability on global temperatures in individual years. (Table 3.1, 5.5.1, 5.5.2, Box 5.2, Table 5.1, Table 5.7, Table 5.8, Table TS.3)

| Global Warming Between 1850–1900 and 2010–2019 (°C)  |  | Historical Cumulative CO <sub>2</sub> Emissions from 1850 to 2019 (GtCO <sub>2</sub> ) |      |      |      |     | Estimated remaining carbon budgets from the beginning of 2020 (GtCO <sub>2</sub> )  | Variations in reductions in non-CO <sub>2</sub> emissions <sup>†</sup> |
|--|--|--|------|------|------|-----|---|--|
| 1.07 (0.8–1.3, likely range)   |  | 2390 (± 240, likely range)   |      |      |      |     |   |  |
| Approximate global warming relative to 1850–1900 until temperature limit (°C) <sup>a</sup> | Additional global warming relative to 2010–2019 until temperature limit (°C) | Likelihood of limiting global warming to temperature limit <sup>b</sup>                |      |      |      |     |   |  |
|  |  | 17%  | 33%  | 50%  | 67%  | 83% |   |  |
| 1.5  | 0.43   | 900  | 650  | 500  | 400  | 300 | Higher or lower reductions in accompanying non-CO <sub>2</sub> emissions can increase or decrease the values on the left by 220 GtCO <sub>2</sub> or more |  |
| 1.7  | 0.63   | 1450   | 1050 | 850  | 700  | 550 |   |  |
| 2.0  | 0.93   | 2300   | 1700 | 1350 | 1150 | 900 |   |  |

By now, the remaining carbon budget is even lower. The Indicators for Global Climate Change (IGCC) initiative<sup>61</sup> has calculated that a large part of the identified remaining carbon budget has been used in the last three years. The

<sup>60</sup> IPCC. Climate Change 2021. The Physical Science Basis. August 2021. [www.ipcc.ch/report/ar6/wg1](http://www.ipcc.ch/report/ar6/wg1)

<sup>61</sup> The Indicators of Global Climate Change (IGCC) initiative, is an international science community effort established in 2023, to provide annual updates of key climate indicators featured in the most recent IPCC report cycle. See: <https://www.igcc.earth/about-igcc>

IGCC estimates the remaining budget from 2023 onwards to be 150 GtCO<sub>2</sub> (for a 67% likelihood). Translated into linear pathways, IGCC authors indicate that for a safe chance to limit temperature rise to 1.5°C, global CO<sub>2</sub> emissions would need to be net zero by 2035.<sup>62</sup>

Different proposals exist for how to share the remaining carbon budget across countries. Both the UNFCCC and the Paris Agreement refer to fair shares/equity in the form of CBRDR (Common But Differentiated Responsibility and Related Capability)<sup>63</sup>. But also this equity concept can be interpreted in many ways, based around three elements: **equality**, which divides the budget according to the size of the population; **responsibility**, which on top of equality takes into account countries' historical use of the carbon budget; and **capacity**, which further takes into account a country's economic strength. Figure 20 shows how these different approaches would affect the remaining EU carbon budget, with most approaches that account for historical responsibility and capacity to act leading to negative budgets for the EU. This means that the EU has already emitted all GHG that it has been assigned based on population size, historical emissions and capacity to mitigate emissions. To tackle this challenge, many scientists<sup>64</sup>, including the ESABCC, call for tackling the equity issue by a combination of domestic efforts and financial support to efforts in Global South countries. Following this approach, NGOs have suggested<sup>65</sup> to use the equal per capita approach to define the domestic carbon budget of Global North countries, while further using responsibility and capacity indicators to identify the country's financial responsibilities: the quantity of international finance that each country should provide to allow the global south countries to deal with climate change.

**Figure 20: EU Carbon budgets (in Gt CO<sub>2</sub>) based on different global effort sharing approaches, for the period 2020 to 2050 (source: based on ESABCC)**

Figure 20 shows a positive remaining carbon budget for the EU when dividing the remaining budget based on a country's size of its (2020) population ("EPC/2020": Based on 2020 Population), while also indicating that using other criteria such as taking into account historical responsibility (from 1990 or from 1850)("EPC/1990": Based on Population + historical emissions since 1990; "EPC/1850": Based on Population + historical emissions since 1850) would lead to negative carbon budgets. Additionally taking into account imported consumption-based emissions would even increase this negative budget ("EPC/CONS/1990": Based on Population + Historical emissions including imported consumption-based emissions). Also taking into account the country's wealth ("EPC/GDP": Based on Population + Country GDP) would lead to a negative budget. A combination of all these approaches (equal per capita, historical responsibility, consumption based emissions and GDP) would lead to an even bigger negative budget.

<sup>62</sup> Lamboll et al. Assessing the size and uncertainty of remaining carbon budgets. In Nature Climate Science. October 2023. [www.nature.com/articles/s41558-023-01848-5](https://www.nature.com/articles/s41558-023-01848-5)

<sup>63</sup> Article 3.1 of the Framework Convention: "1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof." see: <https://unfccc.int/resource/docs/convkp/conveng.pdf>

<sup>64</sup> See: WWF Germany/Öko Institut. Mind The Ambition Gap. Internationale Finanztransfers als Instrument zur Einhaltung nationaler CO<sub>2</sub>-Budgets. November 2021: <https://www.oeko.de/news/aktuelles/finanzstroeme-fuer-den-klimaschutz> and Réseau Action Climat France/Climate Equity Reference Project. France's Climate Fair Share. January 2022: [http://reseauactionclimat.org/wp-content/uploads/2022/02/2022-02-01-report-final\\_en.pdf](http://reseauactionclimat.org/wp-content/uploads/2022/02/2022-02-01-report-final_en.pdf)

<sup>65</sup> Trio, Wendel. Policy implications of Europe's dwindling carbon budget. AirClim. September 2022. [www.airclim.org/publications/policy-implications-europes-dwindling-carbon-budget](http://www.airclim.org/publications/policy-implications-europes-dwindling-carbon-budget)



Taking this approach to base Spain's domestic climate obligations on its population size, and given Spain's average size of the world's population between 2020<sup>66</sup> and 2050<sup>67</sup>, which is 0,53%, while also converting the 400 GtCO<sub>2</sub> emissions budget into a greenhouse gas budget<sup>68</sup>, Spain's fair share of the remaining domestic 1.5°C compatible greenhouse gas budget for the period 2020 to 2050 is estimated at 2,8 GtCO<sub>2-e</sub><sup>69</sup>. This budget would then only relate to Spain's domestic efforts. On top of stringent emission reductions at home, and in order to fulfil the equity principles of the UN Framework Convention on Climate Change, Spain would have a responsibility to provide substantial financial resources to support emission reductions in Global South countries.

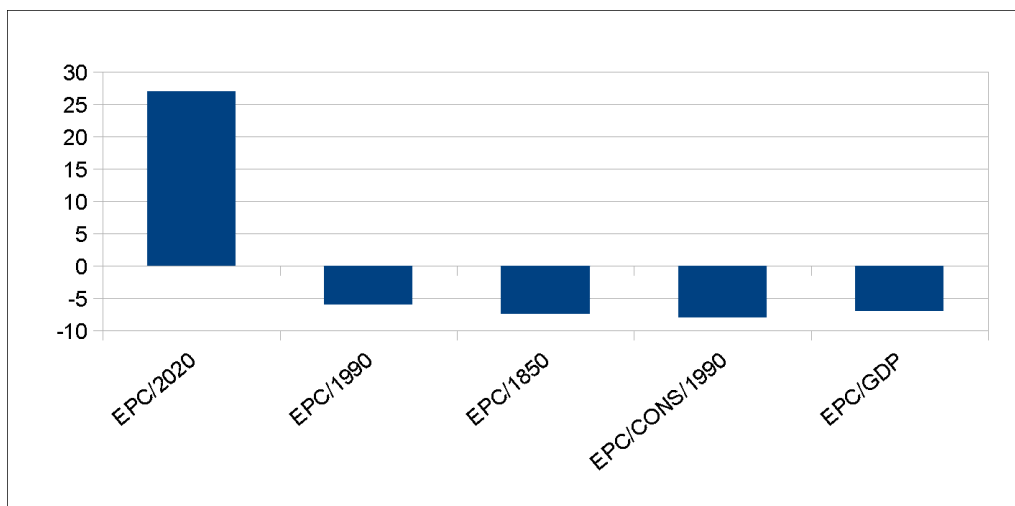


Table 8: Per capita share of the global carbon and GHG budget

|        | share of the world population 2020-2050 | 2020-2050 carbon budget (GtCO <sub>2-e</sub> ) | 2020-2050 GHG budget (GtCO <sub>2-e</sub> ) |
|--------|---|--|---|
| Global | 100,00%                                 | 400,00   | 542,37                                      |
| Spain  | 0.53%                                   | 2,12   | 2,87  |

To stay within this very small budget, Spain will need substantial emission reductions beyond what is currently planned. A linear reduction from current gross emissions to -32% in 2030 and net zero in 2050, would lead to a 2020-2050 GHG budget for Spain of 4 GtCO<sub>2-e</sub> (when including carbon removals). In order to stay with the limited equal per capita 1.5°C aligned budget of 2.8 Gt, Spain would need to reduce its gross greenhouse gas emissions by 55% in 2030, 70% in 2035 and 86% in 2040. This would enable Spain to become climate neutral by 2040. See figure 21 and Table 9.

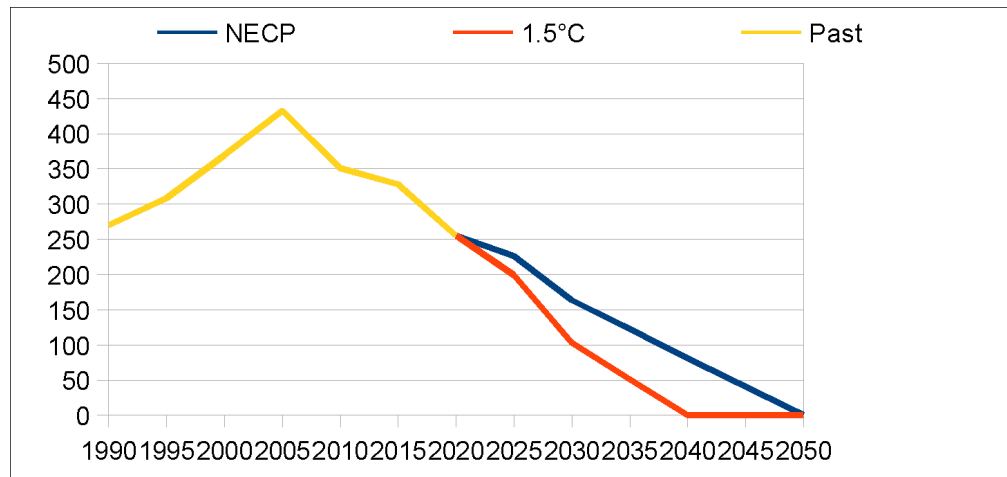
Figure 21: Past and projected Spanish net GHG emissions (including international transport) for a scenario based on the draft NECP and a 1.5°C aligned scenario (source: own calculations).

<sup>66</sup> Spain current share of the world's population is 0.606%, see: <http://data.worldbank.org/indicator/SP.POPTOTL>

<sup>67</sup> Spain's estimated share of the world's population in 2050 is 0.455%, see: <http://databank.worldbank.org/source/population-estimates-and-projections>

<sup>68</sup> Based on an average share of CO<sub>2</sub> in total greenhouse gas emissions of 73.75%, the total remaining global carbon budget of 400 GtCO<sub>2</sub> can be converted into a remaining greenhouse gas budget of 542 GtCO<sub>2-e</sub>. Carbon budget is calculated based only on CO<sub>2</sub> emissions, not taking into account all other existing greenhouse gases. This is because the mathematical relationship between CO<sub>2</sub> and global mean temperature has been calculated in a very accurate way, while the historical emissions data of other gases are more scarce and do not allow to find such a definite relationship. For political action, nevertheless, it is useful to have a target and a quantity not only for CO<sub>2</sub> emissions, but for the full group of Greenhouse gases.

<sup>69</sup> Trio, Wendel. EU climate targets aligned with the Paris Agreement's 1.5°C objective. AirClim. December 2023. [www.airclim.org/publications/eu-climate-targets-aligned-paris-agreement%E2%80%99s-15%C2%B0c-objective](http://www.airclim.org/publications/eu-climate-targets-aligned-paris-agreement%E2%80%99s-15%C2%B0c-objective)



**Table 9: Overview of targets and budgets under Spain's NECP targets and a 1.5°C aligned pathway (total emissions including international transport) (source: own calculations based on Spain's NECP and EEA GHG data viewer).**

|                                   | NECP scenario                |                             | 1.5°C aligned scenari        |                              |
|-----------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
|                                   | Total emissions excl. LULUCF | Total emission incl. LULUCF | Total emissions excl. LULUCF | Total emissions incl. LULUCF |
| <b>2020-2050 GHG budget (Gt)</b>  | 5.37                         | 4.00                        | 3.89                         | 2.61                         |
| <b>Date of achieving net zero</b> | 2050                         |                             | 2040                         |                              |
| <b>2030 emissions (% of 1990)</b> | -32%                         | -40%                        | -55%                         | -62%                         |
| <b>2035 emissions (% of 1990)</b> | -45%                         | -55%                        | -70%                         | -81%                         |
| <b>2040 emissions (% of 1990)</b> | -58%                         | -70%                        | -86%                         | -100%                        |

# 12. Higher ambition is feasible

Although reducing gross greenhouse gas emissions by 55% by 2030 might seem very ambitious for Spain, there are a number of scenarios that indicate that greater emission reductions are possible than those currently planned. As part of its 1.5°C Pathways for Europe report<sup>70</sup>, Climate Analytics looked at different scenarios that would ensure Spanish greenhouse gas emissions would be aligned with equitable 1.5°C scenarios. Its main conclusions are based on downscaled (from the global to the Spanish level) versions of the PAC (Paris Agreement Compatible) Scenario<sup>71</sup> and the IAM REMIND scenario<sup>72</sup>, and indicate that based on the policies and measures developed in these scenarios, Spain could reduce its 2030 gross greenhouse gas emissions by 41% to 62%.

The PAC scenario uses the 2050 Pathways Explorer<sup>73</sup> model developed by Climact. When opting for the highest level of ambition, the Pathways Explorer provides for an emission reduction of 69% of gross emissions and 87% of net emissions by 2030 (compared to 1990).

In its 1.5°C national pathway explorer project<sup>74</sup>, Climate analytics builds further on its downscaling of IPCC scenarios and has specific recommendations for Spain. These include:

- 1.5°C compatible pathways in the power sector include greater drops in emission intensity, with emission intensity in 2030 between 73-91% below 1990 levels, or 40-116 gCO<sub>2</sub>/kWh. This can be achieved by increasing the share of renewable energy in the power mix, from 37% in 2019 to 81-89% by 2030, and a concurrent fall in the share of fossil fuels from 41% to 9-11% by 2030.

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<sup>70</sup> Climate Analytics. 1.5°C Pathways for Europe: Achieving the highest plausible climate ambition EU27, Denmark, France, Germany, Italy, Poland, Portugal, Romania, Spain, Sweden. October 2021.  
[https://ca1-clm.edcdn.com/assets/1-5pathwaysforeurope\\_2.pdf?v=1679477760](https://ca1-clm.edcdn.com/assets/1-5pathwaysforeurope_2.pdf?v=1679477760)

<sup>71</sup> see: [www.pac-scenarios.eu](http://www.pac-scenarios.eu)

<sup>72</sup> see: [www.pik-potsdam.de/en/institute/departments/transformation-pathways/models/remind](http://www.pik-potsdam.de/en/institute/departments/transformation-pathways/models/remind)

<sup>73</sup> see:  
<https://pathwayexplorer.climact.com/pathways?visualisation=0&region=AT&source=model&scenario=REF+%28Not+country+specific%29>

<sup>74</sup> Climate Analytics. What is Spain's pathway to limit global warming to 1.5°C? December 2021.  
<https://1p5ndc-pathways.climateanalytics.org/countries/spain>

- Spain's buildings sector could be decarbonised between 2035-2043 through a combination of higher electrification and lower reliance on fossil fuels, which are almost completely phased out by 2050. Half the 1.5°C pathways reflect lower energy demand in 2050 compared to 2019 levels, which can be achieved through widespread renovation of existing building stock and improved efficiency standards in new buildings.
- 1.5°C compatible pathways in the transport require a decrease in energy consumption by 2030 and emissions to decrease by around 79% below 1990 levels by 2040, with the sector reaching net zero between 2048 and 2053.
- 1.5°C aligned pathways in Spain would see the industry sector decarbonised between 2041 and 2048, predominantly through increased electrification (36-37% by 2030 and 62-71% by 2050, from 33% in 2019). The higher electrification scenarios foresee process-related emissions falling to 6-9 MtCO<sub>2</sub>e/yr by 2050, from 25 MtCO<sub>2</sub>/yr in 2019.

Many of the policies and measures above are described in more detail in sector-specific (but older) publications, such as Ecologistas En Accion 2015 report on power decarbonisation<sup>75</sup>, Transport & Environment's (T&E) 2016 report on reducing transport emissions<sup>76</sup>, and Greenpeace Spain study Energía 3.0<sup>77</sup>.

Beyond these scenarios, examples exist of policies and measures that have led to substantial emission reductions in a short period of time. Below are a number of examples:

- The EU saw a record drop in emissions covered by the ETS in 2023, of more than 15% in a single year (compared to 2022), with emissions in the power sector even dropping by 24% in one year. This is way beyond the reductions the bloc witnessed during the Covid-pandemic.<sup>78</sup>
- During the pandemic Spanish greenhouse gas emissions were reduced by over 12% in one year time.<sup>79</sup>

<sup>75</sup> Ecologistas en Accion. Hacia un escenario energético justo y sostenible en 2050. November 2015.

[www.ecologistasenaccion.org/wp-content/uploads/adjuntos-spio/pdf/informe-escenario-energetico-2050.pdf](http://www.ecologistasenaccion.org/wp-content/uploads/adjuntos-spio/pdf/informe-escenario-energetico-2050.pdf)

<sup>76</sup> T&E. Recipe For Spain How to start decarbonising Spanish transport. June 2016.

[www.transportenvironment.org/wp-content/uploads/2021/07/2016\\_06\\_FSD\\_member\\_state\\_recipe\\_Spain\\_EN\\_final\\_Cover.pdf](http://www.transportenvironment.org/wp-content/uploads/2021/07/2016_06_FSD_member_state_recipe_Spain_EN_final_Cover.pdf)

<sup>77</sup> Energía 3.0 Un sistema energético basado en inteligencia, eficiencia y renovables 100%.

<https://archivo-es.greenpeace.org/espana/es/Trabajamos-en/Frenar-el-cambio-climatico/Revolucion-Energetica/Energia-30->

<sup>78</sup> see:

[https://climate.ec.europa.eu/news-your-voice/news/record-reduction-2023-ets-emissions-due-largely-boost-renewable-energy-2024-04-03\\_en](https://climate.ec.europa.eu/news-your-voice/news/record-reduction-2023-ets-emissions-due-largely-boost-renewable-energy-2024-04-03_en)

<sup>79</sup> see: <https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer>

- In 2022, gas consumption for heating and cooling in Spain decreased by 21.4% in a single year.<sup>80</sup>
- Also in Spain, households reduced their electricity consumption by 23% in 2022.
- Spanish greenhouse gas emissions from the power sector decreased by 60% in 15 years, with electricity made in Spain being 30% less dirty today than just five years ago.
- Reducing speed limits on highways in Germany could reduce transport emissions by almost 7% on an annual basis.<sup>81</sup>

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<sup>80</sup> see: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy\\_statistics\\_-\\_an\\_overview](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview)

<sup>81</sup> see: [https://www.duh.de/fileadmin/user\\_upload/download/Projektinformation/Verkehr/2019\\_Tempolimit/2023-01-27\\_Infopapier\\_Berechnung\\_Tempolimit.pdf](https://www.duh.de/fileadmin/user_upload/download/Projektinformation/Verkehr/2019_Tempolimit/2023-01-27_Infopapier_Berechnung_Tempolimit.pdf)

# 13. Proposals to increase the emissions target

In order to make this transition possible and reap the positive impacts of stringent emission reductions, Greenpeace Spain is calling upon the Spanish government to include additional measures in the new PNIEC, which would allow the emission reduction objectives to be increased, while improving the quality of life of all citizens. Below we include an example of the measures that could be added to the PENIC in each of the main economic sectors. Together with the National Government and its different responsible ministers (Transport, Agriculture, Industry, Housing and Ecological transition), all other public administrations have also the responsibility of taking all the possible measures under their jurisdiction, especially the regional governments and city councils.

1. Transport sector. It is currently the sector with the highest greenhouse gas emissions, with 30.4% of them. It is urgent to move towards a sustainable and fair mobility model that decarbonises the transport and mobility sector and provides the country with more and better public transport. To achieve this, the public transport offer must be strengthened, sizing the network to the real mobility needs and **implementing a single transport ticket for the entire territory** that will make public transport more affordable, ease the purchase of tickets, and therefore, contribute to making public transport much more attractive than private vehicles, favouring the necessary modal transfer.
2. Industry sector (19% of emissions in 2022). COP28 in Dubai in 2023 agreed to take measures to accelerate the transition away from fossil fuels. To do so, the industrial sector must have a plan to phase out fossil fuels and specifically gas. This plan must establish a **schedule for the closure of gas-fired power plants** in parallel with priority integration into a storage system, dispatchable renewable plants and a demand management mechanism. The objective is to stop burning gas for power production in 2030 at the latest.
3. Electricity generation (15.2% of emissions in 2022). It is essential to comply

with the European mandate to empower citizens to be protagonists of the energy transition and make distributed energy a reality, breaking the monopolistic control of the large energy companies once and for all. To do this, in addition to enforcing the regulations, it is essential to regulate more and better. For example, it is urgent **to declare renewable energy communities promoted by local councils to be of public interest**, to encourage all municipalities to have at least one energy community as soon as possible. We need new public policies that protect, enable and promote energy communities as a relevant actor compared to other dominant actors so that they can participate and promote new energy models (aggregation, flexibility, distribution, etc.).

4. Agriculture and livestock (11% of emissions in 2022). The predominant model of intensive agriculture and livestock in Spain has major impacts on the environment, as well as in third countries, not only in terms of greenhouse gas emissions, where methane emissions undoubtedly stand out. Reducing methane emissions, which has a shorter lifespan in the atmosphere, will allow us to gain time to implement measures of other sectors with longer time frames. Therefore, it is urgent to reduce the intensive livestock population (livestock farming is already responsible for 75% of the emissions in the agricultural sector) by 50% by 2030, as well as the use of synthetic fertilisers in Spanish agriculture by 50% by 2030 and to adopt a diet where plant-based foods predominate and those of animal origin are reduced. These measures go to the root of the problem and are not mere patches like the technological measures established in the draft of the PNIEC. In addition, they can be implemented now and are also the pillars of the transition to an agri-food model that is based on agroecology, that works within planetary limits and respects people's health. Given the climate emergency situation in which we are immersed, it is urgent to adopt more ambitious measures in this sector. We urge the **allocation of budget help to the most polluting farms (included in the PRTR register) to reduce the quantity of livestock or to stop its activity**. This should also apply to intensive cattle farms, even if they remain non-PRTR.
5. The residential, commercial and institutional sector is responsible for 7.9% of emissions in 2022. The rate of residential renovation achieved to date is absolutely insufficient to meet the objectives set by Europe and Spain. It is essential to decarbonise homes at much faster rates, and to do so in a fair way: designing policies to favour the most vulnerable families. To do so, it is necessary to improve the insulation of buildings, replace gas boilers with heat pumps and install solar panels on roofs or nearby. Greenpeace proposes the **introduction of a virtual wallet that gradually accelerates the decarbonisation of residential buildings** according to each need.
6. Additional and essential fiscal and financial measures. For the transition to

be successful, it is necessary to significantly increase the resources dedicated to it. It is also essential to move forward with the commitment made in the Law on Climate Change and Energy Transition and to implement a coherent tax system - including the gradual elimination of fossil subsidies - that encourages and accelerates the transition to a carbon-free economy in a fair manner. For this reason, and to give coherence to international commitments, Spain must **establish a green tax that penalizes both refined and stored fossil fuels: a tax on refining of 5/10 euros per barrel and on stored gas.**