

## **UK NON-PAPER: EU 2030 CLIMATE AND ENERGY FRAMEWORK - COSTS AND BENEFITS FOR MEMBER STATES OF SCENARIOS FOR EFFORT SHARING IN THE NON-TRADED SECTOR**

### **Introduction**

At March European Council, EU Leaders invited the Commission and Member States (MS) to rapidly develop a number of elements to support a final agreement on the EU 2030 framework as soon as possible and by no later than October 2014. The elements included analysis of the implications for individual MS of the Commission's proposals and elaboration of mechanisms for overall fair effort sharing. To support this process and related discussions between MS, the UK circulated a non-paper ahead of May informal Council that provided analysis of the implications for MS of illustrative scenarios for effort sharing in the non-traded sector to 2030. **This updated paper now includes economic analysis of the costs and benefits to MS under different effort sharing scenarios.**

In February, a report<sup>1</sup> from Enerdata commissioned by the UK Department of Energy and Climate Change found that the costs of a 40% domestic target were manageable: equivalent to 0.19% of the EU's annual GDP in 2030, in the context of projected EU growth to 2030 of more than 25%. The report also showed that there could be significant wider benefits in terms of reduced fossil fuel imports - a 40% target could reduce Europe's annual fossil fuel import bill by around €70bn - and significant improvements in air quality. **This paper provides information on the MS costs and benefits under three effort sharing scenarios: a GDP per capita approach, a cost effectiveness approach and a balance of cost effectiveness and GDP.** Some of the costs included in this analysis are associated with measures that have benefits in terms energy security, such as reducing fossil fuel dependency through switching to alternatives and energy efficiency improvements that will reduce GHG emissions.

### **Context: current EU targets and emissions levels**

Before considering 2030 targets, it may be helpful to understand where the EU and MS are in meeting the 2020 climate target. The 2020 energy and climate framework included an EU GHG emissions reduction target of 20% on 1990 levels, to be achieved through reductions in the traded sector (covered by the EU Emissions Trading System) and through binding MS targets in the non-traded sector (as set out in the 2009 Effort Sharing Decision). The European Environment Agency has found that EU emissions in 2012 are already about 18% below 1990 levels.<sup>2</sup> The EU is very close to reaching its 20% reduction target, 8 years ahead of 2020. Aggregated projections from MS indicate that total EU emissions will further decrease between 2012 and 2020.

With the current set of national domestic measures in place, EU emissions are expected to reach a level in 2020 which is 21% below 1990 levels (including emissions from international aviation). Implementing the additional measures at planning stage in MS is expected to achieve a reduction of 24% below 1990 levels in 2020. The majority of MS expect that their individual emission targets for the non-traded sector will be met through those policy measures already in place, although some MS will need to implement additional measures or use flexibility mechanisms to achieve their targets by 2020.

The effort required to reach MS targets for 2030 will therefore build on the progress made towards existing 2020 targets. It is noted in the Commission's 2030 framework proposals<sup>3</sup> that the policies and measures implemented and envisaged by MS in relation to their current obligations to reduce GHG emissions will continue to have effect after 2020. If fully implemented, these measures are expected to deliver a 32% reduction relative to 1990. This will require continued effort but at the same time shows that the 40% target recommended in the Commission's proposals is achievable.

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<sup>1</sup> <https://www.gov.uk/government/publications/uk-summary-of-analysis-on-2030-ghg-targets>

<sup>2</sup> [http://ec.europa.eu/europe2020/pdf/themes/16\\_energy\\_and\\_ghg.pdf](http://ec.europa.eu/europe2020/pdf/themes/16_energy_and_ghg.pdf)

<sup>3</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0015>

## **2030 framework - effort sharing scenarios and costs/benefits**

This paper assumes a binding domestic EU emissions reduction target of 40% on 1990 levels by 2030 (as recommended in the Commission's proposals) and uses the same weighting between the EU Emission Trading System (ETS) and non-ETS sectors as set out in the Commission proposals – the non-traded sector must achieve a 30% reduction in emissions compared to 2005 levels. For methodological reasons only, cost impacts are calculated on the assumption that the distribution of EU ETS allowances in the 2030 framework will be the same as under the EU 2020 package. MS may wish to consider other options.

The following scenarios for effort sharing in the non-traded sector are considered:<sup>4</sup>

### **A. Cost effective approach**

The March European Council agreed that the Commission proposals should serve as the basis for the final 2030 framework, and recognised the need to “deliver the objectives for 2030 in a cost-effective manner”. One option would therefore be to determine the share of effort between MS based on the most cost effective approach for the EU as a whole. This approach was used by the Commission in modelling the costs and benefits of a 2030 framework.

*Table 1 below sets out the reductions for individual MS in the non-traded sector based on a cost effective approach for the EU. It also provides cost impacts as a percentage of GDP in 2030.*

### **B. Relative GDP per capita approach**

A second option would be to determine the share of effort based on the relative economic income per head of MS using the same approach taken in the 2009 Effort Sharing Decision, which sets out MS reductions in the non-traded sector for 2020.

*Table 2 below applies the methodology used in the 2009 Effort Sharing Decision to a 40% domestic target for 2030, updated using 2012 GDP per capita data from Eurostat. It also provides cost impacts as a percentage of GDP in 2030.*

### **C. Approach balancing both cost-effectiveness and relative GDP per capita**

An alternative option would be to take account of both cost effectiveness and the relative economic income per head of MS when determining the share of effort.

*Table 3 below sets out the implications for MS if both “cost-effective” and “GDP per capita” indicators are used – the reductions here represent the mid-point between the targets under Scenarios A and B to give an example of how the two could be balanced. It also provides cost impacts as a percentage of GDP in 2030.*

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<sup>4</sup> These costs are economy wide but exclude those in the agricultural sector. Agricultural emissions are assumed to be at the level given in the European Commission's 2050 Low Carbon Roadmap.

**Scenario A “cost effective approach”: implications for Member States**

**Description:** Table 1 shows the level of emissions reductions for each MS when effort is shared in the most cost effective way across the Union, as analysed in the 2030 framework Impact Assessment modelling. In practice, this means the cost of abating one additional tonne of carbon is equal across the Union: more effort will be made in the MS where carbon is cheaper to abate and less in those MS where it is more expensive. This is the distribution provided in Table 32 of the Impact Assessment for the 2030 framework.<sup>5</sup>

**Table 1: effort share for 2030 (all effort shares are against a 2005 baseline) for Scenario A “cost effective approach”**

| Member State   | Cost effective approach target | Additional GDP cost in 2030 |
|----------------|--------------------------------|-----------------------------|
| Austria        | -27%                           | 0.07%                       |
| Belgium        | -24%                           | 0.16%                       |
| Bulgaria       | -25%                           | 0.55%                       |
| Croatia        | -25%                           | 0.61%                       |
| Cyprus         | -20%                           | 0.27%                       |
| Czech Republic | -23%                           | 0.20%                       |
| Denmark        | -31%                           | 0.07%                       |
| Estonia        | -23%                           | 0.28%                       |
| Finland        | -30%                           | 0.11%                       |
| France         | -34%                           | 0.12%                       |
| Germany        | -41%                           | 0.23%                       |
| Greece         | -39%                           | 0.37%                       |
| Hungary        | -29%                           | 0.45%                       |
| Ireland        | -21%                           | -0.02%                      |
| Italy          | -31%                           | 0.28%                       |
| Latvia         | -17%                           | 0.30%                       |
| Lithuania      | -23%                           | 0.51%                       |
| Luxembourg     | -20%                           | 0.13%                       |
| Malta          | -27%                           | 0.28%                       |
| Netherlands    | -28%                           | 0.16%                       |
| Poland         | -12%                           | 0.24%                       |
| Portugal       | -34%                           | 0.29%                       |
| Romania        | -18%                           | 0.36%                       |
| Slovakia       | -17%                           | 0.26%                       |
| Slovenia       | -14%                           | 0.11%                       |
| Spain          | -23%                           | 0.13%                       |
| Sweden         | -29%                           | 0.05%                       |
| United Kingdom | -35%                           | 0.14%                       |

**Notes:** MS GHG reductions in non-ETS sectors are vs. 2005 levels. The targets shown are sourced from the ‘minimum’ values for 40% target scenarios in Table 32 of the Impact Assessment.

<sup>5</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014SC0015> – table 32 (page 120)

**Scenario B “GDP per capita approach”: implications for Member States**

**Description:** Table 2 uses a metric to allocate effort between MS so as to account for relative levels of GDP per capita in 2012, based on the approach employed in the 2009 Effort Sharing Decision. Countries with higher GDP per capita would take a relatively higher proportion of effort.

**Table 2: effort share for 2030 for Scenario B “GDP per capita approach”**

| Member State   | GDP per capita approach target | Additional GDP cost in 2030 |
|----------------|--------------------------------|-----------------------------|
| Austria        | -38%                           | 0.17%                       |
| Belgium        | -36%                           | 0.31%                       |
| Bulgaria       | -1%                            | 0.14%                       |
| Croatia        | -7%                            | 0.35%                       |
| Cyprus         | -23%                           | 0.31%                       |
| Czech Republic | -13%                           | 0.10%                       |
| Denmark        | -41%                           | 0.15%                       |
| Estonia        | -10%                           | 0.13%                       |
| Finland        | -37%                           | 0.19%                       |
| France         | -35%                           | 0.13%                       |
| Germany        | -36%                           | 0.19%                       |
| Greece         | -19%                           | 0.17%                       |
| Hungary        | -9%                            | 0.14%                       |
| Ireland        | -41%                           | 0.14%                       |
| Italy          | -32%                           | 0.29%                       |
| Latvia         | -6%                            | 0.17%                       |
| Lithuania      | -8%                            | 0.27%                       |
| Luxembourg     | -41%                           | 0.33%                       |
| Malta          | -17%                           | 0.19%                       |
| Netherlands    | -38%                           | 0.28%                       |
| Poland         | -9%                            | 0.20%                       |
| Portugal       | -18%                           | 0.11%                       |
| Romania        | -2%                            | 0.16%                       |
| Slovakia       | -10%                           | 0.18%                       |
| Slovenia       | -19%                           | 0.17%                       |
| Spain          | -28%                           | 0.18%                       |
| Sweden         | -40%                           | 0.13%                       |
| United Kingdom | -37%                           | 0.16%                       |

**Notes:** In this methodology, effort has been allocated based on the GDP per capita of each MS, with a 40% range between the highest and lowest target. There are also a number of other possible ways to calibrate a GDP approach, and variations would lead to a different distribution of targets. For example, MS may consider that the 40% range should be narrowed e.g. to 30% or 35% spread given the relative convergence between MS since 2005 (the relative standard deviation of per capita GDP has fallen since 2005, indicating that MS are more closely grouped around the average EU GDP per capita than they were in 2008/9).

The above GDP per capita calculations are made using Eurostat GDP numbers in Millions €, chain-linked volumes, ref. year 2005 at Market Prices. Eurostat population numbers (demographic balance and crude rates) are then used to convert to GDP per capita.

**Scenario C “approach balancing both cost-effectiveness and GDP per capita”: implications for Member States**

**Description:** Table 3 finds a balance between cost-effectiveness and GDP per capita based approaches. The values here represent the mid-point between the levels of effort under Scenarios A and B.

**Table 3: effort share for 2030 for Scenario C “balancing both cost effectiveness and GDP per capita”**

| Member State   | Balanced approach Target | Additional GDP cost in 2030 |
|----------------|--------------------------|-----------------------------|
| Austria        | -33%                     | 0.12%                       |
| Belgium        | -30%                     | 0.23%                       |
| Bulgaria       | -13%                     | 0.35%                       |
| Croatia        | -16%                     | 0.48%                       |
| Cyprus         | -22%                     | 0.29%                       |
| Czech Republic | -18%                     | 0.15%                       |
| Denmark        | -36%                     | 0.11%                       |
| Estonia        | -17%                     | 0.21%                       |
| Finland        | -34%                     | 0.15%                       |
| France         | -35%                     | 0.12%                       |
| Germany        | -39%                     | 0.21%                       |
| Greece         | -29%                     | 0.27%                       |
| Hungary        | -19%                     | 0.30%                       |
| Ireland        | -31%                     | 0.06%                       |
| Italy          | -32%                     | 0.28%                       |
| Latvia         | -12%                     | 0.23%                       |
| Lithuania      | -16%                     | 0.39%                       |
| Luxembourg     | -31%                     | 0.23%                       |
| Malta          | -22%                     | 0.24%                       |
| Netherlands    | -33%                     | 0.22%                       |
| Poland         | -11%                     | 0.22%                       |
| Portugal       | -26%                     | 0.20%                       |
| Romania        | -10%                     | 0.26%                       |
| Slovakia       | -14%                     | 0.22%                       |
| Slovenia       | -17%                     | 0.14%                       |
| Spain          | -26%                     | 0.15%                       |
| Sweden         | -35%                     | 0.09%                       |
| United Kingdom | -36%                     | 0.15%                       |

**Notes:** These calculations are based on finding the mid-point of between MS effort share values in Scenarios A and B.

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| Member State   | Scenario A (cost effectiveness) | Additional GDP cost in 2030 | Scenario B (GDP per capita approach) | Additional GDP cost in 2030 | Scenario C (balanced approach) | Additional GDP cost in 2030 |
|----------------|---------------------------------|-----------------------------|--------------------------------------|-----------------------------|--------------------------------|-----------------------------|
| Austria        | -27%                            | 0.07%                       | -38%                                 | 0.17%                       | -33%                           | 0.12%                       |
| Belgium        | -24%                            | 0.16%                       | -36%                                 | 0.31%                       | -30%                           | 0.23%                       |
| Bulgaria       | -25%                            | 0.55%                       | -1%                                  | 0.14%                       | -13%                           | 0.35%                       |
| Croatia        | -25%                            | 0.61%                       | -7%                                  | 0.35%                       | -16%                           | 0.48%                       |
| Cyprus         | -20%                            | 0.27%                       | -23%                                 | 0.31%                       | -22%                           | 0.29%                       |
| Czech Republic | -23%                            | 0.20%                       | -13%                                 | 0.10%                       | -18%                           | 0.15%                       |
| Denmark        | -31%                            | 0.07%                       | -41%                                 | 0.15%                       | -36%                           | 0.11%                       |
| Estonia        | -23%                            | 0.28%                       | -10%                                 | 0.13%                       | -17%                           | 0.21%                       |
| Finland        | -30%                            | 0.11%                       | -37%                                 | 0.19%                       | -34%                           | 0.15%                       |
| France         | -34%                            | 0.12%                       | -35%                                 | 0.13%                       | -35%                           | 0.12%                       |
| Germany        | -41%                            | 0.23%                       | -36%                                 | 0.19%                       | -39%                           | 0.21%                       |
| Greece         | -39%                            | 0.37%                       | -19%                                 | 0.17%                       | -29%                           | 0.27%                       |
| Hungary        | -29%                            | 0.45%                       | -9%                                  | 0.14%                       | -19%                           | 0.30%                       |
| Ireland        | -21%                            | -0.02%                      | -41%                                 | 0.14%                       | -31%                           | 0.06%                       |
| Italy          | -31%                            | 0.28%                       | -32%                                 | 0.29%                       | -32%                           | 0.28%                       |
| Latvia         | -17%                            | 0.30%                       | -6%                                  | 0.17%                       | -12%                           | 0.23%                       |
| Lithuania      | -23%                            | 0.51%                       | -8%                                  | 0.27%                       | -16%                           | 0.39%                       |
| Luxembourg     | -20%                            | 0.13%                       | -41%                                 | 0.33%                       | -31%                           | 0.23%                       |
| Malta          | -27%                            | 0.28%                       | -17%                                 | 0.19%                       | -22%                           | 0.24%                       |
| Netherlands    | -28%                            | 0.16%                       | -38%                                 | 0.28%                       | -33%                           | 0.22%                       |
| Poland         | -12%                            | 0.24%                       | -9%                                  | 0.20%                       | -11%                           | 0.22%                       |
| Portugal       | -34%                            | 0.29%                       | -18%                                 | 0.11%                       | -26%                           | 0.20%                       |
| Romania        | -18%                            | 0.36%                       | -2%                                  | 0.16%                       | -10%                           | 0.26%                       |
| Slovakia       | -17%                            | 0.26%                       | -10%                                 | 0.18%                       | -14%                           | 0.22%                       |
| Slovenia       | -14%                            | 0.11%                       | -19%                                 | 0.17%                       | -17%                           | 0.14%                       |
| Spain          | -23%                            | 0.13%                       | -28%                                 | 0.18%                       | -26%                           | 0.15%                       |
| Sweden         | -29%                            | 0.05%                       | -40%                                 | 0.13%                       | -35%                           | 0.09%                       |
| United Kingdom | -35%                            | 0.14%                       | -37%                                 | 0.16%                       | -36%                           | 0.15%                       |