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Distances to climate targets in EU-27 agriculture: explorative analysis

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With the Farm-to-Fork strategy and the Effort-Sharing regulation (ESR), the agricultural sector in the EU has several entry points to contribute to climate change mitigation at the EU level. However, most climate mitigation plans for the agricultural sector stay at the national level, while a cross-country analysis is lacking despite data availability. We aim to explore national distances to the ESR climate targets 2030 in agriculture across the EU Member States (MSs) and to explain the observed heterogeneity. For this analysis, we assume that the ESR targets proportionally hold for agriculture.

The progress towards the climate targets is, among others, documented in the projection reports (EEA). For each EU MS, we derived a so-called 'distance to climate targets 2030', i.e., the relative difference between the assumed targeted GHG emission in agriculture and the projected one. The heterogeneity across MSs is remarkable: while Malta and Croatia are going to reach their 2030 targets very well, ten MSs, including Germany, France, and Denmark, are expected to emit 2030 over 50% more GHG in agriculture than targeted, according to the projections. Likewise, the progress over the years differs across MSs: only some MSs have improved their projections for agriculture over years.

Employing the Jenks natural breaks classification to the latest projected distance to climate targets 2030 in agriculture and its progress over 2016-2021 projections, we assigned each EU MS to one of the two classes:

1. With a considerable distance to climate targets in 2030 in agriculture and/or poor progress ("red cluster")
2. With a small distance to climate targets in 2030 in agriculture and/or good progress ("green cluster")

Next, we compared other variables among classes using the Mann-Whitney-U test. The ESR uses GDP per capita as the basis for the distribution of targets across the EU MSs; yet, there is no significant difference among classes in GDP from agriculture per capita found. Moreover, the contribution of agriculture to national GHG accounts differs across the EU MSs. Climate targets might hit agriculture particularly hard in MSs with high GDP and high share of agricultural emissions.

We also observe that the red cluster is characterised by more intensive agriculture and has little space to intensify and increase efficiency. So, the only way for these MSs to fulfil climate responsibilities is to work with innovations and radical transformations. Significant differences among classes were found in mitigation measures. The green cluster is characterised by fewer measures in total, yet a higher share of implemented (vs. planned) ones. Regarding content, the red cluster focuses more on nature- and sustainability-related mitigation measures, while the green cluster focuses on organic-, efficiency-, and livestock-related measures despite having a lower share of permanent grassland and lower livestock density.

Our conclusions are twofold. First, to facilitate agriculture's contribution in achieving climate targets, sectoral targets should be clarified and clear cross-sectoral benchmarks for mitigation should be established, e.g., via carbon pricing. Second, since some MSs currently face a hefty burden of ambitious climate targets, these Member States should be supported in their efforts to find innovative solutions for radical transformations.