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# Quantifying the Economic Cost of Reducing GHG Emissions through Changes in Household Demand: A Linear Multi-Sectoral Approach for European Countries

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**Abstract:** The mitigation of Greenhouse Gas Emissions can be approached in various ways: from the supply side, by using improvements in technologies and input uses; and from the changes in the demand for products, by influencing consumer behavior to achieve a more sustainable consumption pattern. Either way it can be approached using multi-sectoral data based on an input–output or on a Social Accounting Matrix (SAM) framework, although a suitable database and the proposal of appropriate indicators are needed. A suitable database is developed through the estimation of new SAMs for the latest possible period, that of year 2015. This paper focuses on the demand approach: that of changes in the demand for products. It analyzes the different impacts among activities and commodities of a change in domestic household consumption patterns, compares the potential reductions in Greenhouse Gas (GHG) emissions obtained through the reduction of specific demands, and considers the consequent reduction in output and employment. For this purpose, a linear multi-sectoral analysis is employed that focuses on the main EU member states. Despite major differences between countries, the results show that a decrease in emissions through demand-reduction policies exerts greater negative effects on those less polluting sectors with a higher intensity in the labor force, and offers a more suitable option for those highly polluting sectors with a lower concentration of the work factor. Richer countries that are based on service sectors therefore suffer a sharper drop in employment using this kind of policy.

**Keywords:** GHG mitigation; effect of adoption of mitigation measures on society; social accounting matrices; multi-sectoral model; impact analysis

## 1. Introduction

The global increase in economic activity has been connected to the general deterioration of the environment and to the increase in greenhouse gas emissions, and has become a growing issue worldwide that unequivocally demands action. A cleaner environment, a more productive and faster-growing economy, and low levels of unemployment cover what any country or region should aim to achieve. However, a better environment implies previously incurred ecological damage, while higher productivity may hide an increase in unemployment, and higher economic growth often points towards environmental destruction. Those countries that have improved their environmental quality at the same time as they have economically developed and advanced it are not actually succeeding in covering all those general economic targets. Instead, they have unintentionally succeeded in moving the environmental impact abroad through the demand of their economic agents [1].

The current situation has become an extreme exemplification of the relationship between consumption and environment. Skies become cleaner in an undesirable situation in which economic production and demand suddenly and dramatically halt [2]. Pollution indicators demonstrate what even the most basic economic literature strives to explain: demand-driven production triggers environmentally harmful effects, not only through the use of resources but also due to the negative externalities that arise from the economic activity. Nevertheless, the effects differ between countries because the technology of production and the weight of value added also differ in each context.

This paper presents an appraisal of the impacts of variation in demand on the emissions of Greenhouse Gases (GHGs; GHGs considered are Carbon Dioxide ($CO_2$), Methane ($CH_4$), Nitrous Oxide ($N_2O$) and fluorinated gases (hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride) and on employment in order to provide an assessment tool for policies aimed at a reduction of those emissions through reductions in demand of certain commodities. In this respect, the paper compares, as the main objective, the potential reduction in GHG emissions obtained with a reduction in demand, and the corresponding reduction in output and employment.

Lineal multi-sectoral analysis is used, while focusing on the EU member states (MS) and using estimated Social Accounting Matrices (SAMs) for 2015. SAMs make the consideration of all the economic agents possible, since all the interrelations between productive economic activities, final demand, and value added are included in the circular flow of income [3].

Demand-driven emissions have been analyzed in a number of studies. Peters [4] discusses the change in the inventories of the emissions from production-based to consumption-based methods. Wiedmann [5] estimates emissions embedded in international trade. Davis and Caldeira [6] analyze the amount of emissions associated with consumption, while focusing on China and developing countries, and find that a substantial quantity of $CO_2$ emissions is traded internationally. Similarly, Liu et al. [7] study the environmental impact of several industries through embodied emissions. Yang and Meng [8] present a general overview of the mapping between fields of studies regarding demand-driven emissions. Sánchez-Chóliz et al. [9] study the environmental impact of the Spanish economy generated by household demand and Duarte et al. [10,11] analyze the relationship between types of consumption and pollution using a SAM for Spain, by examining the composition of final demand and determining the final volume of emissions. They analyze consumption patterns in relation with sustainable growth and development using a SAM-based model in combination with econometric estimations, and observe that the relationship between per capita income and regional responsibility is based on a demand scale effect. Hertwich and Peters [12] quantify greenhouse gas emissions associated with the final consumption of goods and services, and find that more than 70% of GHG emissions correspond to household consumption, 10% to government consumption, and the remaining GHG emissions correspond to investments, food, shelter, and mobility account for 56% of the total. They demonstrate the major role of consumption in the environmental impact and register greater indirect impact effects than direct impact effects. Other notable research that analyzes the responsibility of household demand for GHG emissions in different ways includes that by Hoekstra and Bergh [13], Gallego and Lenzen [14], and Lenzen and Peters [15].

On the other hand, many studies have used SAMs to analyze impacts on employment: Allan et al. [16], Courtney et al. [17], Khan and Thorbecke [18], Seung and Waters [19], and Campoy et al. [20], among others. More specifically, in relation to the link between demand and employment, Philippidis et al. [21] use employment multipliers for the bioeconomy sectors for 27 EU member states, and find several clusters with a homogeneous structure. Cardenete et al. [22] calculate employment multipliers of the Spanish bio-based accounts; Meng [23] and Meng et al. [24] simulate the effects of taxes on various employment occupations.

The contribution of this paper involves the use of a new dataset of SAMs for EU SAMs (year 2015) and the adaption of a well-known input–output and SAM multi-sectoral analysis tool, which enables a broader analysis of this issue to be performed, for the assessment of demand-driven GHG mitigation policies. It could be considered a prior analysis for a more in-depth analysis based on the specific structure and characteristics of each member state, which provides the main lines that describe the issue. In this respect, the main objective of the paper is to estimate the cost, in terms of employment, of reducing GHG emissions through reductions in the demand for goods and services, so that the effectiveness of this measure can be assessed for 1a wide range of countries and commodities.

The rest of the paper is structured as follows: Section 2 presents the main steps in the estimation of the database (Social Accounting Matrices for the 28 EU MSs, year 2015) and shows the method employed to value the GHG emissions, output, and employment generated by the final demand. Section 3 includes the main results and discussion. Finally, conclusions are described in Section 4.

## 2. Database and Methods

### 2.1. Social Accounting Matrices for the 28 European Union Member States

The database used in this analysis comprises of a new set of Social Accounting Matrices, one for each of the 28 member states of the European Union, and refers to 2015 as the base year. A SAM (a common reference on the origins of SAMs is the work of Sir Richard Stone (see Stone, [25]). Pyatt and Round [26] provide a fundamental explanation of the basic structure and potential utilities of SAMs) is a comprehensive and economy-wide database that records data on transactions between all economic agents within an economy in a given period. A SAM is ultimately a square matrix in which activities, commodities, factors, and institutional sectors are represented by specific rows and columns (Social Accounting Matrices improve traditional Input–Output Tables (IOTs), which reflect the production part of the economy, but not the relations between the income and expenditure of institutional agents. In this respect, SAMs expand the explanatory capacity of I–O models and explicitly introduce income and its primary and secondary distributions, and the final consumption of institutional agents (households, government, etc.). SAMs are extensions of the concept of IOTs achieved in an integrated way and not through the addition of satellite accounts). Each cell records the payment by the account in the column to the account in the row (SAMs have a double relevance: they serve as a database to calibrate economic modeling, and they describe, in a simple but exhaustive way, the complete circuit of economic relations of an economy. The concept of the circular flow of income is the foundation of the SAMs (Mainar et al. [27]). SAMs are extensions of the concept of IOTs achieved in an integrated way and not through the addition of satellite accounts; several primary databases are employed to populate the cells of a matrix. The main databases include the set of National Accounts systems, household budget, and/or labor market surveys (and other socioeconomic databases), and statistics related to foreign sectors and international trade). Thus, the income of each account is described along its corresponding row while its expenditures are recorded in the corresponding column. The basic structure of a standard SAM is shown in Figure 1 (European Commission [28], Eurostat [29], Mainar et al. [27], and Miller and Blair [30] describe the characteristics of this structure, as well as specific issues regarding its definition and composition).

In order to achieve the objective of the analysis, a new SAM was estimated for each MS for the year 2015. These SAMs are completely coherent with the macro-magnitudes of each country, based on statistical data from Eurostat (this entails a two-step procedure for each country. First, a matrix containing aggregates for the main submatrices of the SAM is estimated using official macro-magnitudes. These auxiliary matrices are called MacroSAMs and are estimated with values extracted from the Non-financial Annual Sector Accounts [31]. These accounts provide values paid and received, aggregated, and per institution for the main macro-variables of the economy. This data set is employed for aggregate production, supply and demand, primary factors (labor and capital), taxes, and institutional accounts (i.e., household, government, corporations, and the rest of the world). In a second stage, the MacroSAM structure is extended by opening up the aggregate accounts to represent specific activities and commodities, thereby obtaining the targeted SAMs. The procedure of opening up these submatrices in the MacroSAM is facilitated by entering information from the

2015 Supply-and-Use Tables (SUT) [32]. Activities and products/commodities in the SUT follow the classifications of Eurostat NACE Rev. 2 (statistical classification of economic activities in the European Community, revised version 2) [33] and the Classification of Products by Activity (CPA) [34], respectively, and hence SAMs also use this classification (see Table A1); the Supply-and-Use Tables are the matrices per industry and product that describe production processes and the transactions in products of the national economy. They show the structure of the costs of production and the value added generated, and flows of goods and services produced within the national economy and with the rest of the world. It should be noted that the aggregates from the Supply-and-Use Tables of Eurostat are broadly consistent with the National Accounts system).

| | **Commodities** | **Activities** | **Factors** | **Households** | **Enterprises / Corporations** | **Government** | **Savings-Investment** | **Rest of the World** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| **Commodities (C)** | | Intermediate (inputs) consumption | | Household consumption | | Government expenditure | Investment and stock changes | Exports | Demand |
| **Activities (A)** | Domestic production | | | | | | | | Gross output / Production (activity income) |
| **Factors (F)** | | Remuneration of factors / Factor income | | | | | | Factor income from RoW | Factor income |
| **Households (H)** | | | Factor income distribution to households | (Inter Households transfers) | Distribution of corporations income to households | Government transfers to households | | Transfers to Households from RoW | Household income |
| **Enterprises / Corporations (E)** | | | Factor income distribution to enterprises | | | Government transfers to enterprises | | Transfers to Enterprises from RoW | Enterprise income |
| **Government (G)** | Net taxes on products | Net taxes on production | Factor income to Government / Factor taxes | Direct Household taxes / Transfers to Government | Direct Enterprise taxes / Transfers to Government | | | Transfers to Government from RoW | Government income |
| **Savings-Investment (S-I)** | | | (Depreciation) | Household savings | Enterprise savings | Government savings | (Capital accounts transfers) | Capital transfers from RoW (Balance of Payments) | Savings |
| **Rest of the World (RoW)** | Imports | | Factor income distribution to RoW | Household transfers to RoW | Corporations income to Row | Government transfers to RoW | | | Payments to RoW |
| **Total** | Supply | Costs of production activities | Expenditure on factors | Household expenditure | Enterprise expenditure | Government expenditure | Investment | Incomes from RoW | |

**Figure 1.** Standard structure of a Social Accounting Matrix (SAM). Source: Authors' own based on Mainar et al. (2018).

### *2.2. Multipliers Analysis*

The analysis of the sectoral capacity to generate output and employment on the one hand, and GHG emissions on the other, was carried out by comparing the corresponding SAM multipliers. A multiplier, $m_{ij}$, reflects the impact that an exogenous unit of income (for example, demand) of sector $j$, finally generates on the income of the account $i$, after going through the circular flow of income an infinite number of times. The sum of the columns of the multiplier matrix would indicate the total effect of an exogenous shock on the rest of the economic activity as received by an endogenous account. Therefore, a column of this matrix whose sum attains a very high value corresponds to an account that holds a major influence over the rest of the economy when it receives an exogenous shock, which could be caused by a determined economic policy or by another external event.

In order to estimate the data required for the analysis proposed herein, it is first necessary to obtain the output multipliers (see Pyatt and Round [35], among others) for each of the 28 MSs considered. The SAM multipliers are estimated from the natural extension to a SAM of the classic expression of the Leontief inverse [36]. The starting point for the analysis is given by the following equilibrium equation:

$$\boldsymbol{x} = \mathbf{A}\boldsymbol{x} + \mathbf{y} \Longleftrightarrow \boldsymbol{x} = (\mathbf{I} - \mathbf{A})^{-1} = \mathbf{M}\mathbf{y} \tag{1}$$

where $\boldsymbol{x}$ is the vector of total gross output of endogenous (regarding the selection of endogenous and exogenous variables, exogenous variables are commonly considered as those typically determined outside the economic environment (for instance, the foreign sector) or as those that can be used as instruments of economic policy (for instance, public expenditure, investment, certain social transfers, etc.). In the application presented in this work, these are exogenous: public sector accounts, savings and investment accounts, and the rest of the world) accounts and $\boldsymbol{y}$ is the corresponding vector of total final demand. **I** represents the identity matrix, and **A** is the usual matrix of coefficients in the SAM framework. Their elements $a_{ij}$ show the share of the sector $i$ in each unit produced by sector $j$. **M** is the matrix of SAM multipliers. Although **A** and **M** are square matrices with an order determined by the endogenous accounts, only the part concerning production activities in rows and commodities account in columns, submatrix **Ma**, is considered in order to focus the analysis on the proposed objectives (effects of a demand shock for a commodity on the output generated by an activity).

The sum, for each column of **Ma**, of the values corresponding to the rows of the accounts of activities, results in the sectoral multiplier of production, and shows the increase in output generated by an exogenous shock in one of the exogenous demands for a given commodity.

In order to obtain employment and GHG-emission multipliers, it is necessary to consider additional vectors including information regarding ratios of the employed, or of GHG emissions generated per unit of output, [37]. In this respect, the next step involves the estimation of a vector with the average direct GHG emissions (measured in tonnes of $CO_2$) per unit of output (in this case, one million euros) for each activity. This vector c, which expresses direct emissions (tonnes of carbon dioxide equivalent per million euros of output), is built using Eurostat data on direct emissions per activity (air emissions accounts by NACE Rev. 2 activities, [38]) and the total sectoral output directly observed in SAMs.

The matrix of GHG-emission multipliers, $\mathbf{M_G}$, is obtained by pre-multiplying the output multiplier matrix, **Ma**, by the diagonal matrix from c.

$$\mathbf{M_G} = \hat{\mathbf{c}}\mathbf{M_a} \tag{2}$$

Elements of $\mathbf{M_G}$, $m_G(i,j)$ show the total amounts of emissions generated (direct, indirect, and induced) per sector $i$ for each additional exogenous unit of income in the economic sector $j$, that is, a multiplier matrix of generated embodied emissions. The total effect on GHG emissions resulting from an exogenous shock in each commodity is obtained by adding up in the same way as that used for output multipliers.

Similarly, in order to obtain employment multipliers, a vector **e** that contains the ratios of the number of jobs per million euros of output value is required [39]. To populate this matrix, employment data from the Labor Force Survey was used [40]. A diagonal matrix based on e was multiplied by **Ma**. The expression of this employment multiplier, **Me**, is given as:

$$\mathbf{M_e} = \hat{\mathbf{e}}\mathbf{M_a} \tag{3}$$

Each element in **Me**, $m_e(i,j)$, shows the increment in the number of jobs of the account $i$ when the account $j$ receives a unitary exogenous injection. In the same way as for GHG emissions, the addition by columns provides the total effect on employment resulting from an exogenous shock in the demand for each commodity. Tables A2–A4 summarize the values of these multiplier matrices that serve to obtain the main results of this analysis.

## 3. Results and Discussion

By means of using the estimated SAMs of the 28 MSs and the necessary additional statistical information, the output, GHG emissions, and employment multipliers have been calculated, following the proposed methodology. Although all the calculations have been performed with the complete disaggregation of the matrices (65 activities and 65 commodities), in this section the results were presented aggregated into five broad sectors in order to facilitate their interpretation: primary-sector commodities, mining and quarrying, manufactured products, construction, and services (the disaggregated results per country are presented in the Appendix A). Tables A2–A4 show the corresponding multipliers of output, employment, and emissions. It is necessary to bear in mind that the objective is to allow a comparison between the benefits, quantified in terms of emission reductions that a reduction in a commodity generates, and the damages that the corresponding loss of employment would entail. Therefore, the presented results show the reductions, both in GHG emissions, and in output and employment, generated by a unit reduction (million euros) in the demand for the corresponding commodities or groups of commodities. In general, it can be seen how the greatest multipliers of output are found in the service and construction sectors, which drive sectors of the developed European economies. However, when considering the employment multipliers, these results are modified, since the commodities of the primary sector are shown as the greatest generators of employment, although this is due to the great importance of this sector and its especially labor-intensive character in countries such as Romania and Bulgaria. Apart from these cases, it can be stated that the service sector is that which shows the greatest employment capacity (and, therefore, the greatest destruction capacity, if applicable), followed by the construction sector.

In order to more intuitively balance the benefits of eliminating emissions through reductions in the demand for commodities with the drawbacks of the consequent decrease in output and employment, the quotient of these two multipliers is presented. These ratios show the reductions in output (in millions of euros) and in employment (jobs) that are generated for a reduction of 1000 tonnes of GHG emissions through reductions in the demand for each commodity. These ratios are presented in Figures 2–4 and in Tables 1 and 2 (aggregated sectors) and A5 and A6 (disaggregated sectors).

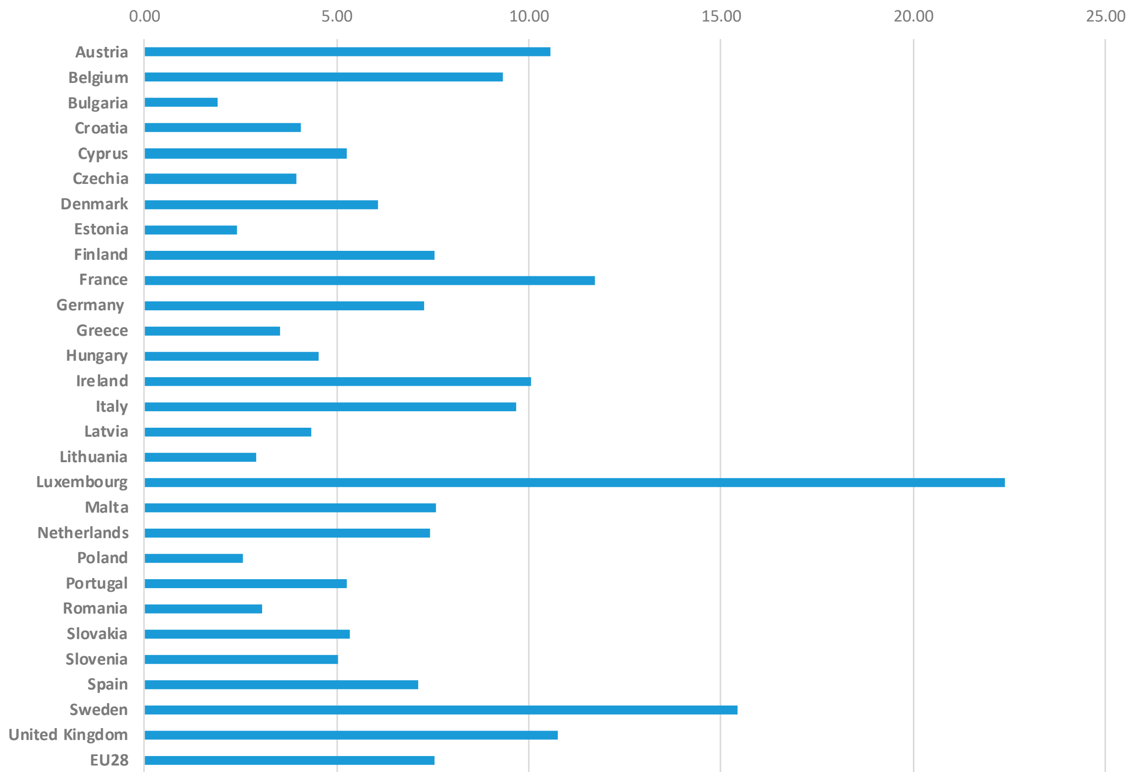


**Figure 2.** Average output (millions of euros) reduction caused by a reduction of 1000 tonnes of Greenhouse Gas (GHG) emissions through a reduction in demand by country.

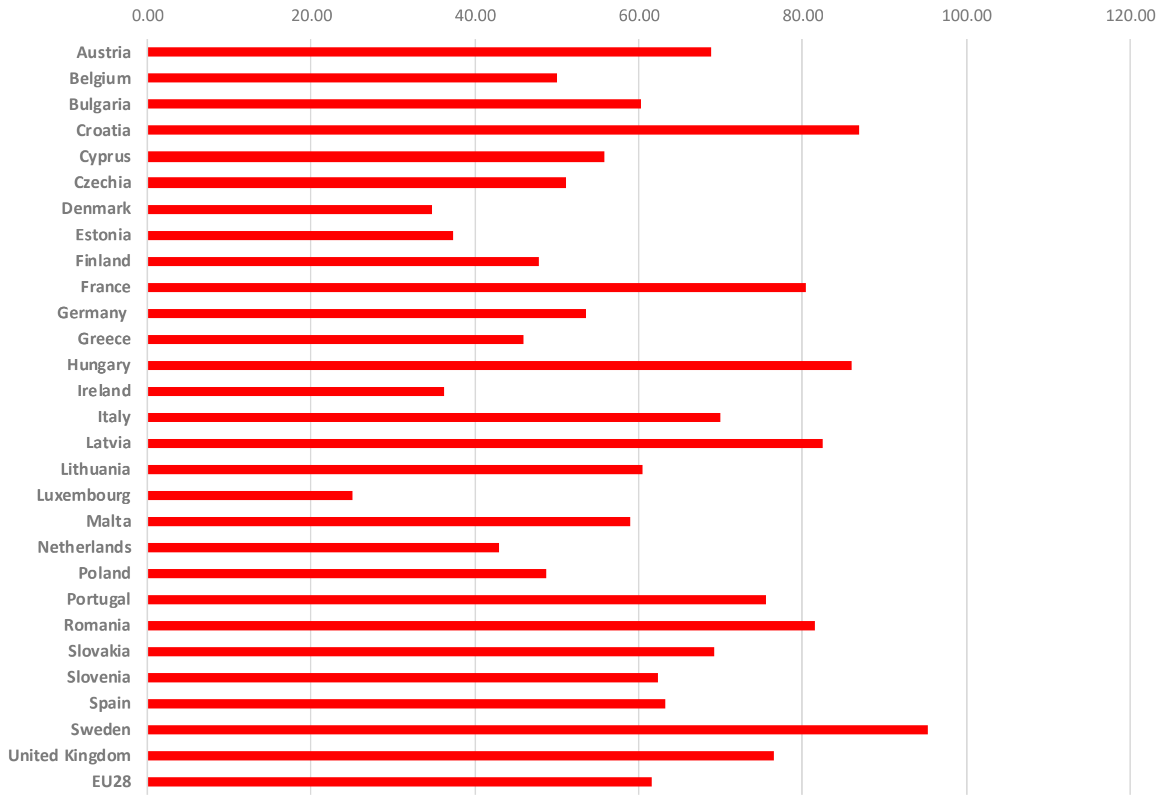


**Figure 3.** Average employment (jobs) reduction caused by a reduction of 1000 tonnes of GHG emissions through a reduction in demand per country.

Figure 2 shows the average reductions in production for each country necessary to achieve a reduction of 1000 tonnes of GHG emissions. The very different data between countries is the reflection of the different production structures. Countries with a greater orientation towards services (less polluting sectors) need to reduce their production by a greater amount than those whose output contains a greater weight of agricultural or manufacturing activities (highly polluting sectors). For example, the drop in France in output to reduce 1000 tonnes of GHG emissions is more than 15 million euros, this stands at around 12 million in Ireland, Italy, and the United Kingdom, and is 18 million in Sweden, but only 2.5 million in Bulgaria, 2.74 million in Poland, and 5.1 million in Hungary.

Thus, the countries with the highest value of this ratio are Austria, Belgium, Finland, France, Ireland, Italy, Luxembourg, and the United Kingdom, with the lowest values observed in Bulgaria, Estonia, Lithuania, Poland, or Romania. On average, EU28 countries would lose 7.6 million euros for every 1000 tonnes of GHG emission reduction through demand. However, in terms of employment, the loss would be 61.5 jobs, now the differences between countries are nuanced, since, to the factor of the production structure, with more or less preponderance of polluting activities, it is necessary to add the intensity of the labor factor, which differs between production branches per se and between countries for the same branch. In this way, included among the countries that would need a greater sacrifice in employment, apart from those that already needed it in production, are Bulgaria, Croatia, Hungary, Latvia, Romania, Slovakia, and Slovenia. These countries, characterized by a greater intensity of the labor factor, both in the cleanest and the most polluting sectors, logically show a greater reduction in employment due to the consequent reductions in production generated by the decrease in demand.

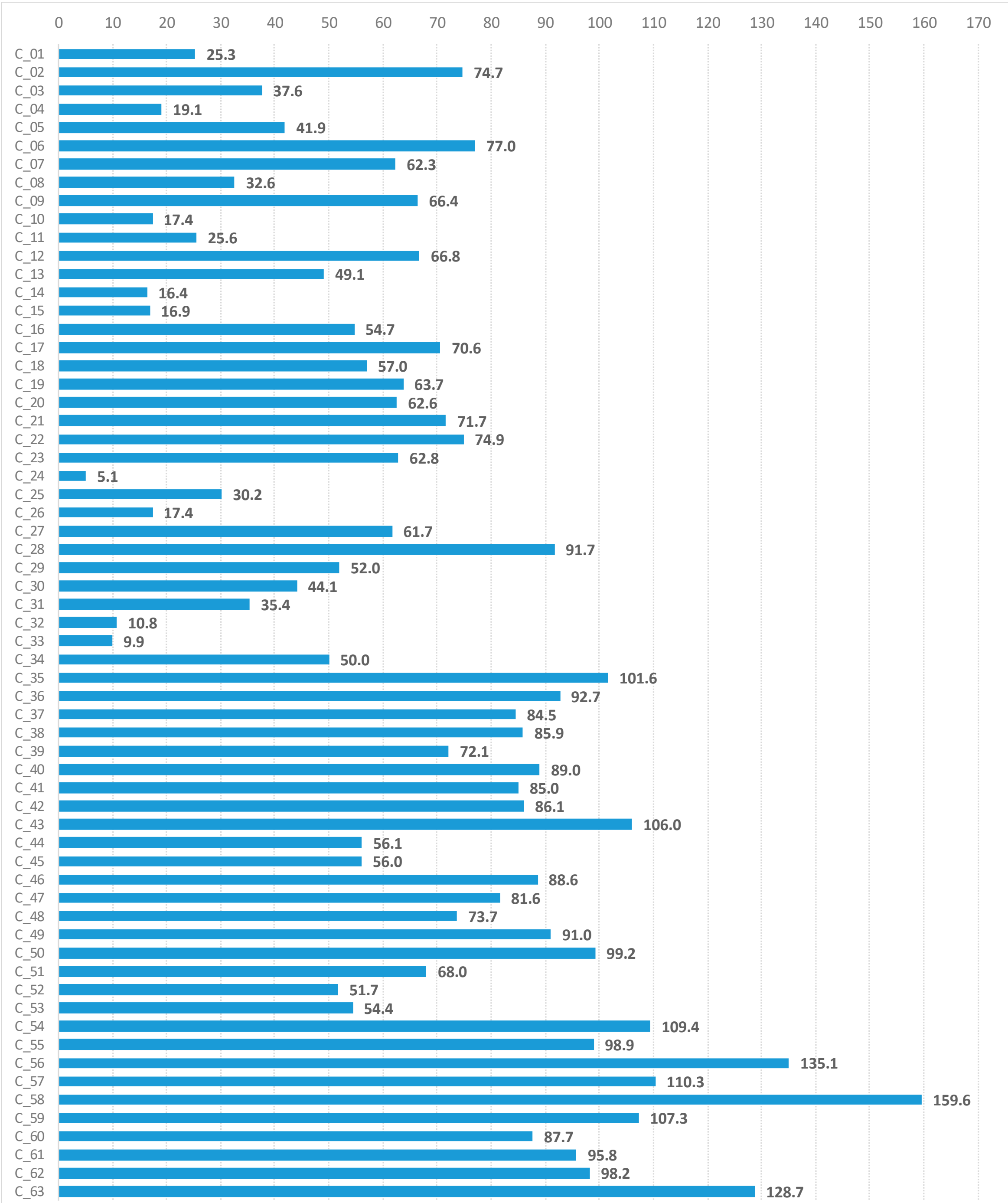


**Figure 4.** Average employment (jobs) reduction caused by a reduction of 1000 tonnes of GHG emissions through a reduction in demand per commodity.

**Table 1.** Average output (millions of euros) reduction caused by a reduction of 1000 tonnes of GHG emissions through a reduction in demand.

| | All Sectors | Primary-Sector Commodities | Mining and Quarrying | Manufactured Products | Construction | Services |
|---|---|---|---|---|---|---|
| **Austria** | 10.56 | 2.13 | 4.66 | 7.93 | 4.64 | 15.47 |
| **Belgium** | 9.33 | 2.06 | 3.74 | 6.74 | 4.76 | 13.74 |
| **Bulgaria** | 1.92 | 1.44 | 1.43 | 1.55 | 2.15 | 2.55 |
| **Croatia** | 4.08 | 1.56 | 2.70 | 3.35 | 0.72 | 5.59 |
| **Cyprus** | 5.25 | 2.16 | 2.81 | 2.39 | 0.64 | 7.43 |
| **Czechia** | 3.95 | 1.92 | 0.71 | 3.72 | 1.01 | 4.44 |
| **Denmark** | 6.08 | 2.03 | 2.09 | 9.79 | 3.24 | 5.08 |
| **Estonia** | 2.42 | 1.49 | 1.84 | 2.06 | 1.15 | 2.77 |
| **Finland** | 7.57 | 2.53 | 5.15 | 5.97 | 2.24 | 8.83 |
| **France** | 11.70 | 2.34 | 7.59 | 9.40 | 2.82 | 15.03 |
| **Germany** | 7.28 | 1.78 | 4.09 | 7.06 | 3.56 | 8.45 |
| **Greece** | 3.54 | 2.56 | 3.98 | 2.42 | 0.86 | 4.38 |
| **Hungary** | 4.55 | 1.64 | 1.68 | 4.77 | 0.78 | 5.06 |
| **Ireland** | 10.05 | 0.78 | 2.53 | 10.26 | 1.97 | 12.00 |
| **Italy** | 9.67 | 3.85 | 5.54 | 8.25 | 3.21 | 11.80 |
| **Latvia** | 4.34 | 1.28 | 4.65 | 4.52 | 1.31 | 4.89 |
| **Lithuania** | 2.93 | 1.29 | 3.75 | 2.89 | 0.99 | 3.08 |
| **Luxembourg** | 22.38 | 1.27 | 10.79 | 11.11 | 6.06 | 26.51 |
| **Malta** | 7.61 | 3.91 | 8.78 | 7.07 | 1.00 | 7.59 |
| **Netherlands** | 7.42 | 2.12 | 4.74 | 6.19 | 3.88 | 10.41 |
| **Poland** | 2.58 | 1.13 | 0.94 | 2.45 | 1.12 | 2.74 |
| **Portugal** | 5.28 | 2.16 | 3.99 | 4.22 | 0.96 | 6.94 |
| **Romania** | 3.05 | 1.38 | 1.60 | 2.98 | 0.84 | 3.89 |
| **Slovakia** | 5.34 | 3.26 | 2.43 | 4.97 | 1.22 | 6.51 |
| **Slovenia** | 5.05 | 1.77 | 2.28 | 4.89 | 3.07 | 5.13 |
| **Spain** | 7.13 | 2.61 | 4.65 | 5.90 | 2.33 | 9.08 |
| **Sweden** | 15.42 | 3.71 | 4.94 | 13.01 | 6.14 | 18.69 |
| **United Kingdom** | 10.76 | 2.17 | 3.79 | 8.27 | 3.43 | 12.43 |
| **EU28** | 7.57 | 2.04 | 3.38 | 6.37 | 2.56 | 9.50 |

Source: Authors' own.

The results in Figures 2 and 3 may seem controversial. While there are eight countries that present an above-average loss of output that are also among those with an above-average loss of employment, there are still countries whose loss in production does not reach that in the loss in employment. Those countries with the worst behavior in these two variables are Sweden, France, the United Kingdom, Italy, and Austria. However, Luxembourg, Ireland, and Belgium would be especially damaged in terms of output, but not in terms of employment. Croatia, Hungary, Latvia, Romania, Portugal, Slovakia, Spain, and Slovenia would suffer particularly in terms of jobs lost, but not that much in terms of output. Special mention has to be made regarding Luxembourg, whose production would decrease by nearly 25% of its value, but whose employment would be the least affected by the simulation. Apart from the aforementioned economic structure characteristics, it is interesting to highlight the relationship between these results and the productivity of labor per country. In labor terms, the more productive the country becomes, the more prone it is to suffer mainly in terms of economic growth; in contrast, the less productive the country, the greater the decrease in employment. This is coherent with the results obtained by Duarte et al. [41], Fuentes et al. [39], and Philippidis and Sanjuan-López [42]. Furthermore, Mainar-Causapé and Fuentes-Saguar [3] obtain analogous results for the Spanish economy. Those sectors most affected are: C_58, C_56, C_63, C_57, C_54, and C_59 (Figure 4, see codification in the Appendix A). For the analysis of the most disaggregated sectoral differences, Figure 4 shows the mean values of job losses in the EU28. Care services (160 jobs), education (135), and health (110), are the sectors that would suffer the greatest losses, followed by artistic activities, financial services, and communications, all of which would suffer in excess of 100 jobs lost. Among the sectors that would allow a reduction of GHG emissions with a lower cost in terms of employment, the most polluting sectors appear: transport (10 jobs), electricity generation (5), metallurgy (16), mining (19), refinery (17), chemical products (25), land transport (35), and the agri-food industry (42). Similar effects regarding the sectoral capacity of GHG generation and their link with demand, especially that of households, can be found for previous periods in Munksgaard et al. [43], Moll et al. [44], and Kerkhof et al. [45], while in Lenzen and Peters [15], the link with employment provides results coherent with these effects. Results show that the service sectors are surprisingly (at least initially) the most polluting sectors in relation to their demand. Indirectly and induced by the inclusion in the circular flow of income, the demand for services finally generates more emissions than other sectors with highly polluting production, such as agriculture, livestock, and energy generation. In this respect, countries, such as Germany, Spain, France, Italy, and the United Kingdom, generate the highest amount of emissions linked to the demand for goods and services, precisely due to the greater weight of the tertiary sector. This would make them lose more production with GHG reduction policies through reductions in demand, unlike Eastern European countries, where the greater weight of the primary sector makes it easier to reduce emissions through demand, because they are highly polluting sectors. Tables A5 and A6 show the detailed results that support these statements.

**Table 2.** Average employment (jobs) reduction caused by a reduction of 1000 tonnes of GHG emissions through a reduction in demand.

| | All Sectors | Primary-Sector Commodities | Mining and Quarrying | Manufactured Products | Construction | Services |
|---|---|---|---|---|---|---|
| **Austria** | 68.80 | 27.06 | 22.70 | 41.83 | 18.75 | 118.50 |
| **Belgium** | 49.99 | 10.67 | 19.10 | 27.78 | 18.58 | 89.30 |
| **Bulgaria** | 60.34 | 48.98 | 38.30 | 42.73 | 55.46 | 94.84 |
| **Croatia** | 86.83 | 49.44 | 42.20 | 64.93 | 15.87 | 128.71 |
| **Cyprus** | 55.87 | 36.40 | 27.32 | 34.02 | 7.44 | 72.59 |
| **Czechia** | 51.05 | 26.95 | 9.46 | 40.26 | 13.68 | 73.95 |
| **Denmark** | 34.81 | 11.34 | 5.85 | 47.33 | 14.43 | 31.99 |
| **Estonia** | 37.36 | 21.20 | 18.25 | 25.98 | 11.99 | 48.98 |
| **Finland** | 47.75 | 19.79 | 23.57 | 28.05 | 9.96 | 65.62 |
| **France** | 80.32 | 16.15 | 48.39 | 53.65 | 18.68 | 115.91 |
| **Germany** | 53.59 | 14.46 | 31.35 | 42.50 | 19.94 | 74.92 |
| **Greece** | 45.82 | 51.39 | 50.92 | 27.06 | 7.83 | 58.12 |
| **Hungary** | 85.89 | 32.16 | 31.48 | 66.36 | 16.96 | 127.19 |
| **Ireland** | 36.15 | 7.29 | 14.51 | 27.42 | 10.29 | 49.00 |
| **Italy** | 70.02 | 35.60 | 37.09 | 51.00 | 20.11 | 98.68 |
| **Latvia** | 82.52 | 29.85 | 80.34 | 75.72 | 22.02 | 104.53 |
| **Lithuania** | 60.50 | 32.75 | 66.85 | 47.19 | 19.29 | 74.83 |
| **Luxembourg** | 24.96 | 4.54 | 6.17 | 12.04 | 4.86 | 28.40 |
| **Malta** | 58.98 | 41.70 | 70.38 | 61.01 | 8.30 | 55.06 |
| **Netherlands** | 42.89 | 11.96 | 14.41 | 27.42 | 18.36 | 73.46 |
| **Poland** | 48.79 | 39.46 | 16.74 | 39.76 | 18.77 | 62.13 |
| **Portugal** | 75.44 | 48.34 | 49.66 | 52.15 | 9.79 | 107.22 |
| **Romania** | 81.47 | 98.52 | 39.55 | 69.72 | 18.50 | 111.05 |
| **Slovakia** | 69.29 | 43.84 | 34.20 | 50.83 | 18.44 | 120.68 |
| **Slovenia** | 62.36 | 39.15 | 27.49 | 52.78 | 35.68 | 75.39 |
| **Spain** | 63.23 | 27.80 | 35.41 | 43.85 | 17.18 | 93.19 |
| **Sweden** | 95.27 | 24.44 | 22.29 | 59.65 | 30.19 | 134.43 |
| **United Kingdom** | 76.51 | 14.85 | 18.40 | 49.17 | 17.81 | 96.79 |
| **EU28** | 61.52 | 26.61 | 19.09 | 44.25 | 17.90 | 85.65 |

Source: Authors' own.

## 4. Conclusions

In general, the results show trends that, although they were expected, were herein quantified and corroborated. The reduction of emissions based on the reduction of the demand for commodities incurred a cost in employment and production that depended on the intensity of emissions and the intensity of the use of the labor factor of each sector, which also differed significantly from one country to another. Reducing emissions through demand–reduction policies exerted greater negative effects in those less polluting sectors with a higher intensity of the work factor, and therefore offered a more suitable option in those highly polluting sectors with a lower weight of the work factor.

The economic structure of each country and the level of labor intensity of their economic activity is determinant in ascertaining to what level each economy may be altered by pollution limitations. The different behavior by a number of the countries in output and employment are key for this situation. While wealthier countries can survive the consequences of production loss and the decrease in employment, others will be left to handle a situation in which employment loss exceeds the effects suffered by the wealthier countries. Apart from the consequences of the labor intensity of each economy through the circular flow of income that can be analyzed due to the inclusion of the interaction between value added and final demand, the sectoral structure remains the determining factor. Nevertheless, these differences between countries fail to respond to specific policies regarding the demand for commodities, since they are caused by the existing economic structure of the region or country.

In an indirect way and induced by the inclusion in the circular flow of income, the service economy has been shown to pollute even more than the other sectors. Therefore, the decrease in the GHG emissions has lead European economies (most of them specialized in services) to suffer more on average due to the activity destroyed in such economic branches. Rich countries, such as France, Germany, Italy, and the United Kingdom, would experience a greater drop in output if they were to reduce emissions via demand, since the services sector is more significant therein, while in countries with a greater weight of primary or secondary sectors, such as Bulgaria, Poland, and Romania, this decrease would be less. However, the differences in employment intensities, both sectoral and between countries, qualify these results.

Notwithstanding this fact, the level of specialization in services differs between European economies, which may create the idea that those with smaller primary sectors may be less damaged. Nevertheless, the possibility of analyzing this scenario with the help of Social Accounting Matrices brings light to that idea, since employment would be affected to a higher level in those countries whose primary sectors are more relevant. Thus, special attention has to be paid to countries belonging to this latter type of economy because these will suffer in terms of employment to a greater degree both directly and in an induced way.

However, although these reductions in employment could be offset by increases due to the reallocation of demand in other less polluting sectors, alternative policies to reduce GHG emissions that involve maintaining employment levels should be directed mainly towards technological aspects (direct emissions in production or use of inputs) and towards a more suitable structure of the economy. In this respect, the subsequent step in this line of research is to delve into the factors that determine the different values calculated for each country, and into where the differences between these factors originate. It would also be relevant to analyze the possible effects that a hypothetical reallocation of the detracted demand of polluting sectors towards other sectors with lower emissions may incur in the medium or long term.

Furthermore, the analysis of short-term and long-term effects of the economic cost of reducing GHG emissions in each member state should be addressed in future research. The updating of data and results could also constitute a critical feature in future research.

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**Conflicts of Interest:** The authors declare there to be no conflict of interest.

## Appendix A

**Table A1.** Products and activities used in EU28 SAMs (2015).

| | | | |
|---|---|---|---|
| C_01 | Products of agriculture, hunting and related services | A_01 | Crop and animal production, hunting and related service activities |
| C_02 | Products of forestry, logging and related services | A_02 | Forestry and logging |
| C_03 | Fish and other fishing products; aquaculture products; support services to fishing | A_03 | Fishing and aquaculture |
| C_04 | Mining and quarrying | A_04 | Mining and quarrying |
| C_05 | Food, beverages and tobacco products | A_05 | Manufacture of food products; beverages and tobacco products |
| C_06 | Textiles, wearing apparel, leather and related products | A_06 | Manufacture of textiles, wearing apparel, leather and related products |
| C_07 | Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials | A_07 | Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials |
| C_08 | Paper and paper products | A_08 | Manufacture of paper and paper products |
| C_09 | Printing and recording services | A_09 | Printing and reproduction of recorded media |
| C_10 | Coke and refined petroleum products | A_10 | Manufacture of coke and refined petroleum products |
| C_11 | Chemicals and chemical products | A_11 | Manufacture of chemicals and chemical products |
| C_12 | Basic pharmaceutical products and pharmaceutical preparations | A_12 | Manufacture of basic pharmaceutical products and pharmaceutical preparations |
| C_13 | Rubber and plastic products | A_13 | Manufacture of rubber and plastic products |
| C_14 | Other non-metallic mineral products | A_14 | Manufacture of other non-metallic mineral products |
| C_15 | Basic metals | A_15 | Manufacture of basic metals |
| C_16 | Fabricated metal products, except machinery and equipment | A_16 | Manufacture of fabricated metal products, except machinery and equipment |
| C_17 | Computer, electronic and optical products | A_17 | Manufacture of computer, electronic and optical products |
| C_18 | Electrical equipment | A_18 | Manufacture of electrical equipment |
| C_19 | Machinery and equipment n.e.c. | A_19 | Manufacture of machinery and equipment n.e.c. |
| C_20 | Motor vehicles, trailers and semi-trailers | A_20 | Manufacture of motor vehicles, trailers and semi-trailers |
| C_21 | Other transport equipment | A_21 | Manufacture of other transport equipment |
| C_22 | Furniture and other manufactured goods | A_22 | Manufacture of furniture; other manufacturing |
| C_23 | Repair and installation services of machinery and equipment | A_23 | Repair and installation of machinery and equipment |
| C_24 | Electricity, gas, steam and air conditioning | A_24 | Electricity, gas, steam and air conditioning supply |
| C_25 | Natural water; water treatment and supply services | A_25 | Water collection, treatment and supply |
| C_26 | Sewerage services; sewage sludge; waste collection, treatment and disposal services; materials recovery services; remediation services and other waste management services | A_26 | Sewerage, waste management, remediation activities |
| C_27 | Constructions and construction works | A_27 | Construction |

**Table A1.** *Cont.*

| | | | |
|---|---|---|---|
| C_28 | Wholesale and retail trade and repair services of motor vehicles and motorcycles | A_28 | Wholesale and retail trade and repair of motor vehicles and motorcycles |
| C_29 | Wholesale trade services, except of motor vehicles and motorcycles | A_29 | Wholesale trade, except of motor vehicles and motorcycles |
| C_30 | Retail trade services, except of motor vehicles and motorcycles | A_30 | Retail trade, except of motor vehicles and motorcycles |
| C_31 | Land transport services and transport services via pipelines | A_31 | Land transport and transport via pipelines |
| C_32 | Water transport services | A_32 | Water transport |
| C_33 | Air transport services | A_33 | Air transport |
| C_34 | Warehousing and support services for transportation | A_34 | Warehousing and support activities for transportation |
| C_35 | Postal and courier services | A_35 | Postal and courier activities |
| C_36 | Accommodation and food services | A_36 | Accommodation and food service activities |
| C_37 | Publishing services | A_37 | Publishing activities |
| C_38 | Motion picture, video and television programme production services, sound recording and music publishing; programming and broadcasting services | A_38 | Motion picture, video, television programme production; programming and broadcasting activities |
| C_39 | Telecommunications services | A_39 | Telecommunications |
| C_40 | Computer programming, consultancy and related services; Information services | A_40 | Computer programming, consultancy, and information service activities |
| C_41 | Financial services, except insurance and pension funding | A_41 | Financial service activities, except insurance and pension funding |
| C_42 | Insurance, reinsurance and pension funding services, except compulsory social security | A_42 | Insurance, reinsurance and pension funding, except compulsory social security |
| C_43 | Services auxiliary to financial services and insurance services | A_43 | Activities auxiliary to financial services and insurance activities |
| C_44 | Real estate services excluding imputed rents | A_44 | Real estate activities excluding imputed rents |
| C_45 | Imputed rents of owner-occupied dwellings | A_45 | Imputed rents of owner-occupied dwellings |
| C_46 | Legal and accounting services; services of head offices; management consultancy services | A_46 | Legal and accounting activities; activities of head offices; management consultancy activities |
| C_47 | Architectural and engineering services; technical testing and analysis services | A_47 | Architectural and engineering activities; technical testing and analysis |
| C_48 | Scientific research and development services | A_48 | Scientific research and development |
| C_49 | Advertising and market research services | A_49 | Advertising and market research |
| C_50 | Other professional, scientific and technical services and veterinary services | A_50 | Other professional, scientific and technical activities; veterinary activities |
| C_51 | Rental and leasing services | A_51 | Rental and leasing activities |
| C_52 | Employment services | A_52 | Employment activities |
| C_53 | Travel agency, tour operator and other reservation services and related services | A_53 | Travel agency, tour operator reservation service and related activities |
| C_54 | Security and investigation services; services to buildings and landscape; office administrative, office support and other business support services | A_54 | Security and investigation, service and landscape, office administrative and support activities |

**Table A1.** *Cont.*

| | | | |
|---|---|---|---|
| C_55 | Public administration and defence services; compulsory social security services | A_55 | Public administration and defence; compulsory social security |
| C_56 | Education services | A_56 | Education |
| C_57 | Human health services | A_57 | Human health activities |
| C_58 | Residential care services; social work services without accommodation | A_58 | Residential care activities and social work activities without accommodation |
| C_59 | Creative, arts, entertainment, library, archive, museum, other cultural services; gambling and betting services | A_59 | Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities |
| C_60 | Sporting services and amusement and recreation services | A_60 | Sports activities and amusement and recreation activities |
| C_61 | Services furnished by membership organisations | A_61 | Activities of membership organisations |
| C_62 | Repair services of computers and personal and household goods | A_62 | Repair of computers and personal and household goods |
| C_63 | Other personal services | A_63 | Other personal service activities |
| C_64 | Services of households as employers; undifferentiated goods and services produced by households for own use | A_64 | Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use |
| C_65 | Services provided by extraterritorial organisations and bodies | A_65 | Activities of extraterritorial organisations and bodies |

Source: Authors' own from Eurostat 2016b.

**Table A2.** Average output (millions of euros) reduction per 1 million euros of demand reduction.

| | Primary-Sector Commodities | Mining and Quarrying | Manufactured Products | Construction | Services |
|---|---|---|---|---|---|
| **Austria** | 1.55 | 0.58 | 1.36 | 1.91 | 1.95 |
| **Belgium** | 1.33 | 0.17 | 1.11 | 1.51 | 1.76 |
| **Bulgaria** | 2.21 | 0.75 | 1.44 | 1.31 | 2.28 |
| **Croatia** | 1.79 | 1.25 | 1.28 | 1.44 | 2.00 |
| **Cyprus** | 1.75 | 0.92 | 0.66 | 2.17 | 1.98 |
| **Czechia** | 1.84 | 0.62 | 1.40 | 2.10 | 2.12 |
| **Denmark** | 1.67 | 1.12 | 1.16 | 1.73 | 1.77 |
| **Estonia** | 1.79 | 1.35 | 1.12 | 1.96 | 1.91 |
| **Finland** | 1.96 | 0.72 | 1.59 | 1.72 | 2.14 |
| **France** | 2.14 | 0.43 | 1.57 | 2.14 | 2.11 |
| **Germany** | 1.59 | 0.52 | 1.64 | 2.06 | 2.13 |
| **Greece** | 2.22 | 0.59 | 1.33 | 2.04 | 2.38 |
| **Hungary** | 1.89 | 0.39 | 1.15 | 1.68 | 1.71 |
| **Ireland** | 1.64 | 0.46 | 1.09 | 1.83 | 1.24 |
| **Italy** | 2.15 | 0.90 | 2.12 | 2.72 | 2.47 |
| **Latvia** | 1.90 | 1.11 | 1.11 | 1.70 | 2.16 |
| **Lithuania** | 1.76 | 0.20 | 1.01 | 1.71 | 1.93 |
| **Luxembourg** | 0.76 | 0.30 | 0.73 | 1.22 | 1.47 |
| **Malta** | 1.43 | 2.05 | 0.89 | 1.88 | 1.45 |
| **Netherlands** | 1.27 | 0.61 | 1.07 | 1.68 | 1.66 |
| **Poland** | 2.25 | 1.02 | 1.60 | 2.09 | 2.37 |
| **Portugal** | 1.87 | 0.41 | 1.49 | 2.33 | 2.32 |
| **Romania** | 2.36 | 1.89 | 1.72 | 2.54 | 2.59 |
| **Slovakia** | 1.83 | 0.42 | 1.31 | 1.80 | 2.24 |
| **Slovenia** | 1.47 | 1.10 | 1.20 | 1.42 | 1.93 |
| **Spain** | 2.13 | 0.44 | 1.84 | 2.48 | 2.43 |
| **Sweden** | 0.99 | 0.85 | 1.29 | 1.87 | 1.91 |
| **United Kingdom** | 2.08 | 1.54 | 1.55 | 2.37 | 2.49 |
| **EU28** | 1.81 | 0.81 | 1.53 | 2.16 | 2.12 |

Source: Authors' own.

**Table A3.** Average employment (jobs) reduction per 1 million euros of demand reduction.

| | Primary-Sector Commodities | Mining and Quarrying | Manufactured Products | Construction | Services |
|---|---|---|---|---|---|
| **Austria** | 19.70 | 2.82 | 7.17 | 7.71 | 14.95 |
| **Belgium** | 6.91 | 0.88 | 4.57 | 5.90 | 11.47 |
| **Bulgaria** | 75.32 | 19.99 | 39.68 | 33.71 | 84.93 |
| **Croatia** | 56.95 | 19.57 | 24.75 | 31.59 | 45.97 |
| **Cyprus** | 29.57 | 8.93 | 9.40 | 25.07 | 19.35 |
| **Czechia** | 25.85 | 8.30 | 15.13 | 28.49 | 35.26 |
| **Denmark** | 9.33 | 3.13 | 5.62 | 7.68 | 11.15 |
| **Estonia** | 25.45 | 13.43 | 14.16 | 20.40 | 33.68 |
| **Finland** | 15.32 | 3.32 | 7.50 | 7.64 | 15.92 |
| **France** | 14.79 | 2.74 | 8.94 | 14.13 | 16.27 |
| **Germany** | 12.86 | 3.97 | 9.86 | 11.55 | 18.84 |
| **Greece** | 44.56 | 7.54 | 14.87 | 18.58 | 31.51 |
| **Hungary** | 37.07 | 7.31 | 15.99 | 36.26 | 43.05 |
| **Ireland** | 15.31 | 2.66 | 2.90 | 9.57 | 5.06 |
| **Italy** | 19.94 | 6.01 | 13.08 | 17.05 | 20.68 |
| **Latvia** | 44.35 | 19.25 | 18.57 | 28.48 | 46.18 |
| **Lithuania** | 44.80 | 3.51 | 16.43 | 33.26 | 46.94 |
| **Luxembourg** | 2.73 | 0.17 | 0.80 | 0.98 | 1.57 |
| **Malta** | 15.24 | 16.45 | 7.68 | 15.58 | 10.52 |
| **Netherlands** | 7.20 | 1.86 | 4.72 | 7.94 | 11.71 |
| **Poland** | 78.70 | 18.17 | 25.98 | 35.22 | 53.79 |
| **Portugal** | 41.74 | 5.05 | 18.44 | 23.82 | 35.81 |
| **Romania** | 168.37 | 46.61 | 40.27 | 56.25 | 73.80 |
| **Slovakia** | 24.64 | 5.90 | 13.35 | 27.20 | 41.47 |
| **Slovenia** | 32.59 | 13.20 | 12.93 | 16.53 | 28.28 |
| **Spain** | 22.77 | 3.39 | 13.69 | 18.30 | 24.93 |
| **Sweden** | 6.50 | 3.85 | 5.93 | 9.17 | 13.75 |
| **United Kingdom** | 14.26 | 7.45 | 9.23 | 12.31 | 19.39 |
| **EU28** | 23.55 | 4.57 | 10.61 | 15.14 | 19.15 |

Source: Authors' own.

**Table A4.** Average GHG emission (1000 tonnes) reduction per 1 million euros of demand reduction.

| | Primary-Sector Commodities | Mining and Quarrying | Manufactured Products | Construction | Services |
|---|---|---|---|---|---|
| **Austria** | 0.73 | 0.12 | 0.17 | 0.41 | 0.13 |
| **Belgium** | 0.65 | 0.05 | 0.16 | 0.32 | 0.13 |
| **Bulgaria** | 1.54 | 0.52 | 0.93 | 0.61 | 0.90 |
| **Croatia** | 1.15 | 0.46 | 0.38 | 1.99 | 0.36 |
| **Cyprus** | 0.81 | 0.33 | 0.28 | 3.37 | 0.27 |
| **Czechia** | 0.96 | 0.88 | 0.38 | 2.08 | 0.48 |
| **Denmark** | 0.82 | 0.54 | 0.12 | 0.53 | 0.35 |
| **Estonia** | 1.20 | 0.74 | 0.54 | 1.70 | 0.69 |
| **Finland** | 0.77 | 0.14 | 0.27 | 0.77 | 0.24 |
| **France** | 0.92 | 0.06 | 0.17 | 0.76 | 0.14 |
| **Germany** | 0.89 | 0.13 | 0.23 | 0.58 | 0.25 |
| **Greece** | 0.87 | 0.15 | 0.55 | 2.37 | 0.54 |
| **Hungary** | 1.15 | 0.23 | 0.24 | 2.14 | 0.34 |
| **Ireland** | 2.10 | 0.18 | 0.11 | 0.93 | 0.10 |
| **Italy** | 0.56 | 0.16 | 0.26 | 0.85 | 0.21 |
| **Latvia** | 1.49 | 0.24 | 0.25 | 1.29 | 0.44 |
| **Lithuania** | 1.37 | 0.05 | 0.35 | 1.72 | 0.63 |
| **Luxembourg** | 0.60 | 0.03 | 0.07 | 0.20 | 0.06 |
| **Malta** | 0.37 | 0.23 | 0.13 | 1.88 | 0.19 |
| **Netherlands** | 0.60 | 0.13 | 0.17 | 0.43 | 0.16 |
| **Poland** | 1.99 | 1.09 | 0.65 | 1.88 | 0.87 |
| **Portugal** | 0.86 | 0.10 | 0.35 | 2.43 | 0.33 |
| **Romania** | 1.71 | 1.18 | 0.58 | 3.04 | 0.66 |
| **Slovakia** | 0.56 | 0.17 | 0.26 | 1.47 | 0.34 |
| **Slovenia** | 0.83 | 0.48 | 0.25 | 0.46 | 0.38 |
| **Spain** | 0.82 | 0.10 | 0.31 | 1.07 | 0.27 |
| **Sweden** | 0.27 | 0.17 | 0.10 | 0.30 | 0.10 |
| **United Kingdom** | 0.96 | 0.40 | 0.19 | 0.69 | 0.20 |
| **EU28** | 0.89 | 0.24 | 0.24 | 0.85 | 0.22 |

Source: Authors' own.

**Table A5.** Average output (millions of euros) reduction caused by a reduction of 1000 tonnes of GHG emissions through a reduction in demand (disaggregated commodities).

| | C_01 | C_02 | C_03 | C_04 | C_05 | C_06 | C_07 | C_08 | C_09 | C_10 | C_11 | C_12 | C_13 | C_14 | C_15 | C_16 | C_17 | C_18 | C_19 | C_20 | C_21 | C_22 | C_23 | C_24 | C_25 | C_26 | C_27 | C_28 | C_29 | C_30 | C_31 | C_32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Austria** | 1.9 | 16.2 | 15.0 | 4.7 | 7.6 | 15.2 | 15.1 | 5.7 | 15.6 | 4.2 | 6.5 | 16.2 | 12.7 | 2.8 | 2.4 | 8.8 | 15.3 | 14.6 | 14.6 | 16.5 | 16.1 | 11.1 | 14.8 | 4.4 | 8.6 | 4.6 | 12.3 | 18.7 | 14.6 | 15.9 | 5.8 | 3.6 |
| **Belgium** | 2.0 | 5.3 | 3.5 | 3.7 | 7.6 | 12.2 | 12.2 | 9.2 | 10.0 | 5.3 | 4.8 | 16.6 | 10.0 | 2.2 | 4.5 | 11.6 | 14.3 | 13.4 | 11.5 | 16.1 | 13.4 | 13.6 | 14.1 | 1.2 | 10.7 | 4.8 | 11.9 | 15.2 | 13.3 | 14.2 | 7.8 | 7.4 |
| **Bulgaria** | 1.4 | 2.5 | 3.2 | 1.4 | 2.0 | 2.5 | 2.0 | 1.7 | 2.4 | 1.9 | 1.1 | 1.4 | 2.1 | 0.8 | 1.8 | 2.1 | 2.2 | 2.4 | 2.2 | 2.5 | 2.6 | 2.4 | 2.2 | 0.2 | 1.1 | 2.1 | 2.4 | 2.5 | 2.0 | 2.2 | 1.2 | 2.6 |
| **Croatia** | 1.2 | 3.0 | 4.4 | 2.7 | 3.8 | 4.8 | 5.7 | 4.8 | 6.0 | 2.1 | 1.5 | 5.1 | 5.0 | 1.7 | 3.8 | 5.5 | 4.5 | 6.0 | 6.1 | 4.5 | 5.9 | 5.5 | 5.9 | 1.3 | 5.1 | 0.7 | 3.8 | 4.4 | 4.4 | 4.3 | 3.3 | 2.9 |
| **Cyprus** | 1.8 | 5.3 | 4.4 | 2.8 | 3.4 | 5.0 | 5.7 | 5.1 | 5.0 | 4.8 | 3.5 | 4.4 | 4.0 | 0.4 | 4.0 | 4.8 | 4.8 | 5.2 | 5.4 | 5.0 | 5.0 | 5.0 | 6.3 | 0.4 | 1.1 | 0.6 | 3.1 | 6.2 | 6.1 | 4.2 | 3.4 | 11.8 |
| **Czechia** | 1.5 | 6.1 | 3.1 | 0.7 | 3.3 | 4.3 | 5.3 | 3.5 | 5.6 | 2.2 | 1.9 | 4.9 | 4.7 | 2.1 | 1.4 | 4.5 | 5.2 | 5.1 | 4.6 | 7.1 | 5.8 | 5.1 | 3.7 | 0.5 | 2.3 | 1.0 | 4.9 | 6.3 | 4.3 | 5.2 | 2.6 | 2.0 |
| **Denmark** | 1.8 | 9.2 | 3.7 | 2.1 | 5.2 | 13.4 | 12.2 | 9.5 | 15.9 | 3.2 | 10.7 | 17.6 | 13.1 | 2.7 | 10.7 | 13.2 | 16.1 | 15.5 | 16.3 | 13.6 | 14.7 | 16.0 | 12.2 | 1.2 | 14.9 | 3.2 | 11.7 | 12.6 | 12.7 | 14.9 | 3.7 | 1.3 |
| **Estonia** | 1.0 | 3.5 | 2.5 | 1.8 | 2.1 | 3.0 | 3.4 | 1.4 | 2.9 | 0.6 | 2.7 | 3.0 | 2.9 | 1.3 | 2.6 | 3.6 | 6.4 | 4.7 | 3.6 | 3.3 | 3.5 | 3.2 | 3.7 | 0.2 | 0.8 | 1.2 | 3.1 | 3.3 | 3.3 | 2.6 | 1.8 | 1.2 |
| **Finland** | 1.5 | 9.2 | 2.9 | 5.1 | 6.0 | 9.0 | 9.2 | 4.9 | 9.2 | 3.4 | 5.2 | 9.4 | 8.4 | 3.9 | 2.9 | 8.8 | 10.9 | 11.0 | 11.9 | 10.0 | 10.3 | 10.0 | 10.1 | 1.1 | 9.0 | 2.2 | 9.3 | 10.8 | 9.4 | 8.4 | 4.0 | 2.1 |
| **France** | 2.1 | 10.3 | 5.1 | 7.6 | 6.3 | 13.2 | 12.8 | 8.0 | 13.4 | 4.4 | 5.8 | 13.5 | 11.0 | 3.1 | 3.0 | 11.8 | 14.5 | 13.0 | 13.9 | 14.4 | 20.6 | 14.2 | 14.9 | 5.1 | 15.0 | 2.8 | 12.7 | 12.2 | 17.5 | 12.5 | 6.1 | 6.6 |
| **Germany** | 1.7 | 8.5 | 6.3 | 4.1 | 5.6 | 7.7 | 8.0 | 5.0 | 8.0 | 3.4 | 5.0 | 8.2 | 7.2 | 2.4 | 2.9 | 7.6 | 9.1 | 8.5 | 9.8 | 10.5 | 11.1 | 8.5 | 10.2 | 0.7 | 1.4 | 3.6 | 5.9 | 10.2 | 8.2 | 8.1 | 5.3 | 2.1 |
| **Greece** | 2.2 | 3.0 | 6.2 | 4.0 | 3.7 | 4.5 | 4.8 | 4.2 | 4.6 | 3.1 | 3.2 | 4.9 | 3.0 | 0.9 | 2.1 | 3.6 | 4.9 | 0.8 | 3.5 | 4.8 | 4.7 | 4.6 | 3.5 | 0.3 | 1.7 | 0.9 | 3.4 | 5.5 | 4.8 | 5.7 | 1.8 | 4.3 |
| **Hungary** | 1.6 | 3.6 | 3.4 | 1.7 | 3.4 | 5.0 | 4.5 | 3.9 | 5.1 | 2.4 | 2.2 | 4.8 | 5.1 | 1.8 | 2.2 | 5.0 | 9.2 | 7.0 | 5.9 | 8.6 | 6.1 | 5.4 | 6.1 | 0.6 | 3.0 | 0.8 | 4.4 | 4.2 | 4.4 | 4.5 | 3.0 | 3.5 |
| **Ireland** | 0.7 | 1.4 | 3.5 | 2.5 | 3.5 | 8.7 | 3.4 | 10.1 | 11.5 | 4.2 | 12.6 | 23.9 | 7.5 | 1.0 | 1.4 | 5.3 | 26.2 | 8.9 | 12.2 | 7.9 | 7.7 | 10.7 | 10.7 | 0.8 | 9.7 | 2.0 | 7.3 | 8.8 | 10.0 | 7.1 | 2.4 | 4.5 |
| **Italy** | 3.6 | 10.8 | 6.9 | 5.5 | 7.6 | 9.9 | 9.0 | 5.5 | 9.5 | 3.9 | 5.3 | 9.2 | 8.5 | 2.5 | 4.6 | 9.9 | 10.1 | 10.1 | 11.3 | 10.6 | 11.9 | 9.8 | 10.1 | 1.8 | 4.3 | 3.2 | 10.6 | 12.4 | 7.7 | 11.5 | 5.6 | 2.0 |
| **Latvia** | 1.0 | 5.7 | 3.7 | 4.7 | 3.6 | 4.5 | 6.3 | 2.2 | 6.3 | 5.6 | 4.0 | 5.8 | 6.3 | 1.8 | 4.1 | 6.0 | 7.1 | 6.8 | 6.1 | 6.0 | 5.7 | 6.4 | 5.8 | 1.6 | 2.3 | 1.3 | 5.9 | 6.5 | 6.4 | 6.7 | 2.0 | 5.4 |
| **Lithuania** | 1.1 | 4.7 | 1.8 | 3.8 | 3.3 | 4.8 | 4.4 | 4.4 | 5.2 | 2.8 | 1.3 | 4.3 | 3.6 | 1.1 | 4.6 | 5.0 | 4.6 | 4.7 | 4.8 | 4.7 | 4.9 | 4.9 | 6.3 | 1.3 | 4.3 | 1.0 | 5.5 | 4.7 | 4.4 | 5.4 | 1.0 | 3.8 |
| **Luxembourg** | 1.2 | 5.6 | 27.2 | 10.8 | 8.9 | 16.0 | 9.1 | 17.5 | 33.0 | 27.1 | 20.9 | 26.8 | 33.1 | 1.1 | 7.4 | 22.2 | 31.0 | 22.5 | 23.0 | 29.2 | 2.0 | 27.6 | 9.4 | 3.5 | — | 6.1 | 12.9 | 25.9 | 27.4 | 28.2 | 8.1 | 20.3 |
| **Malta** | 3.8 | — | 4.2 | 8.8 | 6.5 | 5.5 | 7.7 | 6.7 | 8.2 | 5.3 | 6.0 | 7.5 | 7.0 | 9.0 | 6.4 | 7.9 | 13.5 | 8.2 | 6.9 | 5.7 | 5.7 | 6.8 | 5.7 | 1.9 | 4.0 | 1.0 | 11.2 | 6.6 | 4.7 | 7.0 | 3.0 | 0.1 |
| **Netherlands** | 2.1 | 5.3 | 2.9 | 4.7 | 6.5 | 10.4 | 11.6 | 8.5 | 13.6 | 3.2 | 3.4 | 11.7 | 7.9 | 5.0 | 2.4 | 9.4 | 17.1 | 11.3 | 12.1 | 12.2 | 14.4 | 10.6 | 12.7 | 0.6 | 6.6 | 3.9 | 7.9 | 13.7 | 12.8 | 11.7 | 6.4 | 2.1 |
| **Poland** | 1.1 | 3.0 | 1.3 | 0.9 | 2.3 | 2.9 | 3.0 | 2.4 | 3.3 | 1.5 | 1.5 | 3.0 | 2.8 | 1.2 | 1.3 | 2.7 | 3.4 | 3.1 | 3.0 | 3.4 | 3.3 | 3.1 | 3.5 | 0.4 | 1.0 | 1.1 | 3.1 | 3.5 | 2.6 | 2.8 | 1.8 | 2.8 |
| **Portugal** | 1.8 | 6.4 | 4.1 | 4.0 | 4.6 | 6.6 | 4.7 | 3.3 | 5.9 | 2.9 | 3.3 | 7.0 | 6.0 | 1.2 | 2.4 | 6.1 | 8.2 | 6.9 | 5.2 | 8.8 | 8.0 | 6.7 | 7.4 | 1.3 | 4.4 | 1.0 | 5.1 | 7.5 | 6.5 | 6.8 | 2.6 | 2.0 |
| **Romania** | 1.3 | 4.3 | 3.2 | 1.6 | 3.0 | 4.1 | 3.9 | 3.0 | 3.9 | 2.3 | 1.7 | 3.5 | 3.5 | 1.2 | 1.5 | 2.9 | 3.7 | 3.7 | 3.4 | 3.9 | 3.7 | 4.1 | 4.1 | 0.8 | 2.8 | 0.8 | 2.7 | 3.9 | 4.3 | 3.9 | 2.9 | 3.8 |
| **Slovakia** | 3.0 | 8.8 | 7.2 | 2.4 | 4.8 | 7.9 | 9.0 | 6.3 | 7.6 | 2.6 | 3.2 | 5.9 | 4.8 | 2.2 | 1.0 | 3.3 | 11.7 | 7.4 | 4.9 | 9.5 | 5.9 | 7.3 | 6.6 | 2.3 | 3.5 | 1.2 | 5.5 | 9.5 | 7.5 | 7.9 | 3.4 | 5.1 |
| **Slovenia** | 1.5 | 6.8 | 7.2 | 2.3 | 3.9 | 7.2 | 7.6 | 3.0 | 7.7 | 6.2 | 5.5 | 8.5 | 7.2 | 2.0 | 3.7 | 6.7 | 7.5 | 8.2 | 7.8 | 8.5 | 7.0 | 7.6 | 9.2 | 0.8 | 5.6 | 3.1 | 7.2 | 9.2 | 6.6 | 7.1 | 1.3 | 9.0 |
| **Spain** | 2.6 | 8.6 | 3.0 | 4.6 | 6.4 | 8.3 | 5.7 | 4.5 | 8.5 | 3.2 | 4.9 | 8.1 | 7.9 | 1.5 | 3.6 | 6.7 | 8.8 | 7.6 | 7.7 | 9.1 | 8.5 | 8.6 | 8.2 | 1.7 | 10.8 | 2.3 | 8.2 | 8.9 | 8.2 | 9.2 | 2.8 | 3.7 |
| **Sweden** | 2.0 | 6.9 | 6.3 | 4.9 | 10.6 | 19.0 | 13.6 | 11.8 | 22.1 | 5.3 | 8.8 | 22.6 | 19.3 | 3.5 | 4.6 | 15.8 | 23.5 | 20.0 | 20.8 | 22.7 | 26.9 | 20.0 | 18.3 | 3.6 | 9.1 | 6.1 | 14.2 | 19.7 | — | — | 9.0 | 1.4 |
| **United Kingdom** | 1.9 | 11.7 | 4.9 | 3.8 | 8.1 | 10.8 | 9.7 | 7.4 | 11.1 | 3.2 | 7.2 | 12.0 | 7.6 | 3.7 | 3.3 | 9.0 | 11.5 | 10.6 | 10.0 | 11.5 | 12.4 | 10.8 | 11.1 | 2.1 | 8.2 | 3.4 | 11.5 | 12.8 | 10.3 | 12.2 | 5.8 | 3.1 |
| **EU28** | 1.9 | 6.9 | 4.3 | 3.4 | 5.4 | 8.3 | 6.7 | 5.3 | 8.3 | 3.3 | 4.7 | 10.4 | 6.7 | 2.1 | 2.8 | 7.1 | 10.4 | 7.5 | 9.4 | 9.4 | 12.0 | 8.3 | 9.7 | 0.9 | 3.5 | 2.5 | 7.9 | 9.9 | 11.3 | 28.3 | 3.2 | 2.4 |

| | C_33 | C_34 | C_35 | C_36 | C_37 | C_38 | C_39 | C_40 | C_41 | C_42 | C_43 | C_44 | C_45 | C_46 | C_47 | C_48 | C_49 | C_50 | C_51 | C_52 | C_53 | C_54 | C_55 | C_56 | C_57 | C_58 | C_59 | C_60 | C_61 | C_62 | C_63 | C_64 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Austria** | 2.3 | 15.9 | 21.9 | 14.5 | 18.6 | 22.9 | 25.2 | 19.6 | 26.1 | 24.3 | 26.9 | 18.3 | 23.4 | 17.1 | 19.7 | 13.7 | 21.4 | 9.3 | 16.3 | 16.2 | 13.1 | 16.5 | 19.4 | 16.8 | 19.8 | 17.2 | 17.4 | 15.8 | 17.4 | 17.5 | 16.4 | 22.0 |
| **Belgium** | 1.3 | 13.0 | 12.2 | 11.4 | 15.4 | 20.9 | 24.0 | 17.0 | 26.3 | 28.8 | 22.8 | 22.0 | 28.1 | 17.4 | 14.9 | 12.2 | 25.5 | 19.2 | 14.8 | 15.0 | 6.7 | 14.0 | 14.7 | 16.3 | 17.3 | 14.2 | 15.1 | 14.1 | 18.2 | 12.8 | 12.4 | 10.2 |
| **Bulgaria** | 2.5 | 2.2 | 2.6 | 2.2 | 2.9 | 3.1 | 2.3 | 2.8 | 3.6 | 4.0 | 3.4 | 2.2 | 4.3 | 3.2 | 3.0 | 3.1 | 3.5 | 2.8 | 2.5 | 2.7 | 3.2 | 2.7 | 3.0 | 3.0 | 2.4 | 2.9 | 3.7 | 3.1 | 3.8 | 3.3 | 2.4 | — |
| **Croatia** | 4.6 | 3.9 | 6.5 | 5.4 | 6.5 | 6.2 | 8.0 | 6.7 | 8.5 | 8.0 | 8.0 | 3.1 | 10.6 | 6.5 | 6.2 | 6.0 | 6.9 | 4.0 | 5.5 | 5.5 | 5.8 | 3.2 | 6.0 | 5.9 | 7.1 | 4.5 | 7.0 | 5.5 | 7.0 | 5.0 | 4.6 | 1.2 |
| **Cyprus** | 6.7 | 10.3 | 5.1 | 3.6 | 10.3 | 4.9 | 7.1 | 12.5 | 8.6 | 4.8 | 9.3 | 5.7 | 6.9 | 6.8 | 5.9 | 5.4 | 5.5 | 6.1 | 6.3 | 7.0 | 6.1 | 5.2 | 5.4 | 5.9 | 5.4 | 4.2 | 7.9 | 4.9 | 4.3 | 7.1 | 5.0 | 6.7 |
| **Czechia** | 5.9 | 4.6 | 5.1 | 4.5 | 6.5 | 8.1 | 7.1 | 5.9 | 6.9 | 7.3 | 8.5 | 3.9 | 7.7 | 5.4 | 6.0 | 4.9 | 7.5 | 6.3 | 5.7 | 5.2 | 7.3 | 2.2 | 4.8 | 4.4 | 4.4 | 4.4 | 5.6 | 5.2 | 5.2 | 3.3 | 4.6 | 5.1 |
| **Denmark** | 1.4 | 11.4 | 11.8 | 10.4 | 16.8 | 19.5 | 18.0 | 16.9 | 23.8 | 23.5 | 23.8 | 21.5 | 30.6 | 17.5 | 17.4 | 15.7 | 21.3 | 17.1 | 15.6 | 16.2 | 4.9 | 12.9 | 15.3 | 14.6 | 15.9 | 13.5 | 16.3 | 13.0 | 16.4 | 15.7 | 16.3 | 15.5 |
| **Estonia** | 3.7 | 3.0 | 3.9 | 2.5 | 3.5 | 4.3 | 4.2 | 3.5 | 4.9 | 5.3 | 5.4 | 2.7 | 6.3 | 3.4 | 3.9 | 2.1 | 3.9 | 4.3 | 2.6 | 4.3 | 4.0 | 3.4 | 2.8 | 2.6 | 3.4 | 2.3 | 3.1 | 2.6 | 2.8 | 4.0 | 2.8 | 7.0 |
| **Finland** | 1.8 | 10.7 | 9.0 | 7.3 | 12.3 | 12.6 | 13.4 | 12.6 | 11.6 | 12.5 | 10.9 | 7.7 | 11.8 | 7.6 | 8.6 | 10.5 | 12.2 | 10.8 | 5.7 | 12.3 | 4.2 | 9.1 | 9.4 | 10.6 | 11.6 | 10.3 | 9.3 | 7.9 | 7.6 | 10.8 | 9.6 | 12.4 |

**Table A5.** *Cont.*

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **France** | 2.0 | 20.0 | 13.7 | 12.0 | 17.9 | 15.8 | 21.3 | 20.8 | 24.5 | 27.1 | 21.9 | 23.9 | 27.6 | 22.1 | 20.3 | 18.7 | 17.5 | 17.6 | 12.1 | 16.8 | 20.0 | 17.5 | 16.5 | 14.1 | 17.1 | 13.7 | 17.3 | 11.7 | 16.7 | 13.0 | 13.8 | 16.1 |
| **Germany** | 2.0 | 7.2 | 7.7 | 7.3 | 10.4 | 12.2 | 11.5 | 11.4 | 12.6 | 13.8 | 12.6 | 11.1 | 14.4 | 9.3 | 8.0 | 8.9 | 12.0 | 10.8 | 9.8 | 12.1 | 17.9 | 8.5 | 9.4 | 9.7 | 9.2 | 9.1 | 10.2 | 7.0 | 9.5 | 9.8 | 8.5 | 11.5 |
| **Greece** | 4.0 | 3.6 | 5.6 | 4.7 | 6.2 | 4.8 | 5.9 | 5.2 | 6.2 | 7.1 | 6.4 | 6.4 | 6.8 | 5.8 | 5.1 | 4.8 | 5.5 | 5.7 | 4.0 | 5.2 | 5.5 | 5.9 | 4.2 | 4.9 | 4.7 | 3.5 | 6.2 | 3.6 | 4.4 | 5.7 | 5.1 | 4.6 |
| **Hungary** | 4.1 | 2.6 | 5.9 | 5.0 | 6.0 | 7.8 | 6.8 | 6.4 | 7.6 | 9.3 | 7.4 | 4.4 | 11.5 | 6.6 | 6.5 | 6.2 | 6.1 | 5.4 | 4.2 | 6.3 | 6.9 | 5.0 | 5.5 | 5.8 | 6.2 | 5.2 | 6.6 | 4.6 | 6.3 | 6.1 | 5.4 | 6.1 |
| **Ireland** | 1.1 | 6.9 | 10.9 | 8.6 | 24.1 | 13.4 | 13.7 | 26.2 | 19.5 | 26.5 | 16.1 | 24.1 | — | 17.9 | 10.7 | 12.6 | 12.6 | 7.6 | 15.6 | 11.7 | 4.8 | 12.0 | 9.6 | 9.3 | 11.6 | — | 14.1 | 9.8 | 12.3 | 10.2 | 12.7 | 16.3 |
| **Italy** | 4.1 | 8.5 | 7.1 | 9.5 | 11.8 | 15.4 | 15.3 | 14.5 | 16.0 | 19.4 | 15.2 | 15.2 | 17.7 | 14.5 | 11.7 | 11.1 | 12.8 | 14.2 | 10.6 | 12.1 | 13.0 | 9.3 | 11.6 | 13.6 | 13.3 | 13.3 | 15.1 | 13.7 | 10.0 | 11.5 | 8.1 | 13.6 |
| **Latvia** | 2.1 | 7.4 | 6.5 | 6.3 | 6.6 | 8.6 | 8.8 | 8.1 | 11.5 | 10.2 | 10.7 | 5.8 | 11.2 | 8.0 | 7.8 | 6.9 | 8.9 | 8.5 | 4.7 | 7.9 | 5.3 | 6.1 | 6.9 | 6.6 | 6.5 | 6.3 | 7.3 | 6.3 | 7.9 | 8.5 | 6.1 | 12.8 |
| **Lithuania** | 4.0 | 3.2 | 6.5 | 5.4 | 5.3 | 6.4 | 7.4 | 6.8 | 8.2 | 8.4 | 7.7 | 6.7 | 8.0 | 7.5 | 6.8 | 5.6 | 7.3 | 5.3 | 6.9 | 6.9 | 7.3 | 5.7 | 6.3 | 5.7 | 6.0 | 5.1 | 6.6 | 6.3 | 7.1 | 7.0 | 6.3 | 5.7 |
| **Luxembourg** | 0.7 | 4.3 | 23.1 | 13.3 | 49.7 | 45.3 | 68.7 | 51.7 | 178.2 | 182.1 | 289.0 | 31.5 | 67.7 | 42.7 | 44.6 | 33.5 | 39.6 | 31.7 | 27.6 | 27.7 | 1.2 | 31.6 | 34.2 | 31.2 | 32.0 | 30.5 | 25.5 | 26.7 | 35.1 | 28.4 | 25.1 | 52.1 |
| **Malta** | 3.3 | 7.1 | 7.8 | 8.1 | 9.2 | 8.8 | 13.4 | 11.5 | 32.9 | 14.7 | 13.5 | 10.6 | 16.8 | 23.6 | 11.2 | 6.0 | 15.4 | 11.2 | 14.8 | 8.1 | 2.4 | 6.4 | 7.9 | 8.9 | 8.7 | 6.9 | 21.9 | 6.5 | 8.8 | 7.2 | 8.6 | 13.4 |
| **Netherlands** | 1.6 | 9.3 | 16.5 | 9.6 | 16.2 | 19.6 | 17.5 | 16.4 | 23.8 | 22.3 | 18.3 | 13.8 | 26.2 | 17.1 | 13.0 | 11.8 | 18.2 | 17.5 | 12.8 | 10.4 | 8.7 | 13.1 | 14.0 | 13.8 | 14.1 | 12.2 | 10.9 | 9.1 | 10.4 | 14.1 | 9.8 | 17.0 |
| **Poland** | 2.1 | 2.5 | 2.6 | 2.7 | 3.3 | 4.2 | 3.8 | 3.8 | 3.5 | 2.4 | 3.5 | 1.6 | 4.3 | 3.2 | 3.6 | 2.9 | 4.0 | 3.5 | 3.1 | 3.0 | 3.2 | 2.6 | 2.9 | 2.7 | 3.2 | 2.9 | 3.0 | 2.4 | 2.9 | 3.2 | 3.1 | 4.3 |
| **Portugal** | 4.5 | 8.7 | 8.9 | 6.2 | 8.0 | 10.1 | 11.1 | 9.4 | 11.0 | 12.0 | 10.6 | 10.3 | 11.1 | 9.0 | 7.3 | 7.3 | 8.6 | 9.2 | 5.5 | 8.3 | 7.5 | 7.7 | 6.8 | 8.3 | 8.6 | 5.9 | 8.2 | 6.8 | 7.5 | 7.5 | 7.2 | 8.8 |
| **Romania** | 3.7 | 3.9 | 3.6 | 4.2 | 4.2 | 4.1 | 4.6 | 4.5 | 4.6 | 4.3 | 4.5 | 4.7 | 5.1 | 4.2 | 4.8 | 4.5 | 4.0 | 3.8 | 4.1 | 3.6 | 4.2 | 3.9 | 3.9 | 4.2 | 4.5 | 2.3 | 4.6 | 5.0 | 4.2 | 3.4 | 4.4 | — |
| **Slovakia** | 7.9 | 6.8 | 3.1 | 6.9 | 9.4 | 10.9 | 10.2 | 10.3 | 12.2 | 14.3 | 12.6 | 8.4 | — | 6.2 | 7.9 | 7.1 | 9.1 | 4.7 | 4.8 | 7.9 | 12.0 | 7.3 | 7.0 | 7.6 | 7.6 | 7.5 | 9.2 | 8.4 | 4.8 | 10.4 | 9.3 | — |
| **Slovenia** | 10.6 | 6.1 | 7.8 | 7.0 | 7.8 | 11.1 | 12.8 | 10.1 | 10.4 | 12.6 | 10.8 | 5.4 | 15.3 | 7.9 | 9.3 | 7.9 | 11.1 | 6.2 | 5.6 | 9.6 | 9.3 | 7.3 | 8.8 | 7.6 | 8.2 | 6.6 | 9.3 | 7.7 | 9.2 | 8.9 | 6.0 | 9.8 |
| **Spain** | 1.9 | 8.2 | 10.0 | 10.3 | 9.2 | 11.3 | 11.6 | 12.3 | 13.1 | 15.7 | 13.2 | 10.2 | 17.9 | 12.6 | 9.9 | 9.7 | 11.1 | 8.0 | 10.7 | 11.0 | 7.4 | 8.7 | 9.7 | 11.2 | 10.8 | 9.7 | 12.5 | 9.4 | 8.1 | 10.7 | 10.9 | 11.8 |
| **Sweden** | 2.4 | 12.7 | 18.1 | 18.7 | 32.1 | 32.8 | 33.1 | 28.1 | 33.8 | 36.4 | 28.9 | 24.2 | 26.5 | 19.2 | 24.5 | 23.2 | 33.5 | 28.4 | 17.1 | 13.5 | 12.1 | 19.9 | 24.7 | 26.7 | 25.9 | 24.8 | 25.1 | 21.1 | 23.7 | 23.1 | 19.6 | 28.6 |
| **United Kingdom** | 1.6 | 11.9 | 9.7 | 11.2 | 12.7 | 16.8 | 15.5 | 14.1 | 16.3 | 17.8 | 15.6 | 16.0 | 17.4 | 15.3 | 13.1 | 12.8 | 15.2 | 14.5 | 10.5 | 14.7 | 16.0 | 14.1 | 13.1 | 13.6 | 13.0 | 13.5 | 14.8 | 12.1 | 15.0 | 14.4 | 14.2 | 14.2 |
| **EU28** | 1.8 | 6.9 | 9.6 | 8.4 | 13.0 | 13.4 | 13.5 | 14.1 | 20.7 | 17.2 | 15.7 | 10.6 | 15.6 | 13.2 | 10.7 | 10.8 | 12.1 | 10.8 | 11.5 | 13.4 | 8.8 | 11.5 | 10.1 | 10.5 | 11.2 | 11.2 | 11.5 | 9.1 | 9.8 | 10.4 | 9.5 | 13.0 |

Source: Authors' own.

**Table A6.** Average employment (jobs) reduction caused by a reduction of 1000 tonnes of GHG emissions through a reduction in demand (disaggregated commodities).

| | C_01 | C_02 | C_03 | C_04 | C_05 | C_06 | C_07 | C_08 | C_09 | C_10 | C_11 | C_12 | C_13 | C_14 | C_15 | C_16 | C_17 | C_18 | C_19 | C_20 | C_21 | C_22 | C_23 | C_24 | C_25 | C_26 | C_27 | C_28 | C_29 | C_30 | C_31 | C_32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Austria** | 26.0 | 83.5 | 77.1 | 22.7 | 49.3 | 100.7 | 74.0 | 27.7 | 85.7 | 20.8 | 27.5 | 101.8 | 69.5 | 15.8 | 10.0 | 51.8 | 92.5 | 78.7 | 76.0 | 78.1 | 87.7 | 71.5 | 75.3 | 11.0 | 39.8 | 18.8 | 77.9 | 118.6 | 84.9 | 152.3 | 33.5 | 12.3 |
| **Belgium** | 10.6 | 14.3 | 15.8 | 19.1 | 33.5 | 63.7 | 57.0 | 39.4 | 52.0 | 12.8 | 15.9 | 66.4 | 43.3 | 10.3 | 14.9 | 55.4 | 80.8 | 64.8 | 54.5 | 69.4 | 60.8 | 76.9 | 60.4 | 4.1 | 41.9 | 18.6 | 56.4 | 82.2 | 56.6 | 125.3 | 41.1 | 24.6 |
| **Bulgaria** | 47.7 | 117.6 | 54.6 | 38.3 | 57.4 | 122.2 | 70.8 | 41.8 | 61.3 | 41.8 | 29.7 | 39.3 | 62.2 | 18.7 | 33.0 | 62.6 | 72.6 | 62.1 | 63.0 | 74.9 | 63.2 | 85.4 | 67.0 | 4.4 | 37.7 | 55.5 | 65.3 | 97.6 | 59.7 | 99.2 | 31.3 | 77.7 |
| **Croatia** | 43.2 | 97.1 | 81.9 | 42.2 | 76.8 | 114.1 | 127.3 | 88.9 | 106.1 | 33.8 | 24.4 | 89.5 | 90.9 | 30.6 | 74.7 | 118.0 | 94.2 | 108.2 | 116.3 | 98.2 | 122.1 | 121.7 | 110.4 | 14.2 | 112.4 | 15.9 | 70.8 | 97.6 | 90.9 | 100.9 | 67.2 | 90.3 |
| **Cyprus** | 28.3 | 166.3 | 60.7 | 27.3 | 46.6 | 82.4 | 109.9 | 52.0 | 82.0 | 81.6 | 54.9 | 57.8 | 53.6 | 4.5 | 47.1 | 77.0 | 70.2 | 65.8 | 60.5 | 79.0 | 76.8 | 87.7 | 42.9 | 2.6 | 6.3 | 7.4 | 39.0 | 113.3 | 85.2 | 78.9 | 45.3 | 58.1 |
| **Czechia** | 21.5 | 84.6 | 76.1 | 9.5 | 42.2 | 66.4 | 72.8 | 38.7 | 79.2 | 21.0 | 21.4 | 64.6 | 49.4 | 26.1 | 15.4 | 61.5 | 49.1 | 51.1 | 52.7 | 62.8 | 63.9 | 81.5 | 45.1 | 3.8 | 26.0 | 13.7 | 60.8 | 87.6 | 47.9 | 107.6 | 35.6 | 65.9 |
| **Denmark** | 10.6 | 51.5 | 13.5 | 5.8 | 25.5 | 80.5 | 71.1 | 46.2 | 89.4 | 7.6 | 46.9 | 73.6 | 67.9 | 14.1 | 53.4 | 72.9 | 84.0 | 83.8 | 76.2 | 79.5 | 84.1 | 77.2 | 62.8 | 4.0 | 77.2 | 14.4 | 60.8 | 86.9 | 51.2 | 161.7 | 18.7 | 2.5 |
| **Estonia** | 16.0 | 45.1 | 19.2 | 18.2 | 29.0 | 54.5 | 41.4 | 16.9 | 44.0 | 7.6 | 34.7 | 41.8 | 39.1 | 18.3 | 27.7 | 50.9 | 53.6 | 55.9 | 43.7 | 44.8 | 37.4 | 50.6 | 49.0 | 1.9 | 5.1 | 12.0 | 52.8 | 56.3 | 39.5 | 59.4 | 25.3 | 11.1 |
| **Finland** | 14.6 | 54.6 | 11.8 | 23.6 | 36.1 | 60.1 | 48.6 | 19.4 | 58.8 | 11.6 | 21.2 | 54.3 | 43.4 | 22.7 | 10.2 | 50.6 | 61.0 | 57.9 | 58.6 | 58.0 | 57.0 | 62.8 | 55.8 | 4.3 | 41.5 | 10.0 | 53.4 | 75.2 | 51.8 | 74.3 | 26.0 | 10.0 |
| **France** | 14.8 | 62.5 | 35.4 | 48.4 | 37.6 | 92.0 | 84.4 | 44.3 | 93.8 | 16.9 | 30.0 | 83.3 | 69.5 | 18.4 | 15.3 | 74.7 | 96.9 | 83.2 | 88.4 | 85.3 | 92.6 | 101.7 | 70.5 | 17.1 | 82.8 | 18.7 | 77.8 | 91.3 | 95.4 | 115.7 | 46.7 | 26.1 |
| **Germany** | 13.8 | 54.2 | 59.3 | 31.3 | 38.8 | 63.7 | 48.1 | 28.2 | 63.4 | 15.3 | 26.9 | 56.4 | 42.7 | 15.2 | 13.1 | 50.3 | 65.7 | 48.9 | 60.3 | 54.7 | 63.6 | 69.8 | 56.4 | 3.6 | 6.8 | 19.9 | 45.5 | 86.7 | 54.3 | 92.7 | 32.4 | 9.3 |
| **Greece** | 48.3 | 84.3 | 80.1 | 50.9 | 52.6 | 65.5 | 91.4 | 46.9 | 74.2 | 22.1 | 36.1 | 64.0 | 33.3 | 9.9 | 18.7 | 40.7 | 66.2 | 8.6 | 40.2 | 66.9 | 64.5 | 69.0 | 35.6 | 2.6 | 15.8 | 7.8 | 46.2 | 80.5 | 49.9 | 126.2 | 24.2 | 35.5 |
| **Hungary** | 31.1 | 118.9 | 44.0 | 31.5 | 61.4 | 138.9 | 107.7 | 63.1 | 121.8 | 26.7 | 27.6 | 74.5 | 70.8 | 27.5 | 31.7 | 88.6 | 109.1 | 95.7 | 85.6 | 93.1 | 101.7 | 118.3 | 117.0 | 8.2 | 75.0 | 17.0 | 95.1 | 97.3 | 66.4 | 146.3 | 61.7 | 36.4 |
| **Ireland** | 6.9 | 10.4 | 26.0 | 14.5 | 16.6 | 73.2 | 19.0 | 48.6 | 84.1 | 16.1 | 24.4 | 49.7 | 28.8 | 4.9 | 8.0 | 32.9 | 42.0 | 36.3 | 70.0 | 53.6 | 50.6 | 39.8 | 55.3 | 2.3 | 91.4 | 10.3 | 43.8 | 113.3 | 33.6 | 78.1 | 19.6 | 10.5 |
| **Italy** | 31.6 | 162.7 | 53.5 | 37.1 | 48.6 | 65.0 | 65.9 | 31.4 | 65.4 | 17.2 | 28.7 | 59.6 | 49.6 | 16.1 | 24.8 | 63.4 | 67.9 | 61.2 | 67.0 | 62.9 | 71.9 | 71.3 | 65.1 | 7.6 | 25.1 | 20.1 | 74.7 | 97.3 | 45.1 | 108.9 | 33.7 | 10.7 |
| **Latvia** | 24.8 | 108.9 | 98.6 | 80.3 | 65.7 | 106.8 | 93.5 | 29.2 | 99.6 | 108.2 | 68.8 | 106.2 | 105.2 | 28.0 | 60.1 | 117.1 | 116.0 | 109.2 | 112.3 | 96.1 | 74.1 | 122.0 | 115.3 | 18.7 | 49.7 | 22.0 | 92.1 | 171.2 | 87.5 | 180.2 | 37.0 | 154.9 |

**Table A6.** *Cont.*

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lithuania** | 29.3 | 118.5 | 36.8 | 66.8 | 58.2 | 113.4 | 83.0 | 69.9 | 87.9 | 22.9 | 15.9 | 78.2 | 48.0 | 20.1 | 76.2 | 92.0 | 85.1 | 78.7 | 94.6 | 91.9 | 85.9 | 90.3 | 107.9 | 15.0 | 87.1 | 19.3 | 116.2 | 115.7 | 74.6 | 153.0 | 16.4 | 51.7 |
| **Luxembourg** | 4.5 | 5.8 | 45.0 | 6.2 | 14.1 | 24.1 | 5.4 | 18.5 | 36.3 | 43.7 | 19.2 | 42.6 | 29.1 | 0.8 | 6.9 | 25.8 | 48.9 | 26.4 | 26.7 | 38.9 | 2.2 | 42.6 | 13.6 | 4.1 | — | 4.9 | 25.3 | 78.4 | 31.7 | 47.5 | 21.3 | 23.1 |
| **Malta** | 44.0 | — | 35.5 | 70.4 | 76.3 | 58.4 | 60.7 | 67.3 | 76.1 | 78.7 | 72.3 | 74.0 | 69.4 | 94.7 | 76.2 | 103.5 | 70.3 | 57.7 | 67.0 | 82.4 | 82.4 | 92.1 | 49.5 | 3.2 | 40.3 | 8.3 | 115.4 | 95.9 | 53.0 | 128.8 | 34.4 | 0.9 |
| **Netherlands** | 11.8 | 21.1 | 17.1 | 14.4 | 28.8 | 66.5 | 69.0 | 38.8 | 76.2 | 7.7 | 11.2 | 63.2 | 37.4 | 25.9 | 11.3 | 46.4 | 70.0 | 58.6 | 55.7 | 60.6 | 62.8 | 79.7 | 54.0 | 1.7 | 26.9 | 18.4 | 38.3 | 82.2 | 61.3 | 131.2 | 35.4 | 6.6 |
| **Poland** | 39.0 | 62.6 | 30.4 | 16.7 | 43.9 | 60.1 | 52.8 | 34.8 | 57.5 | 19.5 | 21.6 | 51.8 | 41.0 | 20.5 | 20.1 | 42.6 | 53.0 | 47.0 | 48.8 | 49.3 | 54.8 | 59.4 | 52.4 | 5.0 | 20.1 | 18.8 | 50.1 | 61.8 | 40.3 | 65.4 | 30.3 | 56.9 |
| **Portugal** | 45.5 | 82.3 | 65.6 | 49.7 | 63.7 | 104.8 | 59.2 | 32.6 | 80.5 | 21.0 | 33.0 | 94.9 | 63.0 | 15.0 | 21.1 | 84.4 | 95.8 | 69.9 | 59.2 | 98.2 | 108.1 | 105.5 | 95.6 | 7.0 | 47.3 | 9.8 | 72.7 | 127.6 | 73.1 | 139.7 | 33.2 | 15.8 |
| **Romania** | 97.9 | 124.7 | 74.3 | 39.5 | 93.7 | 136.6 | 97.2 | 64.3 | 70.7 | 41.0 | 36.9 | 86.6 | 74.7 | 28.1 | 27.9 | 68.9 | 89.1 | 80.7 | 78.1 | 80.1 | 86.7 | 110.8 | 109.1 | 13.2 | 94.1 | 18.5 | 64.5 | 114.9 | 83.8 | 139.2 | 66.4 | 91.8 |
| **Slovakia** | 40.0 | 120.1 | 65.4 | 34.2 | 65.5 | 145.5 | 113.4 | 73.8 | 104.9 | 18.6 | 36.3 | 76.6 | 55.0 | 29.0 | 10.2 | 37.9 | 104.4 | 86.9 | 62.8 | 73.9 | 78.8 | 110.9 | 62.4 | 15.5 | 48.1 | 18.4 | 72.5 | 144.3 | 89.6 | 135.1 | 45.1 | 115.5 |
| **Slovenia** | 36.9 | 78.1 | 70.5 | 27.5 | 56.3 | 92.9 | 81.1 | 27.3 | 94.4 | 80.6 | 50.6 | 81.8 | 74.1 | 22.5 | 32.5 | 76.7 | 90.3 | 88.0 | 83.3 | 89.4 | 83.3 | 106.9 | 97.0 | 7.4 | 48.2 | 35.7 | 76.7 | 112.8 | 74.6 | 117.4 | 14.2 | 52.1 |
| **Spain** | 27.4 | 114.7 | 29.3 | 35.4 | 49.3 | 78.8 | 53.3 | 33.0 | 74.1 | 17.8 | 32.4 | 74.7 | 55.9 | 11.4 | 19.8 | 49.9 | 81.3 | 55.1 | 59.5 | 60.8 | 55.4 | 83.5 | 60.7 | 7.5 | 71.0 | 17.2 | 65.0 | 83.3 | 64.7 | 136.3 | 25.2 | 26.5 |
| **Sweden** | 15.6 | 36.9 | 47.5 | 22.3 | 55.2 | 118.5 | 60.1 | 46.3 | 118.8 | 16.0 | 37.1 | 103.8 | 94.0 | 15.9 | 17.8 | 78.5 | 124.4 | 93.4 | 99.8 | 96.9 | 115.4 | 113.3 | 95.7 | 13.1 | 34.1 | 30.2 | 81.6 | 124.2 | — | — | 50.9 | 5.2 |
| **United Kingdom** | 13.7 | 104.4 | 25.9 | 18.4 | 48.0 | 75.0 | 63.8 | 42.2 | 68.4 | 13.2 | 39.1 | 72.2 | 43.7 | 20.6 | 18.0 | 54.5 | 78.3 | 65.7 | 60.9 | 62.7 | 72.3 | 74.4 | 73.7 | 6.7 | 50.3 | 17.8 | 70.5 | 79.0 | 57.2 | 105.3 | 40.5 | 13.0 |
| **EU28** | 25.3 | 74.7 | 37.6 | 19.1 | 41.9 | 77.0 | 62.3 | 32.6 | 66.4 | 17.4 | 25.6 | 66.8 | 49.1 | 16.4 | 16.9 | 54.7 | 70.6 | 57.0 | 63.7 | 62.6 | 71.7 | 74.9 | 62.8 | 5.1 | 30.2 | 17.4 | 61.7 | 91.7 | 52.0 | 44.1 | 35.4 | 10.8 |

| | **C_33** | **C_34** | **C_35** | **C_36** | **C_37** | **C_38** | **C_39** | **C_40** | **C_41** | **C_42** | **C_43** | **C_44** | **C_45** | **C_46** | **C_47** | **C_48** | **C_49** | **C_50** | **C_51** | **C_52** | **C_53** | **C_54** | **C_55** | **C_56** | **C_57** | **C_58** | **C_59** | **C_60** | **C_61** | **C_62** | **C_63** | **C_64** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Austria** | 10.3 | 98.0 | 178.5 | 113.8 | 113.1 | 116.3 | 113.0 | 122.7 | 148.3 | 129.6 | 173.4 | 78.8 | 65.3 | 102.6 | 138.7 | 86.3 | 126.6 | 96.4 | 79.8 | 65.1 | 90.5 | 145.7 | 167.7 | 165.3 | 170.4 | 207.0 | 150.5 | 163.5 | 146.5 | 126.6 | 186.5 | 646.8 |
| **Belgium** | 5.0 | 49.0 | 83.8 | 77.5 | 78.7 | 103.7 | 84.1 | 90.3 | 91.7 | 104.9 | 104.4 | 68.4 | 48.6 | 60.8 | 75.4 | 69.0 | 94.0 | 156.4 | 91.4 | 39.8 | 29.3 | 116.9 | 110.9 | 161.4 | 121.7 | 204.9 | 122.2 | 96.3 | 91.4 | 96.9 | 130.5 | 77.1 |
| **Bulgaria** | 46.0 | 47.9 | 101.7 | 107.1 | 107.9 | 98.0 | 47.5 | 80.2 | 87.4 | 98.3 | 89.6 | 47.7 | 49.5 | 115.9 | 95.0 | 94.6 | 97.4 | 89.2 | 59.1 | 65.5 | 78.5 | 144.4 | 131.3 | 151.1 | 99.1 | 155.4 | 100.3 | 109.9 | 134.9 | 151.3 | 100.9 | — |
| **Croatia** | 54.9 | 84.8 | 188.7 | 122.6 | 148.8 | 125.9 | 109.5 | 128.5 | 114.1 | 157.0 | 137.6 | 54.2 | 73.9 | 104.7 | 114.4 | 99.6 | 107.4 | 117.6 | 75.6 | 57.4 | 86.8 | 129.9 | 134.5 | 200.6 | 179.5 | 168.0 | 153.8 | 103.9 | 143.5 | 123.2 | 149.4 | 66.9 |
| **Cyprus** | 48.6 | 63.8 | 101.1 | 48.7 | 66.2 | 65.9 | 61.8 | 80.8 | 66.7 | 41.8 | 76.8 | 46.1 | 39.4 | 81.3 | 105.5 | 71.5 | 47.5 | 120.8 | 95.5 | 47.7 | 88.3 | 140.5 | 75.2 | 101.1 | 77.8 | 91.1 | 114.2 | 62.0 | 66.9 | 106.9 | 105.4 | 386.7 |
| **Czechia** | 48.2 | 45.6 | 117.7 | 94.3 | 82.3 | 84.5 | 62.0 | 74.8 | 74.1 | 86.0 | 144.8 | 41.2 | 42.3 | 75.0 | 73.2 | 66.5 | 100.8 | 83.0 | 55.2 | 47.7 | 75.4 | 41.2 | 86.9 | 111.6 | 89.1 | 171.5 | 102.1 | 85.9 | 75.1 | 61.3 | 129.5 | 659.4 |
| **Denmark** | 4.6 | 51.9 | 85.7 | 90.3 | 95.6 | 96.6 | 70.4 | 100.7 | 94.3 | 107.4 | 82.4 | 70.0 | 58.4 | 103.5 | 96.3 | 87.4 | 121.1 | 113.9 | 88.3 | 45.1 | 22.9 | 95.9 | 98.1 | 132.7 | 118.9 | 149.3 | 110.0 | 138.6 | 145.5 | 92.8 | 165.2 | 100.3 |
| **Estonia** | 25.3 | 27.4 | 97.5 | 53.9 | 62.2 | 76.1 | 48.2 | 52.2 | 52.1 | 48.9 | 40.3 | 31.0 | 32.4 | 48.3 | 72.9 | 27.3 | 58.0 | 60.3 | 28.7 | 30.0 | 56.7 | 68.6 | 52.3 | 88.2 | 78.1 | 81.5 | 65.9 | 42.9 | 57.0 | 37.2 | 101.2 | 24.9 |
| **Finland** | 7.2 | 53.2 | 87.4 | 57.8 | 75.4 | 72.9 | 60.6 | 70.9 | 61.4 | 65.0 | 54.9 | 34.6 | 31.6 | 47.5 | 61.3 | 72.8 | 81.4 | 89.1 | 33.9 | 46.4 | 27.3 | 96.8 | 52.6 | 95.8 | 101.6 | 117.5 | 78.7 | 65.4 | 60.2 | 91.5 | 99.7 | 267.4 |
| **France** | 10.3 | 110.6 | 162.3 | 91.7 | 104.8 | 81.2 | 91.5 | 113.5 | 125.4 | 121.3 | 109.7 | 108.5 | 65.4 | 112.2 | 128.5 | 86.2 | 111.8 | 135.8 | 57.1 | 60.4 | 123.5 | 128.0 | 140.4 | 146.5 | 153.6 | 200.9 | 129.4 | 82.3 | 170.6 | 79.5 | 164.1 | 624.8 |
| **Germany** | 10.0 | 50.8 | 61.4 | 79.5 | 90.1 | 68.6 | 43.9 | 67.0 | 76.0 | 75.7 | 114.1 | 44.8 | 44.8 | 64.5 | 60.6 | 58.3 | 82.7 | 100.2 | 45.4 | 41.7 | 94.0 | 98.6 | 81.7 | 109.5 | 93.0 | 142.1 | 89.3 | 50.3 | 92.1 | 142.2 | 74.0 | 203.1 |
| **Greece** | 36.5 | 35.8 | 84.3 | 68.2 | 70.5 | 74.5 | 47.8 | 65.4 | 65.9 | 78.0 | 72.2 | 48.9 | 43.2 | 89.3 | 117.5 | 66.2 | 64.1 | 62.5 | 46.2 | 37.6 | 63.9 | 93.9 | 58.5 | 96.4 | 73.8 | 115.6 | 70.3 | 69.9 | 41.0 | 75.2 | 141.0 | 196.5 |
| **Hungary** | 40.1 | 40.6 | 239.7 | 147.9 | 125.7 | 108.4 | 78.0 | 121.4 | 136.0 | 169.4 | 154.4 | 57.1 | 88.6 | 140.2 | 94.4 | 86.0 | 135.3 | 102.5 | 70.1 | 64.7 | 151.1 | 152.3 | 167.7 | 229.8 | 160.2 | 222.1 | 172.9 | 114.1 | 117.8 | 176.0 | 195.2 | 751.1 |
| **Ireland** | 3.6 | 36.7 | 93.1 | 121.9 | 48.7 | 105.0 | 70.8 | 56.4 | 70.0 | 66.7 | 45.6 | 49.2 | — | 70.5 | 111.2 | 71.4 | 89.2 | 51.9 | 43.8 | 35.3 | 49.9 | 143.4 | 63.3 | 95.5 | 88.7 | — | 237.1 | 141.6 | 94.5 | 95.6 | 187.6 | 2,060.6 |
| **Italy** | 19.6 | 47.3 | 96.9 | 83.5 | 82.4 | 88.9 | 77.5 | 93.2 | 92.4 | 107.8 | 86.6 | 69.0 | 58.3 | 112.7 | 96.4 | 66.6 | 81.2 | 113.4 | 68.8 | 50.1 | 80.8 | 81.3 | 94.9 | 170.6 | 110.6 | 173.1 | 102.4 | 105.0 | 97.7 | 109.1 | 84.1 | 294.2 |
| **Latvia** | 20.9 | 83.6 | 186.4 | 159.7 | 125.4 | 145.6 | 119.9 | 138.3 | 157.5 | 171.2 | 180.5 | 89.2 | 84.5 | 192.7 | 128.2 | 148.4 | 144.4 | 211.9 | 62.2 | 74.1 | 74.9 | 150.7 | 147.9 | 242.7 | 191.1 | 301.3 | 177.7 | 144.6 | 156.5 | 237.8 | 308.9 | 73.6 |
| **Lithuania** | 48.9 | 44.7 | 191.2 | 144.8 | 111.6 | 82.1 | 95.1 | 133.9 | 136.2 | 163.2 | 164.5 | 98.1 | 68.7 | 177.3 | 131.5 | 179.7 | 122.8 | 117.5 | 147.9 | 59.1 | 151.9 | 183.1 | 143.6 | 242.8 | 191.0 | 170.3 | 191.6 | 242.6 | 252.8 | 159.6 | 183.7 | 56.1 |
| **Luxembourg** | 0.9 | 8.3 | 14.9 | 57.4 | 41.9 | 53.2 | 72.3 | 40.8 | 75.2 | 126.0 | 68.7 | 36.1 | 29.7 | 88.3 | 42.3 | 98.7 | 41.5 | 41.1 | 27.0 | 34.9 | 3.4 | 51.3 | 194.2 | 213.7 | 143.0 | 204.4 | 60.6 | 63.0 | 115.6 | 34.1 | 161.1 | 1,177.8 |
| **Malta** | 21.2 | 50.7 | 128.3 | 98.6 | 97.1 | 140.4 | 91.3 | 92.2 | 87.9 | 105.0 | 79.7 | 97.1 | 59.5 | 103.5 | 108.8 | 68.1 | 91.4 | 147.3 | 57.1 | 45.4 | 18.7 | 99.8 | 125.8 | 211.5 | 140.4 | 153.0 | 93.2 | 89.9 | 144.6 | 119.4 | 172.6 | 274.9 |
| **Netherlands** | 5.5 | 39.0 | 149.4 | 85.6 | 89.1 | 101.5 | 59.4 | 82.9 | 86.2 | 92.9 | 95.7 | 49.1 | 58.9 | 83.3 | 82.5 | 77.0 | 109.0 | 148.9 | 95.9 | 31.5 | 33.1 | 106.0 | 86.6 | 132.3 | 131.9 | 156.9 | 99.5 | 74.3 | 79.0 | 116.6 | 124.7 | 101.6 |
| **Poland** | 27.7 | 36.0 | 98.4 | 64.8 | 54.9 | 60.4 | 56.4 | 61.6 | 57.3 | 38.4 | 55.6 | 22.1 | 39.5 | 54.3 | 61.3 | 58.4 | 58.2 | 69.4 | 49.0 | 33.5 | 47.2 | 69.8 | 74.5 | 87.1 | 69.7 | 88.6 | 84.7 | 52.8 | 59.5 | 68.2 | 70.9 | 140.8 |
| **Portugal** | 37.0 | 88.2 | 128.1 | 92.2 | 107.2 | 122.5 | 109.2 | 121.5 | 118.5 | 120.4 | 114.1 | 96.2 | 67.4 | 126.3 | 111.5 | 111.8 | 132.3 | 170.5 | 63.2 | 65.6 | 118.7 | 139.2 | 108.4 | 189.9 | 135.0 | 151.5 | 161.0 | 118.1 | 107.9 | 171.9 | 166.3 | 455.6 |
| **Romania** | 72.8 | 72.3 | 122.9 | 125.9 | 93.5 | 78.6 | 90.8 | 88.9 | 95.0 | 99.6 | 87.8 | 77.9 | 69.0 | 84.9 | 85.8 | 87.3 | 70.1 | 79.1 | 60.9 | 62.7 | 82.2 | 126.9 | 154.8 | 158.8 | 136.1 | 248.7 | 90.9 | 117.5 | 102.8 | 72.3 | 124.5 | — |
| **Slovakia** | 109.7 | 63.5 | 64.8 | 197.0 | 110.8 | 109.2 | 99.5 | 131.3 | 116.2 | 137.7 | 147.2 | 72.4 | — | 68.7 | 72.1 | 117.1 | 97.1 | 40.6 | 63.5 | 76.1 | 149.1 | 96.1 | 152.3 | 209.8 | 156.9 | 417.5 | 103.1 | 143.3 | 68.0 | 139.7 | 218.7 | — |
| **Slovenia** | 86.2 | 49.5 | 131.6 | 132.4 | 98.1 | 139.9 | 114.0 | 136.6 | 119.8 | 131.0 | 117.7 | 58.9 | 63.7 | 92.0 | 100.5 | 93.1 | 124.0 | 65.8 | 64.5 | 60.2 | 91.9 | 134.4 | 136.5 | 176.5 | 126.5 | 155.3 | 148.1 | 115.6 | 117.7 | 114.8 | 110.3 | 59.4 |
| **Spain** | 11.4 | 59.7 | 142.5 | 104.3 | 82.0 | 84.1 | 80.0 | 103.8 | 97.4 | 134.2 | 97.6 | 71.3 | 65.5 | 130.6 | 79.5 | 94.7 | 92.1 | 81.8 | 82.3 | 54.6 | 61.0 | 110.2 | 110.8 | 139.5 | 113.4 | 134.0 | 116.4 | 98.7 | 83.4 | 145.6 | 158.2 | 393.6 |
| **Sweden** | 9.8 | 54.4 | 127.5 | 145.6 | 137.0 | 178.6 | 125.6 | 140.1 | 145.7 | 155.9 | 223.7 | 101.1 | 69.8 | 144.3 | 149.1 | 101.6 | 186.8 | 190.1 | 125.7 | 45.8 | 47.9 | 150.2 | 182.4 | 298.6 | 195.8 | 250.8 | 196.3 | 167.6 | 200.6 | 151.8 | 198.1 | 68.7 |
| **United Kingdom** | 7.4 | 71.2 | 80.1 | 93.7 | 82.7 | 94.9 | 72.5 | 91.5 | 82.6 | 86.2 | 111.4 | 76.8 | 56.2 | 102.3 | 88.7 | 88.9 | 101.9 | 118.0 | 77.3 | 60.6 | 86.2 | 118.6 | 98.2 | 145.9 | 106.9 | 176.3 | 109.5 | 158.9 | 113.3 | 121.8 | 135.3 | 85.9 |
| **EU28** | 9.9 | 50.0 | 101.6 | 92.7 | 84.5 | 85.9 | 72.1 | 89.0 | 85.0 | 86.1 | 106.0 | 56.1 | 56.0 | 88.6 | 81.6 | 73.7 | 91.0 | 99.2 | 68.0 | 51.7 | 54.4 | 109.4 | 98.9 | 135.1 | 110.3 | 159.6 | 107.3 | 87.7 | 95.8 | 98.2 | 128.7 | 317.1 |

Source: Authors' own.

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