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The green reallocation

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Abstract

Environmental protection is at the top of the EU's economic policy agenda. Fueled by the increasing support for green movements and the Fridays for Future initiative, policymakers have plunged into climate actionism and set ever stricter climate goals. This can have unintended social and economic consequences.

Zusammenfassung

Der Umweltschutz steht ganz oben auf der wirtschaftspolitischen Agenda der EU. Getragen von der zunehmenden Unterstützung für grüne Bewegungen und der Initiative Friday for Future haben sich die politischen Entscheidungsträger in den Klimaschutz gestürzt und sich immer strengere Klimaziele gesetzt. Dies kann unbeabsichtigte soziale und wirtschaftliche Folgen haben.

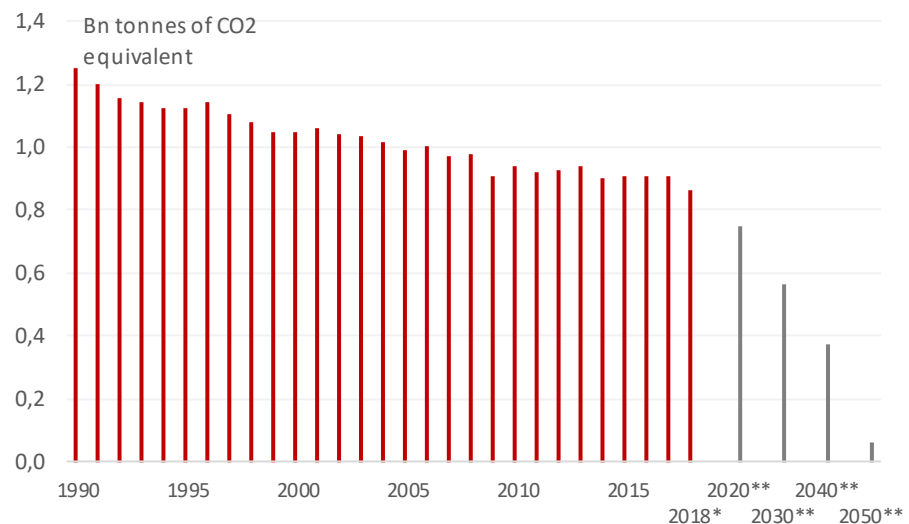


EU's environmental targets

The benchmark for climate protection policy within the EU is set by the international agreements of the UN Framework Convention on Climate Change and its additional protocols, the Kyoto Protocol and the Paris Convention. For the current commitment period of the Kyoto Protocol (2012 - 2020), the European Union has committed itself to reducing its greenhouse gas emissions by 20% by 2020 compared to 1990 levels.

The EU member states intend to meet this target together, although single countries contribute to the common goal with their own commitments. To comply with the agreements, Germany, for instance, has promised to reduce its emissions by 40% until 2020, by 55% until 2030, by 70% until 2040 and to become almost emission-neutral by 2050. The track record so far – a 25% reduction over the last 30 years and almost no change since 2009 – raises doubts about future progress (**Fig. 1**).¹ Similarly ambitious are EU-wide goals (**Fig. 2**). Given the rising support for green movements across Europe, it is reasonable to expect that further steps will be taken to drastically tighten actual emissions.

Figure 1. Germany's greenhouse gas actual emissions and their targets



* projections

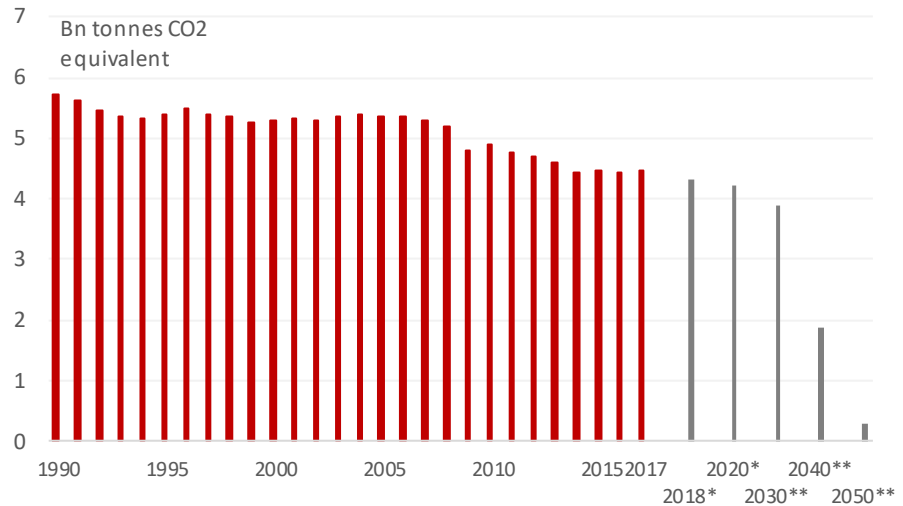
** projections according to the Climate Protection Plan 2050 of the German government

Source: German Environment Agency (Umweltbundesamt)

¹ Since the failure to reach the subsequent goal is foreseeable, Germany has already taken further steps to reduce its emissions. Based on a newest EU regulation 2019/632, car manufacturers must reduce the average emissions of new cars by 37.5% by 2030 compared to 2021.



Figure 2. EU's greenhouse gas actual emissions and their targets



* projections with existing measures

** projections with additional measures as planned by Member States and submitted to the European Environmental Agency

Source: European Environmental Agency

Socio-economic aspects of climate policy

Although protecting the environment should be the integral part of responsibly managed business, it is equally important to understand the economic and social consequences of the structural change associated with it. Insisting on the achievement of ever stricter climate targets and pushing for green investment unduly for whatever it takes is against the stakeholder model, according to which any economic decision should balance interests and trade-offs of the parties involved. A politically, economically and socially balanced approach would need to reconcile both the benefits and the costs of environmental protection. However, the current political debate strongly focuses only on the former and neglects the latter.

Two kinds of effects on the real economy are likely. Environmental protection could – in the long run – spur green innovations and thus contribute to economic growth. At the same time, however, in the short- and medium-term “dirty” plants would have to be closed or at least adapted to new environmental standards. As this entails direct and non-negligible cost for companies, their profits would shrink, leaving less available resources for all kinds of investment, green and dirty alike. All this would have negative consequences for the stock of existing capital and employment. The negative



effects would be amplified by capital outflows from the less profitable EU region towards countries such as the US, which are more reluctant to drastically increase environmental protection. Regarding the labor market consequences, after appropriate training, a part of the labor force could be shifted from dirty to clean production. However, due to labor market rigidities and substantial time-lags in implementing the appropriate policy measures, a large part of the labor force would be pushed out of the labor market.

There is a broad economic literature analyzing socio-economic aspects of climate policy, but the bulk of the research focuses on the US economy. Among recent contributions, Walker studies the impact on employment in companies and business sectors in response to county environmental regulations resulting from the 1990 Clean Air Act changes. He finds that the size of the regulated sectors fell by 15% in the 10 years following the changes.² For the less investigated EU case, a simulation exercise by Böhringer, Löschel, Moslener and Rutherford shows that EU climate policy to reach 2020 targets (as defined in 2009) would cause initial market distortions and non-negligible compliance costs.³

This paper looks at the possible reallocation effects in the EU and its member countries by analyzing the sectoral CO₂ emission patterns. The aim is to answer two key questions: 1) which EU countries may be the first in line to intensify their environmental policy effort in order to comply with the EU-wide targets, and 2) which industrial sectors are likely to be most affected by the reallocation of economic activity and employment.

Green reallocation

Figure 3 shows that 12 EU member countries have a CO₂ emission per employee from production above the EU-average.⁴ Half of them belong to new EU-members from Eastern and Southern Europe (Estonia, Czech Republic, Poland, Cyprus, Malta and Slovakia), the other half are old EU-members (Denmark, Finland, Belgium, Netherlands, Greece and Germany). Given the above-average emissions, these economies are likely to be most affected by the pursuit of climate policy goals.

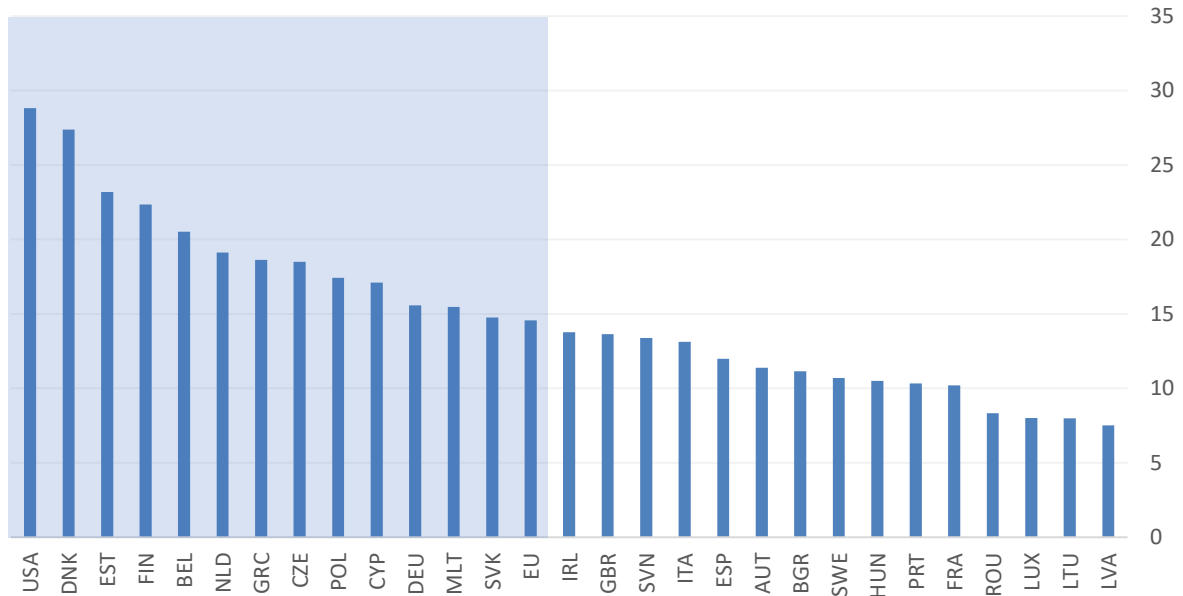
² Walker, W. Reed (2011), Environmental Regulation and Labor Reallocation: Evidence from the Clean Air Act, *American Economic Review*, 101(3): 442-447.

³ Böhringer, Christoph, Andreas Löschel, Ulf Moslener and Thomas F. Rutherford (2009), EU climate policy up to 2020: An economic impact assessment, *Energy Economics*, 31(2): S295-S305.

⁴ International comparisons are typically based on total CO₂ emissions (from consumption and production) per capita (not per employee). From the investor's point of view more relevant is the assessment of production-related CO₂ emissions per capita or per employee.



Figure 3. Total CO₂ emission per employee from production (in kilotons)



Note: Data refer to the year 2009, as the last observation available at the industry-level. However, national industrial structures change only gradually, which gives confidence that at least the relative positioning of the countries has not changed much since 2009. Also CO₂ emissions changed marginally since 2009, as shown in Figures 1 and 2.

Source: Own elaborations Flossbach von Storch Research Institute based on World Input Output Database

Looking at the sectoral CO₂ emissions in each of the 12 identified EU members, **Figure 4** shows the industrial sectors with the highest CO₂ emissions, i.e., those in the last quartile of the sectoral distribution of the country-level emissions. This view allows a more detailed analysis of the possible targets for CO₂ emission cuts and related reallocation effects taking place in each single country.

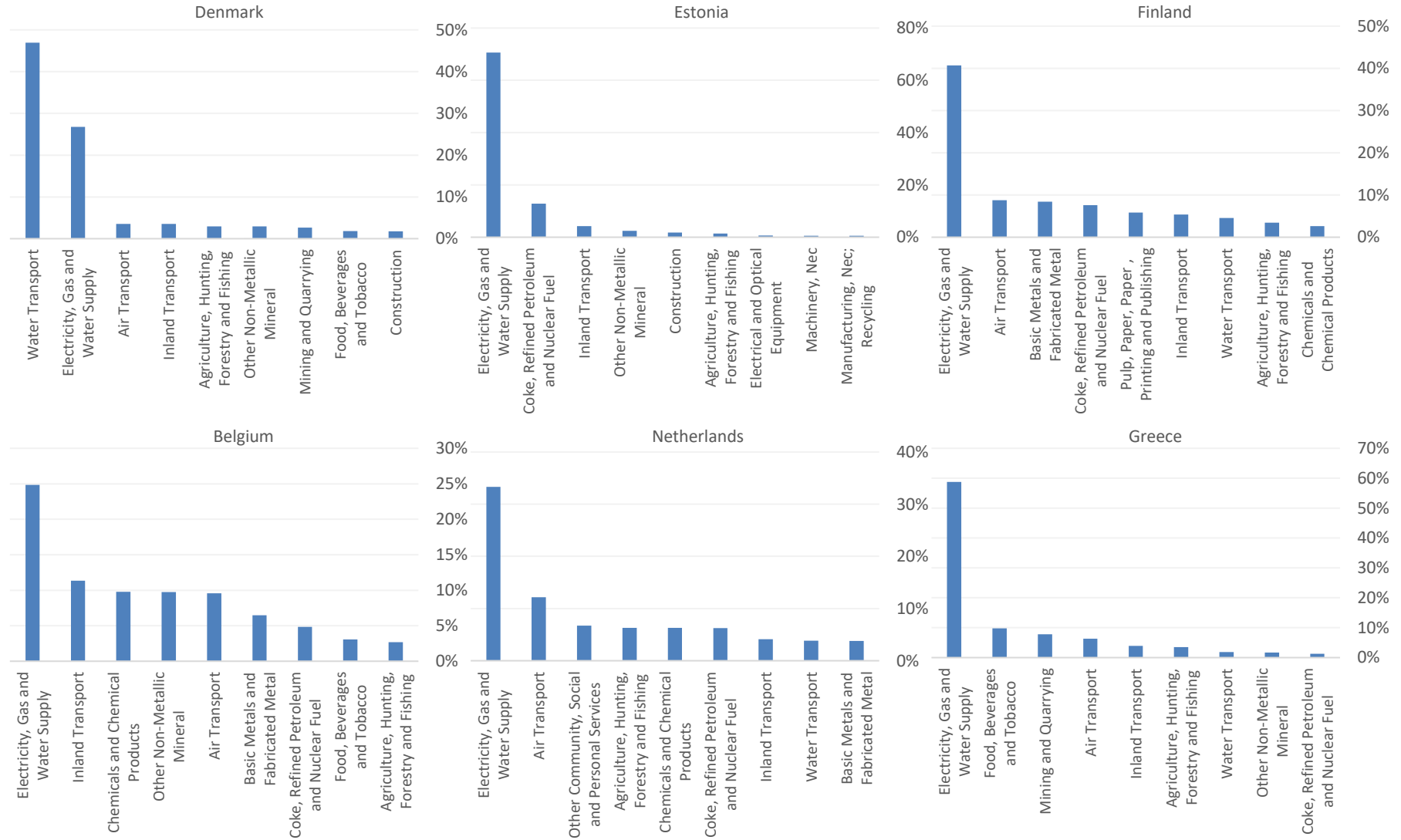
The sector with the highest CO₂ emissions is *electricity, gas and water supply*, which is responsible for 25% to 70% of total country-level CO₂ emissions. A large part of these emissions is attributable to intermediate consumption by other industrial sectors. Regarding the other CO₂ polluters, the three sectors of *water, inland* and *air transportation* are responsible for a large proportion of emissions in all the analyzed countries. The incidence of the remaining CO₂-emitting sectors reflects the industrial specialization pattern of each single country.

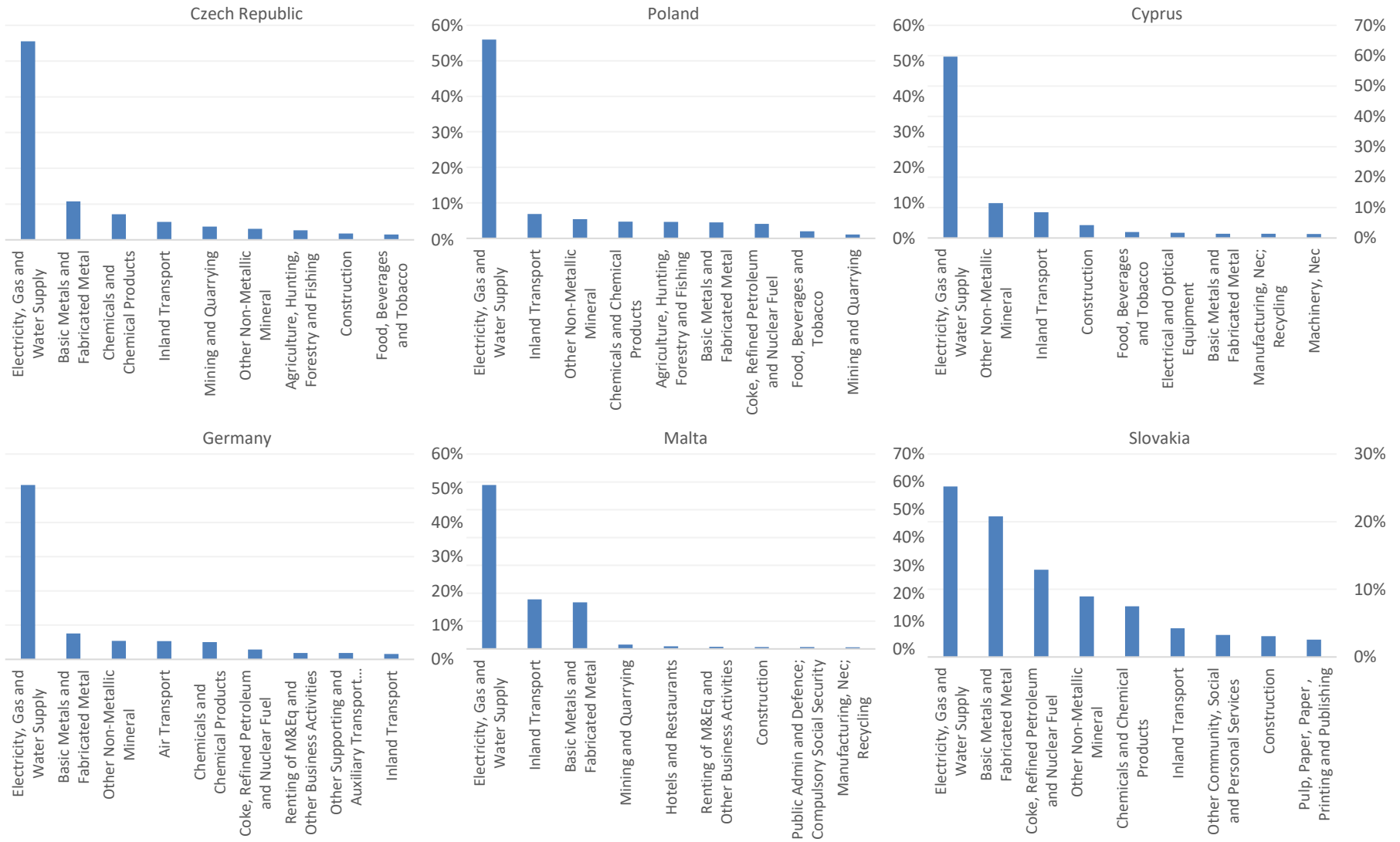


What part of economic activity could be affected by reallocation effects due to climate policy? To assess this, **Table 1** shows the cumulative value added and employment shares of the sectors reported in Figure 4. The overall impact of about 15% - 30% both in terms of value added and employment is significant. The most affected are the less developed, relatively small and thus more specialized countries from Southern and Eastern Europe (Malta, Slovakia, Czech Republic, Poland and Estonia). However, also among the more developed EU members – with Germany at the forefront – the impact could be economically relevant. In the case of Germany, the two sectors with the second and the fifth most intensive CO₂ emissions, namely *basic metals and fabricated metal products* and *chemicals and chemical products*, are responsible for 2.8% and 2% of overall value added production and employ 2.9% and 1% of German workers.



Figure 4. Sectoral shares of CO₂ emissions in countries with above EU-average CO₂ emission





Source: Own elaborations Flossbach von Storch Research Institute based on World Input Output Database



Table 1. Shares of value added and employment over country's total of industries with the highest CO₂ emissions

	Value added share	Employment share
Malta	31%	33%
Slovakia	29%	23%
Czech Republic	28%	28%
Germany	26%	24%
Estonia	22%	27%
Poland	22%	27%
Greece	17%	19%
Finland	16%	16%
Cyprus	16%	19%
Denmark	16%	16%
Netherlands	13%	13%
Belgium	13%	12%

Source: Own elaborations Flossbach von Storch Research Institute based on World Input Output Database

Conclusion

Cuts and eventual elimination of CO₂ emissions will have substantial effects on sectoral value added and employment as well as on the overall economy. A sizeable part of previously employed capital and labor will become redundant. New capital will need to be built and labor will need to be reallocated. This will lower the scope for consumption. Not all employees will be able to adjust, and hence drop out of the labor force. More social spending will be needed. Some countries within the EU will be more affected than others. New technology and investment will eventually boost economic growth. But it will take time, until the positive effects of the green restructuring exceed the negative ones.

Politicians are shying away from telling their electorates the full truth. To appease climate activists, they adopt ambitious climate goals and dismiss the near-term costs associated with achieving these goals. With this they risk a political backlash that could destroy their entire climate policy.



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