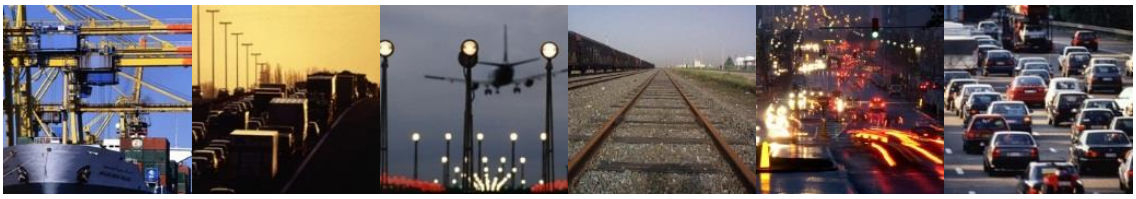
Proposal for a green tax reform

Executive summary and policy recommendations

For the attention of FPS Finance

Date: 30/06/2022



Transport & Mobility Leuven
Diestsesteenweg 57
3010 Leuven
Belgium
https://www.tmleuven.be

In cooperation with

Executive summary

Context

The purpose of this study is to analyse potential avenues for reforming the federal fiscal system in order to make it more environmentally friendly. The analyses are framed in the Belgian institutional context. More specifically, the scope of the study is limited to fiscal reforms that can be implemented at the federal level.

The revision of the federal fiscal system to integrate environmental objectives is in line with the current federal government agreement (Regeerakkoord/Accord de gouvernement) that expresses the government's intention to introduce (a) fiscal instrument(s) to discourage the use of fossil fuels and introducing "polluter pays" principles. We distinguish two dimensions for reform:

1. the taxation of *energy products* through carbon taxation and increased excise duties as part of a climate tax shift
2. *other measures* for greening the federal fiscal system in several key areas

Taxing polluting activities or implementing fiscal rules in favour of environmentally friendly alternatives are relevant strategies to reach environmental objectives. In addition, existing subsidies (such as tax benefits or reductions) to fossil fuels or polluting activities should be carefully assessed and reduced or even phased out.

Our research takes into account the policy and legal context at the European Union (EU) level. We consider the proposals for the revision of the EU Energy Taxation Directive (ETD) and of the EU Emissions Trading System (EU-ETS) under the Fit for 55 package. Reaching the ambitious emission reduction objective laid down in European Climate law[1] (i.e. achieving net zero carbon emissions by 2050 and reducing net GHG emissions by 55% compared to 1990 by 2030) requires strong incentives for households and firms to reduce their consumption of fossil fuels.

We also investigate the reforms implemented or planned abroad, mostly those in neighbouring countries. This allows to evaluate best practices and learn lessons from countries facing similar challenges.

We observe that the current system of energy taxation in Belgium does not sufficiently take into account the environmental impact of energy use. This system, although in line with the current framework of the ETD, contains a wide range of fossil fuels subsidies[2][3]. In addition, energy taxes do not depend on energy products' environmental performance.

To be more specific, the need for reform is supported by the comparison between the level of current excise taxes on energy with marginal external cost (i.e. the damage imposed on society) per unit of energy used in different activities. The figures normalize all costs and excise taxes by calorific content (in €/GJ). The total of each component is added in a column. The level of the current tax is indicated with a horizontal bar, the minimum rate proposed in the revision of the ETD (non-indexed after transitionary period) is indicated with a diamond marker.

---

[1] Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013, *OJ L 156, 19.6.2018, p. 26–42:* Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), *OJ L 243, 9.7.2021, p. 1–17*

[2] Estimated to be larger than 11 billion € in a study by FPS Finance in 2021

[3] Among others IEA (2022), PwC (2019).

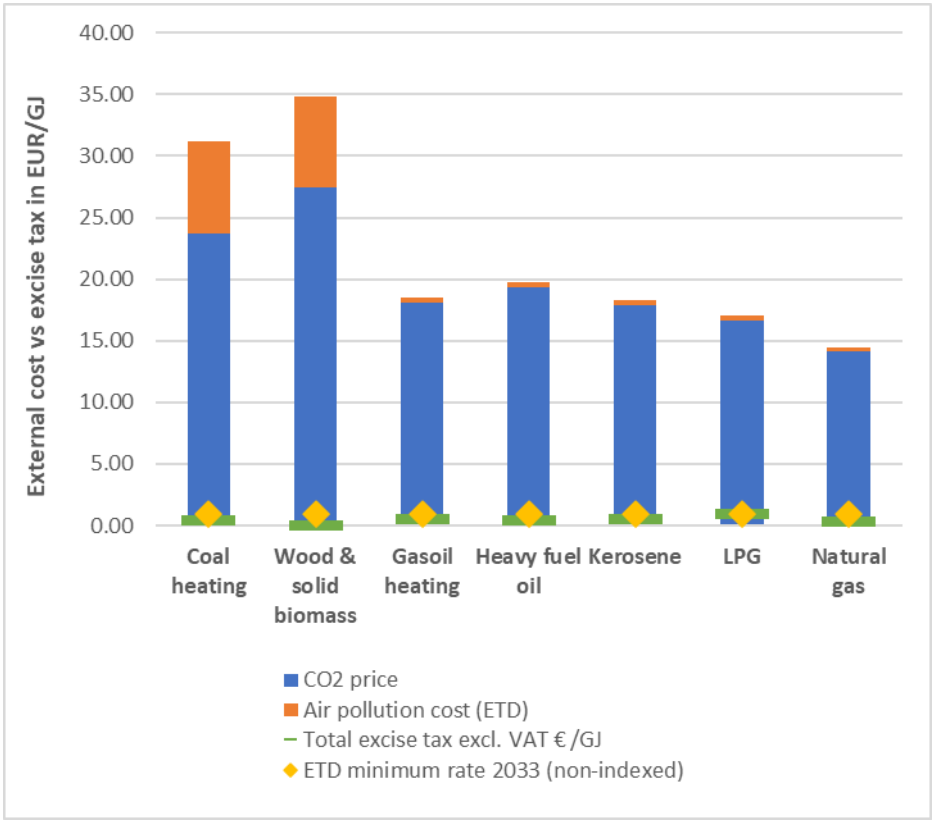


Figure 0.1 : Comparison of current federal excise tax on energy used for heating purposes with external cost based on assessment study ETD (incl. air pollution cost) and the external cost of carbon equal to 250 €/tCO₂, source: EC (2021d) & own calculations

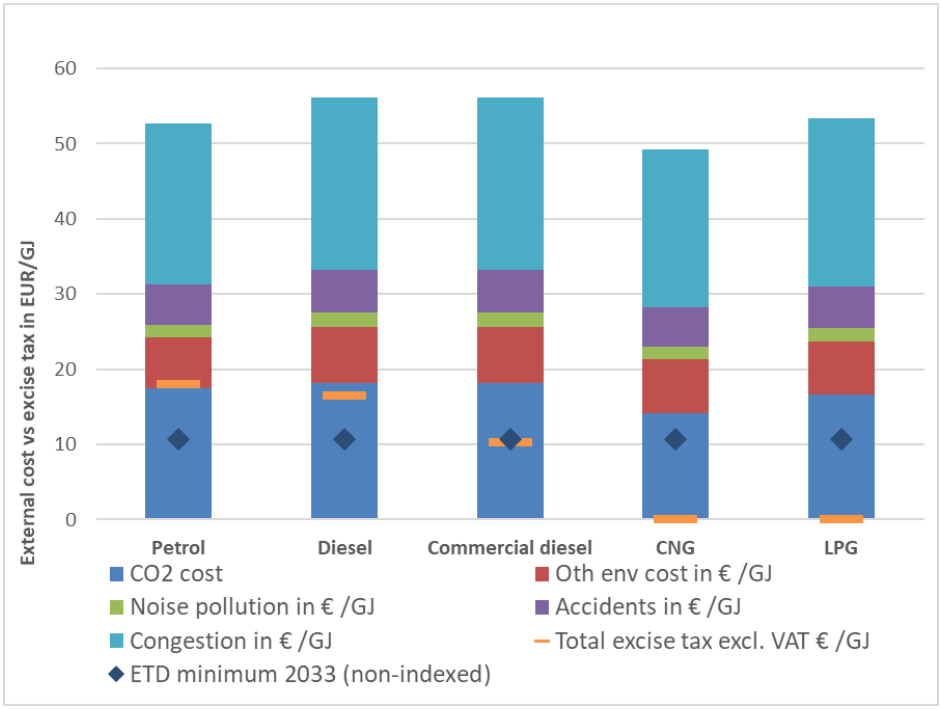


Figure 0.2 : Comparison of c federal excise tax on energy used for transport purposes with external cost based on CE Delft (2019), EC (2021d) & Heyndrickx et al (2021) external cost of carbon equal to €250 /tCO₂, & own calculations

We find that the current excise taxes on energy are generally well below marginal external cost. On the basis of this comparison, we conclude that there are strong arguments to revise federal excise duties.

General design of the reform

In a first step, we study a reform of excise duties on energy. To do so, we establish a two-part scenario.

The first part of the scenario of reform integrates the revision of the ETD, in the hypothesis of its adoption in the framework of the Fit for 55 package. If the revision of the ETD is not adopted, the same measures could be unilaterally adopted at the national level. The revised ETD aims to reform minimum tax levels of excise duties on energy products as of January 2023, to base these taxes on the environmental performance of energy products and on their energy (or 'calorific') content. It also aims to remove most of the fossil fuels subsidies it currently allows.

The second part of our scenario of reform is to introduce a carbon pricing mechanism. In particular, we study the impact of a tax levied on the CO_2 content of fossil fuels in non-ETS sectors. It is useful to precise that this tax is justified insofar the EU-ETS does not cover these sectors. This means that if the extension of the EU-ETS – as it is currently proposed within the framework of the Fit for 55 paquage – is adopted, it may no longer be necessary to adopt a national carbon tax[4]. However, the results of our analyses are valid regardless of the type of instrument adopted (as a tax or ETS) and the level (national or European). Therefore, for the remainder of the report we will use the more general term of "carbon pricing" (realized either through a tax or via the ETS mechanism).

We assess the environmental and socio-economic impact of an introduction of a carbon price on transport and heating fuel of respectively € 20/tonne CO_2 in the short run (2023) and € 70/tonne CO_2 in the medium run (2030). In the macroeconomic analysis, we also consider the impact of a carbon price of € 100/tonne CO_2 in 2030.[5]

The price level is based on the options discussed in the National Debate on Carbon Pricing.[6] The price trajectory, a low entry rate that increases over time, is also in line with the National Debate and follows the approach taken by other countries (*e.g.* the. Sweden, Switzerland). Most countries that introduced a carbon pricing scheme apply gradually increasing rates, or even determine the price trajectory in advance.

We model a budget neutral tax shift, which ensures that revenues arising from the carbon pricing scheme are redistributed to the Belgian population. We propose revenue recycling options and assess them in light of their social and economic impact.

In a second step, we study other fiscal measures beyond general reforms in excise taxation in the perspective of broader environmental protection. We propose a list of specific priority measures that can be taken in five key areas. These measures, in combination with the proposed energy tax reform can be part of a green taxation policy mix that contributes to a greater protection of the environment.

In what follows, we subsequently discuss the methods used in this study, the outcome of our analysis regarding reforms of energy taxation as well as specific recommendations regarding this reform and priority measures to take in a number of key areas (industry & agriculture, transport, circular economy, finance and the building sector).

---

[4] Except as a complementary system (for example a carbon floor)

[5] The consideration of a € 100/t CO_2 carbon tax is based on a recent publication by the EU that computes the current shadow price for carbon at approximately €100/t. This price is expected to rise to € 800/t by 2050 (EIB Group Climate Bank Roadmap 2021-2025). IEEP (2021) also uses a price of 100 €/tonne CO_2 for the external cost of carbon up to 2030.

[6] https://klimaat.be/doc/National_Carbon_Pricing_Debate_-_Final_Report.pdf

Methods

Our research is conducted based on three types of analysis. First, we assess the impact of a a climate tax shift at the **macroeconomic level**. For the macroeconomic analysis, we use the results of a literature review, in combination with the European Model for the Assessment of Income Distribution and Inequality Effects of Economic Policies (EDIP), which is a Computable General Equilibrium (CGE) model. This model is used to estimate the impact of different levels of carbon prices on total CO_2-emissions from transport and buildings by 2030. The model also allows to estimate total fiscal revenues and assess the impact of different tax redistribution alternatives.

Second, we run **microeconomic simulations** to assess the impact of a climate tax shift in 2023 and in 2030 on household budgets. Our analysis focuses on the distributional effects of these taxes on households, identifies the characteristics of the "winners" and "losers", and compares different revenue recycling options based on their potential to compensate the most impacted and/or most precarious households. Our computations are based on the 2018 Household Budget Survey (HBS) for which more than 6,000 households representative of the Belgian population reported their monthly spending.

Third, to determine priority measures for a green taxation reform in other areas, we use the **Delphi method**, supported by **a synthesis of the literature** and **evaluation of country cases**. The Delphi method is a qualitative research approach in which a panel of experts is interviewed in two rounds. Expert opinions are subsequently aggregated and analysed. This is complemented by a comparative analysis of selected examples of environmental taxes in other countries.

Results and recommendations regarding energy taxation

Macroeconomic impact of the energy tax reform

The macroeconomic analysis shows that a climate tax shift and the implementation of the revised ETD excise duties on heating fuels, is a valuable option to increase the pace of the energy transition. Applying revised minimum ETD rates and carbon prices in the transport and buildings sector equal to € 20/tCO_2 in 2023, raising to € 70/tCO_2 by 2030 will lead to emission reductions between 3% and 12.5% in the absence of other policy. A higher level of carbon pricing (€ 100/tCO_2) would reduce emissions by 11.3% and 14% in the buildings and transport sector respectively. Our results are in line with recent estimates by the IMF (IMF (2021a,2021b,2021c, 2020)). They are also in accordance with a recent impact study of an extension of the ETS sector for Flanders (Climact & Oko, 2021). However, the estimated amount of emission reduction, even at the higher level of carbon pricing (€ 100/tCO_2), is below the objective of emission reduction required under Fit for 55.

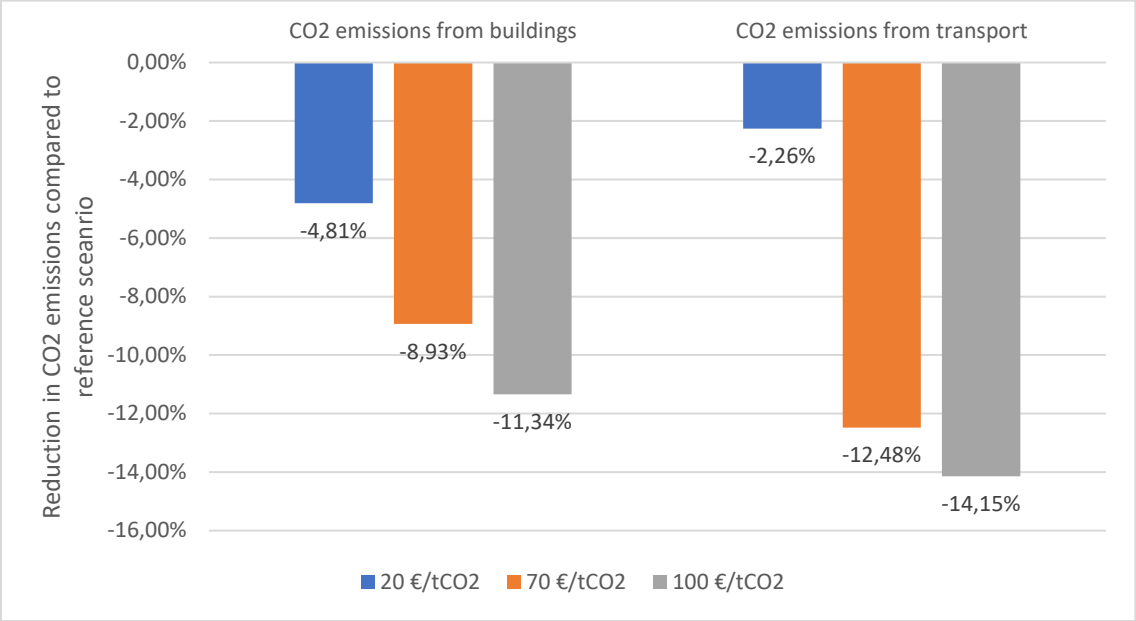


Figure 0.3 Impact of the Belgian energy tax reform on CO_2 emissions

Table 0.1: Expected revenue of carbon pricing at different levels in M€, source: Own calculations based on EDIP model

	Reference year 2023	Reference year 2030	
	€ 20 /tCO_2	**€ 70 /tCO_2**	**€ 100 /tCO_2**
Revenues collected from firms	248	625	830
Revenues collected from households	614	1312	1742
Total revenues	**862**	**1937**	**2572**
Impact revision of ETD rates on firm	95	52	49
Impact revision of ETD rates on households	149	82	79
Total ETD	**244**	**134**	**128**
Total impact on revenues	**1106**	**2071**	**2700**

The expected revenue of implementing a carbon pricing mechanism (Table 0.1) is around € **860 million for a € 20/tCO_2 price level in 2023 and € 1.9 billion in 2030**. This is in line with estimates of the National Debate on Carbon Pricing in Belgium. In a sensitivity analysis, we also compute the tax revenues from a € 100 /tCO_2 carbon price in 2030. This higher carbon price would result in fiscal revenues equal to € 2.57 billion. In combination with the revision of the minimum rates of the ETD we find that total revenues may amount to €1.1 billion for a € 20 / tCO_2 carbon price in 2023 and respectively € 2.1 billion and € 2.7 billion for price levels of € 70 tonne and € 100 tCO_2.

We use the model to assess different budget-neutral revenue recycling options. The reference option is a lump sum redistribution of tax revenues. In addition, we compare three options that use the revenue to implement a linear cut in labour taxes of 1%, 2% and 3%. A last option is to reduce VAT on electricity on a permanent basis from 21% to 6%.

We find that it is possible to combine a cut of up to 2% % in social security contributions (or an equivalent linear tax cut) on labour with a proposed 70 €/tonne carbon tax in budget neutral tax-shift. We expect that a permanent reduction in VAT on electricity to 6% would reduce annual fiscal revenues with around €1.5

to €1.7 billion by 2030. Costs of this measure would increase with the expected electrification of transport and heating. Hence, it may consume almost all of the available revenue from carbon taxation (€ 2.1 billion).

There is a trade-off between efficiency and equity in the choice of the revenue recycling option; lower labour taxes mark better for GDP but lead to higher income inequality, while a lump transfer would better reduce inequality but generate higher economic costs. Inequality and poverty are reduced with the implementation of a carbon price if a lump sum distribution is chosen (see Figure 0.1). Compared to scenario where each household would receive a fixed amount of revenue (lump-sum), a linear cut in labour taxes of 1% would increase GDP by 0.04%, and reduce unemployment by 0.66%. In absolute value at current levels of GDP and unemployment, this represents about € 200 million in GDP and 3000 Full Time Equivalents (FTE). The impact is largely proportional to the size of the tax cut. Therefore a 2% and 3% reduction in labour taxes lead to respectively € 400 and € 600 million in GDP as well as 6000 and 9000 FTE. For a cut in VAT rates on electricity from 21% to 6% GDP would increase by 0.06%, and unemployment would decrease by 0.34% compared to the lump sum scenario.

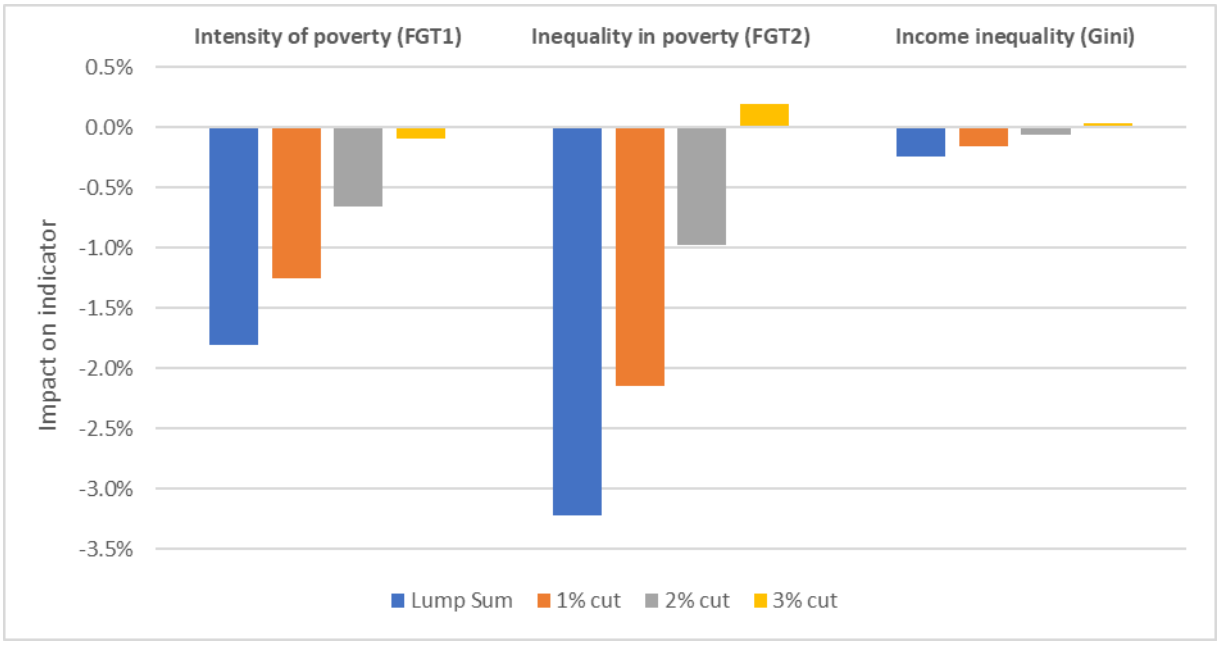


Figure 0.4: Impact of redistributing tax revenue on poverty[7] and inequality indicators, source: Own calculations with EDIP

Microeconomic impact of the energy tax reform

Belgian households spent an average of €72/month on heating fuels (excluding electricity) and €84/month on transport fuels in 2018 (HBS). The proposed reform of excise duties on energy in 2023 would add respectively €8 (+11%) and €4 (+4.7%) to these expenditures. If the fiscal revenues collected on households are redistributed equally among them, which constitutes the reference scenario, households would therefore receive a transfer of €12 per month.

On average, households in the first four deciles (lowest 40% incomes) gain as they are less affected by higher taxes on transport fuels. Indeed, data reveals that (i) heating fuel expenditures are relatively constant across income deciles (ii) the poorest households have fewer cars, use them less and/or have vehicles that consume less fuel. Deciles 5 to 10 are net losers, and the average effect becomes more negative as one moves up the

[7] Foster-Greer-Thorbecke (FGT) measure of intensity and inequality of poverty. Gini index for inequality

deciles. The average impact is, however, rather small: it goes from a gain of €3 per month in the second decile to a loss of €2 in the 10th decile.

There is **considerable heterogeneity between the energy consumption** of households within deciles. Some use their car intensively while others do not have one, housing differs in terms of surface to be heated or insulation, etc. As a result, **the effect of the reform varies greatly between households within each decile**. We find that the additional taxes paid on average by the households that are heavily impacted are +/- €20 higher than for those that are slightly impacted, in each decile. As a result, the share of households that suffer from a net loss higher than 1% of their income is highest in the first decile and this rate decreases with deciles.

Before the reform, 30% of the households in the first decile are in energy poverty (*i.e.*, spend more than 14% of their income on energy used at home). This proportion decreases with deciles to reach 13% in the 5th decile. **The reform for 2023 reduces energy poverty at the population level from 10.6% to 10.2%, with a reduction by 1.5 percentage points in the first two deciles.** Even though the reform does not increase the number of households in energy poverty, its impact is on average negative for those that are currently energy poor (-€3.5 per month), and 10% among them are losing more than 1% of their income. As they are spending a large proportion of their total expenditure on energy goods, they are particularly vulnerable to the increase in fuel prices. Indeed, nearly all the households suffering a loss higher than 1% of their income are already energy poor before the reform.

We analyse how different categories of households are affected by the reform when we consider other dimensions than income. Our two findings are the following. First, **the households who heat mainly with heating oil are heavily impacted**: they lose an average of €9.9 per month, only 14% of them gain and 6.5% among them lose more than 1% of their total income. Second, **the type of housing matters**. Households living in a flat gain on average €4 per month while those living in a house lose, since houses are on average bigger and less energy efficient. Flats are also a more common type of housing in cities. Hence, expenditure on transport fuels is typically lower for people living in flats. These results are confirmed by our econometric analysis.

We simulate **alternative revenue recycling** options and compare their impact on households in energy poverty, on households in the first three deciles and on the entire population. Table 0.2 summarizes the results of a selection of these simulations.

Table 0.2: Comparison of impact on households for different tax recycling options

(1): Energy Poor (2): first 3 deciles (3): Total pop.	Avg. Impact		Winners			Big Losers (impact >1% of hh income)		
	(1)	(2)	(1)	(2)	(3)	(1)	(2)	(3)
Reference scenario	-3.5 €	1.7 €	41 %	67 %	58 %	10 %	4.3 %	1.9 %
Lump Sum 20%	-0.3 €	6.1 €	57 %	78 %	56 %	8.5 %	2.9 %	1.7 %
Lump Sum degressive	1.9 €	7.4 €	62 %	82 %	55 %	5.7 %	1.7 %	1.2 %
No carbon tax 20%	1.6 €	5.9 €	65 %	84 %	58 %	6.6 %	2%	1.4 %

In the scenario **"Lump Sum 20%"** (row 2 of Table 0.2), low-income households representing 20% of the population receive a lump sum of 20 € while the others receive 10 €. Compared to the equal redistribution scheme, it would increase the share of winners among the households in energy poverty from 41% to 57% and reduce the share of households losing more than 1% of their income from 10% to 8.5%. Households in the first three deciles also benefit when looking at these criteria. At the level of the total population, on the other hand, the share of winners decreases, but this is also the case for those losing more than 1% of their income.

In the scenario **"Lump Sum degressive"** (row 3 of Table 0.2), households receive a higher transfer if they belong to a low-income category. Households in the bottom 10% of the income distribution receive 25 € per month while those in the bottom 20%, in the bottom 40% and in the upper 60% of the income distribution would get 17 €, 13 € and 8.5 € per month respectively.[8] This scenario is the most effective in protecting the most vulnerable households and/or those most affected by the reform. The rate of winners among the households in energy poverty or households in the first three deciles is indeed higher than in the other scenario studied where the transfers are targeted. Similarly, this is the scenario where the share of households losing more than 1% of their income is the lowest of all the scenarios studied, among the low-income households, among the households in energy poverty and in the entire population.

In the **"No carbon tax 20%" scenario** (row 5 of Table 0.2), low-income households representing 20% of the population are exempted from the carbon tax. All these households are winners in this case as they would not pay any carbon tax while they would receive a transfer. This scenario benefits 65% of the households in energy poverty and 84% of the households in the first three deciles while significantly reducing the rate of households losing more than 1% of their income in these categories. At the level of the whole population, the share of winners does not decrease compared to the baseline scenario, contrary to other targeted measures, since the cost of targeting is relatively low and there are therefore enough resources left to compensate the other households.

Finally, we project our analysis in 2030 to study the impact of a higher carbon price combined with reduced energy use. We consider a carbon price of € 70 per ton of CO_2 emissions in 2030 and a reduction in CO_2 emissions of -43% for transportation and -49% for residential sectors to be achieved between 2018 and 2030, in order to reach the Fit-for-55 objectives.[9] These fuel consumption reductions are assumed to be the same proportionally for all households. **We find that a household would contribute € 21/month on average**. In each decile, the third of households that are most affected by the reform lose more than € 10/month on average, while those who benefit the most gain about € 15/month.

Policy recommendations with respect to energy taxation

The results from the macro- and microeconomic analyses argue in favour of the revision of existing excise duties on energy so as to improve Belgium climate mitigation policy. We recommend implementing a carbon tax at the federal level to fill the absence of an EU-ETS in the transport and buildings sector. This is supported by the following:

- There is currently no explicit price on GHG emissions in heating (buildings sector) and transport sector (save aviation).
- Our macro-economic results show that a carbon price is an effective measure to reduce GHG emissions and contributes to the achievement of Belgium's targets for 2030 and 2050. Still, carbon pricing should be complemented with additional measures to reach these targets as we find that without any other complementing measures, this would lead to only a part of the required emission reduction.
- Literature and experts recommend using carbon pricing to ensure economically efficient emission reduction.

[8] We target the bottom 10% of the income distribution based on the criteria used to grant the social discount and the bottom 20% based on existing criteria to define the beneficiaries of the increased intervention - BIM. To make this scenario operational, we have created a new category that would target 40% of the population, by relaxing the income criteria used to define the beneficiaries of the increased intervention.

[9] These targets are in line with projections from the Climate.Be platform that shared their results during the "Fit For 55" conference held on the 6/10/2021. The presentation can be found on the following link: https://climat.be/doc/fitfor55-bog-1-non-ets-sectors.pdf

- Many (neighbouring) countries have implemented carbon pricing or plan to do so.

In addition, in case of the revision of the ETD would not be adopted we recommend revising current federal excise duties on energy to remove discrepancies among energy products and uses.

In line with the approach followed by other countries, we propose to apply an **increasing carbon price trajectory**. More specifically, the carbon price should be introduced at a low rate that increases over time.[10] The price path for the tax should be **communicated well in advance**. In the short run, a low rate is recognized to foster public acceptability and give time to households and companies to adapt. In the longer run, a "high" carbon price should be attained to achieve sufficient emission reductions.

We advise to use part of the additional tax revenues to **compensate households, and in particular low-income households.**[11] This would foster a greater public acceptance and would help to reduce (energy) poverty. Indeed, the number of households benefiting from the carbon tax shift is higher when the revenue collected is targeted towards poorer households than when it is redistributed lump sum. This is true (i) among the households in the three first deciles, (ii) among the households in energy poverty and (iii) in the entire population.

We also recommend **redistributing the revenue collected at the household leve**l rather than at the individual level as it would increase the number of households benefiting from the tax shift within the three groups mentioned above.

We recommend **increasing direct income transfers for vulnerable households rather than introducing policies to reduce energy prices**. Even though energy tax cuts for low-income households is attractive as it benefits mainly the most impacted households (those who consume a lot of fuel) among the poorest, lowering taxes on fuels disincentivizes emissions reductions and therefore reduces the environmental effectiveness of the reform.

We **recommend different transfers to different groups based on their income**. The most effective scenario in protecting the most vulnerable households is the lump sum degressive scenario described above. Additionally, it manages to maintain high rates of winners among high income households.

A "rural climate bonus" as implemented in Austria **(rural targeted transfer**) has the potential to increase the number of winners since individuals in rural areas tend to be more impacted than those living in urban areas. However, the legal and administrative feasibility of this option should be assessed.

We stress the **urgency of the reform**. Emission reductions are the result of long-term investments (heating pump, electric vehicles, etc.). Therefore, in order to achieve its emission reduction target in non ETS sector and considering the time gap between policy decisions and practical implementation, Belgium will need to take policy action as quickly as possible.

The reform should take into account external factors like possible increases in market price of energy products. In this respect we should stress that high price levels for energy products is unlikely to induce sufficient structural emission reductions. Andersson (2019) shows that **emission reductions are higher when the price increase is coming from a fiscal reform rather than from higher market prices**. This is because a fiscal reform is perceived as a permanent price shock. However, high energy prices do have an important impact on the political feasibility of the adoption of a climate tax shift. Given the current energy crisis, a price caused by a federal carbon price may suffer from a lack of public support.

---

[10] We do not compute optimal carbon pricing levels. To provide an indication of low and high carbon prices, the OECD uses €30/CO_2 as a low-end price benchmark, €60/t CO_2 as a mid-range price and € 120/t CO_2 as a central price needed in 2030 to decarbonize by 2050 (OECD, 2021).

[11] In the microeconomic analysis, the carbon tax revenues that were redistributed to households were those collected directly from their fuel consumption. We did not investigate the use of additional carbon taxes paid by firms.

Therefore, we **recommend the federal government to build resilience elements in the design of the tax shift**. This **can be done by using the so-called cliquet system**. It would imply that the introduction of the climate tax shift is postponed or moderated in times of high energy prices and accelerated in when prices are dropping again. The system allows to moderate shocks in energy prices, and would be a way to increase public support for the fiscal reform.

The carbon tax should be part of a **broader policy mix**. Our macro-economic results show that a price on transport and heating fuel of €70/tCO_2 in 2030 alone will not be sufficient to achieve the needed emission reductions. The climate tax shift will need to be complemented with existing or new GHG mitigation measures both at the federal and at other levels (i.e. European and regional level). As far as federal competences are concerned, we propose below some possible fiscal measures outside energy taxation.

It is important to **ensure the complementarity** between federal measures and across authority levels. Certain measures at the federal and at European or regional level may have a negative effect on the effectiveness of a carbon tax (*e.g.* aviation subsidies) or pose question of fairness (*e.g.* current fiscal treatment of company cars). Therefore, the federal authority should make efforts to remove inconsistencies between policies, including through dialogue with other levels.

Priority measures related to other key areas

Overview of priority measures

While carbon pricing is relevant to climate change mitigation, we also study fiscal measures to address other environmental problems.

We analyse potential measures to be taken in five key areas, namely (1) industry & agriculture, (2) transport, (3) circular economy, (4) finance and (5) buildings. The proposed measures are classified in Table 0.3 by the name of the priority measure and its type (*e.g.* direct tax, indirect tax, fiscal incentive or removal or environmentally harmful incentive). These measures were chosen based on the analysis of best practices in other countries, a literature study and input from 57 expert interviews. The results of these research methods are translated into concrete policy recommendations for each of the five cases. As with carbon pricing, the environmental effectiveness of these measures will depend on the broader policy mix both at the federal and other levels. We discuss our main results and concrete recommendations for each sector below.

Table 0.3: Overview of priority measures by key area

Key area	Priority measure	Type
Industry & Agriculture (case 1)	Increased taxes on fertilizer and pesticides	Indirect tax (VAT)
	Meat tax	Indirect tax (VAT)
	Tax on rents made by electricity producers	Direct tax (economic rents)
Transport (case 2)	Phase out reimbursement of excise duty on commercial diesel	Indirect tax (excise duty)
	Excise tax on LPG and CNG	Indirect tax (excise duty)
	Increased airplane ticket tax	Indirect tax (flat rate)
	Phase out company car and fuel card subsidies	Removal of direct tax credit
	Institutionalize bicycle commuting allowance	Direct tax credit
Circular economy (case 3)	Reform of beverage container tax	Indirect tax (excise duty)
	Introduce a plastic packaging tax with differentiation based on recyclability	Indirect tax
	Modify the investment deductions to counter rapid depreciation of equipment	Investment deduction regulations
Financial sector (case 4)	Temporary tax incentive for green bonds	Direct tax credit or subsidy
	Green tax credit for pension funds and long term savings	Reform of existing direct tax credit
Buildings (case 5)	Fiscal incentive for collective financing mechanisms	Direct tax credit

Industry & Agriculture

We recommend to increase taxes on fertilizers and pesticides. Inspiration can be found in other EU countries that have implemented similar reforms (Denmark, Sweden, France). Sweden was the first country to introduce a special flat tax on pesticides. Denmark followed with an ad valorem tax on the highest existing wholesale price. The Danish tax level is the highest (5 – 10 times higher per equivalent volume than Sweden). The revenues in 2015 (Bocker & Finger, 2016) amounted to € 80 million. For Sweden, it was € 7-8 million. France has a scheme with rates between those of Sweden and Denmark, with estimated revenues of € 60 million in 2013. Extrapolated to Belgium, the potential revenue of such a tax would be between € 10 million and € 80 million depending on the design and rates. Pesticide sales in Belgium (2019) are 6126 tonnes (Eurostat, 2021). A pesticide tax of € 10/kg (comparable to Denmark) would therefore generate around € 61 million before behavioural change**. While the Danish pesticide tax seems to be a promising measure for Belgium, more studies would be needed to identify and quantify the best tax base and the most efficient tax design.**

A **simpler measure would be to remove the preferential VAT rates for both fertilizer** (currently 6% of 12%) and pesticides (12%). While this reform would have the advantage of its administrative feasibility, its environmental effectiveness would be significantly limited by the fact that an increase in VAT rate only has an impact on individuals, and not on companies.

As an **additional priority measure in agriculture we suggest increasing the VAT on meat consumption** to either 12% or 21% compared to the current 6%. Recent studies for the Netherlands (CE Delft 2018; Broeks et al, 2020) suggest that the current price of meat is substantially lower than its current environmental cost. Extrapolating these studies to Belgium we find annual potential revenues from €394 million to €933 million (with a respective increase in VAT to 12% or 21%) and external benefits of €108 million up to €272 million due to lower environmental damages. In addition, there are significant long term health benefits to consumers that may compensate for losses in consumer surplus (Broeks et al, 2020).

Finally, we **suggest a reform of the current tax on nuclear rents** and to **study a possible extension of the tax to other electricity generation sectors with high fixed costs and low variable production costs (wind, solar, biomass, hydro),** who could benefit from rents in times of exceptionally high electricity prices, such as in 2021 and 2022. Since 2012, the revenues of the existing tax on rents of nuclear power production in Belgium[12] has declined from € 550 million (€11 / MWh) in 2012 to € 72 million (€1.5 / MWh) in 2021. Even at relatively low levels of taxation suggested in earlier reviews (€ 6.2 /MWh in Morbée et al, 2015), the annual revenue of the nuclear tax could be substantially increased.

In conclusion, we suggest reviewing the tax rate on the profitability margin of nuclear power stations. For extending the tax to other sectors, we recommend further study to avoid negative impacts on investment in the transition to renewable energy production.

Transport

As a **priority reform, Belgium could phase out or reduce two important fossil fuel subsidies**. The first is the reimbursement for commercial diesel. Not only is its level significantly higher than in neighbouring countries (€ 981 million payments in 2019), but more than half of the payments go to foreign countries as well. While the behavioural impact of the measure would partially crowd out the budgetary impact, we still recommend to consider a full or gradual phase-out of this subsidy**. We consider two options. Either fully phasing out the subsidy** with an estimated impact of € 366 million in new revenues compared to 2019. Or a **partial phasing out of the subsidy to the level of France** (reducing reimbursement to € 150 per 1000 l) which would generate € 151 million in additional revenues. We also note that if the revision of the ETD will be approved at EU level, fully phasing out the reimbursement will be legally required.

The **second recommendation is to gradually but fully phase out the preferential tax treatment of company cars and associated fuel cards**, which is more generous than in comparable countries as well (estimated budgetary cost of €2.3 billion in 2019). The third recommendation is to institutionalise the tax-free bicycle commuting allowance by making it mandatory in all sectors.

Fourth, to **partially internalize the external costs of aviation, the existing embarkment tax could be increased** from € 10 per ticket to € 20 per ticket (short-haul), from € 2 per ticket to € 8 per ticket for EU flights and from € 4 to € 30 per ticket for non-EU flights. This would align the tax with the rates of Belgium's neighbouring countries. The expected (additional) budgetary impact of this measure is € 109 million.

In the mid and long term, **additional measures could be taken in aviation, such as a VAT on airline tickets (6%, in line with rail passenger transport), and the introduction of excise duties on kerosene.** These measures have a **significant budgetary potential**. Introduction of a VAT on plane tickets would generate annual revenues of between € 200 & € 400 million by 2030. An excise tax on kerosene at the minimum rates required in the revision of the ETD would lead to an additional revenue of up to € 400 million by 2030. To avoid avoidance behaviour, international coordination is recommended, either on the EU level, bilaterally with any EU member state, or with a group of (neighbouring) countries.

We also **recommend to introduce excise taxes on LPG and CNG** at rates proposed in the revision of the ETD. The budgetary impact would be small, with revenues on CNG of € 3-5 million and LPG € 16-22 million.

A **measure that can be considered** is **the reform of current exemptions on excise taxes for inland waterway transport**. The revision of the ETD requires setting a low (€ 0.9/GJ) tax on diesel for inland waterways. We recommend to consider two options. A) introducing a minimum tax at the rate set by the

[12] Introduced to compensate for addition profits linked to the accelerated depreciation of nuclear power plants.

revised ETD, or B) introducing an excise tax at the minimum rate for motor fuels (€ 10.75 /GJ). We find that in option A) the potential revenue is equal to € 7 million, for option B) the potential revenue is € 93.9. It should be critically assessed how this reform may avoid a modal shift from inland waterways to road transport.

Circular Economy

The study recommends to reform the existing beverage container tax in the following ways:

- An immediate compensation for the real tax rate reduction (27% since 2004) by an automatic annual indexation. If the tax rate reduction is compensated, this would lead to an additional € 130 million in revenues.
- Ensuring more differentiation in the tax design (*e.g.* between recycled and virgin material)
- Studying the pros and cons of other economic instruments (such as deposit return systems) which could replace or supplement the beverage container tax

Next, the study recommends to study the introduction of a more general plastic packaging tax[13] with differentiated tax rates based on the recyclability (virgin vs. re-used).

Finally, we recommend to modify the tax regime of investment deductions to stimulate the longer use of (electronic) equipment in companies.

Finance

In the financial sector, a temporary tax incentive for green bonds to support the growth of the green bond market, and increase investments in green projects and green innovation could be introduced. Ideally, this tax incentive would take the form of a temporary exemption on the withholding taxes on the bond's interest income. Alternatively, a reimbursement of the issuance costs or the costs for an external review could be considered. The incentive should be conditional upon certification of the bond (*e.g.* EU Green Bond Standard) to mitigate the risk for greenwashing.

Furthermore, a green tax credit for pension savings could be implemented. The tax credit can be made conditional on the ESG[14] investment strategy of the fund (aligned with the Sustainable Finance Disclosure Regulation).

Buildings

In the sector of the built environment, the federal government's room for manoeuvre is relatively limited. However, tax credits (or other fiscal incentives) for collective financing mechanisms for heat grids could be considered.

[13] The EU has introduced a new levy on non-recycled plastic packaging waste from 1 January 2021. This is financed through Member State contributions. For Belgium, the revenues of this annual levy are expected to be around 153.4 million €.
[14] Environmental, Social, and Governance