EUROPEAN
COMMISSION

Brussels, 14.7.2021
SWD(2021) 641 final

PART 1/3

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying the document

Proposal for a Council Directive

restructuring the Union framework for the taxation of energy products and electricity (recast)

{COM(2021) 563 final} - {SWD(2021) 640 final} - {SWD(2021) 642 final} - {SEC(2021) 663 final}

Table of contents

Glossary

Term or acronym	Meaning or definition
CHP	Combined heat and power generation
CJEU	Court of Justice of the European Union
CN	Combined Nomenclature
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DG TAXUD	Directorate-General for Taxation and the Customs Union
eAD	Electronic Administrative Document for excise goods which are moved under duty-suspension
EEA	European Economic Area
EGD	European Green Deal
EMCS	Excise Movement Control System
Energy Taxation Directive	Council Directive 2003/96/EC
ETD	Energy Taxation Directive
EU ETS	European Union Emissions Trading System
EUA	European Union Allowance
GHG	Greenhouse Gas (CO_2, N_2O, perfluorinated chemicals (PFCs))
Horizontal Excise Directive	Council Directive 2008/118/EC
JRC	Joint Research Centre
LPG	Liquefied Petroleum Gas
Mineral Oils Directives	Directives 92/81/EEC and 92/82/EEC
NACE	European Classification of Economic Activities
NOx	Nitrogen oxides
PM 2.5	Tiny particles or droplets in the air that are two and one half microns or less in width.
RED / RED II	Renewable Energy Directive / Recast Renewable Energy Directive
REF	EU Reference Scenario
REFIT	The Commission's regulatory fitness and performance programme

SAAD	Simplified Administrative Document
SAF	Sustainable Aviation Fuels
SO2	Sulphur dioxide
TFEU	Treaty on the Functioning of the EU
UCC	Union Customs Code

1. INTRODUCTION: POLITICAL AND LEGAL CONTEXT

The world is facing a profound climate crisis and the challenges of this crisis requires a global response. To meet the objective of a climate-neutral European Union (EU) by 2050 in line with the Paris Agreement[1], the EU needs to increase its ambition for the coming decade and update its climate and energy policy framework. As laid down in the European Green Deal[2] (EGD), the Commission proposed a new EU target for 2030 of reducing greenhouse gas (GHG) emissions by at least 55% compared to levels in 1990 and the first proposal of a European Climate Law [3]. This new target is based on a comprehensive impact assessment[4] and has been endorsed by the European Council[5]. To deliver on these GHG emissions reductions, the Commission will review and propose to revise where necessary all relevant policy instruments by June 2021.

In the Commission work programme for 2021, the revisions and initiatives linked to the EGD climate actions and in particular the 55 % net emissions reduction target are presented under the 'Fit for 55 Package'. This package will cover in particular the review of sectorial legislation in the fields of climate, energy, transport, and taxation[6].

The initiative for a revision of Directive 2003/96/EC (Energy Taxation Directive or ETD), which is the subject of this impact assessment, is part of that package to be adopted in June 2021. The other initiatives are subject to dedicated and in-depth impact assessments led by the Commission services, and are beyond the scope of this impact assessment. These other initiatives include new proposals and the review of existing acquis in the area of climate and energy policy:

- the EU Emissions Trading System (ETS)[7] to potentially include the building, maritime and road transport sectors as well as to change the treatment of the aviation sector, which is already included in its scope;
- the Effort Sharing Regulation (ESR)[8]
- the Renewable Energy Directive (REDII)[9];
- the 'ReFuelEU Aviation' initiative aimed at boosting the production and uptake of sustainable aviation fuels in the air transport sector;
- the 'FuelEU Maritime' initiative aimed at increasing the demand of renewable and low-carbon fuels in the maritime transport sector.
- the Energy Efficiency Directive to implement the ambition of the new 2030 climate target (EED)
- A new Carbon Border Adjustment Mechanism
- Reducing methane emissions in the energy sector

[1] https://unfccc.int/sites/default/files/english_paris_agreement.pdf
[2] COM(2019) 640 final, p.4
[3] The Commission adopted the proposal COM (2020) 563 final, amending the initial Commission proposal (COM(2020) 80 final) on the European climate law to revise the EU emission reduction target to at least 55% by 2030.
[4] COM(2020) 562 final
[5] European Council Conclusions of December 2020, EUCO 22/20 CO EUR 17 CONCL 8
[6] European Commission. (2020). Commission Work Programme 2021: Annex I outlines all the instruments to be proposed which includes among others the review of energy taxation.
[7] Directive 2003/87/EC
[8] Regulation (EU) 2018/842 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
[9] Directive (EU) 2018/2001– This directive establishes an obligation on fuel suppliers to ensure a minimum mandatory share of renewable energy within the final consumption of energy in the transport sector by 2030.

- the Regulation on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry (LULUCF)[10]
- the Directive on deployment of alternative fuels infrastructure[11]
- the Regulation setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles[12]

The EGD sets out a detailed vision to make Europe the first climate-neutral continent by 2050, safeguard biodiversity, establish a circular economy and eliminate pollution, while maintaining the competitiveness of industry and ensuring a just transition for the regions and workers affected. Delivering on the revised target with a coherent policy framework to support implementation across sectors will make industry and businesses 'trailblazers'. This is expected to modernise the economy, and deliver innovation while ensuring security and resilience of energy supply and health benefits.

In this context, effective carbon pricing and the removal of incentives for fossil fuel consumption throughout the EU are very much needed to deliver the GHG emission reductions together with other regulatory measures. The review of the Energy Taxation Directive, as an integral part of the EGD, should focus on environmental and climate issues in order to support the transformation of the EU's economy for a sustainable future. One major aspect is that all instruments of the EGD need to support and enhance the EU vision of achieving climate neutrality by 2050 in a coherent way. This means it is essential to ensure that taxation is aligned with climate and environmental objectives. In fact, taxation can enhance other key EU policies and help achieve these objectives by creating proper incentives to change behaviour, and to create the right environment for green innovation. The inclusion of enhanced taxation elements in the EGD supporting other policy instruments acknowledges the importance of the "polluter pays" principle, the internalisation of externalities and the role that taxation can play by providing the incentives to further steer behaviour of producers and consumers.

While the ETD is historically an instrument for Member States to collect tax revenues, the environmental objective of taxation has gained relevance in the present context. The European Green Deal has underlined that it is essential to ensure that taxation is aligned with climate objectives and that the review of the ETD focuses on environmental issues by putting, in particular, an end to fossil fuel incentives. Therefore, this review is designed to deliver a contribution to meeting the greenhouse gas reduction targets of the Climate Law and to be consistent with the other 'Fit for 55' initiatives. The review acknowledges that the main role in the decarbonisation of the EU economy corresponds in any case to the ETS and to the Effort Sharing Decision.

The Climate Law targets could theoretically be achieved without the contribution delivered by the proposed ETD revision. However, as it is considered that the ETD would have to be revised to address a number of shortcomings of the current Directive (e.g. related to the proper functioning of the internal market) and to be focused on environmental issues, it makes sense to consider revising the ETD in such a way as to make it consistent with other 'Fit for 55' proposals and deliver a meaningful contribution to the targets of the Climate Law. Without the contribution of the ETD, other initiatives would have to contribute more. This, for example, could result in a higher ETS price. The coordination of the two initiatives (ETD and ETS) can help to achieve the targets in 2030 and beyond in a more cost-efficient way.

[10] Regulation (EU) 2018/841 of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework

[11] Directive 2014/94/EU of 22 October 2014 on the deployment of alternative fuels infrastructure

[12] Regulation (EU) 2019/631 of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles

The ETD can support and complement the initiatives in the 'Fit for 55 Package' in contributing to the increased ambition of at least 55% reduction in GHG emissions by 2030 by ensuring that the taxation of motor and heating fuels reflects better the impact they have on the environment and on health. This can be achieved by removing disadvantages for clean technologies and introducing higher levels of taxation for inefficient and polluting fuels. The proposed policy measures in this impact assessment will contribute to the objectives of EU's climate, environmental and energy policies by providing secure, affordable and clean energy for EU citizens and businesses. Furthermore, it will facilitate the transition away from fossil fuels towards cleaner energy to deliver on the EU's Paris Agreement commitments for reducing GHG emissions.

Box 1: Overview of Directive 2003/96/EC and its rationale compared to the ETS

Fuel taxation has been part of the existing national taxation measures well before the existence of the EU Directive of 2003. At present, energy taxes, which in most Member States do not pursue an explicit and well defined CO2 reduction objective, range from 3.5% to 9% of total national revenues.

Directive 2003/96/EC lays down the EU rules for the taxation of energy products used as motor or heating fuels and of electricity. Prior to its entry into force in 2003, the Union framework for energy taxation mainly covered mineral oils by means of Directives 92/81/EEC and 92/82/EEC (the so-called "Mineral Oils Directives"). The ETD replaced those Directives retaining their structure based on minimum levels of taxation expressed in terms of volume but widening the scope to avoid distortions between competing sources of energy (such as electricity). It set new minimum rates for the new products under the widened scope and increased the rates for the mineral oils previously covered.

The objective of this harmonisation of energy taxation was to avoid the harmful effects of energy tax competition between Member States. This harmonisation ultimately aimed at strengthening the internal market by tackling possible distortions of competition stemming from the relocation of consumers of energy (i.e. businesses) to Member States with more beneficial tax regimes.

The ETD also intended to allow Member States to use taxation policy in support of other policies. These include the environmental protection and the achievement of international climate related commitments (at the time of the adoption of the ETD, specifically the Kyoto Protocol), energy efficiency, consideration of transport policies and redirection of fiscal policy to combat unemployment.

Since its adoption in 2003, energy markets and technologies in the EU have experienced significant developments, and the EU's international commitments, including the Paris Agreement, as well as the EU's regulatory framework in the area of energy and climate change have evolved considerably.

In view of energy efficiency and environmental objectives, in 2011 the European Commission made a proposal[13] aiming at restructuring the energy taxation to reflect both energy content and CO_2 emissions, as well as at rationalising the structure of possible exemptions and reductions. Following four years of unsuccessful negotiations in the Council in which Member States were unable to reach a unanimous agreement on the way forward, the European Commission decided to withdraw the proposal in 2015[14].

The Commission services published an evaluation report of the ETD[15] on 12 September 2019. In the light of this evaluation, the EU Finance Ministers adopted Council Conclusions at the ECOFIN meeting on 5 December 2019[16]. These conclusions underline that energy taxation can be an important part of the economic incentives that steer successful energy transition, driving low greenhouse gas emissions and energy savings investments while contributing to sustainable growth. Considering the importance of an updated energy taxation framework, the Council Conclusions invited the Commission to analyse and evaluate possible options with a view to publishing in due course a proposal for the revision of the Directive.

In particular, the conclusions support an update of the legal framework for energy taxation contributing to the wider economic and environmental EU policy objectives. They invite the Commission to give particular consideration to i) the scope of the directive, ii) the minimum rates and iii) the specific tax reductions and exemptions.

The Council also highlighted the importance of fully assessing the proposals in terms of their economic, social and environmental costs and benefits. The implications for competitiveness, connectivity, employment and sustainable economic growth, particularly for sectors most exposed to international competition should also be assessed.

The ETD sets minimum levels of fuel taxation according to the different products and uses for energy products used as motor or heating fuel- and electricity, including the sectors in the ETS and/or subject to other standard regulations (such as blending obligations or emission standards for vehicles).

While the ETD is a tax on output fuels, the ETS applies a charge to CO2 emissions in some installations. Therefore, the coverage of the two Directives are independent and the two instruments are considered to be complementary. The economic sectors/energy uses can be subject to ETD and ETS at the same time. A certain overlap in the coverage of the two instruments would arise in case the ETD rate is increased to include a CO2 component. In that case, for the sectors simultaneously covered by ETD and ETS, it could be considered that there is a double carbon price. As long as a sector/energy use is taxed with ETD for fuel consumption and charged by ETS for CO2 emissions, no overlap or double taxation would occur between the two instruments.

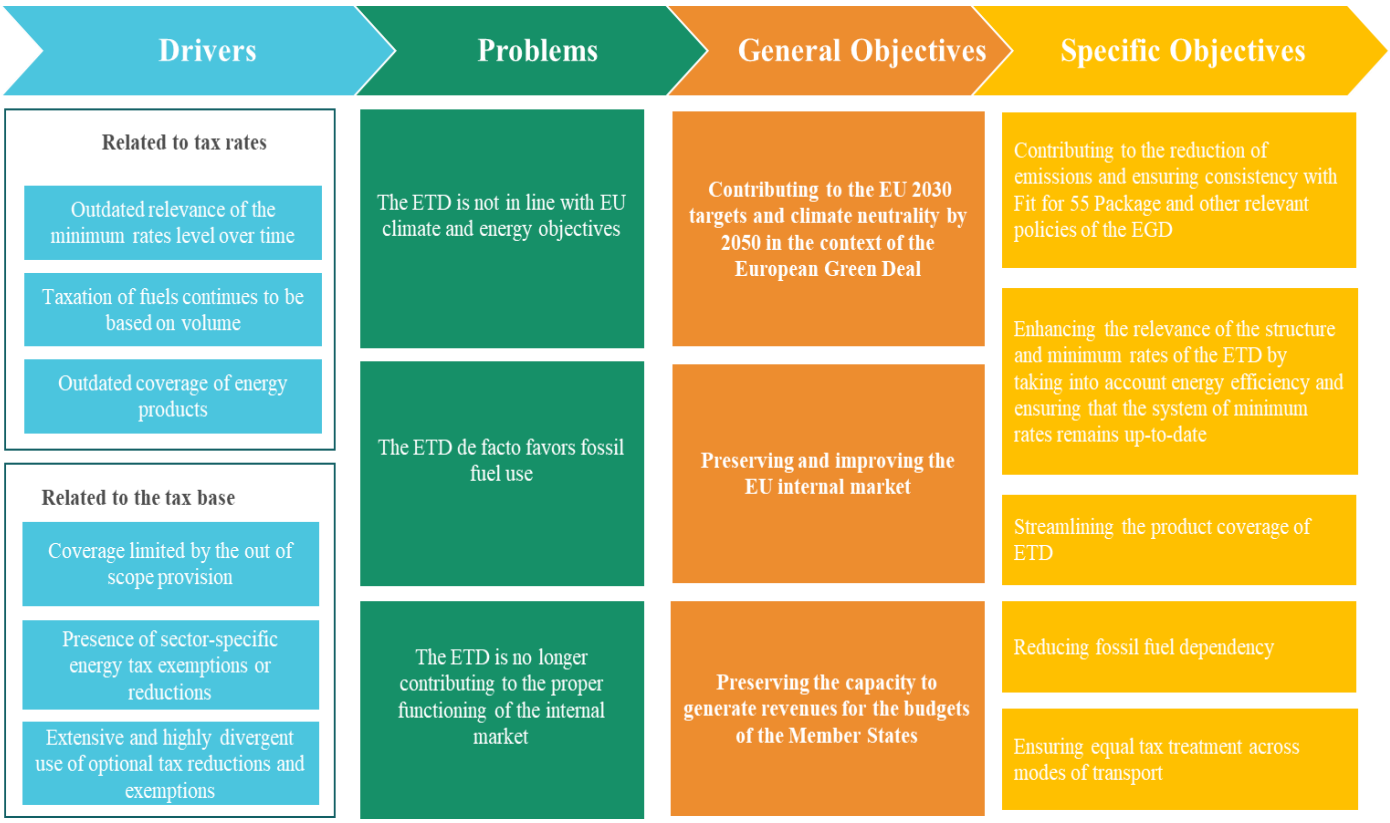
Both instruments cover some uses of energy, such as power and heat generation and energy-intensive industries. Other areas are excluded by either one or both of them. Such, for example, include process emissions, which are covered by EU ETS and not by the ETD.

[13] COM(2011)169
[14] Withdrawal of Commission proposals (OJ C 80, 7.3.2015, p. 17–23)
[15] Commission report: evaluation of the Energy Taxation Directive, SWD(2019) 329 final.
[16] Energy taxation: Council calls for an updated framework contributing to a climate neutral EU.

2. PROBLEM DEFINITION

This section will define and analyse the problems and their drivers and it will assess the expected evolution of these problems in the absence of any EU policy intervention. The section will also present the need for the review of the directive in line with the "Logic for Intervention" below. Figure 1 below presents a snapshot of the main problems, their drivers, and the objectives of the proposed initiative.

Figure 1: Logic for Intervention



2.1 What are the problems?

At the time of its adoption, the ETD represented a positive contribution to the EU legislative framework by establishing harmonised common rules at the EU level for the taxation of electricity and basically, all motor fuels and heating fuels in 2003. However, the ETD has remained unchanged despite the fact that technologies, energy markets and other EU legislation have evolved considerably over the past 15 years. Consequently, significant misalignment exists between the ETD and all these areas today. The overall conclusion of the evaluation report is therefore that the ETD does not ensure the equal tax treatment of energy sources based on their negative externalities. Such externalities include, for example, the emission of greenhouse gases and other air pollutants.

The ETD is not in line with EU climate and energy objectives: The Directive does not adequately promote greenhouse gas emission reductions, energy efficiency and the take-up of electricity and alternative fuels (hydrogen, synthetic fuels, e-fuels, advanced biofuels, etc.).

As a result, the ETD does not provide sufficient incentives for investments in clean technologies. There is a lack of alignment between the ETD and, among others, the Renewables Directive and the Energy Efficiency Directive.

The treatment of the business sector, in particular energy intensive business and manufacturing sectors, varies considerably under the ETD. Furthermore, the exemptions for the aviation and maritime sectors are incoherent with the push for climate change. For these reasons, the ETD is not in line with the objectives of the EGD, and hence, it cannot ensure at present consistency with the 'Fit for 55 Package'.

The ETD de facto favours fossil fuel use: Highly divergent national rates are applied in combination with a wide range of tax exemptions and reductions in order to pursue national industrial and economic policies. The wide range of exemptions and reductions are de facto forms of fossil fuel incentives, which are not in line with the objectives of the EGD. Furthermore, renewable fuels and energy products produced from biomass (see Box 2) are treated less favourable due to their lower energy content. Yet the same minimum tax rate is applied. All these differences increase the fragmentation of the internal market, provide an unequal fiscal treatment of the different fuels and distort the level playing field across the relevant sectors of the economy.

Box 2: What are biofuels, bioliquids and biogas?

These products are produced from biomass (such as plant or animal material) and definitions of these products in the REDII differentiate between biofuels as liquid fuels for transport, bioliquids as liquid fuel for energy purposes other transport, such as heating and biogas as gaseous fuels*. In the EU most biofuels today are blended with fossil transport fuels. Typically, ethanol is mixed with gasoline and biodiesel is mixed with gas oil. There are three main types of biofuels:

i) Non-Sustainable: These biofuels do not achieve significant reductions in greenhouse gases compared to fossil fuel alternatives and/or the cultivation of their feedstock results in land use conflict (food security, land with high biodiversity).

ii) Sustainable**: these biofuels achieve a certain reduction in greenhouse gases compared to fossil fuel alternatives and does not result in land use conflict.

iii) Advanced*** : Beyond complying with the sustainability and greenhouse gas saving criteria listed above, advanced fuels are produced from feedstock that ensure that they do not create additional demand for land while promoting the use of wastes and residues.

Bioliquids include e.g. vegetable oils and fats and are also subject to the above sustainability criteria. Biofuels and biogas for transport are also eligible to be treated as advanced.

* As defined by Article 2 (24), (28), (32) and (33) of Directive (EU) 2018/2001 of the European parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast; REDII)

**As defined by Article 29(2) to (7) of RED II excluding high indirect land-use change-risk biofuels as defined in Article 26(2) of that Directive.

*** As defined by Annex IX Part A of Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast)

The ETD is no longer contributing to the proper functioning of the internal market: The current ETD no longer achieves its primary objective in relation to the proper functioning of the internal market, as the minimum tax rates have lost their converging effect on national tax rates. In the absence of an indexation mechanism, their real value has eroded over time and they no longer have a converging effect on national rates as the vast majority of Member States tax most energy products and, in some cases electricity, considerably above the ETD minima. Highly divergent national rates are applied in combination with a wide range of tax exemptions and reductions in order to pursue national policies. The wide range of exemptions and reduction are de facto, forms support to fossil fuel consumption. These concern important sectors, such as aviation and maritime transport that are currently fully exempt from energy taxation, while land transport bears an important burden of energy taxation (except for leisure flights). All this increases the fragmentation of the internal market in particular distorts the level playing field across the involved sectors of the economy and creates unfair tax treatment.

In addition, there are some aspects of the ETD that lack clarity, relevance and coherence, which creates legal uncertainty. These include, among others, the definition of taxable products and uses that are out of the scope of the Directive and the interpretation of the exemption related to motor fuels used in air and water navigation.

The ETD has historically been an instrument for Member States to collect tax revenues. On average, ETD revenues represent around 5% of total tax revenues in the EU. From an economic perspective, indirect taxes can raise revenues in a less distortive way than direct taxation, because they have a less detrimental impact on growth. During the last decades the Commission has strongly encouraged Member States to make more use of indirect taxes as compared to direct taxes, especially labour taxation. Considering the projected evolution of the energy system under existing climate and energy policies, duly attention has to be given to the expected tax revenues evolution and their stability over time. In fact, a trade-off between environmental objectives and revenue stability may arise if the tax succeeds in internalising environmental costs thus contributing to reduce the taxable basis and namely fossil fuels use. While the aim of this review is not to increase revenues from the tax, it is one of the objectives to preserve the revenues raising potential for Member States (according to their policy choices in the area of taxation) at the same time that the tax ensures a reduction of negative externalities. The reduction of negative externalities and the preservation of revenues potential are not contradictory objectives. This can be achieved by means of the revision of the minimum rates and the broadening of the taxable base.

2.2 What are the problem drivers?

A) <u>Related to the tax rates</u>

A.1 Outdated relevance of the converging role of the minimum rates level over time

In the absence of an indexation mechanism, the real value of minimum rates has eroded over time. The 2019 Evaluation observes that the absence of an increase in minimum rates for more than a decade at EU level has eroded the tax-induced price signal that was supposed to encourage the convergence objective imbedded in the harmonisation and internal market logic of the Directive. As a result the national rates are generally well above the fixed minima and are very different at national level. As an example, the petrol real value of the minimum rate has decreased of around 2/3 since 2003 (CPI indexation).

As most Member States have increased their national level of taxation since then while others have not, there is risk of growing distortion of competition in the Single Market and an erosion of the tax base in high-taxing countries, notably for motor fuels that can be easily and legally transported across borders. This situation has eroded the convergence logic of the harmonisation Directive.

The minimum level of taxation for unleaded petrol already existed under the Mineral Oils Directives of 1992, with a rate fixed at EUR 287 per 1 000 litres. With the entry into force of the ETD, this minimum level of taxation was increased to EUR 359 per 1 000 litres. The ETD raised the minimum level of taxation of gas oil used as propellant from EUR 245 to EUR 302 per 1 000 litres in 2004, and to EUR 330 per 1 000 litres in 2010.

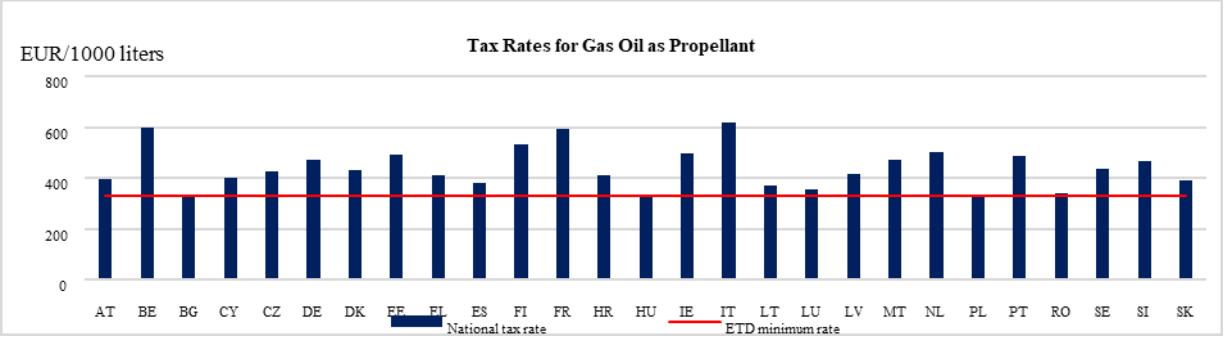
The implementation of the ETD had an initial one-off converging effect. The initial approximation of rates was strongest for the countries joining the EU after 2004. At the time of the ETD adoption, 14 out of the 15 EU Member States were already taxing unleaded petrol above the new minimum, while at the time of accession all but three of the 13 post-2004 Member States were below the minimum levels of taxation. For gas oil used as propellant, nine EU-15 Member States were taxing it above the new minimum against five of the post-2004 countries. Therefore, the minimum levels of taxation applicable to motor fuels under the ETD provided a safety net to avoid a "race to the bottom" in the taxation rates applied by the Member States.

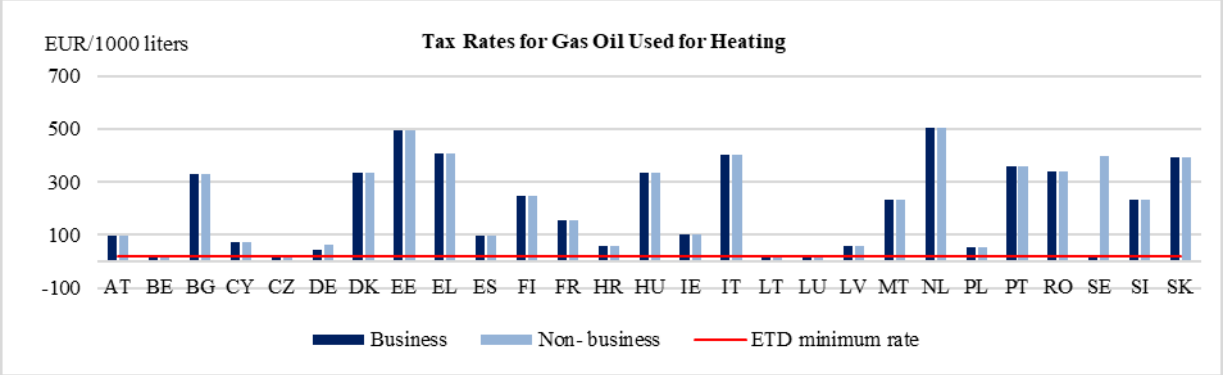
The contribution of the current minimum levels applicable to petrol and gas oil, to the smooth functioning of the single market by approximating excise duty rates, is limited by the possibility of setting national rates above the minimum levels defined in the ETD, resulting in highly divergent national rates for transport fuels. Final prices across the EU ranged in 2018 from 1.10 EUR/litre to 1.68 EUR/litre. Most of the difference results from taxation as the variation of commodity prices remained between 0.53 to 0.66 EUR/litre in 2018[1]. The variation of the tax component was significantly higher, ranging from 0.36 to 0.78 EUR/litre. These differences induced a phenomenon of consumers crossing borders in order to refuel their vehicles at lower prices (tank tourism) in bordering regions. This indicates local distortion of competition.

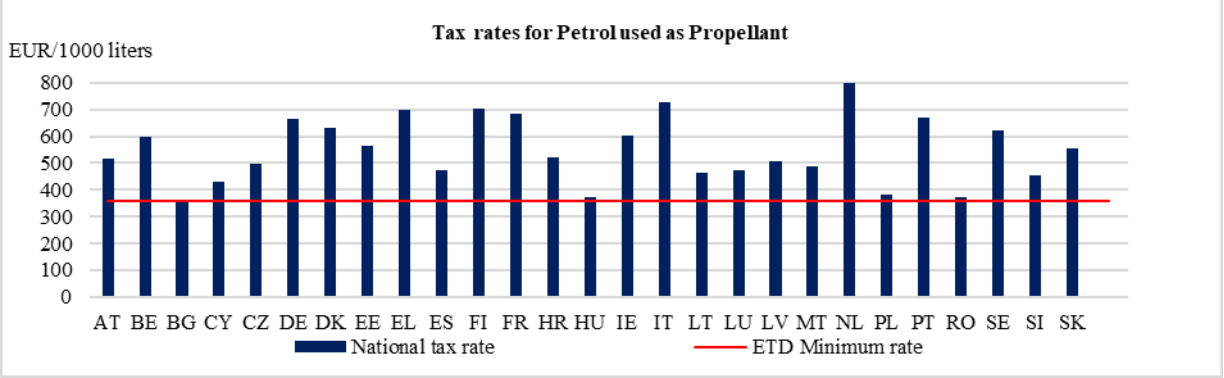
The 2019 evaluation (annex 6) shows the per capita releases for consumption of petrol and gas oil in each Member State. Significantly higher values in certain Member States might indicate the practice of tank tourism

[1] DG Energy – Weekly Oil Bulletin.

Figure 2: National Tax Rates and current ETD minimum rates in 2020)[17] [18]

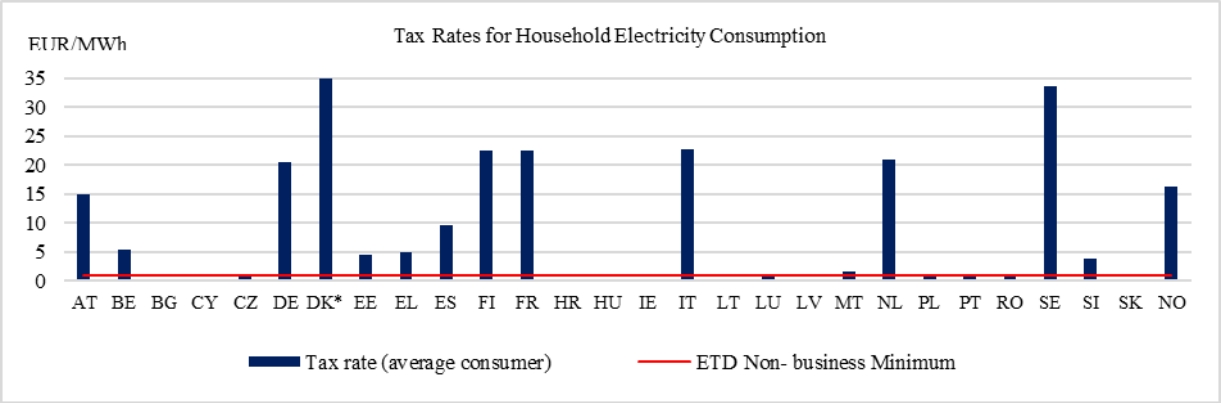






[17] Household tax rates: the ETD allows Member States to exempt the use of energy products and electricity used by households

[18] Heating fuels: The ETD allows Member States to restrict the scope of "business-use". Some Member States apply to higher non- business rate to certain commercial uses, such as services. For further explanation, please consult Annex 5.



Source: TEDB

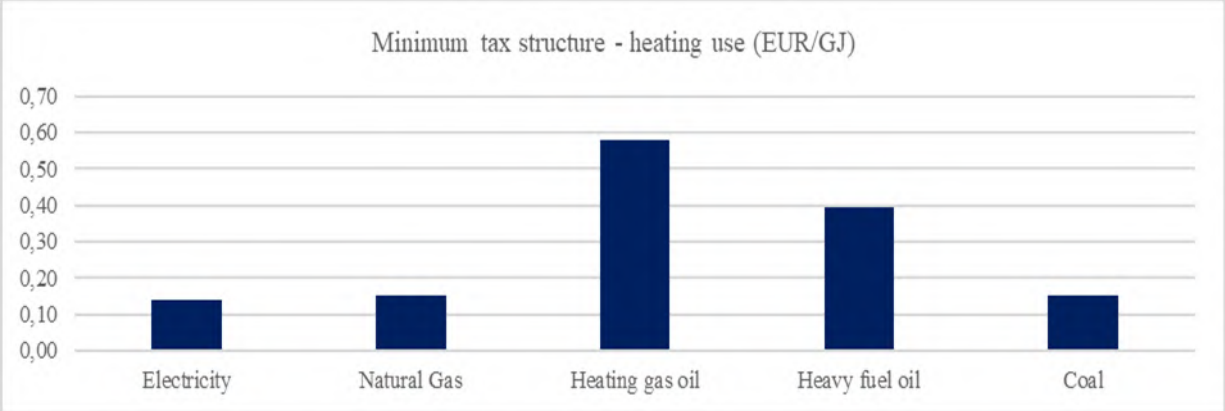
A.2 Taxation of fuels continues to be based on volume

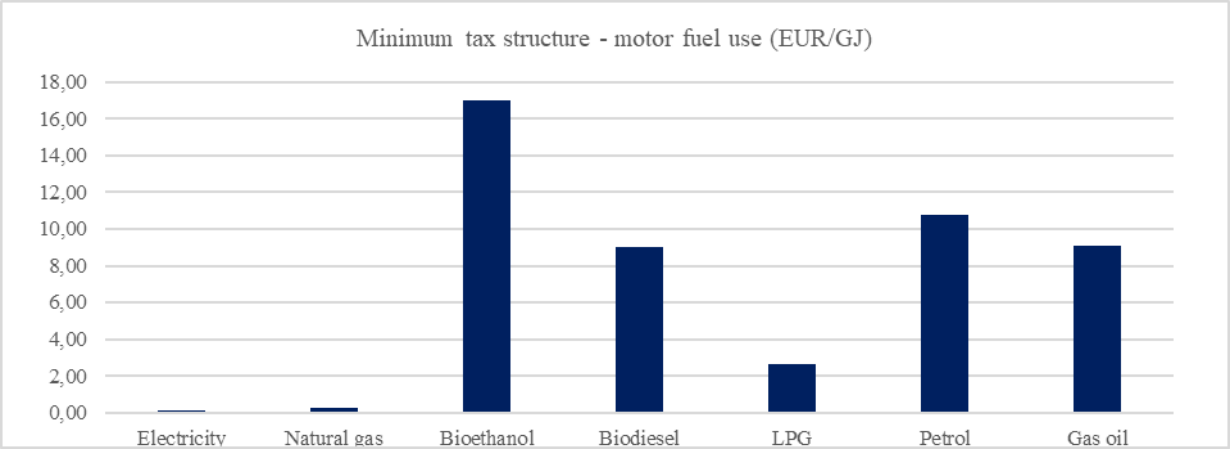
The **taxation of fuels according to volume** and not according to their energy content discriminates against renewable fuels in favour of conventional fossil fuels. The fiscal treatment of new energy products and technologies is unclear.

The lack of sustainability criteria and classification in the ETD to ensure that the use of biogas and liquid fuels produced from biomass in transport and such fuels used for heating is done in a way that guarantees real carbon savings and protects biodiversity, hampers the consistent tax treatment of these biomass fuels. The taxation of them under the ETD, like for almost all fuels, is based on volume and the applicable rate is the same as the rate applicable to the equivalent fossil fuel. The ETD, therefore, fails to take into account the lower energy content of the renewable fuels leading to a higher tax burden on the renewable fuel compared to the same volume of the competing fossil fuel. As a result, as biofuels used for transport is to be taxed at the national tax rate applicable to the equivalent fossil fuel – being fossil petrol or gas oil expressed in volume units – this means that the same distance travelled with biofuels is more heavily taxed.

Moreover, the taxation according to volume also results in unjustified differences of the taxation among different fossil fuels, such as petrol and diesel and among different products for heating use (see figures below).

Figure 3: Minimum tax structure - heating and motor fuel use (2003 minimum rates)



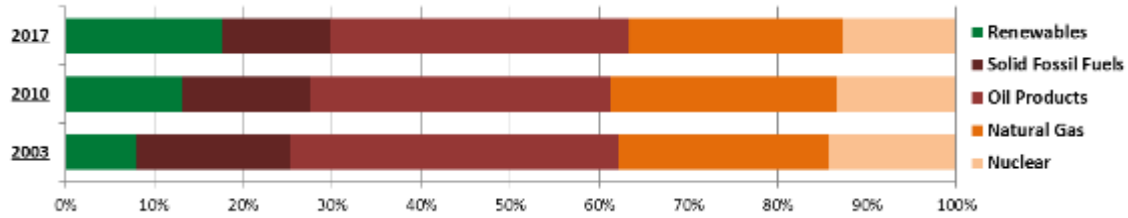


Source: Commission (JRC) calculations on Eurostat data

A.3 Outdated coverage of energy products

The ETD is outdated. The **EU's energy mix** is continuously evolving, as reflected also in the overall 'Fit for 55 Package', with the deployment of renewable energy and the decrease of the use of fossil fuels as a direct consequence of the policy choices made since the signature of the Kyoto protocol. The share of **renewable energy** in the EU's energy mix has increased almost three-fold since the ETD was adopted. Despite the growing market relevance of renewable fuels, their tax treatment under the ETD still relies on rules developed at a time when these fuels were niche alternatives without major market significance. It is a fact that the ETD does not provide clear provisions for a growing portion of the changing EU's energy mix. The relevance of the current ETD will further decrease as the ambition of climate policies increases. The 2030 climate and energy framework sets a target of at least 32% share for renewable energy[19].

Figure 4: EU27 energy mix by type of fuel



Source: Eurostat [nrg_ind_ren]

The ETD was adopted long before the emergence of new technologies and uses that are predicted to become important building blocks on the path to the EU's decarbonised future. At the time of the adoption of the ETD, biofuels in transport were immature products, limited in variety and significance. However, over the last one and a half decades, second[20] and third[21] generation biofuels emerged. The environmental performance of these successive generations of biofuels kept improving. Yet, the ETD does not differentiate between these types of biofuels.

[19] 2030 Energy Strategy.
[20] For example, non- food biomass.
[21] For example, biofuels derived from algae.

Alternative fuels, such as hydrogen[22], e-fuels[23], synthetic fuels, bio-methane and renewable fuels of non-biological origin are gaining traction. However, the ETD does not ensure a tax treatment of these low-carbon alternatives, which is coherent with their potential to reduce GHG emissions, therefore constituting a disincentive for their higher penetration in the EU. The ETD does not even provide clear legal provisions for the taxation of some of these new products.

Because of all this, the current ETD is not properly suited to ensure the preferential treatment of these new energy products and their applications.

B) Related to the tax base

B.1 Coverage limited by the out of scope provision

Article 2 (4) (b) of the ETD lists certain energy products as well as uses of energy products and electricity for which the Directive itself shall not apply, apart from the application of the control and movement provisions laid down in Article 20. Such out of scope uses are as follows:

i) any uses other and as motor fuel or as heating fuels,
ii) the dual use of energy products (such as the use of energy products for chemical reduction, electrolytic, or metallurgical processes),
iii) the use of electricity when it accounts for more than 50% of the cost of a product, and
iv) mineralogical processes.

However, Member States remain free to subject these uses to non-harmonised taxation although in practice very few do so. The current ETD provides short definitions only for dual use and mineralogical processes, leaving sizeable room for interpretation and legal uncertainty.

According to a dedicated modelling exercise by DG Joint Research Centre of the European Commission (see Annex 10), 68% of the EU's industrial energy consumption falls under the out of scope provision and is therefore not subject to harmonised taxation. As most Member States opt not to apply non-harmonised taxation, most "Out of scope" energy use is untaxed.

The impact of the provision however varies significantly across industrial sectors and Member States. The estimated share of "Out of Scope" energy use is the highest in the following sectors:

i) "Non- metallic minerals", including the production of building materials clay, sand and limestone (almost all of the sector's energy consumption falls under the Out of Scope provision). .
ii) "Iron & Steel" (depending on a country's national definitions, over 90% of the sector's energy consumption can fall under the Out Of Scope provision)[24]

[22] For use both in dedicated combustion engines and in fuel cells for electric vehicles.
[23] Drop-in fuels produced from power-to-gas, power-to-liquid, to be used in internal combustion engines.
[24] There is currently no harmonised definition of metallurgical processes in place in the ETD, leading to diverging national implementation as attested by discussions among Member States and interpretations given by the CJEU in rulings on individual cases. Underlying results are based on a wider interpretation of metallurgical processes. Some Member States apply a narrower definition by considering parts of the industrial processes as heating, and therefore subject them to harmonized taxation. Others consider such processes covered by Article 2 (42) (b) of the ETD ("Out of Scope" energy use), which in most cases means that they are not taxed. A uniform

iii) "Non-ferrous metals", including the production of aluminium, zinc and copper (over 80% of the sector's energy consumption falls under Out of Scope)

(Other industrial sectors, such as "Food and beverage" and "Textile and leather" benefit less from the provision, leaving about three quarters of the energy consumption in these sectors in the scope of the ETD. (see more detailed results in section 3 of Annex 10).

Although the ETD sets the same definitions for all, differences across Member States arise depending on the prevalence of production processes in each country's value chain. Some Member States process raw materials, with these processes being the most energy intensive part of the production, and export the product to other Member States. Consequently, the share of untaxed Out of Scope uses will be higher in the exporting country. In the "Chemicals" sector for example, the share of Out of Scope energy use varies from 12% to 66% across Member States.

B.2 Presence of sector-specific energy tax exemptions or reductions

The presence of sector-specific energy tax exemptions or reductions, notably for the transport sector (aviation, maritime, inland shipping and road haulage), for the agricultural/ forestry/aquaculture sectors and for the energy-intensive industries and other business sectors, substantially weakens the incentives for investing in more energy-efficient and less polluting capital stock and production processes in these sectors. As a result alignment and consistency of the current ETD with the European Green Deal is weakened and does not allow to make these sector contribute to the decarbonisation effort.

At present, the ETD provides for an exemption of energy products supplied for **air navigation and navigation in Community waters**, other than for private pleasure purposes. Even if Member States may limit the scope of the exemptions to international and intra-Community transport by taxing these sectors domestically or after having entered into a bilateral agreement with another Member State to waive the exemption, the reality is that exemptions remain. These exemptions offer these sectors a favourable tax treatment in the transport sector as road transport is not exempted and the exemption of rail transport is optional. Moreover, the present situation substantially weakens the incentives for investing in more energy-efficient and less polluting crafts. The lack of proper differentiation between the different fuels in these sectors covered by the mandatory tax exemptions does not facilitate reducing the significant price difference between fossil fuels and sustainable fuels. Properly designed taxation measures could support the uptake of sustainable fuels and at the same time their production what could result in lower prices for these fuels.

Concerning, more particularly the aviation sector, it is worth considering that even after the drop caused by COVID-19 in 2020 and successive years, under the baseline scenario CO_2 emissions from aviation are still forecast to increase by 24% by 2030 and by a further 27% by 2050 compared to 2005 levels[25]. This highlights the fact that, together with the increase in demand, the current exemption / structure does not encourage the switch to less polluting aircraft or fuels.

---

wider interpretation was applied to all Member States tailored to the uniform Eurostat data set, which provided the starting point of the modelling exercise.

[25] According to the October 2020 update of the European Commission EU Reference Scenario.

Existing market-based instruments, the EU ETS for intra-EEA aviation and since January 2021 the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) only partially internalise climate externalities**.** For intra-EEA flights, climate change impacts are currently not fully internalised through the EU ETS as a significant proportion (44% in 2019) of total verified emissions are allocated for free to aircraft operators. This, however, is reassessed in the revision of the EU ETS, where a reduction of the number of the free allocations is among the policy options considered. As for extra-EEA flights, the price signal provided by CORSIA clearly falls below the EU ETS carbon price and would only marginally reflect the climate external costs generated by extra-EEA flights. See Annex 7 for more details about the analysis for this sector.

While the problems of increasing GHG emissions and expensive decarbonisation supply measures equally apply to maritime and inland shipping, no market-based instruments are currently applied in this sector. Moreover, similarly to the case of the aviation sector, the exemption of the maritime and inland shipping gives a preferential energy tax treatment to the sector with respect to other modes of transport.

Lower minimum levels for products used as motor fuels are applicable in the **agriculture sector**[26] (which can moreover enjoy a level of taxation down to zero, for energy products as well as for electricity), and to **stationary motors and machinery for construction and public works.**

Energy intensive industries and other business sectors can, when in compliance with State aid regulations, also benefit from tax reductions potentially down to zero. This is possible under certain conditions, such as qualifying as an energy-intensive business (as defined by the ETD), and/or where agreements, tradable permit schemes or equivalent arrangements are implemented, as far as they lead to the achievement of environmental protection objectives or to improvements in energy efficiency. The national implementation of these provisions varies among Member States and across economic sectors.

B.3 Extensive and highly divergent use of optional tax differentiations, reductions and exemptions

The ETD leaves room for the Member States to implement total or partial exemptions or reductions in the level of taxation. The effective application of optional differentiations often reflects the individual interests of Member States. The extensive and highly divergent use of optional tax reductions and exemptions by Member States fragments the internal market and in particular distorts the level playing field across the respective sectors of the economy. There is a disconnection – and in some cases, a contradiction – between some optional tax exemptions and reductions allowed by the ETD and other EU instruments for energy and climate. The following list provides an overview of the main (possible) differentiations other than those already described in the previous section**:**

- possibility of differentiated rates of taxation above the minima (e.g. when linked to product quality, or depending on quantitative consumption levels for electricity and energy products used for heating purposes or between business and non-business use for heating fuels and electricity, etc.);
- possibility of lower rate for the commercial use, as opposed to non-commercial use, of gas oil used as propellant for the carriage of goods or of passengers;

[26] In this Impact Assessment report references to the agricultural sector also refers to the agricultural, forestry and aquaculture sectors in line with Article 8 (2) (a) and Article 15 (3) of the current ETD.

- tax exemption for energy products and electricity used to produce electricity, with a possibility, within defined limits, to introduce a taxation for reasons of environmental policy; and optional total or partial tax exemption or reduction for electricity from certain sources (including, among others, electricity from solar, wind, wave, tidal or geothermal origin);
- possibility of total or partial exemption or reduction in the level of taxation for energy products and electricity used for producing heat in combined heat and power generation and for electricity produced from combined heat and power generation (provided that the combined generators are environmentally friendly); optional total or partial tax exemption or reduction for natural gas and LPG used as propellants (moreover, for LPG, as well as for kerosene, used as heating fuels, the minimum level of taxation applicable is zero);
- country specific minimum levels[27], as well as additional derogations for specific policy considerations, when requested by a Member State, which granted by means of a Council Implementing Decision. Such measures are of a diverse nature, and include among others: specific rates for specific geographical areas, the tax treatment of electricity directly supplied to vessels at berth in a port ("shore-side electricity") or to electricity supplied to electrical vehicles at charging stations and a tax exemption to operate machinery in humanitarian demining or for low-value solid fuel.

Beyond the discretionary application of tax differentiations, exemptions and reductions, the implementation of other provisions may also undermine the objective of harmonisation. Such include: legal uncertainty in the application of the control and movement provisions and the definition of the conditions establishing, in certain cases, chargeability and chargeable event. A divergent interpretation and implementation of these provisions may be an obstacle to the free movement of goods and investment capital.

As regards the control and movement provisions, an update of the list[28] of energy products to which those provisions apply may be needed. While several attempts to amend this list for various reasons including the fight against tax fraud have been made, this has not been successful to date and as a result national solutions have been implemented.

Concerning chargeability and chargeable event, particularly for storage of electricity, the current ETD was adopted long before several storage technologies (including chemical, electrical and mechanical solutions) emerged. Therefore, its provisions leave the possibility of divergent national implementation open. The ETD states that electricity is taxed at the time of supply but does not clearly define whether electricity is released for consumption when supplied to storage facilities. This could open the possibility of double taxation of electricity that is stored and re-sold. The lack of EU-wide harmonisation could create an insecure environment for business, and consequently might hinder investment in storage technologies.

[27] Particularly Article 9(2) of the ETD.
[28] See Article 20 of the ETD.

2.3 Effective Energy Tax Rates

This section complements the definition of the problems by means of synthetic indicators, which summarise the main findings presented above in terms of problems arising from the present level of rates and definitions of the taxable base. As mentioned above, much of the EU's energy consumption is not taxed at the nominal levels listed in the national legislations.

Effective rates do not result from a single problem driver identified in this Impact assessment, nor do they reflect the shortcomings resulting from a single problem driver. Effective rates are a combined result of the national tax rates applied jointly with the use of sectoral and other tax exemptions and reductions, the highly divergent national criteria attached to benefiting from these tax reliefs and eroded minimum rates that allow for large differences across national effective rates. Effective tax rates are best suited to serve as the basis for policymaking. In fact, effective tax rates are synthetic indicators, which present nominal rates adjusted for tax reliefs and thereby allow for cross country comparisons. Effective rates also illustrate the prevalence of fossil fuel incentives, counterproductive to the goals of the Fit–for-55 package and source of possible distortions -in the internal market.

Consequently, effective rates cannot be derived from a single problem driver. As they represent shortcomings stemming from various features of the current ETD, they also represent the underlying reasons for a number of elements of the new tax design.

A wide range of energy consumers benefit from various tax reliefs, in the form of rebates, refunds, differentiation and exemptions. This Impact Assessment delivers a systematic overview of tax reliefs in the EU27, quantifies tax reliefs in the transport, agriculture, households, services and industry sectors and computes set of effective tax rates. In addition, the criteria attached to tax reliefs are inventoried. (See Annex 5)

. The difference between nominal and effective rates show that the tax burden eventually born by consumers- can vary significantly. The tax effectively paid can be modified in two ways. Firstly, by altering nominal tax rates. In other words, increasing or decreasing the rates applied to energy products and uses. Secondly, by altering the taxable base. This can be achieved by changing the list of beneficiaries or eligibility criteria attached to tax reliefs. Changes in effective rates measure the impact of policy intervention affecting the taxable base, the nominal rate or both. Therefore, it is important to use duly computed effective tax rates to measure the impact of proposed policy changes. Effective tax rates, unlike their nominal counterparts, also allow for cross-country and cross sector comparison.

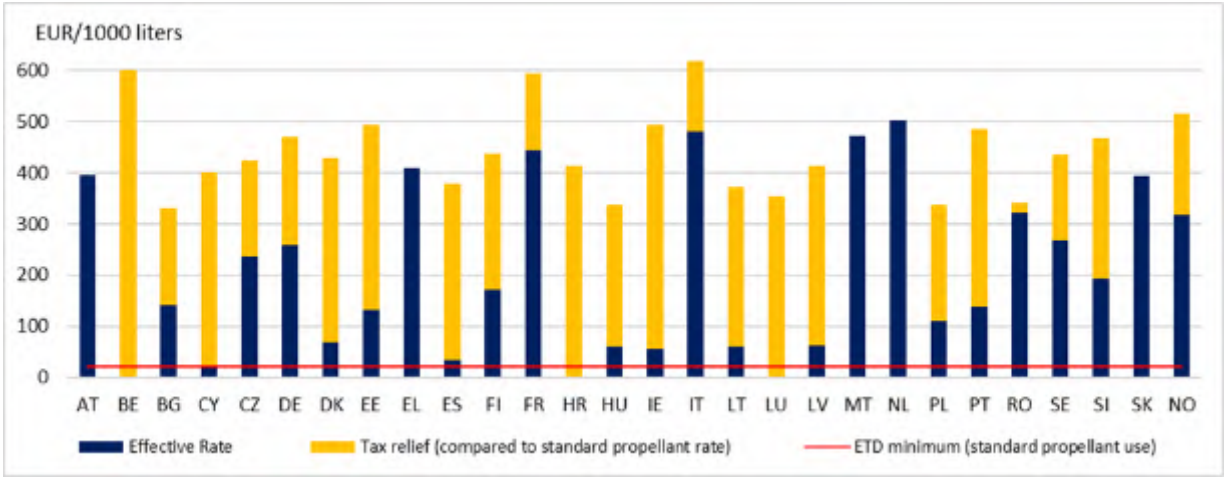
Therefore, the effective tax rates are also the best indicators to summarise the shortcomings of the current ETD and consequently the drivers for its revision. While nominal rates themselves provide no clear indication for the environment or internal market related problems of the EU's current energy tax design, effective rates can serve the purpose. They illustrate the ETD's shortfalls in terms of preserving the EU's internal market as well as contributing to the 2030 targets and climate neutrality by 2050 in the context of the European Green Deal. In fact, effective rates demonstrate harmful fossil fuel incentives in the form of sector and use specific tax reliefs and show the real differences in energy taxes paid by consumers across Member States. For example, only a combination of nominal rates and applicable tax reliefs provides an accurate picture of distortions of the internal market by illustrating the differences in taxes paid by industrial consumers in different Member States.

Findings presented in this Impact Assessment are based on answers given by 28 Finance Ministries to a dedicated survey conducted by the Commission in early 2020 (the 27 Member States and Norway). TAXUD Energy Metadata Survey (TEMS) allowed the collection of systematic information on tax reliefs and the national criteria attached to their application. TEMS also covered the taxation of various environmentally friendly technologies that are important drivers of the blocks energy transition. Amongst them, hydrogen, energy storage and renewables. In order to keep the reporting burden low for Member States, the survey was designed to be complemented by external data sources. Most notably, Taxes in Europe Data Base and Eurostat energy balances. CO2 taxes, in the Member States that apply such a tax, are accounted for in the computation of the effective tax rates[29].

As an example, the following graphs illustrate the effective tax rates for the most relevant energy product in agriculture, households and transport. They show the difference between nominal and effective tax rates, whereas tax reliefs are marked in yellow.

The ETD allows Member States to tax the use of gas oil in the **agriculture** sector[30] below the minimum, including full tax exemption. Some Member States make use of this provision (all yellow bars) while others apply the nominal rate (all blue bars). Yet others apply a refund or rebate (mixed bars) that decreases the effective rate compared to the nominal rate, while respecting the minimum. The result is a highly divergent taxation of gas oil, which accounts for over half of the sectors' energy consumption. Tax reliefs for the use of gas oil may increase fuel use and represent fossil fuel incentives, hindering the achievement of the EU's 2030 environmental goals as well as to reach climate neutrality by 2050.

Figure 5: Effective Rates for Gas Oil Use in Agriculture[31]. 2019/2020



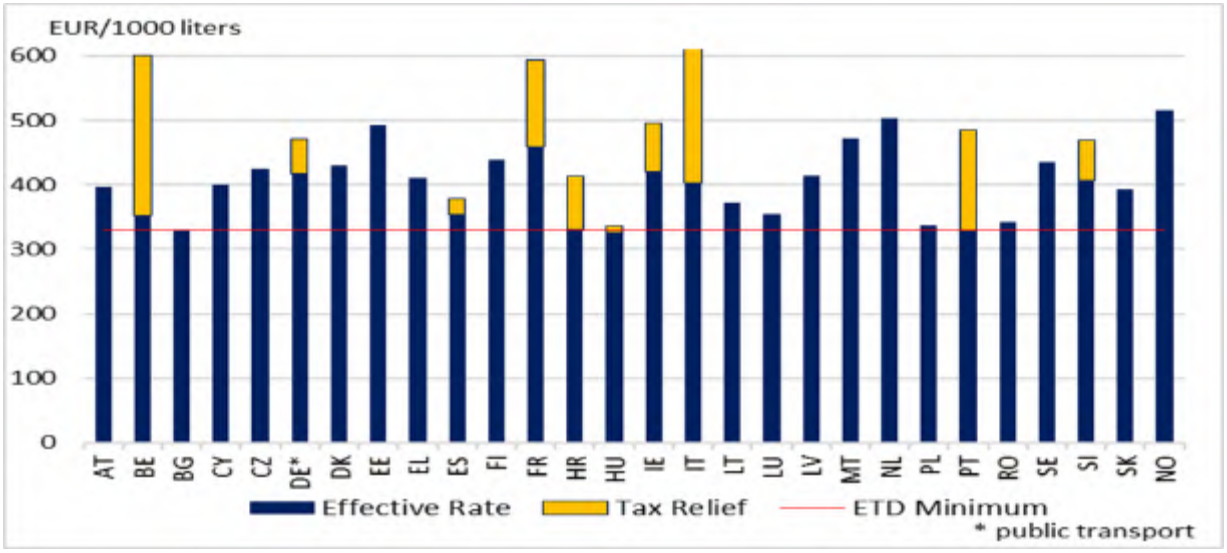
Source: TEMS

The ETD also allows for the differentiation of **non-commercial and commercial use of gas oil in road transport,** with the latter covering the transport of goods and passengers. As of early 2020, ten Member States made use of this provision, mostly in the form of refunds that haulage operators can apply for. Tax reliefs for the use of commercial gas oil push the rates down towards the ETD minimum and therefore do not have a significant negative impact on

[29] At present only eight Member States (DK, FI, FR, IE, LU, PT, SE and SI) apply a carbon tax in combination with ETD rates mainly to non-ETS sectors.
[30] Used as motor or heating fuel
[31] Weighted average of motor and heating use

the functioning of the internal market, yet they remain an incentive for fossil fuel consumption, incentivising the use of a highly polluting, mostly imported energy product.

Figure 6: Effective Rates for Commercial Gas Oil in Road Transport, 2019/2020

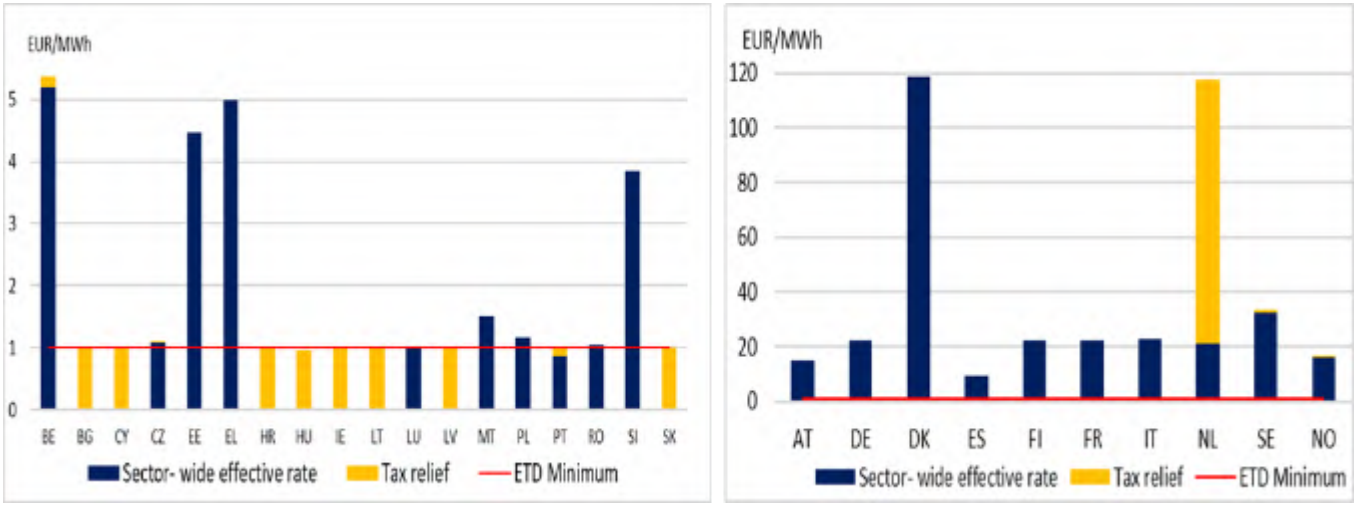


Source: TEMS

The ETD does not define minimum rates for households nor for industry. Instead, while setting separate minimum rates for the business and non-business use, these rates are the same for gas oil, heavy fuel oil, kerosene and LPG and only differ for electricity, natural gas and coal. Households fall in the "non-business" category. Yet, "non-business" nominal rates are often no indication of the actual rates paid by **households**. When nominal rates are combined with optional tax reliefs, the resulting effective rate for household electricity use is zero in eight Member States. Seven[32] Member States exempt natural gas from excise duty. Others grant exemptions and reductions based on regional or social grounds, for example to vulnerable consumers. Tax reliefs for the household consumption of natural gas, coal and partly for electricity may increase fuel use and are fossil fuel incentives that constitute further challenges to realising the EU's environmental and climate agenda.

[32] Not all Member States that exempt the household use of electricity also exempt the household use of natural gas. For the exact lists, please see Annex 5 of this Impact Assessment.

Figure 7: Sector-wide effective rates of household electricity consumption[33] 2019/2020



Source: TEMS

2.4 How will the problem evolve?

The Evaluation of the ETD concluded that:

"The adoption of the ETD represented a positive contribution to the EU legislative framework in 2003 by updating and widening the scope of the harmonised common rules at the EU level for the taxation of energy products used as motor and heating fuel and of electricity……..

The ETD initially made an overall positive contribution towards its main objective of ensuring the proper functioning of the internal market, preventing double taxation or any distortion of trade and competition between energy sources and energy consumers and suppliers.

However, as technologies, national tax rates and energy markets evolved over the past 15 years, the ETD in its present form no longer makes the same positive contribution. Furthermore, the EU legislative framework and policy objectives developed significantly since the adoption of the ETD in 2003. As the ETD has not kept pace with such developments, there are some aspects of it, that now lack relevance and coherence. As a result the overall EU added value of the ETD has eroded significantly over time in particular due to the lack of indexation of the minimum rates and the extensive and highly divergent use of optional tax exemptions by Member States and because of the changing policy environment"

Therefore, considering the already obsolete nature of the Directive and the challenges the EU is facing in terms of climate change, the ETD will become more and more irrelevant in view of its objectives in case of no action. The present problems will evolve further and the ETD will become a patchwork of national legislations aimed at collecting revenues in a non-coordinated way with no effective harmonisation nor any environmental role. In such a situation, considering the evolving of the energy mix and the lack of effective harmonisation, the ability for Member State to effectively collect revenues could also be put under stress. As explained later on in this analysis, revenues for EU27 from this tax are expected to considerably drop in the medium term.

[33] The ETD minimum rate applies as the benchmark

3. WHY SHOULD THE EU ACT?

3.1 Legal basis

The legal basis of the Energy Taxation Directive is Article 113 of the Treaty on the Functioning of the European Union (TFEU), which permits the EU to lay down harmonised rules in order to ensure the proper functioning of the internal market. Additionally, appropriate provisions of fiscal nature intended, inter alia, to preserve and protect the environment can be adopted according to Article 192(2), first subparagraph, of the TFEU.

3.2 Subsidiarity: Necessity of EU action

The problems identified can only be remedied by means of a revision of the ETD, in coordination with other EU policy measures. Under the existing ETD, Member States can increase the rates of their taxes on energy products and electricity, decide not to make use of possible exemptions and reductions or introduce environmental and climate related objectives. However, such national approaches risk distorting the internal market and undermining the EGD objectives due to the non-harmonised structure and level of the national taxes:

(1) The current minimum rates may limit the level of environmental ambition that Member States can pursue with taxes on energy, in particular because energy taxation may directly affect the costs for companies.

(2) The harmonisation of energy taxation through the Energy Taxation Directive should contribute to reducing the harmful effects of energy tax competition between the Member States, stemming for example from the possible relocation of businesses to Member States with more beneficial tax regimes.

(3) The EU Emissions Trading System (ETS) has proven to be an effective tool in reducing greenhouse gas emissions from installations covered by the scheme. A possible extension of the EU ETS to new sectors is envisaged in the EGD, but no decision of such a proposal has yet been taken at the time of the completion of this Impact Assessment Report. However, regardless of the scope of the EU ETS, the ETD needs to provide complementary policy actions, notably relating to transport, energy and other sectoral policies, to ensure that the EU incentives align and incentivise further investments in clean energy technologies and infrastructure or to overcome financing difficulties for low-income households. In that context, action at EU level can ensure the coherence between the application of the EU ETS and the taxation of energy products and electricity, as well as a common EU approach with respect to taxation of energy products including carbon taxes in the sectors not covered by the EU ETS.

(4) Climate objectives can be put into practice in a number of ways and an effective EU-taxation framework can, while supporting other EU policy measures, prevent the creation of national solutions, which can in turn lead to internal market distortions and/or double taxation.

3.3 Subsidiarity: Added value of EU action

The contribution of taxation to the EGD climate and environmentally-related objectives can be ensured most adequately at the EU level. In fact, only a harmonised framework can help to attain the EU levels of ambition in these areas while seeking to preserve both the competitiveness of the productive sectors and the adequate level playing field among sectors

and energy uses. Similarly, the EU's contribution to achieve higher climate ambitions globally international) will be most effective if the EU coordinates all the possible policy instruments, including taxation, in the context of an ambition plan, which encompasses also the extension of the ETS and other relevant policy actions.

4. OBJECTIVES: WHAT IS TO BE ACHIEVED?

4.1 General objectives

The **general objectives** of the review of the Directive are:

I. **Contributing to the EU 2030 targets and climate neutrality by 2050 in the context of the European Green Deal.** This would involve aligning taxation of energy products and electricity with EU energy, environment and climate policies thus contributing to the EU efforts to reduce emissions and other harmful effects due to the use of fossil fuels. The alignment of the ETD objectives with climate policies should be pursued while ensuring the coherence with the ETS system, thus avoiding inconsistencies and overlaps.

II. **Preserving and improving the EU internal market** by updating the scope and the structure of rates as well as by rationalising the use of tax exemptions and reductions by Member States.

III. **Preserving the capacity to generate revenues for the budgets of the Member States**. It should be underlined that one of the main objectives of taxation is to provide sufficient revenues for investment in public goods. However, it should be clarified that it is not an objective of the review of ETD to ensure at least the same level of revenues in the coming years. The objective is to ensure a framework that allows Member States to be able to generate the revenues they estimate necessary in full coherence with the EGD objectives and also be able, within the ETD framework, to design their tax systems to successfully support these objectives. The ETD revision should therefore duly consider the existing trade-off between a shrinking taxable base due to successful environmental objectives and the need to contribute to the financing of our social models.

In fulfilling the above-mentioned objectives, their implications for competitiveness, connectivity, employment and sustainable economic growth should be carefully considered.

The respondents to the open consultation undertaken by the Commission (see Annex 2) share the general objectives of the review. More than 90% of them agree that the ETD has to be revised in order to better ensure the smooth functioning of the internal market. An overwhelming majority of the respondents[34] agree that the ETD should be revised in order to support the transition towards climate neutrality and a strong majority[35] agreed that it has to be revised in order to better tackle environmental concerns, like air pollution.

4.2 Specific objectives

The specific objectives of the review of the Directive are:

- Contributing to the reduction of emissions and ensuring consistency with Fit for 55 Package and other relevant policies of the EGD

[34] 90% of businesses and more than 96% of other stakeholders
[35] 65% of businesses and more than 90% of other stakeholders

- Enhancing the relevance of the structure and minimum rates of the ETD by taking into account energy efficiency and ensuring that the system of minimum rates remains up-to-date
- Streamlining the product coverage of ETD
- Reducing fossil fuel dependency
- Ensuring equal tax treatment across modes of transport.

A strong majority of respondents to the public consultation agree that the ETD:

- should take into account energy content in the definition of rates (65% of citizens and more than 80% of other stakeholders),
- has to be revised in order to take into account the changed energy mix with higher share of renewables and electricity (more than 90%),
- should better promote energy saving/efficiency (more than 85%),
- de facto favours fossil fuels consumption (51% of businesses and more than 83% of other stakeholders) and should reduce the possibility of favouring fossil fuels via tax reductions, exemptions and rebates (65% of businesses and more than 85% of other stakeholders),
- is applied in a too diversified way across the Member States (85% of businesses and more than 95% of other stakeholders).

In contrast, only around 20% of the respondents to the public consultation agree that minimum tax rates of energy products and electricity should be indexed yearly.

5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

5.1 What is the baseline from which options are assessed?

The baseline for this impact assessment represents the existing 2030 climate and energy legislative framework, namely the agreed climate and energy targets, as well as the main policy tools to implement these[36]. It is aligned with the latest available version of the new EU REF Scenario[37]. This includes primarily climate and energy legislation (ETS Directive, the Effort Sharing and LULUCF Regulations, the Energy Efficiency and Renewable Energy Directives), and notably reflects the European Commission's current assessment of Member States National Energy and Climate Plans (NECPs) as required in the "Clean Energy for All European Package".

This baseline (EU REF scenario) is expected to also be the baseline of the subsequent exercises under the 'Fit for 55 Package' this year. At EU27 level, the baseline achieves a 43.7% reduction in total GHG emissions (domestic and intra-EU maritime, inland shipping and aviation) in 2030, relative to a 32.6% reduction already achieved in 2020.

[36] Operationally the baseline is built using the Commission (JRC's) PIRAMID framework combining various data sources to produce a time series of input-output tables up to the year 2050 in five-year steps (see Annex 4). The baseline tables are projected by combining a base year dataset, external macroeconomic projections and results from energy models as constraints. For a number of sectors, especially energy intensive consumers, projections of economic output and energy use are aligned with detailed energy system models. In particular, for EU Member States, projections from the PRIMES model's December version of the EU REF scenario are used.

[37] Version from mid-December 2020, as captured in the PRIMES modelling

As part of the "Fit for 55 Package", the Commission is reviewing this climate and energy framework to achieve the new GHG emission reduction target of at least 55% by 2030. However, this evolving policy framework is under consideration at the moment of the preparation of this impact assessment and is not part of the baseline scenario.

In addition to the above, the baseline should reflect as close as possible the actual energy taxation levels in Member States in implementing the current ETD. In order to more accurately address this requirement the baseline was updated and recalibrated with the set of effective tax rates applied by Member States, as presented in section 2.2.1, and the relevant technical discussion in Annex 5 (Effective Tax Rates by DG TAXUD) and Annex 10 (Out of Scope by DG JRC).

These effective rates were further improved to derive effective tax rates in the sectoral/fuel dimensions of the core model employed for the quantitative analysis of the impacts, namely the JRC-GEM-E3 model. This is particularly relevant for industrial sectors, for which effective tax rates must account for the volume of energy consumed out-of-scope of the Directive. The methodological approach to this further processing of the effective rates is discussed in detail under Annex 4 (Analytical Methods).

The baseline outlined above allows the analysis of this impact assessment to explore how the ETD revision will impact upon the EU economy both in aggregate and by Member State, as well as critically asses how the proposed changes can contribute to emission reductions in view of the EU's increased climate ambition by 2030.

By focusing the analysis against the existing 2030 climate and energy legislative framework we can isolate the impact of the ETD alone and thereby its own contribution to reach 55% emission reductions by 2030. Alternative pathways to achieve 55% emission reductions by 2030 are not explored in this impact assessment, as these are analysed by other exercises under the 'Fit for 55 Package', including the extension of the ETS to transport and buildings performed by other Commission services.

For the purposes of the analysis, the revised ETD is assumed to enter into force in 2023. The JRC-GEM-E3 model runs in 5-year steps, meaning that starting from today an equilibrium is achieved at goods and services markets, and for factors of production through adjustments in prices. As a result, the first visible impact on tax rates of the revision can be seen from 2025 onwards. The methodology and data source used to calibrate effective rates that fed into the modelling of economic impacts is shown by table 17. (See Annex 5).

5.2 Description of the policy options

Option 1: "Minimalistic" Option

This option would ***adjust the current minima*** for all products in line with inflation since 2018 (starting year of indexation). Although the Directive was adopted in 2003, adjusting for inflation since then would result in a too significant increase in the minimum rates. Furthermore, the inflation rate since 2018 would reflect the relative stability of the energy markets and overall economic growth in the EU. The minimum rates will be indexed every year on the basis of the annual variation of the Harmonised Index of Consumer Prices (Eurostat). The HCPI is chosen over an energy price index to ensure smoother adjustment to the ETD rates. Energy prices are in general more volatile and subject to unpredictable changes, which limits their usefulness as a basis of indexation. In addition, employing energy prices as the primary the basis of indexation, would have led to an erroneous situation in

which any price change due to taxation would feed into the same index, which was used for the indexation itself.

In order to improve the legal certainty and to ensure a specific tax treatment, ***some products*** such as advanced biofuels and hydrogen would be included in the definition of energy products. The minimum rates for electricity would apply to these products.

Finally, this option would imply a stricter application of industrial tax reliefs, coupled –where applicable- to environmental performance, with no possibility for full exemptions or to go below the minima for energy intensive industries and other business sectors. The same limitation with exemptions and need to respect minima would also apply to the primary sector (agriculture, forestry and aquaculture).

Furthermore, the current mandatory exemptions for international aviation and maritime transport[38] would be removed and the two sectors would have a zero minimum rate. This would allow Member States to unilaterally tax these two sectors if they so wish without obliging them to do so.

Currently exempted households would reach the ETD minimum rates gradually (heating fuels and electricity), by means of an increase of the rates by 1/10 every year (to reach the minimum after ten years). The possibility for a full exemption would be limited only to vulnerable households.

Table 1: Proposed minimum tax rates under Option 1

Motor fuels			
	Metric	**Current ETD minima**	**Start of transitional period (2023)indexed**
Petrol	EUR/ 1000 litres	359,0	385,0
Gas oil	EUR/ 1000 litres	330,0	353,9
Kerosene	EUR/ 1000 litres	330,0	353,9
Kerosene (aviation)	EUR/ 1000 litres	0,0	0,0
LPG	EUR/ 1000 kg	125,0	134,0
Natural gas	EUR/ GJ	2,6	2,8
Heating fuels plus fuels for agriculture and stationary motors			
	Metric	**Current ETD minima**	**Start of transitional period (2023) - indexed**
Gas oil	EUR/ 1000 litres	21,00	22,52
Heavy fuel oil	EUR/ 1000 kg	15,00	16,08
Coal and coke, business	EUR/ GJ	0,15	0,16
Coal and coke, non-business	EUR/ GJ	0,30	0,32
Kerosene business and non-business	EUR/1000 litres	0,00	0,00
Kerosene agriculture and stationary motors	EUR/1000 litres	21,00	22,52
LPG business and non-business	EUR/1000 kg	0,00	0,00
LPG for agriculture and stationary motors	EUR/1000 Kg	41,00	43,96
Natural gas business	EUR/ GJ	0,15	0,16
Natural gas non business, agriculture and stationary motors	EUR/ GJ	0,30	0,32
Non- renewable hydrogen	EUR/ GJ	n/a	0,16
Electricity, advanced biofuels, e-fuels and renewable hydrogen (all uses)			
	Metric	**Current ETD**	**Start of transitional period (2023) -indexed**

[38] While the current ETD allows Member States to enter into bilateral agreements to waive the tax exemption for air or maritime transport between the two Member States concerned, no such bilateral agreement has ever been concluded. That is why an EU coordinated approach is needed. In November 2019, nine Member States signed a joint political declaration asking for EU coordination for aviation pricing.

		minima	
Electricity business	EUR/ MWh	0,50	0,54
Electricity non business	EUR/ MWh	1,00	1,07
Advanced biofuels and e-fuels	EUR/GJ	n/a	Same as electricity
Renewable Hydrogen	EUR/GJ	n/a	Same as electricity

Source: European Commission

Option 2a: "Energy content" Option: tax rates based on the energy content of the products and according to their environmental performance as well as a widened taxable base

This option would define the ***minimum rates based on the energy content*** (in gigajoules) of each product, rather than on the traditional volume basis, which is currently the case for most of the fuels and electricity in the Directive. This provides a better reference to compare different products and eliminates the current possible disadvantageous tax treatment of biofuels. Moreover, as different uses of electricity and hydrogen become more wide-spread, direct comparison of per unit tax rates might be useful. Whereas it is to be noted that the energy efficiency of appliances (for example heat pumps or electric vehicles) might play a bigger role than the fuel price. This ambitious change of measurement would clearly align the ETD with the objectives of the EGD.

As part of this option, the proposed new minima would be increased to reflect 2023 prices and would be automatically adjusted each year on the basis of the annual variation of the Harmonised Index of Consumer Prices (Eurostat) as in the first option.

Box 3: Proposed minimum rates

In 2023, the base value for one unit of energy content is set at 0.15 EUR/GJ, which corresponds to 0.5 EUR/MWh, the lowest minimum rate in the current Directive for electricity[39]. Taking this value, this option proposes that the minimum rates would range from 0.15 EUR/ GJ to 10.75 EUR/GJ without taking inflation into account. These minima increase to 0.16 EUR/GJ to 11.53 EUR/GJ taking inflation into account (indexation), as in option 1[40].

The indexed rate for petrol in 2023 is set at 11.53 EUR/GJ to ensure consistency with the present minimum rate (indexed) expressed in volume (see table 2).

This option will determine that the level of taxation of petrol and of electricity are the two reference values to set all the other minimum rates. This will allow to differentiate rates to provide clear signals to consumers of better performing energy products and technologies.

The minimum rates applied to energy products for motor fuel use would be applied to the aviation sector. The maritime and inland shipping sector would be subject to the same minima as those for the primary sector. While both sectors are exposed to carbon leakage, the opportunity for tankering fuel outside the EU is significantly higher in the maritime sector[41].

[39] As well as to the current minimum level of taxation for business use of some heating fuels (natural gas and coal and coke), excluding the zero rates (set for kerosene and LPG used as heating fuels).

[40] As in option 1, adjusting for inflation is from 2018. Adjusting for inflation since 2003 would result in substantial increase in the minimum rates, which could have too negative impacts on consumers of traditional fossil fuels.

[41] https://ec.europa.eu/clima/sites/clima/files/transport/shipping/docs/ghg_maritime_report_en.pdf

The relatively low tax rate on the intra EU maritime sector would reduce the economic incentive to purchase fuel outside the EU[42].

Furthermore, the current structure would be simplified by grouping energy products together based on their environmental performance into five ***categories*** for motor fuels and four categories for heating fuels (in terms of applicable rates). The same minimum rate would apply to each energy product within a category according to their use. The five categories are:

(i) Traditional fossil fuels (including e.g. petrol, gasoil, kerosene) and non-sustainable biofuels, bioliquids and certain solid biomass
(ii) Kerosene (for motor fuel in aviation)
(iii) LPG, natural gas and non-renewable hydrogen
(iv) Sustainable but not advanced biofuels, bioliquids and certain solid biomass
(v) Electricity, advanced biofuels, e-fuels and renewable hydrogen

The highest minimum rate would apply to traditional fossil fuels due to their poorer environmental performance compared to other energy products. The minimum rates would decrease (except for kerosene for aviation) for each subsequent category with the lowest minimum rate applied to category (v).

Electricity will increasingly come from renewable sources. Increasing the share of electricity in Europe's energy system is at the centre of the EU's ambitious plan to completely decarbonise by 2050. This will mean a higher penetration of electricity in transport, heating and industry displacing fossil fuels. In line with this, the minimum level of taxation for electricity is proposed to be set at a lower level for all uses.

At the end of a ***transition period***, the categories of energy products would be further reduced to three as category (ii) and (iii) would be merged with category (i) with the rest of the fossil fuels and non-sustainable biofuels.

Option 2 ranks the different fuels according to their environmental characteristics primarily without an explicit element that reflects carbon emissions – the latter addressed explicitly in Option 3.

The concept of 'environmental performance' and the correspondent ranking of applicable rates takes into account the specific energy characteristics of the different products, their treatment under the current ETD and in the Member States, the expected -or sought-after- evolution of the EU energy mix and more importantly, it mirrors the other proposals in the "Fit for 55 package" (in particular the ETS and RED II) to ensure coherence and contribute to the common objectives. The result is reflected in the differentiated rates expressed in energy content (EUR/GJ).

In line with the indications stemming from the EGD initiatives (see e.g. COM(2020) 562 final, Stepping up Europe's 2030 climate ambition, Investing in a climate-neutral future for the benefit of our people) **traditional less environmentally performant fossil fuels** would be taxed from the beginning with higher rates. The same would apply to **non-sustainable**

[42] Including the use of off-shore bunkering platforms that could be located on the high seas outside the territorial waters of Member States

biofuels, bio liquids and certain solid biomass, following the "RED II" logic and definitions[43];

Kerosene used as motor fuel in aviation - which is mandatory exempted in the current ETD - would be taxed in line with the rates applied to transport, by means of a linear yearly increase, to reach in 10 years the minimum rate[44]. The transitional period is justified by the need to ensure a smooth application of a new tax to the aviation sector, taking also into account the effects of the present crisis situation.

LPG and natural gas –which in the current ETD are mostly subject to low or 0 rates-, would have initial applicable rates slightly lower (precisely 2/3) than the (highest) fossil fuel rates, with a linear increase and alignment over a transitional period of 10 years. This takes into account their less polluting impact compared to other fossil fuels (see in this respect e.g. Commission Implementing Regulation (EU) 2018/2066 on the monitoring and reporting of greenhouse gas emissions) and that these fuels have been considered as a sort of 'transitional' fuels, i.e. capable to give a contribution to the green transition (in this regard see also the current Directive 2014/94/EU on the deployment of alternative fuels infrastructure -AFID- where both products are included in the definition of alternative fuels for transport).. Analogous considerations would apply to non-renewable hydrogen[45].

As regards **Renewable Energy Sources (RES),** their expected overall share in 2030 is below what would be needed to cost-effectively and sustainably achieve 55% reduction in GHG. In this context, sustainable but not advanced biofuels, bioliquids and certain solid biomass, following the logic and definitions of RED II, would be adjusted at ½ of the traditional fossil fuel rate[46]. Currently, Member States report in TEDB diversified fiscal treatments of biofuels, ranging from exemption, to reduction, to full rate Moreover, fixing the rates at a new common basis would avoid reported State aid issues.

In the last group, for **electricity** a greater direct electrification of end-use sectors has been taken on board as a relevant objective for decarbonisation (as also highlighted in the above-mentioned COM(2020) 562 final and COM(2020) 299 final, Powering a climate-neutral economy: An EU Strategy for Energy System Integration). For **advanced biofuels, bioliquids and biogases** -once again following RED II logic and definitions-, (e-fuels and renewable hydrogen[47]), it has been judged relevant to account for their potential role for decarbonisation, as well as, the fact that they are in pre-commercial phase and deserve support. This is why they deserve a better treatment with the lowest rate;

Member States may continue to set their national taxation rates above the new minima. However, Member States must ensure that the environmental performance and use of each product is reflected in their national tax rate by respecting the ranking between the different rates. This would ensure that better performing energy products and electricity would be taxed less than those with poorer environmental performances avoiding inconsistencies across Member States and the Directive losing its relevance.

---

[43] The RED II defines a series of sustainability and GHG emission criteria that bioliquids used in transport must comply with to be counted towards the overall 14% target and to be eligible for financial support by public authorities. Some of these criteria are the same as in the original RED, while others are new or reformulated. In particular, the RED II introduces sustainability for forestry feedstocks as well as GHG criteria for solid and gaseous biomass fuels.

[44] The same transitional period would apply to other fuels and electricity potentially used in aviation.

[45] As well as to non-sustainable biogas.

[46] Within this category, a linear increase over ten years to reach fossil fuel rates would only apply to sustainable food and feed crop biofuels, bioliquids and biogases, due to their peculiar origin.

[47] See also COM(2020) 301 final: A hydrogen strategy for a climate-neutral Europe

Member States will maintain the flexibility to determine the differences in rates and will not be required to adopt the same "scaling" that is proposed for the minima. By this, they will retain the flexibility to define their different rates within the "ranking" obligation.

Table 2: Proposed ETD minima under Option 2a in EUR/GJ

Motor fuels				
	Non-indexed		**Indexed**	
	Start of transitional period (2023) – not indexed	**Final rate after completion of transitional period (2033) – not indexed**	**Start of transitional period (2023)- indexed**	**Final rate after completion of transitional period (2033) - indexed**
Petrol	10,75	10,75	11,53	13,25
Gasoil	10,75	10,75	11,53	13,25
Kerosene	10,75	10,75	11,53	13,25
Kerosene (aviation)	0	10,75	0,00	13,25
LPG	7,17	10,75	7,68	13,25
Natural gas	7,17	10,75	7,68	13,25
Non-sustainable Biofuels	10,75	10,75	11,53	13,25
Sustainable Biofuels (not advanced)	5,38	5,38	5,76	6,63
Non-renewable hydrogen	7,17	10,75	7,68	13,25
Heating fuels plus fuels for agriculture, stationary motors, maritime and inland shipping (including fishery)				
	Non-indexed		**Indexed**	
	Start of transitional period (2023) – not indexed	**Final rate after completion of transitional period (2033) – not indexed**	**Start of transitional period (2023)- indexed**	**Final rate after completion of transitional period (2033) - indexed**
Gas oil	0,9	0,9	0,97	1,11
Heavy fuel oil	0,9	0,9	0,97	1,11
Coal and coke	0,9	0,9	0,97	1,11
Kerosene	0,9	0,9	0,97	1,11
LPG	0,6	0,9	0,64	1,11
Natural gas	0,6	0,9	0,64	1,11
Non-sustainable biofuels, bioliquids and solid biomass fuels (wood and pellets)	0,9	0,9	0,97	1,11
Sustainable biofuels, bioliquids and solid biomass fuels[48] (wood and pellets)	0,45	0,45	0,48	0,55
Non- renewable hydrogen	0,6	0,9	0,64	1,11
Electricity, advanced biofuels, e-fuels and renewable hydrogen (all uses)				
	Non-indexed		**Indexed**	
	Start of transitional period (2023) – not indexed	**Final rate after completion of transitional period (2033) – not indexed**	**Start of transitional period (2023)- indexed**	**Final rate after completion of transitional period (2033) - indexed**
Electricity	0,15	0,15	0,16	0,18
Advanced biofuels	0,15	0,15	0,16	0,18
Renewable hydrogen	0,15	0,15	0,16	0,18

[48] For tax implementation and enforcement practicality reasons, solid biomass with an output under 5 MW (e.g. private individual for residential heating) is out of the scope.

Source: European Commission

Table 3: Current and proposed ETD minima for Option 2a in current units

Motor fuels				
		Current ETD minima	**Option 2a**	
			Start of transitional period (2023) -indexed	**Final rate after completion of transitional (2033) period - indexed**
Petrol	EUR/ 1000 litres	359,0	385,4	443,2
Gasoil	EUR/ 1000 litres	330,0	419,0	481,8
Kerosene	EUR/ 1000 litres	330,0	363,2	467,6
Kerosene (aviation)	EUR/ 1000 litres	0,0	0,0	467,6
LPG	EUR/ 1000 kg	125,0	162,5	280,2
Natural gas	EUR/ GJ	2,6	7,7	13,3
Heating fuels				
plus fuels for agriculture, stationary motors, maritime and inland shipping (including fishery)				
		Current ETD minima	**Option 2a**	
			Start of transitional period (2023) -indexed	**Final rate after completion of transitional period (2033)- indexed**
Gas oil	EUR/ 1000 litres	21,0	35,1	40,3
Heavy fuel oil	EUR/ 1000 kg	15,0	36,7	42,2
Coal and coke, business	EUR/ GJ	0,2	1,0	1,1
Coal and coke, non-business	EUR/ GJ	0,3	1,0	1,1
Kerosene business and non-business	EUR/1000 litres	0,0	13,6	23,5
Kerosene agriculture and stationary motors	EUR/1000 litres	21,0	34,1	39,2
LPG business and non-business	EUR/1000 kg	0,0	13,6	23,5
Natural gas business	EUR/ GJ	0,2	0,6	1,1
Natural gas non business, agriculture and stationary motors	EUR/ GJ	0,3	0,6	1,1
Electricity (all uses)				
		Current ETD minima	**Option 2a**	
			Start of transitional period (2023) -indexed	**Final rate after completion of transitional period (2033) - indexed**
Electricity business	EUR/ MWh	0,50	0,58	0,67
Electricity non business	EUR/ MWh	1,00	0,58	0,67

Source: European Commission

In addition, this option would ***extend the scope*** of the Directive and ***remove certain differentiations, reductions and exemptions,*** therefore widening the tax base from the first year. The following would be the main areas of intervention:

- Intra-EU flights within the aviation[49] sector – the mandatory exemption would be removed for this fuel use (see box 4 below)
- Intra-EU maritime and inland shipping[50] sectors – the mandatory exemption of the maritime sector would be removed and the optional exemption of the inland shipping sector would no longer be possible. On the other hand, considering the increasing number of Member States requiring a derogation for the tax treatment of electricity directly supplied to vessels at berth in a port ("shore-side electricity" (SSE)), a possibility for a differentiated tax treatment (not below the minimum level) would be introduced (see box 4 below)
- Some of the "out of scope" processes, such as the use of energy products for mineralogical as well as metallurgical processes other than dual-use, will move to 'in scope'
- Industrial tax reliefs – the application of tax reliefs will be more stringent and will be coupled –where applicable- to environmental performance. Full exemption will be no longer be possible and minima for energy intensive industry and other business sectors will be applied
- Lower minimum rates will be applicable on energy products and electricity used in the primary sector with no possibility to benefit from exemptions
- Heating fuels and electricity for households will no longer benefit from rates below the minima, however the possibility for full exemption limited to vulnerable households will be retained
- Solid biomass fuels covered by Combined Nomenclature codes 4401 and 4402 will be included in the scope.[51]
- No possibility of differentiation between commercial and non-commercial use of gas oil
- Combined heat and power generation (CHP). The taxation of the share of input to produce heat in CHP generation would be set at not less than the minimum rates for the product used. The taxation of the share of input to produce electricity would follow the general rule for electricity generation (i.e. optional exemption with the possibility for Member States to tax on the grounds of environmental policy)
- Article 9(2) of the ETD, which provides for lower minimum levels of taxation for gas oil used for heating purposes in three Member States, would be abolished

[49] The exclusion of international flights and possibly cargo flights from the scope is due to air services agreements concluded with certain third countries that do not allow for the taxation of fuels uplifted at EU airports by the carriers of these third countries.

[50] Refers to a voyage from one EU port to another EU port

[51] For solid biomass used in installations certified equally or above 5 MW. This allows securing state revenue with the growing use of these products since 2003 and taking into account the impact of their combustion on air quality.

Box 4: Aviation, maritime and inland waterway transport

Design of the tax treatment

Under this policy option the use of fuel in aviation, maritime (both transport and fisheries) and inland waterway transport will be taxed at harmonised EU minimum rates as far as intra-EU activities are concerned. The tax on kerosene for aviation will be phased in over a transitional period of 10 years.

In case of aviation, intra-EU activity is defined as a flight from one EU airport to another EU airport whereas in case of maritime and inland waterway transport it is defined as a voyage from one EU port to another EU port. The concept of intra-EU operations would replace the present concept of navigation within EU waters for maritime. For aviation, the exclusion of international flights from the scope of the revised tax is due to legal reasons as air services agreements with some third countries do not allow the taxation of fuel uplifted by the carriers of these third countries at EU airports[52]. Additionally, the tax treatment of intra-EU cargo only flights calls for special attention due to the special privileges granted to some third country and the number of intra-EU cargo-only flights carried out by these carriers[53].While similar privileges are also granted to operators from certain third countries for passenger transport; however, for operational reasons (it is often uneconomical to use the same passenger plane for long-range and short-range flights) those privileges have hardly been used.

Taxing fuel for cargo-only flights could affect the competitiveness of EU carriers for two reasons. Firstly, US carriers have a significant market share of in the intra-EU cargo market as under the US-EU Open Skies agreement some US cargo carriers are allowed to fly intra-EU flights without restriction. Secondly, the current exemption of US carriers from the taxation of aviation fuel uplifted in the EU for use in international (including intra-EU) flights does not allow the taxation of fuel uplifted by US carriers in the EU. Therefore it would be proposed that fuel uplifted by cargo-only flights also in intra-EU would be exempted from fuel tax, with a possibility for Member States to tax it on domestic flights or by virtue of bilateral or multilateral agreements between them. This would provide for a certain flexibility, for example in case of renegotiation of air service agreements with third countries allowing the introduction of the fuel tax for this market segment as well.

The rates for the fossil fuel tax for aviation are based on energy content in line with those applied to the road transport sector. In the study referred to in Annex 7 on aviation, the impacts of various sub options of an intra-EU fuel tax, a ticket tax and a combination of a ticket tax and a fuel tax are analysed. In this study, also a legal analysis and various sensitivity analyses are carried out (e.g. on a possible slower recovery of the sector after the COVID-crisis, the introduction of a blending obligation as proposed in the 'ReFuelEU Aviation' initiative and the introduction of fuel tax covering some extra-EU flights to the UK and Morroco[54]).For maritime and inland waterways, it is proposed to tax the fossil fuels as the

[52] However, a fuel tax could in principle be applied to international flights to those third countries that do not have air services agreements with the EU or with the concerned Member States preventing the taxation of fuel uplifted. In any case, ticket taxes may be an appropriate instrument to be applied to those international flights that would be outside the scope of the fuel tax

[53] American carriers enjoy special provisions under the EU-US 'Open Skies' Air Transport Agreement permitting them to carry out hub operations within Europe using all-cargo aircraft permanently station in the EU

[54] These are third countries for which the implementation of fuel tax is not prohibited by air services agreements.

agriculture sector. The relatively low rate of the tax and the limitation to intra-EU shipping is designed to reduce the economic incentive to purchase fuel outside the EU[55].

The aviation and the shipping sectors are exposed to different degrees to possible carbon leakage due to tankering or bunkering (whereby fuel is bought outside EU jurisdiction to be used on subsequent intra-EU transport operations). Due to the limited size of the fuel tanks of aircrafts, the opportunities for fuel tankering in aviation are relatively limited[56] and depend on the distance to the third country concerned and the aircraft used. The risk of carbon leakage by tankering fuel outside the EU is much more significant in the maritime sector. Ships, in particular large ships, are able to undertake long voyages on a single bunkering and can carry additional fuel without significantly sacrificing their carrying capacity[57]. Ships carrying out extra-EU transport operations can avoid uplifting fuel in EU ports as they can simply uplift more fuel in third countries and thereby avoid the EU fuel tax . . According to the modelling done for the impact assessment, intra-EU transport will represent approximately 16% of all fuel use in the waterborne transport sector in 2030[58].

On the other hand, to be entitled to tax-free bunkering in the EU, vessels would have to justify the need to have access to tax exempt fuel. As an ex-ante conditionality, eligibility for tax-free bunkering would have to be proved by producing the relevant customs documents indicating the next port of call that is located outside the EU. To further strengthen enforcement, ex-post verifications could be carried out based on, for example, the positioning system of the vessels as part of random checks. The rules will be different for fishing vessels in the case of which there are no customs documents to be examined[59].

Interaction with other EU initiatives to reduce GHG emissions

The taxation of traditional fossil fuels used in the aviation and maritime sectors complement a possible extension of the EU ETS to the maritime sector and the review of ETS for aviation including an increase of the level of auctioned allowances for aviation and the implementation of CORSIA as proposed in the revision of the EU ETS. Taken together, these initiatives would ensure that also these economic sectors contribute to the financing of the general budgets under the ETD, while under ETS revenues are reinvested into low-carbon technologies, and reinforce the carbon price signal and the economic attractiveness of mitigation measures such as the implementation of energy efficiency measures or the switch to renewable and low-carbon fuels. Both measures can be modelled in a similar way, as a carbon price or a fuel tax. It is worth noting, however, that the price signal resulting from the options considered for application of ETS and CORSIA to aviation emissions are expected to be lower than the impact of the proposed fuel tax in the aviation sector. On the contrary, in the maritime sector, the possible ETS extension would lead to a much stronger carbon price signal in comparison to the proposed fuel tax on bunker fuel.

The taxation of traditional fossil fuels used in these sectors is also coherent with the logic of the 'ReFuelEU Aviation' initiative aimed at boosting the production and uptake of sustainable aviation fuels in the air transport sector and the 'FuelEU Maritime' initiative aimed at

[55] Including the use of off-shore bunkering platforms that could be located on the high seas outside the territorial waters of Member States

[56] https://www.eurocontrol.int/publication/fuel-tankering-european-skies-economic-benefits-and-environmental-impact

The study estimated that full tankering could potentially be performed on 16.5% of the examined European flights, whereas partial tankering could be performed on further 4.5% of flights.

[57] https://ec.europa.eu/clima/sites/clima/files/transport/shipping/docs/ghg_maritime_report_en.pdf

[58] This includes both intra-EU maritime and inland waterways transport.

[59] As fishing vessels return to their home ports located in the EU, their activities will be considered intra-EU for the purpose of this Directive.

increasing the demand of renewable and low-carbon fuels in the maritime transport sector. As the sustainable and low carbon fuels promoted by these initiatives would be taxed at lower rates under the ETD, the gap between the total costs of traditional and sustainable fuels would narrow down over time and the cost of fuel switching would be reduced[60].

As regards the agriculture sector, the current ETD provides for differentiated and lower minima for motor fuels for certain uses, including agricultural, horticultural and piscicultural works, and forestry. The proposed rates are based on the envisaged need to align those minima and the ones for heating fuels in order to provide for a generally consistent treatment. Moreover, the proposed revision envisages the overall need to respect the applicable minima, leading to the removal of the -currently allowed- possible reduction down to zero for energy products and electricity used in the primary sector.

Finally, the option will **increase legal certainty** for all stakeholders:

- To address the risk of fraud and improve the legal certainty, an update or a revision of the list of energy products subject to control and movement provisions may prove necessary (e.g. for lubricating oils)
- Provisions regarding energy storage will ensure that the possible double taxation of electricity, which is stored for consumption at a later stage, is avoided.

This option includes a ***transitional period of ten years*** (2023-2033) for ***certain categories of products and uses*** to provide stakeholders with a clear price signal trend for the next years in order to adapt investments and technologies. Some relevant examples are:

- The tax on LPG, natural gas and non-renewable hydrogen for both motor and heating use would gradually reach the rate of fossil fuels
- Kerosene tax for the aviation sector will be gradually increased in a linear way to the corresponding minimum tax rates applicable to motor fuels used for road transport .
- A zero rate for advanced biofuels and e-fuels used in aviation will be applied for a limited period. This contributes to the uptake these types of fuels until their production is scaled up.
- The minimum rates for heating fuels for household use will be gradually increased during this period, as described in option 1.

Furthermore, proposing to introduce immediately the three categories with high rates for some traditional energy products could have negative impacts. This transitional period, among others, allows the development of electrification and advanced fuels, which are still in a pre-commercial phase.

[60] In due course, the costs of some sustainable fuels could even be lower than the costs of the fossil fuels. . The impact on the cost of sustainable fuels could not be modelled. Instead, the assumptions of the Refuel Aviation study on the costs of sustainable aviation fuels have been used for this study.

Figure 8: Simplified representation of changes in ETD indexed minima 2023-2030

Source: European Commission

Two thirds of the respondents to the public consultation from businesses and from public authorities as well as 45% of the respondents from civil society consider relevant an energy tax based on energy content. Moreover, more than 90% of all types of respondents consider that the ETD revision should introduce incentives for alternative energy sources (e.g. sustainable biofuels, clean hydrogen) and reduce the possibility of favouring fossil fuels via tax reductions, exemptions and rebates[61]

A vast majority of citizens and civil society respondents but only a small minority of businesses and public authorities indicated that no exceptions should be granted to agriculture, forestry and fishery.

Overall, the public consultation revealed some support to equalising the taxes for different transport modes so that they can compete on a level playing field.
About one third of businesses and more than half of the other stakeholders support the taxation of the intra-EU flights and of the maritime sector based on standard energy tax rules for motor fuels.

[61] 65% of businesses support the reduction of the possibility to favour fossil fuels

While a vast majority of all types of respondents to the public consultation would prefer a legal obligation to use Shore Side Electricity when available, a differentiated tax treatment for SSE is supported by 40% of businesses.
Almost all citizens, more than 70% of civil society and public authorities and half of the businesses support the removal of the differentiation between commercial and non-commercial use of gas oil in road transport.

Two thirds of citizens and half of civil society respondents to the public consultation consider the Industry sector should not be exempted; however only a bit more than 10% of public authorities and of businesses agree with the removal of this exemption.
About half of the citizens and civil society respondents to the public consultation support the removal of tax exemption or reduction to Combined Heat Power but more than 85% of businesses and public authorities respondents disagree.

Option 2b: Energy content option with a shorter transitional period of 7 years

This option includes the same elements of option 2a but with a reduced transitional period until 2030. This impact assessment assumes a period of 7 years (2023-2030).

With the 2030 Climate Target Plan, the Commission proposes to raise the EU's ambition on reducing greenhouse gas emissions to at least 55% below 1990 levels by 2030. Taxation should also contribute to this objective. Reducing the transitional period to 2030 would ensure that the review of the ETD can deliver its objectives at the same time as the rest of the other initiatives of the "Fit for 55 Package".

Accordingly, the option analyses a shorter transition period and the potential increased benefits by 2030, while taking into account the social and economic effects on users and consumers.

Option 2c: Energy content Option and pollution component

The option is based on option 2a with an additional explicit tax rate for air pollution. The calculation of this additional component is based on a low-end value of the external cost of air pollution due to the consumption of energy products. (See Annex 6 for further details).

This value would be incorporated in the minimum tax rates as set out in option 2a. While this pollution component would not be indexed, it would be revised at least every 5 years in order to take into account the evolution of technology in combustion and filtering systems as well as the evolution of air pollutant emissions in the EU.

It should be noted that the highest increase in the minima would correspond to coal and coke and to biomass (without differentiating between sustainable or non-sustainable) mainly used as fuels for stationary motors and/or heating in absolute and relative terms.

Table 4: Proposed ETD minima including the pollution component in EUR/GJ

	Rate energy component option 2a at the start of transitional period (2023) – not indexed	Rate Air Pollution component	Full rate option 2c at the start of transitional period (2023) – not indexed
Motor fuels			
Petrol	10,75	0,23	10,98
Gasoil	10,75	0,55	11,30
Kerosene (aviation, by the end of the transitional period)	10,75	0,05	10,80
LPG	7,17	0,19	7,36
Bioethanol E100	5,38	0,35	5,73
Biodiesel B100	5,38	0,83	6,21
Heating fuels plus fuels for agriculture, stationary motors, maritime and inland shipping (including fishery)			
Gasoil	0,90	0,37	1,27
Heavy fuel oil	0,90	0,37	1,27
Coal and coke	0,90	7,41	8,31
Kerosene	0,90	0,37	1,27
LPG	0,60	0,37	0,97
Natural gas	0,60	0,32	0,92
Non-sustainable biofuels and bioliquids	0,90	(*)	0,90 + (*)
Non-sustainable solid biomass fuels (wood and pellets)	0,90	7,40	8,30
Sustainable biofuels and bioliquids	0,45	(*)	0,45 + (*)
Sustainable biomass fuels (wood and pellets), including consumers with an inputunder 20 MW[48]	0,45	7,40	7,85

(*) same as the equivalent fossil fuel; e.g. the rate of the air pollution component for biodiesel is 0,37 €/GJ
Source: European Commission

Option 3: "Carbon content" Option (3a, 3b and 3c)

This option introduces taxation based on carbon content of energy products, to the sectors which are currently not covered by the ETS[62] (basically the transport and building sectors), in addition to the rates based on the energy content presented in option 2a and 2b. However, it should be recalled that the EGD has announced that the Commission will consider the possibility of extending the ETS to emissions from road transport, the maritime sector and buildings.

The introduction of this carbon content component in the ETD would be a form of explicit carbon pricing directly linked to the level of carbon emissions. This option provides an additional relative advantage to clean products, such as renewable hydrogen, advanced biofuels and electricity, as they have low or zero carbon content. The introduction of a carbon content also differentiates among various fossil fuels, such as less CO_2 intensive natural gas and more CO_2 intensive coal.

[62] Aviation would therefore be exempt from the CO2 component as intra-EEA aviation is covered by the ETS but maritime and inland shipping would not be exempt as long as these sectors are not covered by the ETS.

Since the EU harmonised carbon price is the ETS, the value for the carbon content should be linked to its price. This value would also have to be adjusted regularly to ensure it remains relevant and pegged to the evolution of the ETS over time.

The value of the carbon content component from the introduction of the reviewed rules in the ETD should reflect the level of the price of ETS at that moment. For the purposes of this impact assessment, the carbon content rates have been applied as follows: 30 EUR per tonne of CO_2 in 2020, 35 EUR in 2025, 40 EUR in 2030 and 45 EUR in 2035. These values approximate the present and expected future market price of the EU ETS similar to the other impact assessment of the "Fit for 55 Package". These values take into account the fact that the effective cost in the EU ETS is lower if free allocation of allowances to many ETS sectors are also considered. These values will operate as a minimum rate to be added to the energy content component.

In option 3a a transitional period of 10 years is applied to the taxation of intra-EU aviation, as well as to heating fuels, whereas in option 3b a transitional period of seven years is considered. Finally, option 3c introduces a pollution component in an analogous way to option 2c. As option 2a and 2b, options 3a and 3b will also bring positive effects on air pollution emissions following the increase in taxation of the more air pollutant products with the additional introduction of the carbon content element.

Table 5: Tax rates with carbon content

	Energy component rate (EUR/GJ) Not indexed	CO2 tax rate (EUR/tCO2) in 2030	Fuel emission factor (tCO2/GJ)	Carbon component (EUR/GJ)	Total minimum rate (energy + carbon component) (EUR/GJ) Not indexed	Total minimum rate at start of end of transition period (energy + carbon component) (2033 EUR/GJ)
Motor fuels						
Petrol	10,75	40	0,07	2,80	13,55	16,05
Gasoil	10,75	40	0,07	2,80	13,55	16,05
Kerosene (aviation)	0	40	0,07	2,80	2,80	2,80
LPG	7,17	40	0,06	2,40	9,57	11,24
Natural Gas	7,17	40	0,06	2,40	9,57	11,24
Sustainable biofuels	5,38	40	0	0,00	5,38	6,63
Non- Sustainable Biofuels	10,75	40	eq. fossil alternative	eq. fossil alternative	eq. fossil alternative	eq. fossil alternative
Heating fuels plus fuels for agriculture, stationary motors, maritime and inland shipping (including fishery)						
Gasoil	0,9	40	0,07	2,80	3,70	3,91
Heavy fuel oil	0,9	40	0,08	3,20	4,10	4,31
Coal and cokes	0,9	40	0,09	3,60	4,50	4,71
Kerosene	0,9	40	0,07	2,80	3,70	3,91
LPG	0,9	40	0,07	2,80	3,70	3,91
Natural Gas	0,9	40	0,06	2,40	3,30	3,51
Non-sustainable biofuels, bioliquids and solid biomass fuels (wood and pellets)	0,9	40	0	0,00	0,90	1,11
Sustainable biofuels, bioliquids and solid biomass[48] fuels (wood and pellets)	0,45	40	0	0,00	0,45	0,55

Electricity, advanced biofuels and renewable hydrogen (all uses)						
Electricity	0,15	40	0	0,00	0,15	0,18
Advanced biofuels	0,15	40	0	0,00	0,15	0,18
Renewable hydrogen	0,15	40	0	0,00	0,15	0,18

Source: European Commission

5.3 Options discarded at an early stage

Option with rates based on energy content but without changes in the taxable base

This option would have included the same definition of rates as under option 2 and the same definition of the taxable base as in option 1. While such an option would have a more limited impact on the productive sectors, this would be at the expense of the main objective of the ETD under the EGD, namely to reduce fossil fuel dependency. Moreover, this option would not solve the one of the main problems detected in the evaluation, namely the puzzle of different and uneven national implementations due to use of reductions and exemptions. Finally, an option mainly based on revised rates would impose a disproportional burden to the Member States whose national rates are currently lower without incentivising changes for the other Member States.

Option with tax differentiation according to the source of electricity

This option would have included the differentiation of taxation of electricity according to its source. Electricity of renewable origin would have been taxed at a lower or zero rate. Due consideration was given to this option. Ultimately, in line with the Better Regulation Guidelines, it was discarded on the basis that the option lacks technical feasibility as there is no EU-wide functioning guarantee of origin system in place. Differentiated tax treatment would need to rely on a robust certification system that is not given. While tax differentiation based on origin of electricity is not proposed to become mandatory under harmonised EU legislation, all options of this Impact Assessment retain the current possibility to apply such differentiation on the national level. It remains at the discretion of Member States to apply optional tax reliefs to renewable electricity in accordance with Article 15(1)(b) of the Directive.

6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

This section gives an overview of the main impacts of the options considered under the revision of the ETD by comparing them to the baseline – the latter described in detail under Section 6.1. The analysis is based primarily on the JRC-GEM-E3 model, supplemented with input from the EUROMOD and DG ECFIN's E-QUEST models, the specifications of which are discussed in Annex 4.

Various alternative modelling assumptions were explored with the JRC-GEM-E3 model. For the purposes of this analysis, the focus is on the results based on budget neutrality, where government budgets are held fixed to baseline values in relative to GDP. All additional revenue from the changes in ETD are provided as lump-sums to households[63]. Moreover,

[63] Budget neutrality is a common assumption in many CGE modelling assessments of indirect taxation. While the main results presented focus on lump-sums to households, alternative model closures were explored in the JRC-GEM-E3 modelling most notably labour tax recycling. The results were consistent with the results received on alternative recycling scenarios explored under the E-QUEST model. More specifically CO_2 emissions and tax revenue show little differentiation by the choice of lump sum / labour tax recycling. At the same time labour tax

modeling with the JRC-GEM-E3 further assumes imperfect labour markets, namely wages are held fixed allowing for unemployment to adjust after the policy shock.

The JRC-GEM-E3 model, like all CGE models, can consider technological changes and appliances/equipment substitution only in an aggregated way. Therefore, product substitution is not fully captured in the results. In particular, the model does not capture the treatment of advanced biofuels and hydrogen. Not covering these products may imply that the impact of the proposed tax changes on climate variables is underestimated whereas the macro economic impact (as driven by changes in demand) could be overestimated.

Moreover, the model does not consider substitution between petrol and diesel, which may lead to an overestimation of additional tax revenue as a result of the tax changes. Nevertheless, the model allows for product substitution between aggregate fuels: oil, gas, coal and electricity. The results overall confirm that that the outcome is in the expected direction, as a result the proposed policies.

Nevertheless, advanced biofuels, hydrogen and e-fuels are considered in the revision of Directive, as they may play a significant role in a decarbonised transport sector in the long run. Currently, the share of these fuels in transport is negligible, and it seems unlikely that the proposed revisions of the ETD alone would suffice to ensure a technological breakthrough in a time horizon of 10 years or less. In combination with other policies, however, the importance of these fuels in the fuel mix could increase over time. If this materialises over the next decade, the results of this impact assessment may -as noted before- overestimate the role of a reduction of activity (e.g. number of flights) as a response to higher energy taxation. Hence real-world GDP impacts could be lower than the ones presented in our assessment.

Concerning fossil fuels, the proposed Options 2 and 3 raise the minimum excise tax rate on diesel to the level of petrol. As a consequence, one might anticipate behavioural responses along four main channels. First, a shift from diesel to petrol. Second, a shift to electricity. Third enhanced energy efficiency (e.g. through modernisation of the vehicle fleet). And finally, activity reduction. The modelling does not capture the first channel, and this caveat may introduce a bias in the results in terms of air pollutant emissions. To a lesser extent, this could also affect estimates of tax revenue and emissions of CO_2, although the assumption of fixed diesel/petrol shares will overestimate the cost increase and the corresponding activity reduction, such that the sign of the overall bias is unclear a priori. Furthermore, for tax revenue estimates, the shift from diesel to petrol would not be particularly relevant, since the proposal includes an equalisation of tax rates across both fuels.

In the assessment of the impacts, coherence with other 'Fit for 55' proposals is ensured by placing the quantitative analysis of the different ETD options against the same baseline with all other proposals, namely the EU Reference Scenario (REF)[64]. This ensures that the basic assumptions underlying all modeling scenarios are consistent with other proposals and that in the simulations performed only the impact of the proposed changes of the ETD is accounted for.

---

recycling, can mitigate the already limited GDP losses that arise under lump sum recycling. Moreover, using additional tax revenue to stimulate employment, in this case modelled as lower taxes on labour, and related social investments to support a smooth functioning of the labour market can limit up to nearly three quarters of the job losses experienced under lump sum recycling.

[64] Alternative pathways to achieve 55% emission reductions by 2030 such as the so called MIX scenario are not explored in this impact assessment'. The MIX scenario as stipulated in the Climate Target Plan includes the extension of ETS to transport and building sectors. As such, the MIX scenario would have been incompatible with the ETD Option 3.

In addition to the above, specifically for the proposal on extension of ETS to transport and buildings, coherence is safeguarded by ensuring that in the modeling of option 3, the CO2 component is not applied to any of the current ETS sectors. In this context, the analysis recognizes that the CO2 component of option 3 cannot coexist with ETS in any sector. Therefore, application of the carbon component in this option is strictly limited to sectors currently not covered by the ETS. This eliminates the potential for any overlap between the two. For all other options the proposed changes in fuel taxes can fully coexist (and in fact reinforce) the ETS.

The options considered include the main options discussed in Section 5 including variations as regards to transitional periods.

Table 6: Options considered in the modelling exercise

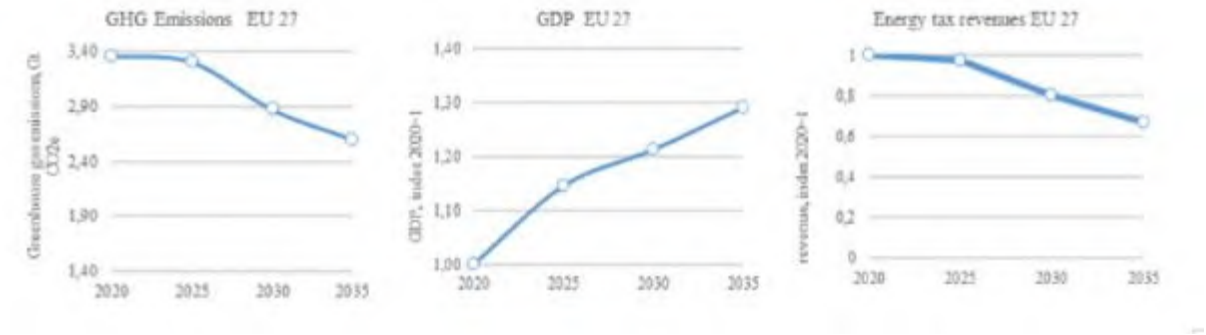
Scenario	Specifications
Option 0	Baseline scenario
Option 1	"Minimalistic" Option
Option 2a	"Energy content" Option with 10 year transitional period
Option 2b	"Energy content" Option with 7 year transitional period
Option 2c	"Energy content" Option with 10 year transitional period and pollution
Option 3a	"Carbon content" Option with 10 year transitional period
Option 3b	"Carbon content" Option with 7 year transitional period
Option 3c	"Carbon content" Option with 10 year transitional period and pollution

The discussion on impacts presented below provides results for all options and their variations.

6.1 Baseline

The baseline represents a projected evolution of the EU economy based on agreed energy and climate policies. As discussed in section 5.1, energy consumption and emissions are aligned with the aligned with the new EU REF, which includes the National Energy and Climate Plans of Member States.

Figure 9: Evolution of GHG emissions, GDP and energy tax revenues in the baseline with fixed nominal energy tax rates

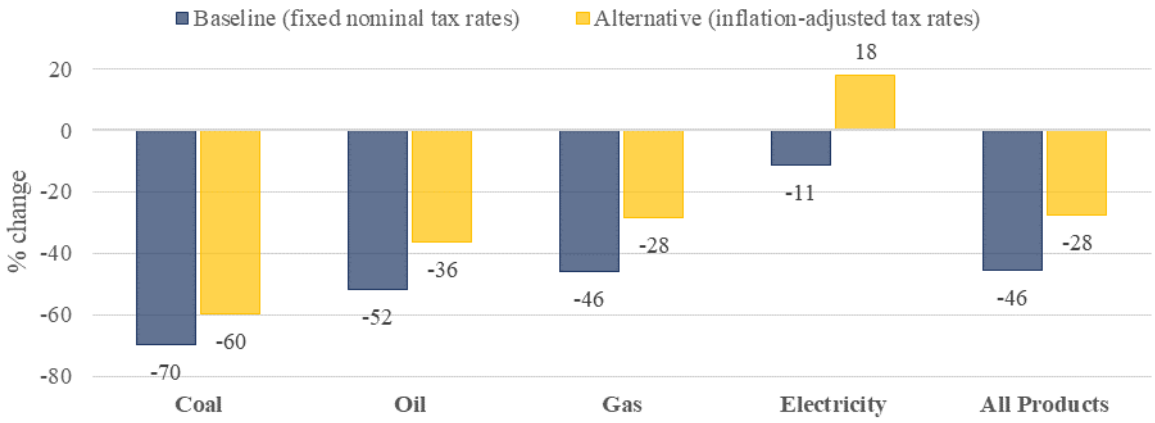


Source: JRC-GEM-E3

Despite a drop in economic activity in 2020 linked to the pandemic, the baseline projects sustained economic growth over the 2020-2035 period. Revenues from energy taxation, however, are projected to drop substantially in the baseline (c. -32% between 2020 and 2035). This is driven by two main factors, namely the projected evolution of the energy system under existing climate and energy policies and the assumption of fixed nominal excise tax rates. The decrease of tax revenues under the current climate and energy policies is noteworthy on its own, and merits attention in view of the relative stability that have characterized them over the last two decades. The baseline is based on stylized assumptions and does not consider possible increases in tax rates by Member States to react to a drop of revenues as they have done in the last twenty years to ensure a stability with the revenues.

The figure below provides more insight into this trend by breaking down tax revenues by energy products. The chart serves to illustrate two key effects: enhanced energy efficiency (all Products) and fuel shifting (stronger decrease in fossil fuel-related tax revenue while the dependency on electricity will go up) over the period 2020-2035. A simple calculation with a hypothetical alternative baseline (yellow bars), assuming fixed excise duty rates in real terms (inflation-adjusted), shows that revenues from energy excise duties would still drop significantly compared to 2015 levels even if rates applied in the Member States were to be adjusted upward to correct for inflation. Nearly two thirds of the projected drop in energy tax revenues can be attributed to the expected evolution of the energy system.

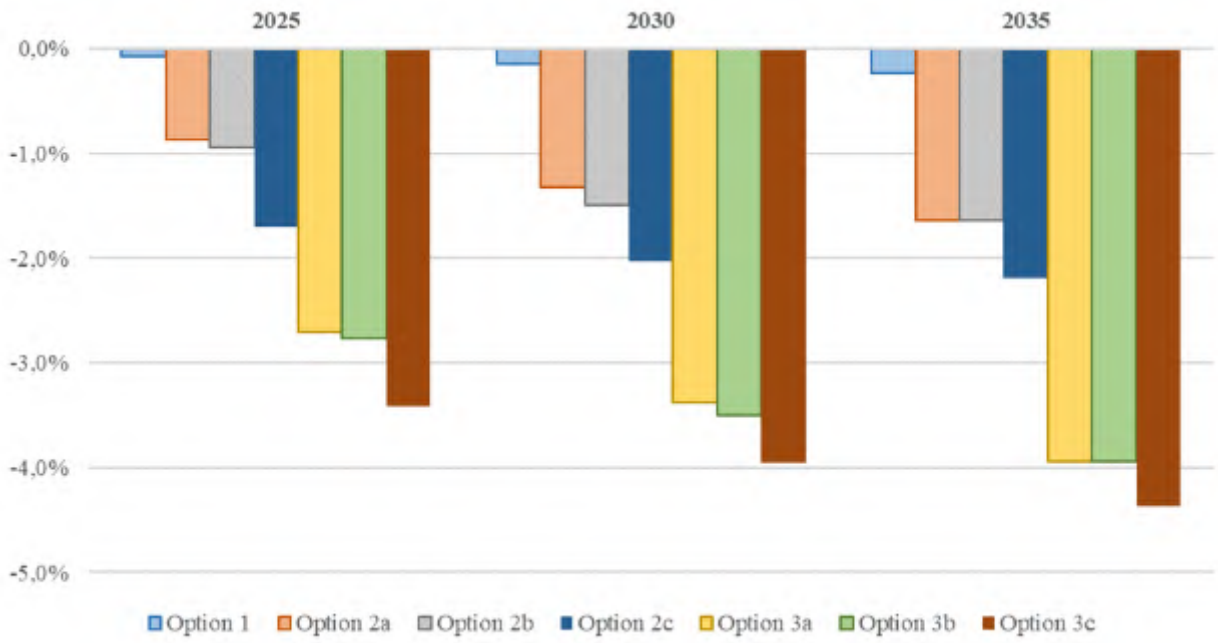
Figure 10: Comparison of change in tax revenue for EU 27 in 2035 relative to 2015 under alternative assumptions (fixed nominal rates and inflation adjusted)



Source: JRC-GEM-E3

6.2 Impact on environment: GHG and air pollutant emissions

Figure 11: Change in EU 27 GHG emissions (% change from baseline)



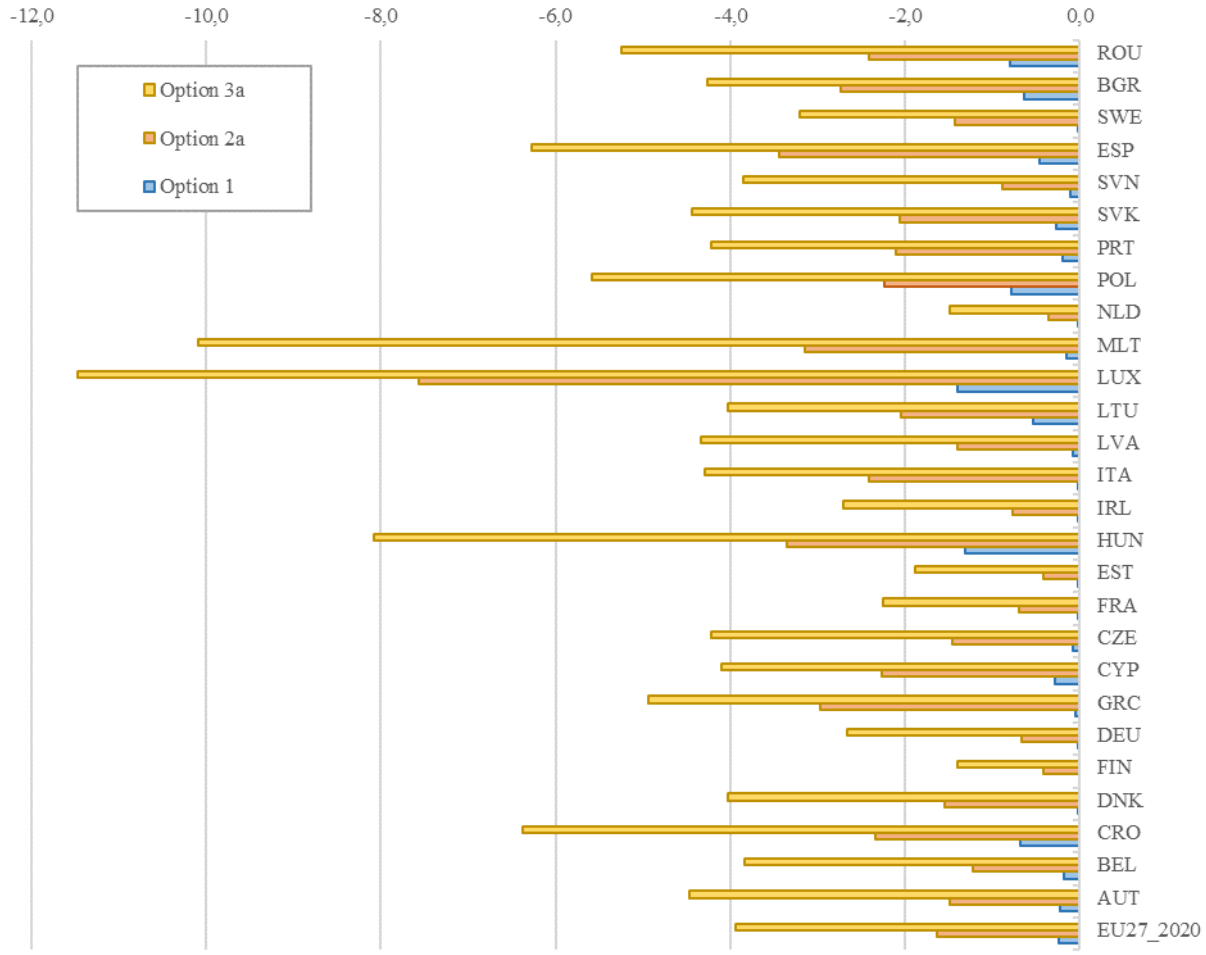
Source: JRC-GEM-E3

The proposed changes under the options considered clearly have the expected positive, albeit small in the case of option 1, impact on the reduction of GHG emissions. These results illustrate that the proposed tax reforms contribute to the objectives of the Green Deal. The results show that the scenarios will have a positive impact in this respect, due to the decrease in fossil fuel support, even when a CO2 component is not yet introduced in the proposed tax design.

The limited impact of option 1 is mostly the result of the indexation of rates in volumes' terms and the limitation imposed on Member States to set rates below the minima. By the end of the transitional period (2035), of the central option (Options 2a and 2b) the impact on GHG emissions is estimated to be more than seven times higher than the impact of the minimalistic option. The impact on GHG emissions is noticeable under the central option, considering the increase and wide restructuring of the tax rates, along with the broadening of the taxable base in this scenario.

When a CO2 component is introduced (Options 3a and 3b) the positive impact on GHG emission more than doubles the impact observed under option 2. This is obviously, because this option adds an explicit CO2 price on top of option 2, which already includes a remarkable reduction of fossil fuel incentives. The relative contribution towards GHG reduction differs noticeably among Member States, largely depending on the starting point of their energy tax design.

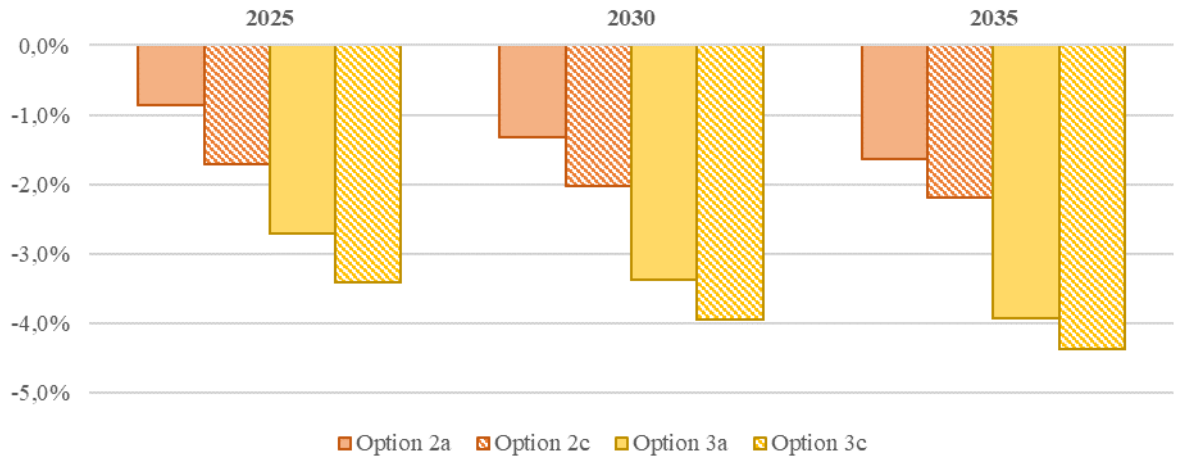
Figure 12: Change in GHG emissions by Member States compared to the baseline in 2035 (in percentage)



Source: JRC-GEM-E3

In the case of the minimalistic option (Option 1), the main driver of the impact is the increase in the minimum rates following their indexation, which will impact notably those Member States whose current national rates are fixed or close to the minima in the ETD. In the case of the central option (all variants of Option 2), the drivers of the impacts are deeper and more wide spread among Member States, considering, as mentioned earlier, the increase of the tax rates and wide broadening of the taxable base. In the case of the CO2 option (all variants of Option 3), the distributional impact among Member States is similar to the one observed under Option 2. Adding the air pollution component results in a stronger reduction in CO2 emissions as illustrated in Figure 13 below.

Figure 13: Change in EU 27 GHG emissions following the introduction of air pollution component compared to baseline

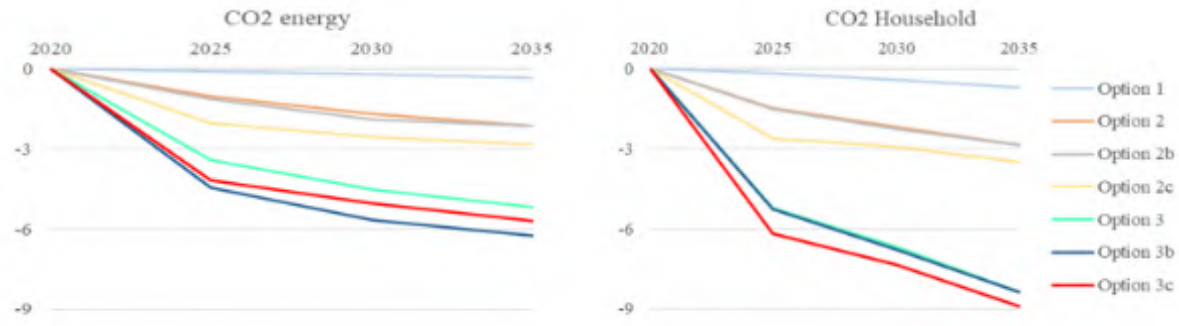


Source: JRC-GEM-E3

Comparing the CO2 emissions reduction by users, the figure below illustrates the contribution by households in relation to productive sectors. In all options, the main contribution to CO2 reduction appears to come from changes in demand by the household sector. However, under options 2 and 3 there is a noticeable increase in the effort made also by the productive sector. While households remain the biggest contributor, the increase in rates and wide broadening of the tax base under these options (Option 2 and 3) result relative greater contributions by the energy and process industries.

With the introduction of the air pollution component (Options 2c and 3c), CO2 emissions from energy in the EU27 aggregate are around 1% lower relative to Option 2 and 3 respectively. It is interesting to highlight that adding the air pollution component to Option 2 (i.e. **Option 2c**) results in a stronger carbon emissions reduction compared to when we add the air pollution component to Option 3, under Option 3c. This is explained by the fact that the inclusion of the carbon tax for the sectors outside the ETS already have a larger effect on the emissions of those gases. However, in absolute terms, the highest GHG (and air pollution) reduction compared to baseline is obtained under option 3c, which includes both the carbon content and the air pollutant component.

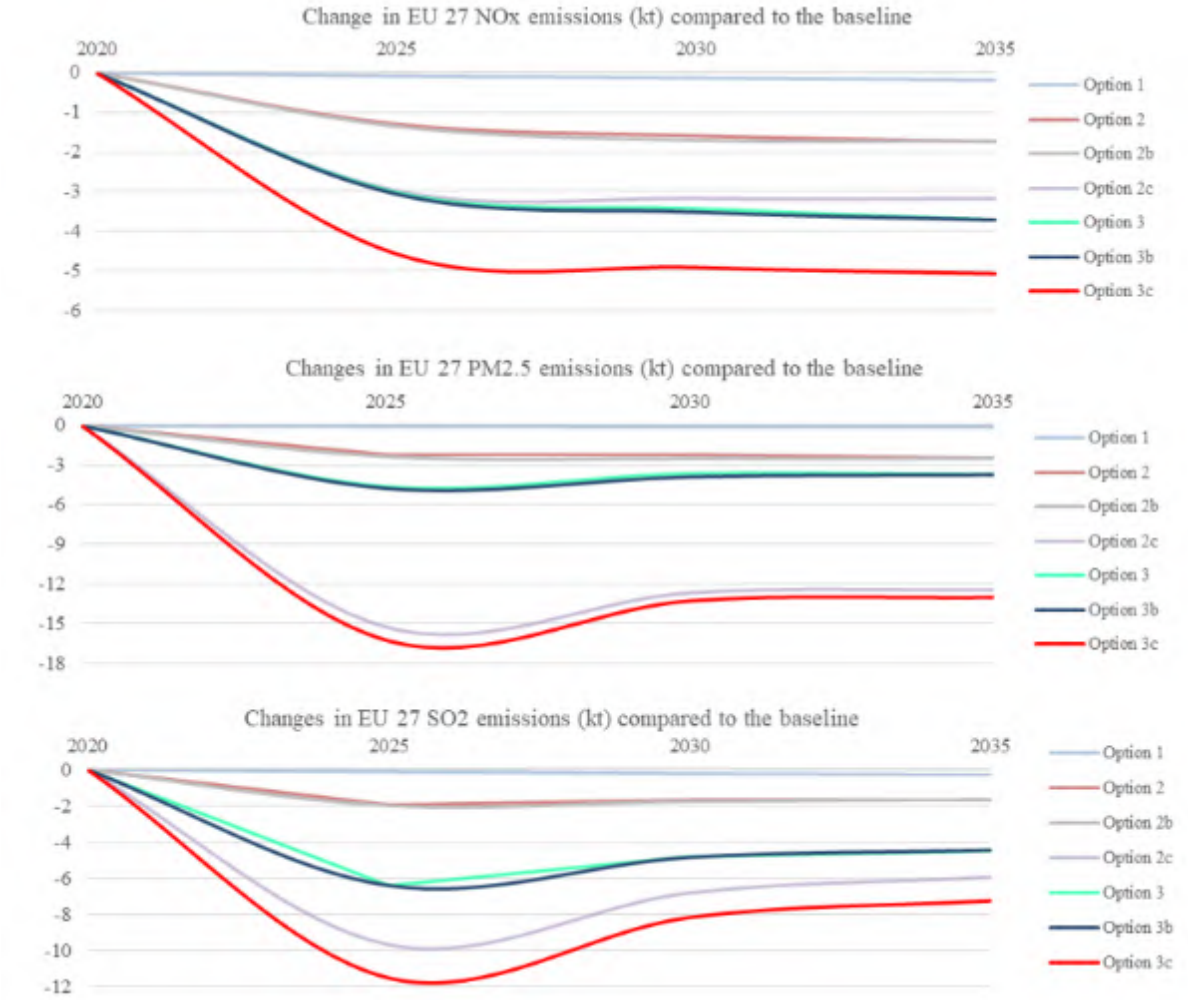
Figure 14: Changes in EU 27 CO2 emissions by users compared to baseline (in percentage)



Source: JRC-GEM-E3

Turning to impact on other pollutants, the analysis focused on the effects on NOx, PM 2.5 and SO2 emissions (aka here as "air pollution"). Figure 15 bellow illustrates the impact on the emissions of these gases by options until 2035. As indicated, only option 1 appears to have very negligible impact on the pollutant emissions. This is clearly due to the lack of significant changes in the levels and structure of tax rates along with a small impact on the taxable base. Option 2 has a noticeable impact on the reduction of all pollutants, even when a specific pollutant component is not added to the minimum tax rates. In fact, the increase and wide restructuring of the tax rates and broadening of the taxable base, clearly result in a behavioural change that reduces the use of more pollutant energy products. The introduction of a CO2 component (Option 3) has a relative limited additional impact on pollution reduction. As expected, when a pollution component is introduced (Options 2c and 3c) we observe a significant impact on pollution emission reductions – mostly noticed in 2025 if compared with 2035 in particular for PM 2.5 and SO2 emissions.

Figure 15: Changes in different pollutants compared to the baseline (in percentage)



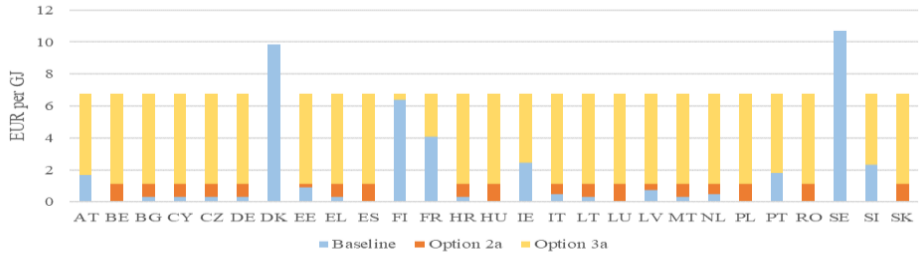
Source: JRC-GEM-E3

6.3 Impact on the internal market

The introduction of the new minima will contribute to greater convergence of tax rates across Member States. It should be noted again that all options are modelled on the hypothesis that only national rates that are below the new minima are increased to ensure alignment with the new minima. National rates that are already above the new and higher minima are kept at their present level. The following graphs illustrate the impacts of the proposed options on the effective tax rates applied to different users, uses and energy products (e.g. Households, Heating, Natural Gas). The baseline reflects how effective rates would look by 2035 in each Member State on the assumption that no change would be introduced, while the add-ons reflect the required increase to respect the new minima set by the revised ETD. The presented rates encompass both changes in rates and volumes of energy consumption. This was required by the need to illustrate the expected changes in effective rates in a comparative way across all Member States. Illustrating volumes separately would limit the possibility of cross-country comparisons.

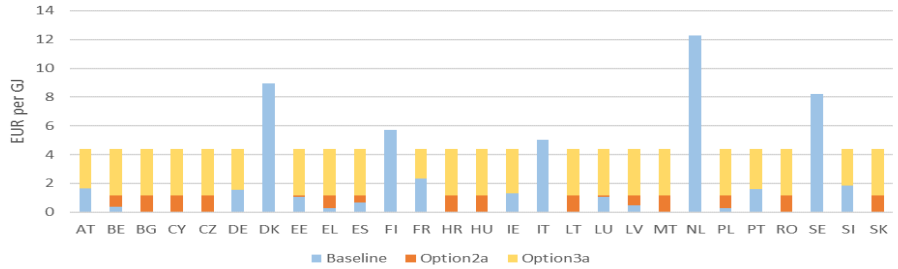
Starting with the effective tax rates applied to the **household sector for heating and transport**, it is evident that the "new" minima, both for option 2 and 3, would imply a strong convergence of rates as most of the effective national rates are at present below the new minima. This converging impact (to higher levels) is evident for coal and coke, as well as, for natural gas. Logically, the necessary increase due to the inclusion of a CO2 component would be higher than the increase observed for Option 2. Based on this analysis, it appears that, ceteris paribus eight Member States would by 2035 have effective rates higher than the new effective minima. As far as natural gas is concerned, eleven Member States are found by 2035 to have effective rates higher than the new effective minima for option 2. The following figures also show that a large number of Member States benefit from the present possibilities to tax below the minima and therefore apply a zero rate.

Figure 16: Tax rates by 2035 – Households, Heating, Coal and coke



Source: JRC

Figure 17: Tax rates by 2035 – Households, Heating, Natural gas

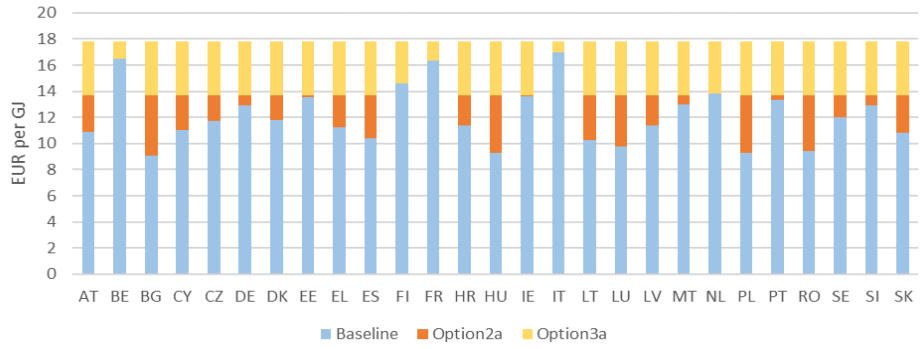


Source: JRC

In relation to fuels used by **households for transport use**, here again, the strong converging impact of options 2 and 3 is evident, both for gas oil and LPG. Considering the proposed minimum rates, the LPG product observes the highest converging value to higher level. In the case of gas oil five Member State are found, ceteris paribus, to have effective tax rates by 2035 higher than the new minima only for Option 2. Contrary to heating use, in this case the higher relative increase in rates is due to Options 2 features (especially energy content) and less to the CO2 component.

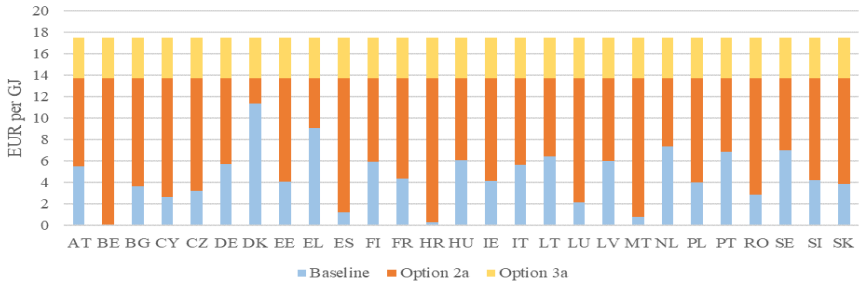
Overall, the increased taxation levels pushes to a convergence of national rates for all the situations as can be observed in the graphs.

Figure 18: Tax rates by 2035 – Households, Motor, Gasoil



Source: JRC

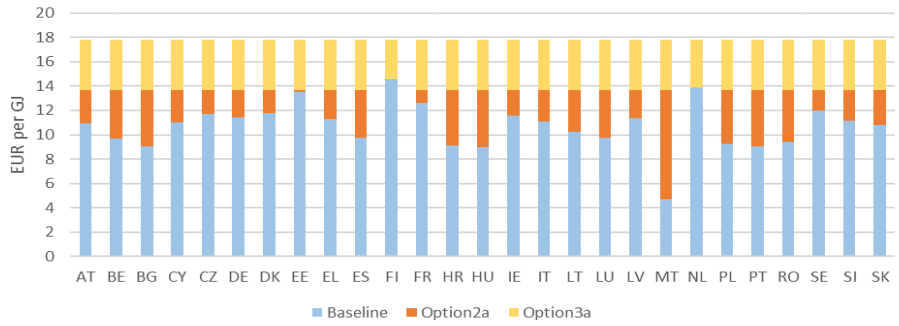
Figure 19: Tax rates by 2035 – Households, Motor, LPG



Source: JRC

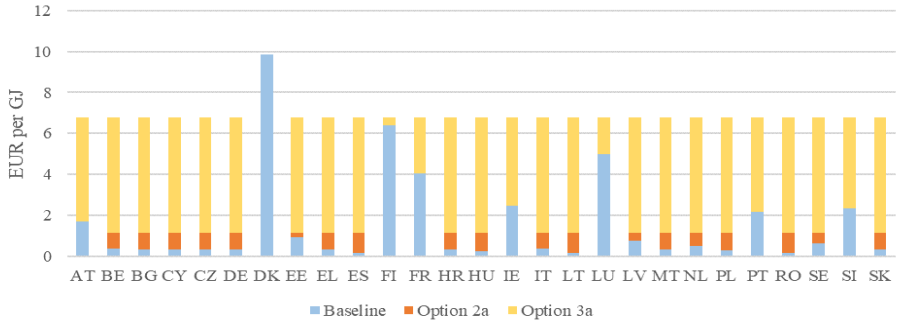
Turning to **manufacturing and commercial sectors,** in general the graphs below show that the proposed options 2 and 3 will also have an impact on the productive sectors albeit at a lower degree than the household sector. Here again, the converging impact is evident in all the situations presented. Overall, the graphs show that option 2 already has an important converging effect by increasing the taxation in almost all Member States.

Figure 20: Tax rates by 2035 – Commercial haulage, Gasoil



Source: JRC

Figure 21: Tax rates by 2035 – Industries other than ETS, Coal and coke



Source: JRC

6.4 Impact on energy tax revenues

As presented in section 6.1, revenues are projected to decrease substantially in the baseline mainly due to the expected evolution of the energy system with a decreasing dependency on fuels thanks to energy savings and a shift from fossil fuels as well as the assumption of fixed nominal rates. It is to be noted again that preserving the capacity to generate revenues for the budgets of the Member States, as it is the case now, is another element to take into due account. While it is not an objective of the review of ETD to ensure the same level of revenues in the coming years, there is some merit in providing insight into how different options fare in compensating to the revenue loss projected in the baseline.

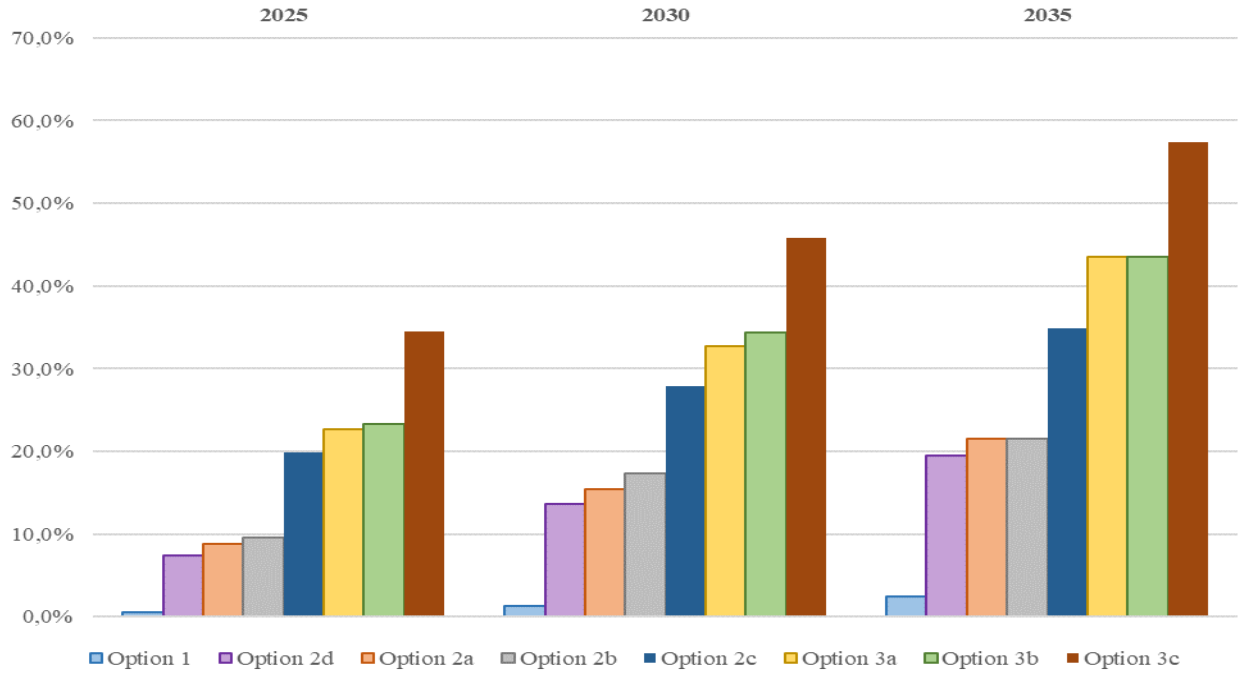
The estimated impact on revenues under each option (see figure 22) is based on the assumption that Member States will only increase their respective national rates, where needed, to reach the "new" minima in the Directive. In all options considered, the increase in minimum rates results in an increase in tax revenues compared to the baseline across the years.

With the indexation of minimum rates under Option 1, revenues only rise slightly compared to the baseline, as rates will only need to increase in those countries and sectors where the new nominal rates in the Directive will lead to crossing the current minimum threshold over time. Under Option 2, with the introduction of higher minima based on energy content and the broadening of the tax base (such as for energy-intensive industries, intra-EU aviation and maritime), effective rates and revenues increase notably compared to the baseline (c. +22% in 2035). In case of the options with a shorter transition period, the gains are observed earlier.

The carbon-content add-on to the energy content under Option 3 impacts rates and revenues strongly from 2025 onwards, as the value for the carbon content component will increase over time as explained in the description of the option. The difference with Option 2 also captures the elimination of the transition period on energy content for all consumers except

Households and the intra-EU aviation sector in Option 3, as well as the regular updates of the CO_2 component in line with the changes in the ETS price in the future.

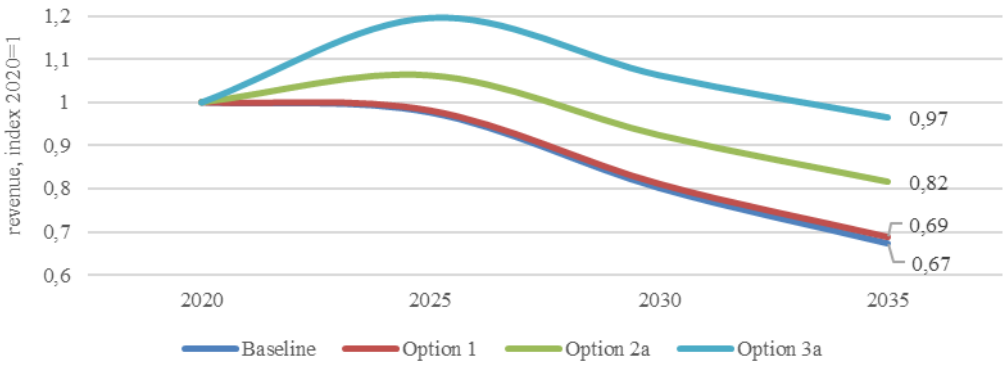
Figure 22: Evolution in EU27 of total tax revenues



Source: JRC-GEM-E3

As mentioned above, revenues will drop by 2035 in comparison to 2020 in the baseline. This reduction appears to be compensated in different degrees (partly or fully) under the different options. This is illustrated in figure 23 below.

Figure 23: Change in tax revenues between 2020 and 2035 for EU 27 (2020=1)



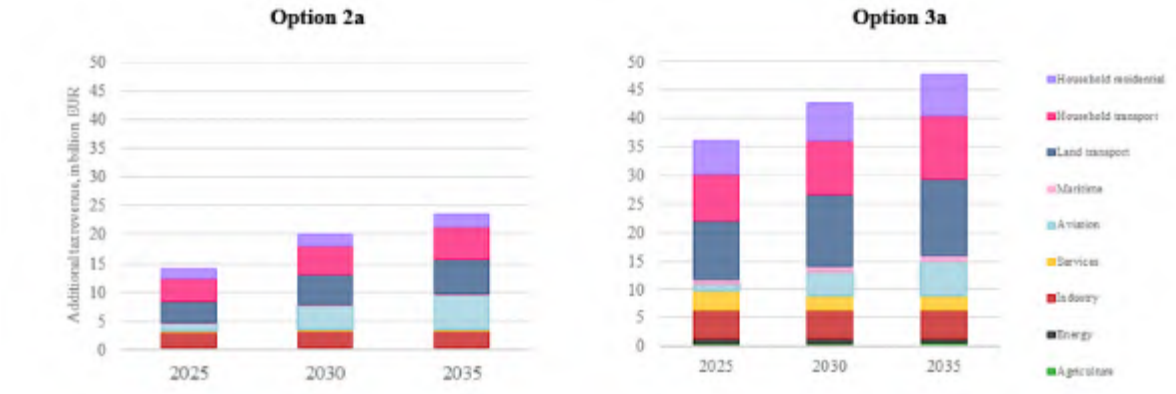
Source: JRC-GEM-E3

The increase in tax revenues under Options 2 and 3 comes mostly from transport fuels (oil products and biofuels), which already make the largest share of excise tax revenues. The

introduction of the carbon component raises revenues from fossil fuels due to their higher carbon content (see list of emission factors provided). The introduction of an air pollution component to the minimum rates significantly increases Member States' revenues from 2025 onwards, both under Options 2a and 3a, as no transition period is assumed.

Considering the impact by type of consumers in Figure 24 below, revenues increase primarily from land transport (transport sector) and private household transport under Options 2 and 3. The carbon component affects all sectors, each contributing more to tax revenues under Option 3 than Option 2 (with the relative increase depending on their carbon intensity).

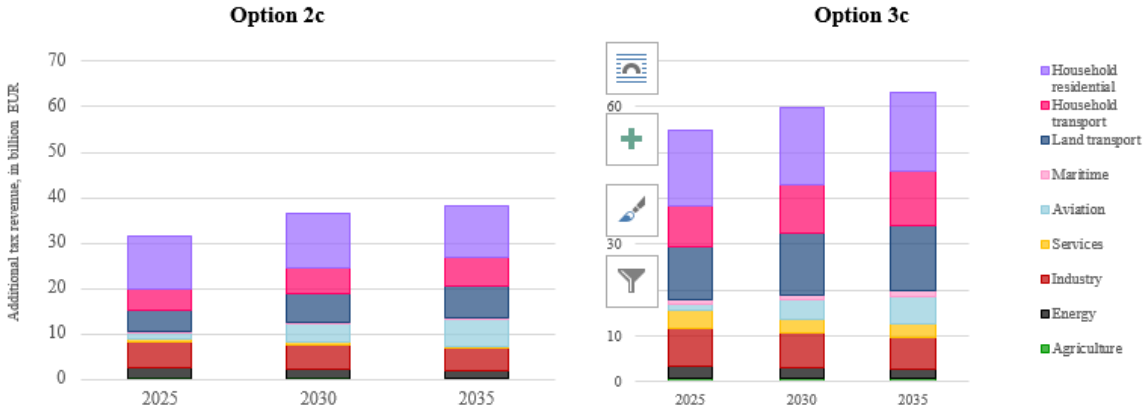
Figure 24: Additional revenue under Option 2a and 3a for EU 27



Source: JRC-GEM-E3

Introducing the air pollution component leads to significant increase in tax revenues of Option 2 and Option 3 compared to baseline. Additional tax revenues primarily come from households' use of fuels for heating purposes, already in a significant way from 2025, given that the pollution component increases in an extremely significant way the cost of coal and biomass. The household sector will bear a very substantial share of the increase in costs following the introduction of this option.

Figure 25: Additional revenue under Option 2c and 3c for EU 27

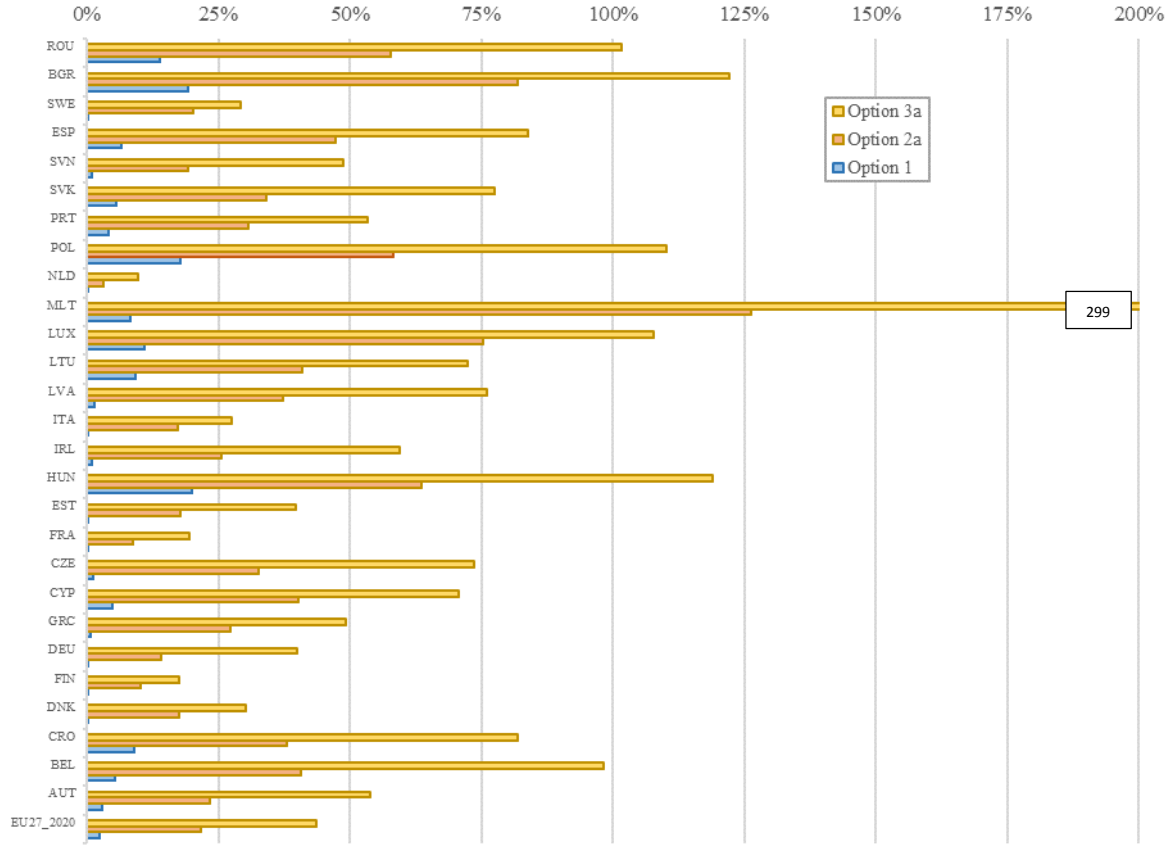


Source: JRC-GEM-E3

The impact on Member States (see Figure 26 below) depends on different factors such as i) the present level of national rates, ii) the national use of exemptions and reductions, iii) the

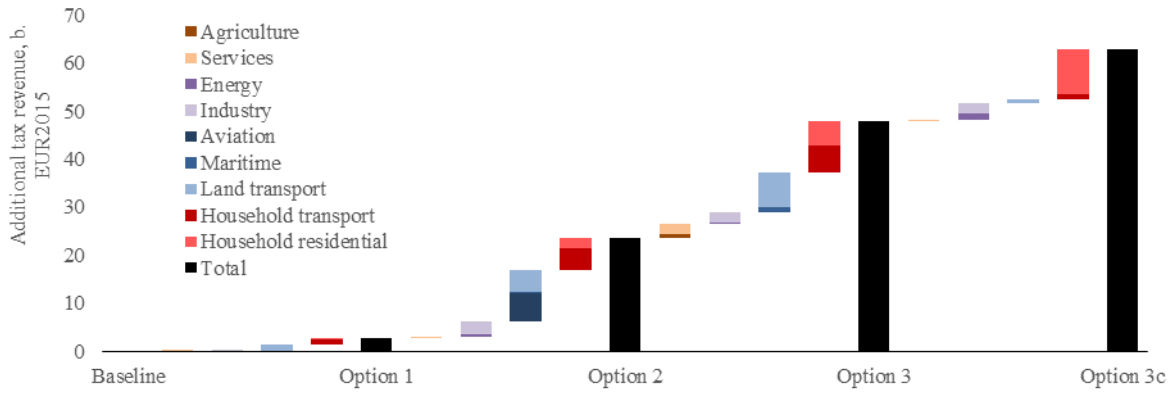
energy mix of the economy and iv) the sectorial impact of the proposed options. In general terms, Option 1 will mainly affect those Member States whose national rates are fixed at the lowest levels, whereas Options 2 and 3 will also have a relevant impact on Member States who make extensive use of possible exemptions and deductions. Moreover, the Member States who base their energy mix more on fossil fuels will also be more affected. The application of a transitional period aims at taking into account all these different national circumstances in view of a smooth transition.

Figure 26: Change in Member States' tax revenues in 2035 relative to the baseline (in percentage)



Source: JRC-GEM-E3

Figure 27: Total additional tax revenues by users for EU27 in 2035



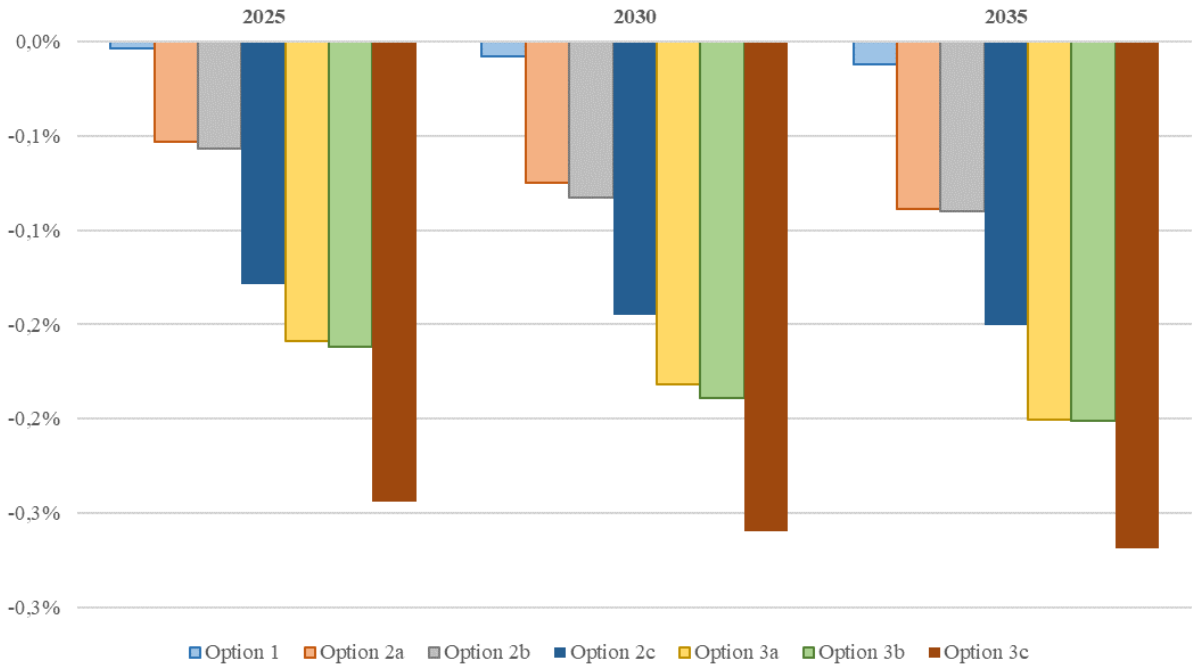
Source: JRC-GEM-E3

Figure **27** above illustrates the breakdown of total increase in revenues by users under the different options. Increases in minimum rates lead to an increase in tax revenues compared to the baseline across all options. With simple indexation under Option 1, revenues rise only slightly compared to the baseline, while under Option 2, with the introduction of higher minima based on energy content, and the broadening of the tax base effective rates, the tax revenues increase strongly compared to the baseline. Transport and aviation contribute most in this increase, followed by household transport and heating and industry. The addition of a pollution component has a higher impact upon households. This impact is evident and much more pronounced under Option 3c which includes also a CO2 component in the tax rates.

Annex 9 provides detailed data on the impact on Member States' revenues when the pollution component is introduced in Options 2 and 3. In both options, the introduction of a pollution component will impact more on lower income Member States. This is mainly the result of their national energy mix where the share of more pollutant products is higher.

6.5 Impact on GDP

Figure 28: Change in EU 27 GDP compared to the baseline (in percentage)



Source: JRC-GEM-E3

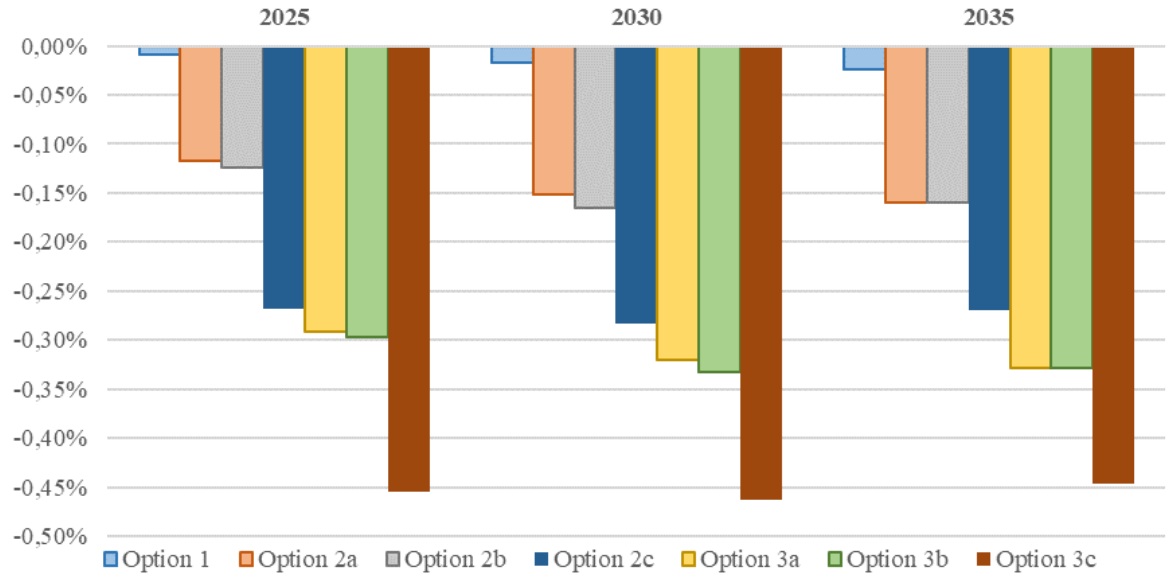
All options considered imply an increase in effective taxation in the economy, which in turn results in a minor decrease in GDP estimated at -0,09% under Option 2 relative to the baseline by 2035. This would indicate that the introduction of an increase in energy taxes achieve an important positive environmental impact with a very low impact on growth perspective.

This result should be seen in the context of the technology options that are included in the model and depend on a variety of factors, mainly on the fact that the increase in taxes is compensated through lump-sums to households.

Three underlying factors explain the differences among scenarios. First, under the minimalistic option the indexing of rates seems to be the main driver, resulting in price increases and thereby demand reduction. By contrast, under Options 2 and 3 the broadening of the taxable base affects the production sector by increasing input costs, which results in a decline in investment parallel to the even more pronounced demand decline. Introducing an air pollution component to the minimum rates leads to further reduction in GDP.

6.6 Impact on the labour market

Figure 29: Change in EU 27 employment compared to the baseline (in percentage)



Source: JRC-GEM-E3

Reflecting the minor negative impact on GDP, all the options considered will have a very small negative effect on the labour market at EU aggregate level. In fact, in the longer term the decrease in employment rate would range from -0.02% to -0.45%. These impacts are presented at a more disaggregated level below.

Similar to GDP, this result depends on the model assumptions of the functioning of the labour market and the recycling of additional tax revenues.

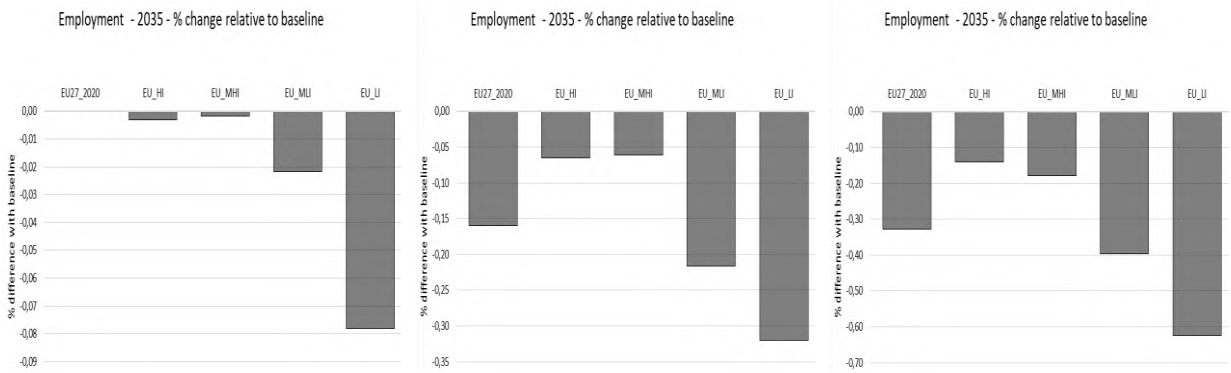
In sectoral terms the biggest impacts are as follows:

- Under Option 1 main impacts are realised in the energy sectors, namely coal, oil and gas production.
- Under Options 2 and 3 the biggest impacts are realised in the energy sectors and the energy intensive industries. Downstream sectors are also affected but to a lesser extent.

As regards differences between Member States, the higher impact on employment is found for low income Member States.

Figure 30 Changes in employment in 2035 by Member State group (% change from baseline) [65]

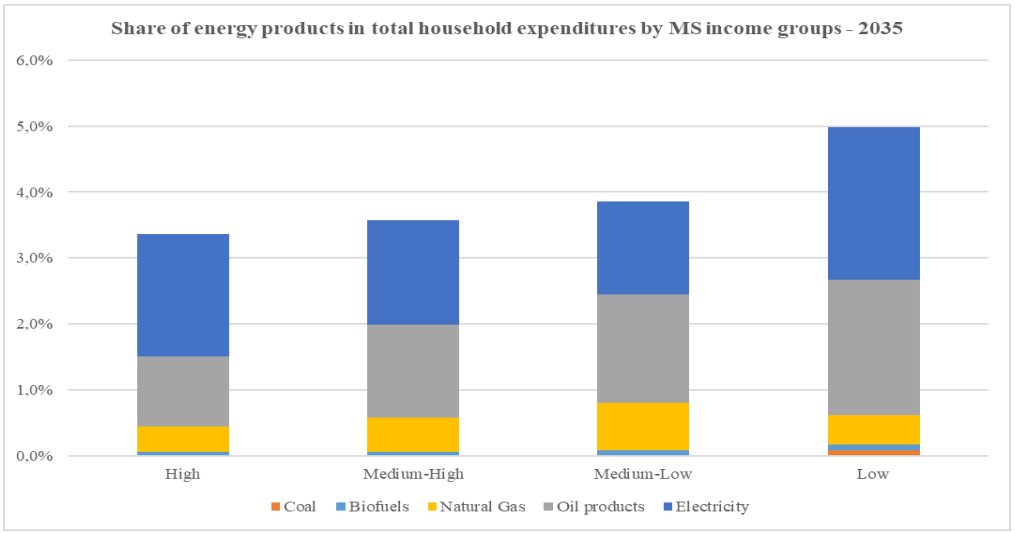
Option 1 **Option 2a** **Option 3a**



Source: JRC-GEM-E3

The higher impact on low income Member States is due to both higher tax rates increase (relative to the baseline) and higher shares of energy products in overall consumption (see figure below).

Figure 31: Share of energy products in total household expenditure in the baseline in 2035 by EU Member State Group



Source: JRC-GEM-E3

Energy sectors (coal, oil and gas) are estimated to experience the highest impacts in terms of employment losses. These sectors, as well as forestry in Options where biomass products are subject to the air pollution component (Option 2c and 3c), are found to experience losses in employment higher than the average of all sectors in the EU 27. Energy intensive industries

[65] The classification of Member States by income is as follows:

- High includes AT, DK, FI, IE, LU, NL, SE
- Medium High includes BE, DE, FR
- Medium Low includes CY, CZ, ES, ET, IT, ML, PR, SI
- Low includes BG, EL, HU, LT, LV, PL, SK, RO, HR

(mostly ferrous, non-ferrous metals and non-metallic minerals), agriculture and the transport sector follow albeit with weaker losses.

Table 7: Changes in employment by sectors – EU 27, in 2035 (% change for baseline)

	Option 1	Option 2a	Option 2c	Option 3a	Option 3c
Crops	0,08	-0,48	-0,43	-0,49	-0,47
Coal	-0,30	-1,51	-6,55	-4,02	-7,57
Crude Oil	-1,21	-3,96	-5,43	-8,57	-9,98
Oil	-0,55	-2,03	-2,54	-4,20	-4,76
Gas	-0,71	-3,83	-3,43	-11,87	-11,42
Electricity supply	-0,04	0,02	0,52	0,23	0,74
Ferrous metals	-0,02	-0,40	-0,93	-0,50	-1,04
Non ferrous metals	-0,01	-0,39	-0,47	-0,40	-0,48
Chemical Products	-0,01	-0,07	-0,19	-0,13	-0,25
Paper Products	-0,02	-0,09	-0,18	-0,25	-0,34
Non metallic minerals	-0,04	-0,25	-0,41	-0,40	-0,57
Electric Goods	0,00	0,08	0,11	0,00	0,03
Transport equipment	-0,02	-0,06	-0,05	-0,20	-0,20
Other Equipment Goods	-0,01	-0,02	-0,06	-0,12	-0,16
Consumer Goods Industries	-0,03	-0,06	-0,13	-0,37	-0,45
Construction	-0,03	-0,17	-0,29	-0,36	-0,48
Transport (Land)*	-0,10	-0,50	-0,68	-0,92	-1,11
Market Services	-0,03	-0,17	-0,29	-0,39	-0,52
Non Market Services	-0,02	-0,11	-0,17	-0,21	-0,27
Livestock	0,04	0,23	0,32	0,07	0,13
Forestry	0,02	-1,33	-8,00	-1,01	-7,73

* Water and air transport effects are presented in the devoted sections bellow

Source: JRC-GEM-E3

6.7 Macro economic impact under alternative revenue recycling settings

The E-QUEST model was employed to compare the Central Option from the ETD revision proposals to a baseline under different revenue recycling settings. Exploring revenue recycling implications under other options was deemed to not to provide significant value added to the analysis. While it would proportionally change the macroeconomic effects, assessing other options would have only marginal impact at the EU-level results without changing the ranking of the recycling measures.

The baseline calibration accounts for the effect of existing climate mitigation policy measures and the current ETD framework. To ensure consistency across the different model simulations in the Impact Assessment, the E-QUEST simulation inputs were calibrated to be in line with those implemented in the JRC-GEM-E3 simulation scenarios.

Six alternative scenarios for the recycling of the additional revenue were explored, namely, (i) reduction in lump-sum taxes, (ii) consumption tax cuts (VAT), (iii) personal income tax (PIT) cuts for low-income households only, (iv) social security contributions cuts for employers, (v) reduction in capital taxes (excluding fuel-intensive capital) and (vi) recycling via 'clean' subsidies to support the purchase of "clean" capital goods.

Overall, the simulated scenarios at the EU level result in slightly negative or close to zero GDP effects relative to the baseline. The ranking of GDP results by recycling instruments reflects the ranking of taxes by their distortive effects in the economy. Reducing lump-sum

taxes, which are the least distortive, shows a negative effect of about -0.07% relative to the baseline GDP. This is followed by social security contribution (SSC) and consumption tax (VAT) reductions by about 0.05% decline in GDP. Personal income tax cuts targeted at lower income groups with a higher marginal propensity to consume can also reduce the output losses to around 0.03% of baseline GDP. In the model labour supply, labour demand and wages are endogenous, therefore, this scenario works via stimulating low-skilled labour supply with higher net wages, lowering the compensation per (low-skilled) employees for firms and leading to higher overall employment. Taxes on capital are the most distortive taxes in the model, and recycling the additional revenue to reduce these has larger impact. The most beneficial scenario in terms of GDP effects is through the recycling of additional revenues into subsidies on the purchase of clean capital and capital tax reduction. Both recycling options can result in slightly positive GDP effects relative to the baseline. In terms of consumption, reducing VAT, cutting personal income taxes or providing green subsidies can mitigate the most the negative effects of the reform relative to the lump-sum tax recycling case. For investment, capital tax cuts and clean capital subsidies are the most beneficial recycling instruments. Targeted labour tax-cuts have the largest potential to increase employment as the slightly higher real wages stimulate labour supply.

Table 8. Macroeconomic effects of recycling measures, 2030

Scenarios	Lump-sum	VAT	SSC	Low-skilled labour tax	Capital tax	Clean subsidy
GDP	-0.07	-0.04	-0.05	-0.03	0.01	0.06
Investment	-0.07	-0.03	-0.05	-0.04	0.42	0.35
Consumption	-0.08	-0.04	-0.08	-0.04	-0.10	-0.05
Employment	-0.01	0.01	0.01	0.06	0.00	0.00

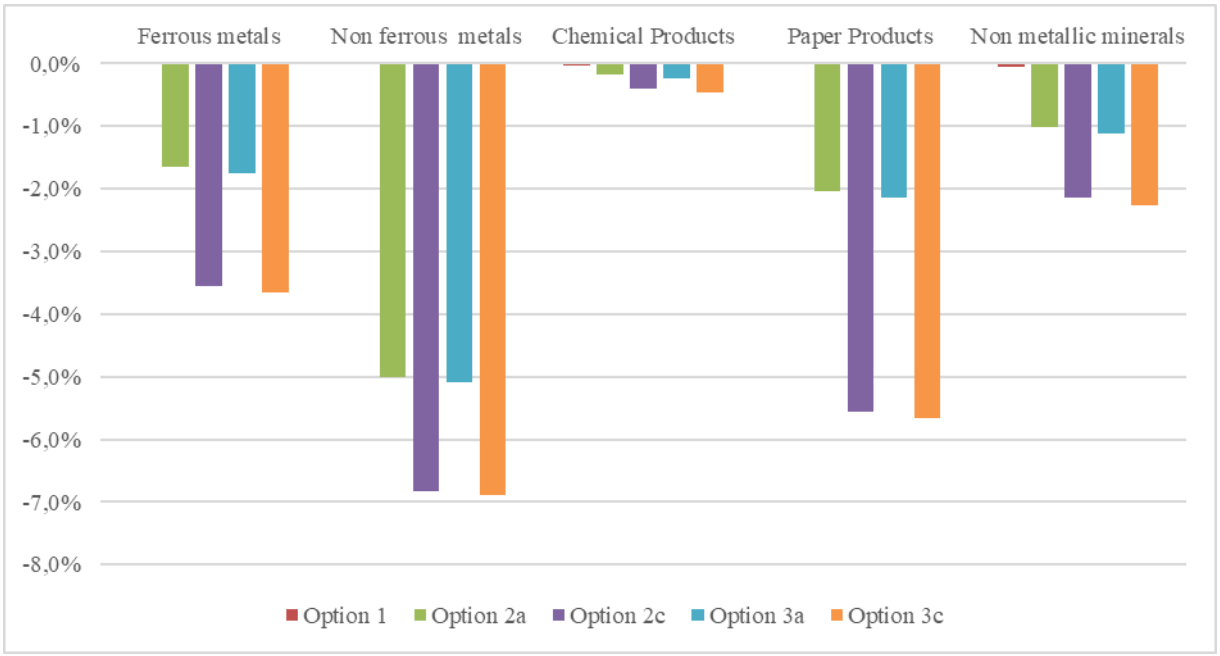
Note: percent deviations from baseline levels.

Source: E-QUEST simulations

6.8 Impact on industries that are more energy intensive

Industries in the EU that are more energy consuming will face an increase in their input costs under option 2 and option 3. Specifically, in option 2a and 3a these will be driven by the introduction of higher minima based on energy content and the broadening of the tax base, while the introduction of the pollution component in options 2c and 3c will bring in additional pressure as evidenced in the proportional reduction in GHG emissions in the figure bellow.

Figure 32: Change in EU27 industrial emissions of energy intensive industries (in percentage)

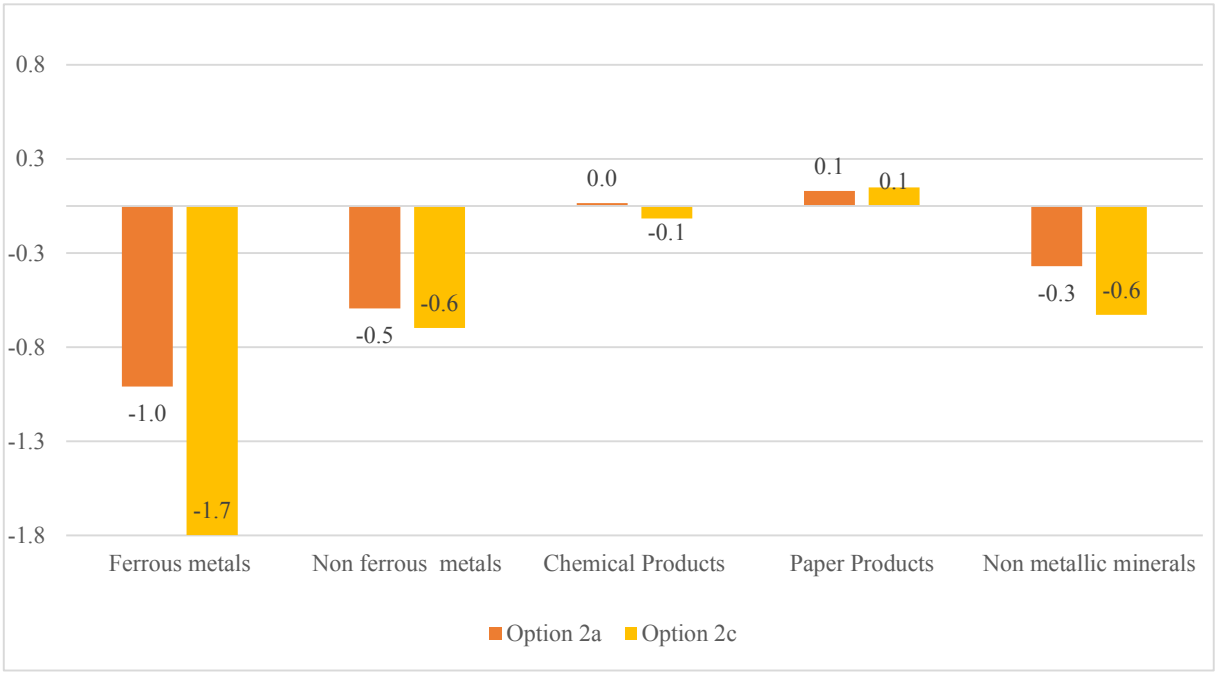


Source: JRC-GEM-E3

The increase in costs could impact on the energy intensive sectors' competitive position in international markets. The figure below illustrates the changes in exports for energy intensive industries relative to the baseline by different options. Within this group, the highest impact is observed in ferrous metals. Exports of chemicals and paper appear to be less affected. In fact

generally at the Member State level these two sectors benefit from less exemptions than other energy intensive industries in the current ETD (baseline), and are therefore less affected by the scope extensions under Options 2 and 3.

Figure 33 Exports of energy intensive industries – EU 27 in 2035, as % change from baseline



Source: JRC-GEM-E3

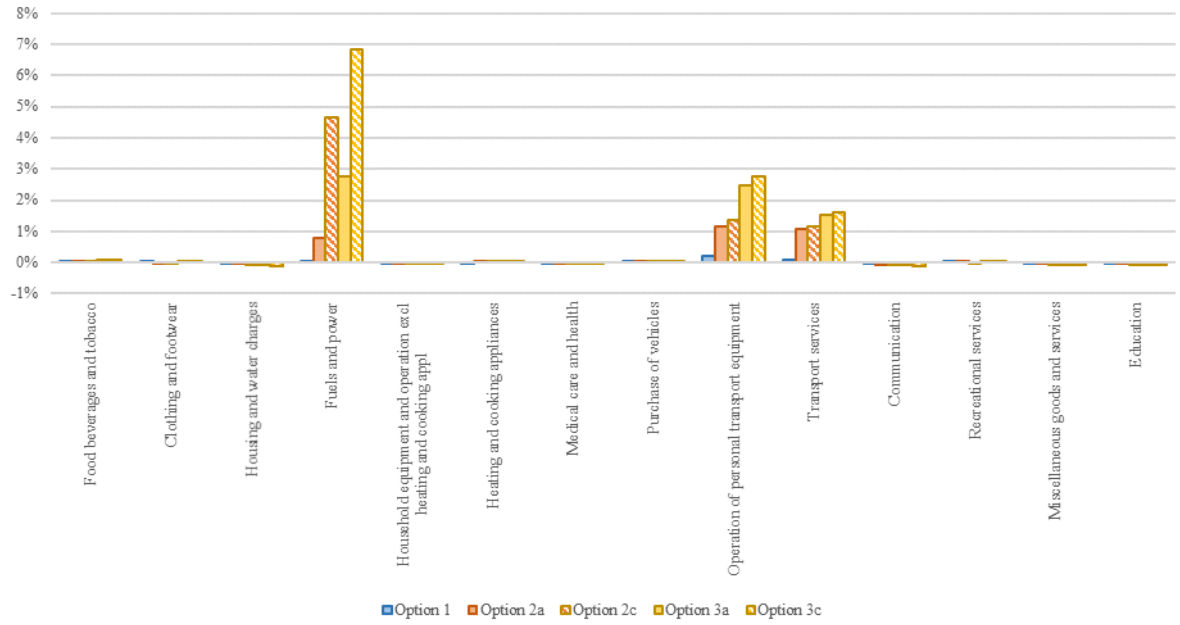
6.9 Distributional Impact

Households heating

Increased tax rates lead to an increase in consumer prices, both for motor and heating fuels. Option 1 minima have a very limited impacts on heating fuels, and a small impact on motor fuels. Under option 2a, this increase is similar across heating and transport fuel prices, around 0,8.% and 1.2% respectively. When a pollution component is added the heating fuel prices increases by around 5%. The addition of the carbon component in Option 3a leads to a 2.8% increase in the price of heating fuels compared to more than 2.5% increase in the case of motor fuels prices, due to the high emission factor of solid heating fuels.

The air pollution component mainly affects heating fuels for households (coal), and result in almost 5% increase in household prices for fuels and power compared to the baseline in Option 2 and nearly 7% increase for Option 3.

Figure 34: Change in EU27 household consumer prices between each Option and the baseline in 2035 (in percentage)



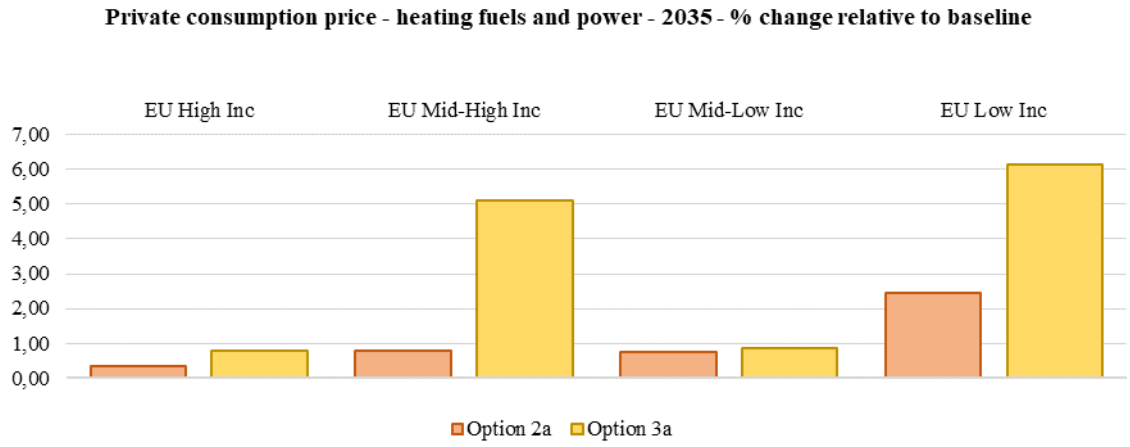
Source: JRC-GEM-E3

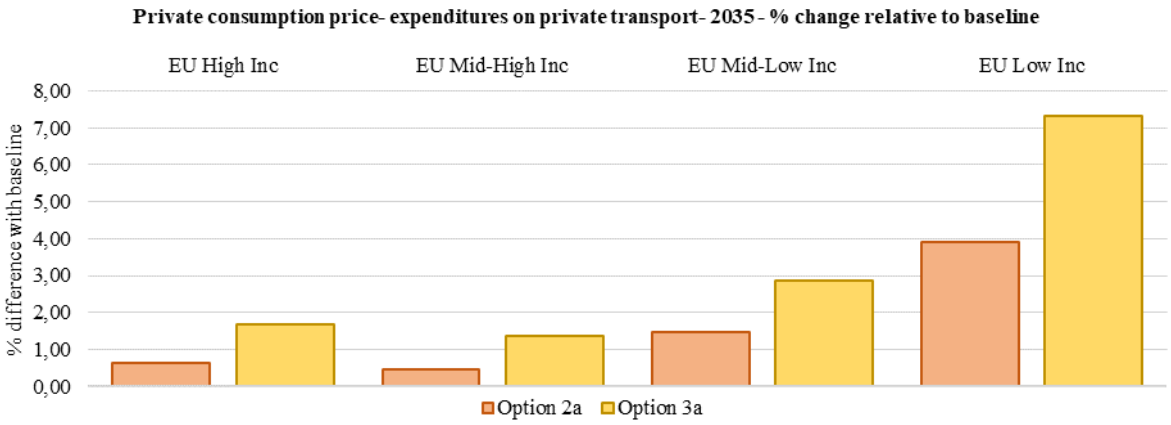
Member States with currently lower effective tax rates on households are relatively more affected by the increase in the minima based on energy content and the removal of exemptions. This generally corresponds to lower income Member States (plus Belgium).

Price increases for motor fuels from the inclusion of the carbon component (difference between Option 2 and 3) is relatively uniformly applied across Member States, as the carbon content of motor fuels vary relatively little across the EU27.

However, the increase in the price for heating fuels from the introduction of a CO2 tax is mostly felt by Member States with more carbon-intensive heating fuel mixes.

Figure 35: Change in private consumption prices (in percentage)





Source: JRC-GEM-E3

Impact on household incomes

Distributional impacts on household incomes by Member State[66] were analysed with the use of the Euromod micro simulation model, by effectively linking it with the JRC-GEM-E3 model thereby allowing the feeding of changes in key variables from the macro simulation to the micro model (see Annex 4 for details). By linking the two models in this way, the distributional analysis at the micro level was able to account for the economy-wide impact of the tax changes under consideration, capturing the effects of the policy option not only through its direct impact on the tax burden, but also through its broader implications on consumer prices and household incomes. The analysis of distributional impacts focused on options 1, 2a, 3a and 3c. Exploring other options was deemed not to provide significant value added to the analysis.

The results indicate that the considered ETD options reduce adjusted disposable income (the disposable income net of indirect taxes) of households, often in a regressive way, but that the distributive impact depends on the policy option and largely differs across countries.

In general, the four options considered show the following impacts on household incomes across the income distribution, for each of the three drivers (price and income effects, and a lump-sum compensation mechanism):

- A negative and regressive "price effect". All the options considered drive a price rise in a number of consumption goods, including transport-related services as well as in fuels and powers. Although other prices are expected to drop, overall, a negative impact on household adjusted disposable income is observed from the changes in consumption prices driven by the energy tax reforms, ranging from 0% to 2%. This generally affects more heavily households at the bottom of the income distribution, for their income share of consumption is notably larger. The lowest income decile loses around 2% of disposable income in Lithuania and between 1.5-2% in Poland and Hungary (option 3c).

[66] The analysis is carried out for the 18 Member States, which are currently covered by EUROMOD's Indirect Tax Tool (ITT) extension. These countries are: BE, CY, CZ, DK, FI, FR, DE, EL, ES, HU, IE, IT, LT, PL, PT, RO, SI and SK. More information on this project can be found in https://EUROMOD-web.jrc.ec.europa.eu/about/extended-functionalities.

- A negative and progressive "income effect". All the options considered generally lead to a decrease of gross labour and capital income, which analogously to the "price effect", reduces household adjusted disposable income. However, this effect penalizes more households in the second half of the income distribution. That is because poorer households rely less on market income than the richer ones. As a result, the income effect tends to compensate and, in some cases, completely reverses the regressivity of the price increase. The final effect of the energy tax changes considered, after allowing for the price and income effects, is generally displaying either a regressive or a flat impact across the income distribution. Overall, the effect on the first decile from the joint effect or price and income ranges from a loss of -0.002% (Germany, option 1) to -2.3% (Hungary, option 3c) with respect to baseline disposable income.
- A positive and progressive effect of the compensatory measure. When the extra tax revenues (from indirect taxation) raised through each tax change are transferred back to households in a lump-sum fashion, the whole reform turns to be progressive, for these transfers determine a larger increase in disposable income for poorer households. EUROMOD-based simulations show that using all additional revenues to finance a lump-sum benefit to all individuals could, in relative terms, provide a larger support to poorer households compared to the rich ones. Therefore, the regressive or flat impact of energy taxes can be mitigated or even eliminated by accompanying measures.

The impact of the considered ETD options, including compensatory measures, on households' adjusted disposable income is generally of small magnitude. Over the whole spectrum of the income distribution, the impact ranges from about 4% to about -1.5% of the baseline disposable income. That is because the predicted impact of the energy tax reforms under analysis over labour and capital income is mostly negligible, and so is the impact on the consumer price index (though variations in the price of individual good categories, such as transport and fuel, can be significant).

Option 1 has the lowest estimated impact on household incomes, while the option with the air pollution component shows the strongest impact. In this latter scenario, Lithuanian, Romanian and Spanish households in the first decile experience the largest increase in adjusted disposable income (i.e. more than 3%); whereas Hungarian, Romanian and Polish households in the 10th decile, experience the strongest income reduction (i.e. about 1.5%). On the other hand, in the minimalistic option the largest increase in adjusted disposable income is experienced by Romanian first decile (i.e. about 0.45%); whereas the largest reduction is for Hungarian, Romanian and Polish households in the 10th decile (i.e. about 0.2 %). The range for the remaining scenarios is in between these extremes.

Within each option considered, results substantially vary across countries. This is due to the different impact that the same policy change produces on prices of the different consumption categories and income in each country. Country disparities are also explained by the different consumption patterns across the income distribution and income structure of households. Another factor is the relative change that the energy tax changes bring onto the existing systems in each country. A detailed discussion of distributional impacts by Member State is provided in Annex 9.

6.9 Impact on aviation, maritime transport and inland shipping

Aviation

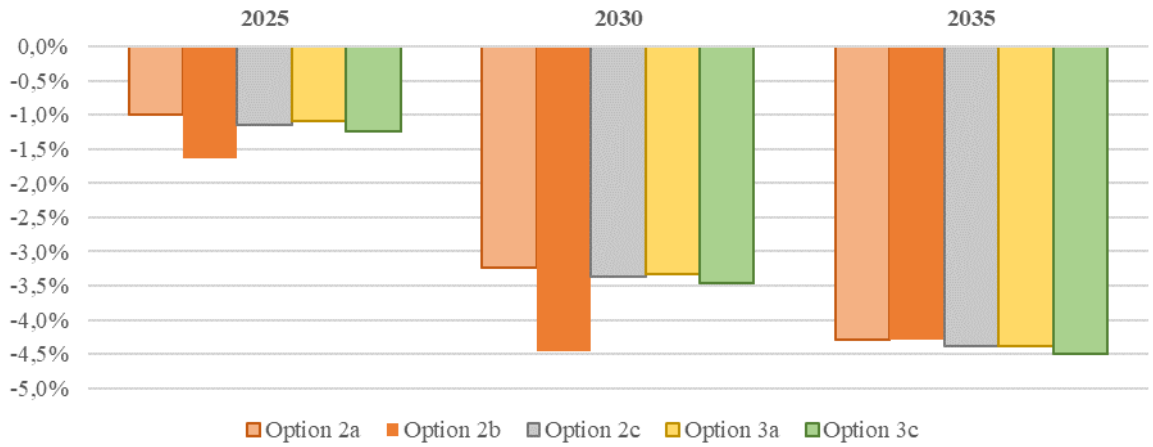
Impact on the aviation sector was analysed both through the JRC-GEM-E3 model and through a focused sectoral study - the results of which are presented in Annex 7. This focused study also performed detailed modelling of alternative scenarios for the revision of taxation in aviation. Modelling in the study was based on the combination of a dedicated sectoral model (AERO-MS) and a macro model (GINFORS). In line with the analysis so far, the discussion in this section also focuses on the results of the JRC-GEM-E3 model, but these are complemented with findings from the AERO-MS and GINFORS models to provide insight of the potential range of impacts under alternative assumptions. The results of all modelling exercises are largely comparable and any differences are explained by underlying technical specificities and assumptions of each model.

In view of the above, rates based on energy content in line with those applied to the road transport sector were introduced for the aviation sector under Option 2 with a 10 or 7 year transition period respectively (Options 2a and 2b). The resulting price increase reduces the total demand and output of the aviation sector. Based on the results of the JRC-GEM-E3 model the impact on output is found between -1.0% and -1.6% in 2025 and about -4,3% by 2035, as illustrated in **Figure 36**.[67] The results confirm the usefulness of introducing a longer transition period to allow the sector to adjust more smoothly to the proposed changes. Indeed option 2b results in a much stronger impact in 2030 relative to option 2a, with both converging by 2035. The sector being included in the ETS, is not eligible for the carbon content component under Option 3. The slight decrease in output compared to Option 2 is due to general equilibrium effects of a slightly more reduced total demand under Option 3.

The results obtained from of the sector specific AERO-MS model, as presented in detail in Annex 7, are largely in line with these estimates. For the case of a 10-year transition period (option 2a) AERO indicates a reduction in sector revenues of -1,1% in 2025, building up to -3,3% and -3,4% for 2030 and 2035 respectively.

Figure 36: Change in EU27 aviation output compared to baseline (in percentage)

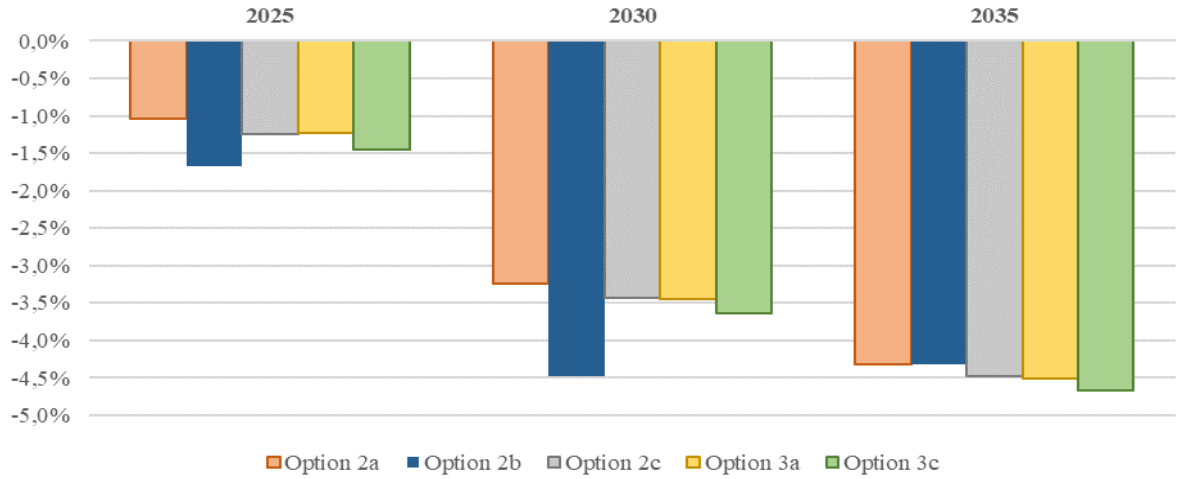
[67] Intra-EU aviation is assumed to represent approximately 47% of all fuel use in the aviation in 2030.



Source: JRC-GEM-E3

Impact on employment as estimated by the GEM E3 model largely reflects changes in sectoral output. In the JRC GEM E3 model, substitution elasticities that govern the ease with which the aviation sector can shift from energy to other inputs in the production process play an important role in determining how output changes relate to employment changes in the context of the ETD. For the aviation sector, the assumption is that the potential to substitute energy for labour is relatively limited, and indeed lower than in other sectors in the economy. Higher energy costs could lead to increased energy efficiency, resulting in higher capital and lower energy input shares. As such, the results of the JRC-GEM-E3 model reflect a situation with a gradual introduction of the policy changes. The implied employment elasticity in this context is close unity. As illustrated in **Figure 37** sectoral employment declines under option 2a by -1,04% in 2025 building up to -3,25% in 2030 and -4,32% in 2035.

Figure 37 Change in EU27 employment compared to baseline (in percentage)



Source: JRC-GEM-E3

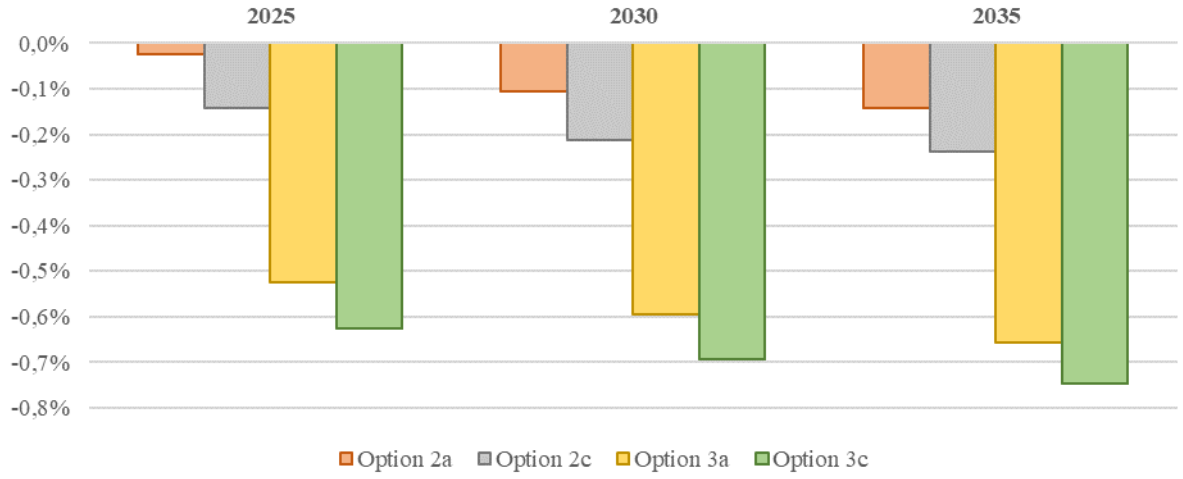
Estimated employment effects from the GINFORS-E model were found to be lower that the JRC-GEM-E3 estimates at -1,03% and 1,04% for 2030 and 2035 respectively. This difference can be interpreted as resulting from different assumptions in the GINFORS-E model about the degree to which the sector correctly anticipates the output changes due to the proposed revision of the Energy Taxation Directive. In the GINFORS-E model, the response of jobs to

output changes in the aviation sector is governed by the employment elasticity, which is calibrated to historical time series. Typically, historical fluctuations in output are stronger than changes in employment, due to labour market rigidities. As a result, the estimated employment elasticity is well below unity, such that employment changes in the aviation sector are less pronounced than output changes in the sector.

Maritime transport and inland shipping

Taxing energy use on intra-EU activity[68] (with a transitional application of the rates applied to the primary sector and to household) also leads to a decrease in sectoral output in maritime transport across all the options. Since maritime transport and inland shipping is taxed both on energy content and carbon content in Option 3, and the transitional period on energy content is dropped in this option, the sector experiences its largest drop in output in 2025 under Option 3.

Figure 38: Change in EU27 maritime transport and inland shipping output compared to baseline (in percentage)

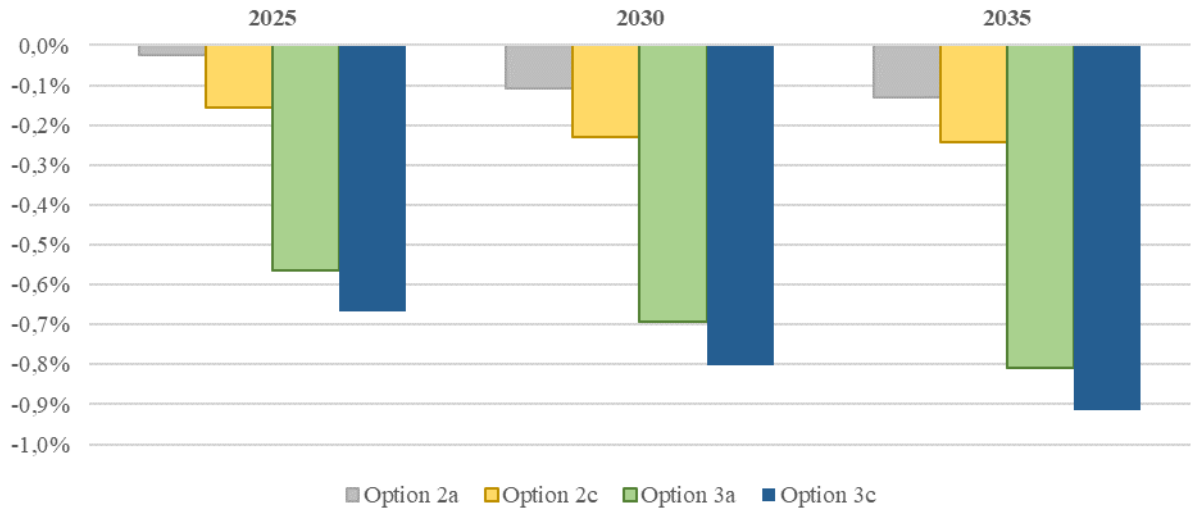


Source: JRC-GEM-E3

The changes in sectoral output are also reflected in equivalent changes in employment for maritime transport and inland shipping sector. As no transitional period is provided for in the energy content option, employment drops immediately from 2025 following the drop in output as illustrated in **Figure 39** bellow. In this context, sectoral employment declines under option 2a by -0,03% in 2025 building up to -0,13% in 2035. The introduction of carbon content (option 3a) leads to stronger employment losses by -0,56% in 2025 building up to -0,8% in 2035.

[68] Intra-EU transport is assumed to represent approximately 16% of all fuel use in the EU maritime and inland shipping in 2030.

Figure 39: Change in EU27 maritime transport and inland shipping employment compared to baseline (in percentage)



Source: JRC-GEM-E3

7. COMPARING THE POLICY OPTIONS

7.1 Comparison of the policy options against selected criteria

This chapter evaluates the policy options presented and analysed in Chapter 5 and 6 against a set of three key criteria: i) Effectiveness, ii) Efficiency and iii) Coherence.

i) Effectiveness

This criterion relates to the extent to which the policy options are able to effectively achieve the general and specific objectives as outlined in section 4.2.

- Contributing to the EU 2030 targets and climate neutrality by 2050 in the context of the European Green Deal. The policy options are assessed in terms of their impact on energy efficiency, CO2 and air pollution emissions of the various fuels as well as their contribution to reduce fossil fuel dependency (specific policy objectives 1, 3, 4 and 5).

- Preserving the integrity of the EU internal market and ensuring fair competition: All the options are assessed to check their contribution to remove possible distortions in the internal market. The latter include distortions between energy users in different Member States due to differences in national tax rates and national applications of exemptions and derogations and distortions between competitors using different energy products. This criterion therefore reflects specific policy objectives 2, 3 and 4.

ii) Efficiency

The efficiency criterion allows to compare options with respect to cost-effectiveness, In the present impact assessment this criterion can be understood to relate to two core elements as follows:

- Budgetary impacts. This criterion is considered because, while meeting the objectives of the ETD revision, the ability of Member States to use energy taxation for revenue raising purposes, remains a key function of this type of excise duties.

- Equity. This criterion reflects the constraint that even if overall an option leads to positive environmental and economic results, this might come at the cost of undesirable distributional side-effects, both at the level of different Member States and different income taxpayers.

The macro economic impacts of all the policy options in terms of GDP and employment, are negligible as emphasised in Chapter 6. Therefore, further discussion of this aspect is not needed for the purposes of this chapter.

iii) Coherence

This criterion relates to the coherence of ETD revision with other initiatives under the 'Fit for 55' Package (specific Options 1 and 3) and other relevant EU policies. All the policy options are assessed in terms of their complementarity and coherence with other initiatives in contributing to the increased ambition of reaching 55% reduction in GHG emissions by 2030 as related to 1990.

Table 8 below provides a comparison of the policy options against the selected key criteria: illustrated above.

Table 9: **Comparison of the policy options in terms of selected assessment criteria**

Policy option	**Baseline**	**Option 1**	**Option 2a**	**Option 2b**	**Option 2c**	**Option 3a**	**Option 3b**	**Option 3c**
	Effectiveness							
Contributing to the EU 2030 targets and climate neutrality by 2050 in the context of the European Green Deal		+	++	++	+++	+++	+++	++++
Preserving the EU internal market and ensure fair competition		+	++	++	++	++	++	++
	Efficiency							
Budgetary impacts		+	++	++	++	++	++	+++
Equity		-	-	-	--	-	-	--
	Coherence							
Coherence with other initiatives of 'Fit for 55' Package and other relevant EU policies		+	++	++	+	-	-	-

Annotation: Options are compared against the baseline scenario

7.2 Effectiveness

7.2.1 Contributing to the EU 2030 targets and climate neutrality by 2050 in the context of the European Green Deal

All the proposed options contribute to the environmental objective. The proposed tax reforms are in line with the objectives of the European Green Deal.

Three features of the proposed scenarios affect different outcomes: the level and structure of rates, the extent to which the taxable base is broadened (altogether contributing to the increase in effective rates) and the introduction of a CO2 or pollution component. The first two options would have a positive impact in this respect, due to the increase in the taxation of in fossil fuel and more air pollutant products , even when a CO2 or/and an air pollution component is not yet introduced in the proposed tax design. The application of different transition periods (10 and 7 years) for Options 2 and 3 will not alter the expected outcome in 2035. The introduction of a pollution component positively affects the reduction of CO2 emission, as a result of increased taxation.

Not surprisingly, Option 1 has more limited, albeit positive, impact on emissions. In fact, the impact of this option is mainly driven by demand's adjustments to price increases expressed in volumes' terms. The products' substitution impact is very limited. The current unfavorable tax treatment of biofuels is only removed in a very limited way, considering that rates are still fixed in volumes and the lower energy content of most biofuels would be still penalised.

The impact is higher under the central scenario (Option 2) considering the Increasing in rates and the wide restructuring of the tax rates and the broadening of the taxable base in this scenario. In this case, the taxation of products according to energy content, the introduction of the taxation of biomass together with a more favourable tax treatment of sustainable biofuels and the much lower taxation of electricity and advanced biofuels contribute to the objective of energy efficiency while encouraging the shift towards the use of less polluting fuels. The broadening of the tax base, including the taxation of intra-EU aviation, maritime and inland shipping further stimulates the positive climate impact *via* the reduction of the favourable fossil fuel's provisions embedded in the present Directive.

By the end of the transitional period of the central option (2035), the impact on emissions is estimated to be more than three times higher than the impact of the minimalistic option.

On the other hand, as opposed to the options introducing CO2 based taxation, Option 2 (different variants) would not reflect the natural advantage in terms of CO2 neutrality.

Since policy Option 3 requires Member States to apply CO2 taxation on top of existing rates, it is not surprising that it has the biggest effect on GHG emissions. The introduction of a CO2 component would double the positive effects of option 2. In relative terms, CO2 taxation reduces emissions more than energy-content based taxation. Biofuels differ when it comes to the question which of the two effects is more important. The Commission's impact assessment of the 2011 proposal suggested that, while correcting for the difference in energy content is very significant for ethanol, non-application of CO2 taxation has more relevance for most types of biodiesel. [69]

The options introducing a pollutant component would reflect the natural advantage in terms of air pollution neutrality. However, it should be noted that Option 2a do have a positive effect on reducing air pollution.

[69] Table 11, page 39 of document SEC(2011) 409

The relative contribution towards GHG reduction differs noticeably among Member States, largely depending on the starting point of the national energy tax design and on their present energy mix.

In the case of option 1, the main driver of the impact is the increase in the minimum rates following indexation, which will impact notably the Member States whose current national rates are fixed at the minima.

In the case of the central Option the drivers the impacts are deeper and more wide spread among Member States, considering, as mentioned earlier, the wide restructuring of both the tax rates and taxable base.

When we include air pollution in the proposed rates and considering that this component increases in a very substantial way the taxation of two products (coal and coke, and biomass), the impact on Member States is even more diverse and depends on the national energy mix). In general, lower income Member States are more affected by this option.

In all options, the main contribution to CO2 reduction is due to the changes in demand by the household sector.

However, under Options 2 and 3 there is a noticeable increase in the effort made also by the productive sector. While the households remain the biggest contributor, the wide broadening of the tax base results in the energy and process industries contributing relatively more.

When a pollution element is introduced, this increases very much the household effort since coal and coke for heating is heavily impacted.

As far as the contribution of transport, heating and other sectors is concerned, both Options 1and 2 can contribute to widespread the EU's efforts to reduce emissions. The taxation based on energy content (Option 2), energy content plus CO2 (option 3), the introduction of the taxation of the intra-EU aviation and shipping, the increase of taxation for the primary sectors and the energy intensive industries as well as the increase of the taxation of heating fuels, will imply that all sectors of the economy will improve their contribution to the EU climate objective and to a more equal tax treatment.

Concerning the application of different transitional period of 10 or seven years, (Option 2b and 3b) it has to be noted that the 2035 expected outcome will not differ. The only difference is that the effects will be more concentrated in the first years with subsequent increase of costs for lower income Member States (Option 1) and for Member States with less stringent system of energy taxation (Option 2 and 3) in the short term.

Preserving the EU internal market and ensuring fair competition

First, all policy options assessed would improve the current situation, in the sense that they would ensure a more consistent treatment of energy products. This is as a result of indexing the minimum rates (Option 1) or indexing and aligning their tax treatment on an objective basis – either energy content or CO2 emissions (option 2 and 3) and reducing exemptions and derogations (all options at different degrees).

However, option 1 has some shortcomings because it maintains the volumes' based taxation, does not revise the structure of rates according to "energy" criteria and considers a much more limited broadening of the tax base (only eliminating the possibility to fix the rates below the minima) as compared to the other options. In option 1, the value added in terms of internal market is mostly due to indexation of the minimum rates and to the impossibility to fix the rates below the minima.

Under Option 2 and 3, the introduction of energy content base taxation, the more homogenous treatment of different energy products as well as the wide restructuring of the taxable basis, will have the effect to induce a considerable convergence of the effective tax rates.

Option 2 and 3 meets the specific objective of tax neutrality between energy sources and, hence, improve the functioning of the internal market. Taxing on the basis of the energy content is also the most neutral way of generating revenue from energy consumption. Furthermore, it would also partly resolve the disincentive effect that taxation can currently generate for renewables, generally having lower energy content.

Proposed Option 2 does not provide a consistent price signal for CO_2 emissions in the non-trading sectors of the EU ETS.

Option 3 would meet the objective of introducing a CO2 price signal in sector at present not covered by the ETS, and would therefore ensure consistency with the EU ETS.

As regards the distribution of burden between the ETS and non-ETS sectors, the option introducing a specific CO_2 based tax element can be considered beneficial as introduces a CO_2 tax element, which would be complementary to the EU ETS and thereby remove current differences. On the other hand, option 3 which proposes the introduction of an additional CO_2 tax on top of existing national rates, i.e. it would not take the differences in existing national rates into account for the purposes of complying with the new structure, which would tend to penalise those Member States which already have an elevated level of taxation in force.

As regards distortions of competition between Member States, all options show a positive effects. In fact, all options propose to widen the tax base, increase the tax rates and abolish the below de minima exemptions, and they represent a big step in reducing the competition distortions mentioned above. However, here again, options 2 and 3 introduce more elements (as the elimination of the distinction business and non-business, commercial and non-commercial,

All options proposed will have a convergence effects on effective tax rates. The most converging scenarios are Option 2 and 3. The application of different transitions period will not affect the 2035 outcome. The increase in convergence will be the most beneficial effect in terms of internal market outcome.

7.3 Efficiency

Budgetary impacts

For modelling purposes it is assumed that all additional revenue would be recycled back to the economy (in different ways) and that the overall effects are budget neutral. The scenarios presented in chapter 6 present the outcome when revenues are recycled through lump-sums to households, although alternative revenue recycling options were presented also in the analysis of the E-QUEST model.

Notwithstanding the above, the decision on how to use any potential additional revenue remains of course with Member States. This criterion therefore only assesses how the different policy options would affect the initial revenue that Member States could raise with energy taxation independently of their decision how to recycle it subsequently.

All options safeguard Member States' ability to raise revenues with energy taxation appropriately and will preserve the revenue raising capability of Member States by compensating for the decreasing energy tax revenues trends projected under the baseline. The decrease of energy tax revenues in the baseline is driven by multiple factors, including the assumption of fixed nominal rates, increasing energy efficiency and fuel shift under current climate policies.

Option 1 is clearly the weakest from the point of view of ability to increase revenues because it restricts the increase of the tax base only as a result of the impossibility to fix the rates below the minima. Option 2 in contrast, would imply a consistent increase of revenues following the wide broadening of the tax base.

A stronger increase in revenues is observed under option 2c, and options 3c which introduce a pollution component or/and a CO2 taxes on top of existing rates for non-ETS sectors.

For the first option, the increase in revenues would mostly be demand driven, whereas for option 2 and 3, the contribution of the productive sectors will be more relevant following the elimination of many exemptions and reductions. The CO2 component of option 3 would further increase tax revenues.

In reality, however, the budgetary impacts would very much depend on national budgetary choices (possible compensation methods) and also on the choices of Member States when fixing national rates and using the left flexibility.

Equity

As already observed, the relative contribution towards GHG reduction differs noticeably among Member States, largely depending on the starting point of the national energy tax design and on their present energy mix. Under Options 1, 2c and 3c, in general terms lower income Member States, which have lower national rates, will be the most affected.

Also the same holds for the increase in revenues and the impact on revenues differs among Member States. Option 1 will mainly affect those Member States whose national rates are fixed at the lowest levels, whereas Options 2 and 3 will also have a relevant impact on Member States who make extensive use of possible exemptions and deductions. Moreover, the Member States who base their energy mix more on fossil fuels will also be more affected. The application of a transitional period aims at taking into account all these different national circumstances in view of a smooth transition.

In all options, the main contribution to the expected changes appears to come from changes in demand by the household sector. However, under options 2 and 3 there is a noticeable increase in the effort made also by the productive sector. While households remain the biggest contributor, the increase in rates and wide broadening of the tax base under these options (option 2 and 3) result in a relative greater contributions by the energy and process industries. The analysis presented in Chapter 6 also shows that options 2c and 3c show the worst impact among taxpayers in terms of equity because the pollution component mostly hits households.

Increased tax rates lead to an increase in consumer prices, both for motor and heating fuels. Option 1 minima have a very limited impact on heating fuels, and a small impact on motor fuels. Under Option 2a, this increase is similar across heating and transport fuel prices. When a pollution component is added the heating fuel prices increase.

The air pollution component mainly affects heating fuels for households (coal), and result in almost five times increase in household prices for fuels and power compared to the baseline in Option 2 and more than nine times for Option 3.

Concerning the impact on income, the expected increase in consumer prices and the contemporary decline in disposable income will have a small negative distributional effects on household adjusted disposable income. The magnitude of the negative effect over adjusted disposable income is broadly comparable across countries.

7.4 Coherence

The initiative for the revision of the ETD forms part of the EGD and a wider package of initiatives that cover in particular the review of sectorial legislation in the fields of climate, energy, transport, and taxation. Different options fare differently in terms of coherence with other initiatives. Option 1 maintains a level of coherence albeit weak. Options 2a and 2b exhibit the highest level of coherence with other EU initiatives considering that they limit substantially fossil fuel dependency. The taxation of products according to energy content along with the more favourable tax treatment of sustainable biofuels and the much lower taxation of electricity and advanced biofuels contribute to the objective of energy efficiency while encouraging the shift towards the use of less polluting fuels.

As far as coherence with the ETS is concerned, the ETD focuses on setting tax minima for the consumption of energy products. The objective pursued in this context as discussed before is not only contributing to climate targets but also, generating revenues for Member States and minimising distortions on the internal market. The ETS, by contrast focuses exclusively on climate targets and is targeted at pricing CO2 emitted at the production level of energy intensive installations. On the basis of this distinction the two policies are complementary and do not introduce double price mechanisms on energy products.

The introduction of the pollution component, under option 2c and 3c, would have an extremely high impact on taxation rates for sustainable biomass, which may play against reaching 2030 and 2050 target, while being coherent with commitments made with regards to pollution reduction in particular in the Zero Pollution Action Plan and under the Clean Air legislation. The addition of the CO2 component under option 3 needs to be assessed in the context of the future with the ETS and in particular the extension to the transport and building sectors to avoid undesired overlaps that could have an excessive impact on stakeholders, therefore resulting in incoherence with other initiatives under the Fit for 55 Package.

8. THE PREFERRED POLICY OPTION

When proposing its updated 2030 greenhouse gas emissions reduction of at least 55%, the European Commission also described the actions across all sectors of the economy that would complement national efforts to achieve the increased ambition. A number of impact assessments have been prepared to support the envisaged revisions of key legislative instruments.

Against this background, this impact assessment has analysed the various options through which the revision of the Energy Taxation Directive could effectively and efficiently contribute to the delivery of the updated target as part of such a wider “Fit for 55” policy package while fulfilling the internal market objective avoiding revenues erosion.

Drawing conclusions about preferred options from this analysis requires tackling two methodological issues.

First, as often the case in impact assessment analysis, ranking options may not be straightforward as it may not be possible to compare options through a single metric and no option may clearly dominate the others across relevant criteria. Ranking then requires an implicit weighting of the different criteria that can only be justifiably established at the political level. In such cases, an impact assessment should wean out as many inferior options as possible while transparently provide the information required for political decision-making. This is what this report does for the introduction of the ETD, based on the objectives of the measure and intervention logic.

Secondly, when a policy package involves a high number of initiatives underpinned by individual impact assessments, the preference for any specific measure may be a function of the policy preferences expressed in other impact assessments. The same can also be true, for instance, for the intensity of any specific measure or the nature and level of a target.

Given the complex interdependence across policy tools and the interplay with the previous methodological issue, no simultaneous determination of a preferred policy package is thus possible. A sequential approach was therefore necessary.

First, the common economic assessment, underpinning the "Communication on Stepping up Europe's 2030 climate ambition" looked at the feasibility of achieving a higher climate target and provided insights into the efforts that individual sectors would have to contribute. It could not, however, discuss precise sectoral ambitions or detailed policy tools. Rather, it looked at a range of possible pathways/scenarios to explore the delivery of the increased climate ambition. It noted particular benefits in deploying a broad mix of policy instruments, including strengthened carbon pricing and increased regulatory policy ambition.

An update of the pathway/scenario focusing on a combination of carbon pricing and medium intensification of regulatory measures in all sectors of the economy, while also reflecting the COVID-19 pandemic and the National Energy and Climate Plans, confirmed these findings.

Taking this pathway and the Communication on Stepping up Europe's 2030 climate ambition as central reference, individual impact assessments for all "Fit for 55" initiatives were then developed with a view to provide the required evidence base for the final step of detailing an effective, efficient and coherent "Fit for 55" package.

At the aggregate level, these various impact assessments provide considerable reassurances about the policy indications adopted by the Commission in the Communication on Stepping up Europe's 2030 climate ambition, notably with regard to reinforcing and expanding the role of pricing mechanisms, energy efficiency and renewable energy policies, and the instruments supporting sustainable mobility and transport - all while revising the Energy Taxation Directive.

Based on the above comparison as well as on the analysis of the specific policy options described in Chapter 6, Option 2 and 3 would fulfil the objectives in a desirable way.

Option 3 appears to comply with the climate objective as the option that helps to reduce a higher number of GHG and pollution emissions. Option 2 also contributes to the Climate and Energy objectives as well as to the rest of the objectives presented above. A well-calibrated extension of the ETS to road transport, maritime and inland shipping and buildings coupled with option 2 for ETD review could help to achieve the EU's ambitious climate objective of 55% emission reductions while allowing attain the rest of the objectives with the ETD review.

Concerning the transitional period, both periods (10 years or 7 years) will have the same impact by 2035 in every option. However, the options with a transitional period of ten years

(option 2a and 3a) provide the best results compared to a shorter transitional period if we look at equity aspects.

When the pollution component is considered, the positive impact on emission reductions is outweighed by the negative distributional impact on households. Moreover, the treatment of biomass (in particular sustainable biomass) under the options including the air pollution component is not consistent with other EU policies. In this respect, it has to be underlined that the quality of wood together with the efficiency and state-of-the art of the bioenergy technology determine the air-pollution from biomass. For domestic use, modern appliances emit almost zero air pollutants and large-scale combined heat and power generated from biomass is more than 80% efficient in some European countries. Considering also that sustainable use of biomass is an important part of bioenergy for reaching carbon neutrality, and also for the RES energy mix, it might be considered whether regulatory measures would be better tailored to address the quality of wood and the use of bioenergy technology.

This being said, options 2a and 3a already have a sizable impact on air pollution reduction.

Therefore, considering that the ETS system should be extended to cover the emissions of transport and buildings, in order to avoid double taxation, option 2a would be the preferred option.

9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

Monitoring of taxation of energy consumption is regularly carried out at least once a year through the collection of information from Member States on the occasion of the meetings of the Indirect Tax Expert Group (ITEG). Moreover, twice yearly DG TAXUD together with the Member States update the information database on the applicable energy tax rates (Tax in Europe Database).

Moreover Article 29 of the ETD provides for a regular examination, on the basis of a report and, where appropriate, a proposal from the Commission, of the various provisions of the Directive and the minimum levels of taxation. This examination shall take into account the proper functioning of the internal market and the wider objectives of the Treaty. Once the ETD will be reviewed, this examination will have to focus in particular, on the following:

i) how Member States have implemented the new framework for the taxation of energy products and electricity in their national systems,
ii) how it has allowed them to better integrate environmental and energy efficiency considerations and
iii) what is the economic impact taking into account the way in which Member States have used any additional revenues

Table 10*:* provides the objectives, progress indicators and data sources/measurement tools which would be used to inform against these indicators. The monitoring indicators are expected to be collected on a yearly basis. For evaluation purposes, annual statistics will be computed and compared between successive years.

Table 10: Monitoring and evaluation indicators

	Indicators	Measurement tools/data sources
Ensuring that the system of minimum rates remains up-to-date and works as a "safety net" to prevent a possible race to the bottom by indexing the minimum rates to consumer prices.	– Applicable energy tax rates by Member States	– Tax in Europe Database
Ensuring that the structure of effective rates is in line with the energy efficiency by fixing rates on the basis of energy content and not on the basis of volume.	– Energy effective tax rates by Member States – Updated tax rates (effective) in the Excise Duty Tables	– Volumes of consumption in view of computing effective tax rates – Tax in Europe Database updated
Ensuring that the product coverage in the Directive follows the present EU energy mix, by updating and streamlining the list of covered products.	– Products coverage under the revised ETD	– Products coverage under the revised ETD – Sector statistics
Ensuring the consistency of the EU products coverage under ETD with the other EU policies, by duly considering the specificities of renewable and alternative energy products.	– Products coverage under the revised ETD – Evolution of the EU ETS carbon price	– Products coverage under the revised ETD – Sector statistics – Statistics on EU ETS carbon price
Reducing fossil fuel dependency, by broadening the taxable basis (out of scope and optional exemptions and derogations)	– Application of the revised ETD by Member States – Applicable energy tax rates by Member States in line with new minima	– Feedback from industry and public authorities – Tax in Europe Database
Contributing to the reduction of CO2 emissions, by taking into consideration energy efficiency and the environmental specific impact of different products.	– Level of emissions in the EU	– Climate statistics – Sector statistics
Ensuring a more equal energy taxation treatment across the different modes of transport, by eliminating the mandatory exceptions for the aviation, maritime and inland waterways sector' intra-EU traffic.	– Application of the revised ETD by Member States – Applicable energy tax rates by Member States in line with new minima	– Feedback from industry and public authorities – Tax in Europa Database