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In cooperation with

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THE LANDSCAPE OF

CARBON AND ENERGY PRICING AND TAXATION

IN BELGIUM

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This report is edited by and available at the following Federal Public Service (FPS):

FPS Health, Food Chain Safety and Environment – DG Environment – Climate Change Department
Avenue Galilée 5/2 – 1210 Brussels

Contact persons:
Justine Soete: justine.soete@health.fgov.be
Samuel Buys: samuel.buys@health.fgov.be
Vincent van Steenberghe: vincent.vansteenberghe@health.fgov.be

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Executive summary

This second edition of 'the landscape of carbon and energy pricing and taxation in Belgium', published by the FPS Health, Food Chain Safety and Environment[1] in collaboration with the FPS Finance, presents an update of the first edition of 2023. While the main conclusions of the first edition remain relevant and similar conclusions are drawn from the analysis in this second edition, we add some new elements to the analysis. In particular, we estimate the evolution of excise duty revenues in light of the changing energy consumption patterns due to the transition to climate neutrality. This edition also goes more into detail on the expected impacts of the new emissions trading system, ETS2, on energy prices in the transport and buildings sectors.

More than three-quarters of all greenhouse gas emissions in Belgium stem from energy use. To meet its climate targets, Belgium must considerably step up its efforts in the coming years. This requires the implementation of policies that influence energy consumption, by encouraging the reduction of energy consumption, the increase of energy efficiency and the increased use of renewable alternatives. The price of energy products, in absolute terms as well as the relative prices between different energy products, is an important driver for changing consumption patterns. Therefore, price instruments are important elements of the climate and energy policy toolbox.

This publication offers, for the second time, a monitoring of the pricing and taxation of energy and carbon in Belgium. It complements the existing Federal Inventory on Fossil Fuels Subsidies, jointly developed by FPS Finance and FPS Health for the third time in 2024. These two publications together provide a comprehensive overview of the tax, budgetary and pricing instruments related to carbon and energy in Belgium.

Zooming in on current prices, taxes and costs related to fossil fuels and electricity, an important observation is that price signals are often distorted.

Excise duties play an important role in the consumer energy price, but their level differs greatly across sectors and energy products. In the transport sector, the reimbursement of excise duties on professional diesel creates a distortion in the price signal of diesel for freight transport, buses and taxis. This reimbursement leads to very competitive diesel prices compared to Belgium's neighbouring countries but results in a fossil fuel subsidy worth €825 million in 2022.

In the buildings sector, the higher excise duties on electricity compared to fossil fuels create price ratios that prevent the uptake of heat pumps. A reform of the excise duties on electricity and fossil fuels could increase the total cost of ownership of gas and heating oil boilers compared to cleaner heating sources.

In the manufacturing industry, gas prices are competitive in Belgium compared to neighbouring countries, largely because of low network costs and low excise duties. For electricity prices, the picture in Belgium is less favourable. Sector-specific reductions on excise duties lead to more competitive electricity prices for some Belgian sectors than others compared to the neighbouring countries. However, network costs and excise duties on electricity and gas are significantly lower for industrial customers in Belgium than those on electricity and gas used by households.

Furthermore, price signals are different for some groups or subsectors as they receive specific advantages for social, competitive or other reasons, constituting fossil fuel subsidies that disincentivize the uptake of more sustainable alternatives. Company cars and fuel cards, the reimbursement of excise duties for professional diesel, social tariffs for households and exemptions from excise duties in industry and agriculture are some of the most prominent examples.

[1] Hereafter 'FPS Health'

Moreover, we observe a variety of energy taxation and subsidies at the regional level. Regional policies often differ in terms of types and amount of, as well as conditions for subsidies. These different policies create inconsistencies with the federal policies and make it more difficult to assess the combined impacts of all these policies. The exemption from the non bis in idem principle, adopted in June 2024, could lead to differences in excise duty rates on heating fuels and electricity between regions in the future.

In addition to their effect on price signals, federal tax policies have an impact on public revenues. In 2022, revenues from federal energy taxation and the EU Emissions Trading System (EU ETS) combined were worth €9.0 billion. Reductions in and exemptions from excise duties, reduced VAT rates and other fiscal advantages all lower public revenue. Furthermore, the transition to climate neutrality can have a dual effect on public revenues. Some revenues will gradually disappear as fossil fuels are phased out. Revenues from excise duties on energy products and electricity might decrease by up to 68% towards 2050. Simultaneously, climate policies such as carbon pricing will generate new sources of public revenues. Therefore, governments must monitor the impact of these policies on public revenues.

Some policies and reforms, partially phasing out fossil fuel subsidies and entailing new revenues have been introduced recently. At the Belgian level, first steps have been taken to lower the reimbursement of excise duties for professional diesel. Several new policies in energy and carbon taxation will enter into force in the coming years. At the European level, a second Emissions Trading System (ETS2) starts in 2027, covering buildings, road transport and small industries. Estimations show that the ETS2 could generate between €4.1 billion and €5.7 billion of new revenues for Belgium for the period 2027-2030, although uncertainty exists on the future ETS2 price. In addition, a Social Climate Fund will be established with a part of the ETS2 revenues to support vulnerable households and micro-enterprises through temporary direct income support or investment support for instance. Finally, the Carbon Border Adjustment Mechanism, of which the transitional phase started on 1 October 2023, will put a price on greenhouse gas emissions for some carbon intensive goods imported from outside of the EU.

The analysis in this publication shows that challenges remain in all sectors for the years to come. Despite the intention of an ambitious fiscal reform, the government was only able to implement a limited number of changes to carbon and energy taxation. There is still room for thorough reforms in carbon and energy taxation to support and to steer the transition towards a climate-neutral economy.

Samenvatting

Deze tweede editie van 'the landscape of carbon and energy pricing and taxation in Belgium', gepubliceerd door de FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu in samenwerking met de FOD Financiën, is een update van de eerste editie in 2023. We hebben een aantal nieuwe elementen toegevoegd aan de analyse, hoewel de meeste conclusies uit de eerste editie relevant blijven en we tot gelijkaardige conclusies komen in deze tweede editie. In het bijzonder maken we een inschatting van de evolutie van de accijnsinkomsten met het oog op veranderende energieconsumptiepatronen als gevolg van de transitie naar klimaatneutraliteit. Deze editie gaat ook meer in detail in op de verwachte impact van het nieuwe emissiehandelssysteem, ETS2, op energieprijzen in de transport- en gebouwensector.

Meer dan driekwart van alle broeikasgasemissies in België zijn afkomstig van energieconsumptie. Om de klimaatdoelstellingen te halen, moet België zijn inspanningen de komende jaren aanzienlijk opvoeren. Dit vereist de implementatie van beleidsmaatregelen die het energieverbruik beïnvloeden door het aanmoedigen van energiebesparing, het verbeteren van energie-efficiëntie en het bevorderen van het gebruik van hernieuwbare alternatieven. De prijs van energieproducten, zowel in absolute termen als de relatieve prijzen tussen verschillende energieproducten, is een belangrijke motor voor het veranderen van consumptiepatronen. Daarom zijn prijsinstrumenten belangrijke elementen in het instrumentarium van klimaat- en energiebeleid.

Deze publicatie biedt, voor de tweede keer, een opvolging van de prijzen en de belasting van energie en koolstof in België. Deze publicatie vult de bestaande Federale Inventaris van Subsidies voor Fossiele Brandstoffen aan, die in 2024 voor de derde keer gezamenlijk werd ontwikkeld door de FOD Financiën en de FOD Volksgezondheid. Samen bieden deze twee publicaties een uitgebreid overzicht van de fiscale, budgettaire en prijsinstrumenten met betrekking tot koolstof en energie in België.

Als we inzoomen op de huidige prijzen, belastingen en kosten van fossiele brandstoffen en elektriciteit, stellen we vast dat prijssignalen vaak verstoord zijn. Accijnzen spelen een belangrijke rol in de energieprijs voor de consument, maar het niveau ervan verschilt sterk tussen sectoren en energieproducten. In de transportsector zorgt de terugbetaling van accijnzen op professionele diesel voor een verstoring van het prijssignaal van diesel voor vrachtvervoer, bussen en taxi's. Deze terugbetaling leidt tot zeer competitieve dieselprijzen in vergelijking met de buurlanden van België, maar resulteert in een subsidie voor fossiele brandstoffen ter waarde van €825 miljoen in 2022.

In de gebouwensector zorgen de hogere accijnzen op elektriciteit in vergelijking met fossiele brandstoffen voor prijsverhoudingen die de uitrol van warmtepompen verhinderen. Een hervorming van de accijnzen op elektriciteit en fossiele brandstoffen zou de totale eigendomskosten van gas- en stookolieketels kunnen verhogen in vergelijking met schonere verwarmingsbronnen.

In de maakindustrie zijn de gasprijzen in België concurrerend in vergelijking met de buurlanden, grotendeels als gevolg van lage netwerkkosten en lage accijnzen. Voor elektriciteitsprijzen is het beeld in België minder gunstig. Sectorspecifieke accijnsverlagingen leiden tot competitievere elektriciteitsprijzen voor sommige Belgische sectoren ten opzichte van andere in vergelijking met de buurlanden. Over het algemeen zijn netwerkkosten en accijnzen op elektriciteit en gas aanzienlijk lager voor industriële gebruikers in België dan voor gezinnen.

Bovendien zijn de prijssignalen verschillend voor sommige groepen en subsectoren omdat ze specifieke voordelen krijgen om sociale, competitiviteits- of andere redenen, wat neerkomt op subsidies voor fossiele brandstoffen die de overstap naar duurzamere alternatieven ontmoedigen. Enkele van de meest prominente voorbeelden zijn bedrijfswagens, tankkaarten, de terugbetaling van accijnzen voor professionele

diesel, sociale tarieven voor gezinnen en vrijstellingen voor accijnzen in de industrie en landbouw.

Ook zien we een verscheidenheid aan energiebelastingen en subsidies op regionaal niveau. Het regionale beleid verschilt vaak, zowel wat betreft het soort subsidie als de hoogte en de voorwaarden ervan. Deze verschillende beleidsmaatregelen creëren inconsistenties met het federale beleid en maken het moeilijker om de gecombineerde impact van alle beleidsmaatregelen te beoordelen. De uitzondering op het non bis in idem principe, aangenomen in juni 2024, maakt het mogelijk dat in de toekomst zelfs accijnstarieven niet meer uniform zijn tussen de gewesten.

Naast het effect op prijssignalen heeft het federaal belastingbeleid ook een impact op de overheidsinkomsten. In 2022 bedroegen de federale energiebelastinginkomsten en de inkomsten uit het EU-emissiehandelssysteem (EU ETS) samen €9,0 miljard. Verlagingen en vrijstellingen van accijnzen, verlaagde btw-tarieven en andere fiscale voordelen leiden allemaal tot lagere overheidsinkomsten. Bovendien kan de transitie naar klimaatneutraliteit een dubbel effect hebben op de overheidsinkomsten. Sommige inkomsten zullen geleidelijk verdwijnen naarmate fossiele brandstoffen worden afgebouwd. Inkomsten uit accijnzen op energieproducten en elektriciteit kunnen tot 68% dalen tegen 2050. Tegelijkertijd kan klimaatbeleid, zoals het beprijzen van koolstof, nieuwe bronnen van overheidsinkomsten genereren. Overheden moeten dus het effect van dit beleid op de overheidsinkomsten monitoren.

Recent zijn er verschillende maatregelen en hervormingen geïntroduceerd die sommige fossiele brandstofsubsidies gedeeltelijk uitfaseren en nieuwe inkomsten met zich meebrengen. Op Belgisch niveau zal de terugbetaling van accijnzen voor professionele diesel worden verlaagd. De komende jaren zullen verschillende nieuwe beleidsmaatregelen op het gebied van energie- en koolstofbelasting van kracht gaan. Op Europees niveau gaat een tweede emissiehandelssysteem (ETS2) van start in 2027 voor gebouwen, wegvervoer en kleine industrie. Schattingen tonen aan dat het ETS2 tussen de €4,1 miljard en €5,7 miljard aan nieuwe inkomsten kan genereren voor de periode 2027-2030, hoewel er onzekerheid bestaat over de toekomstige ETS2 prijs. Daarnaast zal een sociaal klimaatfonds worden opgericht met een deel van de ETS2-inkomsten om kwetsbare gezinnen en micro-ondernemingen te ondersteunen, bijvoorbeeld via tijdelijke directe inkomenssteun of investeringssteun. Ten slotte zal het mechanisme voor koolstofgrenscorrectie, waarvan de overgangsfase op 1 oktober 2023 van start is gegaan, een prijskaartje hangen aan broeikasgassen voor sommige koolstofintensieve goederen die worden geïmporteerd van buiten de EU.

De analyse in deze publicatie toont aan dat er de komende jaren in alle sectoren uitdagingen blijven bestaan. Ondanks de intenties voor een ambitieuze fiscale hervorming, heeft de regering slechts een aantal veranderingen kunnen realiseren in de koolstof- en energiebelastingen. Bijkomende hervormingen in de koolstof- en energiebelastingen zullen nodig zijn om de overgang naar een klimaatneutrale economie te ondersteunen en te sturen.

Résumé

Cette deuxième édition de 'the landscape of carbon and energy pricing and taxation in Belgium', publiée par le SPF Santé publique, Sécurité de la Chaîne alimentaire et Environnement en collaboration avec le SPF Finances présente une mise à jour de la première édition de 2023. Bien que les principales conclusions de la première édition restent pertinentes et des conclusions similaires peuvent être déduit de cette deuxième édition, nous ajoutons quelques nouveaux éléments à l'analyse. En particulier, nous estimons l'évolution des recettes des droits d'accises dans le contexte du changement des modèles de consommation énergétique à cause de la transition vers la neutralité climatique. Cette édition détaille également les impacts attendus du nouveau système d'échange de quotas d'émissions, l'ETS2, sur les prix de l'énergie dans le secteur du transport et des bâtiments.

Plus des trois quarts des émissions de gaz à effet de serre en Belgique proviennent de la consommation d'énergie. Pour atteindre ses objectifs climatiques, la Belgique doit considérablement intensifier ses efforts dans les années à venir. Cela nécessite la mise en œuvre de politiques qui influencent la consommation d'énergie, en encourageant la réduction de la consommation d'énergie, l'augmentation de l'efficacité énergétique et l'utilisation accrue d'alternatives renouvelables. Le prix des produits énergétiques, en termes absolus ainsi que les prix relatifs entre les différents produits énergétiques, est un facteur important de changement des modes de consommation. Par conséquent, les instruments de prix sont des éléments importants de la boîte à outils de la politique climatique et énergétique.

Cette publication offre, pour la deuxième fois, un suivi de la tarification et de la taxation de l'énergie et du carbone en Belgique. Elle complète l'inventaire fédéral des subventions aux énergies fossiles, réalisé conjointement par le SPF Finances et le SPF Santé publique, pour la troisième fois en 2024. Ces deux publications fournissent un aperçu complet des instruments fiscaux, budgétaires et tarifaires liés au carbone et à l'énergie en Belgique.

Si l'on se penche sur les prix, les taxes et les coûts actuels relatifs aux combustibles fossiles et à l'électricité, on constate que les signaux-prix sont souvent faussés. Les droits d'accises jouent un rôle important dans le prix de l'énergie à la consommation, mais leur niveau varie considérablement selon les secteurs et les produits énergétiques.

Dans le secteur des transports, le remboursement des accises sur le diesel professionnel crée une distorsion dans le signal-prix du diesel pour le transport de marchandises, les bus et les taxis. Ce remboursement conduit à des prix du diesel très compétitifs par rapport aux pays voisins de la Belgique, mais entraine une subvention aux combustibles fossiles d'une valeur de 825 millions d'euros en 2022.

Dans le secteur du bâtiment, les accises plus élevées sur l'électricité que sur les combustibles fossiles créent des ratios de prix qui freinent les investissements dans les pompes à chaleur. Une réforme des accises sur l'électricité et les combustibles fossiles pourrait augmenter le coût total de possession des chaudières à combustible fossile par rapport à des sources de chauffage plus propres.

Dans l'industrie manufacturière, les prix du gaz sont compétitifs en Belgique par rapport aux pays voisins, principalement en raison des faibles coûts de réseau et des faibles accises. En ce qui concerne les prix de l'électricité, la situation est moins favorable en Belgique. Des réductions secteur spécifique sur les droits d'accises rend les prix de l'électricité plus compétitifs pour certains secteurs belges que pour d'autres par rapport aux pays voisins. Cependant, en général les coûts de réseau et les accises sur le gaz et l'électricité pour les clients industriels en Belgique sont nettement inférieurs à ceux sur l'électricité et le gaz utilisés par les ménages.

En outre, les signaux-prix sont différents pour certains groupes ou sous-secteurs qui bénéficient d'avantages spécifiques pour des raisons sociales,

concurrentielles ou autres, ce qui constitue des subventions aux combustibles fossiles qui découragent l'adoption d'alternatives plus durables. Les voitures de société et les cartes de carburant, le remboursement des droits d'accises pour le diesel professionnel, les tarifs sociaux pour les ménages et les exonérations de droits d'accises dans l'industrie et l'agriculture sont quelques-uns des exemples les plus marquants.

En outre, nous observons une variété de taxes et de subventions énergétiques au niveau régional. Les politiques régionales diffèrent souvent en termes de types et de montants de subventions, ainsi que de conditions d'octroi. Ces différentes politiques créent des incohérences avec les politiques fédérales et rendent plus difficile l'évaluation des impacts combinés de ces politiques. La dérogation au principe *non bis in idem*, adoptée en juin 2024, pourrait entraîner des différences de tarifs d'accises sur les combustibles de chauffage et l'électricité entre les régions à l'avenir.

Outre leur effet sur les signaux-prix, les politiques fiscales au niveau fédéral ont un impact sur les recettes publiques. En 2022, les recettes de la taxation fédérale de l'énergie et du système d'échange de quotas d'émission de l'UE (EU ETS) s'élevaient ensemble à 9,0 milliards d'euros. Les réductions et les exonérations des droits d'accises, les taux de TVA réduits et d'autres avantages fiscaux réduisent les recettes publiques. En outre, la transition vers la neutralité climatique peut avoir un double effet sur les recettes publiques. Certaines recettes disparaîtront progressivement au fur et à mesure de l'élimination des combustibles fossiles. Les recettes des droits d'accise sur les produits énergétiques et l'électricité pourraient diminuer de 68% en 2050. Dans le même temps, les politiques climatiques telles que la tarification du carbone vont générer de nouvelles sources de recettes publiques. Les gouvernements doivent dont surveiller l'impact de ces politiques sur les recettes publiques.

Quelques mesures et réformes, supprimant partiellement les subventions aux combustibles fossiles et entraînent de nouvelles recettes, ont été prises récemment. Au niveau belge, les premières mesures ont été prises pour réduire le remboursement des droits d'accises pour le diesel professionnel. Plusieurs nouvelles politiques en matière de taxation de l'énergie et du carbone entreront en vigueur dans les années à venir. Au niveau européen, un deuxième système d'échange de quotas d'émission (ETS2) démarra en 2027, couvrant les bâtiments, le transport routier et les petites industries. Selon les estimations, l'ETS2 pourrait générer entre 4,1 milliards et 5,7 milliards d'euros de nouvelles recettes pour la Belgique pour la période 2027-2030, bien qu'il existe des incertitude sur le futur prix de l'ETS2. En outre, un Fonds social pour le climat sera créé avec une partie des recettes de l'ETS2 afin de soutenir les ménages vulnérables et les micro-entreprises par le biais, par exemple, d'une aide directe temporaire au revenu ou d'une aide à l'investissement. Finalement, le mécanisme d'ajustement carbone aux frontières, dont la phase transitoire a débuté le 1er octobre 2023, fixera un prix sur les gaz à effet de serre pour certains biens à forte intensité de carbone importés de l'extérieur de l'UE.

L'analyse dans cette publication démontre que des défis restent à relever dans tous les secteurs pour les années à venir. Malgré les intentions pour une réforme fiscale ambitieuse, le gouvernement n'a pu réaliser que quelques étapes initiales d'une réforme de la taxation du carbone et de l'énergie. Des réformes plus profondes en matière de la taxation du carbone et de l'énergie seront nécessaires afin de soutenir et d'orienter la transition vers une économie neutre sur le plan climatique.

Introduction

With the Paris agreement, 195 countries promised to keep the global temperature rise well below 2°C and preferably below 1.5°C. The latest IPCC report points out that in order to stay below 1.5°C, global greenhouse gas emissions need to peak before 2025, reach a zero level in 2050 and go net negative after 2050. Global temperature rise is already at +1.1°C compared to 1990 and climate related risks are more likely to happen than estimated in previous IPCC reports. In order to comply with the Paris Agreement, the European Union set itself a target of 55% emission reduction by 2030 compared to 1990 and aims at net-zero greenhouse gas emissions by 2050. For the Belgian sectors under the Effort Sharing Regulation of the European Union, this results in a target of -47% emissions in 2030 compared to 2005. These sectors are domestic transport (excluding aviation), buildings, agriculture, small industry and waste. In November 2023, the Brussels Court of Appeal ruled that the Belgian (federal), Flemish and Brussels governments have to reduce their emissions by 55% by 2030 compared to 1990.

More than three quarters of all greenhouse gas emissions in Belgium are energy emissions, i.e. they occur from the combustion of fossil fuels. The other emissions mostly come from industrial processes, waste and agriculture. 61.5% of the energy emissions are not covered by the European Union Emissions Trading System (EU ETS). In order to phase out fossil fuels, policies need to be implemented that guide citizens and companies towards less energy consumption and sustainable alternatives. As energy consumption is strongly impacted by energy prices, policies need to create price signals that point consumers in sustainable directions. However, many policies favouring the use of fossil fuels remain. These include taxes and subsidies – which impact the price of energy directly – as well as infrastructure, public goods and standards – which have indirect effects. At the same time, altering these policies has impacts on other dimensions such as industrial competitiveness, energy poverty and inequality. Moreover, in federal countries as Belgium, policies at different levels may influence price signals in the same or in opposite directions, or create inequalities between the different regional entities.

The objective of this publication is to analyse the different sectors in Belgium, mapping the amount of fossil fuels used with its emissions, prices and tax policies, and to update the first edition of this publication. Such overview on a recurrent basis is necessary to track evolutions in emissions, identify distorted price signals and point out policies needed to facilitate the transition towards climate neutrality. It is complementary to the yearly published Federal Inventory on Fossil Fuels Subsidies of the FPS Finance and FPS Health, Food Chain Safety and Environment (2024).

In addition, it offers the possibility to analyse the impact of climate policy on public revenues and vice versa. Importing fossil fuels creates money streams to and dependencies on other countries, as the energy crisis in 2022 has clearly demonstrated. Taxation on energy products on the other hand, generate public revenues, but also affect price signals and therefore play a role in climate policy. At the same time, reducing the consumption of fossil fuels will have budgetary implications because of lower excise duty and VAT revenues. However, climate policies also generate new income streams, such as the auctions for ETS allowances or carbon taxation. Many other (neighbouring) countries have implemented a carbon tax. Belgium has no carbon tax to date, but will de facto have one in 2027, when the new EU ETS (EU ETS2) will start pricing the emissions in the transport sector, buildings sector and small industries.

In the following section, we give an overview of greenhouse gas emissions in Belgium since 1990. Section 2 discusses the largest emitting sectors in Belgium, namely transport, buildings, manufacturing industry, agriculture and energy industry. Section 3 describes the link between public revenues and climate policy. We focus on the import costs of fossil fuels for Belgium and on the revenues from energy products and electricity, both today and in the future. Section 4 gives a short overview of European and Belgian taxation policies in the pipeline and their potential impacts on prices and public revenues.

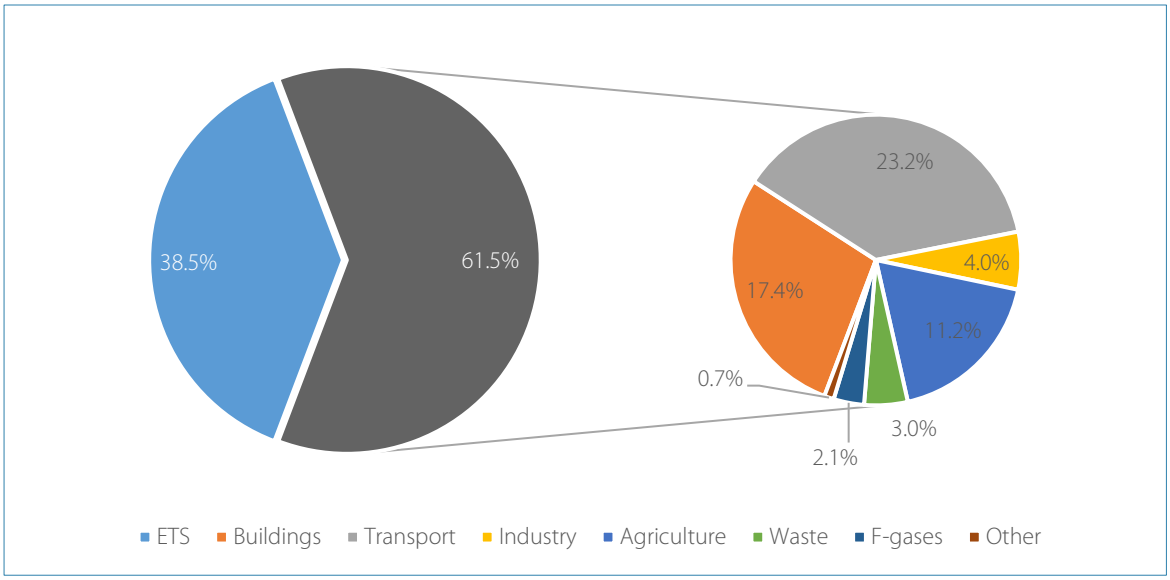
1. Context

KEY MESSAGES

- In 2022, 38.5% of all Belgian emissions were covered by the current EU ETS. The largest emitting sectors are the industry, transport, buildings and agriculture. Burning of fossil fuels caused 76.9% of all emissions in 2022.
- Total emissions in Belgium have diminished by 27.8% since 1990.
- Excise duties on energy products and electricity generated €5.2 billion of revenues in 2022. The current ETS generated €646.1 million of revenues for Belgium in 2022.

In 2022, 38.5% of all the greenhouse gas (GHG) emissions were emitted in the ETS sector, or 39.6 Mt CO_2-eq, mainly industry (69.7%) and electricity generation (28.8%). As illustrated in Figure 1.1, the largest non-ETS sectors are transport (37.7% of non-ETS) and buildings (28.3% of non-ETS), emitting 41.9 MtCO_2-eq, followed by agriculture (18.2% of non-ETS). The industry sector amounts for another 6.4% in the non-ETS sector. This publication focuses on the largest emitters (manufacturing and energy industry, transport, buildings and agriculture) and on energy related emissions. Sectors with less than 5% of all emissions (waste and F-gases[2]) will not be discussed in this publication.

Figure 1.1: GHG emissions per sector in 2022 (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

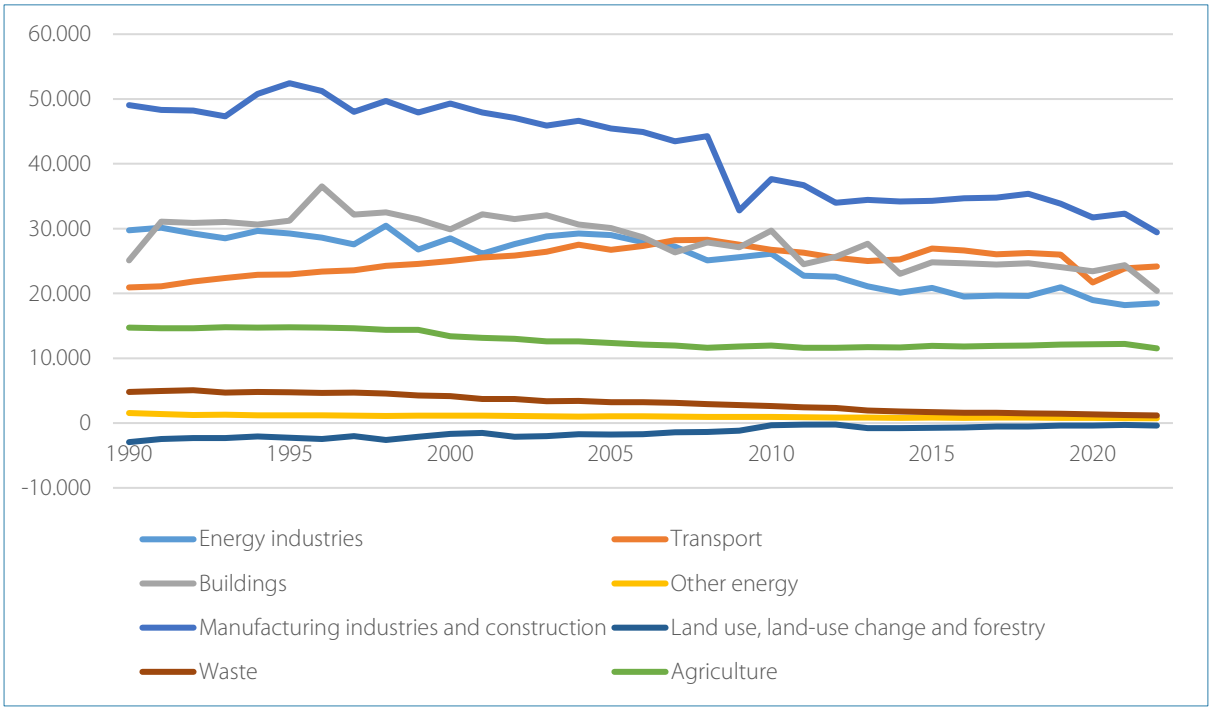
As illustrated in Figure 1.2, the emission paths of sectors have evolved in very different ways since 1990. Especially manufacturing and energy industry emissions have strongly diminished since 1990, although manufacturing industry emissions stagnated since 2012, with a recent drop in 2022. Agricultural and buildings emissions are still close to 1990 emission levels. Transport emissions have even increased. In total, emissions have diminished by 27.8% since 1990, or 39.7 Mt CO_2-eq (including land use, land-use change and forestry).

[2] F-gases or fluorinated gases are very strong greenhouse gases, often used in cooling as substitutes for ozone-depleting substances. The most popular F-gases are hydrofluorocarbons or HFCs.

GHG emissions originate from burning fossil fuels for transport, heating, energy production or in the industry, as well as from industrial processes such as cement production or enteric fermentation of feedstock in agriculture. While Figure 1.1 and Figure 1.2 include all GHG emissions, Figure 1.3 shows the share of energy emissions in each sector. The buildings and transport sector only produce energy related GHG emissions. The non-ETS industry emissions are 86.6% energy related, whereas ETS emissions are 72.4% energy related and agricultural emissions are 20.6% energy related. In the rest of the publication, we focus on these energy related emissions, meaning the emissions originating from the combustion of fuels. Therefore, we will not discuss non-energy emissions such as industrial and agricultural process emissions, and land use, land-use change and forestry.

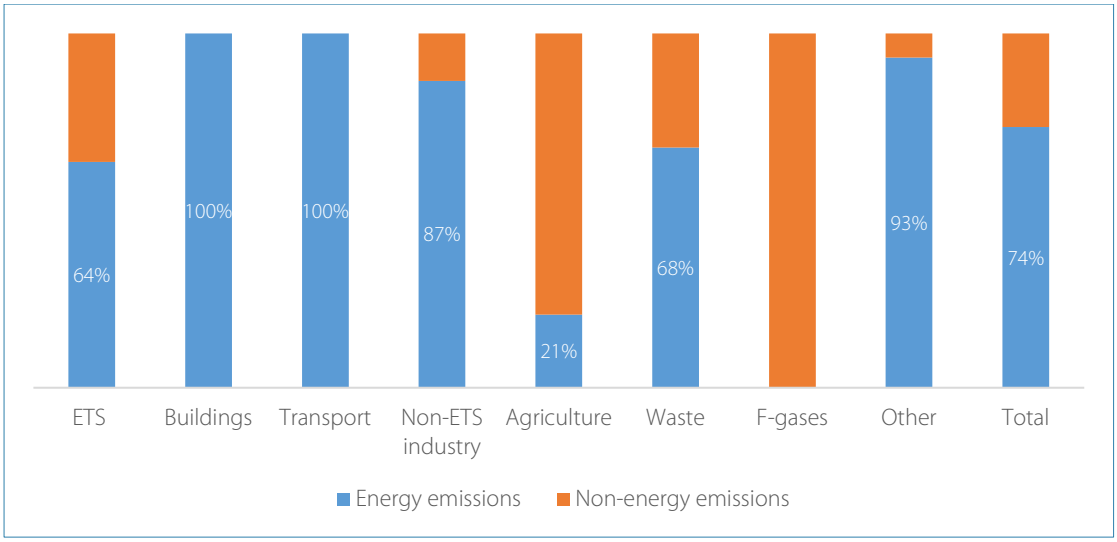
Government policies can have an impact on energy consumption by changing the prices of energy products through excise duties. Excise duties vary between energy products, use of the energy product and amount of energy used. In addition some subsectors and certain uses of energy products are subject to lower excise duties or full exemptions. Section 2 analyses these taxation policies and the effect on price signals in detail. Given the substantial amount of current energy consumption, excise duties also generate a significant source of public revenues. Excise duties on energy products and electricity yielded €6.3 billion in 2023. Carbon emission taxation or pricing is another source of public revenues from energy products. The EU ETS generated €739.9 million in 2023 for Belgium. Section 3 analyses in detail the different sources of revenues from energy taxation. Changes in energy consumption and energy sources will affect public revenues in the future and are therefore worth monitoring

Figure 1.2: Evolution of GHG emissions per sector (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

Figure 1.3: Energy emissions in total GHG emissions per sector in 2022 (in %)



Sources: NIR 2024, MMR reporting 2024

2. Sectors

2.1 Transport

KEY MESSAGES

- Transport emissions increased since 1990. They moderately decrease since 2008, because of slowly decreasing car emissions. The impact of the electrification of cars on carbon emissions was still negligible in 2022.
- Electricity prices are much higher than gasoline and diesel prices. However, because of their efficiency, electric cars have the lowest fuel/electricity cost per km compared to gasoline and diesel cars. Still, it depends on a range of factors (e.g. the number of kilometres driven per year, the purchase cost of the car and the car model), whether electric cars have the lowest total cost of ownership or not. Attention to fuel taxation and price volatility will remain important considering the electrification of vehicles.
- The exemptions from excise duties, the reimbursement scheme for professional diesel and the tax advantages for company cars and fuel cards all create inequalities between actors and subsidise fossil fuels. Professional diesel was subsidised for €825 million in 2022, while company cars led to an indirect subsidy of €2.5 billion in 2021. The reimbursement of professional diesel is higher in Belgium than in the neighbouring countries, resulting in the lowest diesel prices compared to neighbouring countries.
- Belgium has no carbon tax in the transport sector, while most of our neighbouring countries do (France, Germany and Luxembourg).
- At the regional level, tax policies largely differ, e.g. for the yearly road tax and tax on entry into service of vehicles. In terms of investment subsidies, some regions tend to focus more on supporting (vulnerable) households while other focus more on companies. This leads to different investment incentives across regions.

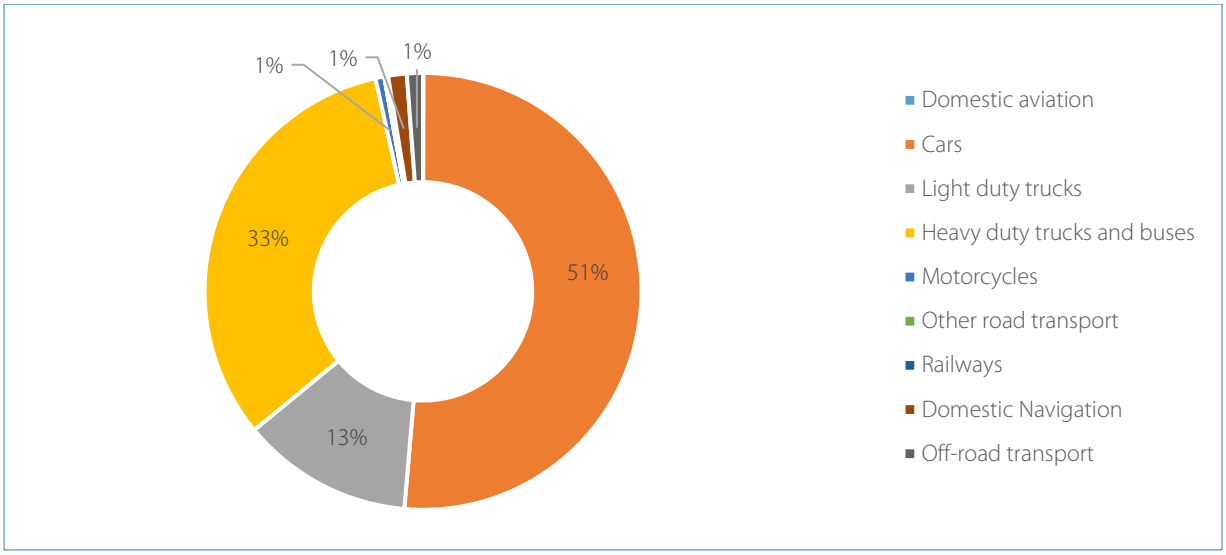
2.1.1 Emissions and energy consumption

In 2022, GHG emissions in the transport sector accounted for 47.4% of Belgian non-ETS energy emissions, or 23.9 Mt CO_2-eq. Cars accounted for half of these emissions, followed by heavy duty trucks and buses (33%) and light duty trucks (13%) (Figure 2.1).

The transport sector is split into two groups, the road transport and the non-road transport. Road transport emissions diminished by 6.7% since 2016, with a large drop due to the covid pandemic in 2020 (Figure 2.2). Cars emissions increased again in 2021 (+13.7%) and 2022 (+2.9%), whereas emissions from light and heavy duty vehicles increased in 2021 (+6.7%) but decreased in 2022 (-2.2%). It seems still to early to identify any post covid trends.

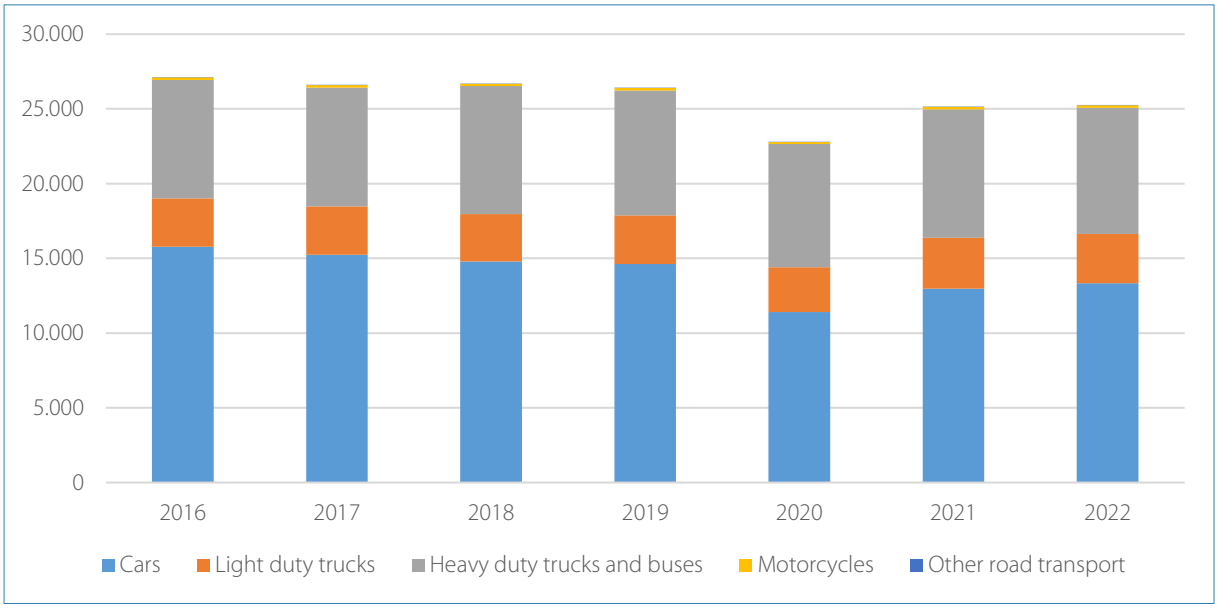
The second group of transport emissions, non-road transport, is much smaller in terms of emissions, but has decreased by 1.4% since 2016 (Figure 2.3). The category 'off-road transport' in Figure 2.3 consists of off-road activities in harbours, airports and transhipment companies and represents an important and increasing share of emissions in non-road transport emissions. Since 2016, emissions in this category have steadily increased, totalling an increase of 13.6% over the period 2016-2021. Emissions from the subsectors domestic navigation, railways and domestic aviation on the other hand, have decreased since 2016 (-9.7%).

Figure 2.1: Transport emissions per transport type in 2022 (in %)



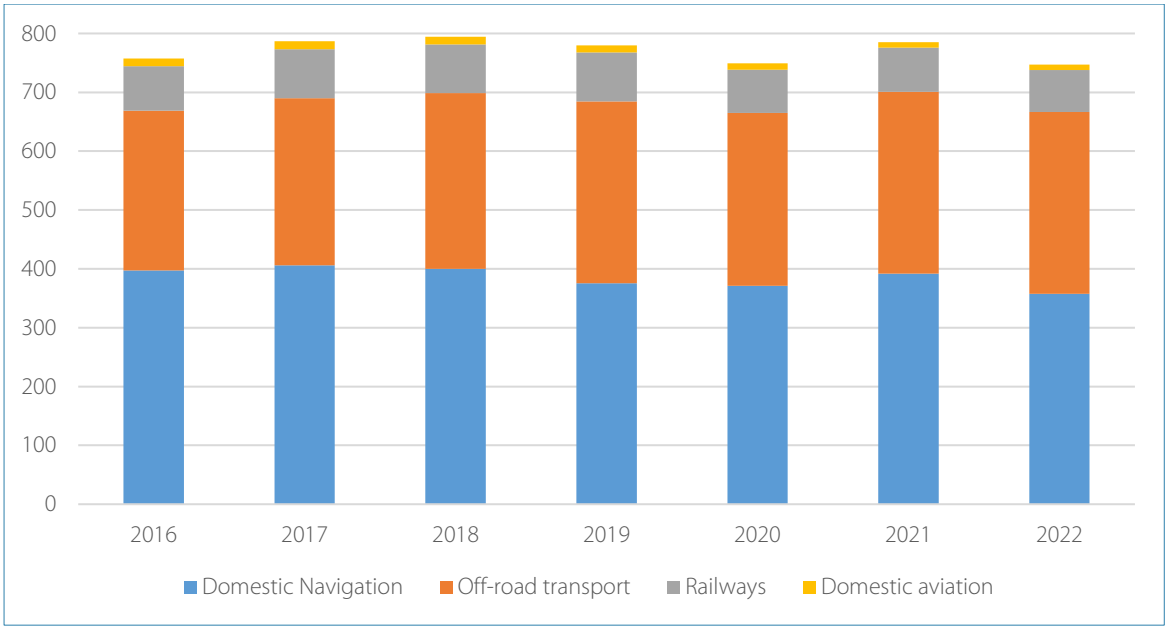
Sources: NIR 2024, MMR reporting 2024

Figure 2.2: Evolution of road transport emissions per transport type (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

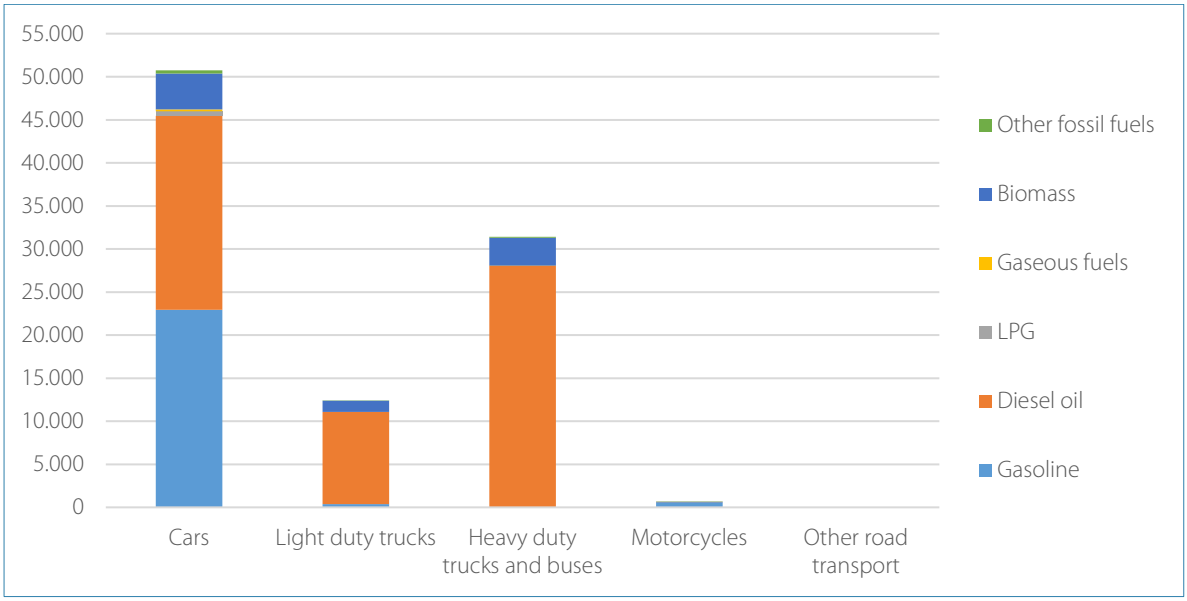
Figure 2.3: Evolution of non-road transport emissions per transport type (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

As illustrated in Figure 2.4, the main energy vector in road transport is diesel oil (64.3%), followed by gasoline (25.1%). Biomass takes up a smaller share, but has increased significantly, from 4.8% in 2016 to 9.2% in 2022.

Figure 2.4: Energy consumption of road transport per type and energy product in 2022 (in GWh)



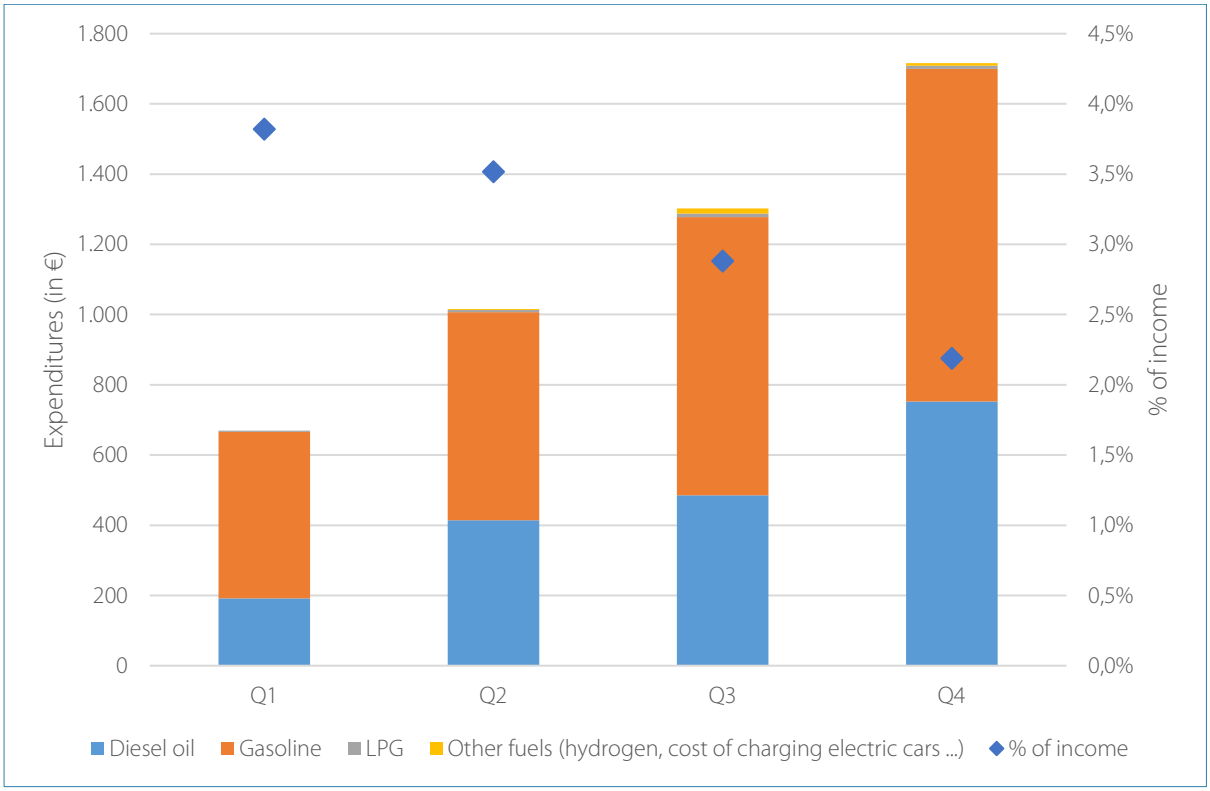
Sources: NIR 2024, MMR reporting 2024

The final energy demand of electric cars is not taken into account in the graph, as the emissions and consumption of energy products for the production of electricity are part of the energy industry emissions. In 2024, 254 240 cars or 4.2% of all registered cars in Belgium were fully electric vehicles, which means increase of 83% compared to 2023 (Statbel, 2024). This results in an estimated final energy demand of 542 GWh[3] for all fully electric cars in 2024, assuming that an average car drives 15 000 km per year and that an electric car uses 14.2 kWh/100km (see Annex 1, middle class model). In addition, 710 687 cars or 11.67% were hybrids or +32% compared to 2023.

[3] Amount of new electric vehicles are only available per year. The number of kilometers thus depends on when exactly the car was bought during the year.

According to the Household Budget Survey[4], Belgian households spent on average €1 176 on transport fuels in 2022, or 2.9% of their total expenditures. This is higher than in 2020, when 2.0% of the household expenditures was reported under transport fuels. As illustrated in Figure 2.1.5, the higher their income, the more households spent on transport fuels. However, households in the lowest quartile spent a higher percentage of their income on transport fuels compared to the highest income quartile (respectively 3.8% and 2.2%). Households in the lowest quartile report almost no expenditures on hydrogen or charging of electric vehicles. Households of the lower half of the income distribution tend to spend more on gasoline than on diesel oil.

Figure 2.5: Household expenditures on transport fuels per income quartiles in 2022 (in €/year) and as % of household income



Source: Household Budget Survey 2023

The non-road transport consumes mainly liquid fuels (67.2%), such as diesel oil, as well as gaseous fuels (32.1%). The domestic aviation sector only uses sector specific fuels, namely jet kerosene and aviation gasoline (see Figure 0.1 in Annex 3).

2.1.2 Prices, taxes and costs

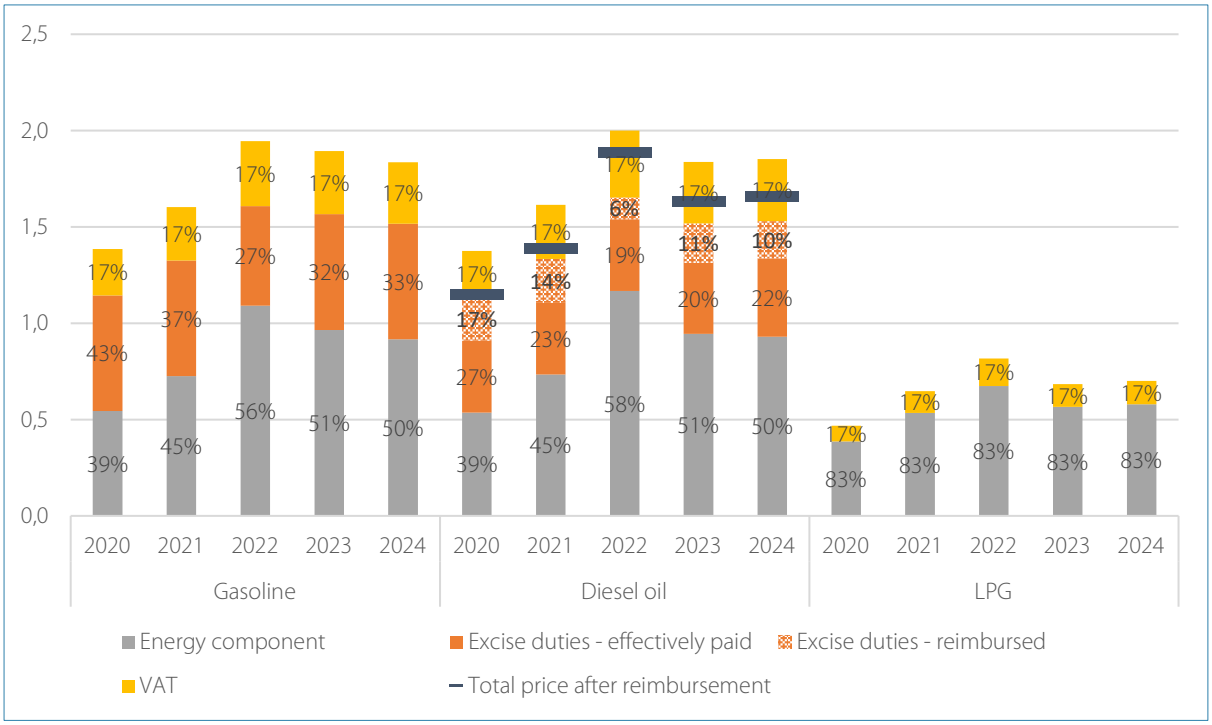
In this section we analyse the prices of the most important energy sources in the transport sector. More specifically, we focus on the impact of excise duties on the different cost levels between energy sources. First, we look at the road transport sector, in general and more specifically for cars. Next, we compare the Belgian road transport sector with the neighbouring countries. Finally, we take a look at the different rates and exemptions in the non-road transport sector.

[4] The Household Budget Survey is a two-yearly European survey collecting data on the consumption expenditures of households (Statbel, 2023a). 4 997 households took part in the survey in 2022.

Figure 2.6 shows the prices of energy sources for road transport. Since prices on biomass are not generally available, they are not included in the graph. While liquified petrol gas (LPG) is subject to a zero excise duty rate, excise duties have an important influence on the price level of gasoline and diesel oil. Therefore, excise duties on gasoline and diesel oil were significantly lowered in 2022 to respond to the rising prices levels of fossil energy products following the Russian invasion in Ukraine. More specifically, the excise duty rates have been reduced by €145/1000 litres to €456/1000 litres for both gasoline and diesel oil in March 2022. From September onwards, the excise duty rates started to go up again via the cliquet system[5], as a result of diminishing oil prices. Gasoline excise duty rates were back at pre-crisis levels in November 2022 (€600.16/1000 litres), whereas diesel oil excise duty rates only hit the pre-crisis levels in April of 2023 (€600.16/1000 litres).

While in previous years the total price for diesel oil was lower than for gasoline, diesel oil was 0.9% more expensive than gasoline in the first six months of 2024, due to a slower decrease in the energy component. However, professional users of diesel oil still have a price advantage compared to gasoline as they receive a partial reimbursement of the diesel oil excise duties in Belgium. These professional users are freight transport, taxis, transport for disabled persons and passenger transport with vehicles with more than 8 seats plus driver. When taking this reimbursement into account, diesel oil is 9.7% cheaper than gasoline in the first half of 2024. This is less than the 16.1% price gap in the first half of 2023, but still implies a significant subsidy to fossil fuels. In 2021, the federal government decided to diminish the professional diesel reimbursement, however at a slow pace, and decided on an additional decrease in 2023, resulting in a reimbursement of €193.5/1000 litres in 2024 to €191.3/1000 litres in 2026. This reimbursement mechanism led to a fossil fuel subsidy that amounted to €825 million in 2022 (FPS Finance and FPS Health, 2024).

Figure 2.6: Yearly prices for fossil energy sources in road transport (in €/litre)



Sources: Statbel for final prices (S1 for 2024), Fisconet plus for excise duties

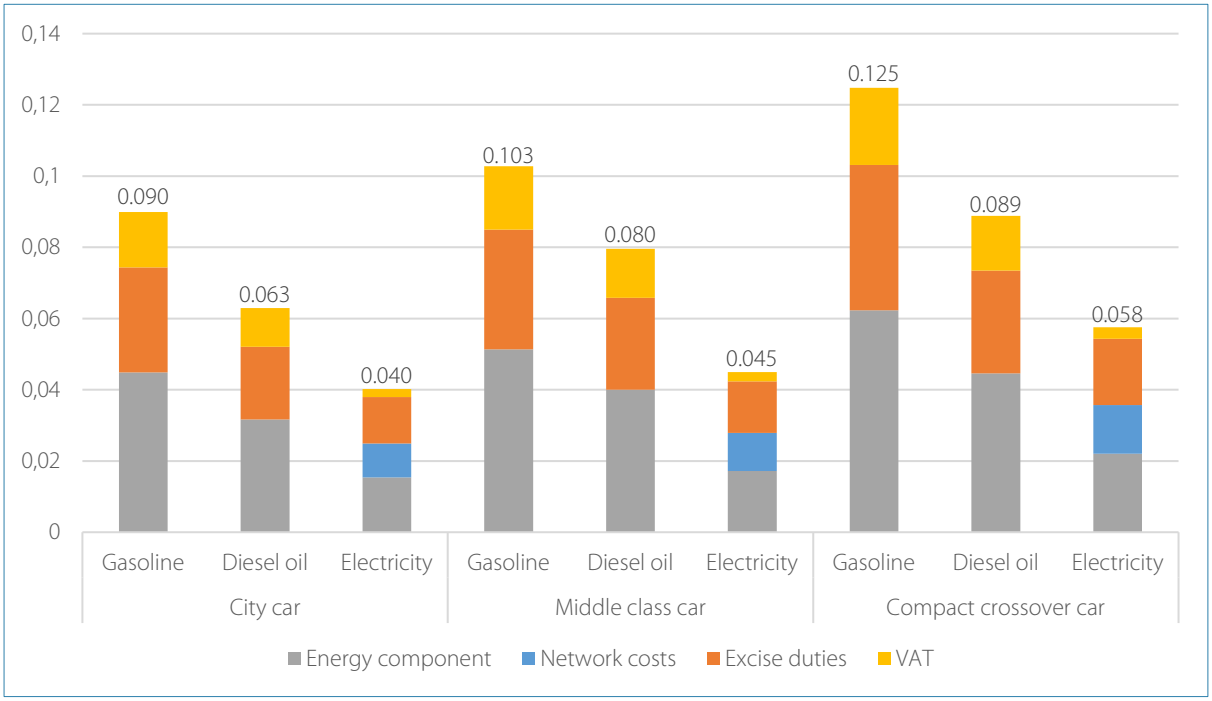
Next we analyse the energy costs of driving a car for individuals. Therefore, we select three categories of cars: city cars, middle class cars and compact crossovers (Dons et al., 2023)[6]. As electric cars form an important part of a carbon neutral transportation system, we compare an electric car to a diesel and a gasoline car for each category.

[5] A cliquet system is a tax system where prices and taxes are linked. In this case, when fuel prices go up, fuel taxation automatically goes down. This tempers the market price effects for consumers.
[6] More information on the selected cars in Annex 1.

We do not take into account any investment costs or operational costs, other than the cost of final energy demand for driving car.

As illustrated in Figure 2.7, the electric car is the cheapest concerning the energy cost of driving within each category. However, the cost depends highly on the car model. The compact crossover car is heavier than the city car and the middle class car, and is therefore consuming more and generating more tax revenues. The difference between internal combustion engine cars and electric cars is also much smaller for diesel cars compared to gasoline.

Figure 2.7: Energy prices for three car types in first half of 2024 (in €/km)



Sources: own calculations based on Statbel for final oil prices (S1 for 2024), Fisconet plus for excise duties, CREG monthly dashboards for electricity prices, VIAS Institute for car type consumptions

Figure 2.8 compares the costs of different fuel types for a middle class car over time. For each year, the price per km driving on electricity is lower than the price per km driving on gasoline or diesel oil. The price ratios between energy vectors also restored to pre-energy crisis levels in 2024, thanks to a decrease in the energy component of electricity prices. Whereas electricity was 20.6% cheaper in 2022 per km than diesel oil, it is 77.2% cheaper in the first half of 2024. The same goes for electricity vs. gasoline (52.8% in 2022 vs. 128.7% in the first half of 2024).

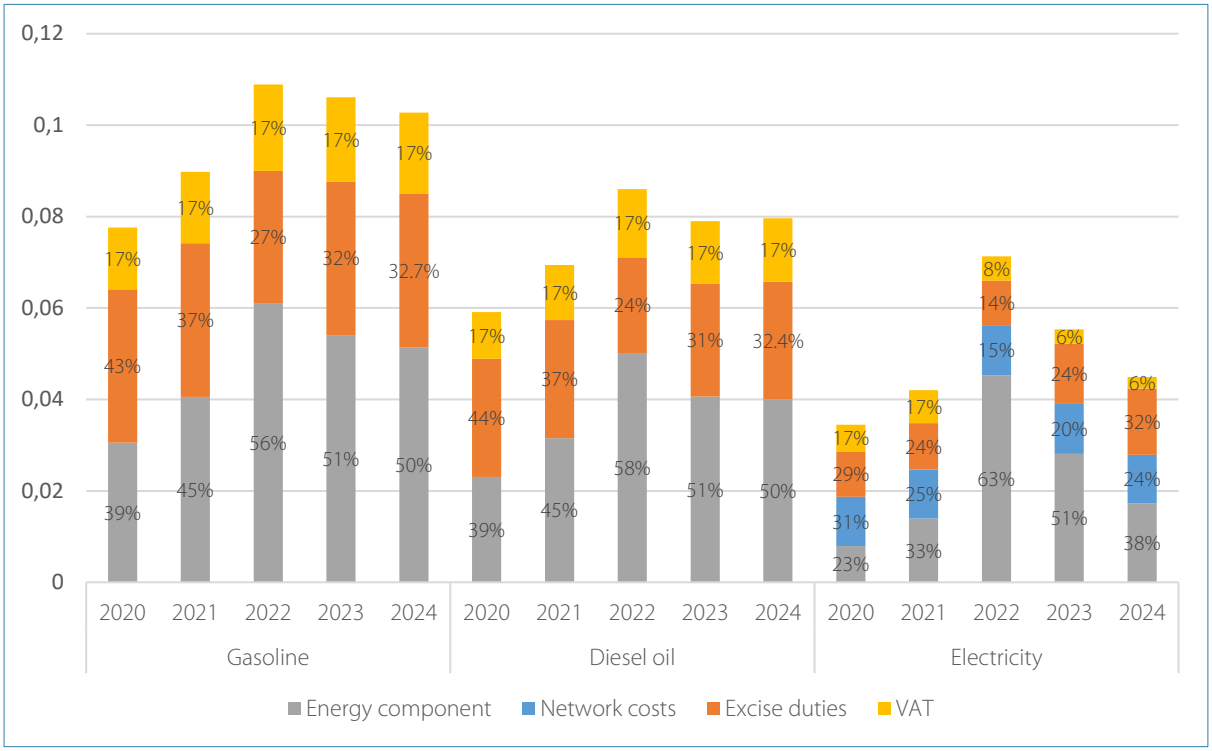
Zooming in on the price components, excise duties and network costs have a significant impact on the total price. Excise duties and network costs on electricity amount for 56.0% of the total price in the first half of 2024. For gasoline and diesel oil, the share of excise duties in the total price is slightly lower (resp. 32.7% and 32.4%). The excise duties and VAT on electricity have been reformed in 2023, lowering VAT and increasing excise duties. The reform is explained in detail in Annex 2. A new reform of the excise duty rates on fossil fuels and/or electricity, could help to make the impact of excise duties and network costs on electricity prices less significant and to shift the price ratio further in favour of electric cars. Moreover, policy makers will have to monitor the volatility in electricity prices as the electrification of transport moves on, considering that electricity prices have been more volatile in recent years than oil prices.

Assuming that on average a car drives 15 000 km per year, the cost of the final energy demand for one year based on 2024 prices with a middle class car on gasoline is €1 541, of which €772 are excise duties and VAT. For a middle

class car on diesel oil the cost is €1 194, of which €594 are excise duties and VAT. An electric middle class car costs €674 per year, of which €416 are network costs, excise duties and VAT.

The Federal Planning Bureau has analysed the total cost of ownership of electric cars versus internal combustion engine cars (Franckx, 2023). They conclude that whether electric or internal combustion engine cars have the lowest total cost of ownership depends on a variety of factors, such as car type, number of kilometres driven, and private or company car. In some segments electric cars have the lowest total cost of ownership, especially when there is a high consumption pattern. Electric cars are also more competitive with internal combustion engine cars when they are used as company car, than when they are used as private car, due to company car taxation. The extent to which the cost of a company car is tax deductible depends on CO_2 emissions of the car. The same goes for the treatment of the benefit in kind of company cars in income taxation.

Figure 2.8: Evolution of average energy prices for a middle class car (in €/km)



Sources: own calculations based on Statbel for final prices (S1 for 2024), Fisconet plus for excise duties, CREG monthly dashboards for electricity prices, VIAS Institute for car type consumption

Figure 2.9 provides a comparison of the prices of the main energy products in road transport in Belgium and its neighbouring countries[7].

France and Ireland have similar reimbursement schemes in place as Belgium for professional use of diesel oil. Ireland has the lowest excise duty rates on diesel oil per litre, both when taking the reimbursement into account or not. Despite the decrease in the reimbursement for professional diesel, Belgium has the lowest total price for professional diesel, followed by France and Ireland. The Netherlands have the highest excise duties on diesel oil per litre for professional use, and Belgium has the highest for non-professional use.

For gasoline, we find the lowest excises in Ireland and the highest in the Netherlands. Total prices are the lowest in Luxembourg, closely followed by Belgium. In contrast to Belgium, non-professional diesel is cheaper in all neighbouring countries.

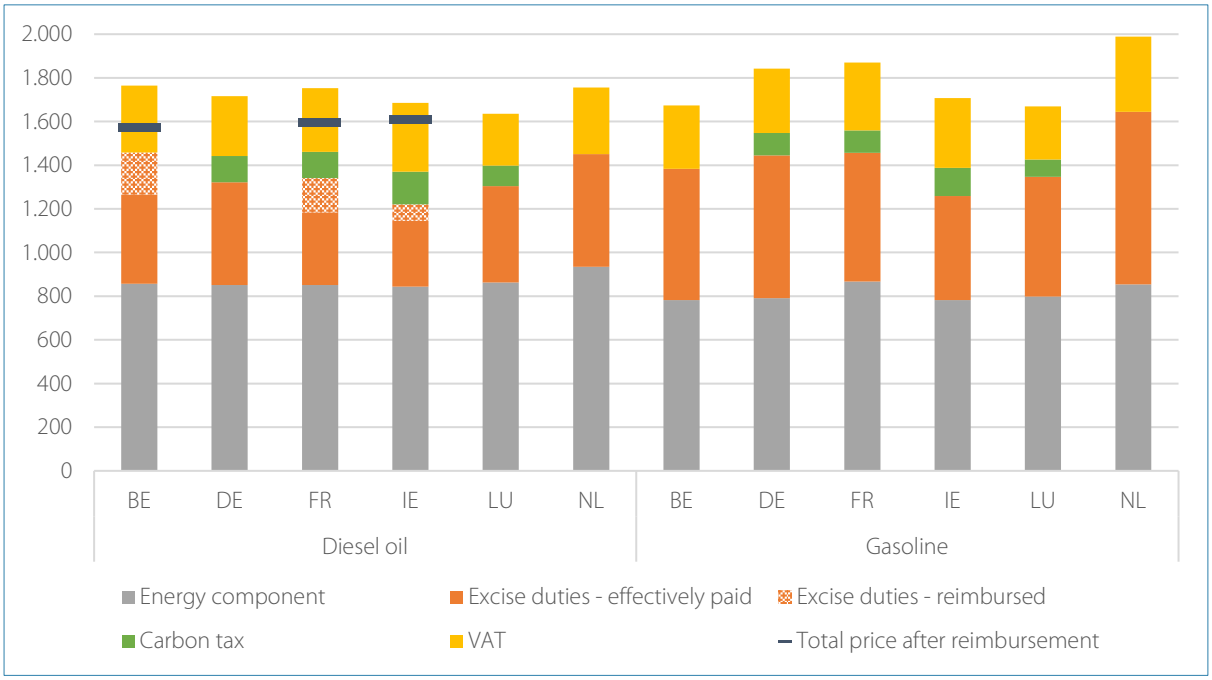
[7] We added Ireland to the neighboring countries in the analysis, because Ireland has a carbon tax as well as a reimbursement mechanism for professional diesel.

While Belgium has no carbon tax on transport, most of its neighbouring countries do. Ireland has a carbon tax since 2010, and decided in 2020 to increase the tax level gradually to reach €100/tCO_2 in 2030. France followed not long after (2014) but had to cap its carbon tax in 2018 at €44.6/tCO_2 due to heavy protests known as *les gilets jaunes*. Luxembourg introduced a carbon tax in 2021 for non-ETS sectors, and increased the tax level each year since then, to €35/tCO_2 in 2024. Germany chose a different system, and implemented an ETS on all non-ETS sectors in 2021. The emission allowances have a fixed price, going up every year, resulting in a carbon price of €45/tCO_2 in 2024. The Netherlands have a carbon tax for the industry, but not on transport (World Bank, 2024).

Belgium is the only of its neighbouring countries to exempt liquified petrol gas from taxation, resulting in the lowest total price for LPG.

For a full comparison of European car taxation, we refer to the 'Good tax guide' of Transport & Environment, including their interactive tool, which offers a full comparison of taxation on car ownership and use in European countries including its impact on the zero emission transition (Transport & Environment, 2022; Transport & Environment, 2024). They point out that tax differentials between private battery electric vehicles (BEVs) and private petrol cars are particularly low in Belgium, leaving possibilities for policy makers to shift tax incentives away from combustion private cars towards private BEVs. The tax differentials between BEVs and petrol cars are higher for company cars in Belgium.

Figure 2.9: Prices in road transport in Belgium and neighbouring countries (in €/1000 litres)



Sources: EC Weekly Oil Bulletin for final prices (S1 2024) and excise duties (rates on 1/1/2024), World Bank Carbon Pricing Dashboard for carbon taxes

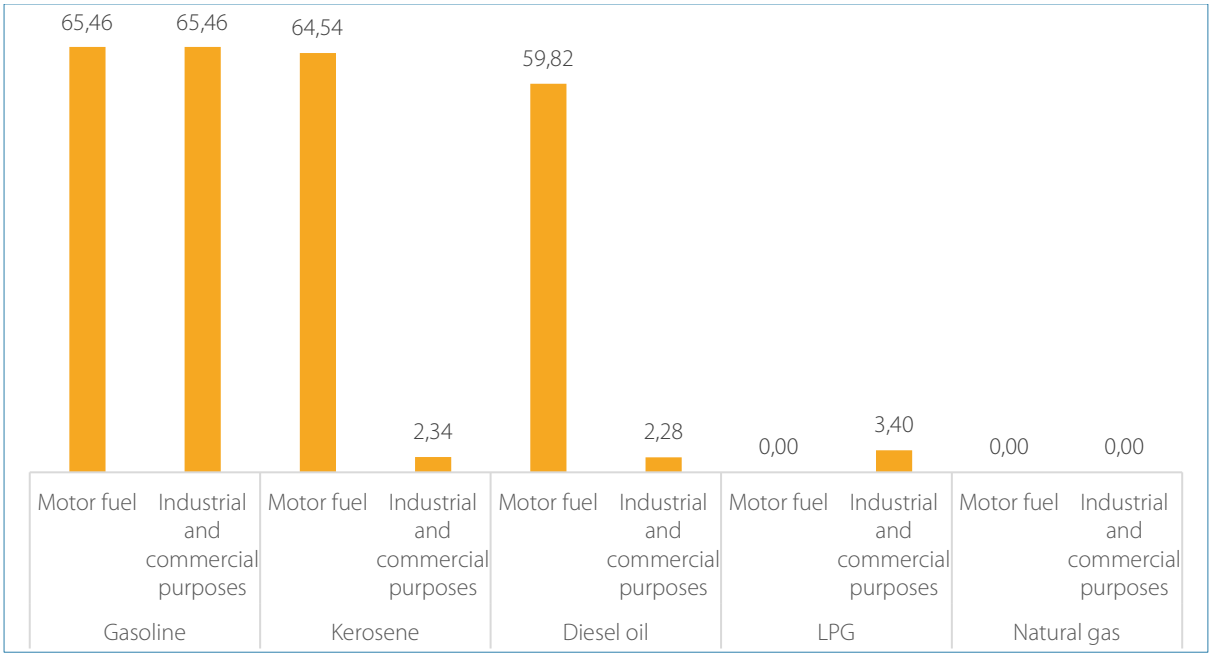
Other excise duty rates and exemptions apply to the non-road transport sector. First, exemptions from excise duties exist for motor fuels in the domestic aviation sector, as well as for domestic navigation, including fishery. For passenger and freight transport by rail, there are exemptions from excise duties on electricity and diesel oil. Moreover, all oil products, electricity, gas and solid fuels used for agriculture, horticulture, fishery and forestry receive exemptions for tractors and all machines and vehicles that are especially designed for use in these sectors.

Off-road transport is not exempted from excise duties but different rates apply than those on regular road transport use. Figure 2.10 shows the large differences between excise duty rates for normal use of motor fuels and for

industrial and commercial use of motor fuels. The last includes use for stationary engines, machines and installations in construction, road and water construction, public works and off-road vehicles.

Finally, for maritime transport, some progress has been made at the European level. Since January 2024, maritime transport is covered by the EU ETS, more specifically all CO_2 emissions from large ships entering EU ports, regardless of their flag (see Section 2.3.3).

Figure 2.10: Excise duty rates in the transport sector for regular motor fuel use and motor fuel use for industrial and commercial purposes (in €/MWh)



Source: Fisconet plus (excise duty rates on 1/7/2024)

2.1.3 Other tax policies and subsidies

Besides excise duties, federal and regional policy makers develop a large range of tax policy measures to influence transport behaviour and investments in transport. The following section compiles a non-exhaustive list of existing tax policies and subsidies in the transport sector. The different measures can have an impact on the cost of use of the investment (Table 1), for example lower yearly taxes on ownership of a vehicle, or on the initial cost of investment (Table 2), for example purchasing an electric vehicle. If available, the total cost (-) or revenue (+) of the measures are included in italic in Table 1 and 2 (see Annex 1 for more information on the sources).

First, for the cost of use of transport, we notice that road taxes vary between regions. The yearly road taxes and taxes on entry into service all have different designs and tax rates, but all have an incentive for electric vehicles and a disincentive for higher engine power. For example, Flanders applies an exemption for electric vehicles for both taxes, while Brussels Capital Region and Wallonia only apply minimum rates for electric vehicles. In addition, the Flemish region has an exemption for the yearly road tax for hydrogen vehicles and a reduction for LPG vehicles. The Walloon region decided on a reform of the tax on entry into service in September 2023. This will enter into force in July 2025, making it the first region to tax vehicles on the basis of their weight. It remains to be seen if and how the new Walloon government will make some amendments to this reform, for example in the form of a vignette as mentioned in the Walloon coalition agreement (Walloon government, 2024). The kilometre charge for heavy goods vehicles is aligned between regions in design but different tax rates levels remain. This tax raised €888 million in revenues for the three regions together in 2023. Second, we look at the very widespread system of company cars, which impacts both the cost of use and the cost of investment. Companies offer their employees

cars instead of extra wage, given the preferential tax regime for company cars. As many studies have shown, this leads to more cars on the road and more kilometres driven per car (FPS Finance and FPS Health, 2024). Therefore, the federal government has decided to phase out the preferential tax regime for internal combustion engine cars and to include an incentive for zero emission cars along the way. All new company cars have to be zero emission in 2026. Moreover, the tax deduction of zero emission company cars will be gradually reduced from 100% in 2026 to 67.5% in 2031. The tax deduction for fossil fuel cars bought before 2026 will gradually be phased out between 2025 and 2028.

Finally, all regions and the federal level offer some sort of investment support, but with large differences between regions. Companies in Flanders can get up to 1 million euros for investments in electric trucks, busses and charging stations every three years. Since 1 January 2024, the Flemish government offers a €5 000 premium for households buying a zero emission car (electric or fuel cell) for less than €40 000 for new cars and a premium of €3 000 for second-hand cars of less than €60 000. Brussels Capital Region strengthens its low emission zone (LEZ) by supporting companies and families with investment support for low emission vehicles and budgets for using alternative transport modes. In Wallonia, individuals and companies can get premiums when purchasing almost any type of bike. The federal government offers additional support for charging stations via a temporary tax credit[8] for individuals and an increased cost deduction for companies. Moreover, carbon neutral trucks, for example trucks on hydrogen, as well as the refuelling infrastructure benefit from an increased tax investment deduction of 35% at the federal level for investments in 2022 and 2023. The increased tax investment deduction will be progressively reduced: 31.5% in 2024, 24% in 2025, 18.5% in 2026 and 13.5 % (i.e. the standard increased rate) in 2027.

Table 1: Tax policies with impact on costs of use of the investment

	Flemish Region	Walloon Region	Brussels Capital Region	Federal level
Kilometre charge for heavy goods vehicles	Max. €0.28/km *(+€596 mio in 2023)*	Max. €0.24/km *(+€312 mio in 2023)*	Max. €0.37/km *(+€11 mio in 2023)*	
Yearly road tax	Exemption for electric and hydrogen vehicles and reduction for LPG vehicles	Minimum rate for electric vehicles (€100.98 per year)	Minimum rate for electric vehicles (€100.98 per year[9])	
Tax on entry into service	Exemption for electric vehicles	Minimum rate for electric vehicles (€61.50) and an ecomalus for vehicles with higher carbon emissions (€100 - €2 500)	Minimum rate for electric vehicles (€74.29[10])	
Compensation for commuter traffic by bike				€0.35/km or €3500/year, tax free *(-€66 mio in 2021)*

[8] Applicable to expenses paid between September 2021 and August 2024. The tax credit varies between 45% and 15% of the expenses according to the year of payment of the expenses.
[9] Tariff for non-leasing cars. €92.93 for leased electric cars.
[10] Tariff for non-leasing cars. €61.50 for leased electric cars.

Table 2: Tax policies and subsidies with impact on costs of initial investment

	Flemish Region	Walloon Region	Brussels Capital Region	Federal level
Company cars				Phasing out of preferential tax regime for non CO_2 neutral cars. *(-€2 523 mio in 2021)*
Charging station	Ecological premium *Ecologiepremie+* for non-public charging stations for busses and trucks (total premium of max. €1 million for 3 years) *(-€3 mio in 2023)*			Tax credit (individuals – 1/1/2023 – 31/8/2024 max. €1 750 for unidirectional - €8 000 for bidirectional) (-€5 mio in 2022) and increased tax deduction (companies –150% 1/1/2023 - 31/8/2024)
Purchase of vehicles	Ecological premium *Ecologiepremie+* for electric busses (max. €600 000), hybrid hydrogen-diesel trucks (max. €200 000), hydrogen trucks (max. €350 000) and electric trucks (max. €400 000), (total premium of max. €1 million for 3 years) *(-€8 mio in 2023)* Premium of €5 000 for purchase of new or second-hand zero emission car for individuals (since 1/1/2024)		LEZ-premium for purchase or leasing of new electric utility vehicle and/or charging station (max. €16 000)	Increased tax deduction for carbon neutral trucks (e.g. green, blue or turquoise hydrogen) and refuelling infrastructure (31.5% in 2024, percentage decreasing to reach 13.5% in 2027)
Bikes and public transport		Premium for bike purchase for individuals (max.	Brussel'Air premium for alternative	

	Flemish Region	Walloon Region	Brussels Capital Region	Federal level
		€1 250) and companies (max. €800) *(-€3 mio in January 2022 - September 2023)*	transport (residential, max. €505-1 010) *(-€1 mio in 2023)*	

2.2 Buildings

KEY MESSAGES

- Emissions from the heating of buildings moderately decreased since 1990 by -0.3% on average per year, with a sharp decrease in 2022. In recent years, it is mostly the households that have driven the reduction, while commercial and institutional emissions increased.
- Compared to neighbouring countries, Belgium has the lowest gas and heating oil prices for household heating and much higher electricity prices. This distortion in the Belgian electricity/fossil fuel price ratio is mainly due to differences in excise duties.
- Electricity prices per MWh are much higher than fossil fuel prices and excise duties on electricity are much higher than on fossil fuels. Heat pumps have lower electricity/fuel costs than fossil fuel boilers for well insulated houses, but changes in excise duties are necessary to make heat pumps competitive in terms of total cost of ownership.
- The Regions offer subsidies for similar investments, for both households and commercial or institutional buildings, but the amounts per subsidy differ across them.
- The federal social tariffs on electricity and gas buffer price volatilities for households in precarious situations, however creating large fossil fuel subsidies at the same time (€184 million in 2021). Plans to completely reform them have not been successful to date, except for the social tariff premium for households with collective energy systems.

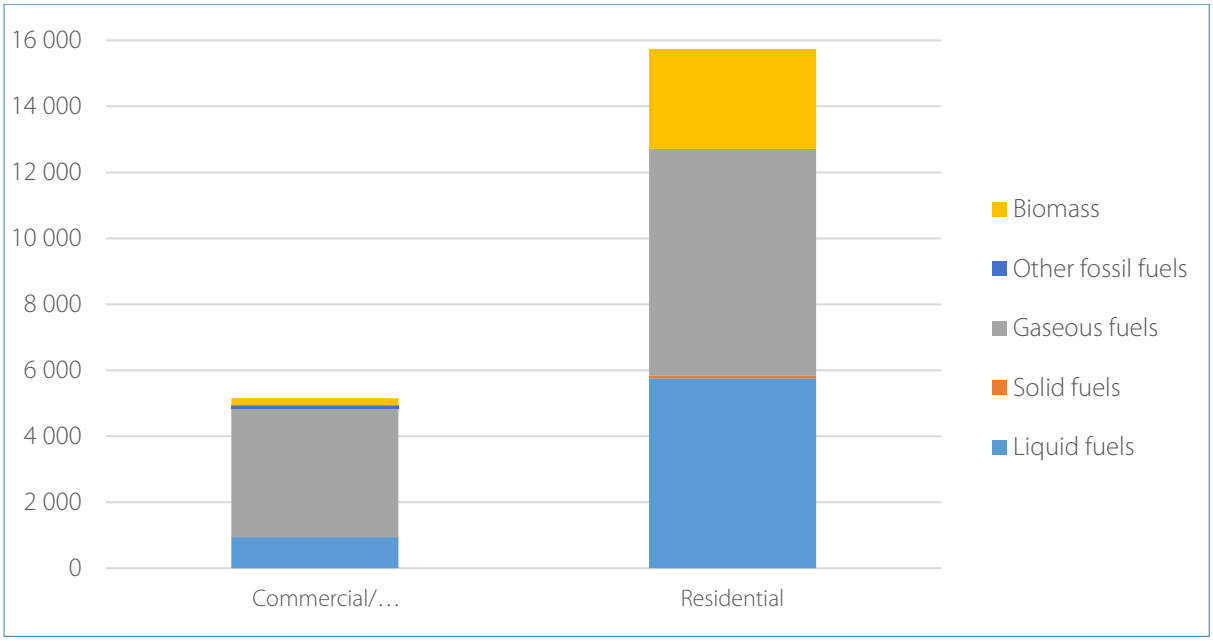
2.2.1 Emissions and energy consumption

Emissions in the buildings sector amount for 35.6% of non-ETS energy emissions in 2022. As Figure 2.11 illustrates, the largest part of these emissions come from heating of households (75.4%). The heating of commercial and institutional buildings accounts for 24.6%.

Gas was the main heating source in 2022 (61.1%), which results in more than half of all emissions in the buildings sector (51.6%). As illustrated in Figure 2.12, liquid fuels (such as diesel oil) represent almost one third of the heating market, leaving 8.9% to biomass. In the residential sector, both gas and biomass gained in market share since 2016 (resp. +6.0% and +18.6%), whereas diesel oil seems to be on a slow but steady phasing out path (-11.6%). The commercial and institutional sector is almost entirely heated by gas (79.9%) and liquid fuels (14.8%).

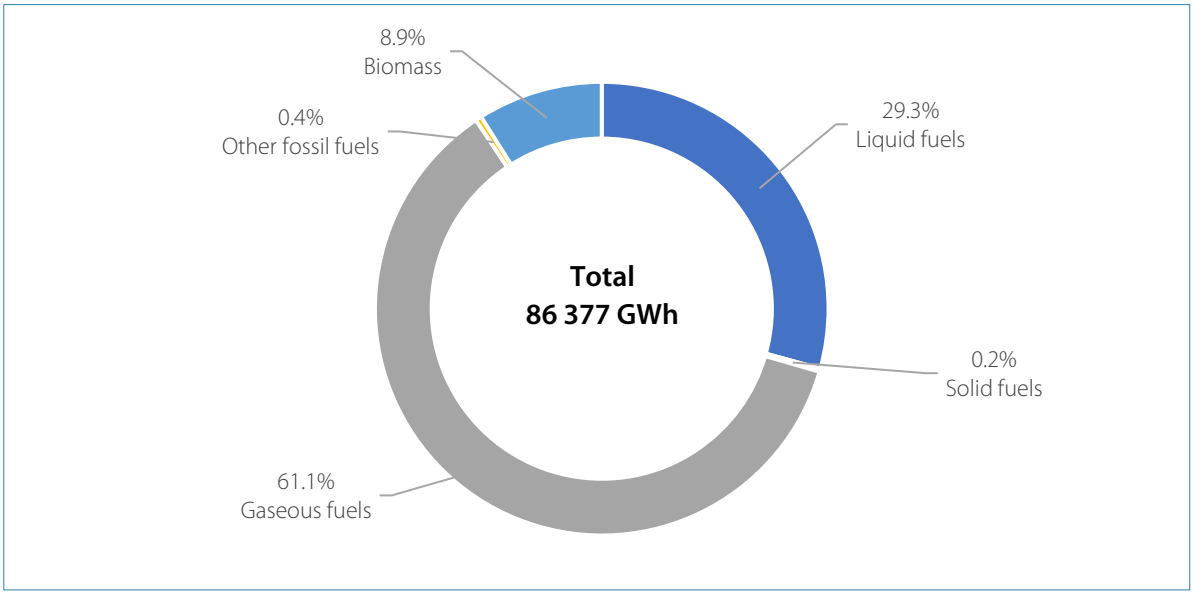
The electricity consumption of traditional electric heating and heat pumps is not shown in Figure 2.12. In 2021, households consumed 16.2 TWh of electricity (Statbel, 2023b). However, this includes both electricity for heating as well as all the other electricity used by households.

Figure 2.11: Buildings emissions in 2022 (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

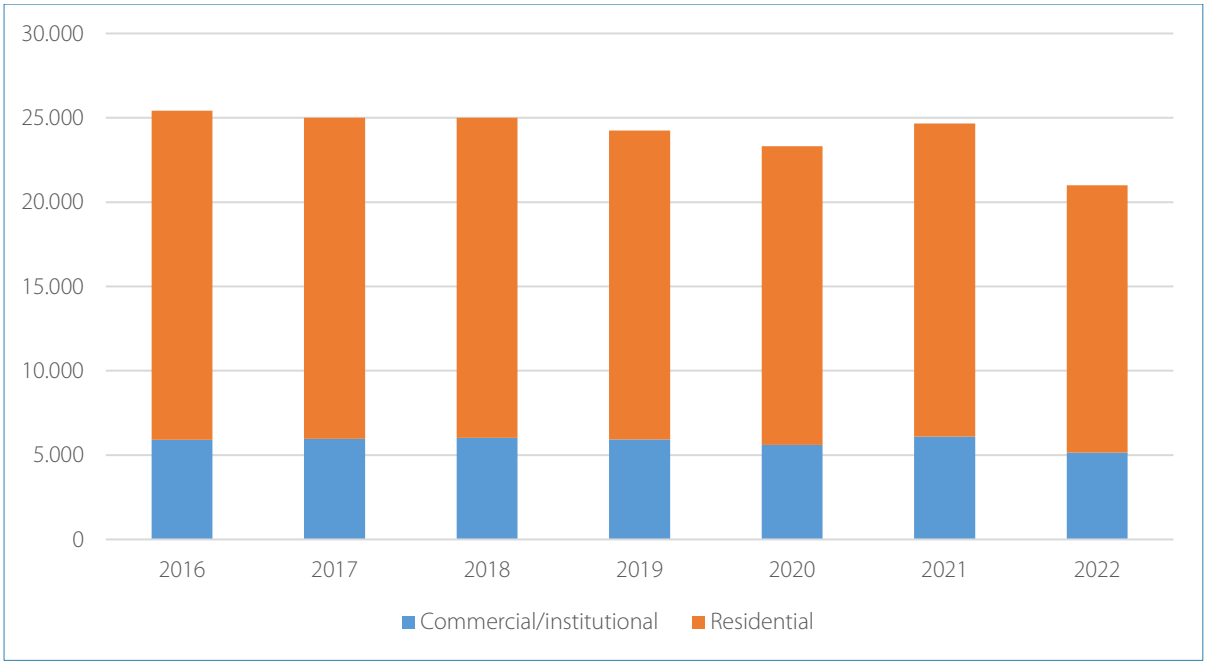
Figure 2.12: Energy consumption of the buildings sector per energy product in 2022 (in %)



Sources: NIR 2024, MMR reporting 2024

Since 2016, the emissions of residential heating have dropped each year, except for 2021, as shown in Figure 2.13. A possible explanation for this sudden increase, is temperature. When we compare the number of heating degree days for a specific year to the average over a 30-year period, we see that 2021 had more cold days and 2022 had less cold days than on average (Synergrid, 2023). Emissions from heating of commercial and institutional buildings still show an upward trend, with a drop in 2020. In total, emissions from the buildings sector are at their lowest point in 2022 since 1990, with a total decrease of 18.7%.

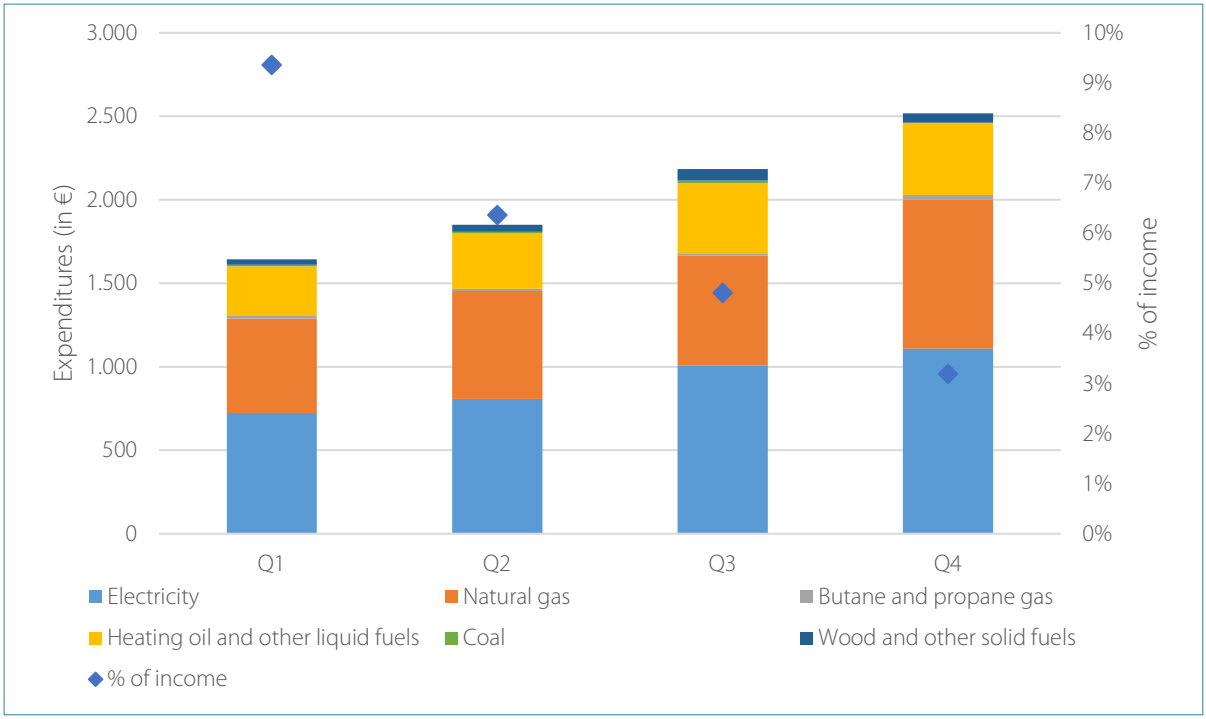
Figure 2.13: Evolution of buildings emissions (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

When looking at expenditures, 5.1% of household expenditures are for electricity and heating, or €2 050 in 2022 (Figure 2.14). Households with higher income spend more on heating and electricity in absolute amounts, but they spend a smaller share of their total income. Households in the lowest income quartile spend on average 9.4% on heating and electricity, while for households in the highest income quartile this is only 3.2%. It should be noted that the expenditures on electricity in the HBS include all types of electricity consumption. Electric heating is only a part of this.

Figure 2.14: Household expenditures on heating and electricity per income quartiles in 2022 (in €/year) and as % of household income



Source: Household Budget Survey 2023

2.2.2 Prices, taxes and costs

In this section we analyse the prices of the most important energy sources in the buildings sector. More specifically, we focus on the impact of excises on the cost of different energy sources. First, we look at the prices for different heating sources per unit. Next, we look at the total heating costs for houses by comparing houses with different heat demands. Finally, we compare the Belgian buildings sector with the neighbouring countries.

Figure 2.15 shows the evolution of gas, heating oil, electricity and pellets prices in recent years. Gas prices increased by 232% for residential consumers and 288% for non-residential consumers during the energy crisis of 2021-2022, and decreased significantly in the first half of 2023. Gas prices have stabilized in the second half of 2023 and the first half of 2024 above pre-crisis levels (+61% for residential consumers and +66% for non-residential consumers). Electricity prices show a similar pattern with an increase of 116% for residential consumers and 139% for non-residential consumers in 2021-2022. However, electricity prices stabilized closer to pre-crisis levels: +20% for residential consumers and +12% for non-residential consumers in June 2024 compared to January 2021.

The same goes for pellets, where we see an increase of 123% for residential and 131% for non-residential customers during the energy crisis. In June 2024, pellets prices are still 25.3% (residential) and 28.0% (non-residential) higher than in 2021. Households and companies heating on heating oil experienced a smaller increase during the energy crisis (+68%), but heating oil prices continued to increase in 2023 and the first half of 2024 (+16%).

Zooming in on the difference between residential and non-residential, prices for electricity and gas are higher for residential customers, even when looking at prices exclusive of VAT. Moreover, the increase in prices remaining in June 2024 compared to January 2021 was higher for residential consumers (excl. VAT).

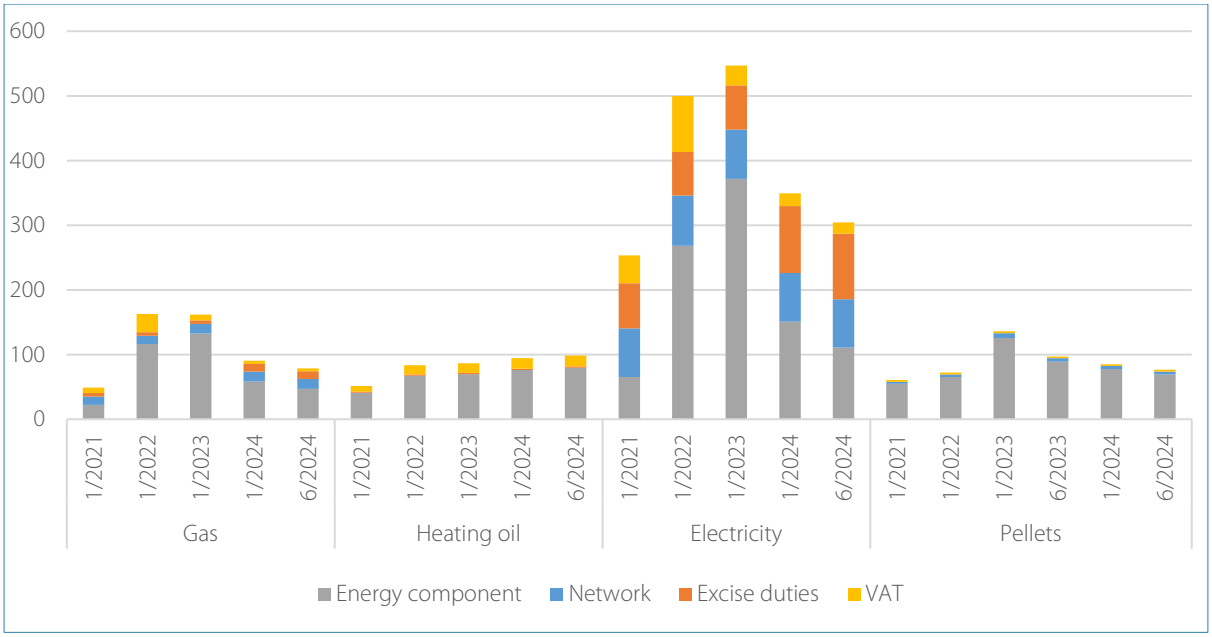
The energy crisis of 2022 has urged governments to take action, some of which in the form of measures targeted to specific groups (e.g. extension of social gas and electricity tariffs, see Section 2.2.3) and others as measures for all citizens or companies (e.g. energy cheques). In addition, the government reduced the VAT to 6% on gas and electricity (permanently in March 2023) and increased the excise duty rates to compensate for the extra budgetary expenses. At the same time a cliquet system was re-established to link the level of excises to market price level. Higher electricity and gas prices on the market lead to an automatic decrease of the excise duty rates and vice versa[11]. The effect on the price components is visible in Figure 2.15. The VAT drops between January 2022 and January 2023, whereas the excise duty component gets larger between January 2023 and January 2024. Figure 0.2 in Annex 3 shows the same as Figure 2.15 for non-residential consumers.

To compare heating costs between different fuel types for residential consumers, we assume three types of houses with different heating demands: a poorly insulated house, a moderately insulated house and a well-insulated house[12].

In June 2024 the heating cost is the lowest for heating on pellets for both the poorly and the moderately insulated house. For the poorly insulated house, heating on gas has a similar cost (+€8), while heating on heating oil and heat pumps is significantly more expensive (resp. +€305 and +€319 per year compared to gas) (Figure 2.16). For the moderately insulated house, heat pumps and gas are only slightly more expensive than pellets (resp. +€19 and +€7), while heating oil is €254 more expensive than gas per year. Only in case of the well-insulated house, heat pumps have the lowest heating cost, with a saving of €48 compared to pellets, €50 compared to gas and €132 compared to heating oil per year.

[11] More information on the exact mechanism in Annex 2.
[12] See Annex 1 for more information on the heating demand of the house types and the final energy consumption.

Figure 2.15: Residential energy prices[13] in the buildings sector per energy product (in €/MWh)



Source: CREG Monthly Dashboards

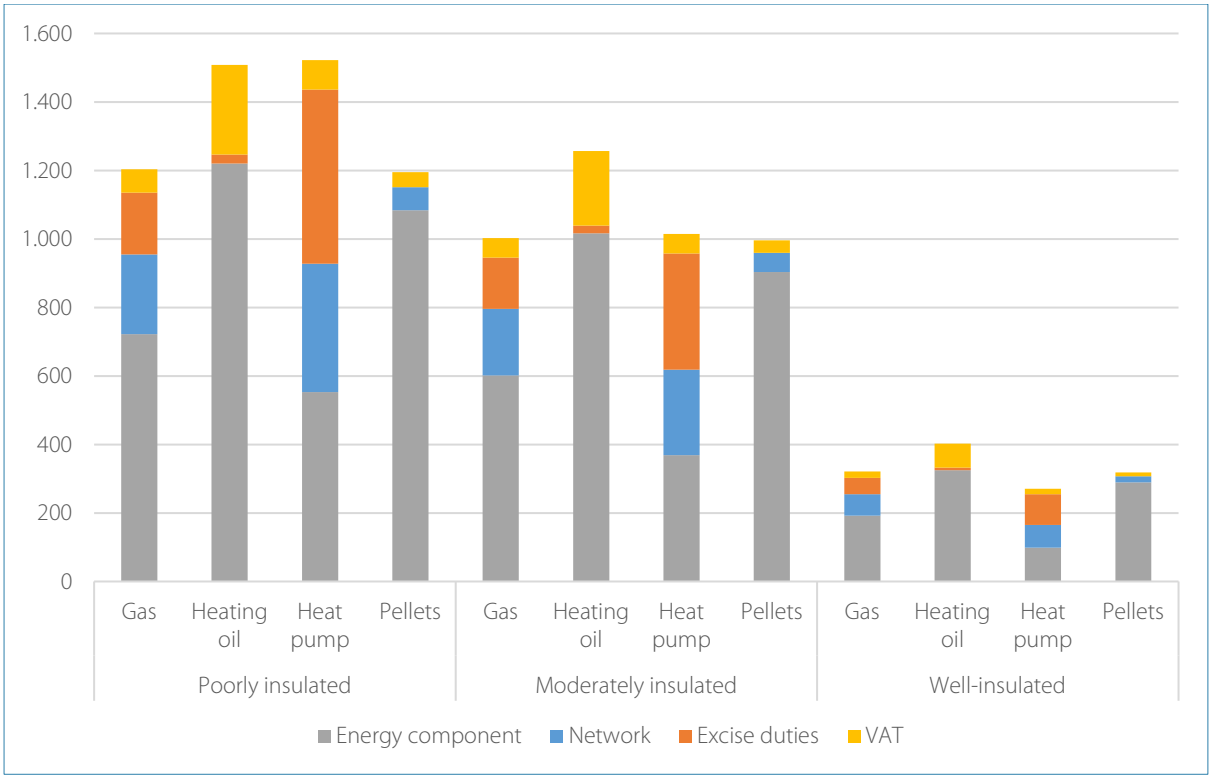
Remarkably, the cost of the energy component is the lowest for heat pumps for all three house types. This implicates that network costs and even more, excise duties largely impact the difference in heating costs between heat pumps and heating on fossil fuels or pellets. As for heating oil, the VAT rate of 21% compared to 6% on gas and electricity contributes to the higher prices of heating oil, on top of the high energy component. Excise duties on heating oil are remarkably low compared to those on gas and electricity: 6 times lower compared to gas and 14 times lower compared to heat pumps for a moderately insulated house. Pellets are even fully exempted from excise duties. In conclusion, reducing the tax difference between electricity and both gas and heating oil is a necessary step towards more heating on heat pumps and thus greener heating. The recently adopted exemption from the *non bis in idem* principle might be a first step in this direction. However, it also creates potential differences in excise duty rates between the regions and further complicates the energy bill[14].

It is important to note that we do not take into account any investment costs in this analysis and therefore cannot draw any conclusions on the total cost or profitability of the different heating technologies. However, the CREG (2024b) has recently analysed that the current price ratios of electricity compared to fossil fuels are not allowing heat pumps to be profitable in a timespan of 10 years. For a more extensive analysis on the profitability of sustainable heating technologies we refer to the CREG study (2024b).

Next, we compare the electricity, oil and gas prices to Belgium's neighbouring countries[15]. As illustrated in Figure 2.17, France and Germany have a carbon tax on heating fuels, while Belgium and the Netherlands do not. The French carbon tax is frozen at €44.6/tCO_2 since 2018, while the German carbon tax is set at €45/tCO_2 in 2024. It represents 8.1% of the French and 5.5% of the German gas price for households, as well as 9.6% of the French and 12.6% of the German heating oil price. Regarding heating oil and gas prices, Belgium has the lowest taxes (carbon tax, excise duties and VAT), leading to the cheapest prices for fossil heating fuels compared to its neighbouring countries. On electricity prices, France is cheaper compared to other countries, thanks to lower excise duties. Belgium has the highest excise duties, but the lowest energy component. Electricity prices in Germany decreased less compared to last year than in other countries, due to the ending of the temporary price cap.

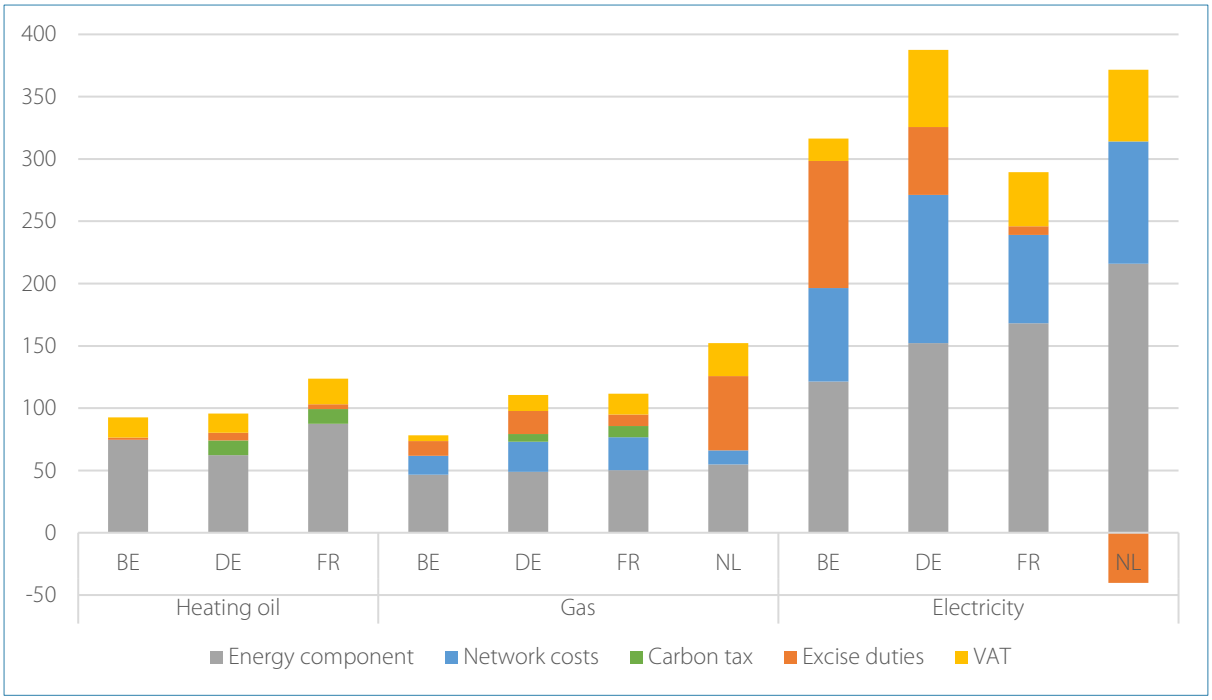
[13] Average price you would pay for a year if you sign a new contract during that month (electricity and gas) or if you order heating oil in that month.
[14] See Section 4 for more information on recent policy developments in excises duties.
[15] Pellets prices are not included in this part of the analysis as not enough information is publicly available.

Figure 2.16: Average heating cost for three house types 2024 (in €/year)



Sources: own calculations based on CREG Monthly Dashboards for prices (1/6/2024)

Figure 2.17: Average prices for household heating in Belgium and neighbouring countries for the first half of 2024 (in €/MWh)



Sources: CREG Monthly Dashboards for electricity and gas prices (S1 2024), EC Weekly Oil Bulletin for heating oil prices (S1 2024), World Bank Carbon Pricing Dashboard for carbon taxes

One of the aspects that influences the profitability of heat pumps compared to gas or heating oil boilers are the relative energy prices. The FPS Health (2023) has shown that in order for a heat pump to have a payback period of maximum 10 years, the price ratio electricity/gas should be maximum 2.14, and the price ratio electricity/heating oil should be maximum 2.51 for a good-insulated house. A recent study of the CREG (2024b) has come to similar price ratios for non-protected consumers, namely a maximum electricity/gas price ratio of 2.06 and a maximum electricity/heating oil price ratio of 2.58. Although we do not further analyse price' ratios and profitability in this publication, it is interesting to highlight that, based on the prices in Figure 2.17, the price ratio electricity/gas is the least favourable towards electricity in Belgium compared to France, Germany and the Netherlands. The electricity/gas ratio is 4.1 in Belgium, compared to 3.5 in Germany, 2.6 in France and 2.2 in the Netherlands. The electricity/heating oil ratio is more favourable in Belgium (3.4) than in Germany (4.1), but still above the ratio in France (2.3) and above the maximum price ratio for a heat pump payback period of 10 years. Changes in excise duty rates have the potential to significantly reduce the electricity/gas and electricity/heating oil price ratios in Belgium.

2.2.3 Other tax policies and subsidies

The following section compiles a non-exhaustive list of existing tax policies and subsidies at regional and federal level, used to encourage businesses and households to make investments concerning heating and insulation, as well as direct support for households to pay their energy bills. If available, we added information on the total cost (-) or revenue (+) of the measures in italic in Table 3 (see Annex 1 for more information on the sources).

As indicated in Table 3, all regions offer subsidies and loans to households for renovation, insulation and investments in clean energy and energy efficiency, although conditions and budgets differ. For example, premiums for heat pumps go up to €9 000 in Wallonia, while Brussels goes up to €6 500 and Flanders to €6 400. All investment support is towards a greener buildings sector. Wallonia and Flanders still gave investment support to new gas boilers in previous years but ended these subsidies at the end of respectively June and October of 2023.

Both Flanders and Wallonia ended their subsidies for solar panels at the end of 2023, leaving Brussels to be the only region to still give some sort of subsidy, in the form of green certificates.

As for businesses, Flanders and Brussels give subsidies for green heating technologies and energy-efficiency investments, such as insulation or LED lights, as well as for energy audits and professional advice. Wallonia reformed their AMUREBA scheme and only offers subsidies for energy audits. On top of these regional policies, the federal government gives a 20.5% tax deduction for investments in energy savings (fiscal year 2024).

Table 3: Tax policies and subsidies with impact on costs of initial investment

	Flemish Region	Walloon Region	Brussels Capital Region	Federal level
Subsidy for renovation, insulation, solar panels, heat pumps and energy-efficiency (households)	*Mijn Verbouwpremie* e.g. premium for heat pumps (€300-6 400) *(-€214 mio of which €12 mio for heat pumps in 2023)*	*Primes habitation* e.g. premium for heat pumps (€1 500-9 000)	Premium *RENOLUTION* e.g. premium for heat pumps (€4 500-6 500) *(-€33 mio in 2023)*	Temporary reduced VAT on heat pumps
	EPC-label premium (max. €6 000)	Premium for small works and		

	Flemish Region	Walloon Region	Brussels Capital Region	Federal level
	(-€6 mio in 2023)	roof(max. €6 000 per bill)		
			Green certificates *(-€42 mio in 2021)*	
	Rent and isolation premium (until September 2024) *(-€0.1 mio in 2023)*	Energy investment support for low income households		
Renovation loan (households)	*Mijn Verbouwlening (-€86 mio in September 2022-December 2022)*	*Rénopack/Rénoprêt* loan *(-€192 mio in 2023)*	*EcoReno* loan	
Subsidy for renovation and energy-efficiency (companies)	Ecological premium *Ecologiepremie+*, *GREEN* investment support and Strategic ecology support for green heating and energy efficiency *(-€10 mio in 2023)*	*AMUREBA* for energy audits *(-€2 mio in 2021)*	Premium *RENOLUTION* *(-€9 mio in 2023)*	Increased investment deduction for energy savings (20.5%) *(-€57 mio in 2021)*
	Mijn Verbouwpremie for green heating and insulation *(-€15 mio in 2023)*			

In addition to these investment support mechanisms, the federal government has introduced policies to help households pay their energy bills. One of these policies are the social tariffs for electricity and gas consumption for households in precarious situations. Only households in certain categories are eligible for the social tariffs, for example when receiving a replacement income, or a guaranteed income for elderly persons. In addition, Wallonia and Brussels Capital Region extent the recipient group of the federal social tariff to some additional groups, for example households supplied by the supplier of last resort due to debts.

The social tariff is significantly lower than the commercial price for both electricity and gas (see Figure 0.3 and 0.4 in Annex 3). For the first half of 2024, the social tariff was 30.2% lower for electricity than the commercial price and 36.2% for gas. Households benefitting from the social tariff are also protected from suddenly increasing prices, as the increase in social tariffs is capped at a certain maximum per three months. Especially during the energy crisis, the social tariff increased slowly compared to the commercial price. According to the CREG (2024c) 498 388 households received the social tariff for electricity and 317 140 for gas in the first half of 2024. 3% of these households are part of the extended recipient group determined at the regional level. From August 2022 until July 2023 the federal recipient group was extended to a larger group of households in precarious situations due to the energy crisis, almost doubling the group of beneficiaries.

The social tariff system is often criticized as it incentivizes more electricity and gas consumption through lower prices, leading to a direct subsidy of fossil fuels of €185 million in 2021 (CNC-Concere, 2023). A recent IMF report suggested replacing the social tariffs system with an income-support based system, which would solve the price distortion (Vernon, 2023). The federal government (De Croo I) started discussions on reforming the system without abolishing it altogether. The social tariffs would become a more gradual, instead of the current have-or-have-not system. In light of this potential reform, the CREG (2024a) proposed in March 2024 to add an income-based criterium. However, the government did not come to an agreement before the elections of June 2024, except for a small part of the reform concerning households living in a building with a collective connection point for gas or electricity. Those households could not receive the social tariff, and will receive a social tariff premium starting in July 2024 if they meet the criteria.

For households in precarious situations and using heating oil, propane or lamp petroleum, the Social Heating Fund (*Sociaal Verwarmingsfonds/ Fonds Social Chauffage*) offers compensations for heating costs. In addition, the Public Centre for Social Welfare provides preventive support, for example by buying energy efficient household appliances, and can pay electricity and gas bills for households with payment problems. These three support mechanisms combined created a direct fossil fuel subsidy of €73 million in 2021 (CNC-Concere, 2023).

2.3 Manufacturing industry

KEY MESSAGES

- Industrial emissions have dropped since 1990 and stagnated since 2012, although a new downward trend is observable since 2018. Natural gas stays the most important energy source.
- Gas prices in Belgium are competitive with the neighbouring countries, largely because of low network and other costs, like excise duties. Flanders offers more reductions on electricity costs than Wallonia and Brussels. For electricity prices the competitive position of Belgium is variable and depends on whether or not companies are eligible for reductions on excise duties and other costs.
- The price for auctioned ETS allowances dropped in the second half of 2023, still generating €739.9 million of revenues in 2023 for the Belgian governments. The new federal and regional governments must reach an agreement urgently to avoid that revenues from 2023 onwards are frozen.
- Energy agreements between regional entities and companies or sector federations are potentially an important instrument for CO2 reductions in the industry. However, the exact impact on CO2 emissions of the energy agreements and of the subsidies linked to these agreements is not clear.

2.3.1 Emissions and energy consumption

The manufacturing industry takes up 30.8% of all GHG emissions in Belgium in 2022. Of these emissions, 87.2% is covered by the EU ETS, of which half are process emissions. The non-ETS emissions are mostly emissions from fuel combustion (11.1%) and only a small part are process emissions (1.7%). The following section discusses the emissions from fuel combustion (energy emissions) of the industrial sector.

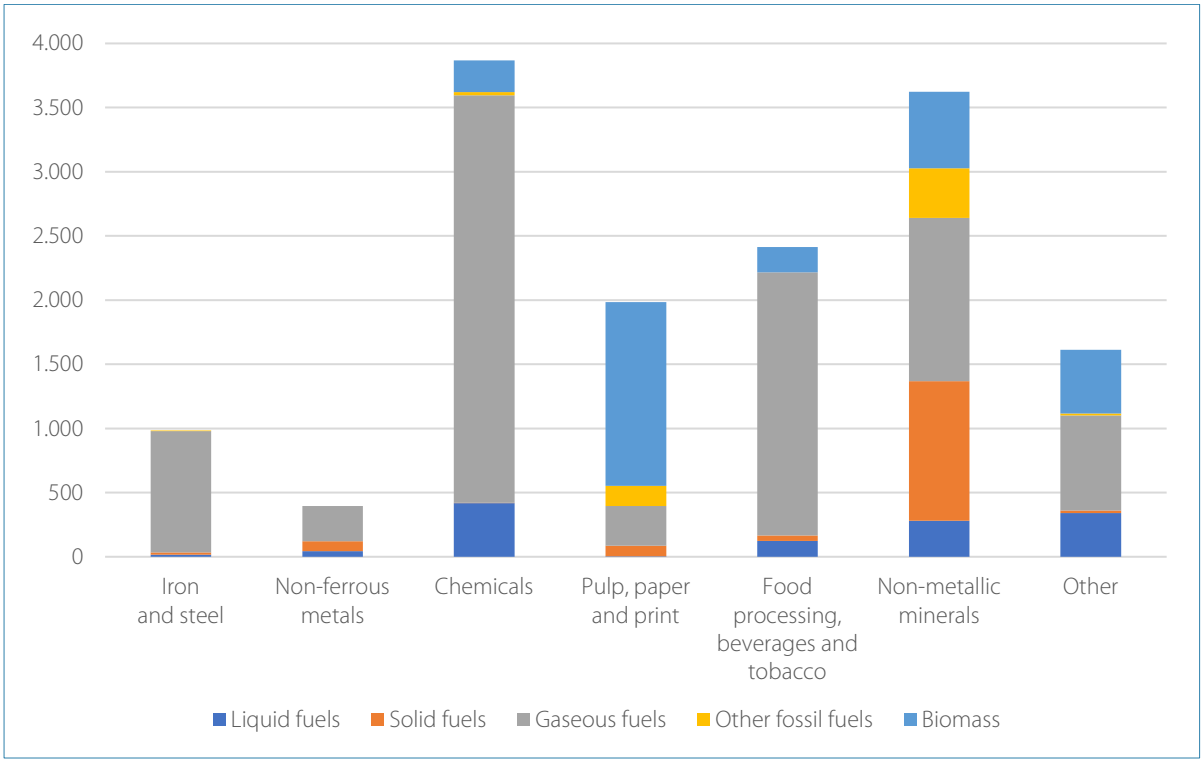
As shown in Figure 2.18, the largest emitting industrial sector is the chemicals sector, followed by non-metallic minerals and food processing, beverages and tobacco. The sector 'other' mainly contains of non-specified activities, textile and leather, and off-road vehicles and other machinery, like fork-lifts.

Industry emissions have strongly decreased from 1990 until 2012, but stabilised since 2016 (see Figure 0.5 in Annex 3). Emissions dropped in 2019 (-2.4%) and 2020 (-3.4%), to increase significantly in 2021 (+16.9%) and stabilise at 2016 levels in 2022 (-11.9%). Regarding the different sectors, all of them decreased their emissions in 2022 compared to 2021. Since 2016, iron and steel, non-ferrous metals, non-metallic minerals chemicals, and pulp, paper

and print have diminished their emissions with an average of 9.1%. An increase in emissions is visible in the food processing, beverages and tobacco industry (+0.5%) and the other industrial sectors (+147.8%).

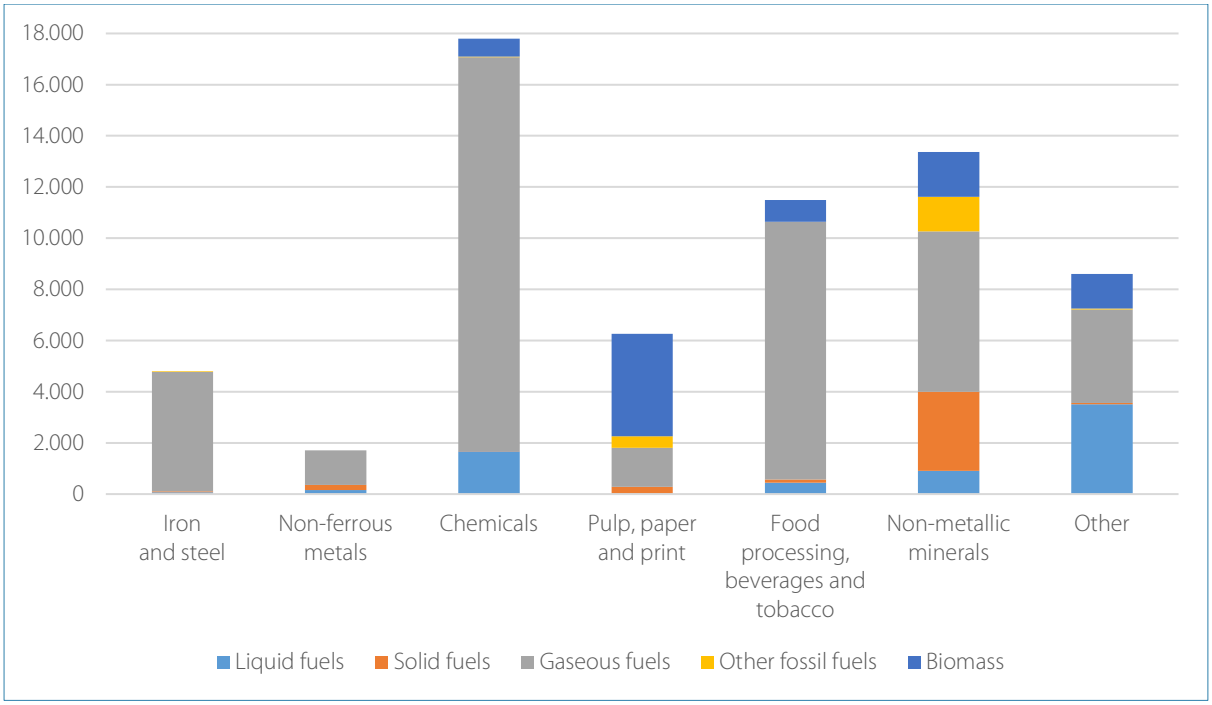
Figure 2.19 shows the consumption of energy products in the industry for energy use. Gas is the largest energy source in every sector of the industry, except for the pulp, paper and print sector, where biomass takes up to 64% of all energy consumption. In total energy products for energy use sum up to 64 026 GWh. Energy products used as feedstocks are not shown in Figure 2.3.2, and make up 75 850 GWh or 54.2% of all energy products in the industry (Statbel, 2023b). Feedstocks are exempted from excise duties and would continue to be exempted under the current reform proposal of the Energy Taxation Directive (see Section 4). The taxation of feedstocks is a relevant question from an environmental and climate point of view, but is out of scope of this publication.

Figure 2.18: Combustion emissions from manufacturing industry and construction per fuel type in 2022 (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

Figure 2.19: Energy consumption of industry sector in 2022 (in GWh)



Sources: NIR 2024, MMR reporting 2024

2.3.2 Prices, taxes and costs

Energy prices for industrial companies are more complex to analyse than residential prices, given the wide divergence in consumption profiles and the numerous exemptions and discount structures in different countries for example for electro-intensive customers. PwC (FORBEG, 2024) and Deloitte (Febeliec, 2024) both publish a yearly study, commissioned by respectively FORBEG and Febeliec, that compares industrial electricity and gas prices in Belgium (and its three regions) to the neighbouring countries. In this section we highlight figures and numbers from these reports. For more extensive analyses, we refer to the PwC and Deloitte studies.

First, the studies show that energy prices have strongly decreased in 2023 in Belgium and its neighbouring countries, mainly driven by the energy component. For Belgium, the total gas price dropped by 74% compared in 2023 (for consumption of 100 000 MWh per year), but is still higher than before the energy crisis of 2021-2022. The electricity price in Belgium decreased by 24.6% from January 2022 to January 2023 (for consumption 25 000 MWh per year). At the same time, the electricity price in Germany increased due to the end of the capping mechanism introduced in January 2023, making it less competitive than in Belgium, France, the Netherlands and the UK for both electro and non-electro-intensive companies.

Second, we note that network costs and excise duties only represent 6 to 11% of the total price for gas in Belgium, while they take up 12 to 22% of the total price for electricity. Moreover, network costs and excise duties are degressive (see Figure 0.6 and 0.7 in Annex 3). Excise duty rates on natural gas used as heating fuel are lower for higher consumption brackets, going from €1.20/MWh in the lowest bracket to €0.69/MWh in the highest consumption bracket for companies[16]. The same goes for electricity, where the excise duty rate goes from €16.14/MWh (lowest consumption bracket) to €2.43/MWh (highest consumption bracket)[17].

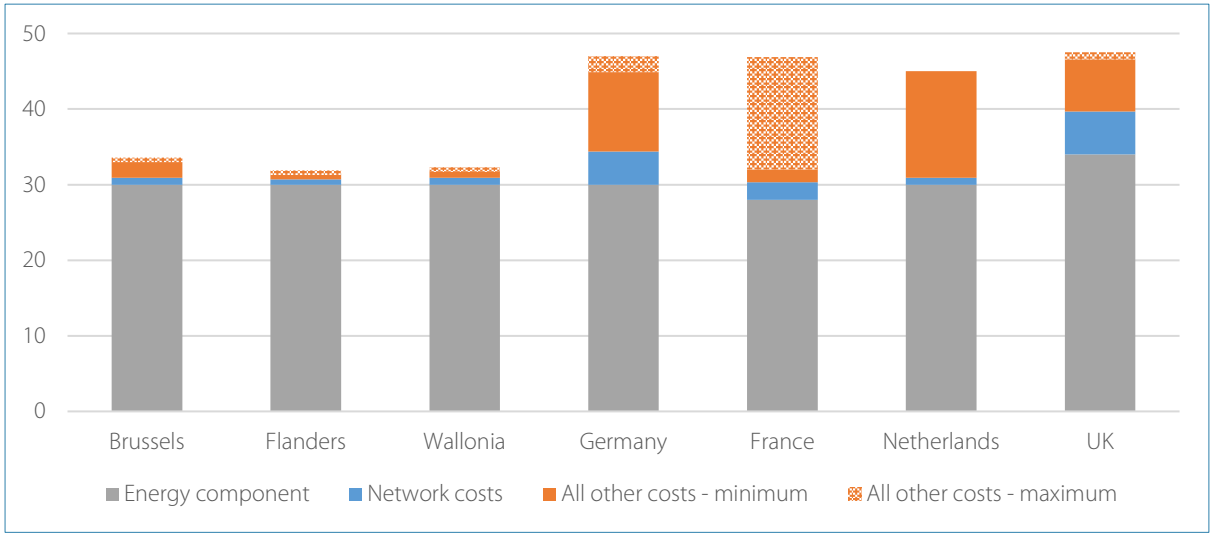
The study shows that Belgium has competitive prices compared to its neighbouring countries for gas, mostly thanks to low network and other costs, like excise duties (Figure 2.20). Only France has lower gas prices than the Brussels region, when considering the minimum ranges. France also has the largest potential reductions on other

[16] Excise duty rates for companies with *energiebeleidsovereenkomst*, *accord de branche* or similar agreement
[17] Excise duty rates for companies connected to the transport or distribution grid with a voltage level of >1kV

costs among all neighbouring countries. The UK has the highest price for the energy component, while the Netherlands have the highest other costs for gas when considering the minimum range. As for electricity (see above), Germany had a temporary price cap in 2023, which significantly lowered its energy component. The price cap ended in 2024, putting Germany's energy component back at the same level as Belgium and the Netherlands. Energy component prices in France are still low, although regulated prices for large industrial companies ended in 2015.

For electricity the conclusions on competitiveness are more diverse. Flanders is the most competitive region in Belgium for electro-intensive companies, as it gives large discounts to electro-intensive companies like the cap on green and combined heat and power certificates. In the three regions, companies need to contribute to the production of renewable energy through certificates. However, the cost of these is capped in Flanders at 0.5% of the gross value added for electro-intensive companies. For cogeneration the cap is set at 4%. In addition, at the federal level some specific activities and subsectors, for example for metallurgical processes, dual use of electricity or in chemistry, benefit from exemptions from electricity excises duties. Companies with regional energy agreements also receive compensations for indirect emissions costs due to the EU ETS in Wallonia and Flanders. However, these compensations are not shown in Figure 2.21, but are discussed in Section 2.3.4.

Figure 2.20: Gas prices for industrial customers in Belgium and neighbouring countries – G1 profile [18] (in €/MWh)



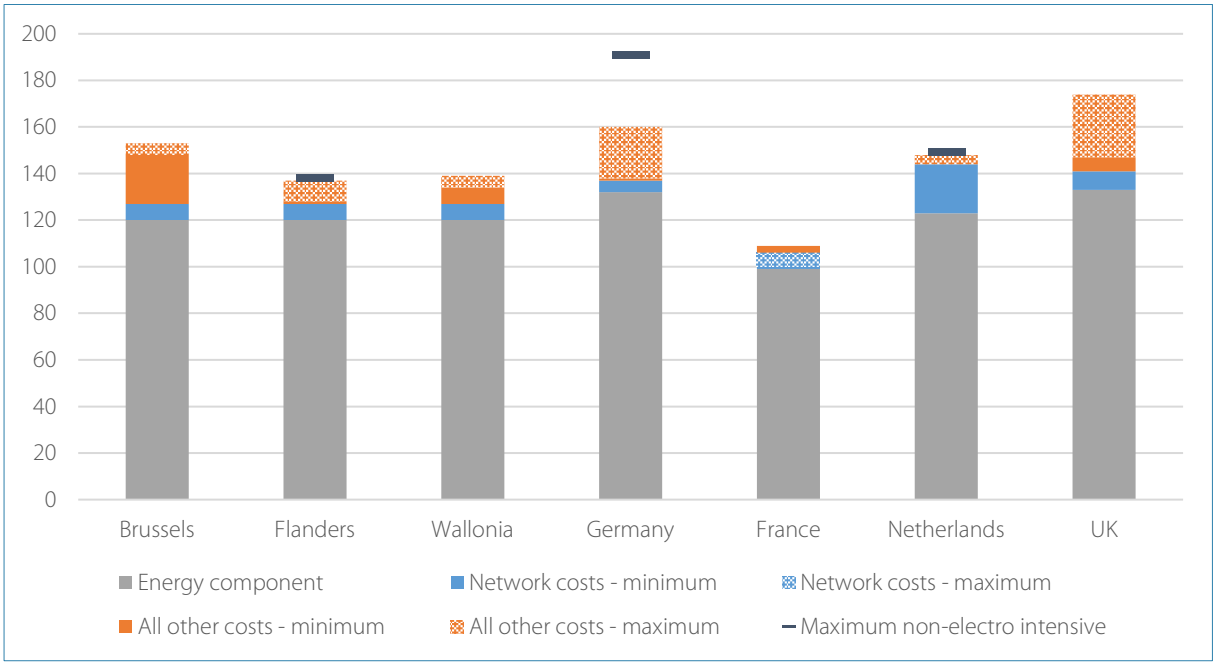
Source: FORBEG, 2024

As Figure 2.21 illustrates, France has the lowest electricity prices in all scenarios in 2024 due to its regulated prices. For electro-intensive companies, Flanders, France, Germany and the UK offer large reductions on network and other costs, which largely influence the total price and make these countries more competitive than the Brussels and the Netherlands [19]. For non-electro intensive companies, Belgium has competitive prices compared to Germany, the Netherlands and the UK. Again, France has lower prices for non-electro intensive companies thanks to regulated prices for the energy component.

Concluding, industrial energy prices vary between Flanders, Wallonia and Brussels and between consumption profiles. Belgian gas prices are generally competitive with the neighbouring countries. For electricity it depends on the region in Belgium, whether companies are electro intensive or not and whether they are eligible for additional specific reductions on excise duties. The regulated prices in France have a significant impact on the competitiveness of electricity prices across our neighbouring countries.

[18] See Annex 1 for more information on the consumption profiles
[19] A recent study analyses this lack of competitive electricity prices compared to Netherlands' neighboring countries and more precisely the impact of the discontinuation of indirect cost compensation (E-Bridge, 2024).

Figure 2.21: Electricity prices for industrial customers in Belgium and neighbouring countries – E3 profile [20] (in €/MWh)



Source: FORBEG, 2024

2.3.3 EU ETS

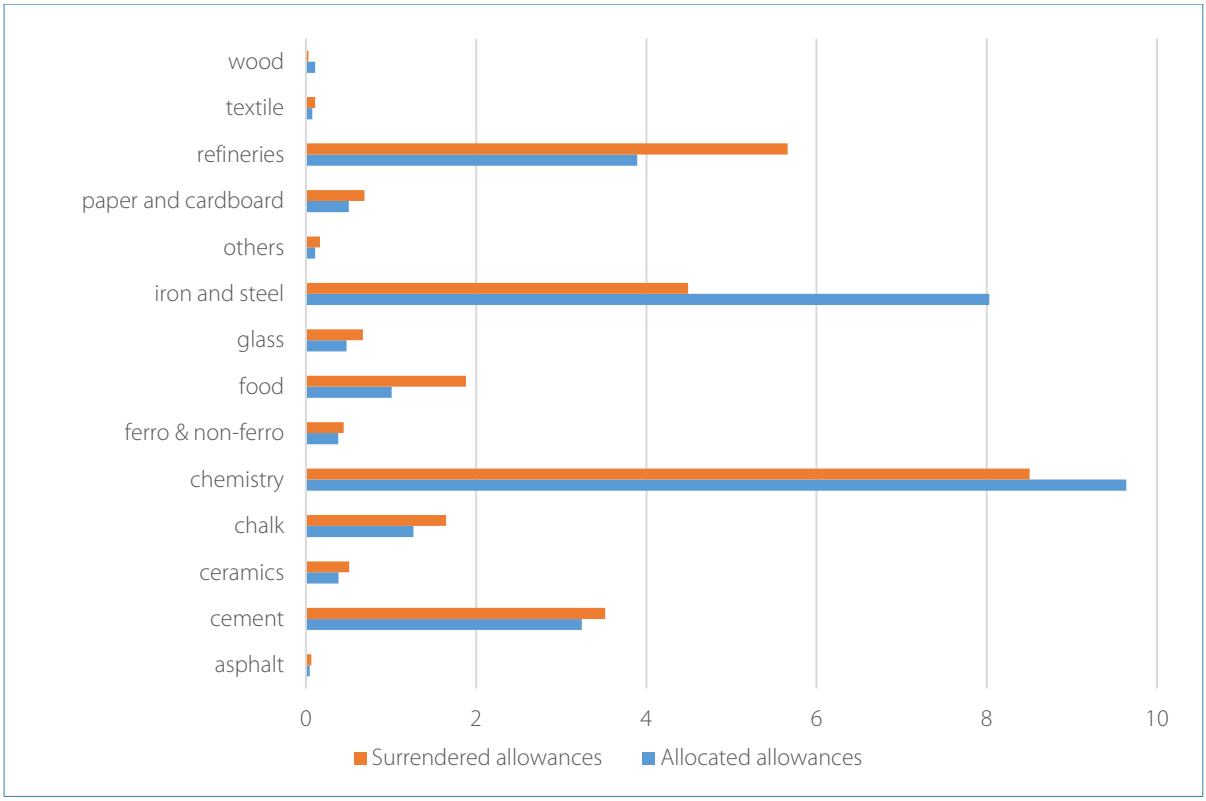
The European Emissions Trading System (EU ETS1) is the most important policy instrument for the energy-intensive industrial sector. Based on a 'cap and trade' principle, the total amount of greenhouse gas emissions is capped and decreases over time on EU-level. Companies receive and/or buy and sell allowances to cover their individual emissions. The EU ETS covers the CO_2, N_2O and PFC emissions from the electricity and heat generation sector, the energy-intensive industry sectors and aviation within the European Economic Area (EEA). Since January 2024 it also covers the emissions from maritime transport, more specifically the CO_2 emissions from all large ships entering EU ports, regardless of their flag.

The evolution of the surrendered allowances in Belgium – and thus the emissions – differed widely between industrial sectors in the first two phases of the ETS (see Figure 0.8 in Annex 3). Since 2013, the beginning of phase 3, most sectors stagnated, with a drop in surrendered allowances in 2020 due to a covid-related slowdown of the industrial production. The EU ETS entered into its fourth phase in 2021. In 2022, the total allowances surrendered in Belgium for the manufacturing industry dropped by 8.4% compared to 2021 and 10.9% compared to the beginning of the third phase (2013).

Figure 2.22 shows the allocated and surrendered ETS allowances for the energy-intensive industry sectors in 2022. The amount of free allocated allowances are based on benchmarks. The best performing installations in the European Union get all the allowances they need or more, while less performing installations will need to buy extra allowances or reduce their emissions. The iron and steel sector and the chemistry sector in Belgium receive more free allowances than needed to cover their emissions, as a result of their efficiency (and the re-use of blast furnace gas for electricity generation in the largest installation in the iron and steel sector) compared to these sectors in the rest of Europe. Except for the chemistry sector in the year 2021, these two sectors have received more free allowances than needed each year since 2013.

[20] See Annex 1 for more information on the consumption profiles.

Figure 2.22: Surrendered and allocated ETS allowances per industrial sector in 2022 (in millions)

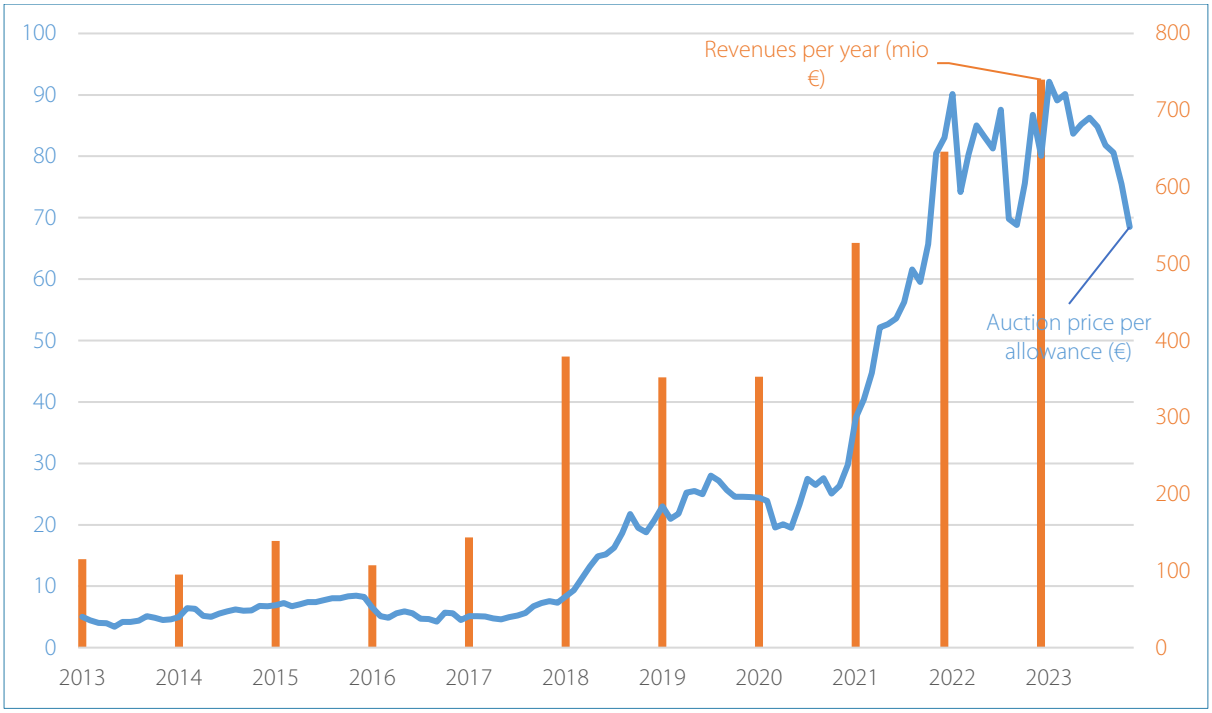


Source: Belgian Greenhouse Gas Registry

Since 2013, a part of the ETS allowances is no longer allocated for free but sold through auctions by the member states in a joint way. As illustrated in Figure 2.23, the average auction price for an ETS allowance increased since 2013, with an acceleration in 2017 and 2020-2021. The price then dropped significantly in the second half of 2023, due to lower CO_2 emissions in the energy industries and thus lower demand for allowances. This decline in CO_2 emissions is driven mainly by a reduced energy demand, an increase in renewable energy and nuclear power and a decline in gas prices leading to a reduction in the use of coal (ERCST, 2024).

In 2023, 8.9 million allowances were auctioned for Belgium at an average price of €83.1, generating a total revenue of €739.9 million. ETS allowance auctions have created a revenue of €3.8 billion for Belgium since the beginning of the auctions in 2013. These revenues have been split between the federal and the regional entities for the years 2013-2020 according to a cooperation agreement on burden sharing (2018). Only at the end of 2022, the federal and regional entities reached an agreement on certain provisions on the distribution of the energy and climate objectives and on the distribution of the ETS revenues of the years 2021 and 2022. This agreement was legally anchored in a cooperation agreement between the federal state and the regions on 19th December 2023. There have been several attempts to reach an agreement on the revenues of the years 2023 and after, but still no agreement was found at this stage.

Figure 2.23: Average auction price of ETS allowance (€) and total auction revenues in Belgium (in million €)



Source: Belgian Greenhouse Gas Registry

2.3.4 Other tax policies and subsidies

Another important instrument in the industrial sector are the energy agreements in Flanders (*Energiebeleidsovereenkomst*) and Wallonia (*Conventions Carbone*) (VITO, 2023; SPW Energie, 2024). Companies or sectoral federations enter into a voluntary agreement with regional governments and promise to conduct energy audits and invest in profitable energy saving technologies and measures. In exchange, regional governments commit themselves to offer financial support, not to implement additional targets or financial measures (e.g. carbon tax) for the duration of the agreement, with an exception for mandatory EU policy, as well as lowering administrative burdens and maintaining a positive communication on the participating companies. Wallonia extended the existing agreements (*Accords de branche*) from 2014-2020 to 2023, while negotiating on new agreements. The first new agreements (*Conventions Carbone*) were signed with the industrial sector in June 2024. Flanders made new agreements for 2023-2026, following the 2015-2022 agreements.

In 2022, 347 companies participated in Flanders. According to their annual report, this led to a reduction in primary energy consumption of 36.7 PJ and a reduction of 2.2 Mt CO_2 emissions (VITO, 2023). In Wallonia, 12 carbon communities were established in June 2024, representing 202 participating companies. The last publicly available annual report on the previous energy agreements (*Accords de branche*) showed that the 231 participating companies generated a reduction of 0.9 PJ in primary energy consumption and a reduction of 82 kt CO_2 emissions in 2020 (SPW Energie, 2023).

Some differences exist between the Flemish and the Walloon agreements. First, in Wallonia the agreement is made between the government and an entity, for example a sectoral federation, representing the community, which needs to include at least two plant units. In Flanders, it is the company itself that enters into an agreement with the government, although sectoral federations can enter into agreements too.

Second, the Walloon agreements include a target for the following 8 years on CO_2 reduction, energy savings and renewable energy, whereas the Flemish agreements do not. The last includes the obligation to conduct an energy audit and implement all investments with a certain rate of return but do not include any a priori target.

Third, there is a difference in transparency. The previous Walloon *Accords de branche* included a number of support mechanisms and subsidies, of which the costs were systematically calculated in the annual report of the Walloon government on the *Accords de branche*, as shown in Table 4. However, no reports have been published to date on 2021, 2022 and 2023. The Flemish annual reports is even less transparent and does not include such overview. Some numbers however can be found, for example the compensation of indirect emissions costs for companies with energy agreements cost €138 million in 2021 (CNC-Concere, 2023). However, the total amount of subsidies that companies in Flanders receive as a compensation in the context of the energy agreements is not publicly available. Several actors have raised questions on energy agreements as a adequate and effective climate policy tool (AWAC, 2023; Minaraad, 2022; A&M & BBL, 2020).

Table 4: Support mechanisms and subsidies for companies with an Accord de branche

Support mechanism	Cost in 2020
Reduction of the quota for green certificates	€114 million
Partial exemption from the surcharge CV wallons (system for the support of renewable energy production)	€17 million
Premium for energy audits (AMURE)	€1.4 million
Reduction of the federal excise duties on natural gas	€5.2 million

Source: Annuel report 2020 of the Accord de branche

At the federal level, the advantages of energy agreements changed for companies since 2022. Before 2022, the federal contribution on electricity and gas was degressive for these companies, but not for other companies. The federal contribution changed on 1st January of 2022 into a special excise duty, which is degressive for all companies. The only advantage left at the federal level today are the lower excise duty rates on gas used as heating fuel for companies with an energy agreement (see Table 4 for Wallonia). However, questions can be raised on whether subsidising energy consumption through lower fossil fuel prices is the best way to support the energy intensive industry and guarantee their competitiveness in the long run.

Brussels Capital Region has not the same kind of agreements in place as Flanders and Wallonia. However, industrial companies in Brussels Capital Region need to conduct an obligatory energy audit every four years, in exchange for a premium of €3000 per building (Leefmilieu Brussel, 2023).

Another important instrument are the investments deductions. Currently, increased investment deductions exist for example for carbon neutral trucks and energy saving investments (see Section 2.1.3 and 2.2.3). However, the investment deduction system was reformed in May 2024 (see Section 4). The new system should enter into force in January 2025.

2.4 Agriculture

KEY MESSAGES

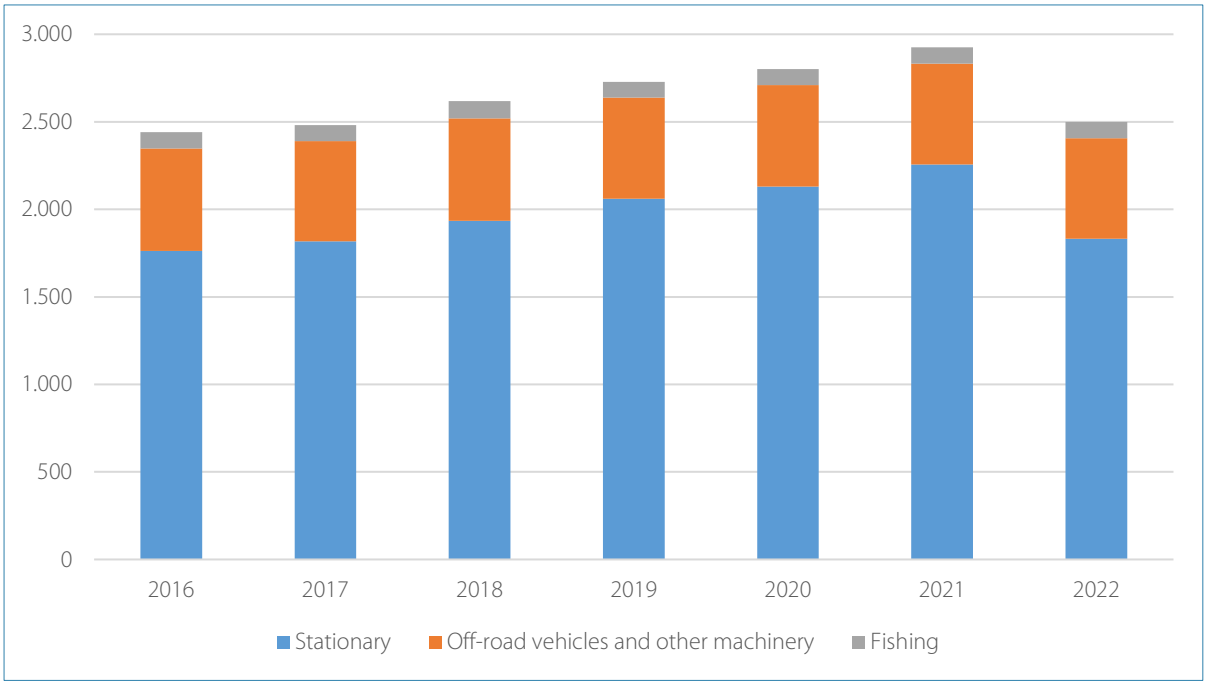
- Since 1990, non-energy emissions in agriculture stagnated, while energy emissions, mostly heating emissions for e.g. greenhouses, went up since 2009 although they show a sharp decline of 15% in 2022.
- Non-energy emissions in agriculture are not subject to any taxation measures.
- Energy products for agricultural use are exempted from excise duties, which lowers price incentives for efficiency.

2.4.1 Emissions and energy consumption

Agriculture, forestry and fishery amounts for 18.2% of non-ETS GHG emissions in 2022, or 11.5 Mt CO_2-eq. 80% of this are non-energy emissions, for example from enteric fermentation, manure management and agricultural soils. In the following parts only the energy emissions are discussed.

Energy emissions in the agricultural sector in 2022 came from stationary combustion (73.3%), off-road vehicles and other machinery (23.0%) and fishing (3.7%). From 2016 to 2021, emissions in agriculture have only gone up, with a total increase of 20.1%. A significant drop in emissions in 2022 (-14.6%), almost puts the sector back at the emissions level of 2017. (Figure 2.24). Both the increase and decrease are entirely driven by stationary combustion emissions, while emissions from off-road vehicles and fishing slightly decreased (resp. -1.9% and -2.0% since 2016).

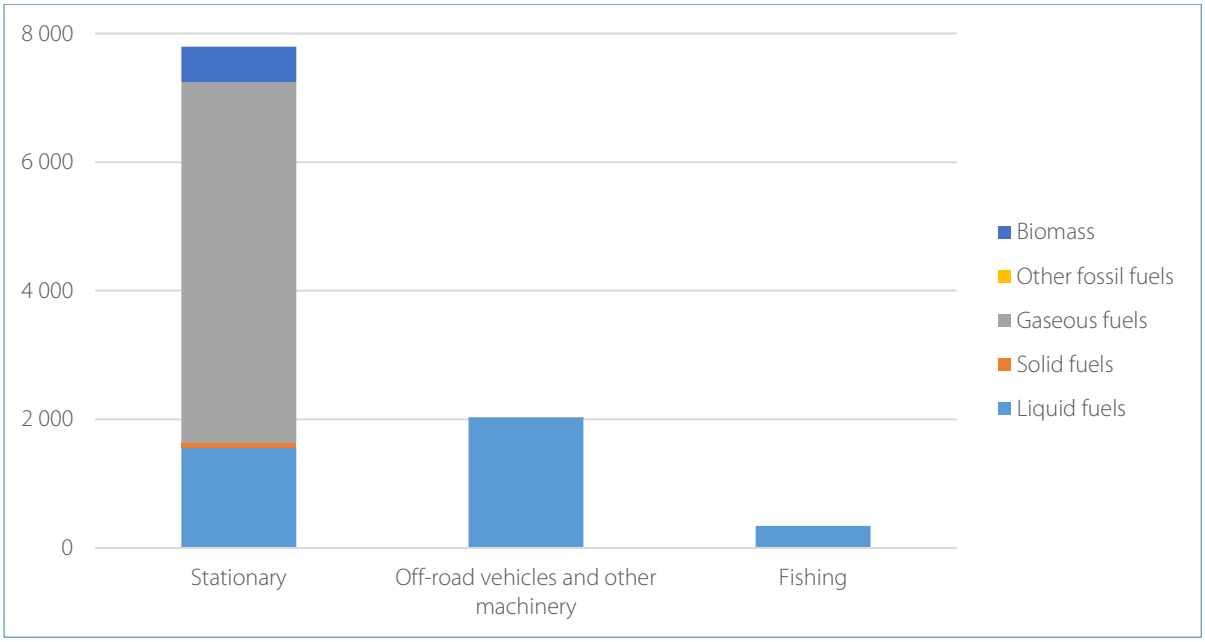
Figure 2.24: Evolution of agricultural energy emissions (in kt CO_2-eq)



Sources: NIR 2024, MMR reporting 2024

Despite a decrease of 22.1% in 2022, gaseous fuels are still the largest fuel source in the agricultural sector for stationary combustion, which is for a large part used for the heating of greenhouses (Figure 2.25). Off-road vehicles and the fishing sector rely almost entirely on gasoline and diesel oil.

Figure 2.25: Energy consumption of the agricultural sector in 2022 (in GWh)



Sources: NIR 2024, MMR reporting 2024

2.4.2 Prices, taxes and costs

First, we look at energy prices for heating purposes in agriculture. Commercial prices for energy products and electricity used as heating fuel are the same for agricultural consumers as for other commercial consumers[21]. However, the agricultural sector benefits from excise duty exemptions. All energy products and electricity used as heating fuel are exempted from excise duties if exclusively used in agricultural, horticultural or piscicultural works or in forestry[22]. This gives the agricultural sector a significant discount on energy prices compared to non-residential consumers. For example, excise duties made up 6.8% of the total price per MWh for gas for a non-residential customer in June 2024 and 30.6% for electricity, 60% of which is exempted if used for agricultural purposes. For heating oil, excise duties represent only 2.1% of the total price, of which 100% is exempted if used for agricultural purposes.

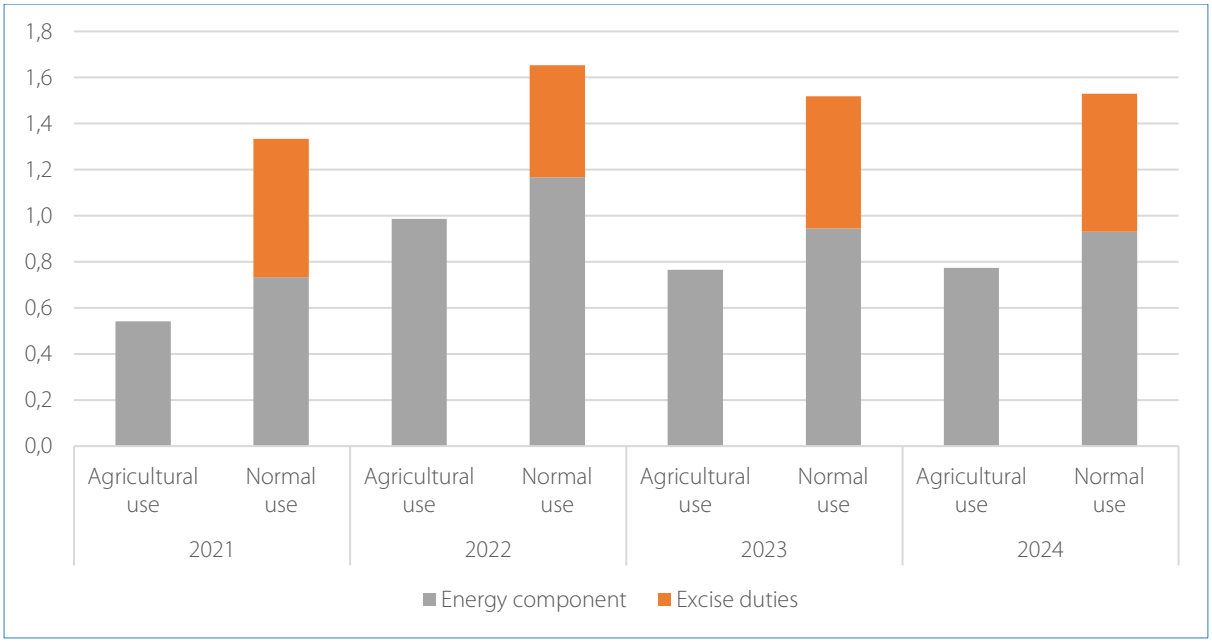
Second, we look at energy prices for transport purposes in agriculture. All energy products and electricity used as motor fuel are exempted from excise duties if exclusively used in agricultural, horticultural or piscicultural works or in forestry. Figure 2.26 shows the price difference between diesel used as motor fuel in the agricultural sector versus diesel used as motor fuel by other companies. In the first half of 2024, diesel prices were 49.4% lower for agricultural use, compared to normal use. This was mostly due to the excise exemptions. In order to prevent and detect misuse, exempted diesel is coloured red, hence its name 'red diesel'.

Last, all energy products are exempted for fishing if used as heating fuel or motor fuel for navigation within Community waters or if used as fuel for navigation on inland waterways.

According to the Federal Inventory on Fossil Fuels Subsidies (FPS Finance and FPS Health, 2024), all these exemptions from excise duties add up to a subsidy of €8.6 million in 2021.

[21] See Section 2.2.2 for a full analysis on commercial heating prices.
[22] For natural gas and electricity the exemption is limited to the energy levy.

Figure 2.26: Diesel prices for agricultural use compared to normal use (in €/litre)



Sources: Statbel for final prices and VAT, Fisconet plus for excise duties

2.5 Energy industries

KEY MESSAGES

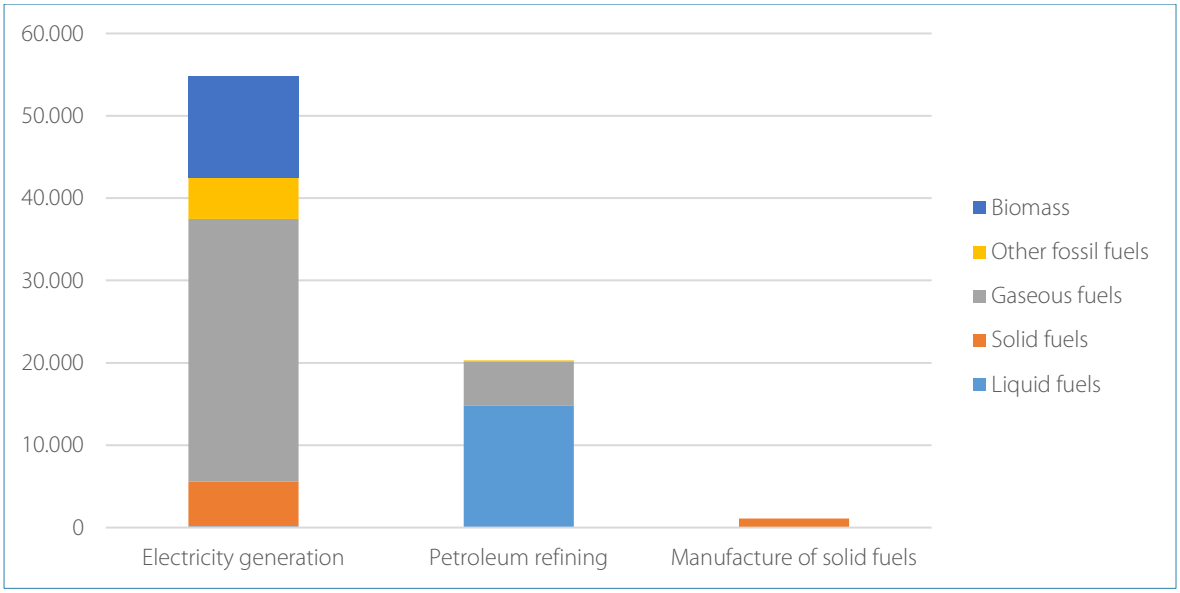
- The emissions of the energy industry strongly decreased since 1990, and were responsible for 17.7% of all GHG emissions in 2022.
- The electricity production sector and the petroleum refining sector have benefited from the higher gas, oil and electricity prices in recent years. The federal windfall profit tax and the solidarity contribution eliminated a part of these sudden profits.

2.5.1 Emissions and energy consumption

In 2022, the energy industry is responsible for 17.7% of all GHG emissions, of which 88.6% is covered by the EU ETS. More than three quarters of the emissions are linked to the generation of electricity. The rest originates from petroleum refining (20.9%) and manufacture of solid fuels (0.7%). Petroleum refining only takes place in Flanders. The manufacture of solid fuels contains the combustion in cokes ovens, and mining activities in the past. The emissions of the energy industry have significantly dropped since 1990 (-37.8%).

As illustrated in Figure 2.27, gas is the largest energy source for electricity generation (58.2%), followed by biomass (22.4%). Nuclear energy and renewable energy sources for electricity generation such as wind, solar and hydro, are not included in this figure (see Annex 1). For petroleum refining, both liquid and gaseous fuels are used.

Figure 2.27: Energy consumption of energy industries in 2022 (in GWh)



Sources: NIR 2024, MMR reporting 2024

2.5.2 Prices, taxes and costs

Although we have not much information available on energy product prices for the energy industry, there are three points worth noting in this context.

First, all energy products and electricity used to produce electricity are exempted from excise duties, except for heavy fuel oil, coal, coke and lignite. This is coherent with the fact that electricity is already subject to excise duties.

Second, the temporary solidarity contribution from the petroleum refining sector, introduced by the federal government in light of the energy crisis, came to an end. All oil companies with refining capacity had to pay €6.9 per ton of crude oil between January 2022 and December 2023. The Belgian Monitoring Committee (2024) estimated that this contribution generated €153 million of public revenue in 2023.

Third, in December 2022, the federal government adopted a tax for electricity production to capture the windfall profits in the context of the energy crisis. All market revenues above a ceiling of €130/MWh for electricity are taxed at 100%. For electricity from solid and gaseous biomass fuels and for incineration of urban waste, there is a ceiling of €180/MWh. The Monitoring Committee (2024) estimates the public revenues of this measure at €761 million in 2023, but does expect any revenues in 2024.

These windfall profits are linked to the design of the current European electricity market, which is based on a marginal pricing system. This means that the last electricity installation in the merit order that is needed to secure the electricity demand at a given time, determines the price paid for every MWh sold at that moment. Therefore, even if renewable energy produces electricity at a very low or zero cost, the producer will receive the price of the last installation activated. In the current situation, this will mostly be a gas installation. With the energy crisis of 2021-2022, gas prices at the wholesale market skyrocketed and so did the cost for the production of electricity in gas installations. As gas installations mostly determine the price on the electricity market, renewable energy producers and nuclear installations received much higher prices for their electricity than needed to cover the production costs, hence creating windfall profits. At the same time, some electricity production installations have power purchase agreements. These long-term contracts fix a price per energy unit to be sold in the future. Installations with power purchase agreements, signed at the time that energy prices were still low, did not enjoyed windfall profits in 2022 as their price to sell was fixed at a lower rate.

3. Public costs and revenues

KEY MESSAGES

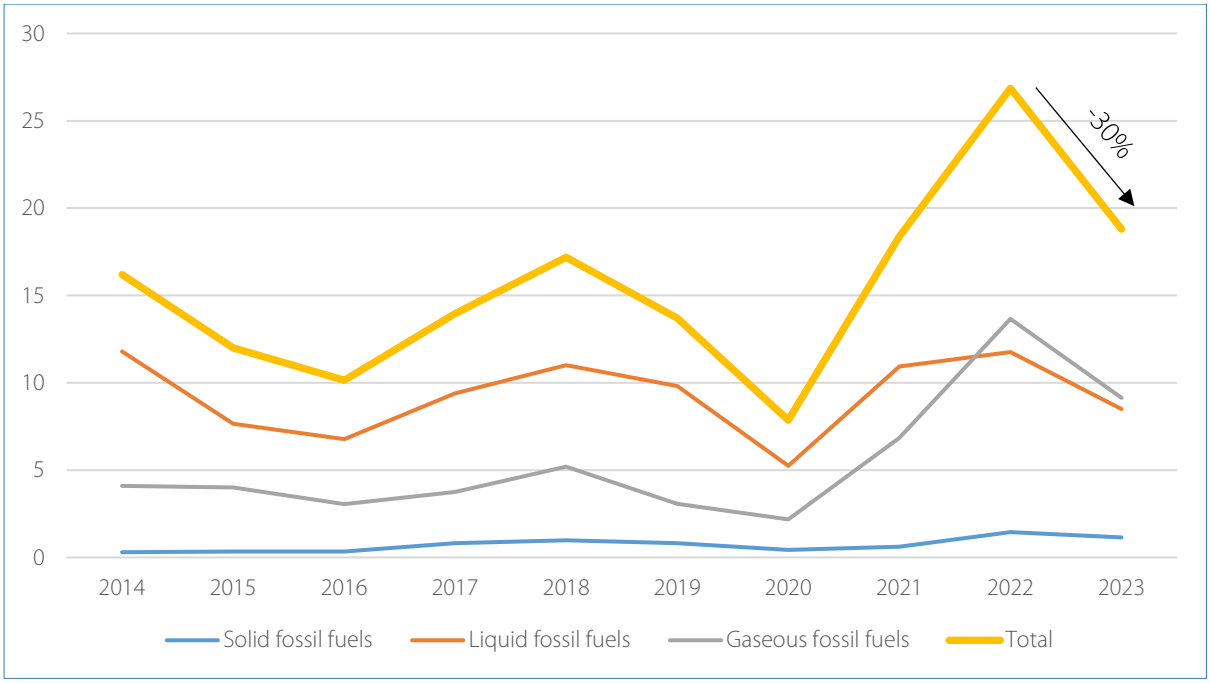
- Import of fossil fuels costed €18.8 billion in 2023, more than 3% of the Belgian GDP. It exposes households, companies and public entities to price and supply volatility and international dependencies. Shifting towards domestic, renewable energy remains key in lowering these dependencies.
- The public revenues from energy products and electricity represent 1.6% of Belgian GDP or €9.0 billion in 2022. The decarbonisation of the Belgian economy will lower public revenues from fossil energy products, which will not be fully compensated by revenues from the current and new ETS. Tax reforms, including the phasing out of fossil fuel subsidies, offers possibilities to increase public revenues and decrease public spending.

3.1 Import costs of fossil fuels

As Belgium has no oil wells or gas fields, all fossil fuels consumed are imported. In 2023, almost one third of all the imported oil came from OPEC countries, followed by Norway (16.3%), the USA (13.1%) and the UK (11.5%), whereas gas came for 34.6% from Norway and 18.1% from the UK (FPS Economy, 2024). This implies that fossil fuel revenues are not mirrored by equivalent investments in Belgium and will not create trickle down effects in the domestic economy. The total net import cost of fossil fuels[23] was €18.8 billion in 2023, or 3.2% of Belgian GDP (Eurostat, 2024). Figure 3.1 shows the vulnerability of Belgium relying on fossil fuels. A combination of post-pandemic growth, a cold winter in Northern Europe in 2021 and the Russia-Ukraine war, led to rapidly increasing fossil fuel prices in 2021 and 2022 (European Investment Bank, 2023). After the sharp increase from 2020 to 2022 (+243%), the import cost of fossil fuels for Belgium dropped by 30% in 2023. In the 2024 Belgian Country report (European Commission, 2024a), the European Commission repeats its message from previous reports that "Belgium has a high level of dependency on imported fossil fuels, which dents its competitiveness". Moreover, the Commission states that "remedying this situation requires accelerating the pace of action on the energy transition".

[23] Calculated as the total value of the import of fossil fuels minus the total value of the export of fossil fuels.

Figure 3.1: Estimation of net import cost of all fossil fuels (in billion €)



Source: National Bank of Belgium Online Statistics

3.2 Revenues from energy taxation

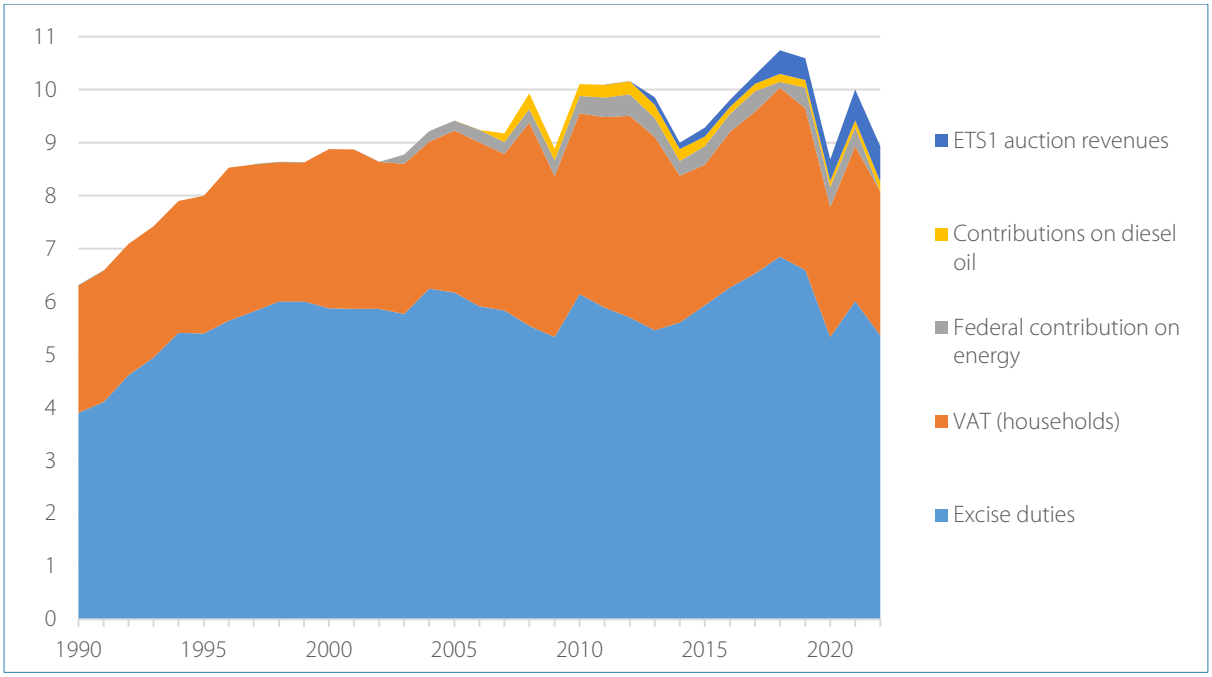
As described in Section 2, energy products and electricity are subject to excises duties, VAT and other contributions. Figure 3.2 shows the total amount of revenues from energy products and electricity since 1990. More information on the methodology can be found in Annex 1.

The total amount of revenues in 2022 equals €9.0 billion (in 2023 prices). The largest part (€5.4 billion or 59.2%) comes from excise duties on energy, followed by VAT (€2.7 billion or 30.0%). The revenues from ETS1 is the third largest revenues source on energy with €0.7 billion or 7.4%. Finally, the contribution on mineral oils (APETRA) and the contribution on diesel oil for the Social Heating Fund account for €0.2 billion.

Climate change policies can impact public revenues in multiple ways. First, decarbonisation will have a significant impact on energy taxation revenues, since a large part currently comes from fossil fuels or electricity produced with fossil fuels. Figure 3.3 shows the historic revenues from excise duties and estimates the future excise duty revenues based on different climate transition scenarios assuming no change in the tax system (see Annex 1 for more information on the methodology and the scenarios). The WEM or 'with existing measures' scenario can be seen as a business as usual scenario. The WAM or 'with additional measures' scenario takes into account additional measures that are not yet adopted or implemented but does not lead to climate neutrality in 2050. The CORE95 scenario leads to climate neutrality in 2050 based on a balanced approach between technological and behavioural changes.

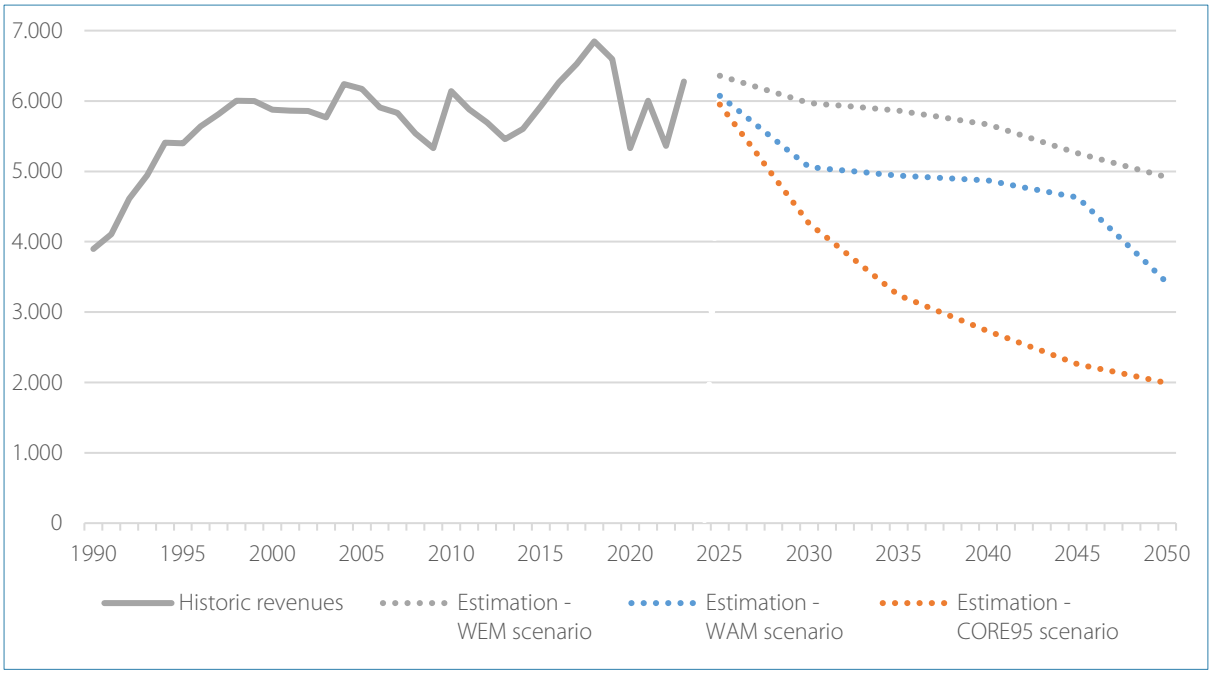
Excise duty revenues have increased since 1990, fluctuated in recent years and are expected to decrease towards 2050 (Figure 3.3). In case of the WAM scenario, excise duty revenues would decrease by approximately 2.9 billion euros (-45.7%) compared to the actual revenues in 2023. In case of the CORE95 scenario, excise duty revenues would decrease by approximately 4.3 billion euros (-68.3%).

Figure 3.2: Public revenues from energy products and electricity, 1990-2022 (in billion €, in 2023 prices)



Sources: Belgian Greenhouse Gas Registry for ETS, APETRA and Social Heating Fund annual reports for contributions on diesel oil, CREG annual reports for federal contribution on energy, own calculations for VAT and FPS Finance for excise duties

Figure 3.3: Excise duty revenues from energy products and electricity – estimations until 2050 (in million €, in 2023 prices)



Sources: FPS Finance for historical excise duty revenues, own calculations based on transition scenarios from CNC-Concere (WEM and WAM) and FPS Health and energy demand data from Statbel

According to the estimations, the largest decrease in excise duty revenues will occur in the transport sector (Figure 3.4). On the one hand, electric vehicles are more efficient in energy consumption than combustion vehicle. Hence, excise duties on electricity will not compensate for the lost revenues on fossil fuels. On the other hand, transition scenarios assume a certain shift towards soft mobility as well as railways and inland waterways, where certain

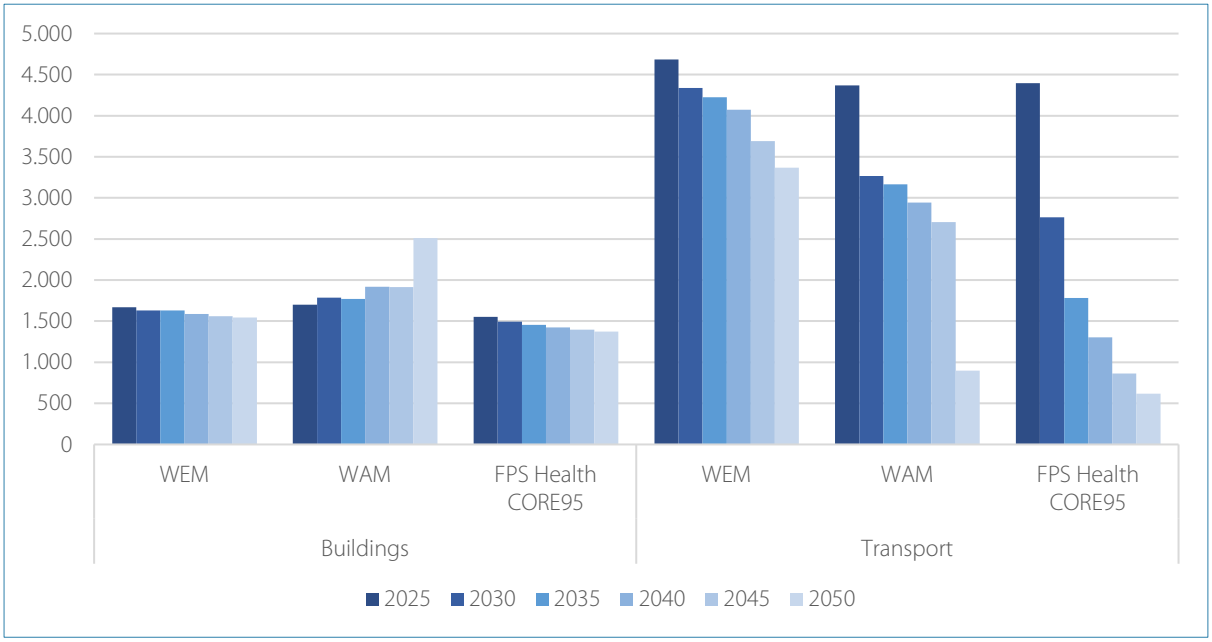
exemptions from excise duties currently exist. Due to a lack of data, railways and inland waterways are not included in the estimations.

In the buildings sector, the climate transition is likely to have far less impact on excise duty revenues as shown in Figure 3.4. The main explanation is that the estimations are calculated with the current excise duty rates, where electricity has much higher excise duty rates than gas and heating oil. An excise duty shift to increase the profitability of heat pumps might alter this picture, depending on the specificities of this reform.

These estimations should be interpreted with caution as much depends on the climate transition scenario. Transition scenarios based on technological solutions, like the scenarios from EnergyVille or the technology scenario from FPS Health, also lead to climate neutrality but have lower decreases in final energy demand. Therefore, the estimated impacts on excise duty revenues in these scenarios will be smaller. The opposite goes for transition scenarios based on more behavioural changes, such as the scenario from Clever or the behaviour scenario from FPS Health. Figure 0.9 in Annex 3 includes the estimations for the transport sector for these additional scenarios.

To conclude, without any change in the tax base and in the tax rates, a decarbonisation towards net zero will decrease the energy tax revenues from fossil fuels, such as VAT and excise duties on gas and oil. VAT and excise duties revenues will still be collected on electricity, however this will not compensate for the lost fossil fuel taxation revenues.

Figure 3.4: Excise duty revenues estimations per sector until 2050 (in million €, in 2023 prices)



Sources: own calculations based on transition scenarios from CNC-Concere (WEM and WAM) and FPS Health and energy demand data from Statbel

At the same time, new revenues arise, for example from carbon pricing. ETS1 allowance prices increased significantly in 2021 (see Section 2.3.3). ETS1 allowances represented 7.4% of the revenues on energy in 2022, compared to 5.7% in 2021 (Figure 3.2). In addition, the new ETS (ETS2) on buildings and road transport will generate a new revenue stream for European member states. For Belgium, this is expected to be between €4.1 billion and €5.7 billion for the period 2027-2030[24] (in 2020 prices, own calculations). Moreover, Belgium will receive approximately €0.9 billion from the Social Climate Fund and €2.5 billion from the CBAM revenues for 2026-2030[25]

[24] Assuming that no revenues go to the own resources of the EU. For more details see Section 4.1.
[25] Assuming that no revenues go to the own resources of the EU. For more details see Section 4.1.

(in 2020 prices, own calculations). However, the actual revenues will depend on the price levels of the ETS1 and ETS2 allowances (see Section 4.1).

In any case, with current price estimations the combination of these new revenues might not fully compensate the whole loss of revenues from taxation on fossil fuels. Therefore, it is important for policymakers to reflect on the budgetary impacts of the phasing out of fossil fuels and to adapt taxation to the decarbonisation of the economy. In federal countries like Belgium, the division of competences can impact these discussions, as some taxation policies are no longer federal competences. An important aspect in this discussion is the link with fossil fuel subsidies, as listed and analysed in the Federal Inventory on Fossil Fuels (FPS Finance and FPS Health, 2024). Phasing out fossil fuel subsidies can to some extend increases public revenues and decrease public spending.

4. Policy developments

Both the federal government and the European Union are working on new tax policies that stimulate emission reductions. We give a short overview of recent developments in this section.

4.1 Policy developments at the European level

Energy taxation directive

In July 2021, the European Commission put forward a proposal to revise the Energy Taxation Directive. This Directive, adopted in 2003, determines rules for the taxation of energy products and electricity. A revision is needed to align the Directive with the EU emission reduction targets and includes an update of different excise duty categories, an increase of the minimum rates and a decrease of the numbers of tax exemptions and reductions. Despite many technical discussions, no political agreement has been reached to date.

New emissions trading system (ETS2) and Social Climate Fund

In May 2023 the European Union adopted a new emissions trading system (ETS2) for buildings, road transport and some small industry not covered by the existing emissions trading system (ETS1) (European Council, 2023). Fuel distributors will need to cover their fuel sales by surrendering allowances. The yearly available allowances will be capped and yearly declining. Countries with a national carbon tax equal to or higher than the ETS2 allowance price can opt-out until 2030. For all other countries, including Belgium, the system should[26] start in 2027. All ETS2 allowances will be auctioned, so no allowances will be allocated for free. A part of the revenues from the auctioning will be put into a Social Climate Fund. Through this fund, member states will be able to support vulnerable households and micro-enterprises through structural measures and investments or with temporary direct income support. The remainder of the revenues will go directly to all member states who have to use them to support climate and social projects.

The future ETS2 price will result from the auctioning of ETS2 allowances. Its level is therefore uncertain. One reason is the inherent uncertainty on the actual cost of mitigation options. Moreover, external factors, such as cold or hot winters and international energy prices, influence the energy consumption for heating and transport and therefore the demand for ETS2 allowances. In addition, the deployment of public transition policies in these sectors at the EU, member state and local level plays a critical role as they will impact the demand for ETS2 allowances, and therefore the price.

Price uncertainty could pose challenges for households, especially those facing energy and transport poverty risks, as well as companies, for which the uncertainty complicates investment decisions. This uncertainty is also an issue for public finances, as ETS2 revenues are proportionally linked to the carbon price.

The ETS Directive contains three mechanisms for price limitation and which thereby also reduce price uncertainty. First, 20 million additional allowances will be released if the average auction price exceeds €45/tCO_2 for two consecutive months, until 2030. Second, 50 million additional allowances will be released if for more than three consecutive months the average auction price is more than twice[27] the average price during the six preceding consecutive months. Third, 150 million additional allowances will be released if for more than three consecutive months the average auction price is more than three times the average price during the six preceding months.

[26] The start of the ETS2 can be postponed to 2028 in case of exceptionally high gas or oil prices in 2026.
[27] In 2027 and 2028 these additional allowances are already released if the price is 1.5 times as high instead of double.

Furthermore, the auctioning of part of the allowances will be organized well in advance in order to facilitate the establishment of a stable price.

Initially, the European Commission estimated the ETS2 price at €51/tCO_2 in 2030, in 2020 prices (European Commission, 2021). Currently, the European Commission uses the estimation of €43/tCO_2 in 2030[28], in 2020 prices. Some other ex-ante estimations have been made (Kiel Institute for the World Economy, 2023; Abrell et al, 2024; Günther et al 2024). However, these are poorly informative as the ETS2 price is often not properly modelled and the estimations do not take into account the specific mechanisms of the ETS Directive that are designed to limit the price increases[29]. Yet, these estimations clearly show that without the implementation of additional public policies at different levels, the carbon price could rise well above €45/tCO_2 in 2030, with estimations up to €300/tCO_2.

Bearing in mind these considerations, we use €45/tCO_2 (in 2020 prices, i.e. €55.5/tCO_2 in 2024 prices) to perform the analyses of the impact on energy prices. The impact is directly proportional to the ETS2 price, so other ETS2 price levels can easily be estimated. For the estimations of the public revenues from 2026 to 2030, we use two trajectories: one trajectory starts at €23/tCO_2 in 2027 and goes up to €45/tCO_2 in 2030 ('EU scenario'), the other stays flat at a constant price of €45/tCO_2 ('High scenario'), all in 2020 prices.

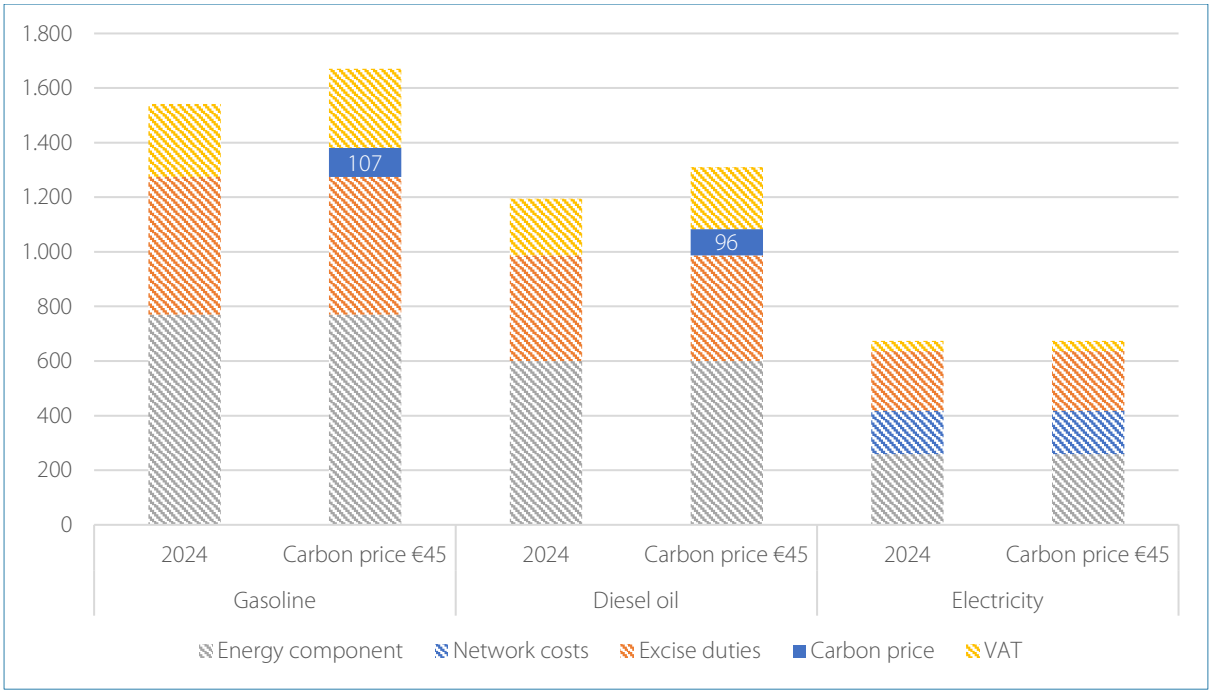
Figure 4.1 shows the impact of the ETS2 on the cost of a middle class car with a yearly consumption of 15 000 km. At an ETS2 price of €45/tCO_2 (in 2020 prices, i.e. €55.5/tCO_2 in 2024 prices), the price level triggering one of the stability mechanism, the fuel cost of driving would increase by 8.4% for gasoline and 9.7% for diesel oil compared to 2024 prices. If the ETS2 price increases by €1/tCO_2, this results in an increase of the average annual cost of gasoline of €1.92 and of €1.73 for diesel.

For residential heating, an ETS2 price of €45/tCO_2 (in 2020 prices, i.e. €55.5/tCO_2 in 2024 prices) adds 12.4% to the gas heating price and 12.7% to the heating oil price (Figure 4.2). If the ETS2 price increases by €1/tCO_2, the heating cost per year would increase with €3.1 for gas and €4.1 for heating oil.

A household with one middle class car on gasoline, driving 15 000 km per year, and a well-insulated house heated on gas, pays on average €1 863 per year for their energy demand of both transport and heating, based on 2024 energy prices. €900 of this are taxes[30]. With an ETS2 price of €45/tCO_2 this could go up to €2 040 of which €1 078 are taxes and ETS2. The increase in taxes is partly due to the ETS2 (+€152) and partly due to the VAT on ETS2 (+€25). For a household with an electric middle class car with the same consumption, and a well-insulated house with a heat pump the annual cost of energy demand for transport and heating is €946 of which €588 are taxes. For this household, the introduction of the ETS2 has no direct impact.

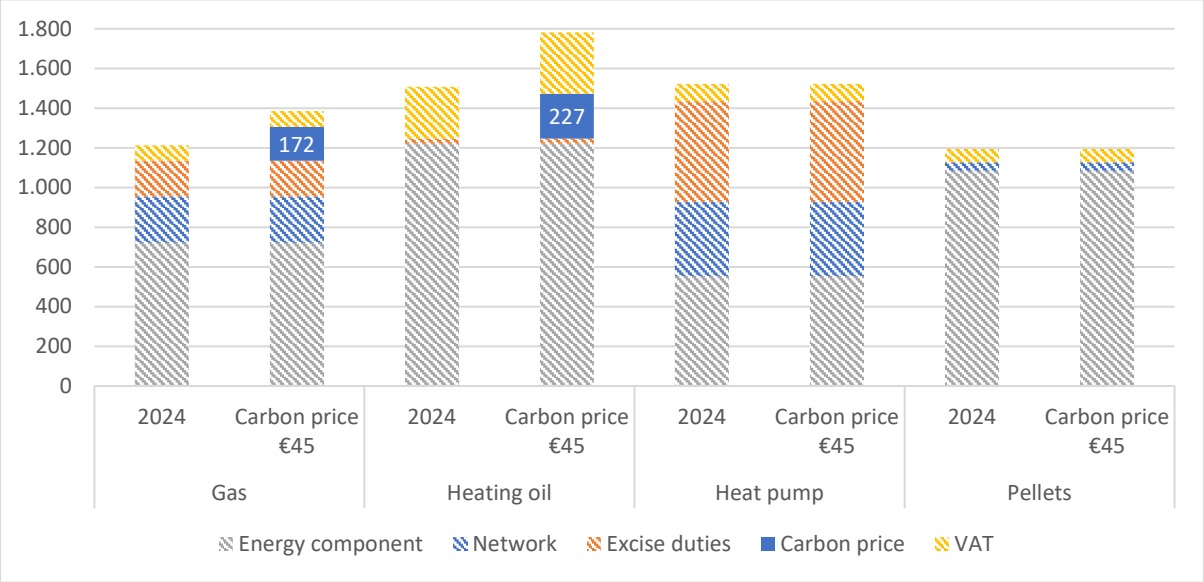
[28] Recommended parameters for reporting on GHG projections in 2025 – Update of June 2024.
[29] These estimations clearly show that without the implementation of additional public policies at different levels, the carbon price could rise well above €45/tCO_2 in 2030, with estimations up to €300/tCO_2. However, these estimations do not model the price limitation mechanisms of the ETS Directive.
[30] These include excise duties and VAT for fossil fuels and excise duties, network costs and VAT for electricity.

Figure 4.1: Estimated impact of an ETS2 price of €45/tCO_2 [31] on average energy cost for a middle class car (in €/year)



Sources: own calculations based on Statbel for final prices (S1 for 2024), Fisconet plus for excise duties, CREG monthly dashboards for electricity prices, VIAS Institute for car type consumption

Figure 4.2: Estimated impact of an ETS2 price of €45/tCO_2 [32] on average energy cost for a poorly insulated house (in €/year) – updated on 6 December 2024



Sources: own calculations based on CREG Monthly Dashboards for prices (1/6/2024)

[31] In 2020 prices, i.e. €55.5/tCO_2 in 2024 prices.
[32] In 2020 prices, i.e. €55.5/tCO_2 in 2024 prices

According to own calculations based on the above mentioned price scenarios from the European Commission, auction revenues from the ETS2 for Belgium would be worth €4.1 billion ('EU scenario') to €5.7 billion ('High scenario') for the period 2027-2030 (Figure 4.1.3, in 2020 prices)[33].

Belgium will also receive a fixed revenue share (up to 2.56%) from the Social Climate Fund, which will mainly get its revenues from ETS2 allowance auctioning. As the total budget of the Social Climate Fund is fixed at a maximum of €65 billion for the period 2026-2032, Belgium could receive maximum €1.7 billion. Own calculations based on the Commission's price scenarios estimate the Social Climate Fund revenues at €0.9 billion for the period 2026-2030[34] (Figure 4.3, in 2020 prices). However, the Social Climate Fund revenues actually received by Belgium will depend on the effective implementation of its Social Climate Plan.

With the introduction of ETS2, waste, agriculture and land use, land use change and forestry will be the only emissions sectors not covered by an emissions trading system in the European Union. The European Commission commissioned a first study in 2023 (European Commission, 2023) and a second in June 2024 on the possibility of an ETS for agriculture, but no legislative work has been done on this to date.

Carbon border adjustment mechanism (CBAM)

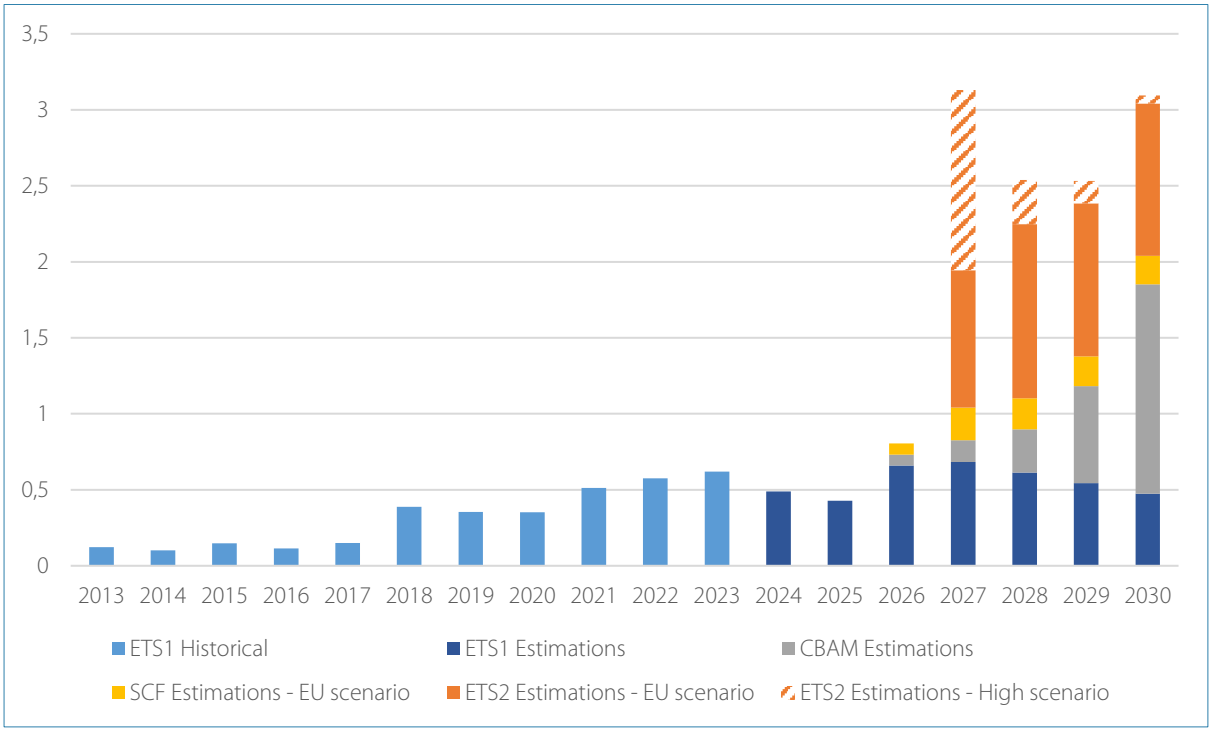
In addition, the European Union created a mechanism to avoid carbon leakages to countries outside of the EU, a Carbon Border Adjustment Mechanism (CBAM). This mechanism taxes the carbon emitted during the production of goods outside of the EU when the goods enter the EU and are released for free circulation. It applies to goods with a carbon intensive production process and with a high risk of carbon leakage, namely aluminium, cement, electricity, fertilisers, hydrogen, iron and steel.

The CBAM revenues are redistributed between the member states. The amount of revenues in the coming years strongly depends on the ETS1 price. At a fixed ETS1 price of €70/tCO_2, Belgium will receive €2.5 billion for 2026-2030 (Figure 4.3, in 2020 prices)[35].

Figure 4.3 summarizes the estimated future revenues from ETS1, ETS2, Social Climate Fund and CBAM. We show a 'Low' and a 'High' estimation. The 'Low' estimation is based on the 'EU scenario'[36] for the ETS2 price. The 'High' estimation is based on the 'High scenario'[37] for the ETS2 price. The ETS1 price is fixed in both scenarios at €70/tCO_2. In 2030, these revenue streams could collect up to €3.1 billion ('High' estimation in 2020 prices).

[33] These estimations are based on the assumption that no revenues go to the own resources of the EU (EU-budget). Negotiations are ongoing at the European level to dedicate as from 2028 30% of the ETS2 revenues to the EU own resources. This would lower the ETS2 revenues for Belgium to €3.7-€5.3 billion (in 2020 prices).
[34] With a future ETS1 price fixed at €70/tCO_2.
[35] These estimations are based on the assumption that no revenues go to the own resources of the European Union. Negotiations are ongoing at the European level to dedicate as from 2028 75% of the CBAM revenues to the EU own resources. This would lower the CBAM revenues for Belgium to €0.7 billion (in 2020 prices).
[36] The 'EU scenario' is a scenario from the European Commission and is based on an ETS2 price ranging from €23.2/tCO_2 in 2027 to €43.7/tCO_2 in 2030 (in 2020 prices).
[37] The 'High scenario' is based on an ETS2 price of €45/tCO_2 (in 2020 prices).

Figure 4.3: Estimated revenues from ETS1, ETS2, Social Climate Fund and CBAM for Belgium (in billion €, in 2020 prices)



Sources: Belgian Greenhouse Gas Registry for historical ETS revenues, own calculations for future revenues

4.2 Policy developments in Belgium

At Belgian level, a fiscal reform has been proposed by means of the blueprint of federal Minister of Finance Vincent Van Peteghem in July 2022 (Van Peteghem, 2022). Some proposals of the plan have already been executed. First, a step has been taken for the professional diesel, lowering the reimbursement by 11.0% from 2022 to 2026, but it still remain at a significant level.

Second, the tax deduction on investments has been reformed in May 2024. Environmental investments and investments in energy efficiency, renewable energy and zero-emission transport and related digital investments will receive increased tax deductions: 30% for large companies and 40% for SME's compared to the 10% base deduction. At the same time, investments harmful to the environment will no longer receive any tax deduction at all. The list of positive and negative investments still needs to be defined in a Royal Decree. The law foresees an update of the investment lists every three years. A recurrent monitoring and evaluation in preparation of these updates will be needed to keep them in line with technological evolutions.

Third, the VAT on electricity has been permanently lowered and the excise duties are permanently coupled to the energy prices through the cliquet system. In addition, the federal government agreed in June 2024 on an exception to the *non bis in idem* principle, which allows the regional entities to shift historical costs, originating from renewable energy subsidies, from the electricity bill to fossil heating fuels.

Finally, the federal government agreed on a partial excise duty shift from electricity to fossil heating fuels in the last update of the National Energy and Climate Plan, however without any specifications or concrete actions.

Conclusion

This publication has analysed the emissions and energy consumption of the largest emitting sectors in Belgium, as well as the existing energy taxation and pricing instruments in these sectors. The pricing and fiscal aspects of energy have shown a complex and multifaceted landscape with many different rates in excise duties depending on the sector, the use of the energy products and the type of consumer. Many specific groups or sectors receive reduced rates or even full exemptions from excise duties, generating fossil fuel subsidies. In addition, several other fossil fuel subsidies were mentioned, for example social tariffs for electricity and gas and company cars.

As parts of energy and climate policy are regional competences, the publication includes an non-exhaustive overview of related regional policies. We have seen that incoherencies exist between regions and between the federal and regional approaches, leading to less readability in climate and energy policies. The European Union adds a strong third layer to this context. The EU-level will gain importance in energy taxation in the coming years with the introduction of the new ETS for buildings, road transport and small industry, as well as the Social Climate Fund and the Carbon Border Adjustment Mechanism.

The main conclusion that emerges from this analysis is clear: there is an urgent need to closely monitor and reform the taxation and pricing of carbon and energy. Such reforms are essential for several reasons. Shifting taxation towards carbon and fossil fuels can steer decarbonisation by incentivizing low carbon investments and behaviours. Furthermore, reforming taxation and pricing mechanisms can anticipate changes in public revenues. An important aspect in this regard is the phasing out of fossil fuel subsidies. In addition, new revenues from energy taxation have a potential role in financing public policies related to the transition, both in terms of investments as well as protecting vulnerable groups in society. Finally, reforming the energy system can make it more resilient and capable of withstanding shocks like the 2022 energy crisis.

In summary, addressing the complexities and inconsistencies of the tax and pricing aspects of our current energy system is not only a critical step towards a greener and more sustainable future, but is also a matter of financial prudence. By monitoring and reforming the Belgian energy system, we can effectively encourage decarbonisation, safeguard public revenues and build a more resilient framework for the energy transition.

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Annexes

Annex 1: Methodology

The following changes have been made in the methodology of this publication compared to the previous edition. We added pellet condensing boilers to the heating technologies (see 'Buildings prices'). We added an estimation of future excise duty revenues (see 'Public revenues').

Emissions and consumptions

All emissions and consumption data are derived from the National Inventory Report 2024 (NIR) on the Belgian greenhouse gas emissions from 1990 to 2022 (National Climate Commission, 2024a). This inventory under the framework of the UNFCCC contains all greenhouse gasses. We convert the different greenhouse gas emissions to carbon dioxide equivalents based on AR5 conversion factors. Electricity is no separate fuel source in the statistics, although it has a significant share in the transport, buildings and other sectors. Taking electricity into account in those sectors, would lead to double counting. Emissions and consumption of fossil fuels and biomass for electricity production are counted in the energy sector. Electricity production from nuclear energy and renewable sources, such as solar panels and wind turbines, are not in the NIR since they do not directly generate emissions.

Energetic emissions in the NIR are based on the regional energy balances. Regarding the transport sector, last years the emissions were based on the fuels sold from the federal petroleum balance. Since the 2023 submission these are based on the regional statistics of fuels sold.

Conversion factors for prices

To compare all different energy sources, we need conversion factors to go from litres to kg (CBS, 2023) and from kg to kWh (European Commission, 2019). Following conversion factors are used:

- Gasoline: 9.17 kWh/litre
- Diesel oil: 10.03 kWh/litre
- LPG: 13.14 kWh/kg
- Propane in bulk: 6.96 kWh/litre

Transport prices

Regarding energy prices in 2024, we use averages based on the prices of the first 6 months.

Regarding electricity prices for transport, we assume that electric cars are always charged at home and that this house has no solar panels.

In order to compare fuel prices for electric and internal combustion engine cars, we use specific car models, based on a study from VIAS-institute (Dons et al., 2023). To limit the scope of this exercise, we selected three of their seven car categories: city cars, middle class cars and compact crossovers. Tables 5, 6 and 7 summarize the most important characteristics per car model.

Table 5: City car models

City car	Fiat 500 Berlina	Fiat 500 1.2 Lounge	Fiat 500 1.3 Multijet
Car type	BEV	ICEV	ICEV
Energy type	Lithium-ion	Gasoline	Diesel oil
WLTP-consumption (kWh/100km or l/100km)	12.7	4.9	3.4
Battery capacity (kWh)	23.8	-	-

Table 6: Middle class car models

Middle class car	Tesla Model 3 Standard Range Plus	Audi A4 Avant 2.0 TFSI	Audi A4 Avant 2.0 TDI
Car type	BEV	ICEV	ICEV
Energy type	Lithium-ion	Gasoline	Diesel oil
WLTP-consumption (kWh/100km or l/100km)	14.2	5.6	4.3
Battery capacity (kWh)	50	-	-

Table 7: Compact crossover models

Compact crossover	Volkswagen ID.4 1st	Volkswagen Tiguan 1.4 TSI	Volkswagen Tiguan 2.0 TDI
Car type	BEV	ICEV	ICEV
Energy type	Lithium-ion	Gasoline	Diesel oil
WLTP-consumption (kWh/100km or l/100km)	18.2	6.8	4.8
Battery capacity (kWh)	77	-	-

Buildings prices

We build three housing scenarios to compare heating prices from different energy sources: a poorly insulated house, a moderately insulated house and a well-insulated house. Table 8 shows the consumptions per house. We only take into account pellets used in a condensing boiler as pellet stoves are not fit to used as main heating source.

Table 8: Energy consumption per energy product for three housing scenarios

	Poorly insulated house	Moderately insulated house	Well-insulated house
Final heat demand	15 000 kWh	12 500 kWh	4 000 kWh
Gas oil	15 306 kWh	12 755 kWh	4 082 kWh
Natural gas	15 306 kWh	12 755 kWh	4 082 kWh
Heat pump	5 000 kWh	3 333 kWh	889 kWh
Pellets	15 625 kWh	13 021 kWh	4 167 kWh

Industry prices

The gas and electricity consumption profiles come from the study from FORBEG (2024). In Section 2.3.3 we use the G1 and E3 consumption profile. Table 9 shows the annual energy demand for all profiles. Industrial prices are also determined by other aspects, e.g. peak demand, contracted capacity. For those details we refer to the FORBEG study.

Table 9: Annual energy demand per energy type for industrial profiles

	Annual energy demand
Gas G0	1 250 MWh
Gas G1	100 000 MWh
Gas G2	2 500 000 MWh
Electricity E0	2 000 MWh
Electricity E1	10 000 MWh
Electricity E2	25 000 MWh
Electricity E3	100 000 MWh
Electricity E4	500 000 MWh

Other tax policies and subsidies

This section gives a non-exhaustive list of additional policies from both regional and federal entities. All information on the specific policies come from the official webpages of the regional and federal government. Policies from cities and municipalities are beyond the scope of this paper.

The total costs and revenues of these policies shown in Sections 2.1.3 and 2.2.3 are based on publicly available information or on information as provided by the relevant administrations and agencies. Table 10 gives an overview of all the sources of the total costs and revenues in Tables 1, 2 and 3.

Table 10: Sources of total costs and revenues from regional and federal policies

Policy	Source
Kilometre charge on trucks	Expenditures of 2023, publicly available at Viapass
Ecological premium *Ecologiepremie+*, GREEN investment support and Strategic ecology support (for charging stations, electric, hybrid or hydrogen trucks and busses, green heating and energy efficiency)	Expenditures of 2023, provided by VLAIO
Premium for bike purchase for individuals and companies	Expenditures of 2020 – September 2023, provided by SPW Mobilité
Brussel'Air premium	Available budget for 2023, provided by Leefmilieu Brussel
Compensation or commuter traffic by bike	Expenditures of 2021, publicly available at FPS Finance
Tax credit for individuals for charging stations	Expenditures of 2022, provided by FPS Finance
Increased tax deduction for companies for charging stations	Expenditures of 2021, provided by FPS Finance
Mijn Verbouwpremie for households and business	Expenditures of 2023, publicly available at VEKA

Policy	Source
Premium *RENOLUTION*	Expenditures of 2023, provided by Leefmilieu Brussel
EPC-label premium	Expenditures of 2023, publicly available at VEKA
Solar panel premium (households)	Expenditures of 2023, publicly available at VEKA
Green certificates	Expenditures of 2021, publicly available at CIRCABC (CNC-Concere, 2023)
Rent and insulation premium	Expenditures of 2023, publicly available at VEKA
Mijn Verbouwlening	Total amount of loans for September 2022 – December 2022, provided by VEKA
Renopack loan	Expenditures of 2023, provided by SWCS
AMURE for energy efficiency and insulation	Expenditures of 2021, publicly available at CIRCABC (CNC-Concere, 2023)
Increased investment deduction for energy savings	Expenditures of 2021, publicly available at CIRCABC (CNC-Concere, 2023)
Company cars	Estimation of fossil fuel subsidy in 2021, publicly available at FPS Finance and FPS Health (FPS Finance and FPS Health, 2024)

Public revenues

Figure 3.2 is based on several calculations and sources. The excise duty revenues are based on public data of the FPS Finance and include the excise duty, the levy on energy and the inspection fee (FPS Finance, 2024). The contributions on diesel oil include the APETRA-contribution and the contribution for the Social Heating Fund and are based on the annual report from APETRA and the Social Heating Fund. The federal contribution is estimated based on the annual reports of the CREG, as there are no yearly total revenues available.

The VAT revenues are based on own calculations. We calculated the VAT revenues for all residential consumption, as companies in most cases recover the VAT they paid. For the buildings sector, calculations are based on consumptions from the national energy balance (Statbel, 2023b) and on prices from Eurostat (gas and electricity) and Statbel (heating oil). For the transport sector, we used the consumption of cars (MMR reporting, 2024), which we corrected for the consumption by company cars based on percentage of company cars in the total Belgian fleet (Statbel, 2024). The fuel prices for transport are based on the Weekly Oil Bulletins (European Commission, 2024b).

Figure 3.3 and Figure 3.4 is based on several calculations, sources and assumptions. The historical excise duty revenues in Figure 3.3 are the same as in Figure 3.2 (see above). For the estimations of the future excise duty revenues we use the energy demands per sector from different climate transition scenarios.

- The WEM scenario or 'with existing measures' scenario is the combination of all measures that have already been adopted and implemented. This scenario can be seen as a reference or business as usual scenario and does not lead to climate neutrality in 2050 (CNC-Concere, 2023a).
- The WAM scenario or 'with additional measures' scenario takes into account additional measures that are not yet implemented or adopted. This scenario still does not lead to climate neutrality in 2050 (CNC-Concere, 2023a).
- The CORE95 scenario is one of the scenarios built the Climate Change Department of the FPS Health, based on the CLIMACT tool (FPS Health, 2021). The scenario is defined on a balanced approach between

the BEHAVIOUR scenario which emphasis transformational changes in mobility, housing and dietary patterns, and the TECHNOLOGY scenario, which relies more heavily on technological developments. All three scenarios lead to climate neutrality in 2050.

- The Central scenario from EnergyVille leads to climate neutrality in 2050 and "envisions a balanced approach to achieving carbon neutrality in Belgium, incorporating various technological options for energy efficiency, fuel substitution, electrification, and carbon removal" (EnergyVille, 2024). It is a technology based scenario and does not take into account any behavioural changes or sufficiency measures.
- The CLEVER scenario leads to carbon neutrality at the European level at 2050, with a 100% renewable energy mix and "mobilises the energy demand reduction potential made possible through sufficiency and efficiency" (négaWatt, 2023).

However, the energy demand data in these scenarios do not offer the granularity needed to calculated excise duty revenues. Therefore, we make some assumptions. For the transport sector, we apply the ratio of the passenger/freight transport total energy demand from the CORE95 scenario to the energy demand of each energy type separately, in both the CORE95 scenario and the other scenarios. We calculate a ratio diesel/gasoline based on the number of cars, busses and trucks (Statbel, 2024) and apply this to the energy demand for liquid fossil transport fuels in all the scenarios. Next, we assume that all diesel used for freight transportation receives the reimbursement on excise duties for professional diesel. We also assume that all liquid biofuels are taxed at the same rate as fossil liquid fuels and we assume that all electricity is taxed at the rate of the first excise duty bracket. Finally, we only take the road transport into consideration, due to a lack of data. For the buildings sector, we calculate a residential/non-residential ratio per energy type based on the final energy demand data from the energy balance (Statbel, 2023b) and apply this to the energy demand of the buildings sector for the CORE95 scenario. We use the first bracket excise duty rates for electricity and gas, except for non-residential electricity where we use the second bracket as the first one is very small. We do not take into account the reduced rates for protected consumers. Other sectors (industry, agriculture) are left out of the analysis, due to limited granularity and availability of the data.

For the future excise duty rates, we assume that the excise duty rates remain at their level of 1 July 2024. Except for professional diesel, where we take into account the adopted reduction in the reimbursement (see Section 2.1.2). Finally, we calibrate the future excise duty revenues on the historical excise duty revenues by correcting for the average percentual deviation between historical and estimated excise duty revenues in 2019 and 2020.

Annex 2: Excise duties on energy products and electricity

Excise duties are indirect taxes which are payable for the consumption or use of certain products, whether they are manufactured within the country, originated from a Member State of the European Union or imported from a third country. A distinction can be made between (ordinary) excise duties, special excise duties, the levy on energy (on energy products and electricity) and the inspection fee (on domestic fuel oil). The total excise duty is the sum of these four categories. Energy products and electricity are subject to excise duties at the time of their production, extraction or importation.

Council Directive 2003/96/EC of 27 October 2003 is concerned with restructuring the Community framework for the taxation of energy products and electricity. At a national level, provisions can be found in Chapter XVIII of Title XI – Finance of the Programme Law of 27 December 2004. For the application of Chapter XVIII of the Programme Law of 27 December 2004, 'excise duty' means (ordinary) excise duty, special excise duties, the inspection fee on domestic fuel oil and the levy on energy.

In addition, the *Wet houdende hervorming van de fiscaliteit van 19 maart 2023/ Loi portant réforme de la fiscalité sur la facture d'énergie du 19 mars 2023* reformed the VAT as well as the excise duty rates for gas as heating fuel and electricity. Following the temporary VAT reduction during the energy crisis, this law permanently puts the VAT on gas as heating fuel and electricity on 6%. To compensate the extra budgetary expenses, the government increased the excise duty rates and created a cliquet system to link the excise duty rates to market price levels. Higher electricity and gas prices on the international markets lead to an automatic decrease of the excise duty rates and vice versa. Table 11 gives an overview of the different boundaries and mechanisms in the cliquet system. The boundaries are indexed on the 1st of January based on the difference in consumption price index of June from the two previous years.

Table 11: Cliquet system for electricity and gas as heating fuel (since 1/4/2023 – indexed values on 1/1/2024)

	Electricity	Gas as heating fuel
1. If market price higher than …	€260.39/MWh	€104.15/MWh
… decrease of special excise duty,	6% of difference between €260.39/MWh and the average price	6% of difference between €104.15/MWh and average price
but special excise duty never lower than …	€0/MWh	€0.0822/MWh
2. If market price lower than …	-	€46.87/MWh
… decrease of special excise duty	-	6% of difference between €46.87/MWh and average price
3. If market between high and low boundary, special excise duty returns to …	€47.48/MWh	€8.23/MWh

Table 12 shows the excise duty rates valid on 1st of July 2024[38]. For some products these tariffs are only valid for a limited period.

[38] For previous excise duty rates, we refer to the webpage of FPS Finance: https://eservices.minfin.fgov.be/myminfin-web/pages/public/fisconet/document/b91925cd-fbba-4da5-8b9a-06974300ff1e

Table 12: Excise duty rates on energy products (valid on 1/7/2024)

Product	Unit	Excise duty	Special excise duty	Levy on energy	Total amount
A. Leaded petrol	€/1000 l	245.4146	393.7887	28.6317	667.835
B. Unleaded petrol ≥ 98 octane 1. High sulphur and high aromatic level	€/1000 l	245.4146	341.8221	28.6317	615.8684
2. Low sulphur and low aromatic level	€/1000 l	245.4146	326.1124	28.6317	600.1587
3. Other kinds of unleaded petrol	€/1000 l	245.4146	326.1124	28.6317	600.1587
C. Kerosene 1. Used as motor fuel	€/1000 l	294.9933	308.9057	28.6317	632.5307
2. Used as motor fuel for industrial and commercial purposes	€/1000 l	18.592	4.2925	0	22.8845
3. Used as heating fuel 3.1 Business use	€/1000 l	0	0	19.558	19.558
3.2 Non-business use	€/1000 l	0	0	19.558	19.558
D. Gas oil with a sulphur level exceeding 10 mg/kg 1. Used as motor fuel	€/1000 l	198.3148	402.6798	14.8736	615.8682
2. Used as motor fuel for industrial and commercial purposes	€/1000 l	18.592	4.2925	0	22.8845
3. Used as heating fuel 3.1 Business use	€/1000 l	0	0	18.6521[39]	18.6521

[39] Including €10 inspection fee

Product	Unit	Excise duty	Special excise duty	Levy on energy	Total amount
3.2 Non-business use	€/1000 l	0	0	18.6521[40]	18.6521
E. Gas oil with a sulphur level not exceeding 10 mg/kg 1. Used as motor fuel	€/1000 l	198.3148	386.9702	14.8736	600.1586
2. Used as motor fuel for industrial and commercial purposes	€/1000 l	18.592	4.2925	0	22.8845
3. Used as heating fuel 3.1 Business use	€/1000 l	0	0	17.2564[41]	17.2564
3.2 Non-business use	€/1000 l	0	0	17.2564[42]	17.2564
F. Heavy fuel oil 1. Business use	€/1000 kg	13	3.346	0	16.346
2. Non-business use	€/1000 kg	13	3.346	0	16.346
3. Used for the production of electricity	€/1000 kg	13	3.346	0	16.346
G. Liquefied petroleum gas 1. Used as motor fuel	€/1000 kg	0	0	0	0
2. Used as motor fuel for industrial and commercial purposes	€/1000 kg	37.184	7.4953	0	44.6792
3. Used as heating fuel 3.1 Business use - butane	€/1000 kg	0	0	18.6397	18.6397
3.2 Non-business use - butane	€/1000 kg	0	0	18.6397	18.6397
3.3 Business use - propane	€/1000 kg	0	0	18.9097	18.9097

[40] Including €10 inspection fee
[41] Including €10 inspection fee
[42] Including €10 inspection fee

Product	Unit	Excise duty	Special excise duty	Levy on energy	Total amount
3.4 Non-business use - propane	€/1000 kg	0	0	18.9097	18.9097
H. Natural gas (upper combustion value) 1. Used as motor fuel	€/MWh	0	0	0	0
2. Used as motor fuel for industrial and commercial purposes	€/MWh	0	0	0	0
3. Used as heating fuel 3.1 Business use – companies holding an *energiebeleidsovereenkomst*, an *accord de branche* or a similar energy efficiency agreement 0 tot 20 000 MWh	€/MWh	0	0.66	0.54	1.2
20 000 to 50 000 MWh	€/MWh	0	0.56	0.54	1.1
50 000 to 250 000 MWh	€/MWh	0	0.54	0.54	1.08
250 000 to 1 000 000 MWh	€/MWh	0	0.42	0.54	0.96
1 000 000 to 2 500 000 MWh	€/MWh	0	0.22	0.54	0.76
From 2 500 000 MWh	€/MWh	0	0.15	0.54	0.69
3.2 Business use - other companies 0 to 20.000 MWh	€/MWh	0	0.66	0.9978	1.6578
20 000 to 50 000 MWh	€/MWh	0	0.56	0.9978	1.5578
50 000 to 250 000 MWh	€/MWh	0	0.54	0.9978	1.5378
250.000 to 1 000 000 MWh	€/MWh	0	0.42	0.9978	1.4178
1.000.000 to 2 500 000 MWh	€/MWh	0	0.22	0.9978	1.2178
From 2 500 000 MWh	€/MWh	0	0.15	0.9978	1.1478
3.3 Non-business use – protected residential customer on low incomes or in precarious situations	€/MWh	0	2.77	0	2.77
3.3 Non-business use - other 0 to 12 MWh	€/MWh	0	8.23	0.9978	9.2278

Product	Unit	Excise duty	Special excise duty	Levy on energy	Total amount
From 12 MWh	€/MWh	0	9.2027	0.9978	10.2005
I. Coal, coke and lignite	€/1000 kg	0	0	18.9097	18.9097
J. Electricity 1. Supplied to end user connected to the transport or distribution network with a nominal voltage > 1kV – business use 0 to 20 MWh	€/MWh	0	14.21	0	14.21
20 to 50 MWh	€/MWh	0	12.09	0	12.09
50 to 1 000 MWh	€/MWh	0	11.39	0	11.39
1 000 to 25 000 MWh	€/MWh	0	10.69	0	10.69
25 000 to 100 000 MWh	€/MWh	0	2.73	0	2.73
From 100 000 MWh	€/MWh	0	0.50	0	0.50
2. Supplied to end user connected to the transport or distribution network with nominal voltage ≤ 1kV 2.1 Business use 0 to 20 MWh		0	14.21	1.9261	16.1361
20 to 50 MWh	€/MWh	0	12.09	1.9261	14.0161
50 to 1 000 MWh	€/MWh	0	11.39	1.9261	13.3161
1.000 to 25 000 MWh	€/MWh	0	10.69	1.9261	12.6161
25 000 to 100 000 MWh	€/MWh	0	2.73	1.9261	4.6561
From 100 000 MWh	€/MWh	0	0.50	1.9261	2.4261
2.2 Non-business use – protected residential customer on low incomes or in precarious situations	€/MWh	0	23.62	0	23.62
2.3 Non-business use – other customers 0 to 3 MWh	€/MWh	0	47.48	1.9261	49.4061
3 to 20 MWh	€/MWh	0	47.48	1.9261	49.4061
20 to 50 MWh	€/MWh	0	45.46	1.9261	47.3861
50 to 1 000 MWh	€/MWh	0	44.78	1.9261	46.7061
1.000 to 25 000 MWh	€/MWh	0	44.11	1.9261	46.0361
From 25 000 MWh	€/MWh	0	36.28	1.9261	38.2061

Energy products (see Article 415 of the Programme Law of 27 December 2004 for definitions of these products) when intended for use, offered for sale or used as motor fuel or heating fuel, energy products for which no rate of taxation is specified in the above table are to be taxed, according to use, at the rate for the equivalent motor fuel or heating fuel. In addition to the above-mentioned energy products, any product is to be taxed as an equivalent to motor fuel when it is intended for use, offered for sale or used as motor fuel or as an additive or filler in motor fuels. Likewise, in addition to the above-mentioned energy products, any other hydrocarbon, except for peat, is to be taxed at the rate for the equivalent energy product if it is intended for use, offered for sale or used as heating fuel.

Exemptions[43]:

1. Exemptions are provided (unless otherwise stipulated) for:
    a. energy products used for purposes other than as motor fuels or as heating fuels;
    b. dual use of energy products (= used both as heating fuels and for purposes other than as motor fuels or heating fuel. Only the use of energy products for chemical reduction and in electrolytic and metallurgical processes is considered as dual use);
    c. electricity used principally for the purposes of chemical reduction and in electrolytic and metallurgical processes;
    d. energy products and electricity used for mineralogical processes;
    e. energy products (except heavy fuel oil, coal, coke and lignite) and electricity used to produce electricity and electricity used to maintain the ability to produce electricity;
    f. energy products supplied for use as motor fuel or heating fuel for the purpose of air navigation, excluding private pleasure flying;
    g. energy products supplied for use as motor fuel or heating fuel for the purposes of navigation within Community waters (including fishing) and electricity produced on board a craft, excluding private pleasure craft.
2. Unless otherwise stipulated, further exemptions are provided for the following products used under fiscal supervision:
    a. taxable products used in the field of pilot projects for the technological development of more environment-friendly products or in relation to fuels from renewable resources;
    b. electricity that is not removed from the transmission or distribution system
        - from solar, wind, wave, tidal or geothermal sources,
        - from hydraulic sources produced in hydroelectric installations,
        - from biomass or products derived from biomass,
        - by means of fuel cells.
    c. energy products and electricity used for combined heat and power generation;
    d. cogeneration electricity[44] provided that the combined generators are environmentally friendly and the electricity produced is not removed from the transmission or distribution system;
    e. motor fuel used for the manufacture, development, testing and maintenance of aircraft and ships;
    f. gas oil, kerosene and electricity used for the carriage of passengers and goods by rail;
    g. energy products supplied for use as fuel for navigation on inland waterways (including fishing), excluding navigation in private pleasure craft, and electricity produced on board a craft;
    h. energy products supplied for use as fuel, used for dredging operations in navigable waterways and in ports;
    i. energy products and electricity used exclusively in agricultural, horticultural or piscicultural works and in forestry;

The exemption for natural gas and electricity is limited to the energy levy.

    j. coal, coke, lignite and solid fuels, where used by households.

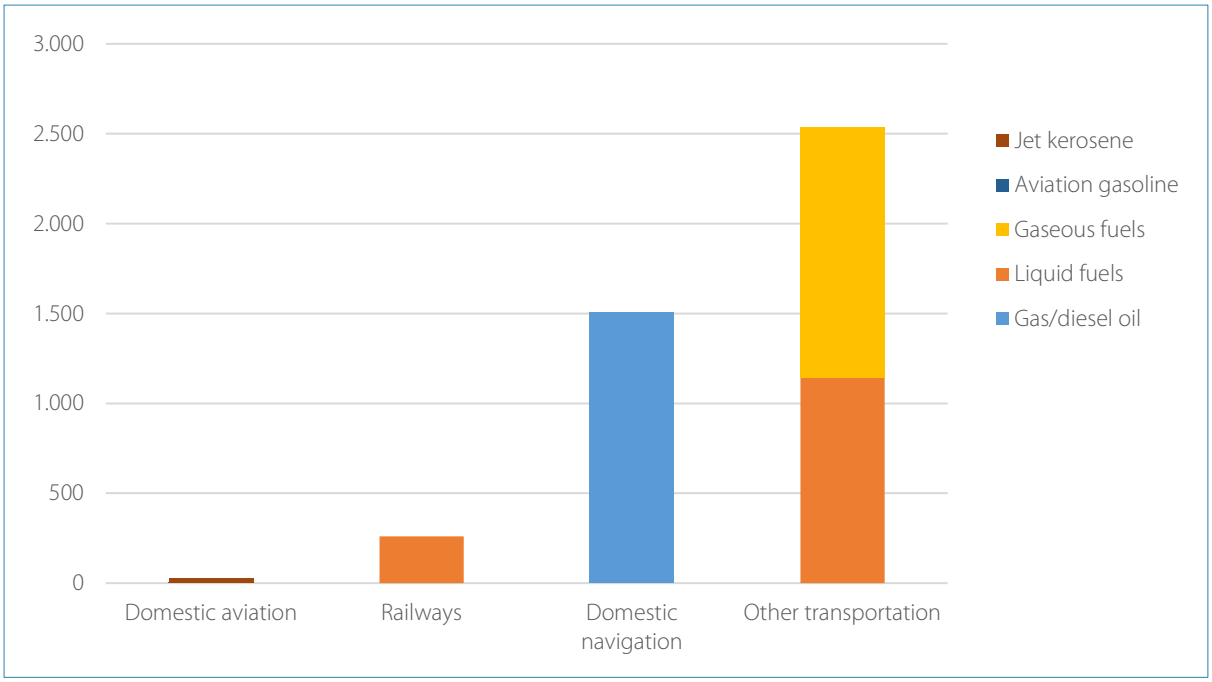
[43] The list of these exemptions are included in articles 429-431, Law of 27 December 2004. The legislation described here is the one referring to the consolidated version until Law of 19 March 2023 reforming the taxation of energy bills.

[44] High-efficiency cogeneration plants are considered to be environmentally friendly and provide primary energy savings of at least 10% compared to the separate heat and power production benchmarks.

Annex 3: Additional information on the sectors

Transport sector

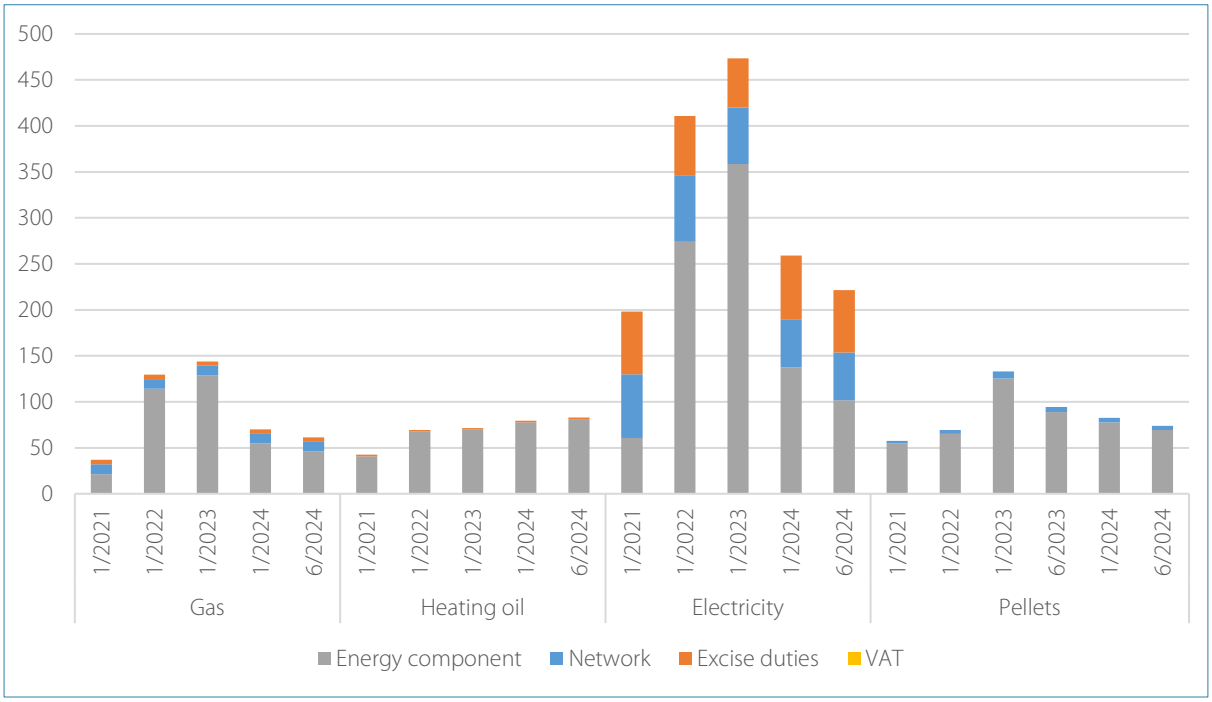
Figure 0.1: Energy consumption of non-road transport in 2022 (in GWh)



Sources: NIR 2024, MMR reporting 2024

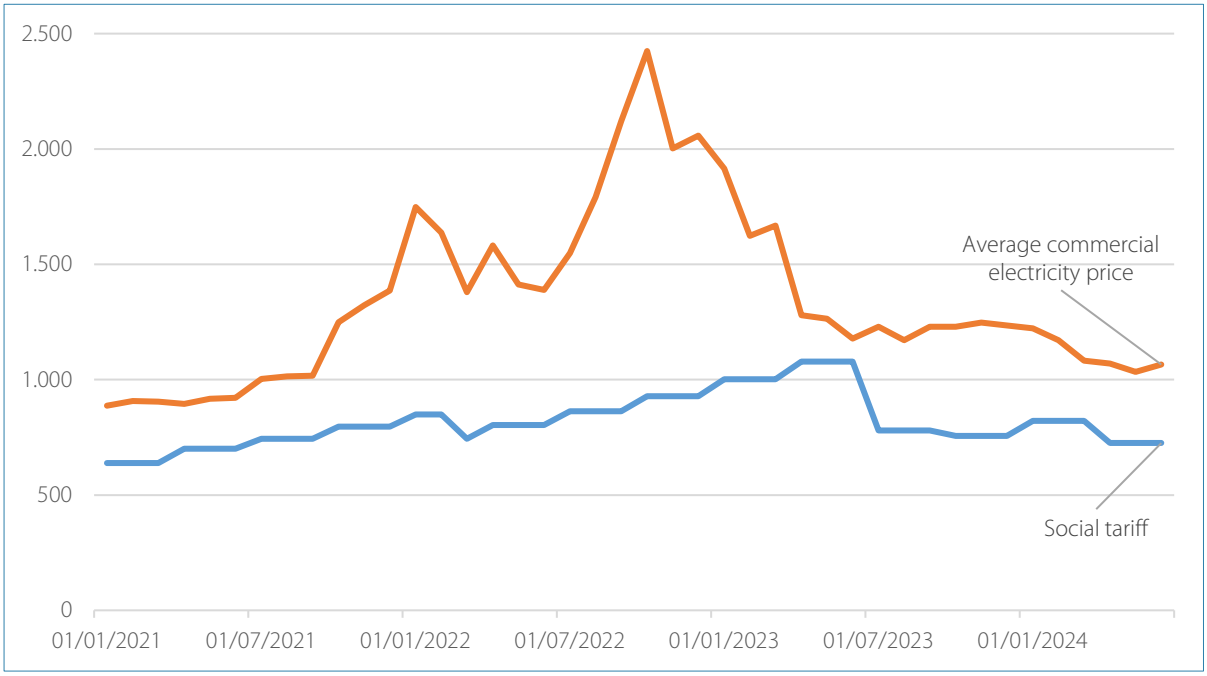
Buildings sector

Figure 0.2 Non-residential energy prices in the buildings sector per energy product (in €/MWh)



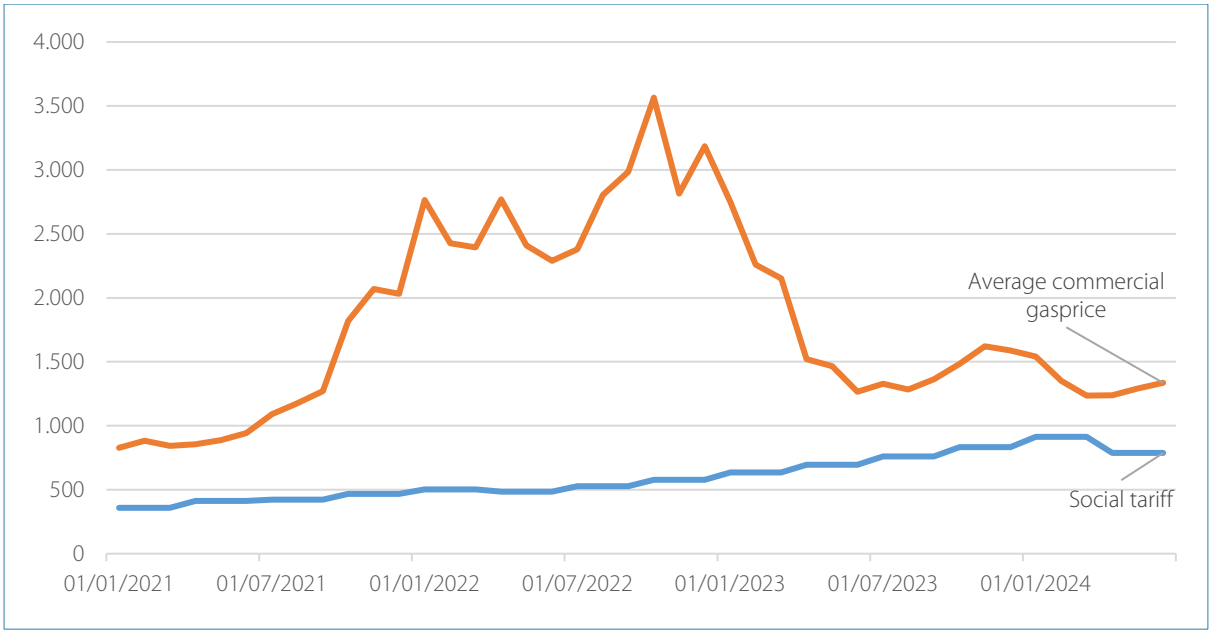
Source: CREG Monthly Dashboards

Figure 0.3: Social tariff and commercial price for electricity for an average household consumption (in €/3 500 kWh)



Source: CREG Monthly Dashboards

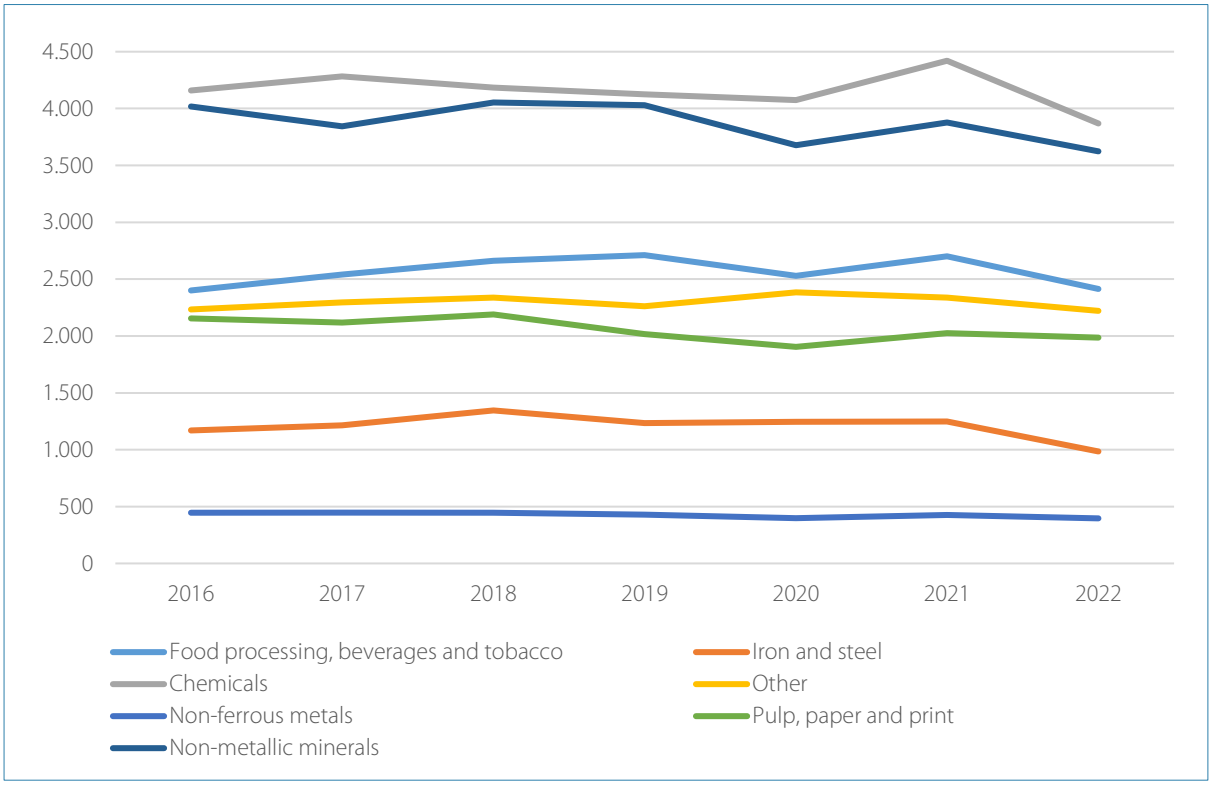
Figure 0.4: Social tariff and commercial price for gas for an average household consumption (in €/17 000 kWh)



Source: CREG Monthly Dashboards

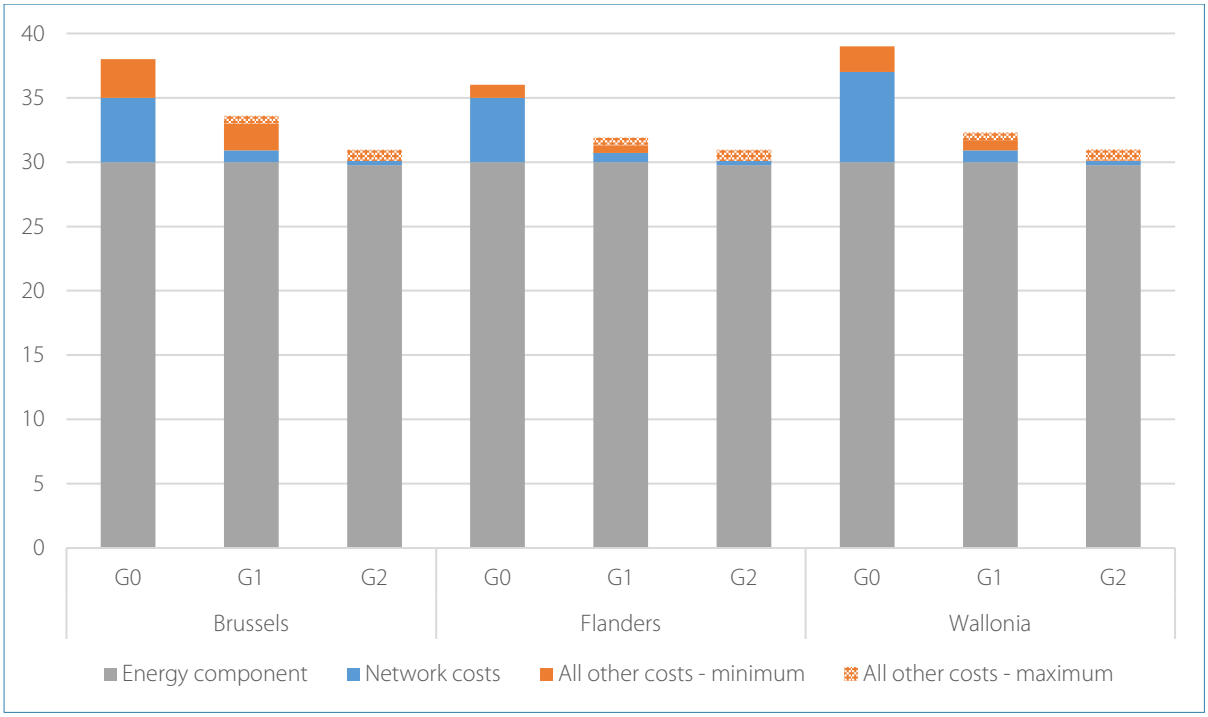
Industry

Figure 0.5: Evolution of industry emissions (in kt CO_2-eq)



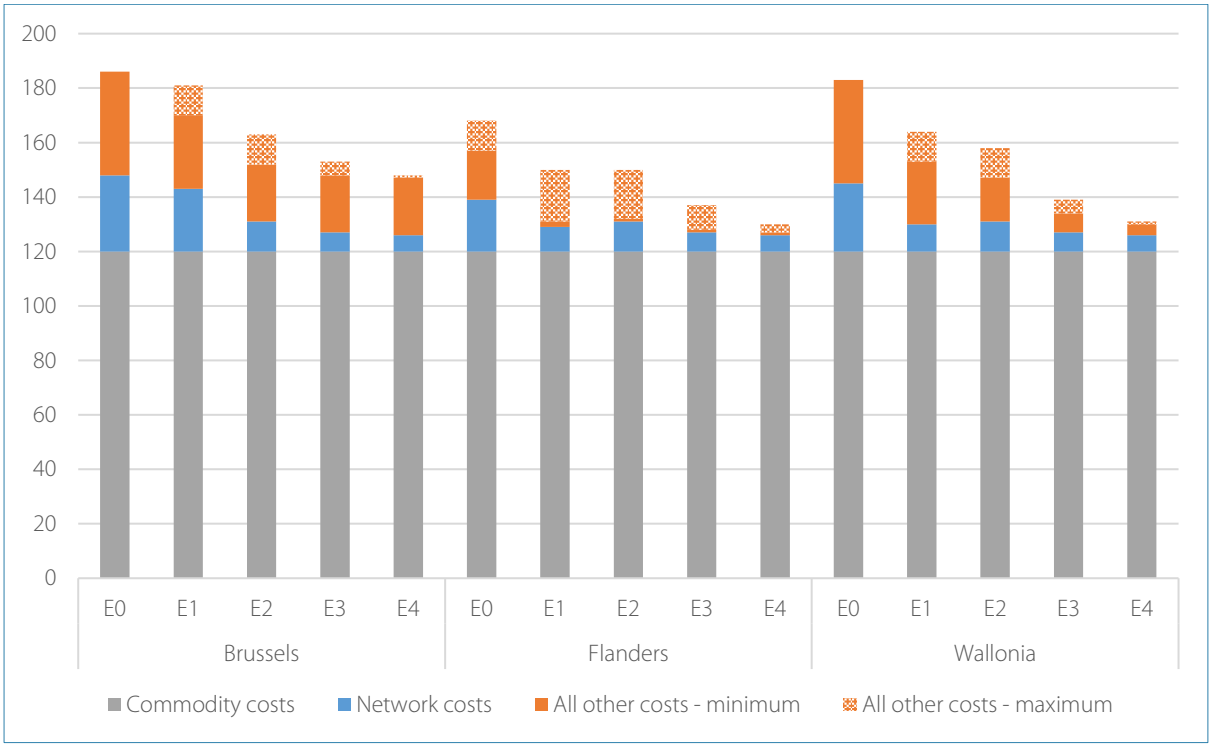
Sources: NIR 2024, MMR reporting 2024

Figure 0.6: Gas prices for different consumption profiles of industrial customers (in €/MWh)



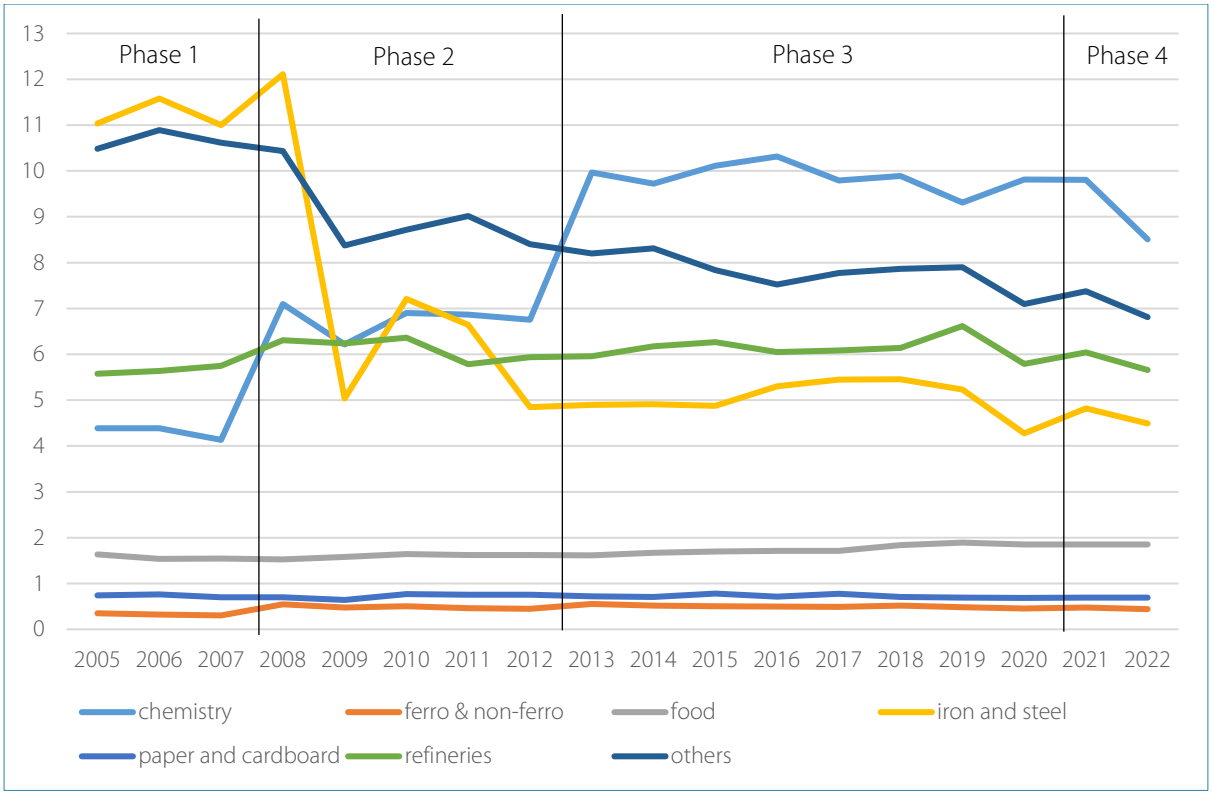
Source: FORBEG, 2024

Figure 0.7: Electricity prices for different consumption profiles of industrial customers (in €/MWh)



Source: FORBEG, 2024

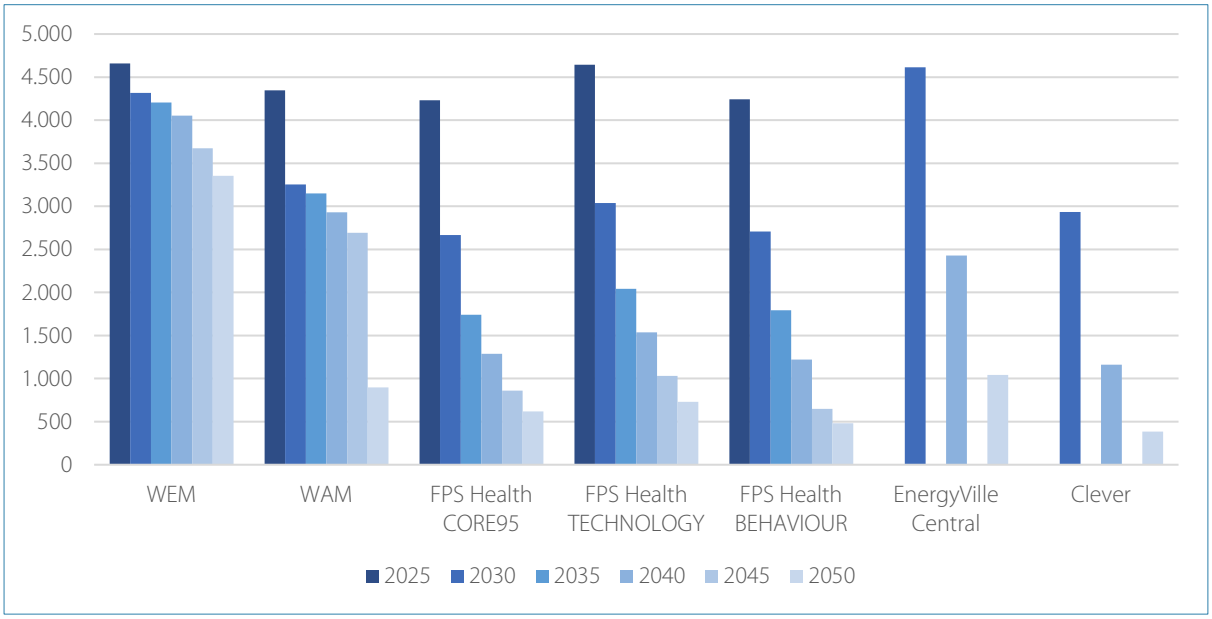
Figure 0.8: Evolution of the amount of surrendered ETS allowances 2005-2022 (in millions)



Source: Belgian Greenhouse Gas Registry overview table 2005-2022

Public costs and revenues

Figure 0.9: Excise duty revenues estimations until 2050 for the transport sector – additional scenarios (in million €, in 2023 prices)



Sources: own calculations based on transition scenarios from CNC-Concere (WEM and WAM), FPS Health, EnergyVille and négaWatt and energy demand data from Statbel

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