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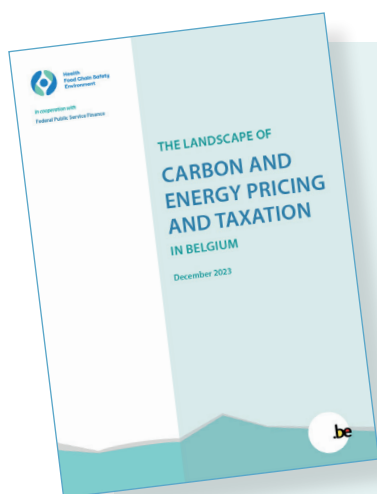
*In cooperation with*

Federal Public Service Finance

THE LANDSCAPE OF  
**CARBON AND  
ENERGY PRICING  
AND TAXATION**  
IN BELGIUM

December 2023

.be



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 Service**

Avenue Galilée 5/2 – 1210 Brussels

**Contact persons:**

Justine Soete: [justine.soete@health.fgov.be](mailto:justine.soete@health.fgov.be)

Samuel Buys: [samuel.buys@health.fgov.be](mailto:samuel.buys@health.fgov.be)

Vincent van Steenberghe: [vincent.vansteenbergher@health.fgov.be](mailto:vincent.vansteenbergher@health.fgov.be)

This report is edited in cooperation with the

**FPS Finance – Strategic Expertise and Support – Research Department**

This report is edited based on the information available on 10 November 2023.

All prices and taxes were updated until July 2023. Measures taken during the October 2023 budget meeting are not included.

*The authors thank Jean-Baptiste Traversa and Samantha Haulotte for proofreading the report.*

*The authors thank the colleagues of the Climate Change Service for their cooperation.*

Publication date: **December 2023**

Legal deposit: D/2023/2196/41

An electronic copy of this report is available at <https://climat.be/landscape>.

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## Executive summary

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.

A recurrent monitoring of the pricing and taxation of energy and carbon, did not yet exist in Belgium. This new publication attempts to offer such an overview and complements the existing Federal Inventory on Fossil Fuels Subsidies, jointly conducted by FPS Finance and FPS Public Health, Food Chain Safety, and Environment in 2023. 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 implies a fossil fuel subsidy worth €906 million in 2021.

In the building sector, the higher excise duties on electricity compared to fossil fuels create price ratios that prevent the uptake of investments in heat pumps. A reform of the excise duties on electricity and fossil fuels could increase the total cost of ownership of gas and heating 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. Reductions on excise duties are offered to specific sectors, but in general, electricity prices in Belgium are higher than in neighbouring countries. Network costs and excise duties on industrial gas and electricity prices are also significantly lower than for households.

Furthermore, price signals are different for some groups or subsectors as they receive specific advantages for social, competitive or other reasons, constituting to 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 for excise duties in industry and agriculture are some of the most prominent examples.

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 incoherencies with the federal policies and make it more difficult to assess the combined impacts of all these policies.

In addition to their effect on price signals, tax policies at the federal level have an impact on public revenues. In 2021, federal energy taxation revenues and revenues from the EU Emissions Trading System (EU ETS) combined were worth €9.7 billion. Reductions in and exemptions on excise duties, reduced VAT rates and other fiscal advantages all lower public revenue. Furthermore, decarbonisation and climate policies can have a dual effect on public revenue. Some revenues will gradually disappear as fossil fuels are phased out, like excise duties on fossil fuels. Simultaneously, climate policies such as carbon pricing will generate new sources of public revenues. Governments have to monitor the impact of these policies on public revenues, also to ensure that they can finance a just transition.

Some steps towards new revenues have been taken in last few years. 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. The European Union agreed to implement a second Emissions Trading System (ETS2) in 2027, covering buildings, road transport and small industries. Estimations show that the ETS2 could generate up to €6 billion of new revenues for Belgium in the first six years. 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. The Carbon Border Adjustment Mechanism, of which the transitional phase started on 1 October 2023, will put a price on carbon for some carbon intensive goods imported from outside of the EU.

Given the observations made in this publication, challenges remain in all sectors for the years to come. Reforms in carbon and energy taxation will be needed to make the transition towards a climate-neutral economy.

## Samenvatting

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.

Een terugkerende opvolging van de prijzen en de belasting van energie en koolstof bestond nog niet in België. Deze nieuwe publicatie tracht een dergelijk overzicht te bieden en vult de bestaande Federale Inventaris van Subsidies voor Fossiele Brandstoffen aan, die in 2023 gezamenlijk werd uitgevoerd door de FOD Financiën en de FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu. 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 energieprijzen 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 impliceert een subsidie voor fossiele brandstoffen ter waarde van €906 miljoen in 2021.

In de gebouwensector zorgen de hogere accijnzen op elektriciteit in vergelijking met fossiele brandstoffen voor prijsverhoudingen die investeringen in warmtepompen verhinderen. Een hervorming van de accijnzen op elektriciteit en fossiele brandstoffen zou de totale eigenkostkosten van gas- en verwarmingsketels 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. Specifieke sectoren genieten van accijnsverlagingen, maar over het algemeen zijn de elektriciteitsprijzen in België hoger dan in de buurlanden. De netwerkkosten en accijnzen op industrieel gas en de elektriciteitsprijzen liggen ook aanzienlijk lager 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.

Bovendien 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 incoherenties met het federale beleid en maken het moeilijker om de gecombineerde impact van alle beleidsmaatregelen te beoordelen.

Naast het effect op prijssignalen heeft het belastingbeleid op federaal niveau ook een impact op de overheidsinkomsten. In 2021 bedroegen de federale energiebelastinginkomsten en de inkomsten uit het EU-emissiehandelssysteem (EU ETS) samen €9,7 miljard. Verlagingen en vrijstellingen van accijnzen, verlaagde btw-tarieven en andere fiscale voordelen leiden allemaal tot lagere overheidsinkomsten. Bovendien kunnen decarbonisatie en klimaatbeleid een dubbel effect hebben op de overheidsinkomsten. Sommige inkomsten zullen geleidelijk verdwijnen naarmate fossiele brandstoffen worden afgebouwd, zoals accijnzen op fossiele brandstoffen. Tegelijkertijd kan klimaatbeleid, zoals het beprijzen van koolstof, nieuwe bronnen van overheidsinkomsten genereren. Overheden moeten het effect van dit beleid op de overheidsinkomsten monitoren, onder meer om ervoor te zorgen dat ze een rechtvaardige overgang kunnen financieren.

De afgelopen jaren zijn er enkele stappen gezet in de richting van nieuwe inkomsten. Op Bel-

gisch 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. De Europese Unie heeft beslist om in 2027 een tweede emissiehandelssysteem (ETS2) in te voeren voor gebouwen, wegvervoer en kleine industrie. Schattingen tonen aan dat het ETS2 in de eerste zes jaar tot €6 miljard aan nieuwe inkomsten voor België kan genereren. 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. Het mechanisme voor koolstofgrenscorrectie, waarvan de overgangsfase op 1 oktober 2023 van start is gegaan, zal een prijskaartje hangen aan koolstof voor sommige koolstofintensieve goederen die worden geïmporteerd van buiten de EU.

Gezien de observaties in deze publicatie blijven er de komende jaren in alle sectoren uitdagingen bestaan. Hervormingen in de koolstof- en energiebelastingen zullen nodig zijn om de overgang naar een klimaatneutrale economie te maken.

## Résumé

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.

Il n'existait pas encore en Belgique de suivi récurrent de la tarification et de la taxation de l'énergie et du carbone. Cette nouvelle publication tente d'offrir une telle vue d'ensemble et complète l'inventaire fédéral des subventions aux énergies fossiles, réalisé conjointement par le SPF Finances et le SPF Santé publique, Sécurité de la chaîne alimentaire et Environnement en 2023. 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 implique une subvention aux combustibles fossiles d'une valeur de 906 millions d'euros en 2021.

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 sur les droits d'accises sont offertes à des secteurs spécifiques, mais en général, les prix de l'électricité en Belgique sont plus élevés que dans les pays voisins. Les coûts de réseau et les accises sur le gaz industriel et les prix de l'électricité sont néanmoins nettement inférieurs à ceux des 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.

Outre leur effet sur les signaux-prix, les politiques fiscales au niveau fédéral ont un impact sur les recettes publiques. En 2021, les recettes de la taxation fédérale de l'énergie et les recettes du système d'échange de quotas d'émission de l'UE (EU ETS) s'élevaient ensemble à 9,7 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 décarbonisation et les politiques climatiques peuvent avoir un double effet sur les recettes publiques. Certaines recettes disparaîtront progressivement au fur et à mesure de l'élimination des combustibles fossiles, comme les droits d'accise sur les combustibles fossiles. Dans le même temps, les politiques climatiques telles que la tarification du carbone vont générer de nouvelles sources de recettes publiques. Les gouvernements doivent surveiller l'impact de ces politiques sur les recettes publiques, afin de s'assurer qu'elles peuvent financer une transition juste.

Quelques mesures ont été prises ces dernières années pour dégager de nouvelles recettes. 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. L'Union européenne a convenu de mettre en œuvre un deuxième système d'échange de quotas d'émission (ETS2) en 2027, couvrant les bâtiments, le transport routier et les petites industries. Selon les estimations, l'ETS2 pourrait générer jusqu'à 6 milliards d'euros de nouvelles recettes pour la Belgique au cours des six premières années. 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. Le mécanisme d'ajustement carbone aux frontières, dont la phase transitoire a débuté le 1er octobre 2023, fixera un prix sur le carbone pour certains biens à forte intensité de carbone importés de l'extérieur de l'UE.

Compte tenu des observations faites dans cette publication, des défis restent à relever dans tous les secteurs pour les années à venir. Des réformes de la taxation du carbone et de l'énergie seront nécessaires pour assurer 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.

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. 65.5% 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. 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 Public Health, Food Chain Safety and Environment (2023).

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, building 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. Section 4 gives a short overview of European and Belgian taxation policies in the pipeline.

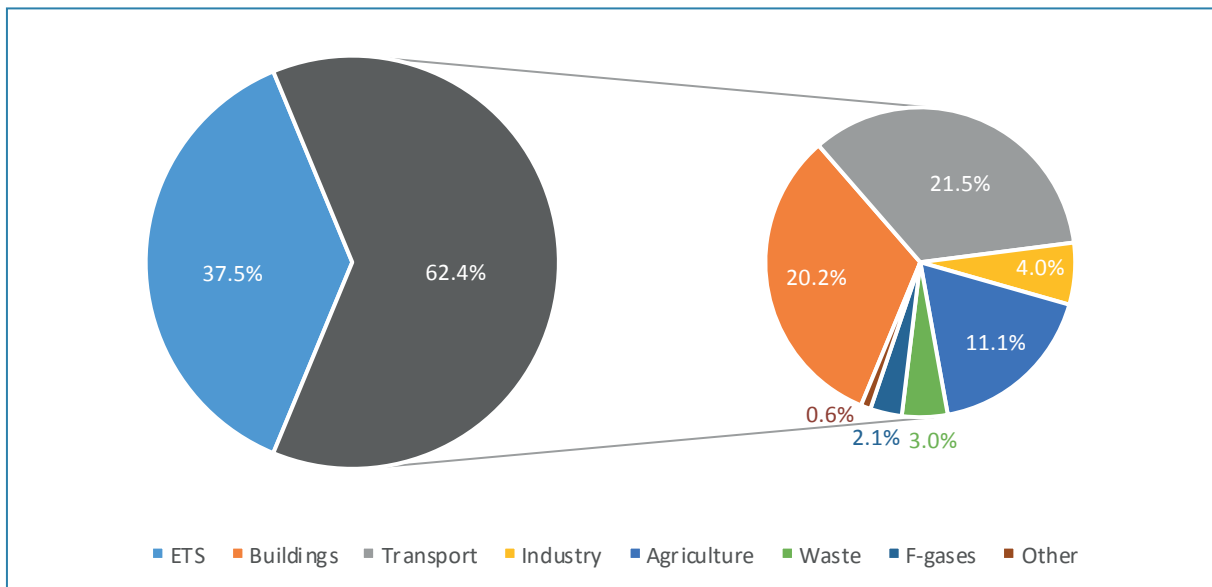
# 1. Context

## KEY MESSAGES

- In 2021, 37.6% 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 77.3% of all emissions in 2021.
- Total emissions in Belgium have diminished by 22.6% 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 2021, 37.6% of all the greenhouse gas (GHG) emissions were emitted in the ETS sector, or 41.5 Mt CO<sub>2</sub>-eq, mainly industry (73.2%) and electricity generation (25.6%). As illustrated in [Figure 1.1](#), the largest non-ETS sectors are transport (34.4% of non-ETS) and buildings (32.4% of non-ETS), emitting 46.1 MtCO<sub>2</sub>-eq, followed by agriculture (17.7% 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<sup>1</sup>) will not be discussed in this publication.

Figure 1.1: GHG emissions per sector in 2021 (kt CO<sub>2</sub>-eq)

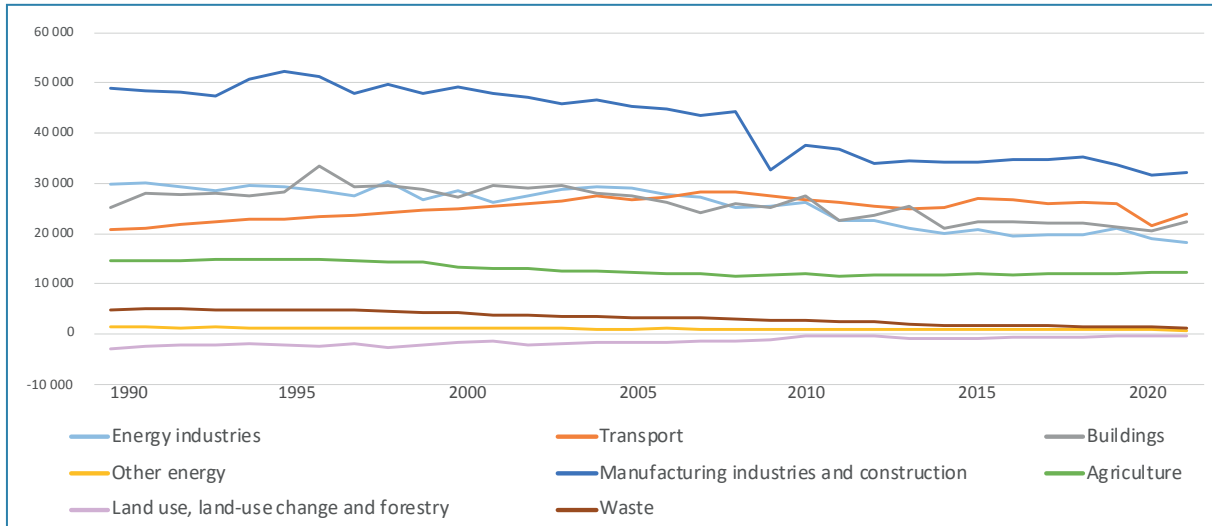


Sources: NIR 2023, MMR reporting 2023

<sup>1</sup> 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.

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 in recent years. Agricultural and building emissions are still close to 1990 emission levels. Transport emissions have even increased. In total, emissions have diminished by 22.6% since 1990, or 32.3 Mt CO<sub>2</sub>-eq (including land use, land-use change and forestry).

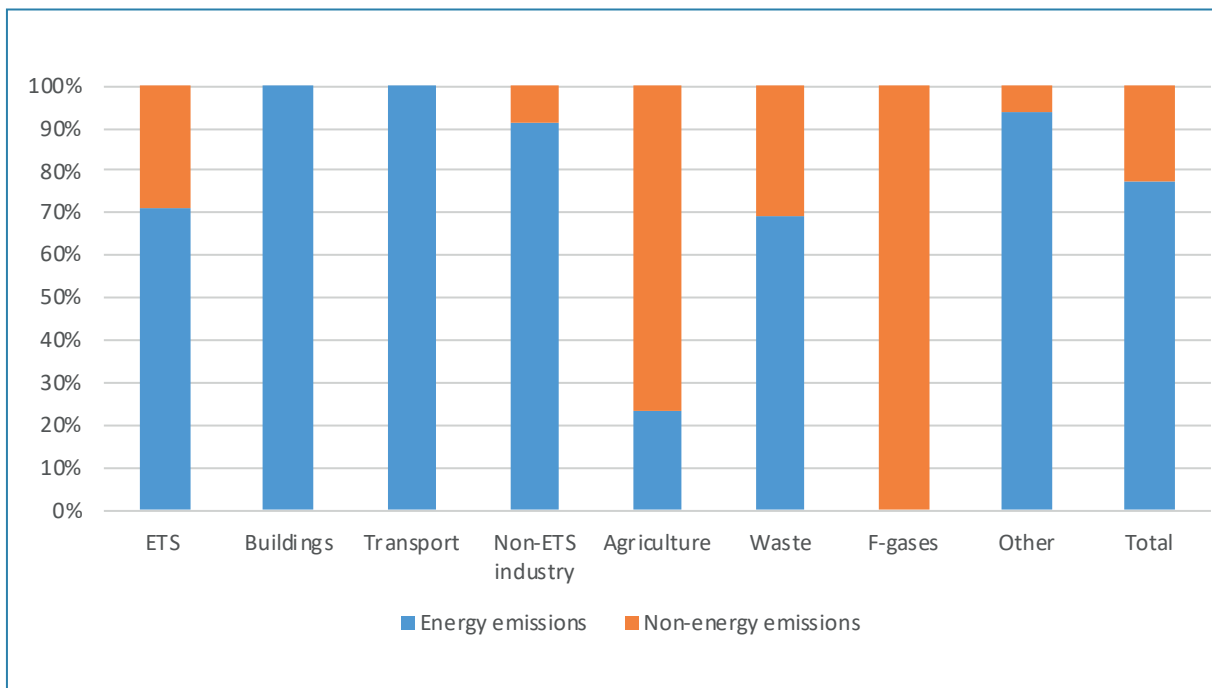
Figure 1.2: Evolution of GHG emissions per sector (kt CO<sub>2</sub>-eq)



Sources: NIR 2023, MMR reporting 2023

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

Figure 1.3: Energy emissions in total GHG emissions per sector in 2021



Sources: NIR 2023, MMR reporting 2023

each sector. The building and transport sector only produce energy related GHG emissions. The non-ETS industry emissions are 97.9% energy related, whereas ETS emissions are 71.2% energy related and agricultural emissions are 23.3% 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 ([2. Sectors](#)) goes more into detail on this and on the effects on price signals. 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 €5.2 billion in 2022. Another example of public revenues from energy products are revenues from carbon emission taxation. The EU ETS generated €646.1 million in 2022 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.

## 2. Sectors

### 2.1 Transport

#### KEY MESSAGES

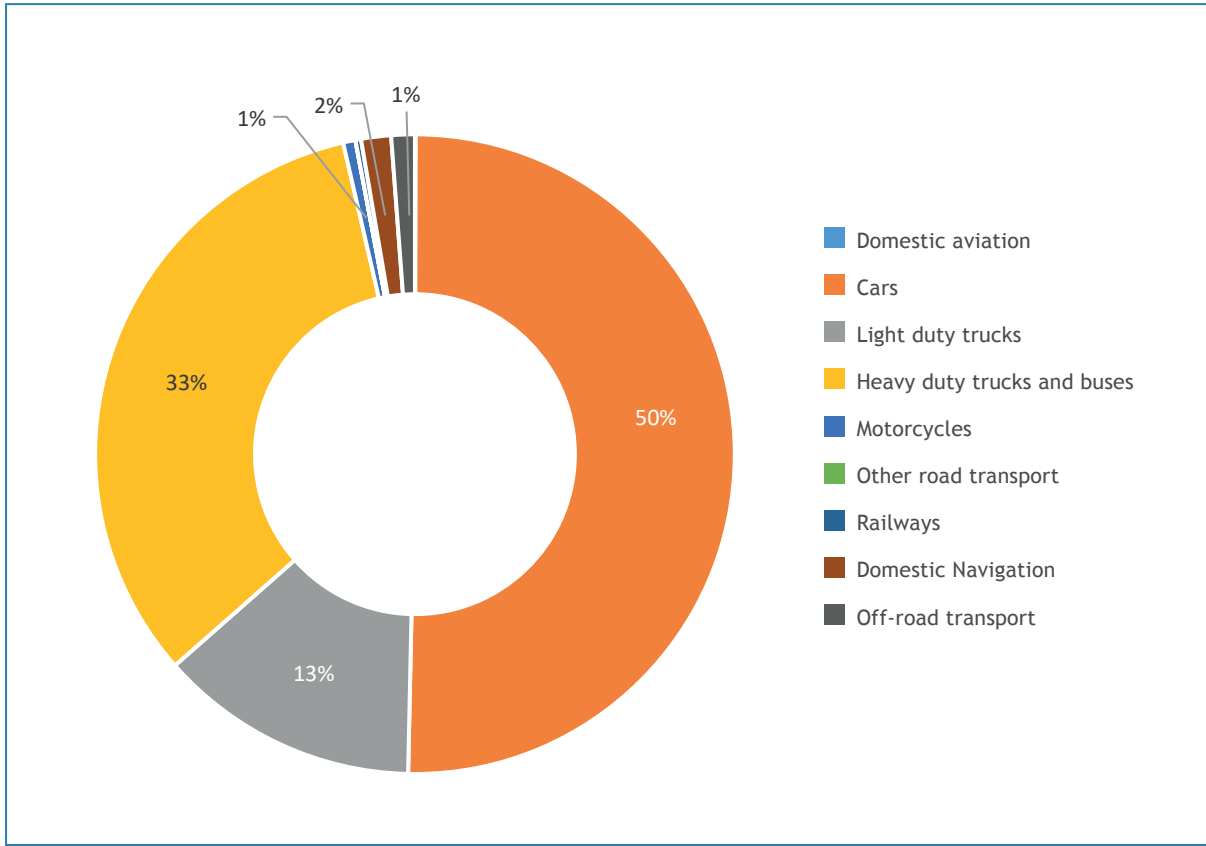
- *Transport emissions increased since 1990. They moderately decrease since 2008, because of slowly decreasing car emissions. The impact of electrification of cars was still negligible in 2021.*
- *Electricity prices are much higher than gasoline and diesel prices. However, because of their efficiency, 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 on 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 €905.8 million in 2021, while company cars led to an indirect subsidy of €1.9 billion in 2020. The reimbursement of professional diesel is higher in Belgium than in the neighbouring countries, resulting in price levels comparable to those in Luxembourg.*
- *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 2021, GHG emissions in the transport sector accounted for 42.4% of Belgian non-ETS emissions, or 23.9 Mt CO<sub>2</sub>-eq. Cars accounted for half of these emissions, followed by heavy duty trucks and buses (33%) and light duty trucks (13%) ([Figure 2.1.1](#)).

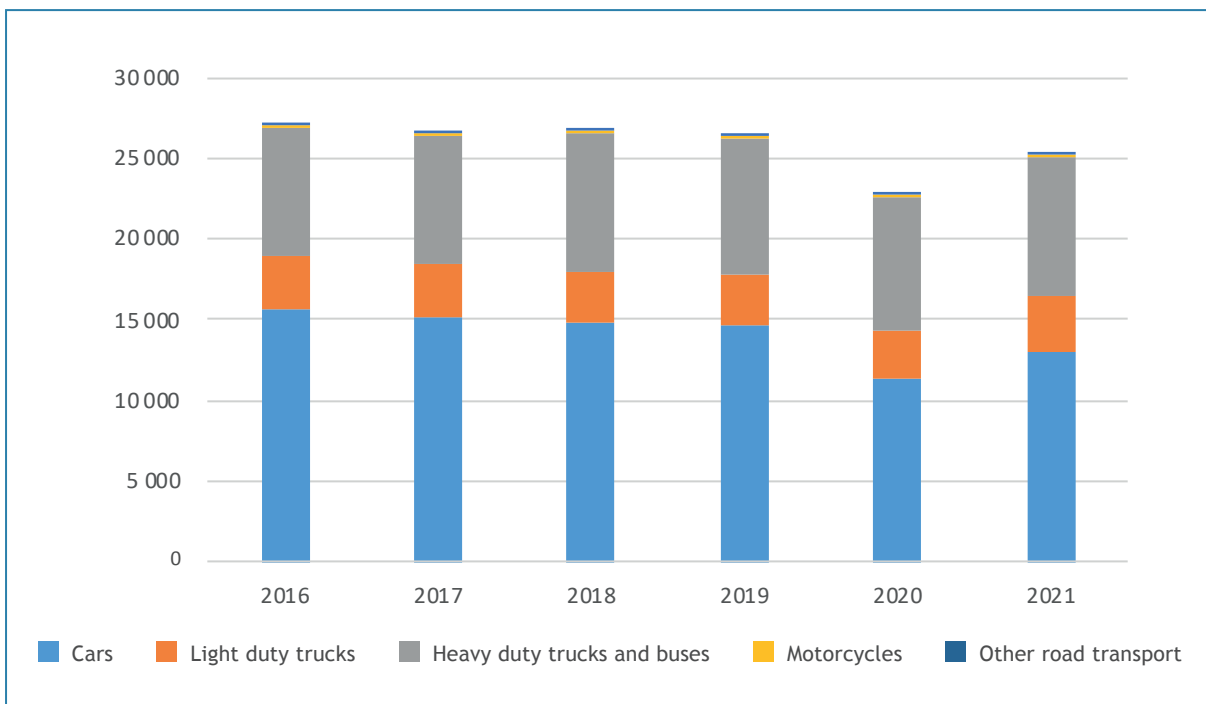
The transport sector is split into two groups, the road transport and the non-road transport. Road transport emissions diminished by 7% since 2016, with a large drop due to the covid pandemic in 2020 ([Figure 2.1.2](#)). However, emissions increased again in 2021 with a 10.1% increase compared to 2020. In the last six years, especially car emissions have dropped (-17%), whereas emissions from light duty trucks as well as heavy duty trucks and busses increased (6.3%).

Figure 2.1.1: Transport emissions per transport type in 2021 (%)



Sources: NIR 2023, MMR reporting 2023

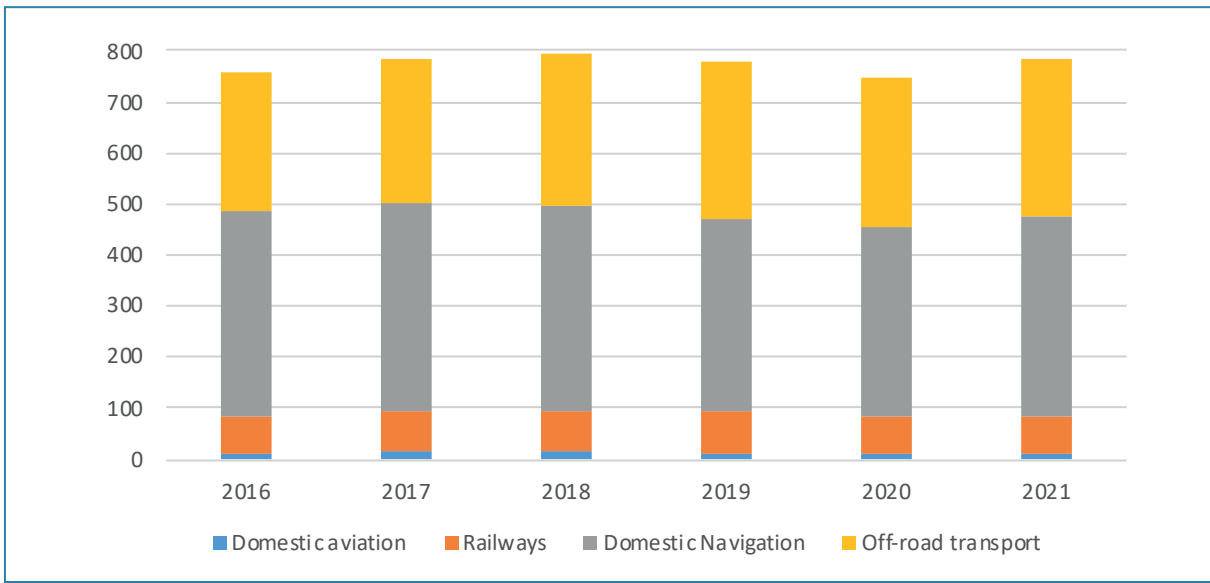
Figure 2.1.2: Evolution of road transport emissions per transport type (kt CO<sub>2</sub>-eq)



Sources: NIR 2023, MMR reporting 2023

The second group of transport emissions, non-road transport, is much smaller in terms of emissions, but has increased by 3.7% since 2016 (Figure 2.1.3). The category 'off-road transport' in Figure 2.1.3 consists of off-road activities in harbours, airports and transshipment companies and represents an important and increasing share of emissions in non-road transport emissions. Since 2016, emissions in the category 'other' have steadily increased, totalling an increase of 13.4% over the period 2016-2021. Emissions from the subsectors domestic navigation, railways and domestic aviation on the other hand, have decreased since 2016 (-1.7%).

Figure 2.1.3: Evolution of non-road transport emissions per transport type (kt CO<sub>2</sub>-eq)



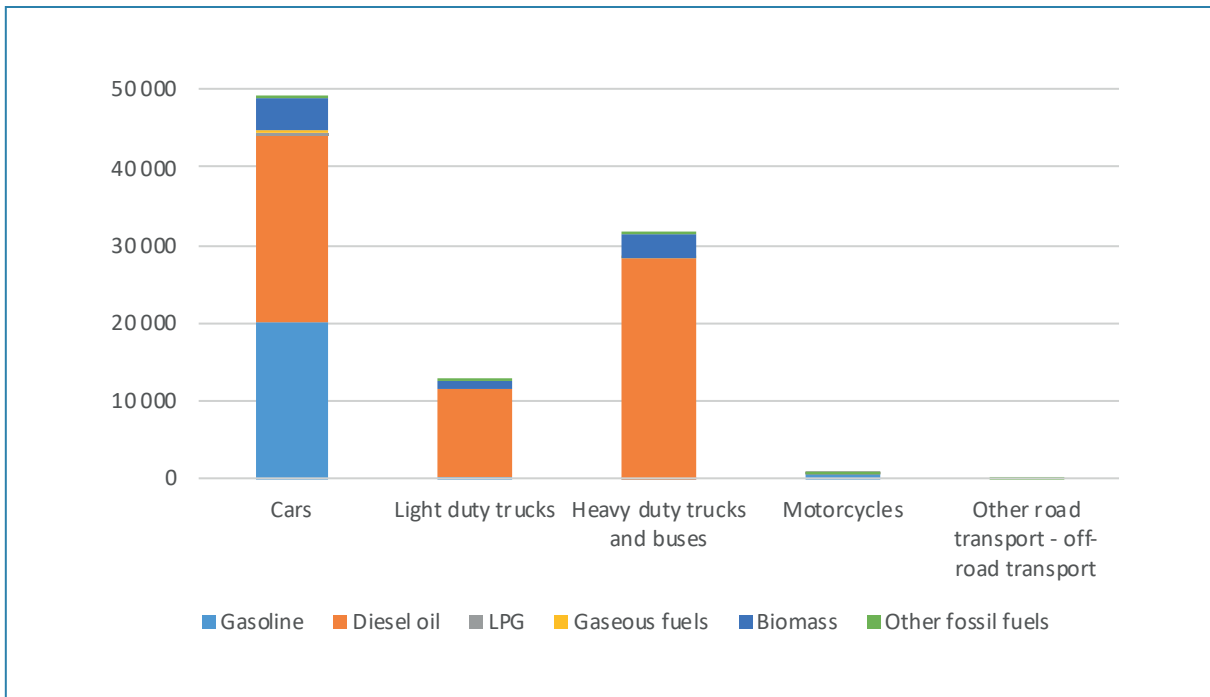
Sources: NIR 2023, MMR reporting 2023



As illustrated in [Figure 2.1.4](#), the main energy vector in road transport is diesel oil (67.3%), followed by gasoline (22.2%). Biomass takes up a smaller share, but has increased significantly, from 4.8% in 2016 to 8.8% in 2021.

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 2023, 138 749 cars or 2.3% of all registered cars in Belgium were fully electric vehicles (Statbel, 2023a). This results in an estimated final energy demand of 296 GWh<sup>2</sup> for all fully electric cars in 2023, 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, 537 817 cars or 8.92% were hybrids.

**Figure 2.1.4: Energy consumption of road transport per type and energy product in 2021 (GWh)**

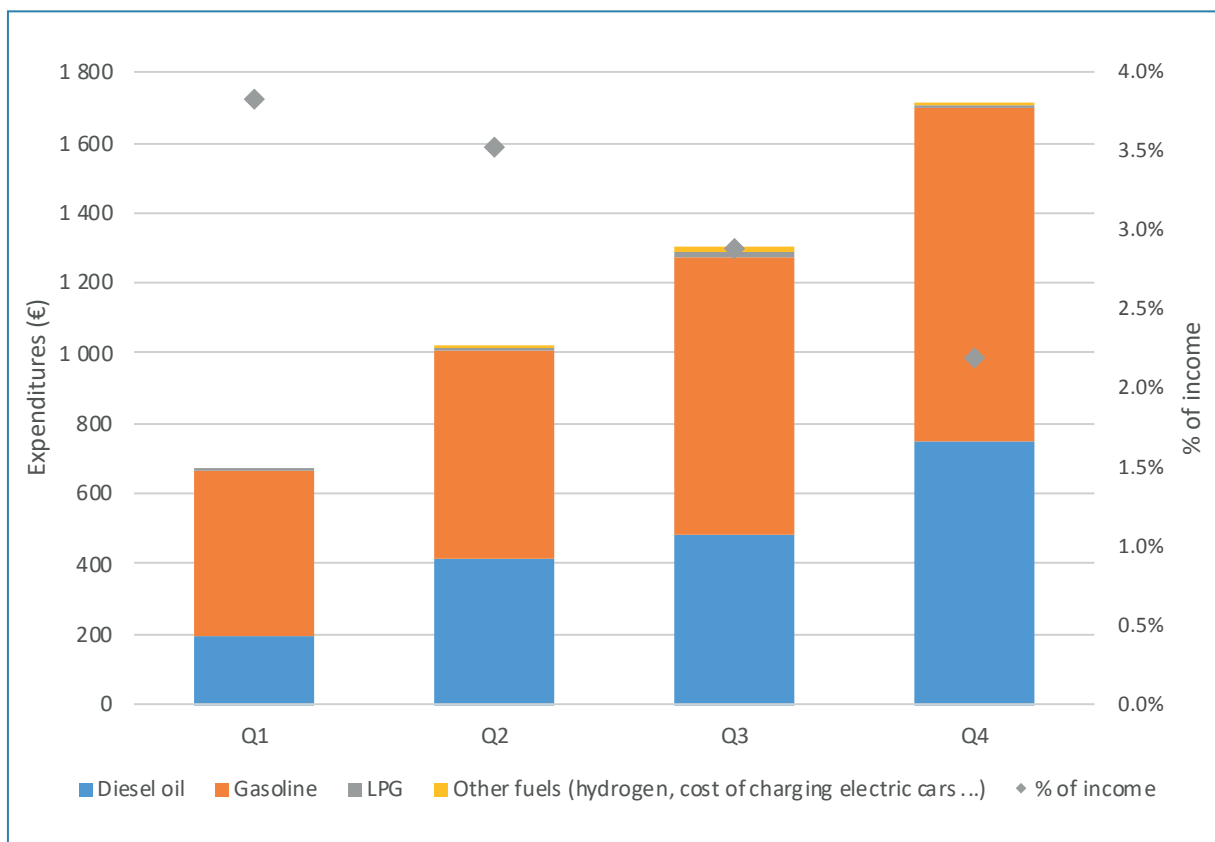


Sources: NIR 2023, MMR reporting 2023

<sup>2</sup> 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<sup>3</sup>, Belgian households spent €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. An explanation could be that company cars are more common in higher income quartiles than in lower quartiles and company cars are less often petrol cars than private owned cars (27.6% compared to 57.1% on 1/8/2023) (Statbel, 2023a).

**Figure 2.1.5: Household expenditures on transport fuels per income quartiles in 2022 (€/year) and as % of household income**



Source: Household Budget Survey 2023

The non-road transport consumes mainly liquid fuels (57.3%), such as diesel oil, as well as gaseous fuels (42.1%). The domestic aviation sector only uses sector specific fuels, namely jet kerosene and aviation gasoline (see [Figure 0.1](#) in [Annex 3](#)).

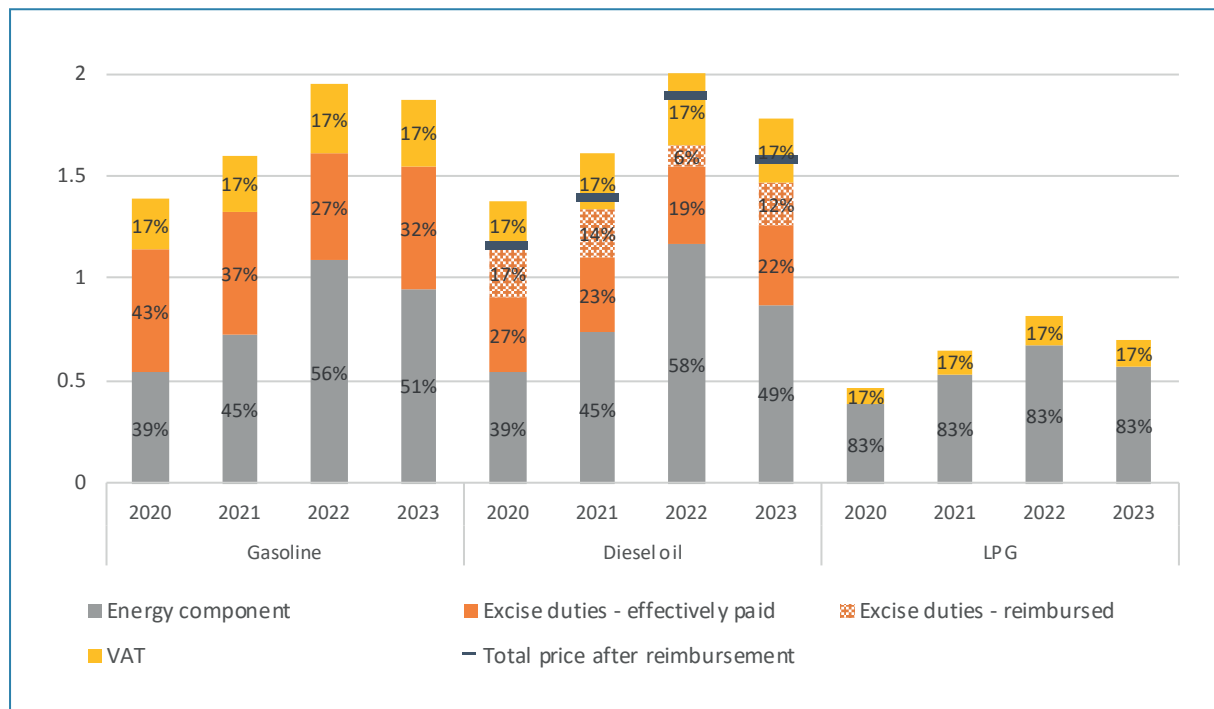
<sup>3</sup> The Household Budget Survey is a two-yearly European survey collecting data on the consumption expenditures of households (Statbel, 2023b). 4 997 households took part in the survey in 2022.

### 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.

Figure 2.1.6 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

Figure 2.1.6: Yearly prices for fossil energy sources in road transport (€/litre)



Sources: Statbel for final prices (S1 for 2023), Fisonet plus for 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 with €145 per 1000 litre to €456 per 1000 litre for both gasoline and diesel oil<sup>4</sup> in March 2022. From September onwards, the excise duty rates started to go up again via the cliquet system<sup>5</sup>, as a result of diminishing oil prices. Gasoline excise duty rates were back at pre-crisis levels in November 2022 (€600.16/1000 litre), whereas diesel oil excise duty rates only hit the pre-crisis levels in April of 2023 (€600.16/1000 litre).

Although gasoline and diesel oil are again subject to the same excise duty rate since April 2023, total prices for both energy sources are still different. Due to the energy component, diesel oil is 5.1% cheaper than gasoline in the first six months of 2023. In the last couple years, gasoline was slightly cheaper than diesel oil. In addition, professional users of diesel oil, namely freight transport, taxis, transport for disabled persons and passenger

4 More specifically, the special excise rate was lowered from €326 to €181 per 1000 liter for gasoline and from €387 to €242 per 1000 liter for diesel oil. Total excise duties are composed of excise duties, special excise duties and the levy on energy (see Annex 2).

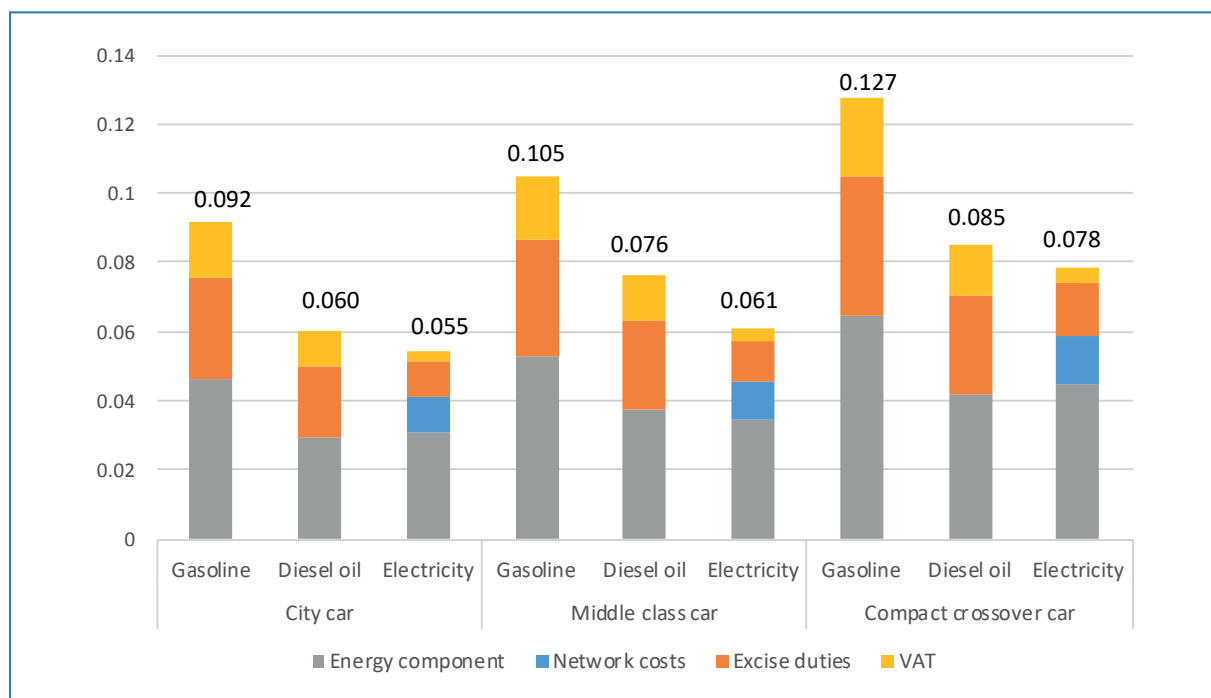
5 A cliquet system is a tax system where prices and taxes are linked. In this case, when fuel prices go up, fuel taxation automatically goes down. This tempers the market price effects for consumers.

transport with vehicles with more than 8 seats plus driver, receive a partial reimbursement of the diesel oil excise duties in Belgium. When taking this reimbursement for professional diesel into account, diesel oil becomes 16.1% cheaper than gasoline in the first half of 2023. This reimbursement mechanism led to a loss of revenues that amounted to €905.8 million in 2021 (FPS Public Health and FPS Finance, 2023). In 2021, the federal government decided to diminish the professional diesel reimbursement, however at a slow pace. In 2023, the reimbursement decreased from €226.97/1000 litre to €205.07/1000 litre, and it will continue to decrease until 2026.

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)<sup>6</sup>. 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. 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 2.1.7](#), 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 2.1.7: Energy prices for three car types in first half of 2023 (€/km)

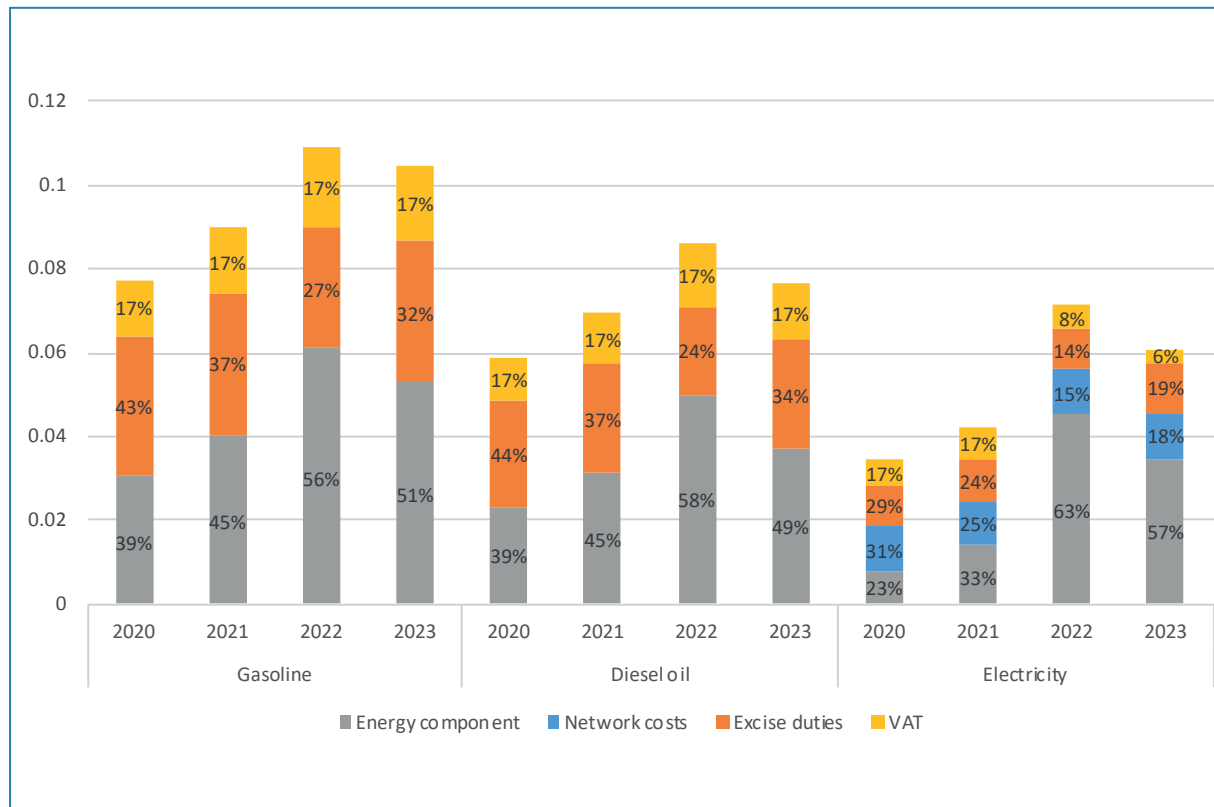


Sources: own calculations based on Statbel for final prices (S1 for 2023), Ficonet plus for excise duties, VIAS Institute for car type consumptions

6 More information on the selected cars in [Annex 1](#).

**Figure 2.1.8** compares the costs of different fuel types for a middle class car over time. Each year, the price per km driving on electricity is lower than the price per km driving on gasoline or diesel oil. However, the energy crisis of 2022 left its mark on the price ratios between energy vectors. Whereas electricity was 65.2% cheaper in 2021 per km than diesel oil, it is only 25.2% cheaper in the first half of 2023. The same goes for electricity vs. gasoline (113.8% in 2021 vs. 71.9% in 2023).

**Figure 2.1.8: Evolution of average energy prices for a middle class car (€/km)**

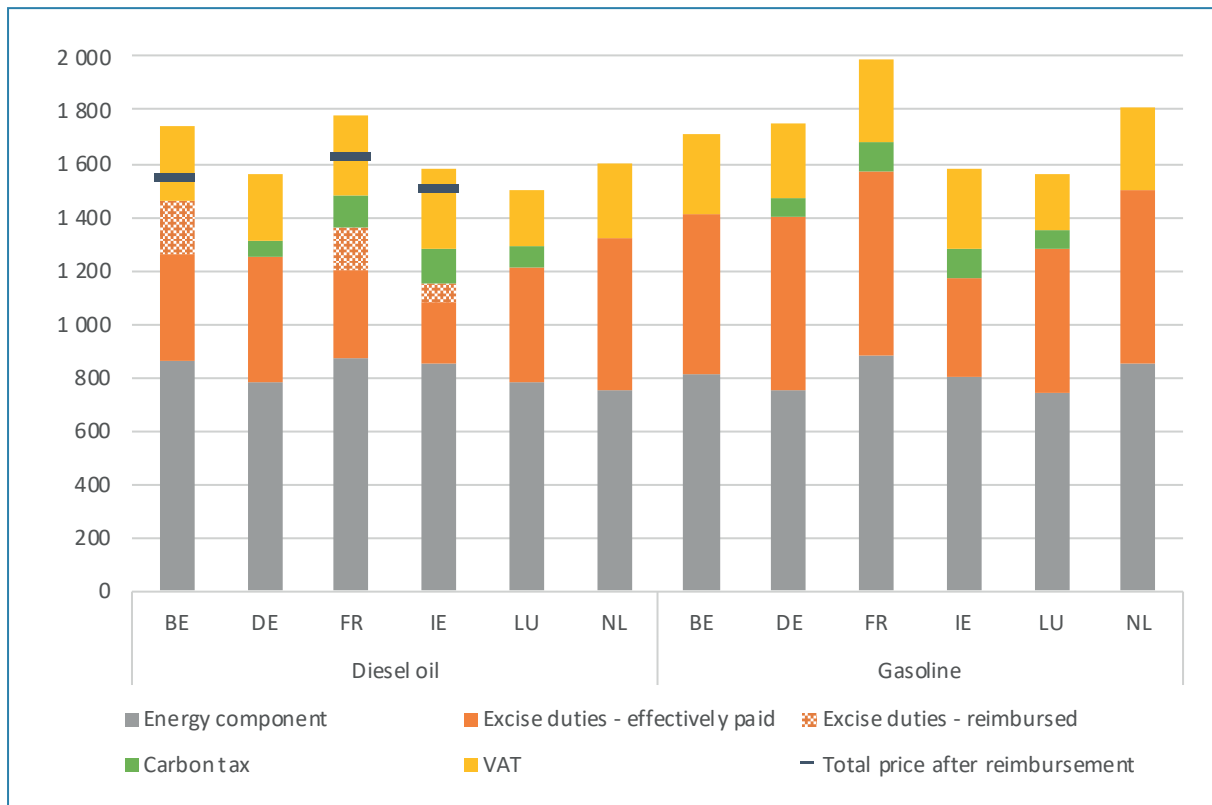


Sources: own calculations based on Statbel for final prices (S1 for 2023), Ficonet plus for excise duties, VIAS Institute for car type consumption

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 28.6% of the total price in 2022. For gasoline and diesel oil, the share of excise duties in the total price is slightly lower (resp. 26.5% and 24.3%). 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 make the price ratio more favourable to electricity than fossils fuels. 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.

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.

Figure 2.1.9: Prices in road transport in Belgium and neighbouring countries (€/1000 litre)



Sources: EC Weekly Oil Bulletin for final prices (S1 2023) and excise duties (rates on 1/4/2023), World Bank Carbon Pricing Dashboard for carbon taxes

Figure 2.1.9 provides a comparison of the prices of the main energy products in road transport in Belgium and its neighbouring countries<sup>7</sup>.

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. The total price for diesel oil for professional use is the lowest in Luxembourg and Ireland, followed by Belgium. 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 France. Total prices are the lowest in Luxembourg, but prices in Belgium are still lower than in France, Germany and the Netherlands. In Belgium, prices for gasoline and for non-professional diesel oil are almost the same in 2023. However in the neighbouring countries non-professional diesel oil is cheaper than gasoline.

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<sub>2</sub> in 2030. France followed not long after (2014) but had to cap its carbon tax in 2018 at €44.6/tCO<sub>2</sub> 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 €30/tCO<sub>2</sub> in 2023. 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. Due to the energy crisis, Germany skipped the increase of the allowance price in 2023. The Netherlands have a carbon tax for the industry, but not on transport (World Bank, 2023).

<sup>7</sup> 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.

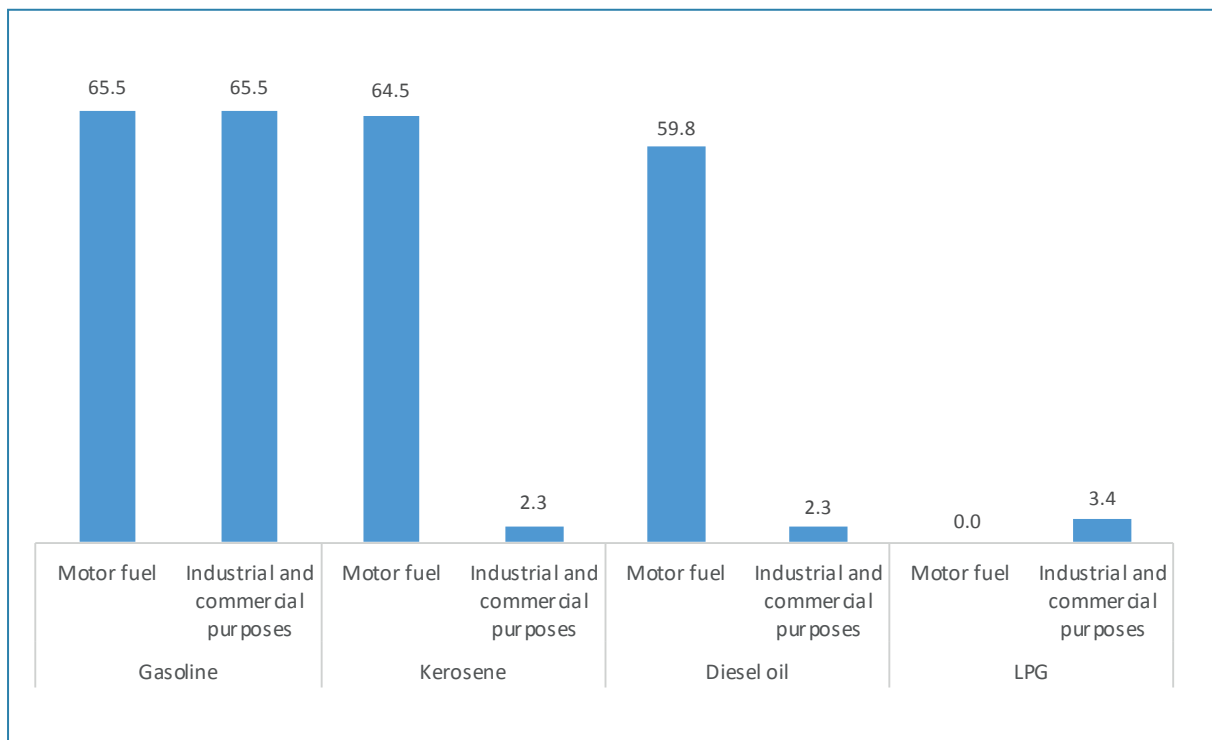
Belgium is the only of its neighbouring countries to exempt liquified petrol gas from taxation, resulting in the lowest total price for LPG.

For a full comparison of European car taxation, we refer to the ‘Good tax guide’ of Transport & Environment, 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). They point out that tax differentials between private battery electric vehicles (BEV’s) 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 BEV’s. The tax differentials between BEV’s and petrol cars are higher for salary cars in Belgium.

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 2.1.10](#) 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.

**Figure 2.1.10: Excise duty rates in the transport sector for regular motor fuel use and motor fuel use for industrial and commercial purposes (€/MWh)**



Source: Ficonet plus (excise duty rates on 1/7/2023)

### 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](#)), e.g. lower yearly taxes on ownership of a vehicle, or on the initial cost of investment ([Table 2](#)), e.g. purchasing an electric vehicle. If available, the total cost (-) or revenue (+) of the measures are included in *italic* in [Table 1](#) and [Table 2](#) (see [Annex 1](#) for more information on the sources).

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

|   | <i>Flemish Region</i>   | <i>Walloon Region</i>   | <i>Brussels Capital Region</i>                       | <i>Federal level</i>   |
|---|---|---|--|--|
| Kilometre charge for heavy goods vehicles | Max. €0.255/km<br><i>(+ € 544 mio in 2022)</i>                              | Max. €0.241/km<br><i>(+ € 275 mio in 2022)</i>  | Max. €0.339/km<br><i>(+ € 10 mio in 2022)</i>        |  |
| Yearly road tax                           | Exemption for electric and hydrogen vehicles and reduction for LPG vehicles | Minimum rate for electric vehicles (€97.68 per year)  | Minimum rate for electric vehicles (€92.93 per year) |  |
| 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 (€61.50)          |  |
| Compensation for commuter traffic by bike |   |   |  | €0,25/km or €430/year, tax free<br><i>(-€61 mio in 2020)</i> |

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 the weight of vehicles. The kilometre charge for heavy goods vehicles is aligned between regions in design but different tax rates levels remain. This tax raised € 829 million in revenues for the three regions together in 2022.

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 Public Health and FPS Finance, 2023). 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. During the budgetary negotiations of September 2023, the Flemish government decided to add a €5 000 premium for households buying an electric car for less than €40 000. 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<sup>8</sup> for individuals and an increased cost deduction for companies. Moreover, carbon neutral trucks, e.g. 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: 29.5% in 2024, 24% in 2025, 18.5% in 2026 and 13.5% (i.e. the standard increased rate) in 2027.

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

|                            | <i>Flemish Region</i>  | <i>Walloon Region</i>   | <i>Brussels Capital Region</i>  | <i>Federal level</i>   |
|----------------------------|--|---|---|--|
| Company cars               |  |   |   | Phasing out of preferential tax regime for non CO <sub>2</sub> neutral cars.<br>(-€2 083 mio in 2020)  |
| Charging station           | Ecological premium "Ecologiepremie+" (total premium of max. € 1 million for 3 years)<br>(-€2 mio in 2022)  |   |   | Tax credit (individuals – since 1/1/2023 max. €1 750 for unidirectional - €8 000 for bidirectional)<br>(-€6 mio in 2022)<br>and increased tax deduction (companies – since 1/1/2023 150%)<br>(-€2 mio in 2021) |
| Purchase of vehicles       | Ecological premium "Ecologiepremie+" for electric busses (max. €600 000) and electric, hybrid or hydrogen trucks (max. €400 000), (total premium of max. € 1 million for 3 years)<br>(-€2 mio in 2022) |   | LEZ-premium for purchase or leasing of new electric or gasoline company car and/or charging station (max. €1 500) | Increased tax deduction for carbon neutral trucks (e.g. green, blue or turquoise hydrogen) and refuelling infrastructure (35% in 2022 - percentage decreasing to reach 13.5% in 2027)                          |
| Bikes and public transport |  | Premium for bike purchase for individuals (max. €1 250) and companies (max. €800)<br>(-€3 mio in January 2022 - September 2023) | Brussel'Air premium for alternative transport (residential - max. €500-900)<br>(-€3 mio available budget in 2022) |  |

<sup>8</sup> Applicable to expenses paid between September 2021 and August 2024. The tax credit will vary between 45% and 15% of the expenses according to the year of payment of the expenses.

## 2.2 Buildings

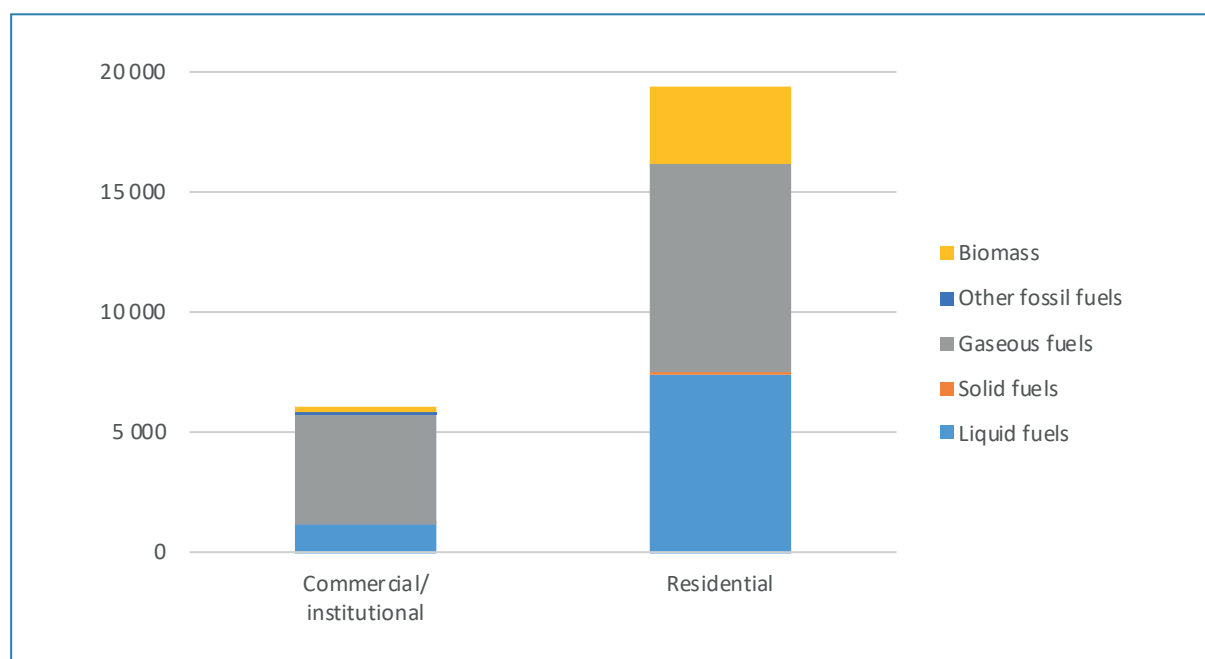
### KEY MESSAGES

- Emissions from the heating of buildings moderately decreased since 1990, by - 0.05% on average per year, but have gone up in 2021. In recent years, households have driven the reduction, while commercial and institutional emissions increased.
- Compared to neighbouring countries, Belgium has the highest electricity prices but the lowest gas and heating oil prices for household heating. This distortion in the Belgian electricity/fossil fuel price ratio is partly due to excise duties.
- Electricity prices per MWh are much higher than fossil fuel prices. 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 have buffered the price volatility for households in precarious situations during the energy crisis of 2022, however creating large fossil fuel subsidies at the same time (€184 million euro in 2021).

### 2.2.1 Emissions and energy consumption

Emissions in the building sector amount for 39.9% of non-ETS emissions in 2021. As [Figure 2.2.1](#) illustrates, the largest part of these emissions come from heating of households (76.2%). The heating of commercial and institutional buildings accounts for 23.8%.

Figure 2.2.1: Building emissions in 2021 (kt CO<sub>2</sub>-eq)



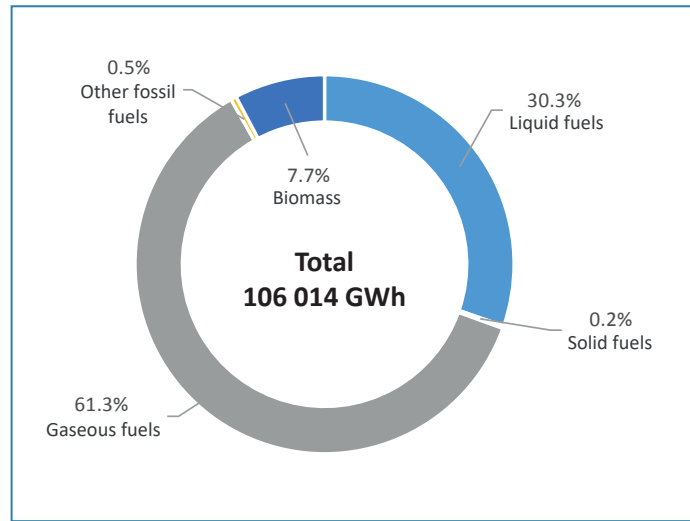
Sources: NIR 2023, MMR reporting 2023

Gas was the main heating source in 2021 (61.3%), which results in more than half of all emissions in the building sector (52.1%). As illustrated in [Figure 2.2.2](#), liquid fuels (such as diesel oil) represent almost one third of the heating market, leaving 7.7% to biomass. In the residential sector, both gas and biomass gained in market share since 2016 (resp. +6.4% and +2.1%), whereas diesel oil seems to be on a slow but steady phasing out path (-8.4%). The commercial and institutional sector is almost entirely heated by gas (80.2%) and liquid fuels (15.1%).

The electricity consumption of traditional electric heating and heat pumps is not shown in [Figure 2.2.2](#). In 2021, households consumed 19.3 TWh of electricity (Statbel, 2022). However, this includes both electricity for heating as well as all the other electricity used by households.

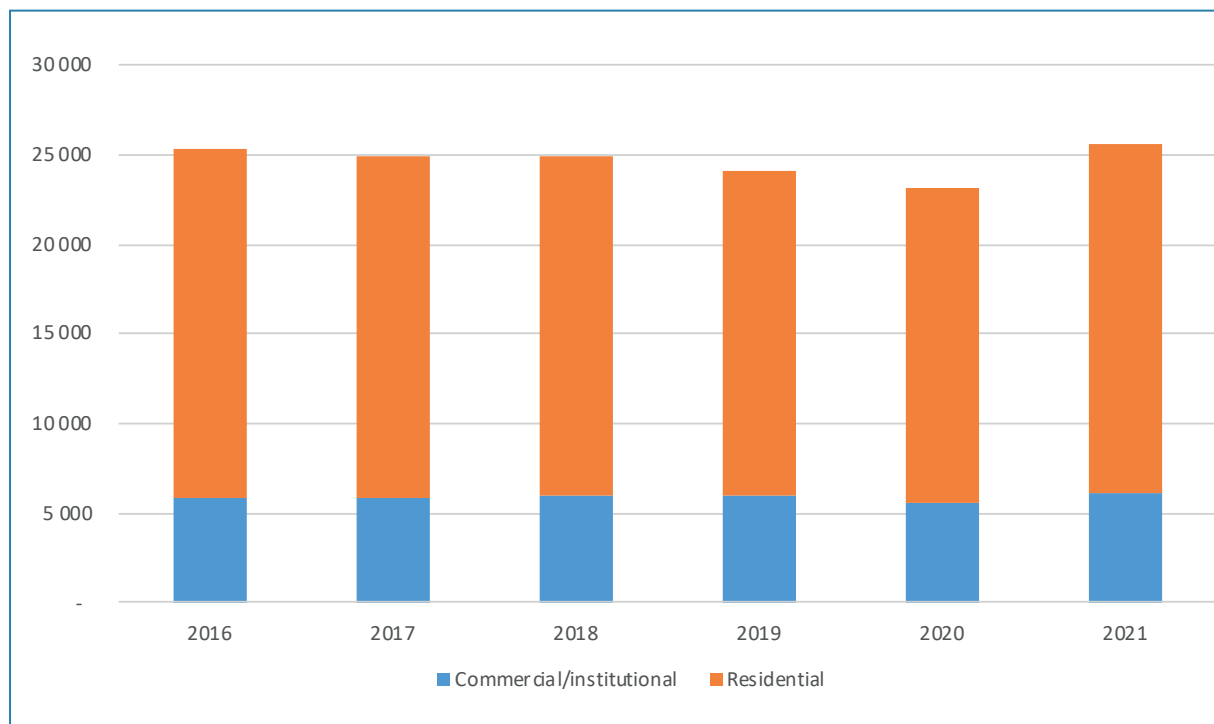
Since 2016, the emissions of residential heating have dropped each year, except for 2021. A possible explanation for this sudden increase, is temperature. 2021 had more cold days, when we compare the number of heating degree days in 2021 to the average over a 30-year period (Synergrid, 2023). Emissions from heating of commercial and institutional buildings still show an upward trend, with a drop in 2020. In total, emissions from the building sector were slowly going down until 2021, as shown in [Figure 2.2.3](#).

**Figure 2.2.2: Energy consumption of the building sector per energy product in 2021 (%)**



Sources: NIR 2023, MMR reporting 2023

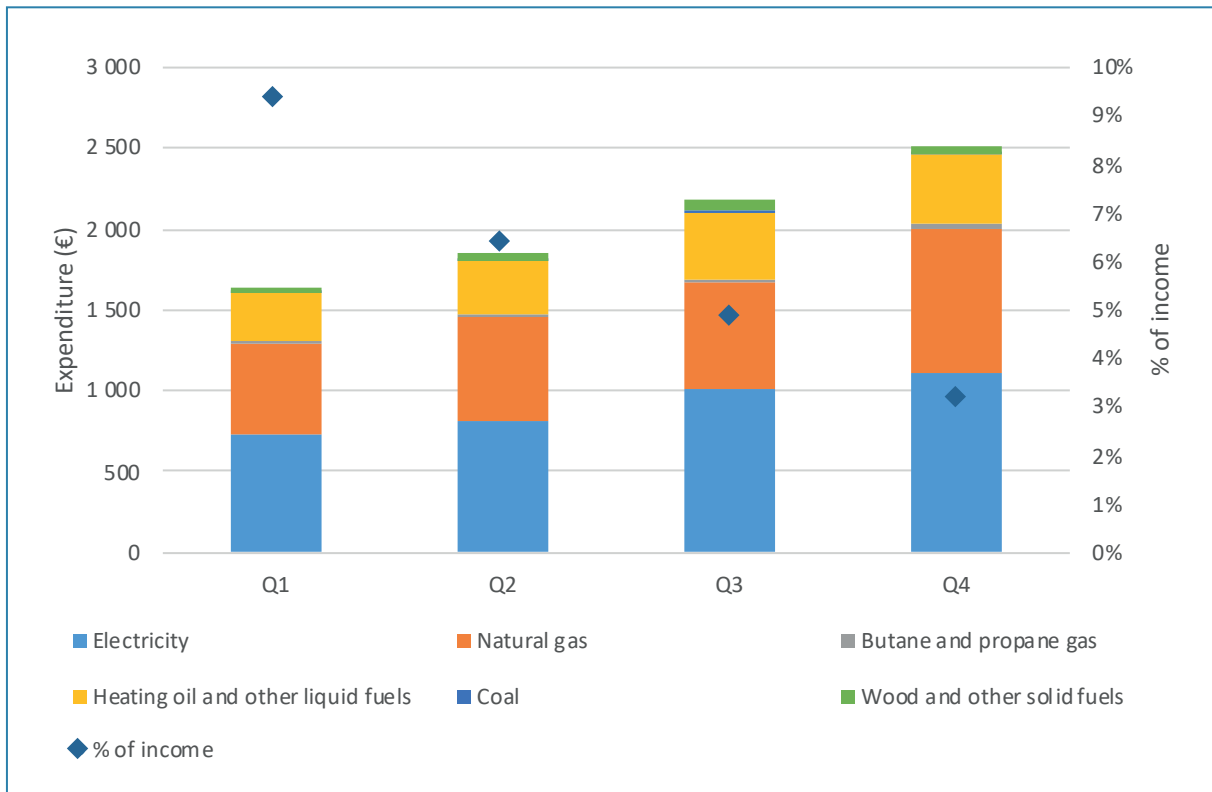
**Figure 2.2.3: Evolution of building emissions (kt CO<sub>2</sub>-eq)**



Sources: NIR 2023, MMR reporting 2023

When looking at expenditures, 5.1% of household expenditures are for electricity and heating, or €2 050 in 2022 (Figure 2.2.4). 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 2.2.4: Household expenditures on heating and electricity per income quartiles in 2022 (€/year) and as % of household income



Source: Household Budget Survey 2023

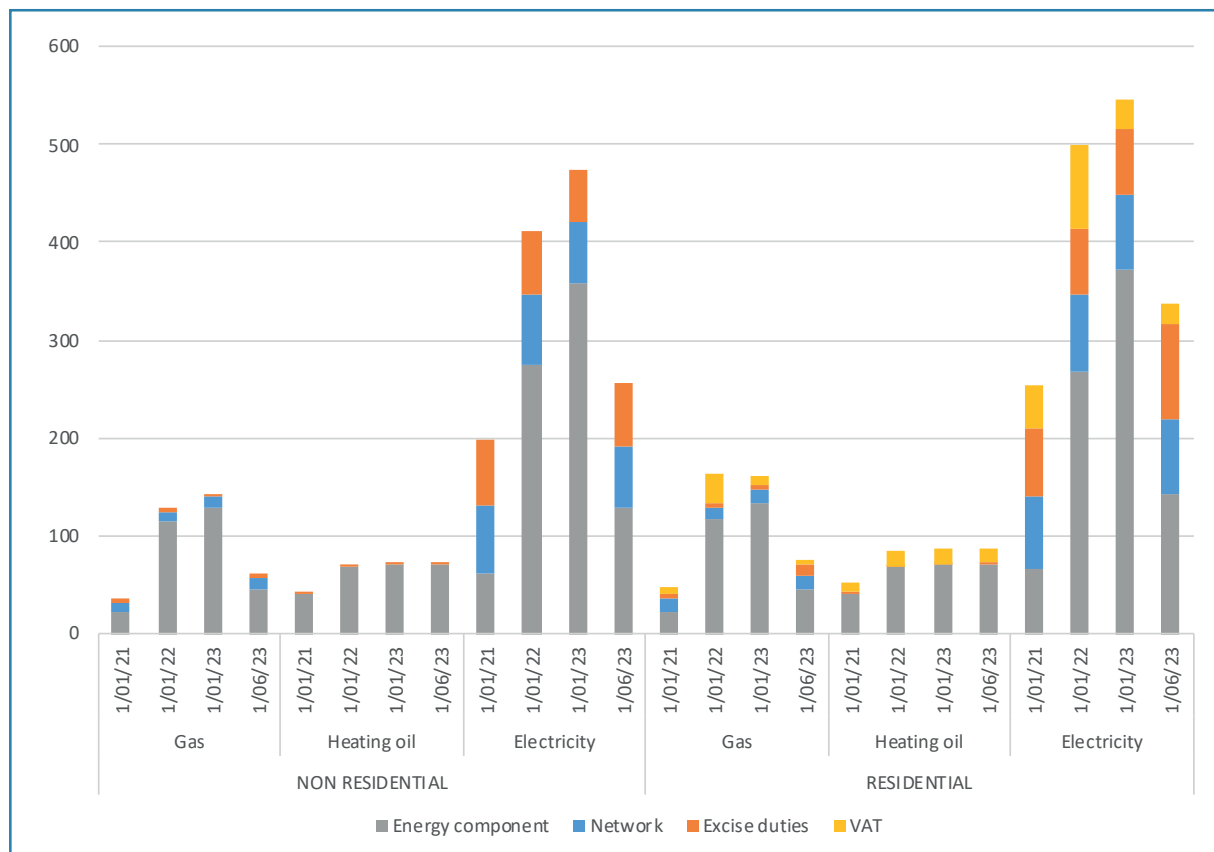
### 2.2.2 Prices, taxes and costs

In this section we analyse the prices of the most important energy sources in the building 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 and the impact of the government measures following the energy crisis. Next, we look at the total heating costs for houses by comparing houses with different heat demands. Finally, we compare the Belgian building sector with the neighbouring countries.

Figure 2.2.5 shows the evolution of gas, heating oil and electricity prices before, during and after the energy crisis. All fuel types were subject to price shocks in 2021-2022, but with different amplitudes. Electricity prices have increased considerably in 2022 compared to 2021, for both residential (+97%) and non-residential consumers (+107%). Gas prices faced an even higher increase with +234% for residential consumers and +250% for non-residential customers in 2022 compared to 2021. Households and companies heating on heating oil experienced a smaller increase (+62%). The first half of 2023 shows a decrease for electricity and gas compared to 2022, but prices remain above 2021 levels. Heating oil prices almost stagnated in the first half of 2023, compared to 2022 (+4%).

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 2023 compared to 2021 was higher for residential consumers (incl. VAT).

Figure 2.2.5: Energy prices<sup>9</sup> in the building sector per energy product (€/MWh)



Source: CREG Monthly Dashboards

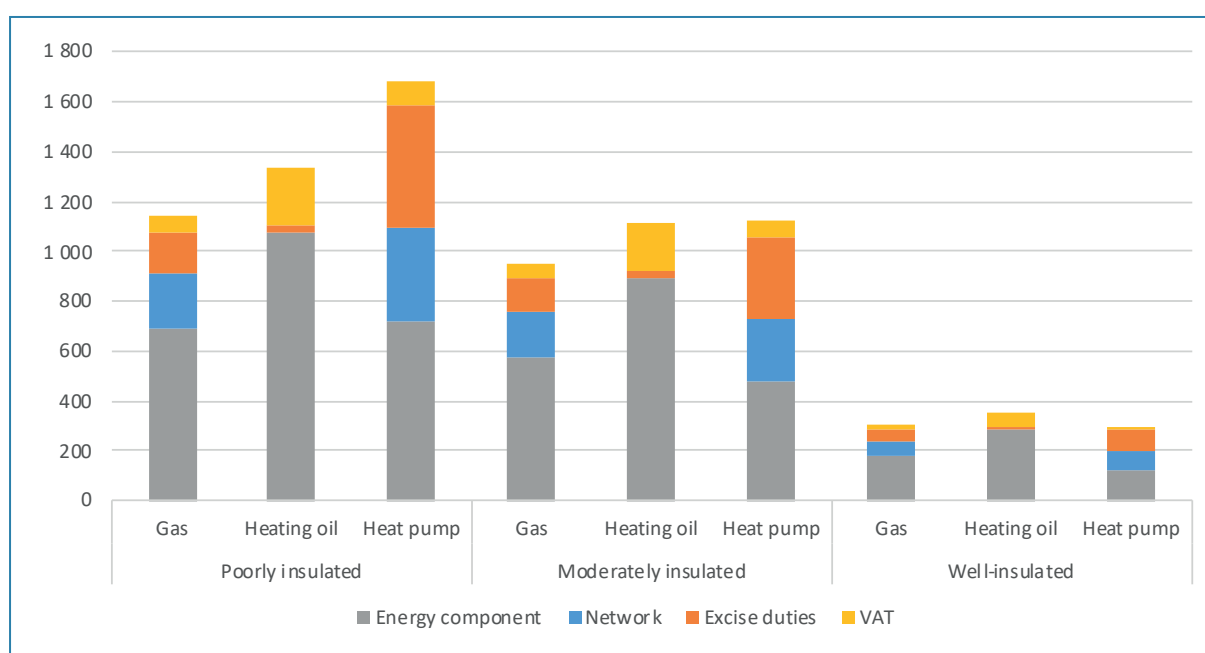
9 Average price you would pay for a year if you sign a new contract during that month (electricity and gas) or if you order heating oil in that month.

The energy crisis of 2022 has urged governments to take action. Some measures were targeted to specific groups, like extending the target group for social tariffs for gas and electricity (see section 2.2.3). Other measures were for all citizens or companies, e.g. the energy cheques for electricity, gas and heating oil, or temporarily reduced VAT and excise tariffs. Eventually, in March 2023, the government decided on a permanent reduction of the VAT to 6% on gas and electricity. To compensate the extra budgetary expenses, the government increased the excise duty rates and re-established a cliquet system to link the level of excises to market price level. Higher electricity and gas prices on the national and international markets lead to an automatic decrease of the excise duty rates and vice versa<sup>10</sup>. The effect on the price components is visible in Figure 2.2.5 between January 2022 and June 2023. The VAT drops in 2022, whereas the excise duty component gets larger between January 2023 and June 2023.

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<sup>11</sup>. It is important to note that we do not take into account any investment costs in the following comparison. Therefore, we cannot draw any conclusions on the total cost or rentability of the different heating technologies.

In June 2023, after the VAT and excise duties reform, heating on gas remains the cheapest option for both the poorly and the moderately insulated house (Figure 2.2.6). For the poorly insulated house, heating on heating oil is €194 more expensive per year compared to gas, and heat pumps are even €544 more expensive per year. For the moderately insulated house, heating oil is €162 more expensive and heat pumps are €173 more expensive than gas. Only in case of the well-insulated house, heat pumps are the best financial option, with a saving of €5 compared to gas heating and €56 compared to heating oil in heating per year.

Figure 2.2.6: Average heating cost for three house types 2023 (€/year)



Sources: own calculations based on CREG Monthly Dashboards for prices (1/6/2023)

Remarkably, the cost of the energy component for gas and heat pumps is similar in the poorly insulated house and lower for heat pumps in the moderately and well-insulated house. This implicates that network costs and even more, excise duties largely impact the difference in heating costs between heat pumps and gas. As for heating oil, it is mainly the energy component that is determining the total price, and to a lesser extent the VAT. Excise duties on heating oil are remarkably low compared to those on gas and electricity: 5 times lower compared to

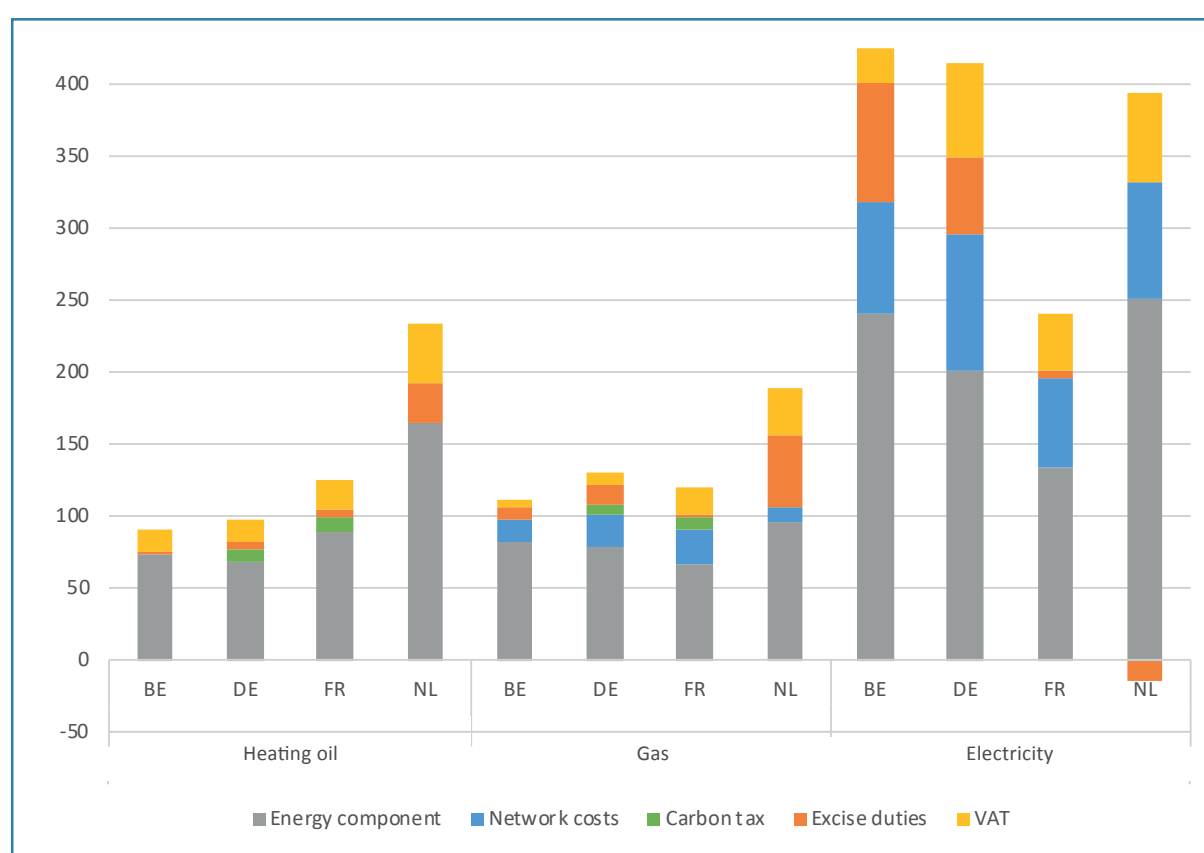
10 More information on the exact mechanism in Annex 2.

11 See Annex 1 for more information on the heating demand of the house types and the final energy consumption.

gas and 14 times lower compared to heat pumps for a moderately insulated house. In conclusion, reducing the tax difference between electricity and both gas and heating oil is a necessary step towards greener heating.

Next, we compare the electricity, oil and gas prices to Belgium's neighbouring countries. As illustrated in [Figure 2.2.7](#), France and Germany have a carbon tax, while Belgium and the Netherlands do not. The French carbon tax is frozen at €44.6/tCO<sub>2</sub> since 2018, while the German carbon tax is set at €30/tCO<sub>2</sub> since 2022. It represents 7.5% of the French and 4.6% of the German gas price for households, as well as 9.5% of the French and 8.1% of the German heating oil price. Regarding electricity prices, France is significantly cheaper compared to other countries, thanks to the lower excise duties and regulated energy component prices. Belgium has the highest electricity prices, partially due to high excise duties. However, the energy component of electricity in Belgium is also more expensive than in Germany, as Germany introduced a temporary price cap on electricity prices in 2023. Excises duties on heating oil on the other hand, are lowest in Belgium.

**Figure 2.2.7: Average prices for household heating in Belgium and neighbouring countries for the first half of 2023 (€/MWh)**



Sources: CREG Monthly Dashboards for electricity and gas prices (S1 2023), EC Weekly Oil Bulletin for heating oil prices (S1 2023), World Bank Carbon Pricing Dashboard for carbon taxes

One of the aspects that influences the rentability of heat pumps compared to gas or heating oil boilers are the relative energy prices. A recent study of the FPS Public Health (Unpublished) 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 2.1, and the price ratio electricity/heating oil should be maximum 2.5 for a good-insulated house. Although we do not further analyse price ratios and rentability in this publication, it is interesting to highlight that the price ratio electricity/gas and electricity/heating oil is the least favourable towards electricity in Belgium compared to France, Germany and the Netherlands. The electricity/heating oil ratio is 4.7 in Belgium, compared to 4.2 in Germany, 1.9 in France and only 1.6 in the Netherlands. The electricity/gas ratio is 3.8 in Belgium, compared to 3.2 in Germany, and 2.0 in both France and the Netherlands. Changes in excise duty rates can 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. Most of the support is towards a greener building sector, yet both Flanders and Wallonia still give subsidies for gas boilers to lower income households as part of the renovation subsidy.

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

|   | <i>Flemish Region</i>   | <i>Walloon Region</i>  | <i>Brussels Capital Region</i>   | <i>Federal level</i>   |
|---|---|--|--|--|
| Subsidy for renovation, insulation, solar panels, heat pumps and energy-efficiency (households) | 'Mijn Verbouwpremie' (max. €25 000)<br>e.g. premium for heat pumps (€300-6 400)<br><i>(-€56 mio of which €5 mio for heat pumps in 2022)</i> | 'Primes habitation'<br>e.g. premium for heat pumps (€1 500-9 000)  | Premium 'RENOLUTION'<br>e.g. premium for heat pumps (€4 500-6 500)<br><i>(-€54 mio available budget in 2022)</i> |  |
|   | EPC-label premium<br><i>(-€4 mio in 2022)</i>   | Premium for small roof works (max. €5 400 per bill)  |  |  |
|   | Solar panel premium (max. €750 in 2023, €375 in 2024 and €0 in 2025)<br><i>(-€20 mio in 2022)</i>   | Compensation of prosumer tariff (54% in 2023)  | Green certificates (1.81 certificate/ MWh solar energy produced)<br><i>(-€42 mio in 2021)</i>                    | Temporary reduced VAT on solar panels  |
|   | Rent and isolation premium<br><i>(-€0.4 mio in 2022)</i>  | Energy investment support for low income households  |  |  |
| Renovation loan (households)  | 'Mijn Verbouwlening'<br><i>(-€86 mio in September 2022-December 2022)</i>   | 'Rénopack' loan<br><i>(-€84 mio in 2021)</i>   | 'EcoReno' loan   |  |
| Subsidy for renovation and energy-efficiency (companies)  | Ecological premium "Ecologiepremie+" and "Strategic ecology support" for green heating and energy efficiency<br><i>(-€3 mio in 2022)</i>    | 'AMURE' for energy efficiency and insulation (40% of the investment for SEs and 50% for MEs)<br><i>(-€2 mio in 2021)</i> | Premium 'RENOLUTION'   | Increased investment deduction for energy savings (13.5%)<br><i>(-€57 mio in 2021)</i> |
|   | 'Mijn Verbouwpremie' for green heating and insulation<br><i>(-€8 mio in 2022)</i>   |  |  |  |



As for businesses the three regions 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. On top of these regional policies, the federal government gives a 13.5% tax deduction for investments in energy savings.

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, e.g. when receiving a replacement income, or a guaranteed income for elderly persons. In addition, Wallonia and Brussels Capital Region extend the recipient group of the federal social tariff to some additional groups, e.g. 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 0.2](#) and [Figure 0.3](#) in [Annex 3](#)). Especially during the energy crisis, the social tariff increased slowly compared to the commercial price. In August 2022, the federal recipient group was extended to a larger group of households in precarious situations due to the energy crisis. Whereas in July 2022 499 017 households receive the social tariff for electricity, this went up to 931 738 after the expansion (18.6%). For gas, 308 052 households initially received the social tariff, increasing to 583 164 households after the expansion (19.3%) (CREG, 2023). As of July 2023, only the initial categories of households still receive the benefit of the social tariffs.

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). There are ongoing discussions at the federal level about reforming the system without abolishing it altogether. The social tariffs would become a more gradual, instead of the current have-or-have-not system. The current reform proposal defines three groups of recipients: people with certain types of social allowances, people with a yearly income lower than €17 500 and people with a yearly income between €17 500 and €25 000. The three groups would receive the lowest tariff on the market by default. The first two groups would receive an extra discount, larger for the first group than the second.

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, e.g. 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

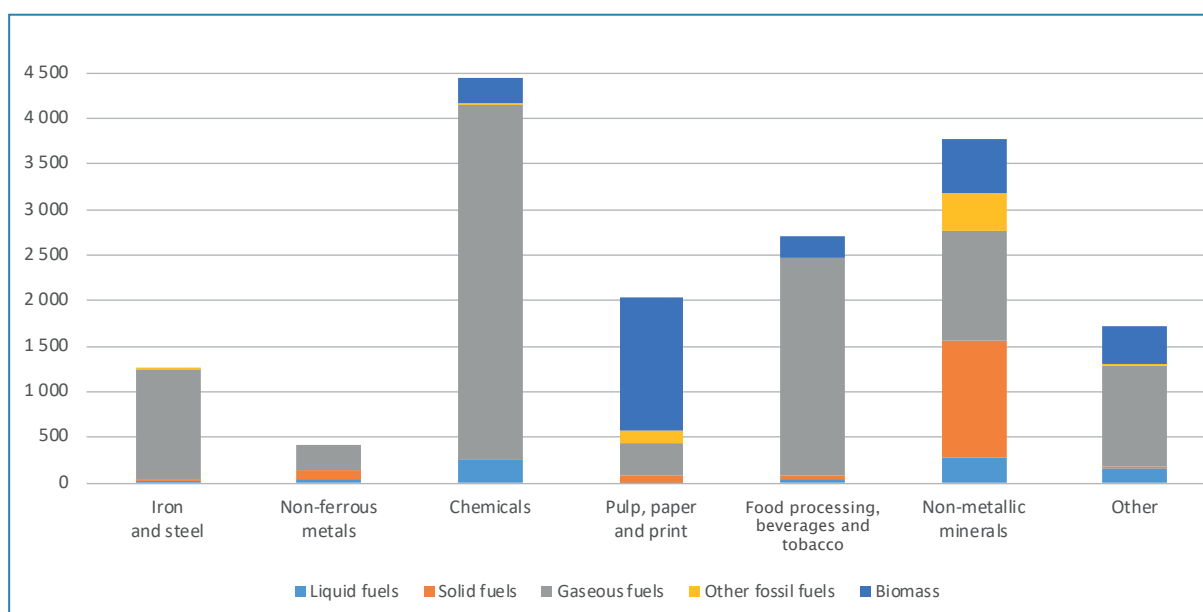
- Industrial emissions have dropped since 1990, but stagnated the last ten years. Natural gas stays the most important energy source.
- Gas prices in Belgium are competitive with the neighbouring countries, largely because of low network and other costs, like excise duties. Flanders offers more reductions on electricity costs than Wallonia and Brussels. Overall, Belgium is less competitive for electricity prices than its neighbouring countries. Whether or not companies are eligible for reductions on excise duties and other costs, has a significant impact on this.
- The price for auctioned ETS allowances rapidly increased in 2021 and kept a high level in 2022, generating €1.2 billion of revenues in 2021-2022 for the Belgian governments. A burden sharing agreement has yet to be adopted in order to distribute these revenues among the federal and regional entities.
- Energy agreements between regional entities and companies or sector federations are potentially an important instrument for CO<sub>2</sub> reduction in the industry. However, the exact impact on CO<sub>2</sub> emissions of the energy agreements and subsidies linked to the agreements is not clear.

### 2.3.1 Emissions and energy consumption

The industry takes up 31.3% of all GHG emissions in Belgium in 2021. 87.9% of these emissions are covered by the EU ETS, of which three quarters are process emissions. The non-ETS emissions are mostly emissions from fuel combustion (11.8%) and only a small part are process emissions (0.2%). The following section discusses the emissions from fuel combustion (energy emissions) of the industrial sector.

As shown in [Figure 2.3.1](#), 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.

Figure 2.3.1: Combustion emissions from manufacturing industry and construction per fuel type in 2021 (kt CO<sub>2</sub>-eq)

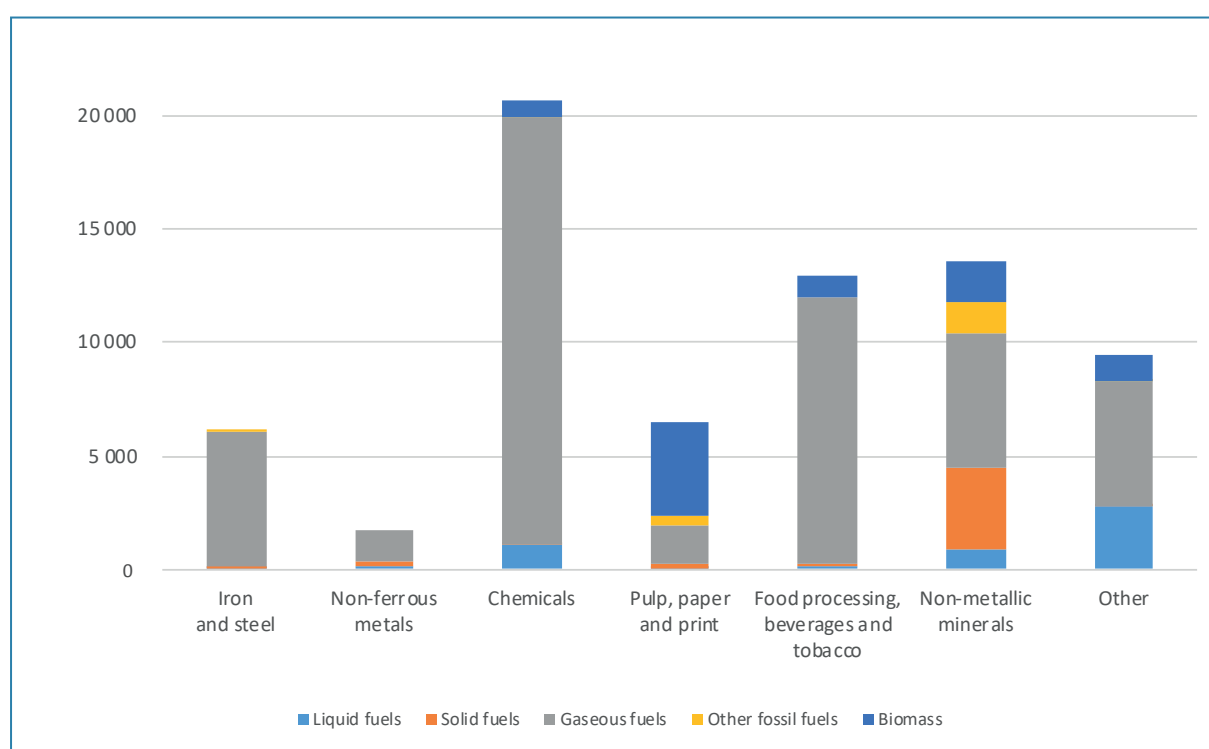


Sources: NIR 2023, MMR reporting 2023

Industry emissions have strongly decreased from 1990 until 2016, but increased since 2016 (see [Figure 0.4](#) in [Annex 3](#)). Emissions increased with 2.3% since 2016, despite the significant drop in industry emissions in 2019 (-2.4%) and 2020 (-3.4%). Regarding the different sectors, non-ferrous metals, non-metallic minerals and pulp, paper and print have diminished their emissions with an average of 5.9%. The largest increase in emissions is visible in the food processing, beverages and tobacco industry (+12.7%), followed by iron and steel (+7.1%) and chemicals (+6.7%).

[Figure 2.3.2](#) 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 63% of all energy consumption. In total energy products for energy use sum up to 70 986 GWh. Energy products used as feedstocks are not shown in [Figure 2.3.2](#), and make up 87 406 GWh or 55.2% of all energy products (Statbel, 2022). Feedstocks are exempted from excise duties and will continue to be under the current reform proposal of the Energy Taxation Directive (ETD). 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 2.3.2: Energy consumption of industry sector in 2021 (GWh)



Sources: NIR 2023, MMR reporting 2023

### 2.3.2 Prices, taxes and costs

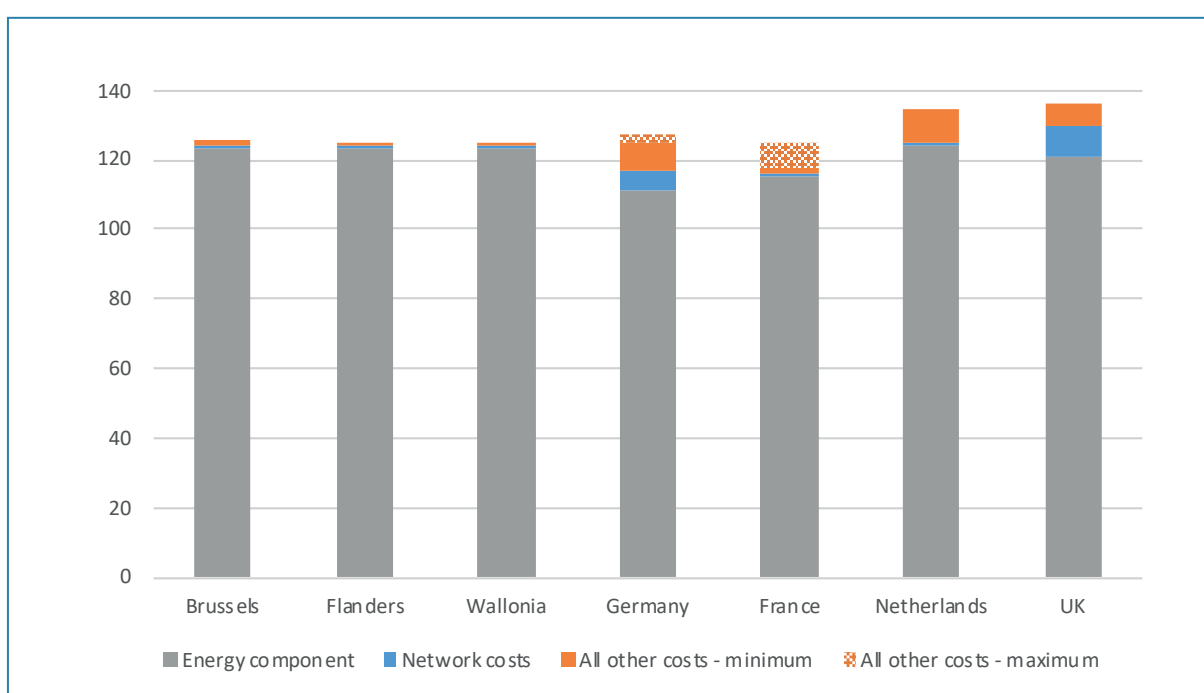
Energy prices for industrial companies are more complex to analyse than residential prices, given the wide divergence in consumption profiles and the numerous exemptions and discount structures in different countries for example for electro-intensive customers. PwC (FORBEG, 2023) and Deloitte both publish 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 increased in 2022 in Belgium and its neighbouring countries, mainly driven by the energy component. For Belgium, the total gas price increased by more than 500%

from 2021 to 2023 (for consumption of 100 000 MWh per year). The electricity price increased by more than 140% (for consumption 25 000 MWh per year). Two exceptions are France and Germany. France has a long standing tradition of regulated rates for gas and electricity. Germany introduced a temporary price cap (January 2023-April 2024) on electricity and gas prices for households and companies. For large industrial customers, the price cap of €0.13/kWh for electricity and €0.07/kWh for gas will be applied to 70% of their 2021-consumption level.

Second, we note that network costs and excise duties only take up 1 to 6% of the total price for gas in Belgium, while they take up 6 to 26% of the total price for electricity. Moreover, network costs and excise duties are degressive (see [Figure 0.5](#) and [Figure 0.6](#) in [Annex 3](#)). Excise duty rates on natural gas used as heating fuel are lower for higher consumption brackets, going from €1.66/MWh in the lowest bracket to €1.15/MWh in the highest consumption bracket for companies<sup>12</sup>. The same goes for electricity, where the excise duty rate goes from €14.21/MWh (lowest consumption bracket) to €0.50/MWh (highest consumption bracket)<sup>13</sup>.

Figure 2.3.3: Gas prices for industrial customers in Belgium and neighbouring countries – G1 profile<sup>14</sup> (€/MWh)



Source: FORBEG, 2023

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 2.3.3](#)). The Netherlands have the highest price for the energy component and other costs for gas. France and Germany have similar total gas prices as Belgium, but have a lower energy component and higher network costs and other costs. France also has the largest potential reductions on other costs of all neighbouring countries. Germany had a higher energy component for gas than Belgium in 2022, but introduced a temporary price cap in 2023. Industrial customers pay a maximum price of €0.07/kWh for the first 70% of their gas consumption of the previous year. 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, especially for electro-intensive companies, as it gives large discounts to electro-intensive compa-

<sup>12</sup> Excise duty rates for companies without “energiebeleidsovereenkomst”, “accord de branche” or similar agreement.

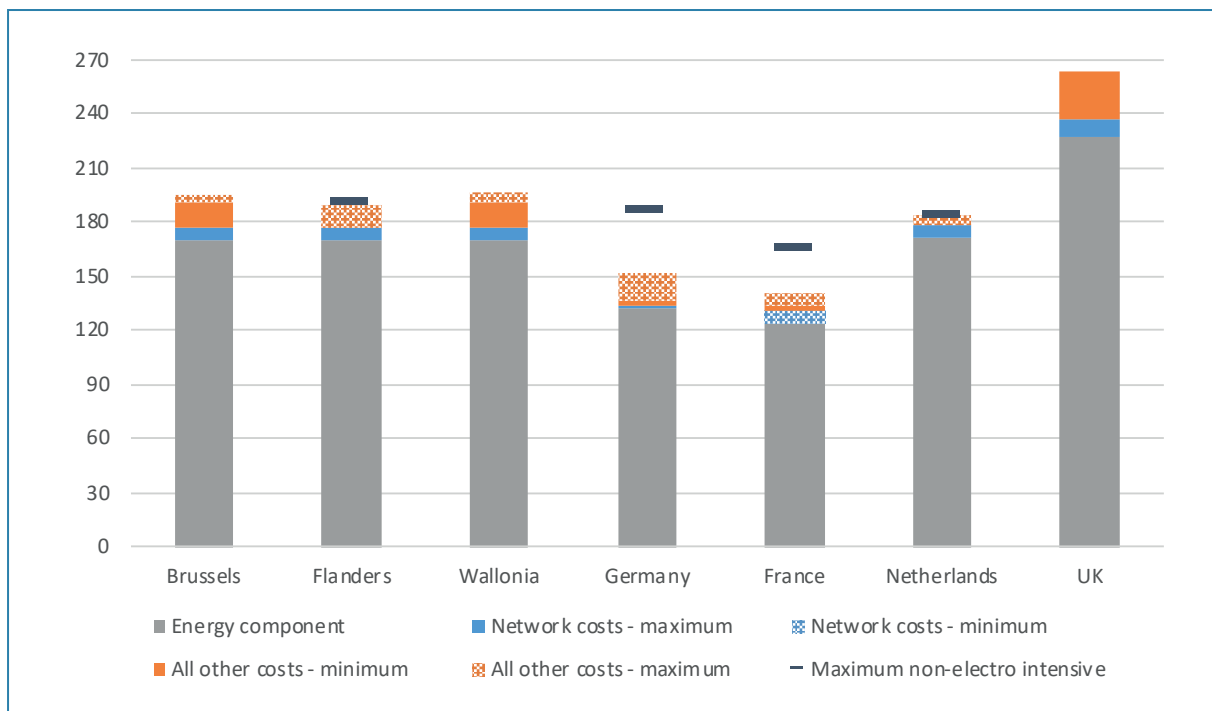
<sup>13</sup> Excise duty rates for companies connected to the transport or distribution grid with a voltage level of > 1kV.

<sup>14</sup> See [Annex 1](#) for more information on the consumption profiles.

panies 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, e.g. for metallurgical processes, dual use of electricity or in chemistry, benefit from exemptions on 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 2.3.4](#), but are discussed in [Section 2.3.4](#).

As [Figure 2.3.4](#) illustrates, Germany and France have much lower energy components for electricity in 2022 thanks to respectively a price cap and regulated prices. In 2021, energy components are similar between Belgium and the neighbouring countries, except for France. For electro-intensive companies, the Netherlands, France and Germany offer large reductions on network and other costs, which largely influence the total price and make these countries more competitive than the UK and Belgium. For non-electro intensive companies, Belgium has comparable price levels to Germany and the Netherlands. Again, France has lower prices for non-electro intensive companies thanks to regulated prices for the energy component.

**Figure 2.3.4: Electricity prices for industrial customers in Belgium and neighbouring countries – E3 profile<sup>15</sup> (€/MWh)**



Source: FORBEG, 2023

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 whether companies are electro intensive or not and whether they are eligible for additional specific reductions on excise duties. The temporary price cap in Germany has a significant impact on the competitiveness of electricity prices.

<sup>15</sup> See [Annex 1](#) for more information on the consumption profiles.

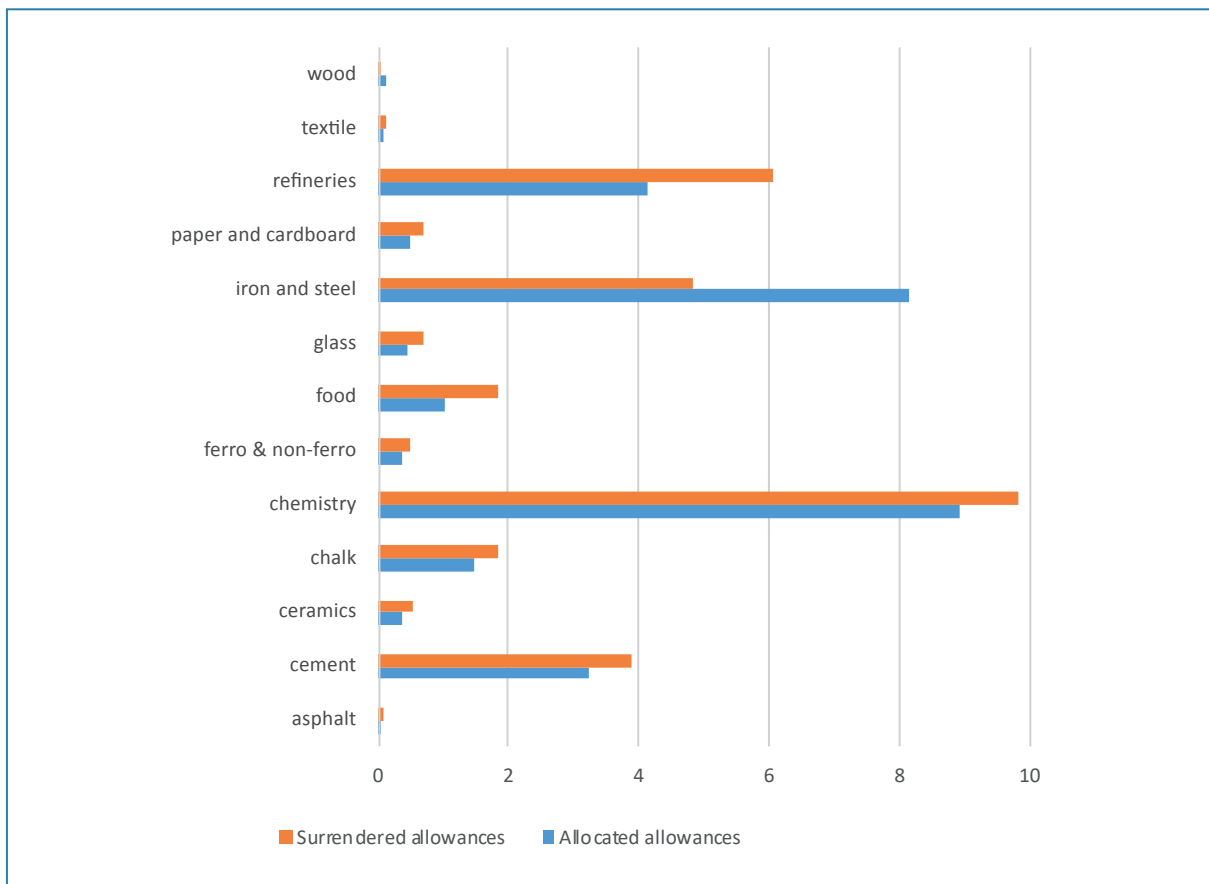
### 2.3.3 EU ETS

The European Emissions Trading System (EU ETS) 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<sub>2</sub>, N<sub>2</sub>O and PFC emissions from the electricity and heat generation sector, the energy-intensive industry sectors and aviation within the European Economic Area (EEA). It will also cover the emissions from maritime transport from 2024.

The evolution of the surrendered allowances in Belgium – and thus the emissions – differs widely between industrial sectors (see [Figure 0.7](#) in [Annex 3](#)). Most sectors stagnated since 2013 and had a drop in surrendered allowances in 2020 due to a covid-related slowdown of the industrial production. In 2021, the total allowances surrendered in Belgium were 2.5% lower compared to the beginning of phase 3 of the ETS (2013), but until 2019 the total amount of surrendered allowances increased.

[Figure 2.3.5](#) shows the allocated and surrendered ETS allowances for the energy-intensive industry sectors. 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 in Belgium receives 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) compared to the rest of the European iron and steel sector.

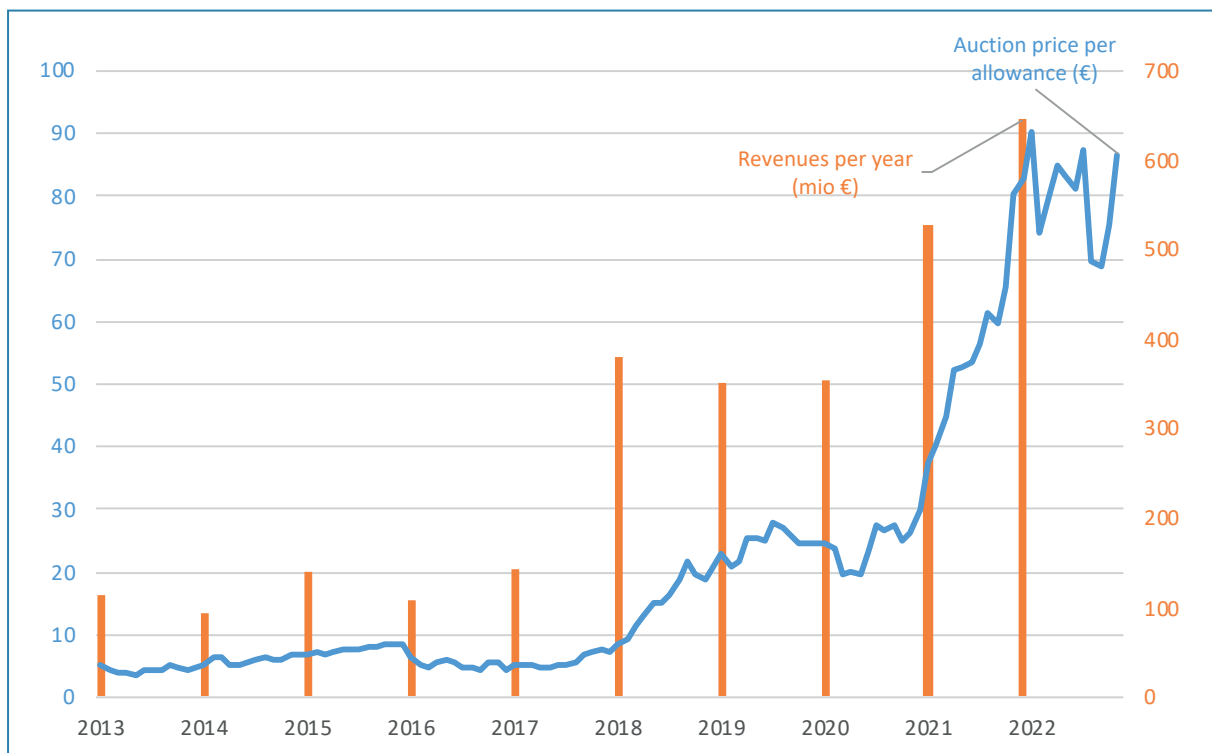
Figure 2.3.5: Surrendered and allocated ETS allowances per industrial sector in 2021 (in millions)



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 2.3.6](#), the average auction price for an ETS allowance increased since 2013 accelerating even more since 2021, the start of the fourth phase of the EU ETS, and kept a high level in 2022. In 2022, 8.1 million allowances were auctioned for Belgium at an average price of €79.5, generating a total revenue of €646.1 million. ETS allowance auctions have created a revenue of €2.9 billion for Belgium since the beginning of the auctions in 2013. These revenues had 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 in principle on the division of the ETS revenues of 2021 and 2022. For the coming years, an agreement has yet to be found, in order to avoid that revenues are blocked.

Figure 2.3.6: Average auction price of ETS allowance (€) and total auction revenues in Belgium (mio €)



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 ('Energiebeleids-overeenkomst') and Wallonia ('Accord de Branche') (VITO, 2023; SPW Energie, 2023). 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 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 from 2014-2020 to 2023, while negotiating on new agreements. Flanders made new agreements for 2023-2026, following the 2015-2022 agreements.

In 2021, 346 companies participated in Flanders. According to their annual report, this led to a reduction in primary energy consumption of 34.6 PJ and a reduction of 2 Mt CO<sub>2</sub> emissions (VITO, 2023). In Wallonia, 231 com-

panies participated in 2020, generating a reduction of 0.9 PJ in primary energy consumption and a reduction of 82 kt CO<sub>2</sub> emissions according to their annual report (SPW Energie, 2023).

Some differences exist between the Flemish and the Walloon agreements. First, in Wallonia the agreement is made between the government and sectoral federations. These federations inform and motivate their member companies during the duration of the agreement. 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 on CO<sub>2</sub> reduction and energy savings, 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 Walloon agreements include a number of support mechanisms and subsidies, of which the costs are systematically calculated in the annual report of the Walloon government on the 'Accords de branche', as shown in [Table 4](#). The Flemish annual reports is 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 companies in Flanders get as compensation for 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'**

| <i>Support mechanism</i>  | <i>Cost in 2020</i> |
|---|---------------------|
| 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: Annual report 2020 of the « Accord de branche »*

On 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 1<sup>st</sup> January of 2022 into a special excise duty, which is degressive for all companies. The only advantage left on the federal level today are the lower excise duty rates on gas used as heating fuel (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 e.g. carbon neutral trucks and energy saving investments (see Section [2.1.3](#) and [2.2.3](#)). However, a reform on the increased investment deduction is, at the time of writing, under political discussion (see Section [4. Policy developments](#)).



## 2.4 Agriculture

### KEY MESSAGES

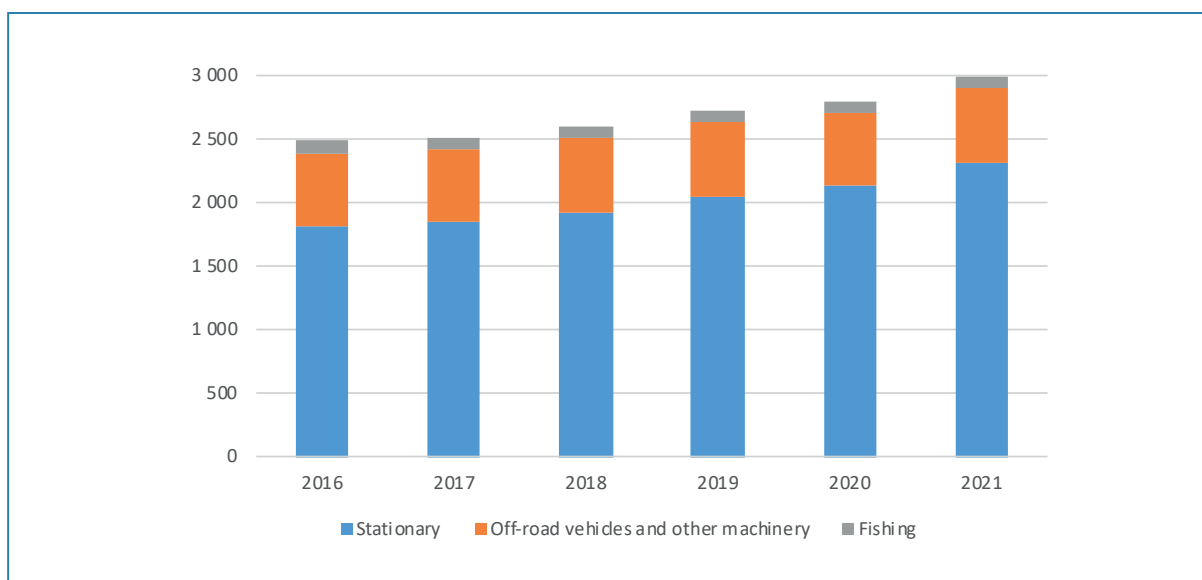
- Since 1990, non-energy emissions in agriculture stagnated, while energy emissions, mostly heating emissions for e.g. greenhouses, went up since 2009 with an average yearly rate of 3.1%.
- Non-energy emissions in agriculture are not subject to any taxation measures.
- Energy products for agricultural 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 17.8% of non-ETS GHG emissions in 2021, or 12.3 Mt CO<sub>2</sub>-eq. More than three quarters of this are non-energy emissions, e.g. 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 2021 came from stationary combustion (77.5%), off-road vehicles and other machinery (19.4%) and fishing (3.1%). Since 2016, emissions in agriculture have only gone up, with a total increase of 20.1% (Figure 2.4.1). This increase is entirely driven by higher stationary combustion emissions, while emissions from off-road vehicles and fishing slightly decreased (resp. -1.0% and -1.7%).

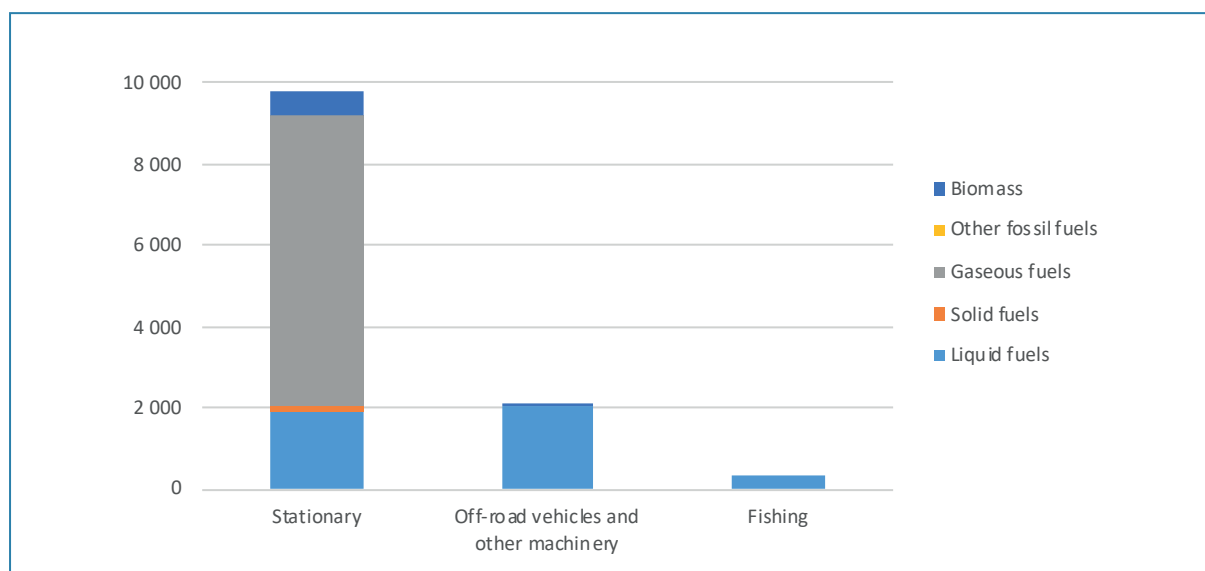
Figure 2.4.1: Evolution of agricultural energy emissions (kt CO<sub>2</sub>-eq)



Sources: NIR 2023, MMR reporting 2023

Gaseous fuels are the largest fuel source in the agricultural sector for stationary combustion, which is for a large part used for the heating of greenhouses ([Figure 2.4.2](#)). Off-road vehicles and the fishing sector rely almost entirely on gasoline and diesel oil.

Figure 2.4.2: Energy consumption of the agricultural sector in 2021 (GWh)



Sources: NIR 2023, MMR reporting 2023

## 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<sup>16</sup>. However, the agricultural sector receives exemptions on excise duties. 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. This gives the agricultural sector a significant discount on energy prices compared to non-residential consumers. For example, excise duties made up 8.6% of the total price per MWh for gas for a non-residential customer in June 2023. For heating oil, excise duties represent only 2.4% of the total price, but for electricity the advantage goes up to 25.6%.

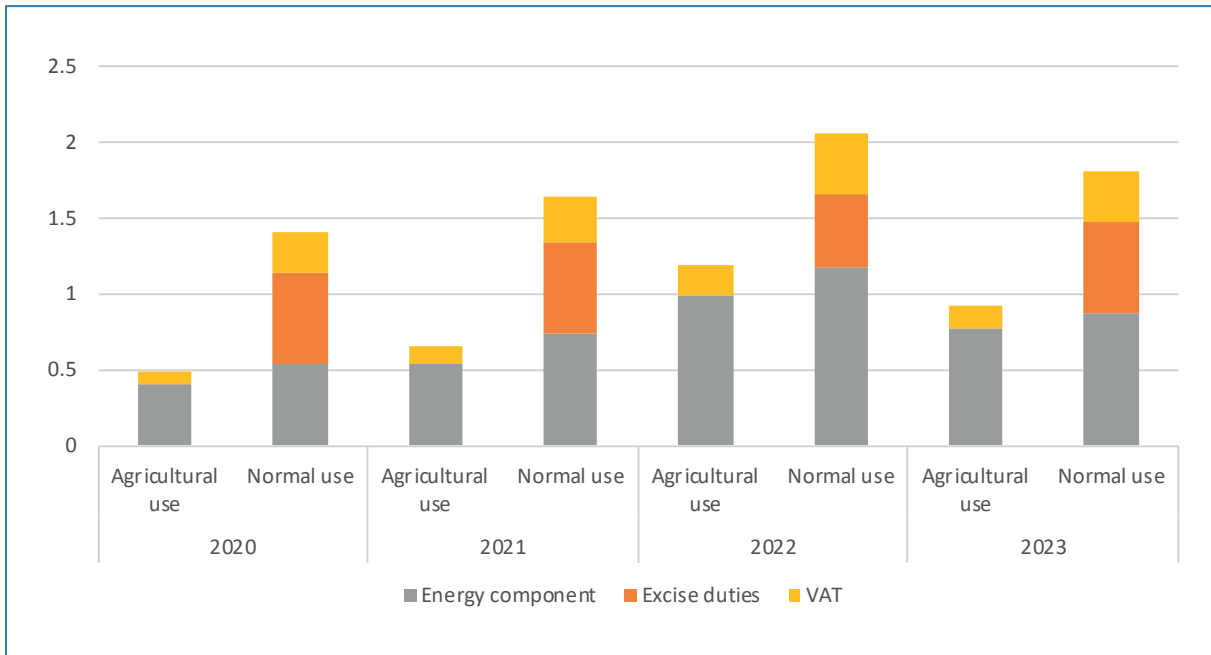
Second, we look at energy prices for transport purposes in agriculture. All energy products and electricity used as motor fuel are exempted from excise duties if exclusively used in agricultural, horticultural or piscicultural works or in forestry. [Figure 2.4.3](#) shows the price difference between diesel used as motor fuel in the agricultural sector versus diesel used as motor fuel by individuals. In the first half of 2023, diesel prices were 49.0% 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 progress report on the National Energy and Climate Plan (CNC-Concere, 2023), all these exemptions on excise duties add up to a total subsidy to the agricultural sector of €7.8 million in 2021.

<sup>16</sup> See Section [2.2.2](#) for a full analysis on commercial heating prices.

Figure 2.4.3: Diesel prices for agricultural use compared to individual use (€/litre)



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

## 2.5 Energy industries

### KEY MESSAGES

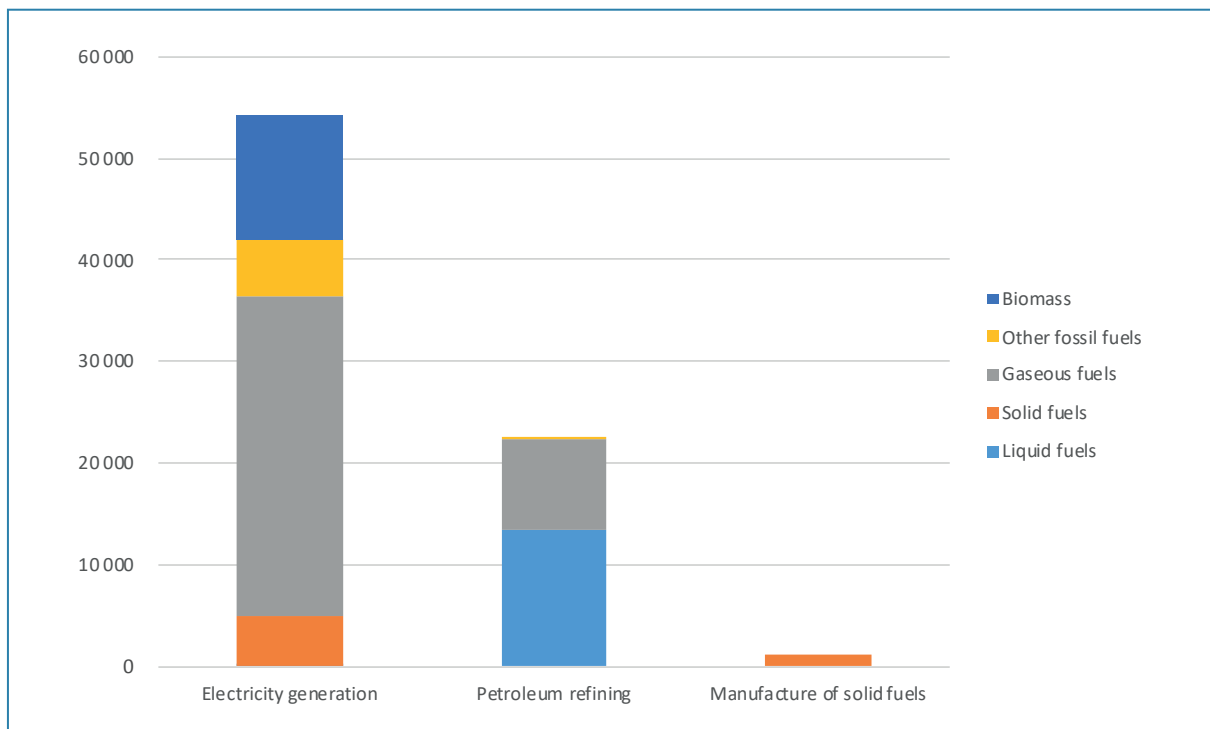
- The emissions of the energy industry strongly decreased since 1990, and were responsible for 16.4% of all GHG emissions in 2021.
- The electricity production sector and the petroleum refining sector have benefited from the higher gas, oil and electricity prices in 2022. The federal government decided on a windfall profit tax and a solidarity contribution in those sectors.

### 2.5.1 Emissions and energy consumption

In 2021, the energy industry was responsible for 16.4% of all GHG emissions, of which 87.3% was covered by the EU ETS. Approximately three quarters of the emissions are linked to the generation of electricity. The rest originates from petroleum refining (22.7%) 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 (-38.8%).

As illustrated in [Figure 2.5.1](#), gas is the largest energy source for electricity generation (58.1%), followed by biomass (22.7%). 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 2.5.1: Energy consumption of energy industries (GWh)



Sources: NIR 2023, MMR reporting 2023

## 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 federal government adopted a tax for electricity production with the energy crisis of 2022 to tax windfall profits. The current European electricity market 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 at the end of 2021 and 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. In order to redistribute these windfall profits, the federal government decided in December 2022 on a tax of 100% on market revenues above a ceiling of €130/MWh of electricity. For electricity from solid and gaseous biomass fuels and for incineration of urban waste, there is a ceiling of €180/MWh.

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 have windfall profits in 2022 as their price to sell was fixed at a lower rate.

Third, the federal government also decided on a temporary solidarity contribution from the petroleum refining sector. All oil companies with refining capacity have to pay €6.9 per ton of crude oil between January 2022 and December 2023. The Belgian Monitoring Committee estimated that the windfall profits tax on electricity production and the temporary solidarity contribution would generate an extra public revenue of respectively €408 million and €289 million in 2022 and €692 million and €151 million in 2023. (Monitoring Committee, 2023).

### 3. Public costs and revenues

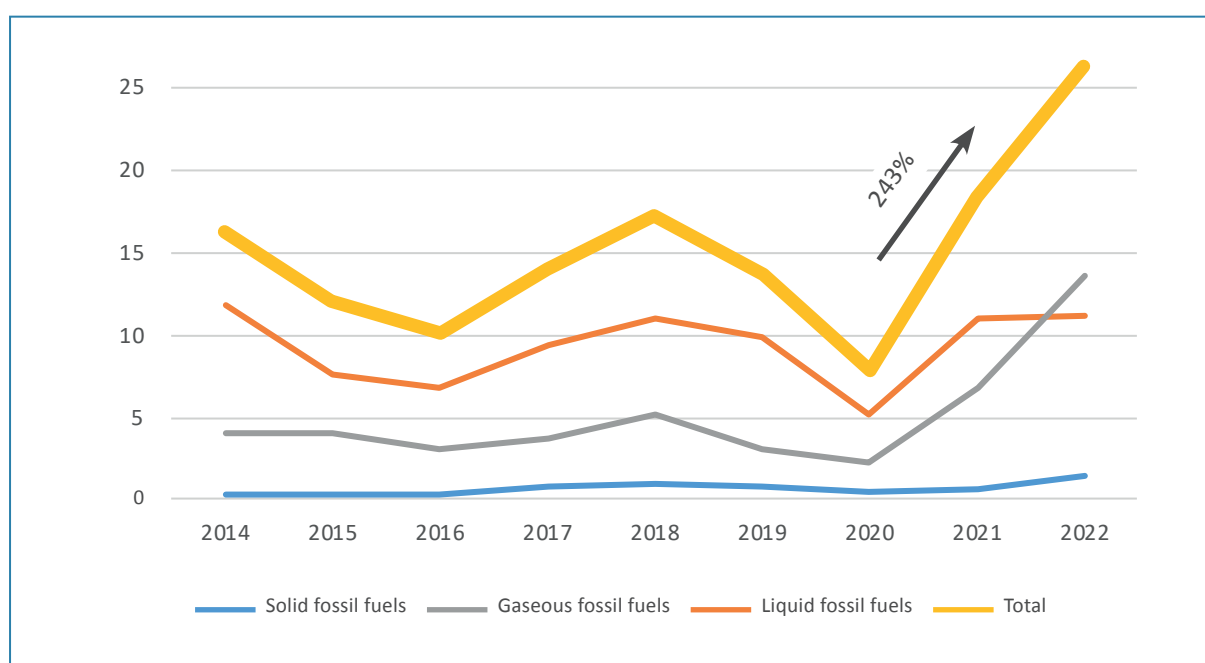
#### KEY MESSAGES

- *Import of fossil fuels costed €26.3 billion in 2022. It exposes households, companies and public entities to price and supply volatility and international dependencies. Shifting towards domestic, renewable energy is key in lowering these dependencies.*
- *The public revenues from energy products and electricity represent 1.8% of Belgian GDP or €9.4 billion in 2021. 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. Phasing out 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 2022, more than half of all the imported oil came from OPEC countries and Russia, whereas gas came for 61% from Norway (FPS Economy, 2023). 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<sup>17</sup> was €26.3 billion in 2022, or 4.8% of Belgian GDP (Eurostat, 2023). [Figure 3.1.1](#) 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). For Belgium, import costs of fossil fuels have increased by 243% from 2020 to 2022. In the 2022 Belgian Country report (European Commission, 2022), the European Commission stated that “Belgium’s overall dependency on fossil fuels imports is high”. Decarbonising electricity production through boosting renewable energy can help to reduce fossil fuel dependency.

Figure 3.1.1: Estimation of net import cost of all fossil fuels (billion €)



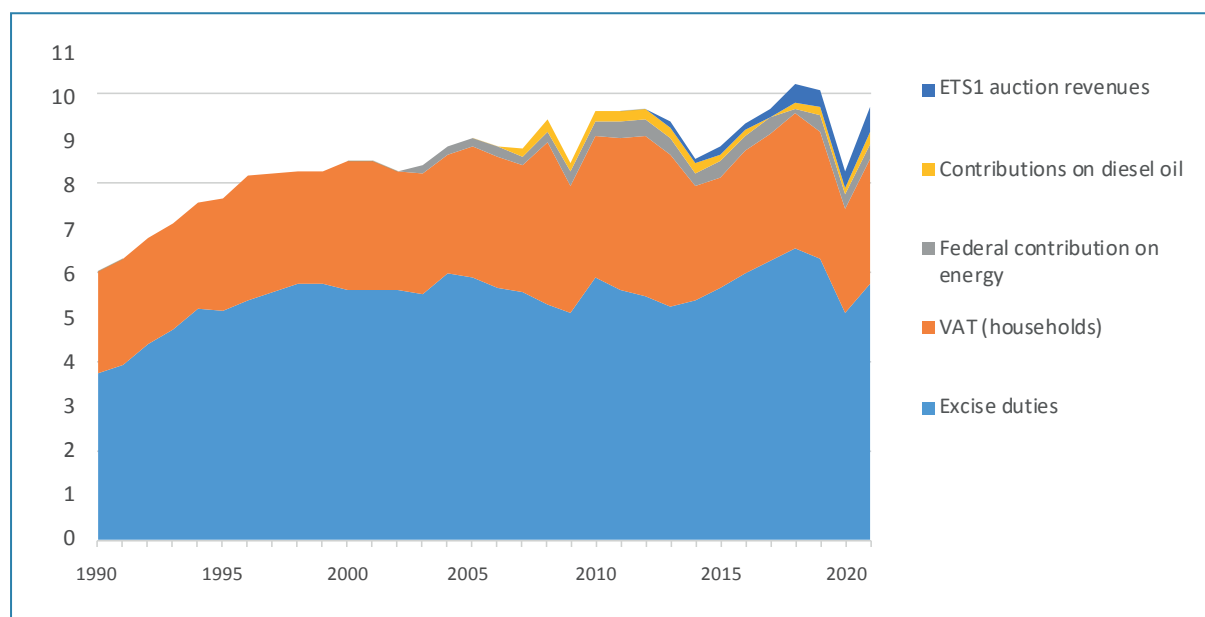
Source: National Bank of Belgium Online Statistics

17 Calculated as the total value of the import of fossil fuels minus the total value of the export of fossil fuels.

## 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 3.2.1](#) shows the total amount of revenues from energy products and electricity since 1990. More information on the methodology can be found in [Annex 1](#).

Figure 3.2.1: Public revenues from energy products and electricity, 1990-2021  
(billion €, in 2022 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

The total amount of revenues in 2021 equals €9.7 billion (in 2022 prices). The largest part (€5.8 billion or 59.4%) comes from excise duties on energy, followed by VAT (€2.8 billion or 28.6%). The revenues from ETS1 is the third largest revenues source on energy with €0.6 billion or 5.7%. Finally, the federal contribution on energy and the contributions on diesel oil both account for €0.3 billion.

Decarbonisation will have a significant impact on these revenues, since a large part are taxes on fossil fuels or on electricity produced with fossil fuels. Although CO<sub>2</sub> emissions only slowly decreased in the past decade, we notice already a decrease in the energy revenues. In 2005, the revenues on energy products and electricity still represented 2.0% of Belgian GDP, whereas this was only 1.8% in 2021. CO<sub>2</sub> emissions dropped by 23.0% during this period. Without any change in the tax base, a decarbonisation towards net zero will further decrease the revenues from fossil fuels, such as VAT and excise duties on gas and oil. Revenues from VAT and excise duties on electricity will not disappear, as they will still be collected on electricity produced by renewable sources.

At the same time, new revenues pop up e.g. from carbon taxation. The revenues from ETS1 allowances are still low, but prices rapidly increased in 2021 (see Section [2.3.3](#)). As shown in [Figure 3.2.1](#), ETS allowances represented 5.9% of the revenues on energy, in 2021. In addition, the new ETS (ETS2) on buildings and road transport will generate a new revenue stream for European countries (see Section [4. Policy developments](#)). This is expected to be €6 billion in the first 6 years of the ETS2 (not shown in [Figure 3.2.1](#)) (own calculations). However, much will depend on the price levels of the allowances. In addition, Belgium will receive up to €1.7 billion from the Social Climate Fund and €4 billion from the CBAM revenues for 2026-2032 (see Section 4). In any case, with current price estimations the combination of these new revenues might not fully compensate the whole loss of reve-



nues 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 Public Health, 2023). Phasing out fossil fuel subsidies can increase 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.

In May 2023 the European Union adopted a new emission trading system (ETS2) for buildings, road transport and some small industry not covered by the existing emission 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 will start in 2027. There will not be any free allocation in the ETS2, but all the ETS2 allowances will be auctioned. 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 temporary direct income support or investment support. The remainder of the revenues will go directly to all member states who can use them to support climate and social projects.

According to own calculations based on an increasing auction price of €25 in 2027 to €55 in 2032, auction revenues from the ETS2 for Belgium would be worth up to €6 billion for the period 2027-2032 (in current prices). With regard to the price of the allowances, a stability mechanism will be triggered if the price of allowances is higher than €45 per allowance for two months in a row that will put additional allowances on the market. Belgium will also receive 2.56% of the Social Climate Fund. As the budget of the Social Climate Fund is fixed at a maximum of €65 billion for the period 2026-2032, Belgium will receive up to €1.7 billion.

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. 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 largest part of these revenues goes into the budget of the EU, the rest is redistributed between member states. According to estimations of the European Commission and own calculations, Belgium will receive €4 billion for 2026-2032 from CBAM.

On the Belgian level, a first step towards a fiscal reform has been set. Federal Minister of Finance Vincent Van Peteghem launched his blueprint for a federal fiscal reform in July 2022. With regard to energy taxes, the plan proposes to permanently lower the VAT on electricity, reform the excise duties on electricity and gas to differentiate between base consumption and additional consumption, introduce a CO<sub>2</sub> tax for sectors not covered by the EU ETS1, support the introduction of a kerosene tax on European level and lower the discount on professional use of diesel oil (Van Peteghem, 2022).

Some proposals of the plan have already been executed, e.g. permanent lowering of VAT on electricity and a coupling of excise duties to energy prices through the cliquet system. However, some major steps still have to be taken. As no CO<sub>2</sub> tax for sectors not covered by the current EU ETS has been introduced before the end of 2023, Belgium will automatically be part of the ETS2 system in 2027, as mentioned above. A first step has also been taken for the professional diesel, lowering the reimbursement by 11.0% from 2022 to 2026, but it still remain at a significant level. In November 2023, the federal government decided on a reform of the increased tax deduction for companies. Environmental investments and investments in energy efficiency and clean transport will receive increased tax deductions. At the time of writing the government has ceased negotiations on a more comprehensive tax reform.

# 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 on excise duties, generating fossil fuel subsidies. In addition, several other fossil fuel subsidies were mentioned, e.g. social tariffs for electricity and gas and company cars.

As parts of energy and climate policy are regional competences, the publication includes a 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 and will gain importance in energy taxation in the coming years. The development of the new ETS for buildings, road transport and small industry, as well as the Social Climate Fund and the Carbon Border Adjustment Mechanism will have its impact on Belgian energy taxation policies.

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 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 recent energy crisis.

In summary, addressing the complexities and incoherencies of the taxation 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 incentivize decarbonisation, safeguard public revenues and build a more resilient framework for the energy transition.

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# Annexes

## Annex 1: Methodology

### Emissions and consumptions

All emissions and consumption data are derived from the National Inventory Report 2023 (NIR) on the Belgian greenhouse gas emissions from 1990 to 2021 (National Climate Commission, 2023a). 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, building 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 liters to kg (CBS, 2023) and from kg to kWh (European Commission, 2019). Following conversion factors are used:

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

### Transport prices

Regarding energy prices in 2023, 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. [Table 5](#) to [Table 7](#) summarize the most important characteristics per car model.

Table 5: City car models

| <i>City car</i>                         | <i>Fiat 500 Berlina</i> | <i>Fiat 500 1.2 Lounge</i> | <i>Fiat 500 1.3 Multijet</i> |
|---|-------------------------|----------------------------|------------------------------|
| 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

| <i>Middle class car</i>                 | <i>Tesla Model 3 Standard Range Plus</i> | <i>Audi A4 Avant 2.0 TFSI</i> | <i>Audi A4 Avant 2.0 TDI</i> |
|---|--|-------------------------------|------------------------------|
| 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

| <i>Compact crossover</i>                | <i>Volkswagen ID.4 1st</i> | <i>Volkswagen Tiguan 1.4 TSI</i> | <i>Volkswagen Tiguan 2.0 TDI</i> |
|---|----------------------------|----------------------------------|----------------------------------|
| 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                         | -                                | -                                |

## Building 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.

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

|                   | <i>Poorly insulated house</i> | <i>Moderately insulated house</i> | <i>Well-insulated house</i> |
|-------------------|-------------------------------|-----------------------------------|-----------------------------|
| 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                     |



## Industry prices

The gas and electricity consumption profiles come from the study from FORBEG (2023). 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

|                | <i>Annual energy demand</i> |
|----------------|-----------------------------|
| 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 [Table 1](#), [Table 2](#) and [Table 3](#).

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

| <i>Policy</i>   | <i>Source</i>  |
|---|--|
| Kilometre charge on trucks  | Expenditures of 2022, publicly available at Viapass  |
| Ecological premium "Ecologiepremie+" and "Strategic ecology support" (for charging stations, electric, hybrid or hydrogen trucks and busses, green heating and energy efficiency) | Expenditures of 2022, 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 2022, publicly available at Leefmilieu Brussels   |
| Compensation or commuter traffic by bike  | Expenditures of 2020, 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 2022, publicly available at VEKA<br>'Mijn Verbouwpremie' since 1 <sup>st</sup> October 2022, before separate energy premiums |
| Premium 'RENOLUTION'  | Expenditures of 2022, publicly available at Leefmilieu Brussels  |
| EPC-label premium   | Expenditures of 2022, publicly available at VEKA   |
| Solar panel premium (households)  | Expenditures of 2022, publicly available at VEKA   |
| Green certificates  | Expenditures of 2021, publicly available at CIRCABC (CNC-Concere, 2023)  |
| Rent and insulation premium   | Expenditures of 2022, publicly available at VEKA   |
| 'Mijn Verbouwenning'  | Total amount of loans for September 2022 – December 2022, provided by VEKA   |
| 'Renopack' loan   | Expenditures of 2021, publicly available at SPW finances   |
| '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 2020, publicly available at FPS Finance and FPS Health (FPS Finance and FPS Public Health, 2023)        |

## Public revenues

Figure 3.2.1 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, 2023). 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 building sector, calculations are based on consumptions from the national energy balance (Statbel, 2022) and on prices from Eurostat (gas and electricity) and Statbel (heating oil). For the transport sector, we used the consumption of cars (MMR reporting, 2023), which we corrected for the consumption by company cars based on percentage of company cars in the total Belgian fleet (Statbel, 2023a). The fuel prices for transport are based on the Weekly Oil Bulletins (European Commission, 2023).

## 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 op de energiefactuur 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 excises tariffs 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 tariffs 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 tariffs and vice versa. [Table 11](#) gives an overview of the different boundaries and mechanisms in the 'cliquet system'.

**Table 11: Cliquet system for electricity and gas as heating fuel (since 1/4/2023)**

|   | <i>Electricity</i>                                      | <i>Gas as heating fuel</i>                          |
|---|---|---|
| 1. If market price higher than ...  | €250/MWh  | €100/MWh  |
| ... decrease of special excise,   | 6% of difference between €250/MWh and the average price | 6% of difference between €100/MWh and average price |
| but special excise never lower than ...                                   | €0/MWh  | €0.0822/MWh   |
| 2. If market price lower than ...   | -   | €45/MWh   |
| ... decrease of special excise  | -   | 6% of difference between €45/MWh and average price  |
| 3. If market between high and low boundary, special excise returns to ... | €47.48/MWh  | €8.23/MWh   |

Table 12 shows the excise duty rates valid on 1<sup>st</sup> of July 2023<sup>18</sup>. For some products these tariffs are only valid for a limited period.

Table 12: Excise duty rates on energy products (valid on 1/7/2023)

| Product   | Unit         | Excise duty | Special excise duty | Levy on energy        | Total amount |
|---|--------------|-------------|---------------------|-----------------------|--------------|
| <b>A. Leaded petrol</b>                                       |              |             |                     |                       |              |
|   | €/1000 litre | 245.4146    | 393.7887            | 28.6317               | 667.835      |
| <b>B. Unleaded petrol ≥ 98 octane</b>                         |              |             |                     |                       |              |
| 1. High sulphur and high aromatic level                       | €/1000 litre | 245.4146    | 341.8221            | 28.6317               | 615.8684     |
| 2. Low sulphur and low aromatic level                         | €/1000 litre | 245.4146    | 326.1124            | 28.6317               | 600.1587     |
| 3. Other kinds of unleaded petrol                             | €/1000 litre | 245.4146    | 326.1124            | 28.6317               | 600.1587     |
| <b>C. Kerosene</b>  |              |             |                     |                       |              |
| 1. Used as motor fuel   | €/1000 litre | 294.9933    | 308.9057            | 28.6317               | 632.5307     |
| 2. Used as motor fuel for industrial and commercial purposes  | €/1000 litre | 18.592      | 4.2925              | 0                     | 22.8845      |
| 3. Used as heating fuel                                       |              |             |                     |                       |              |
| 3.1 Business use  | €/1000 litre | 0           | 0                   | 19.558                | 19.558       |
| 3.2 Non-business use  | €/1000 litre | 0           | 0                   | 19.558                | 19.558       |
| <b>D. Gas oil with a sulphur level exceeding 10 mg/kg</b>     |              |             |                     |                       |              |
| 1. Used as motor fuel   | €/1000 litre | 198.3148    | 402.6798            | 14.8736               | 615.8682     |
| 2. Used as motor fuel for industrial and commercial purposes  | €/1000 litre | 18.592      | 4.2925              | 0                     | 22.8845      |
| 3. Used as heating fuel                                       |              |             |                     |                       |              |
| 3.1 Business use  | €/1000 litre | 0           | 0                   | 18.6521 <sup>19</sup> | 18.6521      |
| 3.2 Non-business use  | €/1000 litre | 0           | 0                   | 18.6521 <sup>20</sup> | 18.6521      |
| <b>E. Gas oil with a sulphur level not exceeding 10 mg/kg</b> |              |             |                     |                       |              |
| 1. Used as motor fuel   | €/1000 litre | 198.3148    | 386.9702            | 14.8736               | 600.1586     |
| 2. Used as motor fuel for industrial and commercial purposes  | €/1000 litre | 18.592      | 4.2925              | 0                     | 22.8845      |
| 3. Used as heating fuel                                       |              |             |                     |                       |              |
| 3.1 Business use  | €/1000 litre | 0           | 0                   | 17.2564 <sup>21</sup> | 17.2564      |
| 3.2 Non-business use  | €/1000 litre | 0           | 0                   | 17.2564 <sup>22</sup> | 17.2564      |
| <b>F. Heavy fuel oil</b>                                      |              |             |                     |                       |              |
| 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       |

18 For previous tariffs, we refer to the webpage of FPS Finance: <https://eservices.minfin.fgov.be/myminfin-web/pages/public/fisconet/document/b91925cd-fbba-4da5-8b9a-06974300ff1e>.

19 Including €10 inspection fee.

20 Including €10 inspection fee.

21 Including €10 inspection fee.

22 Including €10 inspection fee.

| <i>Product</i>   | <i>Unit</i> | <i>Excise duty</i> | <i>Special excise duty</i> | <i>Levy on energy</i> | <i>Total amount</i> |
|--|-------------|--------------------|----------------------------|-----------------------|---------------------|
| <b>G. Liquefied petroleum gas</b>  |             |                    |                            |                       |                     |
| 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                     | 44.6793             |
| <b>3. Used as heating fuel</b>   |             |                    |                            |                       |                     |
| 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             |
| 3.4 Non-business use - propane   | €/1000 kg   | 0                  | 0                          | 18.9097               | 18.9097             |
| <b>H. Natural gas (upper combustion value)</b>   |             |                    |                            |                       |                     |
| 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                   |
| <b>3. Used as heating fuel</b>   |             |                    |                            |                       |                     |
| 3.1 Business use – companies holding an "energiebeleidsvereenkomst", 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              |
| From 12 MWh  | €/MWh       | 0                  | 8.23                       | 0.9978                | 9.2278              |
| <b>I. Coal, coke and lignite</b>   |             |                    |                            |                       |                     |
|  | €/1000 kg   | 0                  | 0                          | 18.9097               | 18.9097             |

| <i>Product</i>   | <i>Unit</i> | <i>Excise duty</i> | <i>Special excise duty</i> | <i>Levy on energy</i> | <i>Total amount</i> |
|--|-------------|--------------------|----------------------------|-----------------------|---------------------|
| <b>J. Electricity</b>  |             |                    |                            |                       |                     |
| <b>1. Supplied to end user connected to the transport or distribution network with a nominal voltage &gt; 1kV – business use</b> |             |                    |                            |                       |                     |
| 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                |
| <b>2. Supplied to end user connected to the transport or distribution network with nominal voltage ≤ 1kV</b>                     |             |                    |                            |                       |                     |
| 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<sup>23</sup>:

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
    - o from solar, wind, wave, tidal or geothermal sources,
    - o from hydraulic sources produced in hydroelectric installations,
    - o from biomass or products derived from biomass,
    - o by means of fuel cells.
  - c. energy products and electricity used for combined heat and power generation;
  - d. cogeneration electricity<sup>24</sup> 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.

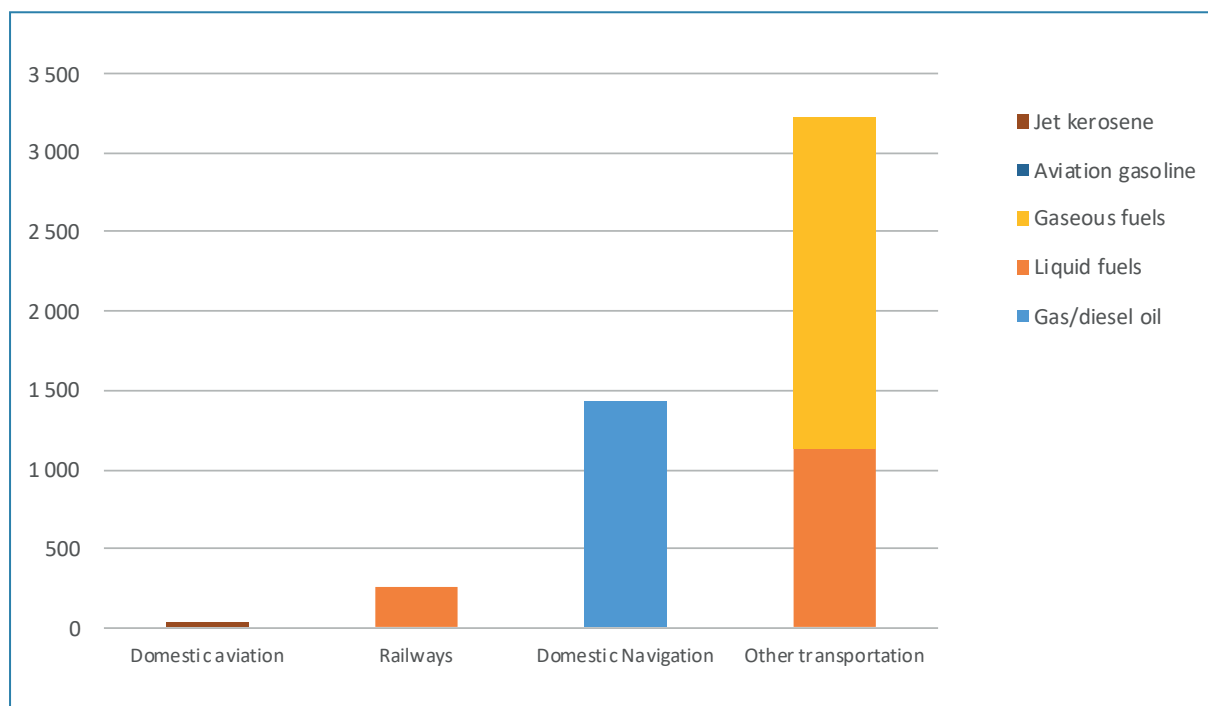
<sup>23</sup> The list of these exemptions are included in articles 429-431, Law of 27 December 2004. The legislation described here is the one referring to the consolidated version until Law of 19 March 2023 reforming the taxation of energy bills.

<sup>24</sup> 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 2021 (GWh)

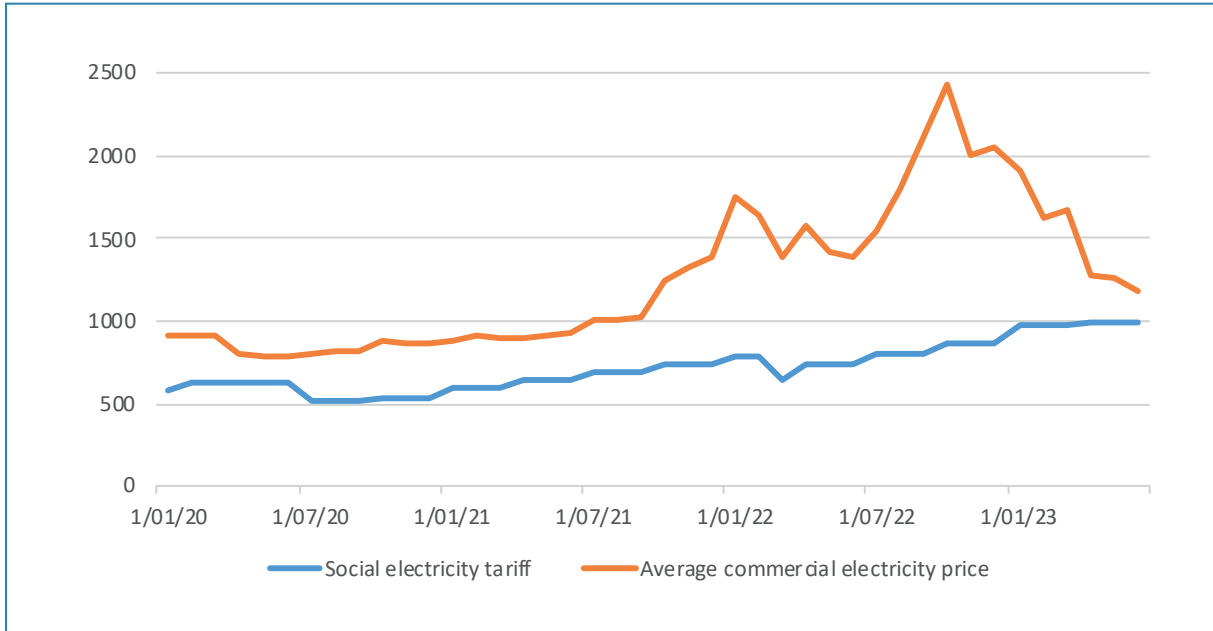


Sources: NIR 2023, MMR reporting 2023



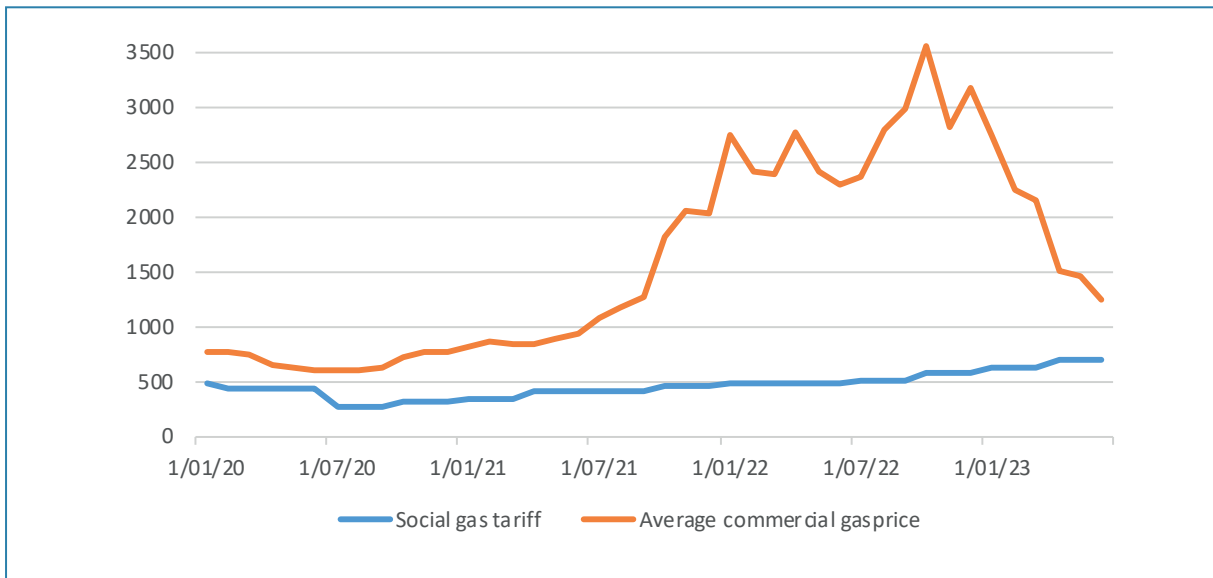
## Building sector

Figure 0.2: Social tariff and commercial price for electricity for an average household consumption (€/3 500 kWh)



Source: CREG Monthly Dashboards

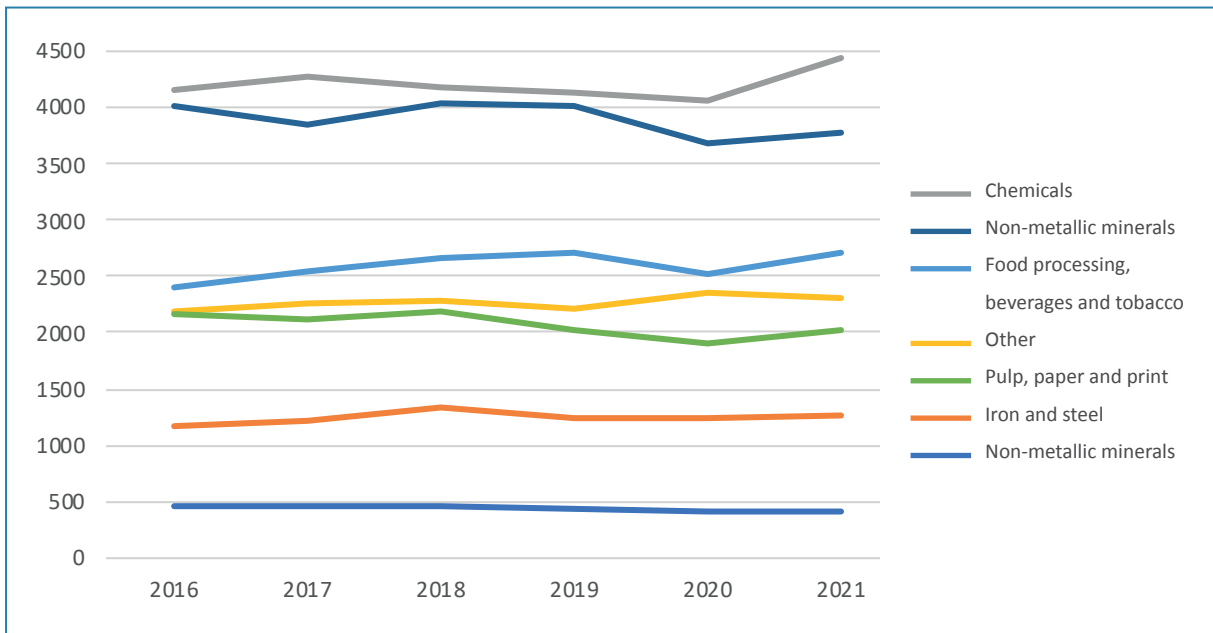
Figure 0.3: Social tariff and commercial price for gas for an average household consumption (€/17 000 kWh)



Source: CREG Monthly Dashboards

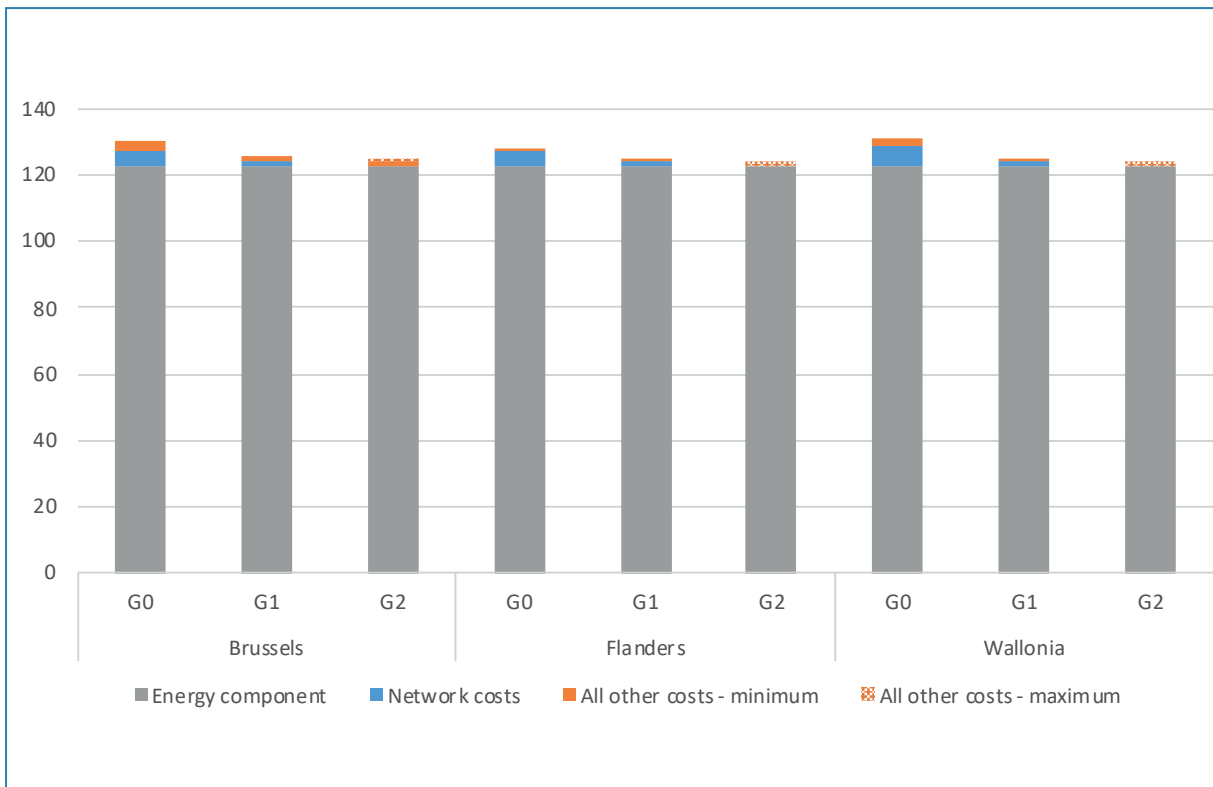
Industry

Figure 0.4: Evolution of industry emissions (kt CO<sub>2</sub>-eq)



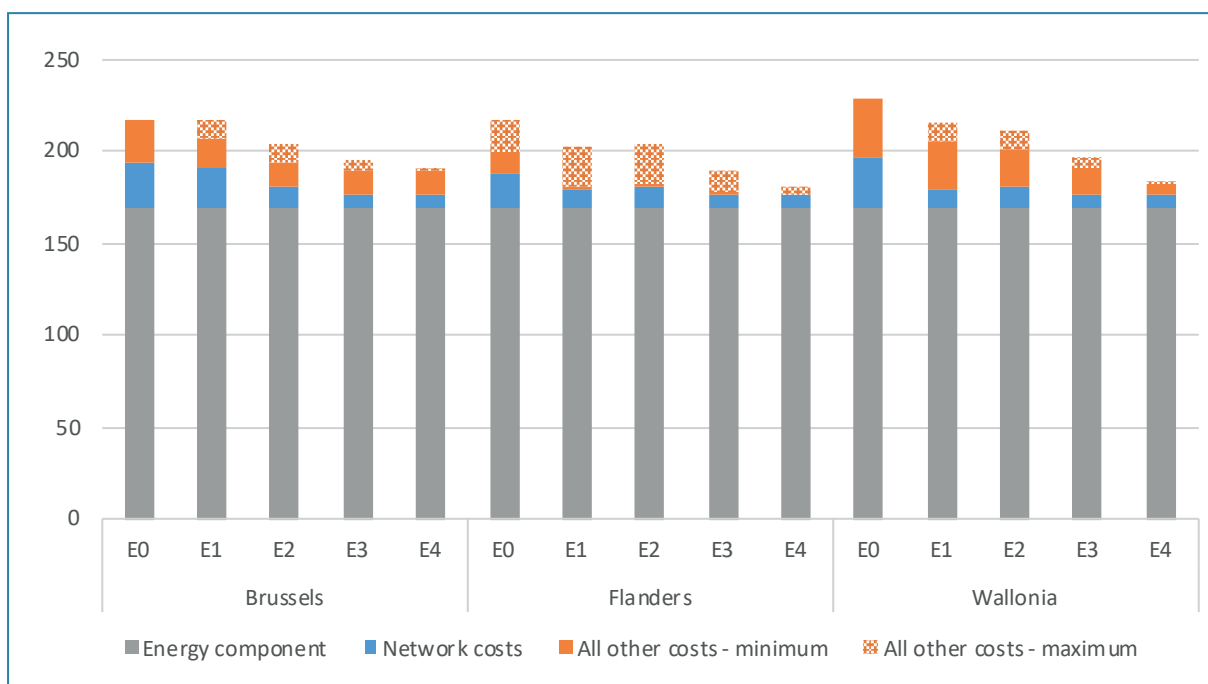
Sources: NIR 2023, MMR reporting 2023

Figure 0.5: Gas prices for different consumption profiles of industrial customers (€/MWh)



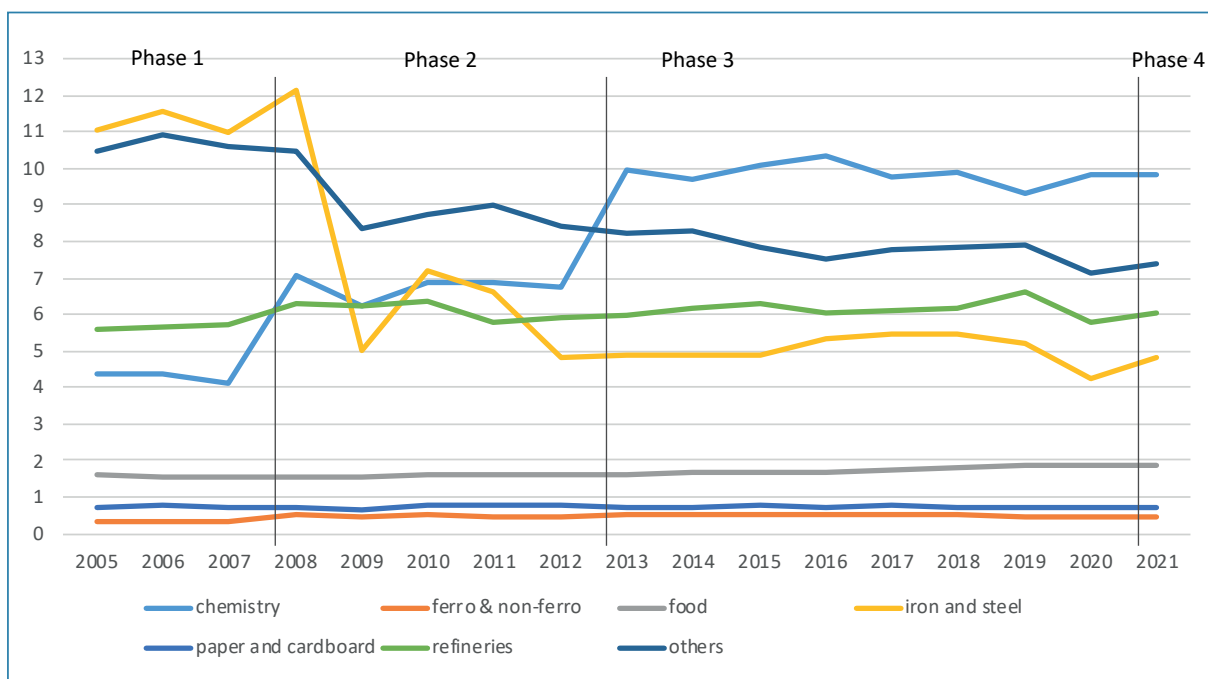
Source: FORBEG, 2023

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



Source: FORBEG, 2023

Figure 0.7: Evolution of the amount of surrendered ETS allowances 2005-2021 (in millions)



Source: Belgian Greenhouse Gas Registry overview table 2005-2021

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