FORBEG

A European comparison of electricity and natural gas prices for residential, small professional and large industrial consumers

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List of acronyms

AMR	Automatic meter reading
BE	Belgium
BT	Basse Tension It encompasses consumers connected to the distribution grid on a voltage level < 1 kV.
CHP	Combined Heat and Power
CU	Consumption unit
CHPC	Combined Heat and Power Certificates
DCM	Distribution Charging Methodology
DE	Germany (abbreviation from ‘Deutschland’)
DSO	Distribution System Operator
EAN	European Article Number
EEAG	Guidelines on State aid for environmental protection and energy 2014-2020
EHV	Extra-High Voltage
FR	France
FPS	Federal Public Service (see FOD in Dutch or SPF in French)
GC	Green Certificates
GRAPA	La Garantie de revenus aux personnes âgées
GRDF	Gaz Réseau Distribution France
HH	Half Hourly
HHI-Index	Herfindahl-Hirschman Index
HS	Hoogspanning
HT	Haute Tension
IGO	Inkomensgarantie voor ouderen
kV	kilo Volt
kWh	kilo Watt-hour
KWKG	Kraft-Wärme-Kopplungsgesetz (see CHP in English)
LS	Laagspanning It encompasses consumers connected to the distribution grid on a voltage level < 1 kV.

LT	Long-term
LTSO	Local Transmission System Operator
MPA	Meter Point Administration Number
MS	Middenspanning It encompasses consumers connected to the distribution grid on a voltage level ranging from 1 to 26 kV.
MT	Moyenne Tension It encompasses consumers connected to the distribution grid on a voltage level ranging from 1 to 26 kV.
MWh	Mega Watt-hour
NBB	National Belgian Bank
NBP	National Balancing Point
NCG	NetConnect Germany
NHH	Non-Half Hourly
NL	The Netherlands
OFGEM	Office of Gas and Electricity Markets (UK)
PPP	Purchasing Power Parities
PSO	Public Service Obligation
PSWC	Public Social Welfare Centre
RTI	Reference Tax Income
SME	Small and medium-sized enterprise
SR	Switching rate
ST	Short-term
TRANS-HS	TRANS-HS comes from “Transformatorstation hoogspanning” for which DSOs are directly connected to the transformer stations.
TRANS-MT	TRANS-MT comes from “Transformation moyenne tension” for which DSOs are directly connected to the transformer stations.
TSO	Transmission System Operator
UK	The United Kingdom
VAT	Value-Added Tax
YMR	Yearly meter reading

1. Executive summary

1. Executive summary

English version

This study compares the prices of electricity and natural gas for residential, small professional and industrial consumers between Belgium and four of its neighbouring countries (France, Germany, the Netherlands and the UK). When deemed more relevant, the results of this study are presented at regional level rather than on a countrywide basis.

This report focuses explicitly on energy prices in force in January 2024. This is an important aspect to keep in mind considering the current volatility of electricity and natural gas prices.

Before going into the details of the methodology, we would like to summarise here the most relevant changes observed in comparison with the situation of 2023:

- For electricity, we can draw separate conclusions for small and large profiles. Residential and small companies saw their total bills decrease in most countries, mainly due to lower commodity costs, support and/or protection mechanisms (i.e., exemptions, reductions) keeping the burden bearable for smaller profiles. On the other hand, medium-sized and large industrial consumers also observed a decrease in their electricity bill due to the commodity market prices falling, except where a price cap was effective in 2023 but is no longer in force in 2024.

- For natural gas, we observe a significant decrease in the commodity prices compared to last year, for all profiles, both professional as residential.

The **consumer profiles** under review were set by the Terms of Reference of this study and remain in line with the previous comparative studies conducted by PwC for the CREG and the VREG[1]. In total, 13 different consumer profiles were studied: 8 for electricity (1 residential, 2 small professional and 5 industrial consumers) and 5 for natural gas (1 residential, 1 small professional and 3 industrial consumers). In 2024, the residential profile for natural gas was adjusted to better reflect the consumption reality of small consumers. The annual consumption for G-RES was changed from 23.26 MWh to 17 MWh. The tables below synthesize, albeit non-exhaustively, specific characteristics of the consumer profiles for which further hypotheses can be found in Chapter 3.

[1] Previous year's studies on the residential and industrial consumers can be found on the CREG website:
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20230515EN.pdf (2023 edition)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20220513EN.pdf (2022 edition)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20210517EN.pdf (2021 edition)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20200520-errata.pdf (errata 2020 edition)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20200520EN.pdf (2020 edition)

Electricity consumer profiles

Profile	Consumer type	Annual demand (MWh)	Contracted capacity (kW)	Annual peak (kW)
E-RES	Residential	3.5	7.36	5.89
E-SSME	Small professional	30	37.5	30
E-BSME	Large professional	160	125	100
E0	Industrial	2,000	625	500
E1	Industrial	10,000	2,500	2,000
E2	Industrial	25,000	5,000	4,000
E3	Industrial	100,000	13,000	10,400
E4	Industrial	500,000	62,500	50,000

Natural gas consumer profiles

Profile	Consumer type	Annual demand (MWh)	Contracted capacity (kW)
G-RES	Residential	17	-
G-PRO	Small professional	300	-
G0	Large professional	1,250	-
G1	Industrial	100,000	20,000
G2	Industrial	2,500,000	312,500

The comparison looks at three **components** of the energy bill: commodity costs, network costs and all other costs (taxes, levies and certificate schemes). A fourth component, the VAT, is only considered for both electricity and natural gas residential profiles.

An extensive description of the energy prices composition and components (Chapters 4 and 5) precedes price comparison results (Chapter 6). Energy costs are analysed following a bottom-up approach, leading to a detailed description of the various price components and their application within the countries considered in this study.

For both electricity and natural gas, this report notes great differences in the price structure between the different regions and countries, including the setting of network costs and tax regimes. This adds an additional layer of complexity for a relevant comparison across all countries/regions covered in this study.

Comparison of electricity prices

Comparison of electricity prices for residential and small professional consumers

Compared to last year, the most significant difference is the decrease in overall costs for the E-RES profile in most countries, with some regions/countries experiencing stagnation. Germany is the only country experiencing a price increase (excluding the Tennet region). The commodity price has decreased in several countries, including Belgium, the Netherlands, and different German regions (Amprion, Tennet, and 50 Hertz). Conversely, France, the UK, and the Transnet BW region have seen a slight increase in commodity costs. The Amprion region has the highest commodity costs for residential consumers in 2024, as opposed to last year. France offers the lowest yearly bill since the standard product for residential consumers remains regulated by the government. Following France, Flanders is the region with the second-lowest annual electricity bill for residential consumers, closely followed by Wallonia and Brussels[2]. This ranking remains the same in 2024 as it was in 2023.

While Germany is not the cheapest country for residential electricity consumers, its total electricity bill has stabilized for this consumer type (except for the notable decrease in the Tennet region). This stabilization is due to the discontinuation of the price cap in 2024, which mechanically increases the portion of commodity costs in the total bill. On average, Germany has the most expensive bill in 2024. On the other hand, the Netherlands has observed the steepest decrease in the total bill for residential consumers, despite the discontinuation of the price cap in 2023. The Netherlands remains the only country with a "negative" value for the "all other costs" component of the invoice, due to tax rebates practiced (i.e., "Belastingvermindering per elektriciteitsaansluiting").

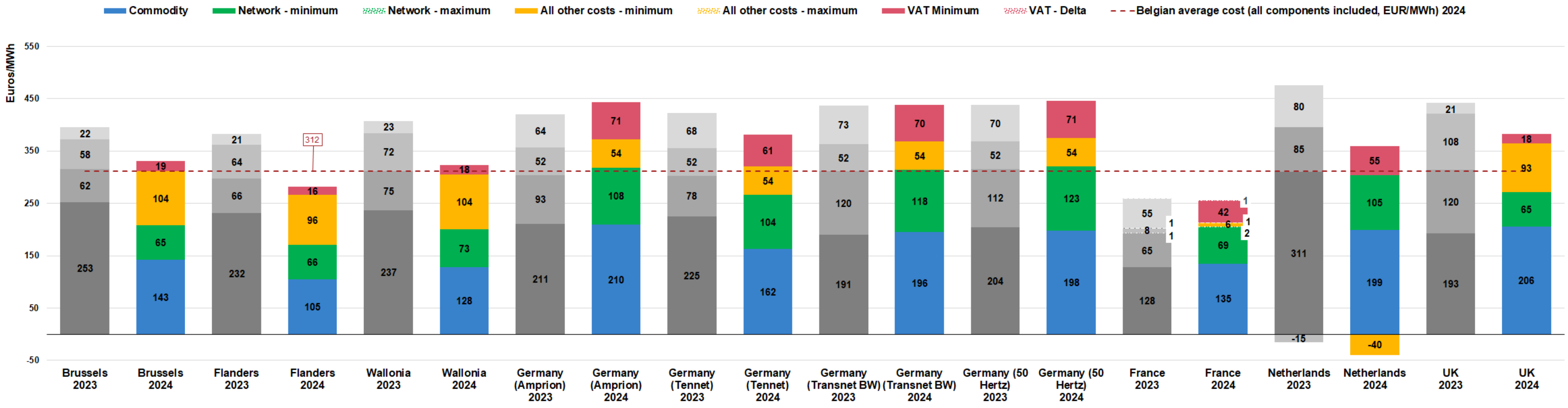
Germany and the Netherlands have the highest network costs. Both countries have seen an increase in grid fees in 2024, to comply with a Court decision in Germany and preparations for the energy transition in the Netherlands.

Belgium experienced a surge in the "all other costs" component due to the termination of the exemption (to the European minimum) of the special federal excise duty for small consumers. This was done to compensate for the VAT being permanently fixed at 6% (following the temporary reduction set in 2022). It should be noted that both Belgium and the UK have a competitive advantage regarding the VAT component, as they apply much lower rates (6% for Belgium and 5% in the UK) compared to other countries in this study.

For this reason, Belgium has the highest "all other costs" for residential consumers, closely followed by the UK. The difference with the Netherlands' "all other costs" component is an average of 140 EUR/MWh.

[2] (Brugel, 2023) It has to be noted that the price comparison tools used for the 3 regions in Belgium have been using forward looking prices as from 2023. This why the products selection for E-RES, G-RES and E-SSME was fetched through these websites, but products tariffs were taken using historical-looking indexation parameters, which is a change in the methodology compared to the 2023 study.

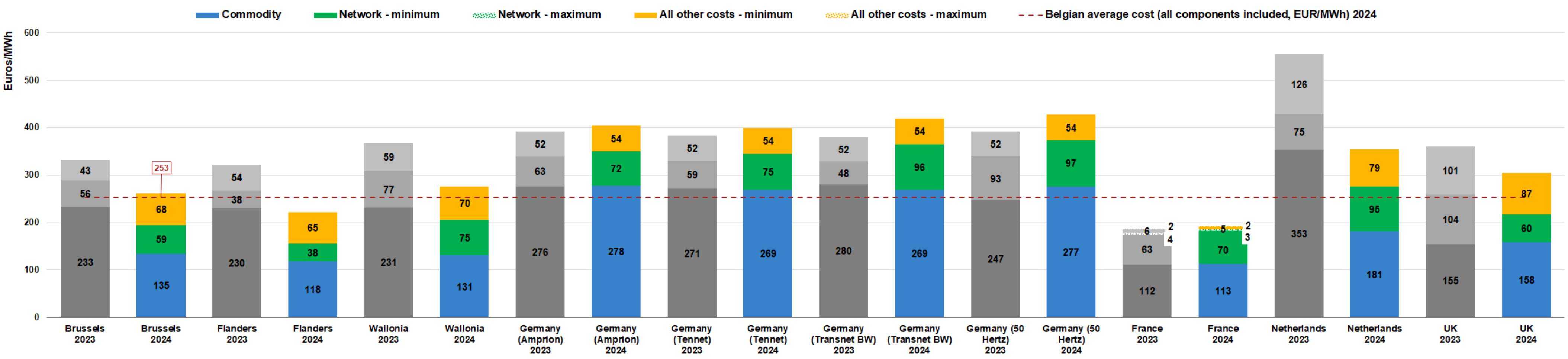
Electricity price by component in EUR/MWh (profile E-RES)



For the E-SSME profile in 2024, France remains the cheapest country due to the price guarantee mechanism in place, along with strong and appealing incentives and fiscal system. The most significant difference from last year's results is the steep decrease in costs in the Netherlands and the increased competitiveness of Belgium. Belgium's commodity cost has decreased to a level slightly above France's, despite not having regulated products or price guarantee mechanisms. Germany has become the most expensive country mainly due to its highest and non-decreasing commodity costs, as well as higher network costs in 2024. The total electricity bill for this profile is lower in Belgium compared to last year, with Flanders remaining the cheapest region, closely followed by Brussels and finally Wallonia.

The surge in network costs for Germany and the Netherlands has the same cause for the hereunder E-SSME profile as it does for the E-RES profile. On the other hand, the UK's increased competitiveness is largely due to the decrease in transmission charges and better incentives on taxes and levies.

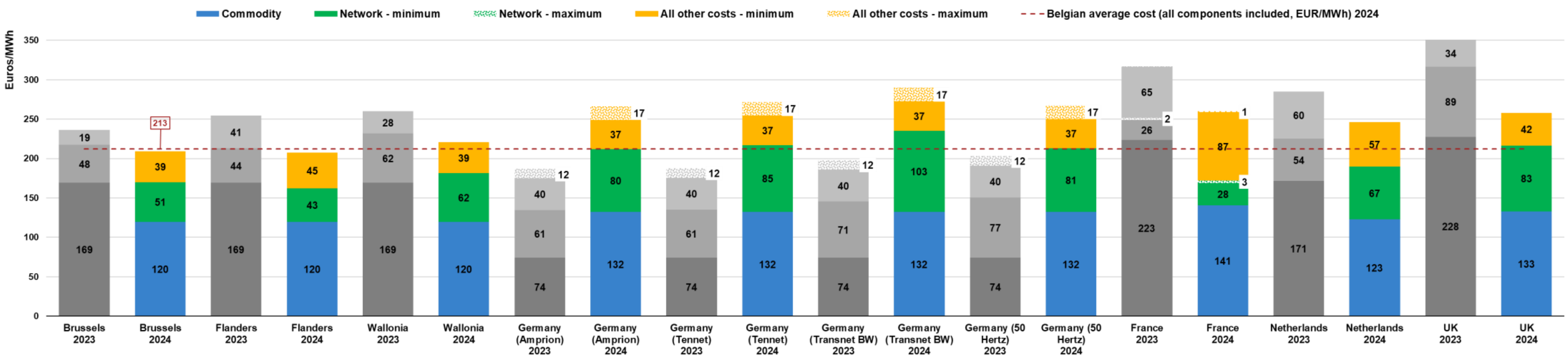
Electricity price by component in EUR/MWh (profile E-SSME)



The decreasing commodity prices observed across regions between 2023 and 2024 for the E-RES and E-SSME profiles are consistent with the E-BSME and E0-E4 profiles. There is a significant decrease in commodity prices, which helps alleviate electricity costs for industries. This decrease is also evident in all other countries/regions included in this study, except for Germany, where the removal of the price cap set in 2023 contributed to an increase in commodity costs. The trend of decreasing market prices can be partially explained by the way energy prices are calculated for these profiles. The formula used for larger electricity profiles considers that 51.5% of the commodity cost is based on the day-ahead, month-ahead, quarter-ahead and year-ahead forward prices. Therefore, as market prices started to drop from the end of 2022, this decrease is already included in the final computed commodity price. As a result, the decrease in spot prices is partially visible in the results.

For the E-BSME profile, all countries except Germany have experienced a general decrease in the total electricity bill. Belgium has achieved the most competitive rank, with all three regions considered to be the least expensive for this profile, moving up from the second place in 2023. Belgium is followed by the Netherlands and the UK. The main reasons for Belgium's competitiveness are the lowest commodity cost, as well as relatively low network and all other costs. In Belgium, Flanders has become the most affordable region for this profile, primarily due to lower distribution fees. It is closely followed by Brussels and then Wallonia.

Electricity price by component in EUR/MWh (profile E-BSME)



Comparison of electricity prices for industrial consumers

Similarly, to residential and small professional consumers, there has been a large decrease in commodity prices in most regions/countries for larger consumers, except for Germany due to the discontinuation of its capping mechanism on the 31st of December 2023. When considering all discounts, the lowest cost of electricity for the E0, E1, and E2 consumer profiles is found in Flanders, as opposed to Germany in 2023. It is followed by France for the E0 profile, the Netherlands for the E1 profile, and France for the E2 profile. The lower prices in Flanders can be attributed to a low commodity cost and potential reductions in all other costs (such as green and CHCP certificate schemes and special excise duty exemptions, starting from the E1 profile), coupled with low network costs. The Netherlands, with their potential exemption (i.e., for companies active in the chemicals and metalwork) on the energy tax, offers a strong competitive range in the all other costs component. Germany remains the most expensive country, as with the other smaller profiles, due to high network costs.

The result for the Netherlands is highly variable depending on the exemptions. While it offers average prices lower than most other countries when the exemption on all other costs applies to electro-intensive consumers (starting from the E1 profile), other industrial consumers in the Netherlands face a less competitive position when these reductions do not apply.

In Belgium, the cost of electricity is on average highest in Brussels, followed by Wallonia for E0, E1, and E2 profiles[3]. While there is almost no difference between the two regions for the E0 profile, the spread becomes visible for E1 and E2 profiles due to the low reductions provided to Brussels-based companies, as there are few of them in the region. On the other hand, Flanders has the potential to be the cheapest region in Belgium for these three profiles due to lower minimum all other costs and lower network costs. The distribution tariff structure introduced in Flanders on January 1, 2023, has not changed its competitive position for E0 and E1 profiles, although it has kept its network costs below the other regions.

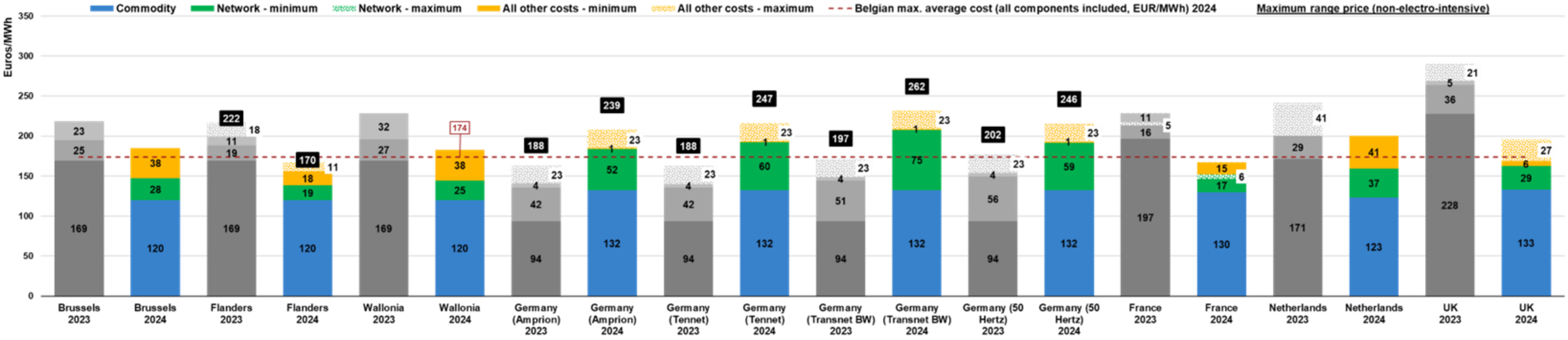
Taking these observations into account, it confirms Flanders as the most competitive region for electro-intensive consumers. However, for non-electro-intensive consumers, the total invoice cost in France and Flanders is quite similar, making of them the most competitive regions across all these profiles. It shows that the other regions/countries offer more discounts to electro-intensive consumers.

For non-electro-intensive consumers within Belgium, the difference between Flanders and Wallonia remains stable, while Brussels remains the most expensive region in the country. From the countries observed, Germany and the Netherlands are the most expensive regions for the E0 profile, while Germany and the UK are the most expensive for E1 and E2 profiles. The difference in bills paid by electro-intensive consumers benefitting from discounts and non-electro-intensive consumers is relatively small in Belgium and France compared with the other countries under review. This indicates that other countries offer more incentives to electro-intensive consumers. However, it is important to consider the full picture, as government support can also be reflected in commodity costs (such as price caps in Germany in 2023, ARENH[4] in France, and price guarantees in the UK) or network costs (such as grid fee cost reductions compensated by government financial packages to network operators).

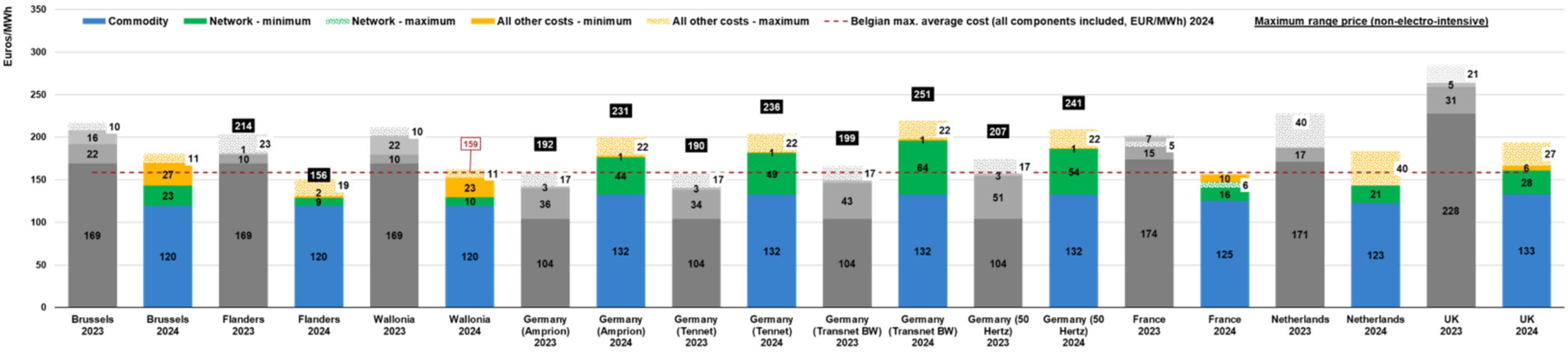
[3] The degression factor on the Walloon transport costs has been applied since 2023. This degressive factor of the costs according to the electro-intensity of the consumer, enables the reduction of transport costs paid by the Walloon E0 and E1 profiles. It is therefore necessary to take this into account when making comparative analyses between Wallonia and other regions, or Belgium and other countries.

[4] ARENH stands for « Accès Régulé à l'Électricité Nucléaire Historique » (Regulated Access to Historic Nuclear Electricity). This is a mechanism that allows all alternative suppliers to obtain electricity from EDF (the historical electricity supplier in France) under conditions set by the public authorities.

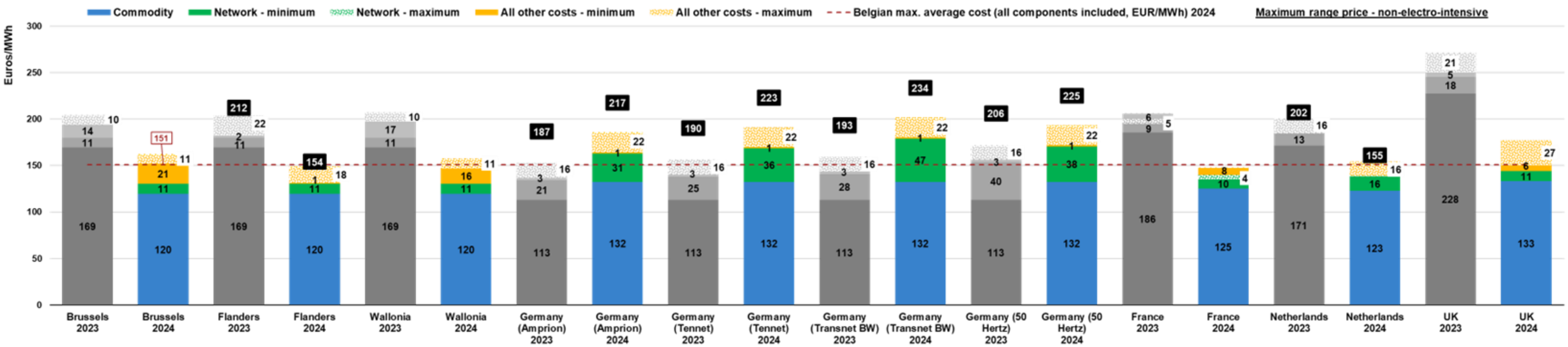
Electricity price by component in EUR/MWh (profile E0)



Electricity price by component in EUR/MWh (profile E1)



Electricity price by component in EUR/MWh (profile E2)



When considering E3 and E4 profiles, France remains the country with the lowest total invoice among all countries included in this study, primarily due to the ARENH mechanism in place. On the other end of the spectrum, Germany becomes the most expensive country for E3 and E4 non-electro-intensive profiles, closely followed by the UK. This can be attributed to the all other costs component, which is higher in Germany and the UK compared to the other regions considered. For E3 and E4 profiles, we observe three groups of countries. Some countries have low-range prices, such as France, while others have average-range prices, like the Netherlands and Belgium. Finally, there are countries with high-range prices, such as Germany and the UK, for non-electro-intensive profiles that do not benefit from reduction/exemption schemes. The differences between these groups become blurred.

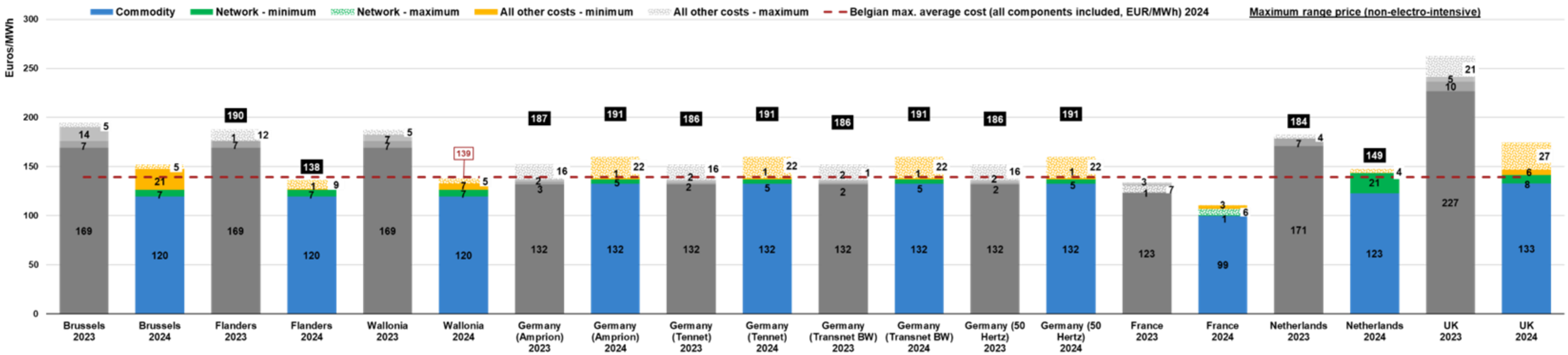
For electro-intensive E3 and E4 profiles, France remains the most competitive country due to its low commodity cost. Flanders is the runner-up, with a small range due to the green certificates and combined heat and power certificate schemes. However, when reductions apply, Germany becomes more competitive than the UK, which is an advantage for German electro-intensive companies compared to non-electro-intensive ones.

In Belgium, we observe that for E3 and E4 profiles, Flanders is always the most competitive region for electro-intensive consumers, while its position is challenged for non-electro-intensive consumers, which is consistent with the results from last year. Since commodity costs and network costs are harmonized across all Belgian regions, this difference purely depends on the "all other costs" component. It is important to note that the largest energy consumer in Brussels is closer to an E3 profile than an E4 profile, and the E4 profile is therefore a purely theoretical observation for this region due to the absence of very large industrial consumers in Brussels.

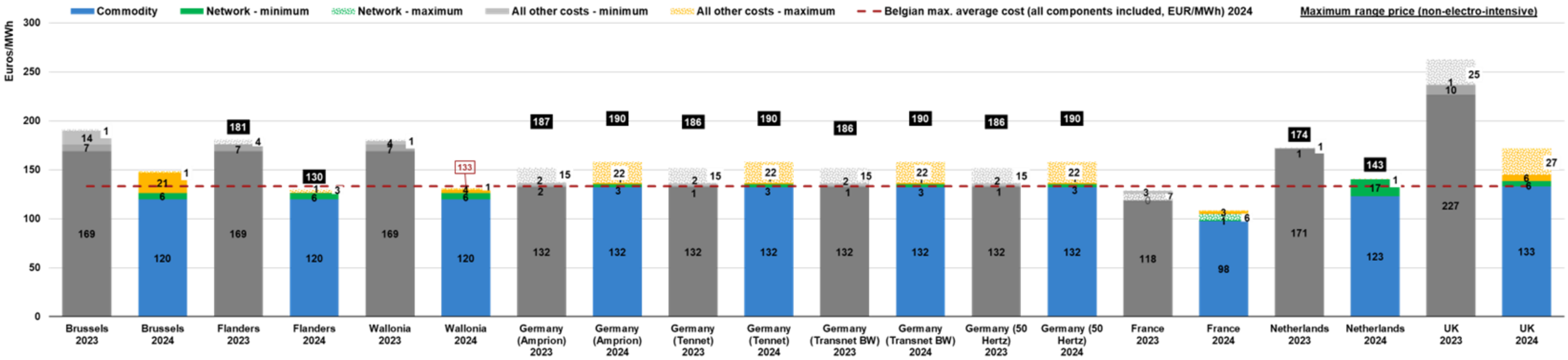
For the E3 profile, Belgium has a low commodity price, second only to France. Belgium remains handicapped by higher all other costs, especially in Brussels. The criteria of electro-intensity does not provide as many reductions as in Flanders, where the all other costs component is lower than in the other regions. Belgium is generally competitive when looking at non-electro-intensive profiles (after France), with the Netherlands and the UK coming in 3rd and 4th positions. Belgium's taxes, levies, and certification scheme costs would align with those of Germany and the Netherlands if they did not apply reductions for electro-intensive consumers.

The E4 profile follows a similar trend to the E3 profile, with France being the cheapest country, followed by Flanders, Wallonia, and the Netherlands. The Netherlands and Belgium have similar total bills for this profile, although differences in their price structure keep these countries apart. Similar to the E3 profile, Belgium shows relatively high all other costs components, although they are more similar to France and the UK when considering the potential schemes and reductions applicable, depending on the region of Belgium observed. The network costs for E3 and E4 profiles in the Netherlands are extremely high: this is due to an increase in grid charges by Tennet, the network operator, and the removal of the volume correction, under which conditions the E3 and E4 profiles fell until 2023. These changes affect the competitive position of the Netherlands, potentially making it the most expensive country/region after Brussels, when considering all reductions.

Electricity price by component in EUR/MWh (profile E3)



Electricity price by component in EUR/MWh (profile E4)



Regarding electricity for industrial consumers, the report highlights the complexity of competitiveness due to government interventions aimed at reducing electricity costs for certain categories of large industrial consumers. These interventions aim to influence the burden of grid costs and the components of all other costs, such as taxes, levies, and certificate systems. Belgium, France, Germany, and the Netherlands apply tax reductions and certificate schemes based on specific economic criteria, generally related to electro-intensity. If specific reductions can be directly applied (e.g., choice for network tariffs in France), we have presented the results for the wide range of possibilities. The application of these reductions changes the competitive position of other countries in scope: the UK gains a very competitive position this year for large industrial profiles for consumers who meet the reduction criteria, the Netherlands and Flanders become slightly cheaper, and France remains the most competitive region observed, which is further enhanced by these reductions. Finally, France is the only country to have mitigated the increase in commodity costs thanks to the ARENH mechanism.

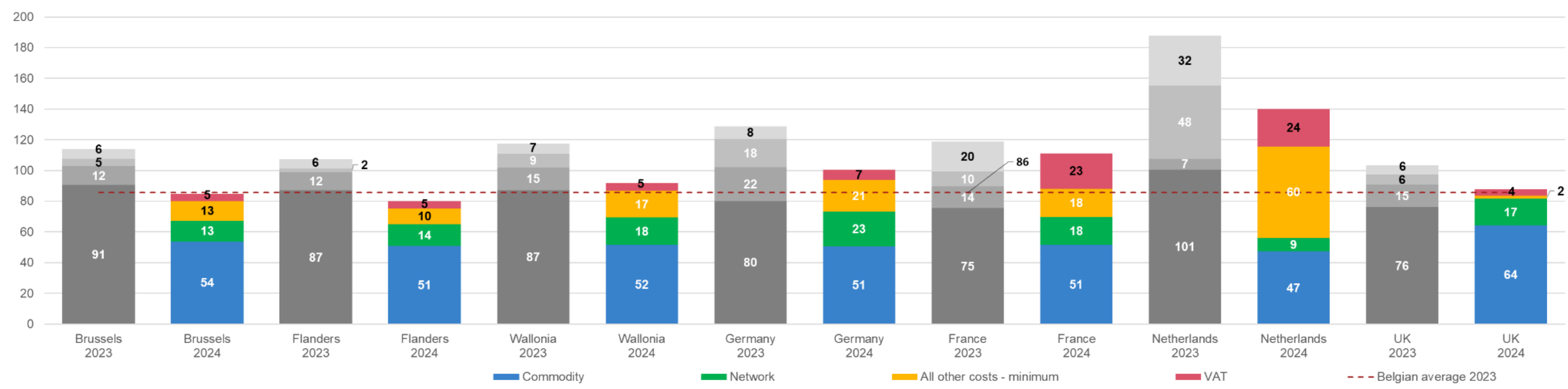
Comparison of natural gas prices

Comparison of natural gas prices for residential and small professional consumers

For residential consumers (G-RES), Belgium is the least expensive country in 2024, closely followed by the UK. The Netherlands is the most expensive country for residential consumers, mainly due to a significantly higher other costs component (which only consists out of the Energy Tax). The good results of Belgium can be explained by low network costs and a low VAT component. Within Belgium, Flanders is cheaper than Brussels and Wallonia due to lower other costs. Wallonia has the highest network costs and “all other costs” component, while Brussels has the highest commodity costs in 2024. On the other side, the good performance of the UK can be explained by the lowest other costs component, although having the highest commodity cost among the regions/countries under review. As it was already the case last year, Germany still stands in the middle of the pack, with prices higher than Belgium and the UK, but lower than France and the Netherlands. Because of an increase in network costs and the all other cost component, in addition to a high VAT rate in comparison to the other countries, France has become the second most expensive country.

If we compare with results from last year, all countries see their prices going down, due to a significant decrease in commodity costs. Despite having the largest decrease in commodity costs, the Netherlands remains the most expensive country because of higher taxes and higher other costs than the other regions/countries analysed. On the other hand, the UK had the smallest decrease in commodity costs, but this didn’t prevent it from becoming the second most competitive country in 2024 because of small other costs and VAT rate.

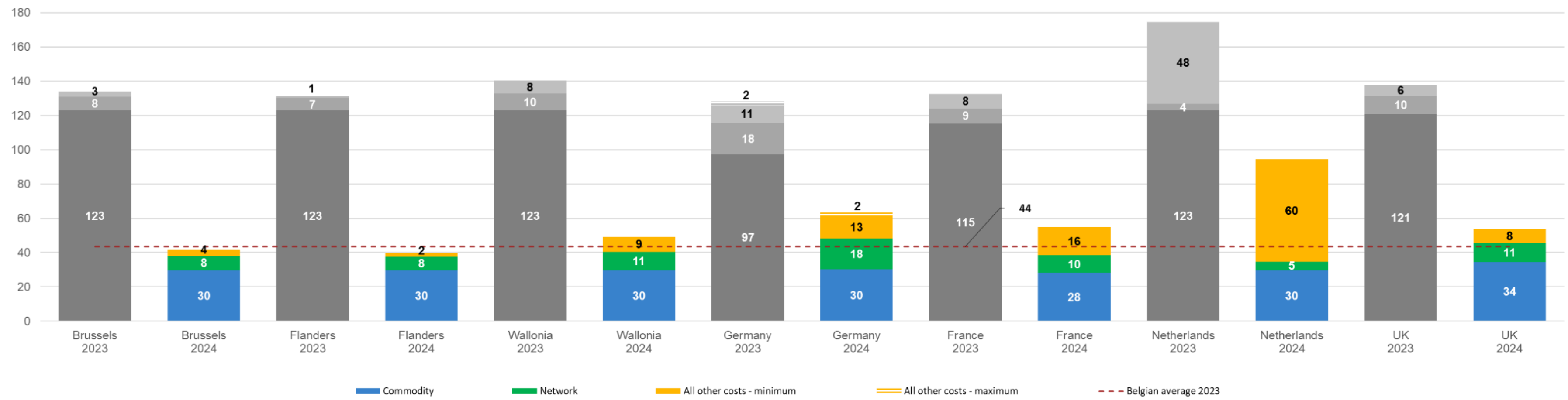
Natural gas price per component in EUR/MWh (profile G-RES)



For professional consumers (G-PRO), all countries show a decrease of the total cost due to a sharp decline in commodity costs. While Germany was the cheapest country in 2023 (thanks to its price capping mechanism), this place has now been taken over by Belgium, driven by low tax levels (except in Wallonia). In Belgium, Flanders has the lowest total invoice followed by Brussels and then Wallonia. The Netherlands remains the most expensive country under review, being more than twice as expensive as the Belgian average.

France stands in the middle of the pack pricewise, being more expensive than Belgium and slightly more than the UK, but less expensive compared to Germany and the Netherlands. France witnesses a rise of its TICGN[5] tax when comparing 2023 and 2024, negatively impacting the total invoice.

Natural gas price per component in EUR/MWh (profile G-PRO)

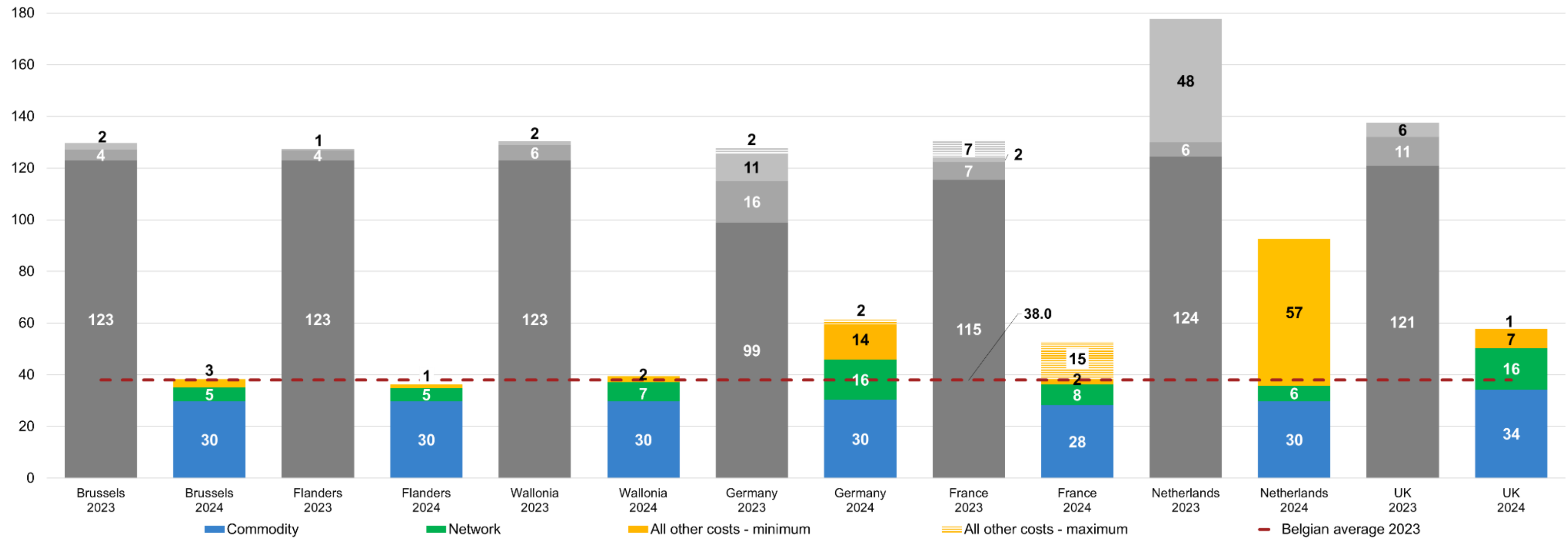


[5] Taxe Intérieure de Consommation sur le Gaz Naturel (Internal Consumption Tax on Natural Gas)

Comparison of natural gas prices for industrial consumers

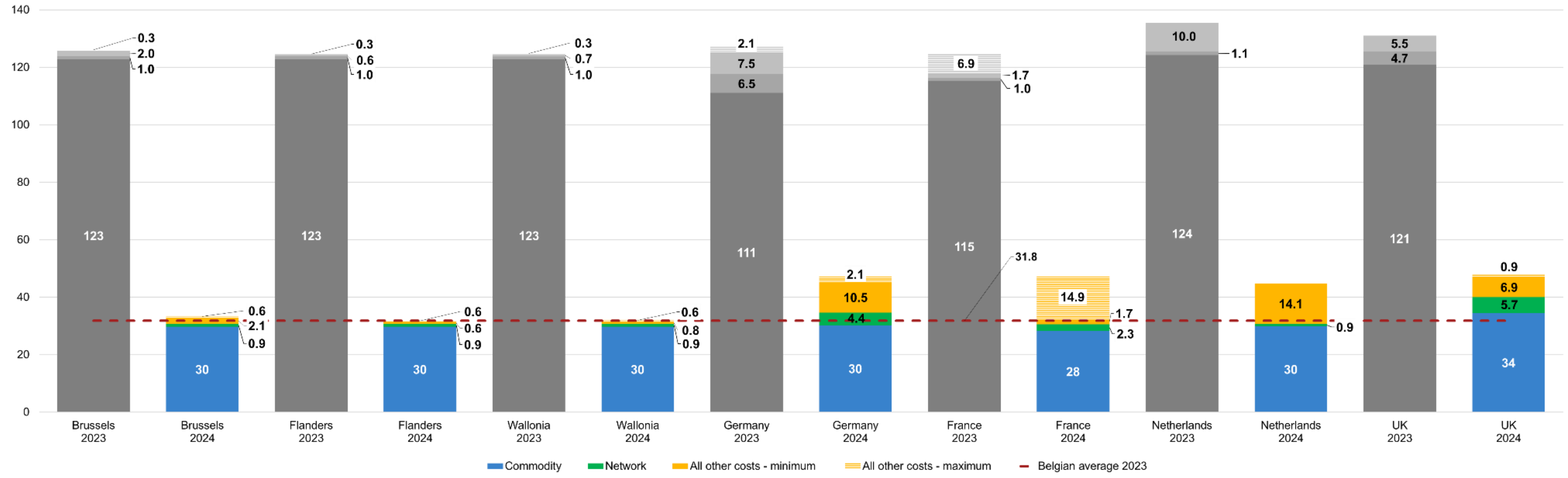
We observe again this year a large decrease in the total annual invoice for industrial natural gas consumers, which is mainly caused by significantly lower commodity costs. Overall, Belgium is once again rather competitive when it comes to natural gas, thanks to its relatively low all other costs and network components prices. For profile G0, Belgium is by a significant margin the cheapest country without reductions. Although Belgium also remains the most competitive country when taking into consideration maximum reductions, the difference with France becomes marginally small. The significant increase in other costs, primarily due to the higher TICGN rate, has had a substantial impact on France. The ability to obtain a reduction on these costs greatly affects the total annual invoice and France's competitive position. Within Belgium, Flanders is the most competitive region due to the lowest network and other costs, while Wallonia is the most expensive region. The Netherlands is once again the most expensive country due to the high other costs, followed by Germany. Additionally, the UK sees a large increase in its network costs component.

Natural gas price per component in EUR/MWh (profile G0)



For the G1 profile, a similar trend can be observed where Belgium is clearly the cheapest country when not considering reductions and by a small margin when considering the maximum reductions. The UK is the most expensive country, closely followed by the Netherlands and Germany when taking into account all reductions. In Belgium, the network and other costs have remained relatively stable compared to the 2023 results, and there are minimal differences observed between regions.

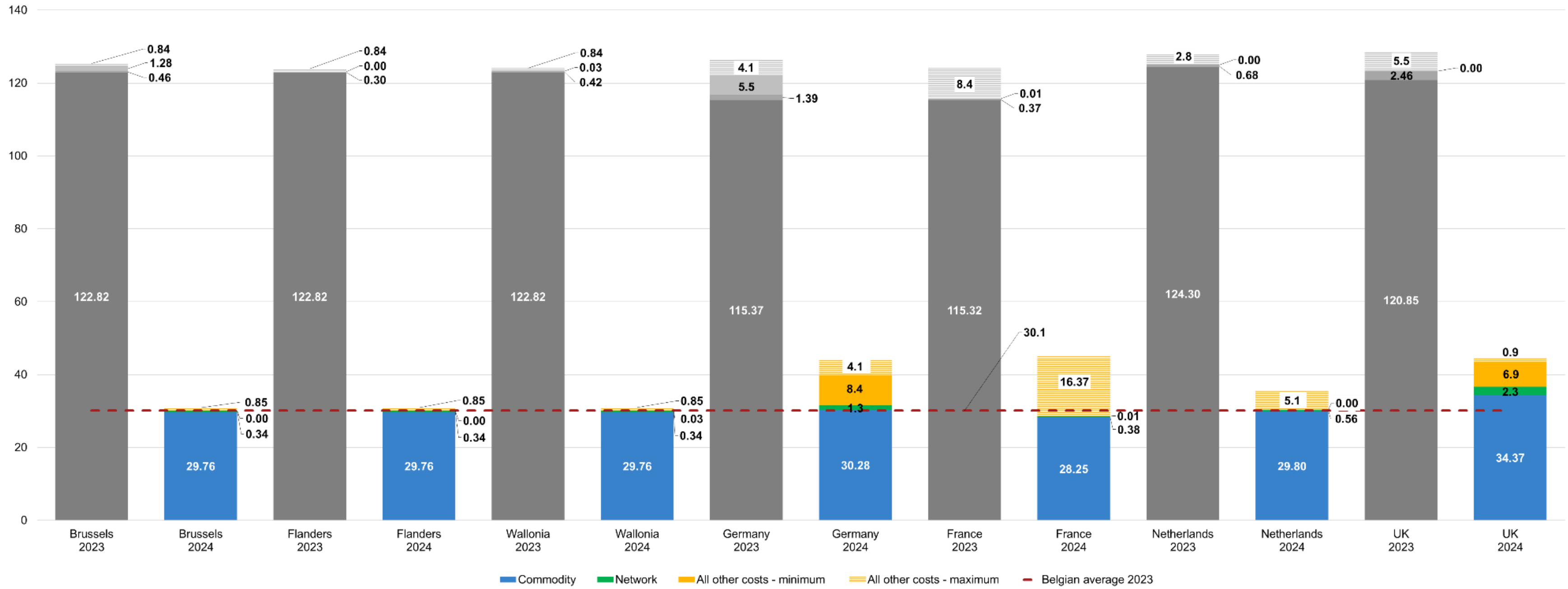
Natural gas price per component in EUR/MWh (profile G1)[6]



For the G2 profile, France is the least expensive country, closely followed by Belgium and the Netherlands, when reductions are taken into account. When maximum reductions don't apply, then the cheapest country is Belgium, followed by the Netherlands. Commodity prices have sharply fallen for all countries, whereas network and other costs have been rather similar to 2023. Because of increased tax rates, Germany, France and the UK are clearly the most expensive countries under review.

[6] This study acknowledges the natural gas consumption tariffs invoiced to industrial consumers based on the consumer profiles defined in the hypotheses. It is therefore important to clarify that potential disparities occurring between network tariffs invoiced to industrial consumers (i.e., G1 and G2 profiles) in this study and the tariffs they empirically pay, when exceeding their contractual capacity, might differ. The details of this variation are outlined in the 2022 study by CREG: https://www.creg.be/fr/publications/etude-f2716

Natural gas price per component in EUR/MWh (profile G2)[7]



[7] This study acknowledges the natural gas consumption tariffs invoiced to industrial consumers based on the consumer profiles defined in the hypotheses. It is therefore important to clarify that potential disparities occurring between network tariffs invoiced to industrial consumers (i.e., G1 and G2 profiles) in this study and the tariffs they empirically pay, when exceeding their contractual capacity, might differ. The details of this variation are outlined in the 2022 study by CREG: https://www.creg.be/fr/publications/etude-f2716

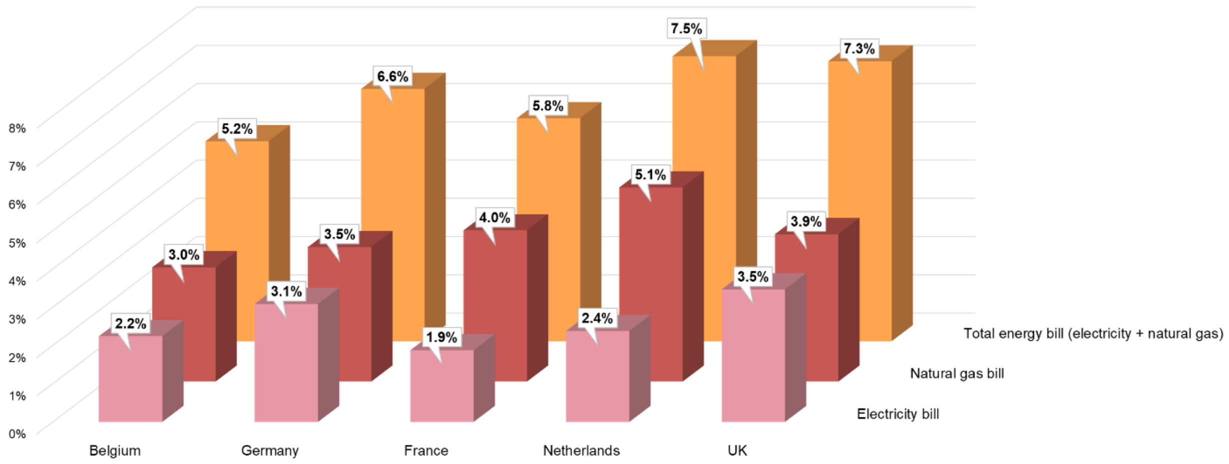
Efforts in paying for energy bills for vulnerable consumers

We also assessed the different measures put in place by the different countries in scope of this study to cushion the impact of rising energy prices and inflation for both residential and professional consumers. Those measures can range from social tariffs to direct financial support to lower consumers' bill. The variety of the measures makes it however complex to perform a cross-country comparison.

Effort rates compared to the average disposable income (housing costs deducted)

In this first view, we are looking at the weight of the energy bill on a household with an average disposable income (2 working people), after having deducted one of the most significant shares of household spending, namely the cost of housing. The figure below shows that for all countries in scope of this study, the electricity bill has a lower impact on budget than the natural gas one.

Energy bill effort rate compared to average disposable income (in %)



All in all, Belgium is in January 2024 the country where the total weight of the energy bill is the lowest in comparison with disposable income (5.2%), mainly due to a competitive advantage regarding natural gas. France comes second with 5.8%, pulled down by the low price of electricity. Germany sits in the middle with a total annual bill reaching 6.6% of the annual disposable income while the UK and the Netherlands bring up the rear with more than 7% (7.3% and 7.5% respectively), the Netherlands being penalised by its high prices for natural gas. It must be noted that all countries in scope of this study see a significant drop of the energy bill weight in comparison with what was observed last year at the same period, with a drop ranging from around 2% (for France) to more than 6% (for the Netherlands).

If we focus on the price of electricity[8], France is the country where the electricity bill weights the least with 1.9% of the annual disposable income (housing costs deducted). Belgium comes second with an average of 2.2% of the disposable income, closely followed by the Netherlands with 2.4%. Germany and the UK are the countries where the electricity bill weights the most with more than 3% of the disposable income.

When looking at natural gas prices[9], Belgium is the country where the bill weighs the least in comparison with disposable income, with an average of 3%. Germany comes second with 3.5%, closely followed by France and the UK (both around 4%). In an opposite trend than what we see for electricity, the Netherlands is here the country where the natural gas bill is weighting the most, with just above 5% of the disposable income.

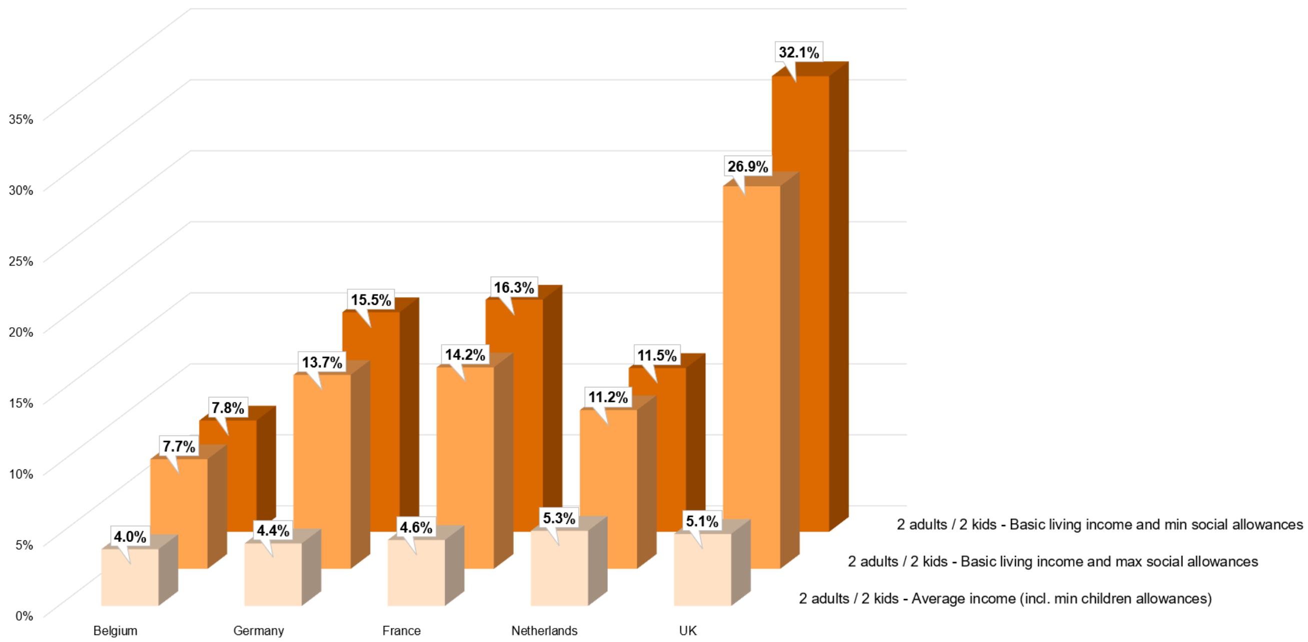
[8] Considering natural gas and electricity bills taken separately and not in combined plans
[9] Ibid

Effort rates compared to a total living wage

In this second view, we assess the weight of the average energy bill on people earning the country's average income against the impact it has on the most vulnerable people. To do so, all social measures that can be quantified are added to the basic income that our typical household (2 adult parents and 2 children) could earn without having other sources of revenue. This time we do not deduct the share of housing from the disposable income. As most households with minimum incomes also often benefit from significant aid in that area too, that would indeed provide a biased picture of reality. As a result, the weight of the energy bill for an average household automatically decreases compared to the previous figure.

As shown in the figure below, when comparing the effort rate for the total energy bill across countries for a household with an average income, we can see that Belgium is this year the country where the energy bill weights proportionally the least with 4%, closely followed by Germany and France with 4.4% and 4.6% respectively. The UK comes next with 5.1%, with the Netherlands bringing up the rear with 5.3%.

Energy bill effort rate compared to living income (in %)



Unsurprisingly, the situation becomes much more complicated for households with modest living incomes. In that case, Belgium can maintain a rather low weight of the energy bill compared to a basic income thanks to a social tariff available. This helps to keep the weight of the energy bill around 7.7%, which is around twice as what is observed for an average household. The Netherlands comes next, with a total energy bill counting for a bit more than 11% of the available income. Germany and France stand neck and neck with a total energy bill weighting from around 14% to 16% depending on the allowances that can be perceived. Finally, the UK is the country with the heaviest bill in relation to living income for the most exposed households, with figures ranging from almost 27% to more than 32% of available income. The total energy bill in the UK could therefore have a disproportionate burden on households most at risk of energy poverty.

Note: The approach followed in this section has limitations as it does not necessarily correspond to the consumption profile of some people in the situation of energy poverty (such as an isolated person without children for instance). Furthermore, it doesn't take either the fact that some more exposed people would decide to consume less energy to lower their energy bill for example. The ultimate objective of this chapter being to determine the effort rate needed to pay the energy bill (and compare it across countries to assess the impact of the energy bill in relative terms), we believe this approach is however robust enough to draw conclusions. Chapter 8 provides further insights on these observations.

Evaluation of Belgian industries competitiveness

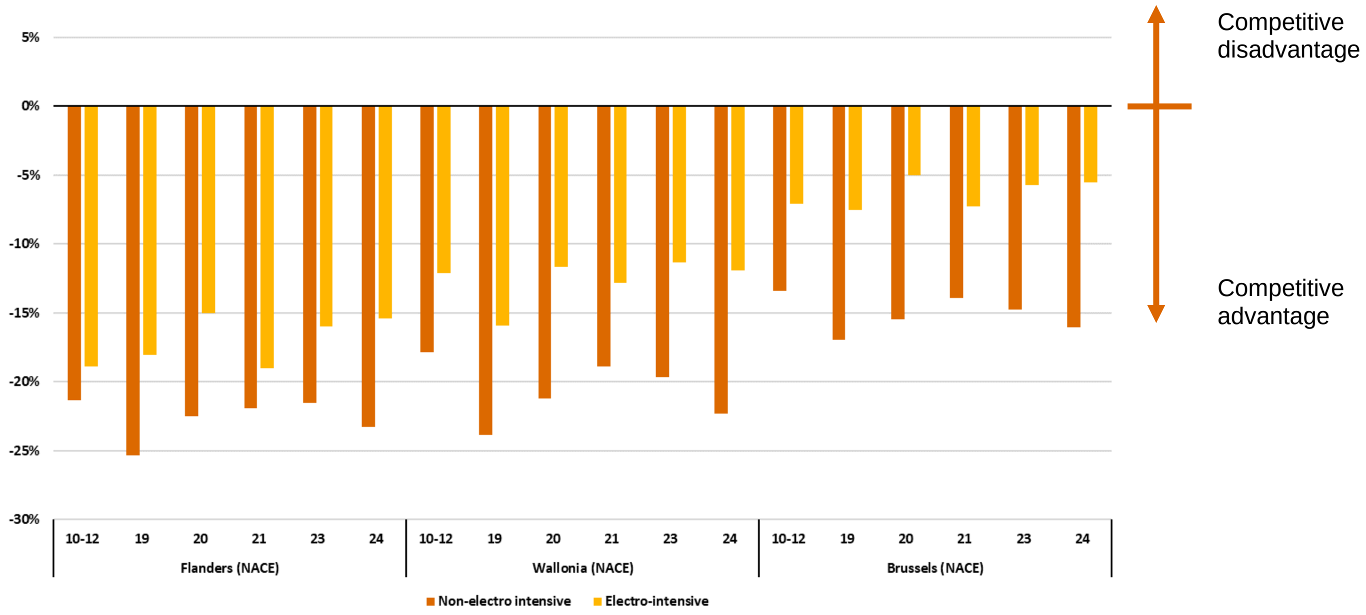
In the final chapter, sector- and region-specific electricity and natural gas prices are analysed to assess their impact on the competitiveness of Belgian industrial consumers compared to their competitors abroad. These results focus on industrial consumers from selected sectors as detailed in section 3.3, namely: food and beverages (NACE 10-12), coke and refined petroleum products (NACE 19), chemicals (NACE 20), pharmaceuticals (NACE 21), non-metallic mineral production (NACE 23), and manufacture of basic metals (NACE 24). These sectors account for a range of 0.87% to 2.26% of Belgium's gross value added and from 0.62% to 2.04% of total employment[10].

The results were differentiated depending on the UK's inclusion or exclusion in the comparison. When the UK is included, it becomes evident that non-electro-intensive industrial consumers in Belgium, competing with non-electro-intensive consumers in neighbouring countries, display a competitive advantage in most sectors. Among the regions in Belgium, Flanders benefits from the largest competitive advantages in terms of total energy cost for all sectors. However, the competitive advantage is lower for all sectors and regions when the UK is excluded.

For electro-intensive consumers, a difference is observed when including and excluding the UK. All sectors in the three regions show competitive advantages when including the UK, although the three regions are slightly less competitive when the UK is excluded. For electro-intensive consumers, Flanders and Wallonia remain more competitive than their neighbouring countries when excluding the UK, but this changes for Brussels as several sectors become competitive disadvantages. However, it should be noted that in Brussels, several activity sectors under review in this study do not have a significant presence in the region.

When the UK is included, Belgium's competitive position has changed compared to last year. Flanders, Brussels, and Wallonia see their competitiveness increase, presenting a competitive advantage in most sectors for both non-electro-intensive and electro-intensive consumers. In line with this trend, Flanders has seen its competitive advantage increase compared to 2023 for both electro-intensive and non-electro-intensive consumers, while remaining the most competitive region in Belgium.

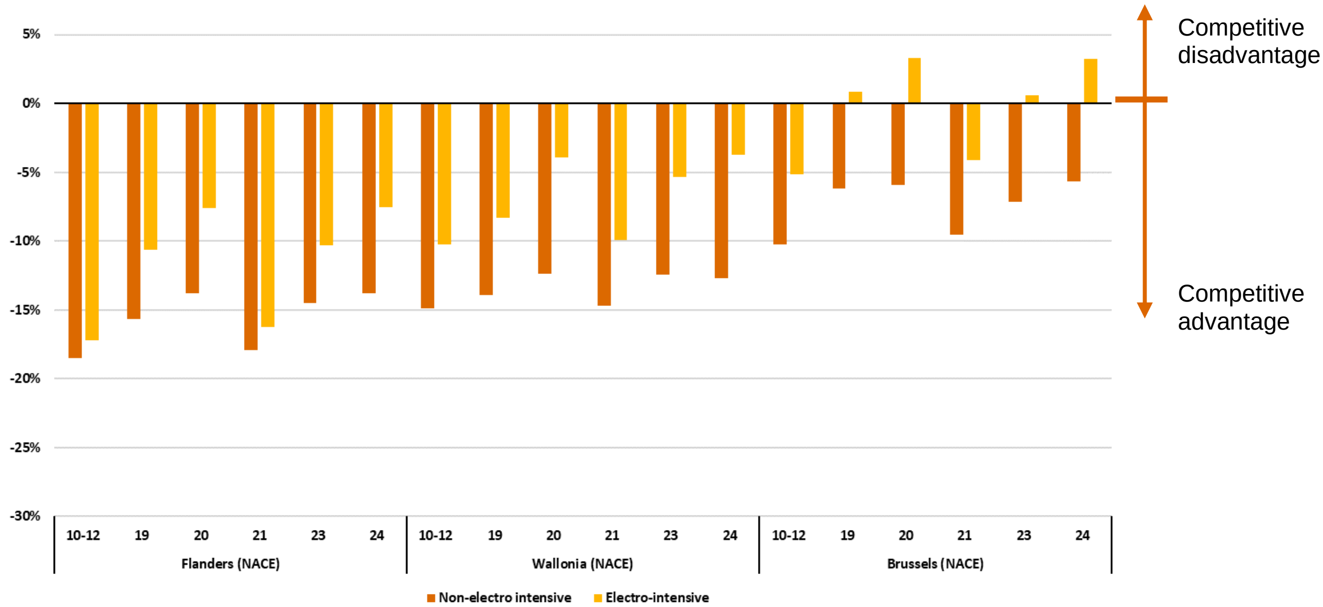
Weighted energy (electricity and natural gas) cost differences between the Belgian regions and the average costs of neighbouring countries (including the UK) for electro-intensive and non-electro-intensive consumers



[10] 2022 national values, retrieved from Eurostat.

As mentioned earlier, the competitive situation of Belgium becomes less pronounced when the UK is excluded. In fact, similarly to 2023 we observe that the three Belgian regions lose some of their competitive advantage compared to their neighbouring countries when excluding the UK from the analysis, regardless of the electro-intensity of the consumers. However, the magnitude varies by sector and region. In fact, in 2024, we observe that excluding or including the United Kingdom in the observations has little impact on the competitiveness of the food and beverage production sectors in the three regions. This is not the same finding for the chemical sector, which loses some of its competitive advantage in all three regions and even becomes a competitive disadvantage in Brussels. Belgium as a whole remains a strong competitor compared to its neighbouring countries, regardless of the sector.

Weighted energy (electricity and natural gas) cost differences between the Belgian regions and the average costs of neighbouring countries (excluding the UK) for electro-intensive and non-electro-intensive consumers



Overall, non-electro-intensive consumers in Belgium continue to benefit from competitive prices compared to their counterparts in neighbouring countries. This is particularly true for natural gas.

The detailed results highlight both the potential loss in competitiveness in neighbouring countries due to measures not being taken or continued, and the need for Brussels and Wallonia to continue scanning the market in order to keep or take the necessary measures to keep their competitiveness in their industries, particularly with regards to electricity. This conclusion also applies to Flanders, that should continue its efforts in order to support its key industries and maintain their competitive advantage.

In conclusion, these findings can serve as a first basis for a more detailed discussion on potential federal and/or regional interventions aimed at levelling or strengthening the competitiveness of Belgian consumers[11]. This could involve actions such as adjusting tariffs and/or taxes. In terms of taxes, the European Commission provides a framework through the CEEAG[12] that could be utilized for the design and/or adaptation of taxes to support the development of renewable energy.

[11] The compensation for indirect CO2 emission costs (e.g., in Flanders, the UK and Germany) has not been part of this study. This scheme is targeting electro-intensive consumers, thus differences in conclusions could arise when including it.

[12] Guidelines on State Aid for Climate, Environmental Protection, and Energy in the European Union - January 2022.

Version française

Cette étude compare les prix de l'électricité et du gaz naturel pour les consommateurs résidentiels, les petites entreprises et les consommateurs industriels pour la Belgique et quatre de ses pays voisins (la France, l'Allemagne, les Pays-Bas et le Royaume-Uni). Lorsqu'ils sont jugés plus pertinents, les résultats de cette étude sont présentés au niveau régional plutôt qu'au niveau national.

Ce rapport se concentre explicitement sur les prix de l'énergie en vigueur en janvier 2024. Il s'agit d'un aspect important à garder à l'esprit compte tenu de la volatilité actuelle des prix de l'électricité et du gaz naturel.

Avant d'entrer dans les détails de la méthodologie, nous aimerions résumer ici les changements les plus pertinents observés par rapport à la situation de 2023 :

- Pour l'électricité, nous pouvons tirer des conclusions distinctes pour les petits et grands profils. Les consommateurs résidentiels et les petites entreprises ont vu leurs factures totales diminuer dans la plupart des pays, principalement en raison de la baisse des coûts de la composante énergétique, des mécanismes de soutien et/ou de protection (i.e., exemptions et réductions) maintenant la charge supportable pour les profils plus petits. D'un autre côté, les consommateurs industriels de taille moyenne et grande ont également observé une baisse de leur facture d'électricité en raison de la baisse de la composante énergétique, sauf là où un plafond de prix était en vigueur en 2023 et ne l'est plus en 2024.

- Pour le gaz naturel, nous observons une baisse significative des prix de la composante énergétique par rapport à l'année dernière, pour tous les profils, tant professionnels que résidentiels.

Les types de **profils de consommateurs** examinés ont été définis par les Termes de Référence de cette étude et restent conformes aux études comparatives précédentes réalisées par PwC pour la CREG et la VREG [13]. Au total, 13 profils de consommateurs différents ont été étudiés : 8 pour l'électricité (1 consommateur résidentiel, 2 petits professionnels et 5 consommateurs industriels) et 5 pour le gaz naturel (1 consommateur résidentiel, 1 petit professionnel et 3 consommateurs industriels). Les tableaux ci-dessous synthétisent, de manière non-exhaustive, les caractéristiques des types de profils de consommateurs pour lesquels d'autres hypothèses peuvent être trouvées dans le chapitre 3.

[13] Les études précédentes portant sur les consommateurs résidentiels et industriels peuvent être trouvées sur le site web de la CREG :
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20230515EN.pdf (édition 2023)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20220513EN.pdf (édition 2022)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20210517EN.pdf (édition 2021)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20200520-errata.pdf (errata édition 2020)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20200520EN.pdf (édition 2020)

Profils des consommateurs d'électricité

Profils	Type de consommateur	Demande annuelle (MWh)	Capacité contractée (kW)	Pointe annuelle(kW)
E-RES	Résidentiel	3.5	7.36	5.89
E-SSME	Petit professionel	30	37.5	30
E-BSME	Grand professionel	160	125	100
E0	Industriel	2,000	625	500
E1	Industriel	10,000	2,500	2,000
E2	Industriel	25,000	5,000	4,000
E3	Industriel	100,000	13,000	10,400
E4	Industriel	500,000	62,500	50,000

Profils des consommateurs de gaz naturel

Profils	Type de consommateur	Demande annuelle (MWh)	Capacité contractée (kW)
G-RES	Résidentiel	17	-
G-PRO	Petit professionel	300	-
G0	Petit professionel	1,250	-
G1	Industriel	100,000	20,000
G2	Industriel	2,500,000	312,500

La comparaison porte sur trois **composantes** de la facture énergétique : les coûts de la composante énergétique ("commodity"), les coûts de réseau et tous les autres coûts (taxes, prélèvements et systèmes de certificats). Une quatrième composante, la TVA, n'est prise en compte que pour les profils résidentiels de l'électricité et du gaz naturel.

Une description détaillée de la composition et des composantes des prix de l'énergie (chapitres 4 et 5) précède les résultats de la comparaison des prix (chapitre 6). Les coûts de l'énergie sont analysés selon une approche « bottom-up », ce qui conduit à une description détaillée des différentes composantes des prix et de leur application dans les pays considérés dans cette étude.

Tant pour l'électricité que pour le gaz naturel, le présent rapport constate de grandes différences dans la structure des prix entre les différentes régions et les différents pays, notamment en ce qui concerne la fixation des coûts de réseau et des régimes fiscaux. Cela ajoute un niveau de complexité supplémentaire pour une comparaison pertinente entre tous les pays/régions couverts par cette étude.

Comparaison des prix de l'électricité

Comparaison des prix de l'électricité pour les profils résidentiels et petites entreprises

Par rapport à 2023, la différence la plus significative est la diminution des coûts globaux pour le profil E-RES dans la plupart des pays, avec certaines régions/pays observant une stagnation. L'Allemagne est le seul pays à connaître une augmentation des prix (à l'exception de la région Tennet). Le prix de l'électricité a diminué dans plusieurs pays, dont la Belgique, les Pays-Bas et différentes régions allemandes (Amprion, Tennet et 50 Hertz). En revanche, la France, le Royaume-Uni et la région Transnet BW ont connu une légère augmentation des coûts de la composante énergétique. La région allemande Amprion a les coûts de la composante électrique la plus élevée pour les consommateurs résidentiels en 2024, contrairement à l'année précédente. La France propose la facture annuelle la plus basse, car le produit standard pour les consommateurs résidentiels reste réglementé par le gouvernement. Après la France, la Flandre est la région avec la deuxième facture d'électricité annuelle la plus basse pour les consommateurs résidentiels, suivie de près par la Wallonie et Bruxelles[14]. Ce classement reste le même en 2024 qu'en 2023.

Bien que l'Allemagne ne soit pas le pays le moins cher pour les consommateurs d'électricité résidentiels, sa facture d'électricité totale s'est stabilisée pour ce type de consommateur (à l'exception de la baisse notable dans la région Tennet). Cette stabilisation est due à la suppression du plafonnement des prix en 2024, ce qui augmente mécaniquement la part de la composante énergétique dans la facture totale[15]. En moyenne, l'Allemagne a la facture la plus élevée en 2024. En revanche, les Pays-Bas ont observé la plus forte baisse de la facture totale pour les consommateurs résidentiels, malgré la suppression du plafonnement des prix en 2023. Les Pays-Bas restent le seul pays avec une valeur "négative" pour le composant "tous les autres coûts" de la facture, en raison des réductions pratiquées (i.e., "Belastingvermindering per elektriciteitsaansluiting").

L'Allemagne et les Pays-Bas ont les coûts de réseau les plus élevés. Les deux pays ont vu une augmentation des frais de réseau en 2024, pour se conformer à une décision de la cour de justice en Allemagne et afin de préparer la transition énergétique pour les Pays-Bas.

La Belgique a connu une augmentation de la composante "tous les autres coûts" en raison de la suppression de la réduction temporaire des accises spéciales fédérales pour les petits consommateurs au niveau du minimum européen. Cela a été mis en œuvre afin de compenser la TVA fixée de manière permanente à 6%, suite à la baisse temporaire de 2022. Il convient de noter que la Belgique et le Royaume-Uni ont tous deux un avantage concurrentiel en ce qui concerne la composante TVA, car ils appliquent des taux beaucoup plus bas (6% pour la Belgique et 5% au Royaume-Uni) par rapport aux autres pays de cette étude.

Pour cette raison, la Belgique a la composante "tous les autres coûts" la plus élevée pour les consommateurs résidentiels, suivie de près par le Royaume-Uni. La différence avec la composante "tous les autres coûts" des Pays-Bas est en moyenne de 140 EUR/MWh.

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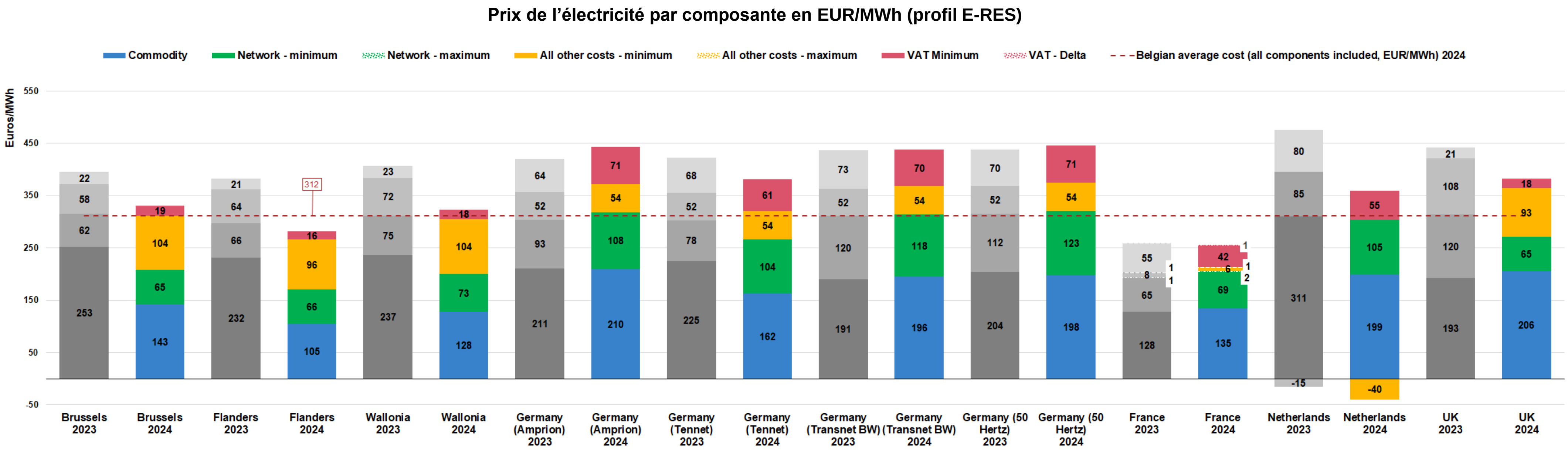
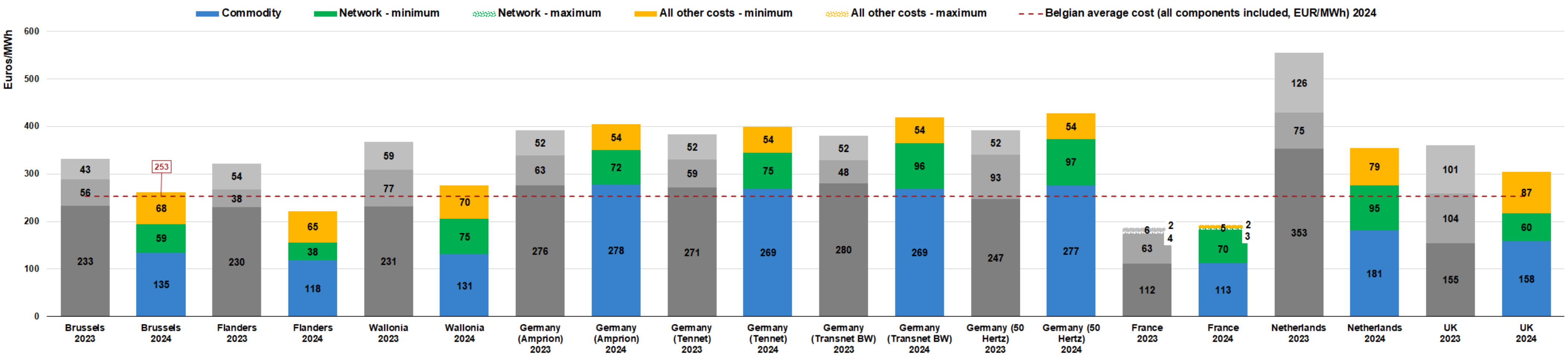
[14] (Brugel, 2023) Il convient de noter que les outils de comparaison de prix utilisés pour les 3 régions de Belgique utilisent des prix prospectifs depuis 2023. C'est pourquoi la sélection de produits pour E-RES, G-RES et E-SSME a été récupérée via ces sites Web, alors que les tarifs sur les produits ont été calculés à l'aide de paramètres d'indexation historiques, ce qui constitue un changement de méthodologie par rapport à l'étude de 2023.


Prix de l'électricité par composante en EUR/MWh (profil E-RES)
Commodity
Network - minimum
Network - maximum
All other costs - minimum
All other costs - maximum
VAT Minimum
VAT - Delta
Belgian average cost (all components included, EUR/MWh) 2024
Euros/MWh
312
Brussels 2023
Brussels 2024
Flanders 2023
Flanders 2024
Wallonia 2023
Wallonia 2024
Germany (Amprion) 2023
Germany (Amprion) 2024
Germany (Tennet) 2023
Germany (Tennet) 2024
Germany (Transnet BW) 2023
Germany (Transnet BW) 2024
Germany (50 Hertz) 2023
Germany (50 Hertz) 2024
France 2023
France 2024
Netherlands 2023
Netherlands 2024
UK 2023
UK 2024

Pour le profil E-SSME en 2024, la France reste le pays le moins cher grâce au produit régulé permettant une garantie de prix faibles. De plus, la France possède des incitants et mesures attrayantes, ainsi qu'un système fiscal avantageux. La différence la plus significative par rapport aux résultats de l'année dernière est la forte baisse des coûts aux Pays-Bas et l'augmentation de la compétitivité de la Belgique. La composante énergétique a diminué en Belgique pour atteindre un niveau légèrement supérieur à celui de la France, malgré l'absence de produits réglementés ou de mécanismes de garantie des prix. L'Allemagne est devenue le pays le plus cher principalement en raison de la croissance de ses coûts pour la composante énergétique, ainsi que ses coûts de réseau plus élevés en 2024. La facture d'électricité totale pour ce profil est plus basse en Belgique par rapport à l'année dernière. La Flandre reste la région la moins chère, suivie de près par Bruxelles et enfin la Wallonie.

La hausse des coûts de réseau en Allemagne et aux Pays-Bas a la même origine pour le profil E-SSME ci-dessous que pour le profil E-RES. En revanche, l'augmentation de la compétitivité du Royaume-Uni est largement due à la diminution des frais de transmission et à de meilleures incitations fiscales et prélèvements avantageux.

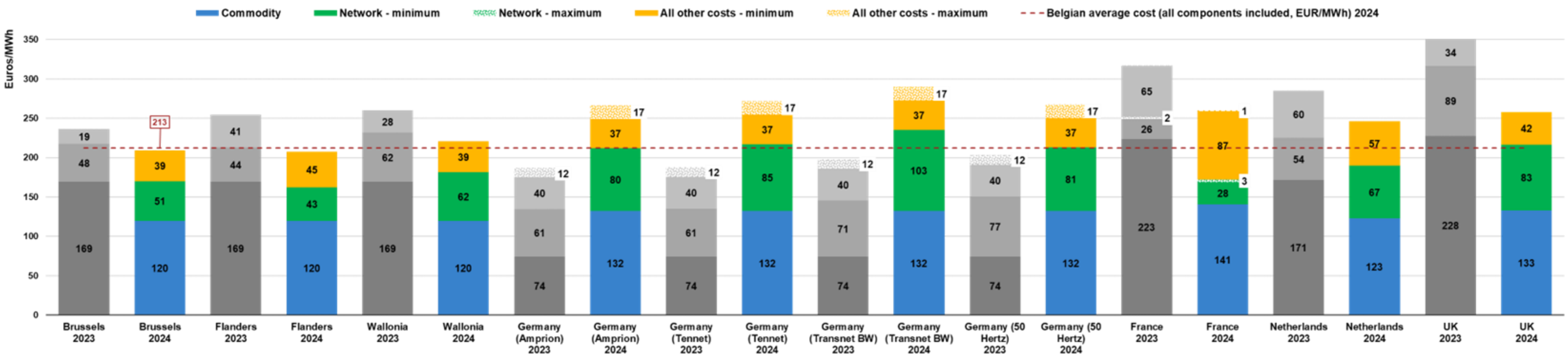
Prix de l'électricité par composante en EUR/MWh (profil E-SSME)



La baisse des prix de la composante énergétique observée entre 2023 et 2024 pour les profils E-RES et E-SSME est cohérente avec celle observée pour les profils E-BSME et E0 jusqu'à E4. Il s'observe une diminution significative des prix de l'électricité sur les marchés de gros, ce qui contribue à réduire les coûts de l'électricité pour les industries. Cette baisse est également observable dans tous les autres pays/régions inclus dans cette étude, à l'exception de l'Allemagne, où la suppression du plafonnement des prix établi en 2023 a contribué à une augmentation des coûts de l'électricité. La tendance à la baisse des prix du marché peut être partiellement expliquée par la manière dont les prix de l'énergie sont calculés pour ces profils. La formule utilisée pour les profils d'électricité industriels considère que 51,5 % du coût de l'électricité est basé sur les prix observés au cours du jour ainsi que du mois, du trimestre et de l'année qui précèdent. Par conséquent, comme les prix du marché ont commencé à baisser à partir de fin 2022, cette diminution est déjà incluse dans la composante énergétique. En conséquence, la baisse des prix est partiellement visible dans les résultats.

Pour le profil E-BSME, tous les pays, à l'exception de l'Allemagne, ont connu une baisse générale de la facture d'électricité totale. La Belgique a atteint le rang le plus compétitif, avec ses trois régions considérées comme les moins chères pour ce profil, une amélioration par rapport à la seconde place occupée en 2023. La Belgique est suivie par le Pays-Bas et le Royaume-Uni. Les principales raisons de la compétitivité de la Belgique sont le coût inférieur de la composante énergétique, ainsi que des coûts de réseau et une composante "tous les autres coûts" relativement basse. En Belgique, la Flandre est devenue la région la plus abordable pour ce profil, principalement en raison de frais de distribution inférieurs. Elle est suivie de près par Bruxelles, puis suivi par la Wallonie.

Prix de l'électricité par composante en EUR/MWh (profil E-BSME)



Comparaison des prix de l'électricité pour les consommateurs industriels

De la même manière qu'une forte baisse du prix de l'électricité est observée dans la plupart des régions/pays pour les consommateurs résidentiels et petits professionnels, une baisse similaire est constatée pour les grands consommateurs, à l'exception de l'Allemagne en raison de l'arrêt de son mécanisme de plafonnement des prix au 31 décembre 2023. En tenant compte de toutes les réductions, le coût le plus faible de l'électricité pour les profils de consommateurs E0, E1 et E2 se trouve en Flandre, alors qu'il était en Allemagne en 2023. La Flandre est suivie par la France pour le profil E0, les Pays-Bas pour le profil E1, et la France pour le profil E2. Les prix bas en Flandre peuvent être attribués au faible coût de la composante énergétique et à des réductions potentielles sur la composante « tous les autres coûts » (tels que les programmes de certificats verts et de cogénération, ainsi que les exemptions de droits d'accise spéciaux, à partir du profil E1), associés à des coûts de réseau relativement bas. Les Pays-Bas, forts d'exemptions (i.e., pour les entreprises dans le secteur de la chimie et métallurgie) sur la taxe énergétique, offrent une forte compétitivité dans la composante « tous les autres coûts ». L'Allemagne reste le pays le plus cher, comme pour les autres petits profils, en raison de coûts de réseau élevés.

Les résultats pour les Pays-Bas sont très dépendants des exemptions possibles. Bien que le pays propose des prix moyens inférieurs à la plupart des autres pays lorsque l'exemption sur tous les autres coûts s'applique aux consommateurs électro-intensifs (à partir du profil E1), les autres consommateurs industriels localisés aux Pays-Bas se trouvent dans une position moins compétitive lorsque ces réductions ne s'appliquent pas.

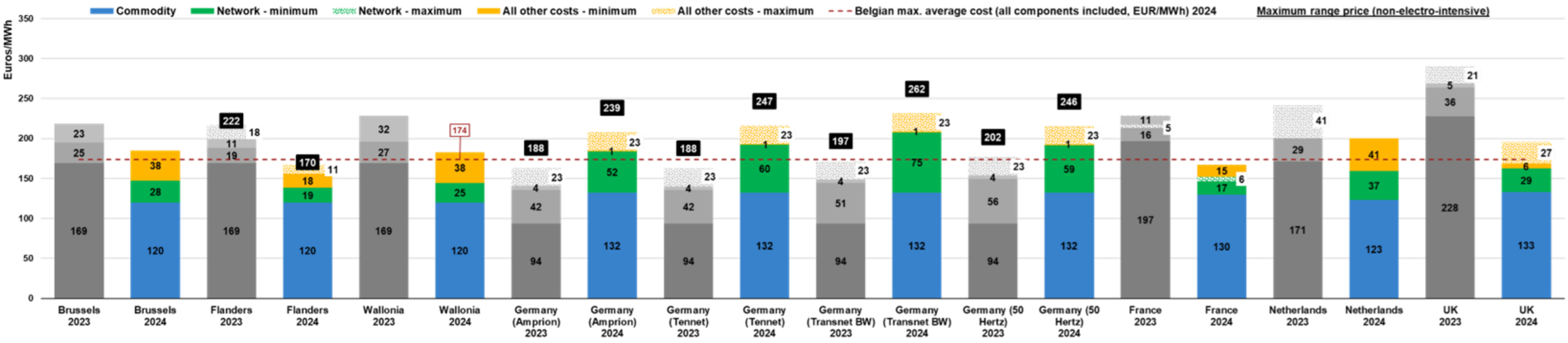
En Belgique, le coût de la facture d'électricité est en moyenne plus élevé à Bruxelles, suivi de la Wallonie pour les profils E0, E1 et E2[16]. Alors qu'il n'y a presque aucune différence entre ces deux régions pour le profil E0, l'écart devient visible pour les profils E1 et E2 en raison des faibles réductions offertes aux entreprises localisées à Bruxelles, qui y sont d'ailleurs peu nombreuses. En revanche, la Flandre a le potentiel d'être la région la moins chère en Belgique pour ces trois profils en raison de coûts minimaux plus bas pour tous les autres coûts et de coûts de distribution inférieurs. La structure tarifaire de distribution introduite en Flandre le 1er janvier 2023 n'a pas modifié sa position compétitive pour les profils E0 et E1, bien qu'elle ait maintenu ses coûts de réseau inférieurs aux autres régions.

Pour les consommateurs non-électro intensifs localisés en Belgique, la différence entre la Flandre et la Wallonie reste stable, alors que Bruxelles reste la région la plus chère du pays. Des pays analysés, l'Allemagne et les Pays-Bas sont les pays avec la facture la plus élevée pour le profil E0, tandis que l'Allemagne et le Royaume-Uni sont les plus chers pour les profils E1 et E2. La différence entre les factures payées par les consommateurs électro-intensifs bénéficiant de réductions et celle payée par les consommateurs non-électro intensifs est relativement faible en Belgique et en France, comparée aux autres pays analysés. Cela indique que les autres pays offrent plus de réductions aux consommateurs électro-intensifs. Cependant, il est important de prendre en compte le contexte dans son ensemble, car le soutien gouvernemental peut également se refléter dans un coût de la composante énergétique réduite (e.g., le plafonnement des prix en Allemagne en 2023 ; l'ARENH[17] en France ; et les garanties de prix au Royaume-Uni) ou de moindres coûts de réseau (e.g., les réductions des frais de réseau compensés par des mesures financières gouvernementales pour les opérateurs de réseau).

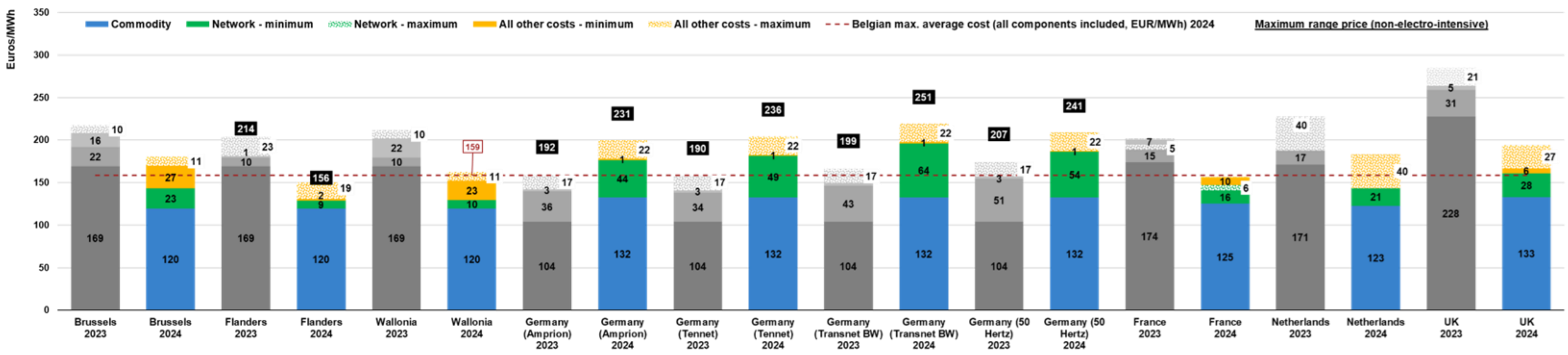
[16] A la différence des études précédentes, le facteur de dégressivité sur les coûts de transports wallons a été appliqué en 2023. Ce facteur de dégressivité des coûts en fonction de l'intensité électrique permet de réduire les coûts de transports payés par les profils E0 et E1 wallons. Il est donc nécessaire de prendre ceci en compte lors d'analyses comparatives faites entre la Wallonie et les autres régions, ou la Belgique et les autres pays.

[17] ARENH signifie « Accès Régulé à l'Électricité Nucléaire Historique ». Il s'agit d'un mécanisme qui permet à tous les fournisseurs d'obtenir de l'électricité auprès d'EDF (le fournisseur historique d'électricité en France) selon des conditions fixées par les autorités publiques.

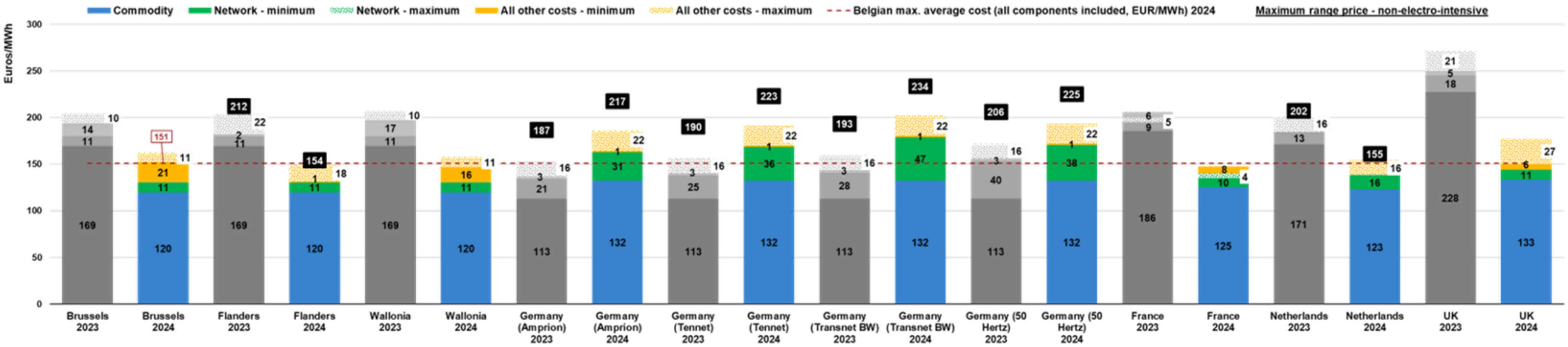
Prix de l'électricité par composante en EUR/MWh (profil E0)



Prix de l'électricité par composante en EUR/MWh (profil E1)



Prix de l'électricité par composante en EUR/MWh (profil E2)



Lorsque l'on observe les profils E3 et E4, la France reste le pays avec la facture totale la plus basse parmi tous les pays inclus dans cette étude, principalement grâce au mécanisme ARENH mis en place. À l'autre extrémité du spectre, l'Allemagne devient le pays le plus cher pour les profils E3 et E4 non électro-intensifs, suivi de près par le Royaume-Uni. Cela peut être attribué à la composante « tous les autres coûts » qui est plus élevée en Allemagne et au Royaume-Uni que dans les autres régions considérées. Pour les profils E3 et E4, nous observons trois groupes de pays. Certains pays ont des prix bas, comme la France, tandis que d'autres ont des prix moyens, comme les Pays-Bas et la Belgique. Enfin, il existe des pays avec des prix élevés comme l'Allemagne et le Royaume-Uni pour les profils non électro-intensifs ne bénéficiant pas de réductions ou d'exemptions.

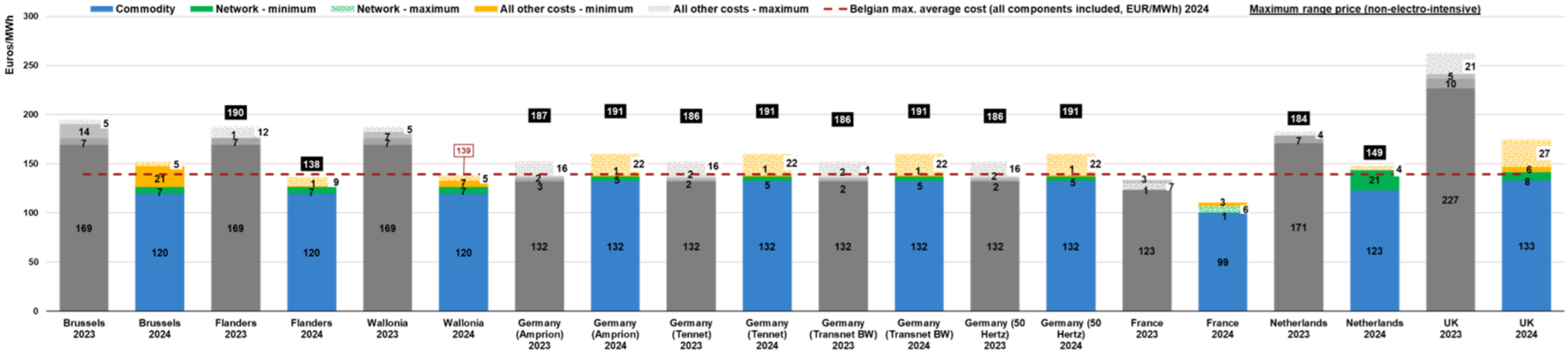
Pour les profils E3 et E4 électro-intensifs, la France reste le pays le plus compétitif grâce à son faible coût de la composante énergétique. La Flandre arrive en deuxième position, avec une petite différence en raison des programmes de certificats verts et de cogénération. Cependant, lorsque les réductions s'appliquent, l'Allemagne devient plus compétitive que le Royaume-Uni, ce qui est un avantage pour les entreprises électro-intensives allemandes par rapport à celles qui ne le sont pas.

En Belgique, nous observons que pour les profils E3 et E4, la Flandre est toujours la région la plus compétitive pour les consommateurs électro-intensifs, tandis que sa position est remise en question pour les consommateurs non électro-intensifs, ce qui est conforme aux résultats de l'année dernière. Étant donné que les coûts de la composante énergétique et les coûts de réseau sont harmonisés dans toutes les régions belges, cette différence dépend uniquement de la composante « tous les autres coûts ». Il est important de noter que le plus grand consommateur d'énergie à Bruxelles se rapproche davantage d'un profil E3 que d'un profil E4, et le profil E4 est donc une observation purement théorique pour cette région en raison de l'absence de très grands consommateurs industriels à Bruxelles.

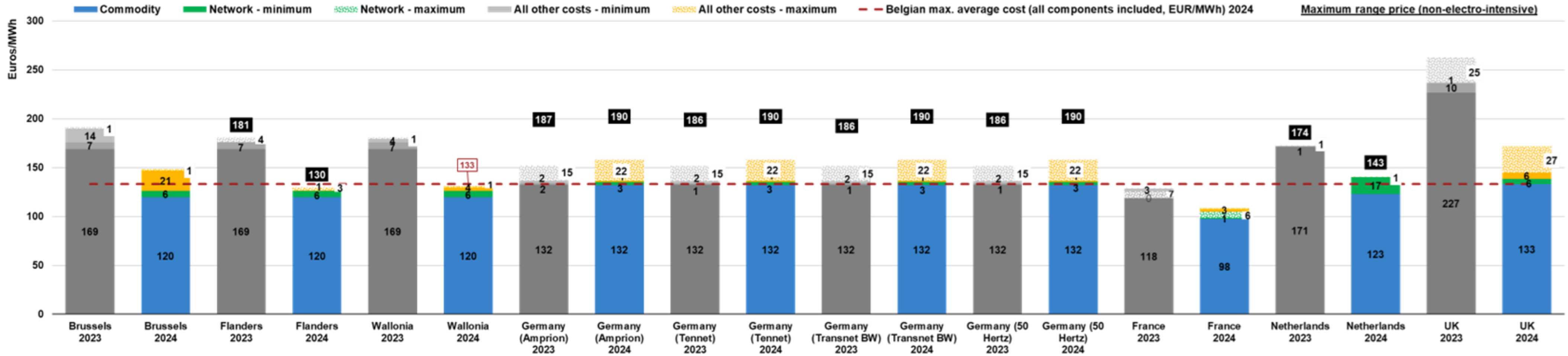
Pour le profil E3, la Belgique possède un prix de la composante énergétique bas, plus élevé cependant que celui observé en France. La Belgique reste désavantagée par une composante « tous les autres coûts » plus élevées que ses voisins, en particulier à Bruxelles. Les critères d'électro-intensité ne fournissent pas autant de réductions qu'en Flandre, où la composante « tous les autres coûts » est plus basse que dans les autres régions. La Belgique est généralement compétitive lorsque l'on regarde les profils non électro-intensifs (après la France), avec les Pays-Bas et le Royaume-Uni en 3ème et 4ème position. Les taxes, les prélèvements et les coûts des mécanismes de certificats en Belgique seraient alignés sur ceux de l'Allemagne et des Pays-Bas s'ils n'appliquaient pas de réductions pour les consommateurs électro-intensifs.

Le profil E4 suit une tendance similaire au profil E3, la France étant le pays le moins cher, suivie de la Flandre, de la Wallonie et des Pays-Bas. Les Pays-Bas et la Belgique ont des factures totales similaires pour ce profil, bien que des différences dans leur structure de prix les distinguent. De manière similaire au profil E3, la Belgique présente des composantes « tous les autres coûts » relativement élevées, bien qu'elles soient plus similaires à la France et au Royaume-Uni lorsque l'on considère les régimes et réductions potentiels applicables en fonction de la région de la Belgique observée. Les coûts de réseau pour les profils E3 et E4 aux Pays-Bas sont extrêmement élevés : cela est dû à une augmentation de tarifs de réseau par Tennet, l'opérateur de réseau, et à la suppression de la correction de volume, dont bénéficiaient les profils E3 et E4 jusqu'en 2023. Ces changements affectent la position compétitive des Pays-Bas, en faisant potentiellement le pays/région le plus cher après Bruxelles, lorsque l'on considère toutes les réductions.

Prix de l'électricité par composante en EUR/MWh (profil E3)



Prix de l'électricité par composante en EUR/MWh (profil E4)



En ce qui concerne l'électricité pour les consommateurs industriels, l’étude met en évidence la complexité de la compétitivité, due aux interventions gouvernementales visant à réduire les coûts de l'électricité pour certaines catégories de grands consommateurs industriels. Ces interventions visent à influencer la charge des coûts de réseau et les composantes « tous les autres coûts », tels que les taxes, les prélèvements et les systèmes de certificats. La Belgique, la France, l'Allemagne et les Pays-Bas appliquent des réductions d'impôts et des régimes de certificats basés sur des critères économiques spécifiques, généralement liés à l'électro-intensité. Si des réductions spécifiques peuvent être directement appliquées (e.g., des choix de tarifs de réseau en France), nous avons présenté les résultats pour une large gamme de possibilités. L'application de ces réductions modifie la position compétitive des autres pays dans le cadre de l'étude : le Royaume-Uni acquiert cette année une position très compétitive pour les profils industriels importants lorsque les consommateurs répondent aux critères de réduction, les Pays-Bas et la Flandre deviennent légèrement moins chers, et la France reste la région la plus compétitive observée, ce qui est renforcé par ces réductions. Enfin, la France est le seul pays à avoir atténué l'augmentation du coût de la composante énergétique grâce au mécanisme de l’ARENH.

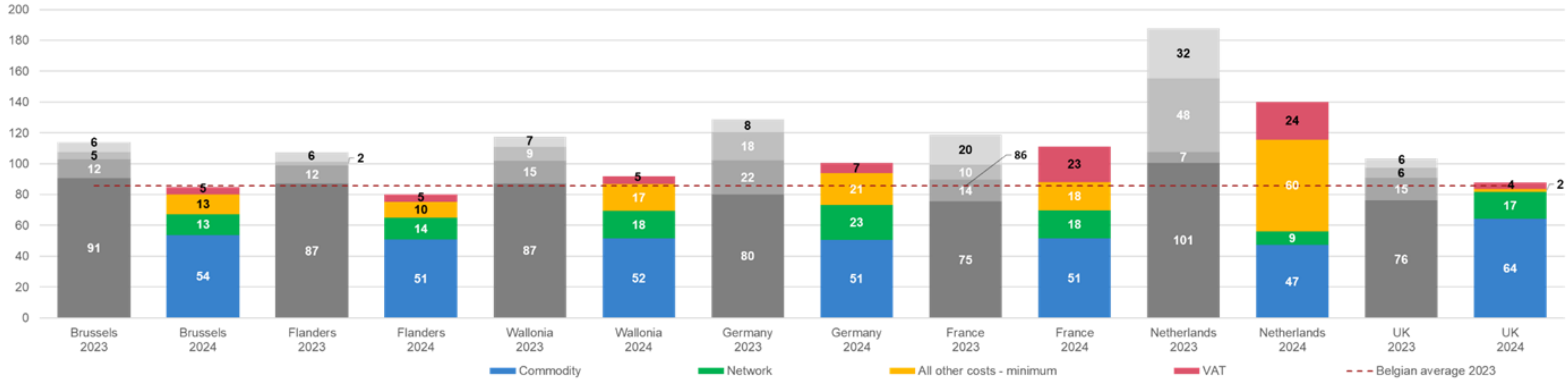
Comparaison des prix du gaz naturel

Comparaison des prix du gaz naturel pour les consommateurs résidentiels et les petits professionnels

Pour les consommateurs résidentiels (G-RES), la Belgique est le pays le moins cher en 2024, suivi de près par le Royaume-Uni. Les Pays-Bas sont le pays le plus cher pour les consommateurs résidentiels, principalement en raison de la composante « tous les autres coûts » significativement plus élevée et qui ne comprend que la taxe sur l'énergie. Les bons résultats de la Belgique peuvent s'expliquer par des coûts de réseau bas et une faible TVA. En Belgique, la Flandre est moins chère que Bruxelles et la Wallonie, en raison d'une composante « tous les autres coûts » plus basse. La Wallonie a les coûts de réseau et la composante « tous les autres coûts » les plus élevés, tandis que Bruxelles possède la composante énergétique la plus élevée en 2024. D'autre part, la bonne performance du Royaume-Uni peut s'expliquer par une composante « tous les autres coûts » plus basse, bien qu'ayant la composante énergétique le plus élevée parmi les régions/pays examinés. Comme c'était déjà le cas en 2023, l'Allemagne se situe toujours au milieu du classement, avec des prix plus élevés que la Belgique et le Royaume-Uni, mais inférieurs à ceux de la France et des Pays-Bas. En raison d'une augmentation à la fois des coûts de réseau et de la composante « tous les autres coûts », ainsi que d'un taux de TVA élevé par rapport aux autres pays, la France est devenue le deuxième pays le plus cher.

Si l'on compare ces observations aux résultats de l'année précédente, tous les pays voient leurs coûts énergétiques baisser en raison d'une diminution significative de la composante énergétique. Malgré cette forte baisse, les Pays-Bas restent le pays le plus cher en raison d'une composante « tous les autres coûts » plus élevés que les autres régions/pays analysés. D'autre part, le Royaume-Uni a connu la plus faible baisse des coûts de la composante énergétique, mais cela ne l'a pas empêché de devenir le deuxième pays le plus compétitif en 2024 en raison de faibles coûts sur la composante « tous les autres coûts » et d'un taux de TVA réduit.

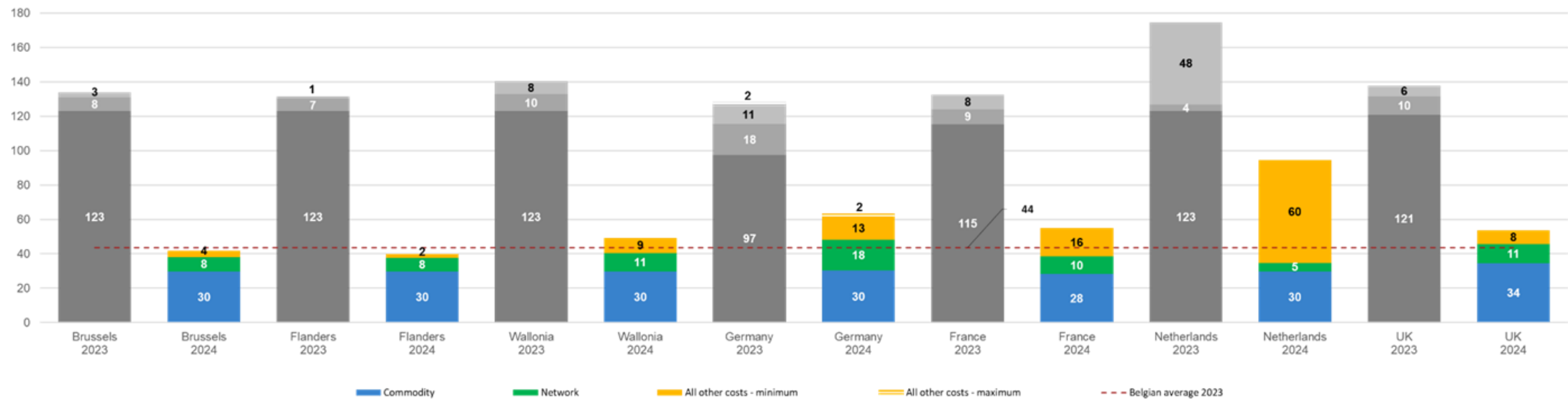
Prix du gaz naturel par composante en EUR/MWh (profil G-RES)



Pour les consommateurs professionnels (G-PRO), tous les pays voient leurs coûts énergétiques totaux diminuer en raison d'une forte baisse de la composante énergétique. Alors que l'Allemagne était le pays le moins cher en 2023 (grâce à son mécanisme de plafonnement des prix), cette place a maintenant été prise par la Belgique grâce à des niveaux de taxes relativement bas (sauf en Wallonie). En Belgique, la Flandre a la facture totale la plus faible, suivie de Bruxelles, puis de la Wallonie. Les Pays-Bas restent le pays le plus cher examiné, étant plus de deux fois plus chers que la moyenne belge.

La France se situe au milieu du classement en termes de prix, étant plus chère que la Belgique et légèrement plus chère que le Royaume-Uni, mais moins chère par rapport à l'Allemagne et aux Pays-Bas. La France connaît une augmentation de sa taxe TICGN[18] lorsque l'on compare 2023 et 2024, ce qui a un impact négatif sur la facture totale.

Prix du gaz naturel par composante en EUR/MWh (profil G-PRO)

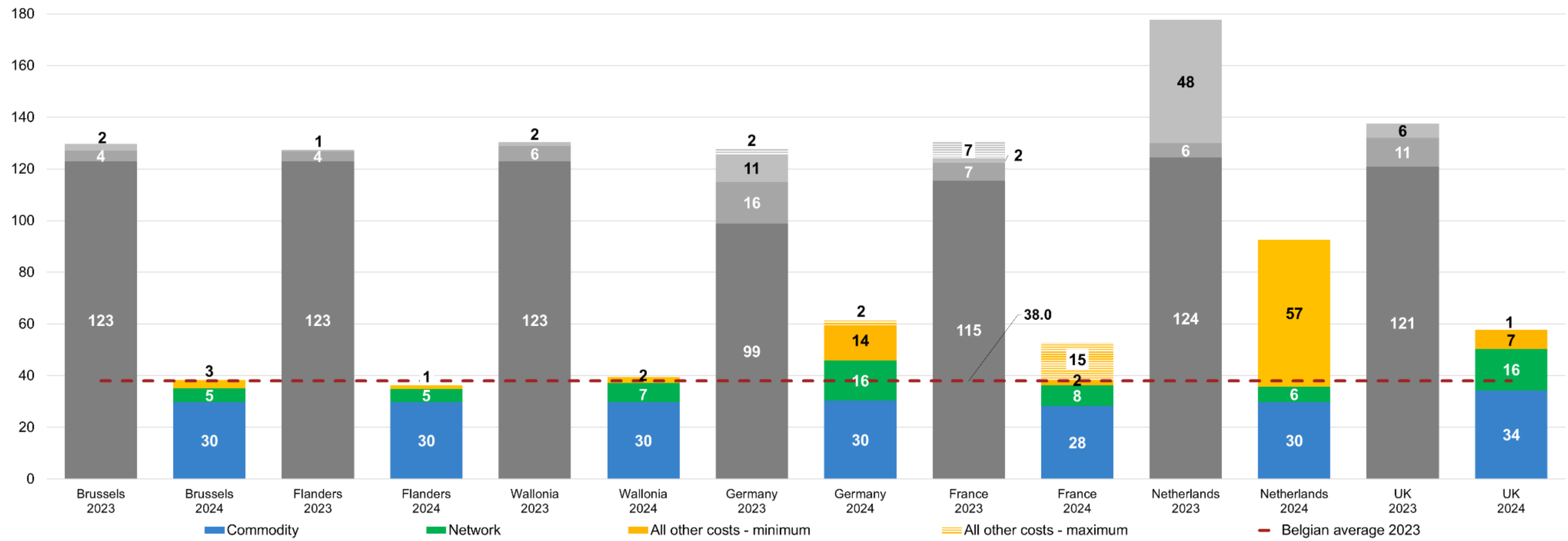


[18] Taxe Intérieure de Consommation sur le Gaz Naturel

Comparaison des prix du gaz naturel pour les consommateurs industriels

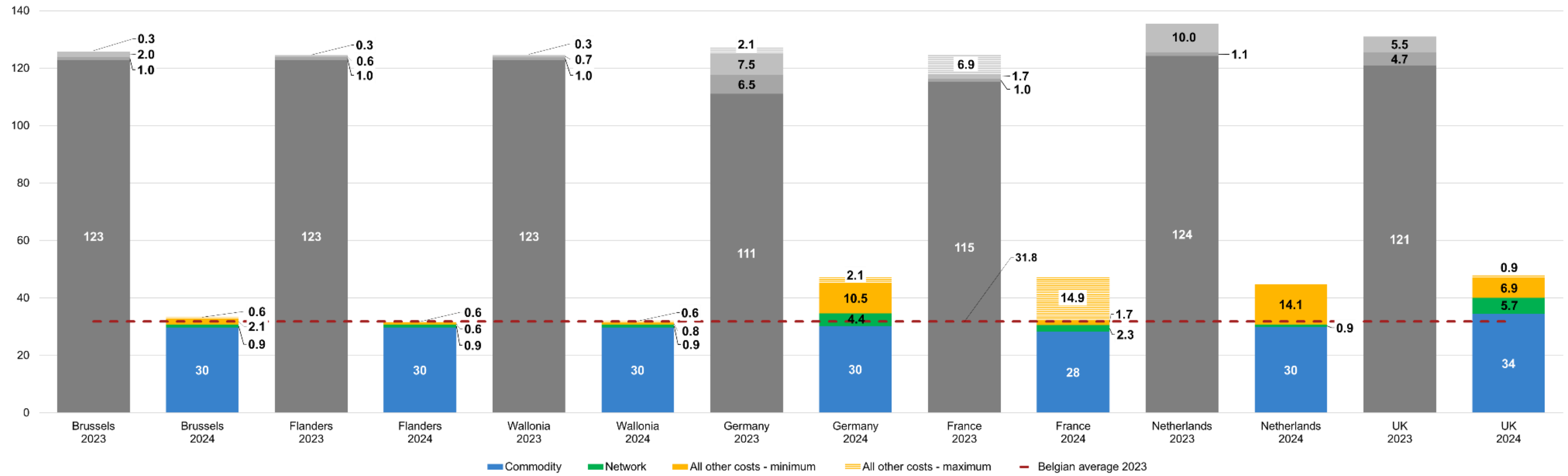
Nous observons à nouveau cette année une forte baisse de la facture annuelle totale pour les consommateurs industriels de gaz naturel, principalement due à des coûts du gaz nettement inférieurs à 2023. Dans l'ensemble, la Belgique reste plutôt compétitive en ce qui concerne le gaz naturel, grâce à des coûts relativement bas pour les composantes « tous les autres coûts » et coûts de réseau. Pour le profil G0, la Belgique est de loin le pays le moins cher, sans réductions. Bien que la Belgique reste également le pays le plus compétitif lorsque l'on prend en compte les réductions maximales, la différence avec la France devient marginale. L'augmentation significative de la composante « tous les autres coûts » principalement due au taux plus élevé de la TICGN, a un impact substantiel sur la France. La possibilité d'obtenir une réduction sur ces coûts a un impact considérable sur la facture annuelle totale et la position concurrentielle de la France. En Belgique, la Flandre est la région la plus compétitive en raison des coûts de réseau et d'une composante « tous les autres coûts » faibles, tandis que la Wallonie est la région la plus chère. Les Pays-Bas sont une fois de plus le pays le plus cher en raison d'autres coûts, suivi de l'Allemagne. De plus, le Royaume-Uni connaît une forte augmentation de sa composante de coûts de réseau.

Prix du gaz naturel par composante en EUR/MWh (profil G0)



Pour le profil G1, on observe une tendance similaire où la Belgique est le pays le moins cher lorsque l'on ne tient pas compte des réductions, et le moins cher de peu lorsque l'on considère les réductions maximales. Le Royaume-Uni est le pays le plus cher, suivi de près par les Pays-Bas et l'Allemagne lorsque l'on tient compte de toutes les réductions. En Belgique, les coûts de réseau et la composante « tous les autres coûts » sont restés relativement stables par rapport aux résultats de 2023, même si des différences minimales sont observées entre les régions.

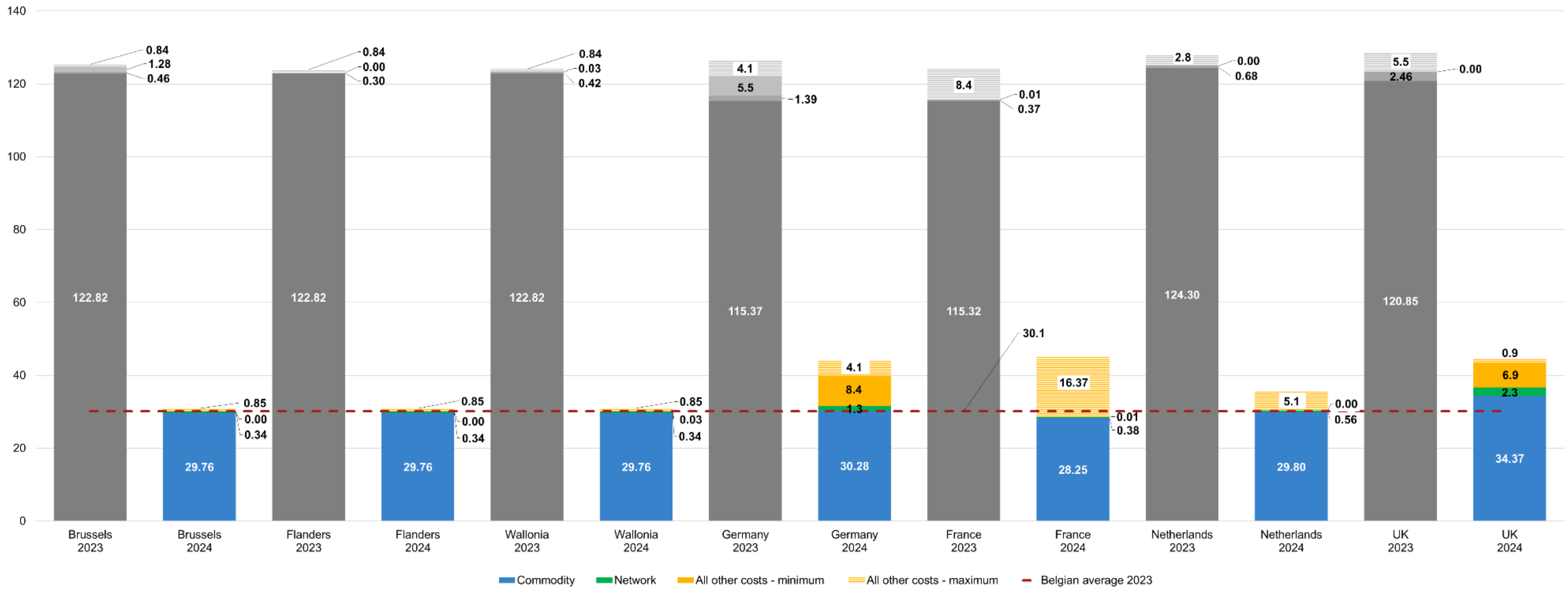
Prix du gaz naturel par composante en EUR/MWh (profil G1)[19]



[19] Cette étude reconnaît les tarifs de consommation de gaz naturel facturés aux consommateurs industriels en fonction des profils de consommation définis dans les hypothèses. Il est donc important de préciser que les disparités éventuelles entre les tarifs de réseau facturés aux consommateurs industriels (c'est-à-dire les profils G1 et G2) dans cette étude et les tarifs qu'ils paient effectivement, lorsqu'ils dépassent leur capacité contractuelle, peuvent différer. Les détails de cette variation sont exposés dans l'étude de 2022 réalisée par la CREG : https://www.creg.be/fr/publications/etude-f2716

Pour le profil G2, la France est le pays le moins cher, suivi de près par la Belgique et les Pays-Bas, lorsque l'on tient compte des réductions. Lorsque les réductions maximales ne s'appliquent pas, le pays le moins cher est la Belgique, suivi des Pays-Bas. Les prix de la composante énergétique ont fortement baissé pour tous les pays, tandis que les coûts de réseau et la composante « tous les autres coûts » sont restés relativement similaires à 2023. En raison de l'augmentation des taxes, l'Allemagne, la France et le Royaume-Uni sont les pays les plus chers examinés.

Prix du gaz naturel par composante en EUR/MWh (profil G2)[20]



[20] Cette étude reconnaît les tarifs de consommation de gaz naturel facturés aux consommateurs industriels en fonction des profils de consommation définis dans les hypothèses. Il est donc important de préciser que les disparités éventuelles entre les tarifs de réseau facturés aux consommateurs industriels (c'est-à-dire les profils G1 et G2) dans cette étude et les tarifs qu'ils paient effectivement, lorsqu'ils dépassent leur capacité contractuelle, peuvent différer. Les détails de cette variation sont exposés dans l'étude de 2022 réalisée par la CREG : https://www.creg.be/fr/publications/etude-f2716

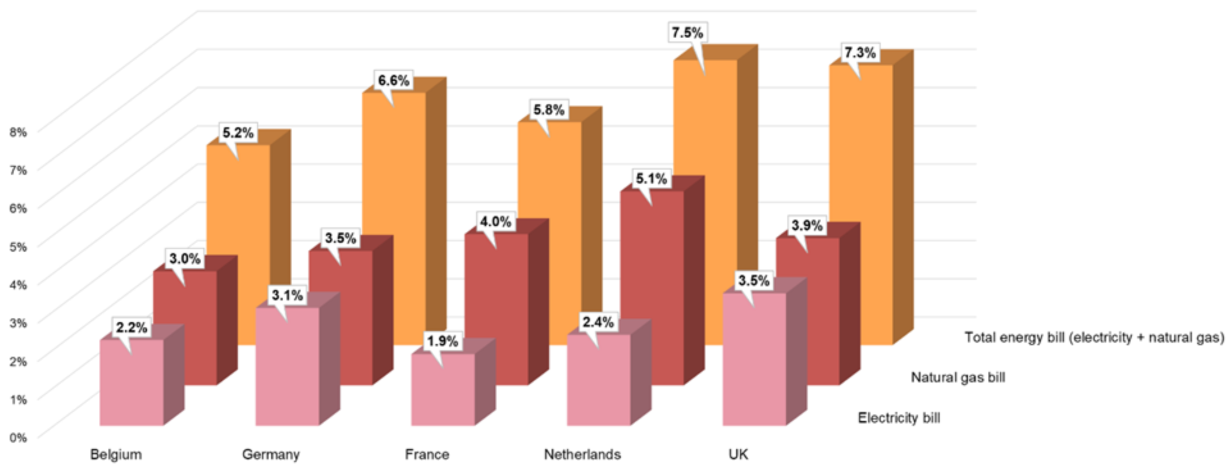
Efforts mis en œuvre pour le paiement des factures d'énergie des consommateurs vulnérables

Nous avons également évalué les différentes mesures mises en place par les différents pays inclus dans cette étude afin d'atténuer l'impact de la hausse des prix de l'énergie et de l'inflation tant pour les consommateurs résidentiels que professionnels. Ces mesures peuvent aller des tarifs sociaux au soutien financier direct pour réduire la facture des consommateurs. La diversité des mesures rend toutefois complexe la comparaison entre les pays.

Taux d'effort par rapport au revenu moyen disponible (frais liés au logement déduits)

Dans ce premier point de vue, nous examinons le poids de la facture énergétique sur un ménage disposant d'un revenu disponible moyen (2 personnes actives), après avoir déduit l'une des parts les plus importantes des dépenses du ménage, à savoir le coût du logement. Le graphique ci-dessous montre que, pour tous les pays inclus dans cette étude, la facture d'électricité a un impact moins important sur le budget que celle du gaz naturel.

Taux d'effort de la facture énergétique par rapport au revenu moyen disponible (en %)



Dans l'ensemble, la Belgique est en janvier 2024 le pays où le poids total de la facture énergétique est le plus faible par rapport au revenu disponible (5,2%), principalement en raison d'un avantage concurrentiel en ce qui concerne le gaz naturel. La France arrive en deuxième position avec 5,8%, tirée vers le bas par le faible prix de l'électricité. L'Allemagne se situe au milieu avec une facture annuelle totale représentant 6,6% du revenu disponible annuel, tandis que le Royaume-Uni et les Pays-Bas ferment la marche avec plus de 7% (respectivement 7,3% et 7,5%), les Pays-Bas étant pénalisés par le prix élevé du gaz naturel. Il convient de noter que tous les pays inclus dans cette étude constatent une baisse significative du poids de la facture énergétique par rapport à ce qui a été observé l'année dernière à la même période, avec une baisse allant d'environ 2% (pour la France) à plus de 6% (pour les Pays-Bas).

Si l'on se concentre sur le prix de l'électricité[21], la France est le pays où la facture d'électricité pèse le moins avec 1,9% du revenu disponible annuel (déduction faite des frais de logement). La Belgique arrive en deuxième position avec 2,2% du revenu disponible, suivie de près par les Pays-Bas avec 2,4%. L'Allemagne et le Royaume-Uni sont les pays où la facture d'électricité pèse le plus, soit plus de 3% du revenu disponible.

En ce qui concerne les prix du gaz naturel[22], la Belgique est le pays où la facture pèse le moins par rapport au revenu disponible, avec une moyenne de 3%. L'Allemagne arrive en deuxième position avec 3,5%, suivie de près par la France et le Royaume-Uni (tous deux autour de 4%). Contrairement à ce que l'on observe pour l'électricité, les Pays-Bas sont ici le pays où la facture de gaz naturel pèse le plus, représentant un peu plus de 5% du revenu disponible.

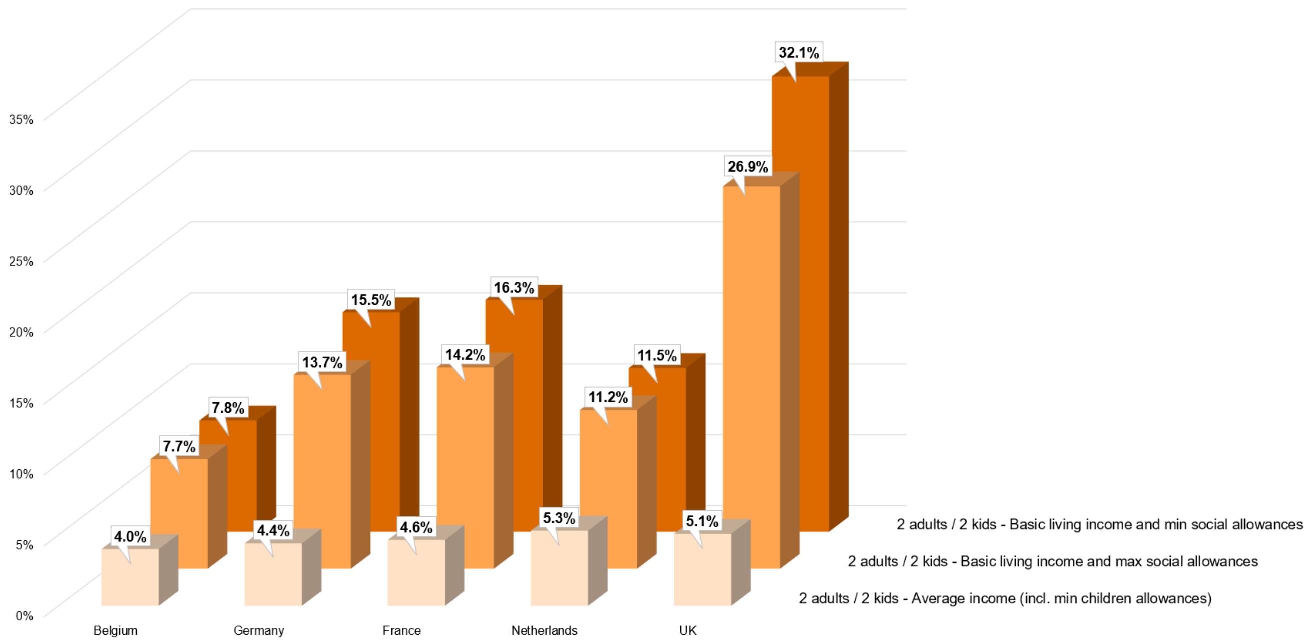
[21] Considérant des factures pour l'électricité et le gaz naturel prises séparément et non au sein de tarifs groupés.
[22] Ibid

Taux d'effort des pays par rapport à un salaire minimum total

Dans ce deuxième point de vue, nous évaluons le poids de la facture énergétique moyenne sur les personnes gagnant le revenu moyen du pays par rapport à son impact sur les personnes les plus vulnérables. Pour ce faire, toutes les mesures sociales quantifiables sont ajoutées au revenu de base que notre ménage type (2 parents adultes et 2 enfants) pourrait gagner sans avoir d'autres sources de revenus. Cette fois-ci, nous ne déduisons pas la part du logement du revenu disponible. Comme la plupart des ménages aux revenus minimums bénéficient souvent d'une aide significative dans ce domaine, cela donnerait en effet une image biaisée de la réalité. De ce fait, le poids de la facture énergétique pour un ménage moyen diminue par conséquence automatiquement par rapport au graphe précédent.

Comme le montre le graphique ci-dessous, lors de la comparaison du taux d'effort pour la facture énergétique totale entre les pays pour un ménage avec un revenu moyen, nous pouvons voir que la Belgique est cette année le pays où la facture énergétique pèse proportionnellement le moins avec 4%, suivi de près par l'Allemagne et la France avec respectivement 4,4% et 4,6%. Le Royaume-Uni et les Pays-Bas fermant la marche avec 5,1% et 5,3%.

Taux d'effort de la facture énergétique par rapport au revenu minimal disponible (en %)



Sans surprise, la situation devient beaucoup plus compliquée pour les ménages ayant des revenus modestes. Dans ce cas, la Belgique peut parvenir à maintenir un poids relativement faible de la facture énergétique par rapport à un revenu de base grâce au tarif social disponible. Cela permet de maintenir le poids de la facture énergétique autour de 7,7%, ce qui représente environ le double de la part observée pour un ménage moyen. Les Pays-Bas viennent ensuite, avec une facture énergétique totale représentant un peu plus de 11% du revenu disponible. L'Allemagne et la France se tiennent au coude à coude, avec une facture énergétique totale représentant environ 14% à 16% en fonction des allocations perçues. Enfin, le Royaume-Uni est le pays avec la facture la plus lourde par rapport au revenu disponible pour les ménages les plus exposés, avec des chiffres allant de près de 27% à plus de 32% du revenu disponible. La facture énergétique totale au Royaume-Uni peut donc représenter un fardeau disproportionné pour les ménages les plus exposés à la précarité énergétique.

Note : L'approche suivie dans cette section présente des limites car elle ne correspond pas nécessairement au profil de consommation de certaines personnes en situation de précarité énergétique (comme une personne isolée sans enfants, par exemple). De plus, elle ne prend pas en compte le fait que certaines personnes plus exposées pourraient par exemple décider de consommer moins d'énergie pour réduire leur facture énergétique. L'objectif ultime de ce chapitre étant de déterminer le taux d'effort nécessaire pour payer la facture énergétique (et le comparer entre les pays pour évaluer l'impact de la facture énergétique en termes relatifs), nous pensons que cette approche est cependant suffisamment solide pour en tirer des conclusions. Le chapitre 8 fournit des informations supplémentaires sur ces observations.

Évaluation de la compétitivité des industries belges

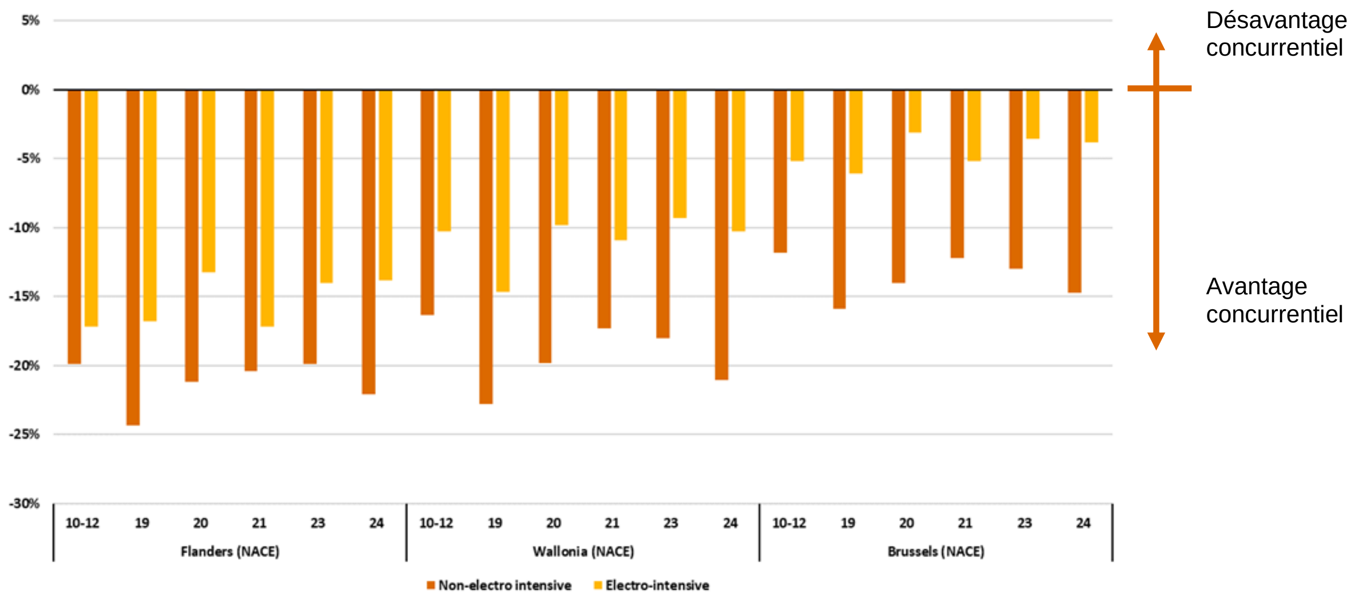
Dans le dernier chapitre, les prix spécifiques de l'électricité et du gaz naturel pour les secteurs et les régions sont analysés afin d'évaluer leur impact sur la compétitivité des consommateurs industriels belges par rapport à leurs concurrents à l'étranger. Ces résultats se concentrent sur les consommateurs industriels des secteurs sélectionnés, tels que détaillés dans la section 3.3, à savoir : l'industrie agroalimentaire (NACE 10-12), la cokéfaction et les produits pétroliers raffinés (NACE 19), l'industrie chimique (NACE 20), l'industrie pharmaceutique (NACE 21), la production de minéraux non métalliques (NACE 23) et la fabrication de métaux de base (NACE 24). Ces secteurs représentent entre 0,87% et 2,26% de la valeur ajoutée brute de la Belgique et de 0,62% à 2,04% de l'emploi total[23].

Les résultats ont été différenciés en fonction de l'inclusion ou de l'exclusion du Royaume-Uni dans la comparaison. Lorsque le Royaume-Uni est inclus, il devient évident que les consommateurs industriels non électro-intensifs en Belgique, en concurrence avec les consommateurs non électro-intensifs des pays voisins, bénéficient d'un avantage concurrentiel dans tous les secteurs. Parmi les régions de Belgique, la Flandre bénéficie des avantages concurrentiels les plus importants en termes de coût énergétique total pour tous les secteurs. Cependant, l'avantage concurrentiel est moindre pour tous les secteurs et toutes les régions lorsque le Royaume-Uni est exclu.

Pour les consommateurs électro-intensifs, une différence est observée en fonction de l'inclusion du Royaume-Uni ou non. En effet, tous les secteurs des trois régions présentent des avantages concurrentiels lorsque l'on inclut le Royaume-Uni. Cependant, les trois régions sont légèrement moins compétitives lorsque le Royaume-Uni est exclu. Pour les consommateurs électro-intensifs, la Flandre et la Wallonie restent plus compétitives que leurs pays voisins lorsque le Royaume-Uni est exclu, mais cela change pour Bruxelles car plusieurs secteurs comportent alors des désavantages concurrentiels. Cependant, il convient de noter que plusieurs secteurs d'activité examinés dans cette étude ne sont pas significativement présents dans la région de Bruxelles.

Lorsque le Royaume-Uni est inclus, la position concurrentielle de la Belgique est modifiée par rapport à l'année dernière. En effet, la Flandre, Bruxelles et la Wallonie voient leur compétitivité augmenter, présentant un avantage concurrentiel dans la plupart des secteurs pour les consommateurs non électro-intensifs et électro-intensifs. Conformément à cette tendance, la Flandre a vu son avantage concurrentiel augmenter par rapport à 2023 pour les consommateurs électro-intensifs et non électro-intensifs, tout en restant la région la plus compétitive en Belgique.

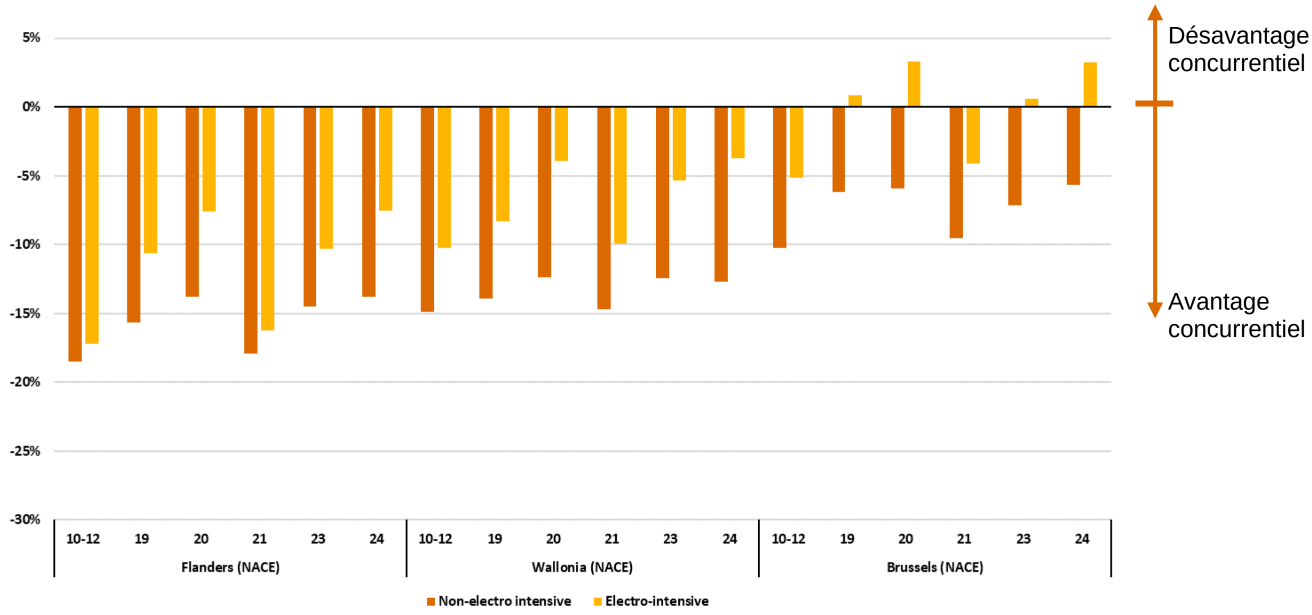
Différences de coûts énergétiques pondérés (électricité et gaz naturel) entre les régions belges et les coûts moyens des pays voisins (y compris le Royaume-Uni) pour les consommateurs électro-intensifs et non-électro-intensifs



[23] Valeurs nationales datant de 2021, récupérées sur Eurostat.

Comme mentionné précédemment, la compétitivité de la Belgique est moins prononcée lorsque le Royaume-Uni est exclu. En effet, de manière similaire à 2023, lorsque le Royaume-Uni est exclu nous observons que les trois régions belges perdent en compétitivité par rapport à leurs pays voisins, quel que soit le degré d'électro-intensité des industries. Cependant, la magnitude varie par secteur et par région. En effet, en 2024 nous constatons qu'exclure ou inclure le Royaume-Uni dans les observations a peu d'impact sur la compétitivité des secteurs de production de nourriture et boissons dans les trois régions. Ce n'est pas la même constatation pour le secteur de la chimie qui lui perd une partie de son avantage concurrentiel dans les trois régions, et devient même un désavantage concurrentiel à Bruxelles. La Belgique dans son ensemble reste un concurrent solide par rapport à ses pays voisins, quel que soit le secteur.

Différences de coûts énergétiques pondérés (électricité et gaz naturel) entre les régions belges et les coûts moyens des pays voisins (hors Royaume-Uni) pour les consommateurs électro-intensifs et non-électro-intensifs



Dans l'ensemble, les consommateurs non électro-intensifs en Belgique continuent de bénéficier de prix compétitifs par rapport à leurs homologues des pays voisins. Ceci est particulièrement vrai en ce qui concerne le gaz naturel.

Les résultats détaillés mettent en évidence à la fois la perte potentielle de compétitivité dans les pays voisins en raison de mesures non prises ou non poursuivies, et la nécessité pour Bruxelles et la Wallonie de continuer à scruter le marché afin de garder ou prendre les mesures nécessaires pour garder la compétitivité de leurs industries, en particulier dans le secteur de l'électricité. Pour la Flandre, cela signifie aussi de maintenir les efforts pour soutenir la compétitivité de ses industries clés.

En conclusion, ces résultats peuvent servir de base à une discussion plus détaillée sur les interventions potentielles au niveau fédéral et/ou régional pour maintenir à niveau ou renforcer la compétitivité des consommateurs belges[24]. Cela pourrait impliquer des actions telles que l'ajustement des tarifs et/ou des taxes. En ce qui concerne les taxes, la Commission européenne fournit un cadre à travers le CEEAG[25] qui pourrait être utilisé pour la conception et/ou l'adaptation des taxes afin de soutenir le développement des énergies renouvelables.

[24] La compensation des coûts indirects des émissions de CO_2 (par exemple, en Flandre, au Royaume-Uni et en Allemagne) n'a pas été prise en compte dans cette étude. Ce dispositif vise les consommateurs électro-intensifs, ce qui implique que des différences additionnelles au niveau des conclusions puissent survenir en l'incluant.

[25] Directions de l'Agence d'aide pour le Climat, la protection environnementale et énergie de l'Union Européenne – janvier 2022.

Nederlandse versie

In deze studie worden de prijzen van elektriciteit en aardgas voor residentiële, kleine professionele en industriële consumenten vergeleken tussen België en vier van zijn buurlanden (Frankrijk, Duitsland, Nederland en het Verenigd Koninkrijk). Indien relevant worden de resultaten van deze studie op regionaal niveau gepresenteerd in plaats van op landelijk niveau.

Dit rapport richt zich expliciet op energieprijzen die van kracht zijn in januari 2024. Dit is een belangrijk aspect gezien de huidige volatiliteit van de elektriciteits- en aardgasprijzen.

Voordat we ingaan op de details van de methodologie, willen we hier de meest relevante veranderingen samenvatten die zijn waargenomen in vergelijking met de situatie van 2023:

- Voor elektriciteit kunnen we verschillende conclusies trekken voor kleine en grote profielen. Residentiële en kleine bedrijven zagen hun totale facturen in de meeste landen dalen, voornamelijk als gevolg van lagere energiekosten en dankzij ondersteunings- en/of beschermingsmechanismen (bijvoorbeeld vrijstellingen, verlagingen), die de prijzen onder controle houden voor kleinere profielen. Aan de andere kant hebben middelgrote en grote industriële consumenten ook een daling van hun elektriciteitsfactuur waargenomen als gevolg van de daling van de prijzen op de elektriciteitsmarkt, behalve waar in 2023 een prijsplafond van kracht was, maar in 2024 niet langer van kracht is.
- Voor aardgas zien we een aanzienlijke daling van de grondstofprijzen ten opzichte van vorig jaar, voor alle profielen, zowel professioneel als residentieel.

De onderzochte **consumentenprofielen** werden vastgesteld in het bestek van deze studie en blijven in overeenstemming met de vorige vergelijkende studies die PwC voor de CREG en de VREG[26] heeft uitgevoerd. In totaal zijn 13 verschillende consumentenprofielen bestudeerd: 8 voor elektriciteit (1 residentieel, 2 kleine professionele en 5 industriële consumenten) en 5 voor aardgas (1 residentieel, 1 klein professioneel en 3 industriële consumenten). In 2024 is het residentiële profiel voor aardgas aangepast om beter de consumptierealiteit van kleine consumenten weer te geven. Het jaarlijkse verbruik voor G-RES is gewijzigd van 23,26 MWh naar 17 MWh. De onderstaande tabellen geven, zij het niet exhaustief, specifieke kenmerken weer van de consumentenprofielen waarvoor verdere hypothesen te vinden zijn in Hoofdstuk 3.

[26] De studies van vorig jaar over de residentiële en industriële consumentenprofielen zijn terug te vinden op de website van de CREG:
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20230515EN.pdf (2023 editie)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20220513EN.pdf (2022 editie)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20210517EN.pdf (2021 editie)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20200520-errata.pdf (errata 2020 editie)
https://www.creg.be/sites/default/files/assets/Publications/Studies/F20200520EN.pdf (2020 editie)

Elektriciteit consumentenprofielen

Profiel	Consument type	Jaarlijkse verbruike (MWh)	Gecontracteerde capaciteit (kW)	Jaarlijkse piek (kW)
E-RES	Residentieel	3,5	7,36	5,89
E-SSME	Kleine professionele consumenten	30	37,5	30
E-BSME	Grote professionele consumenten	160	125	100
E0	Industrieel	2.000	625	500
E1	Industrieel	10.000	2.500	2.000
E2	Industrieel	25.000	5.000	4.000
E3	Industrieel	100.000	13.000	10.400
E4	Industrieel	500.000	62.500	50.000

Aardgas consumentenprofielen

Profiel	Consument type	Jaarlijkse verbruike (MWh)	Gecontracteerde capaciteit (kW)
G-RES	Residentieel	17	-
G-PRO	Kleine professionele consumenten	300	-
G0	Kleine professionele consumenten	1.250	-
G1	Industrieel	100.000	20.000
G2	Industrieel	2.500.000	312.500

De vergelijking kijkt naar drie **componenten** van de energiefactuur: energiekosten, netwerkkosten en alle andere kosten (belastingen, heffingen en certificatenregelingen). Een vierde component, de BTW, wordt alleen in aanmerking genomen voor de residentiële profielen elektriciteit en aardgas.

Een uitgebreide beschrijving van de samenstelling en de componenten van de energieprijzen (hoofdstuk 4 en 5) gaat vooraf aan de resultaten van de prijsvergelijking (hoofdstuk 6). De energiekosten worden geanalyseerd volgens een bottom-up benadering, die leidt tot een gedetailleerde beschrijving van de verschillende prijscomponenten en hun toepassing binnen de in deze studie beschouwde landen.

Voor zowel elektriciteit als aardgas worden in dit verslag grote verschillen geconstateerd in de prijsstructuur tussen de verschillende regio's en landen, met inbegrip van de vaststelling van netwerkkosten en belastingregelingen. Dit verhoogt de complexiteit van de vergelijking.

Vergelijking van elektriciteitsprijzen

Vergelijking van de elektriciteitsprijzen voor residentiële en kleine professionele consumenten

Vergeleken met vorig jaar is het meest opvallende verschil de daling van de totale kosten voor het E-RES profiel in de meeste landen. Sommige regio's/landen ervaren echter een lichte stijging (Duitsland) of een stagnatie (Frankrijk). De energieprijs is gedaald in de meeste landen, waaronder België, Nederland en verschillende Duitse regio's (Amprion, Tennet en 50 Hertz). Daarentegen hebben Frankrijk, het Verenigd Koninkrijk en de Transnet BW-regio een lichte stijging van de energiekosten gezien. De Amprion-regio heeft de hoogste energiekosten voor huishoudelijke consumenten in 2024, in tegenstelling tot vorig jaar. Frankrijk biedt de laagste jaarlijkse elektriciteitsfactuur, aangezien het standaardproduct voor huishoudelijke consumenten nog steeds gereguleerd wordt door de overheid. Na Frankrijk is Vlaanderen de regio met de laagste jaarlijkse elektriciteitsfactuur voor huishoudelijke consumenten, gevolgd door Wallonië en Brussel[27]. Deze ranglijst blijft hetzelfde in 2024 als in 2023.

Hoewel Duitsland niet het goedkoopste land is voor huishoudelijke elektriciteitsconsumenten, is de totale elektriciteitsfactuur gestabiliseerd voor dit type consument (met uitzondering van de opmerkelijke daling in de Tennet-regio). Deze stabilisatie is te wijten aan het stopzetten van het prijsplafond in 2024, waardoor het aandeel van de energiekosten in de totale factuur toeneemt. Gemiddeld genomen is Duitsland het duurste land in 2024. Aan de andere kant heeft Nederland de sterkste daling gekend van de totale eleketriciteitsfactuur, ondanks het stopzetten van het prijsplafond in 2023. Nederland is het enige land met een "negatieve" waarde voor het onderdeel "alle overige kosten" van de factuur, vanwege toegepaste belastingteruggaven (bijv. "Belastingvermindering per elektriciteitsaansluiting").

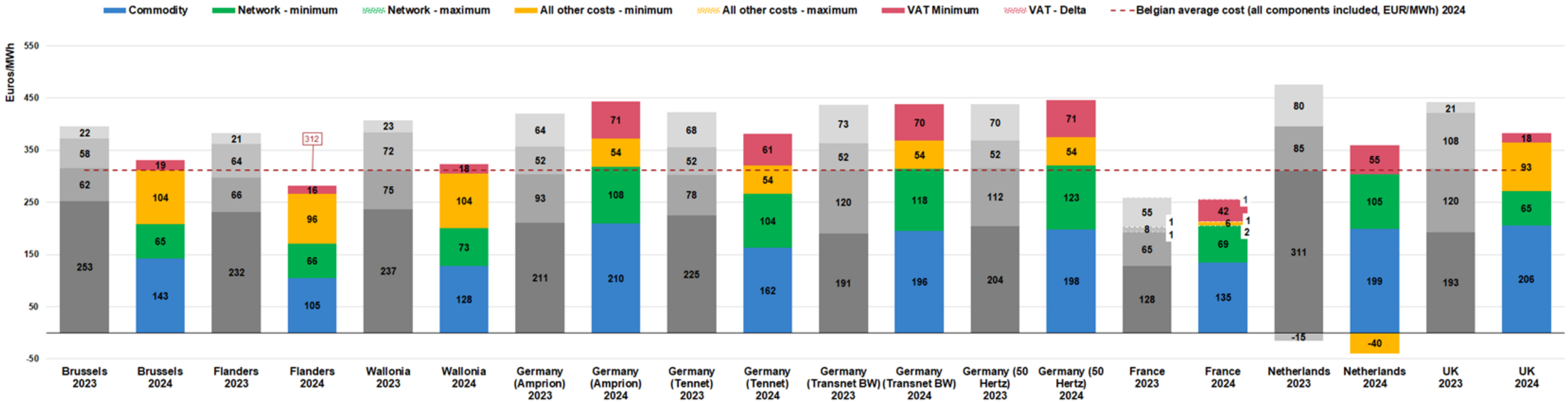
Duitsland en Nederland hebben de hoogste netwerkkosten. Beide landen hebben in 2024 een stijging van de netwerktarieven gekend, om te voldoen aan een gerechtelijke beslissing in Duitsland en voorbereidingen voor de energietransitie in Nederland.

België heeft een sterke stijging van het onderdeel "alle overige kosten" ervaren als gevolg van het beëindigen van de vrijstelling (tot het Europese minimum) van de federale bijzondere accijns voor kleine consumenten. Dit werd gedaan om de permanente verlaging van het btw-tarief naar 6% te compenseren (nadat het als tijdelijke maatregel in 2022 werd ingesteld). Merk op dat zowel België als het Verenigd Koninkrijk een concurrentievoordeel hebben wat betreft het btw-onderdeel, aangezien zij veel lagere tarieven hanteren (6% voor België en 5% in het Verenigd Koninkrijk) in vergelijking met andere landen in dit onderzoek.

Daarom heeft België de hoogste "alle overige kosten" voor huishoudelijke consumenten, gevolgd door het Verenigd Koninkrijk. Het verschil met het onderdeel "alle overige kosten" van Nederland bedraagt gemiddeld 140 EUR/MWh.

[27] (Brugel, 2023) Merk op dat de prijsvergelijkingstools die worden gebruikt voor de 3 regio's in België vanaf 2023 forward looking prijzen gebruiken. Daarom werden de productselectie voor E-RES, G-RES en E-SSME verkregen via deze websites, maar werden de tarieven van de producten genomen met behulp van de historische indexatieparameters, wat een verandering is in de methodologie in vergelijking met het rapport van 2023.

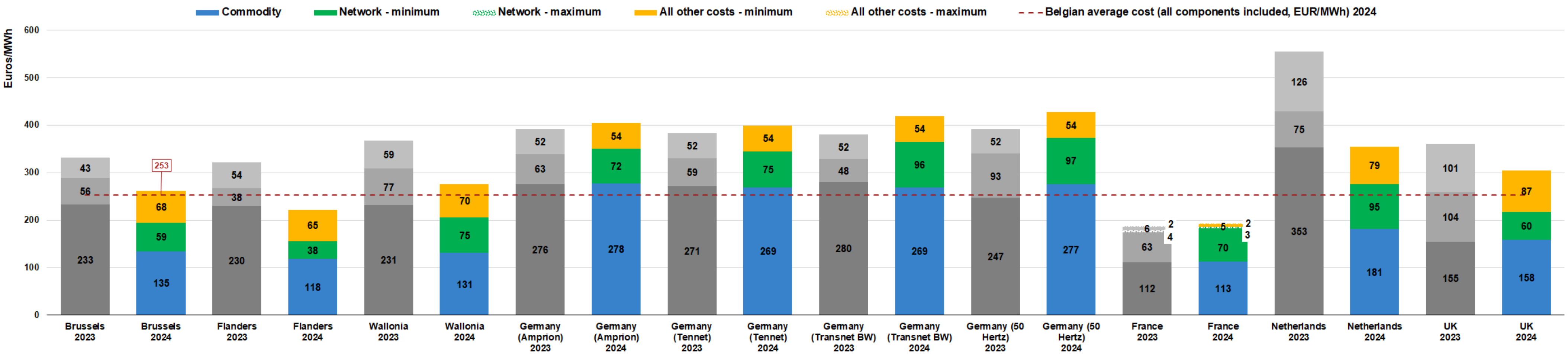
Elektriciteitsprijs per component in EUR/MWh (profiel E-RES)



Voor het E-SSME profiel in 2024 blijft Frankrijk het goedkoopste land vanwege het prijsgarantiemechanisme dat van kracht is, samen met sterke en aantrekkelijke stimuleringsmaatregelen en fiscaal systeem. Het meest opvallende verschil ten opzichte van de resultaten van vorig jaar is de sterke daling van de kosten in Nederland en de toegenomen concurrentiekracht van België. De energiekosten in België zijn gedaald tot een niveau iets boven dat van Frankrijk, ondanks het ontbreken van gereguleerde producten of prijsgarantiemechanismen. Duitsland is het duurste land geworden, voornamelijk vanwege de hoogste en niet-dalende energiekosten, als hogere netwerkkosten in 2024. De totale elektriciteitsfactuur voor dit profiel is lager in België in vergelijking met vorig jaar, waarbij Vlaanderen de goedkoopste regio blijft, gevolgd door Brussel en tot slot Wallonië.

De stijging van de netwerkkosten voor Duitsland en Nederland heeft dezelfde oorzaak voor het E-SSME profiel als voor het E-RES profiel. Aan de andere kant is de toegenomen concurrentiekracht van het Verenigd Koninkrijk grotendeels te danken aan de verlaging van de transmissiekosten en betere stimuleringsmaatregelen op belastingen en heffingen.

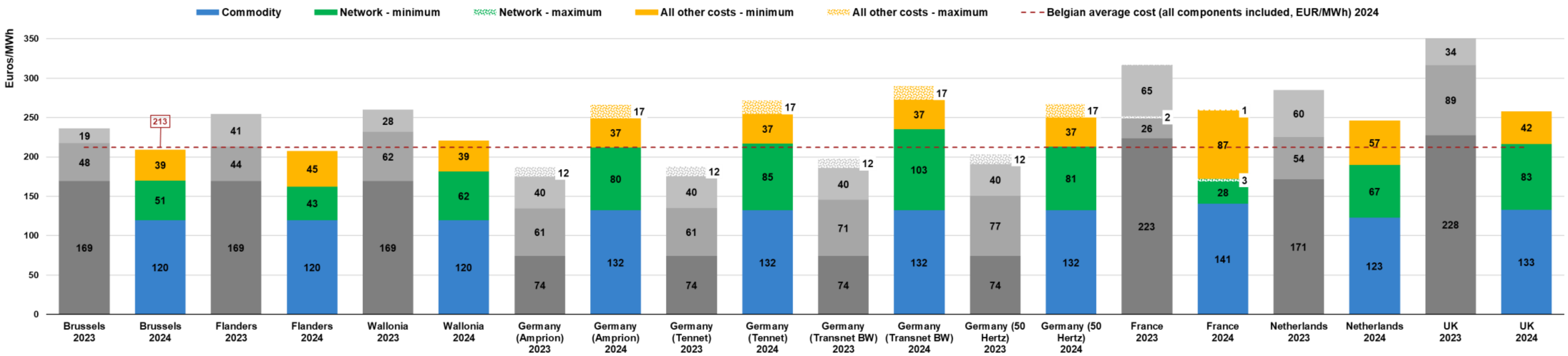
Elektriciteitsprijs per component in EUR/MWh (profiel E-SSME)



De dalende energieprijzen die tussen 2023 en 2024 zijn waargenomen voor de profielen E-RES en E-SSME zijn consistent met de profielen E-BSME en E0-E4. Er is een aanzienlijke daling van de energieprijzen, wat helpt om de elektriciteitskosten voor industrieën te verlichten. Deze daling is ook zichtbaar in alle andere landen/regio's die in dit onderzoek zijn opgenomen, behalve in Duitsland, waar het opheffen van het prijsplafond, dat in 2023 was ingesteld, heeft bijgedragen aan een stijging van de energiekosten. De trend van dalende marktprijzen kan gedeeltelijk worden verklaard door de manier waarop energieprijzen worden berekend voor deze profielen. De formule die wordt gebruikt voor grotere elektriciteitsprofielen houdt in dat 51,5% van de energiekosten is gebaseerd op de day-ahead, month-ahead, quarter-ahead en year-ahead forward prijzen. Daarom is deze daling al opgenomen in de uiteindelijk berekende energieprijs toen de marktprijzen begonnen te dalen vanaf eind 2022. Als gevolg hiervan is de daling van de spotprijzen gedeeltelijk zichtbaar in de resultaten.

Voor het E-BSME profiel hebben alle landen behalve Duitsland een algemene daling van de totale elektriciteitsfactuur ervaren. België heeft de meest competitieve positie behaald, waarbij alle drie de regio's als de minst dure worden beschouwd voor dit profiel. In 2023 stond België op de tweede plaats. België wordt gevolgd door Nederland en het Verenigd Koninkrijk. De belangrijkste redenen voor de concurrentiekracht van België zijn de lagere energiekosten, evenals relatief lage netwerk- en alle overige kosten. In België is Vlaanderen de meest betaalbare regio voor dit profiel, voornamelijk vanwege lagere distributiekosten en wordt op de voet gevolgd door Brussel en vervolgens Wallonië.

Elektriciteitsprijs per component in EUR/MWh (profiel E-BSME)



Vergelijking van de elektriciteitsprijzen voor industriële consumenten

Net als bij residentiële en kleine professionele consumenten wordt dezelfde grote daling van de energieprijs in de meeste regio's/landen geobserveerd voor grotere consumenten, behalve voor Duitsland vanwege het stopzetten van het plafondmechanisme eind 2023. Als alle kortingen worden meegerekend, worden de laagste elektriciteitskosten voor de E0, E1 en E2 consumentenprofielen geobserveerd in Vlaanderen, in tegenstelling tot Duitsland in 2023. Het wordt gevolgd door Frankrijk voor het E0-profiel, Nederland voor het E1-profiel en opnieuw Frankrijk voor het E2-profiel. De lagere prijzen in Vlaanderen kunnen worden toegeschreven aan lage energiekosten en mogelijke kortingen op alle overige kosten (zoals groene en CHCP-certificatenschema's en vrijstellingen van speciale accijnzen, vanaf het E1-profiel), in combinatie met lage netwerkkosten. Nederland, vanwege de mogelijke vrijstelling (bijvoorbeeld voor bedrijven actief in de chemie en metaalbewerking), biedt een sterke concurrentiepositie op het gebied van de component "alle overige kosten". Duitsland blijft het duurste land, net als bij de andere kleinere profielen, vanwege hoge netwerkkosten.

Het resultaat voor Nederland is sterk variabel afhankelijk van de vrijstellingen. Hoewel het gemiddeld genomen lagere prijzen aanbiedt dan de meeste andere landen wanneer de kortingen op alle overige kosten van toepassing zijn op elektro-intensieve consumenten (vanaf het E1-profiel), hebben andere industriële consumenten in Nederland een minder competitieve positie wanneer deze kortingen niet van toepassing zijn.

In België is de elektriciteitskost gemiddeld genomen het hoogst in Brussel, gevolgd door Wallonië voor de E0, E1 en E2 profielen[28]. Hoewel er bijna geen verschil is tussen de twee regio's voor het E0-profiel, wordt het verschil zichtbaar voor de E1- en E2-profielen vanwege de beperkte kortingen die worden verleend aan bedrijven in Brussel, aangezien er weinig van dergelijke bedrijven in de regio zijn. Aan de andere kant heeft Vlaanderen het potentieel om de goedkoopste regio in België te zijn voor deze drie profielen vanwege lagere minimale kosten voor alle overige kosten en lagere netwerkkosten. De distributietariefstructuur die op 1 januari 2023 in Vlaanderen is ingevoerd, heeft de concurrentiepositie voor de E0- en E1-profielen niet veranderd, hoewel de netwerkkosten lager bleven dan in de andere regio's.

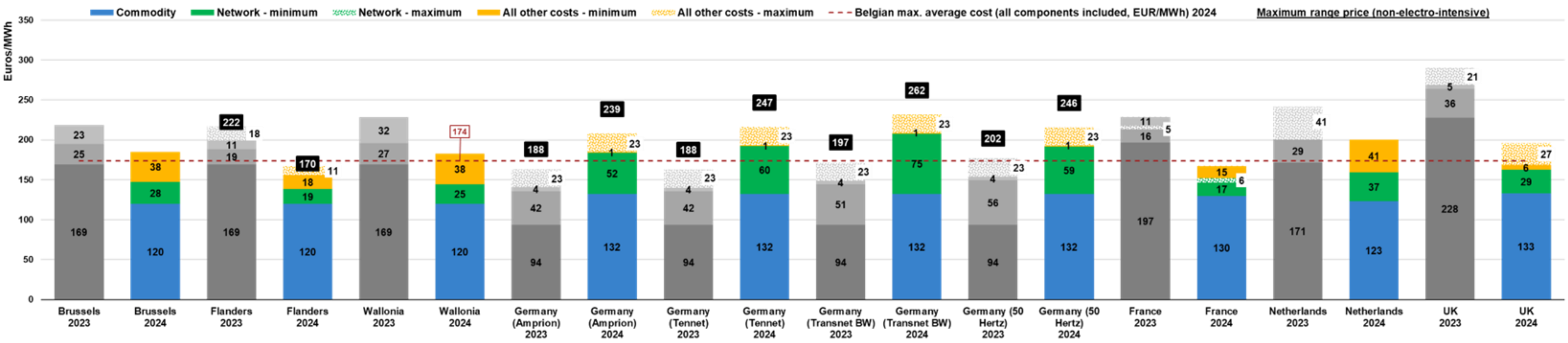
Met deze observaties in gedachten, wordt bevestigd dat Vlaanderen de meest competitieve regio is voor elektro-intensieve consumenten. Voor niet-elektro-intensieve consumenten zijn de totale elektriciteitskosten in Frankrijk en Vlaanderen echter vrij vergelijkbaar, waardoor ze de meest competitieve regio's zijn voor al deze profielen. Het toont ook dat de andere regio's/landen meer kortingen bieden aan elektro-intensieve consumenten.

Voor niet-elektro-intensieve consumenten in België blijft het verschil tussen Vlaanderen en Wallonië stabiel, terwijl Brussel de duurste regio in het land blijft. Van de geobserveerde landen zijn Duitsland en Nederland de duurste regio's voor het E0-profiel, terwijl Duitsland en het Verenigd Koninkrijk de duurste zijn voor de E1- en E2-profielen. Het verschil in elektriciteitsfacturen die worden betaald door elektro-intensieve consumenten die profiteren van kortingen en niet-elektro-intensieve consumenten is relatief klein in België en Frankrijk in vergelijking met de andere landen in dit onderzoek. Dit geeft aan dat andere landen meer stimulansen bieden aan elektro-intensieve consumenten. Het is echter belangrijk om het volledige plaatje in overweging te nemen, aangezien overheidssteun ook kan worden weerspiegeld in energiekosten (zoals prijsplafonds in Duitsland in 2023, ARENH[29] in Frankrijk en prijsgaranties in het Verenigd Koninkrijk) of netwerkkosten (zoals verlagingen van netwerktarieven gecompenseerd door financiële pakketten van de overheid aan netbeheerders).

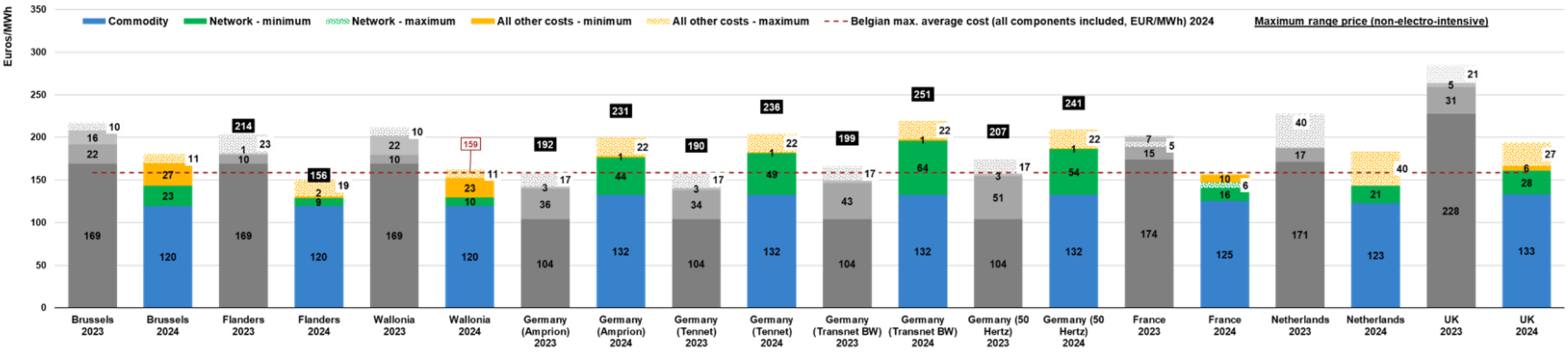
[28] De degressieve factor op de Waalse transportkosten wordt sinds 2023 toegepast. Deze degressieve factor van de kosten in functie van de elektro-intensiteit van de consument maakt een verlaging mogelijk van de transportkosten betaald door de Waalse E0- en E1-profielen. Het is dus noodzakelijk om hiermee rekening te houden bij het maken van vergelijkende analyses tussen Wallonië en andere regio's, of België en andere landen.

[29] ARENH staat voor « Accès Régulé à l'Électricité Nucléaire Historique » (Gereguleerde toegang tot historische nucleaire elektriciteit). Dit is een mechanisme waarmee alle alternatieve leveranciers stellen om elektriciteit te betrekken van EDF (de historische elektriciteitsleverancier in Frankrijk) onder voorwaarden die door de overheid zijn vastgesteld.

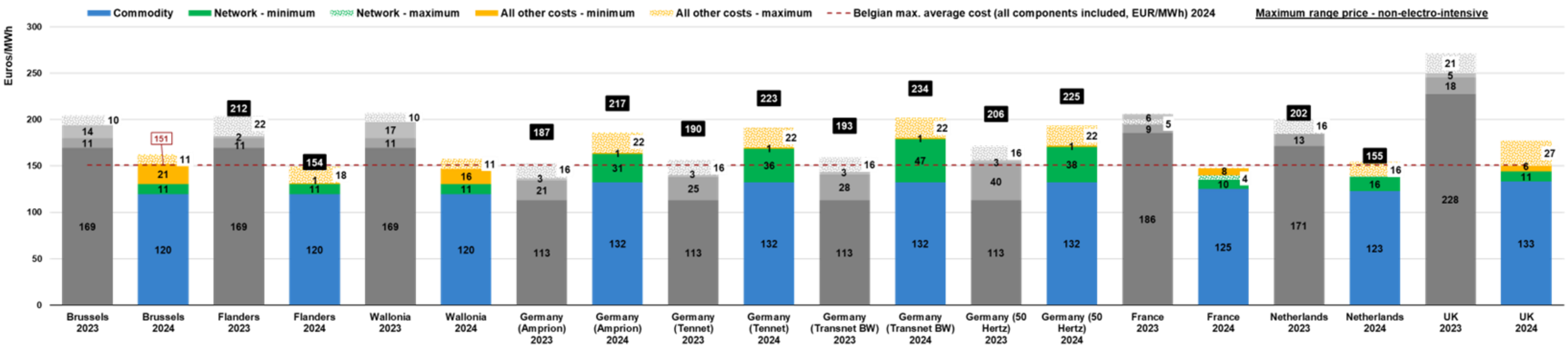
Elektriciteitsprijs per component in EUR/MWh (profiel E0)



Elektriciteitsprijs per component in EUR/MWh (profiel E1)



Elektriciteitsprijs per component in EUR/MWh (profiel E2)



Bij de E3- en E4-profielen blijft Frankrijk het land met de laagste totale factuur van alle landen die in deze studie worden onderzocht, voornamelijk vanwege het ARENH-mechanisme dat van kracht is. Aan de andere kant van het spectrum wordt Duitsland het duurste land voor niet-elektro-intensieve E3- en E4-profielen, gevolgd door het Verenigd Koninkrijk. Dit kan worden toegeschreven aan het onderdeel "alle overige kosten", dat hoger is in Duitsland en het Verenigd Koninkrijk in vergelijking met de andere overwogen regio's. Voor de profielen E3 en E4 observeren we drie groepen landen. Sommige landen hebben lage prijzen, zoals Frankrijk, terwijl andere landen gemiddelde prijzen hebben, zoals Nederland en België. Ten slotte zijn er landen met hoge prijzen, zoals Duitsland en het Verenigd Koninkrijk. Voor niet-elektro-intensieve profielen, die niet altijd profiteren van bepaalde verlagingen/vrijstellingen, worden de verschillen tussen deze groepen significant kleiner.

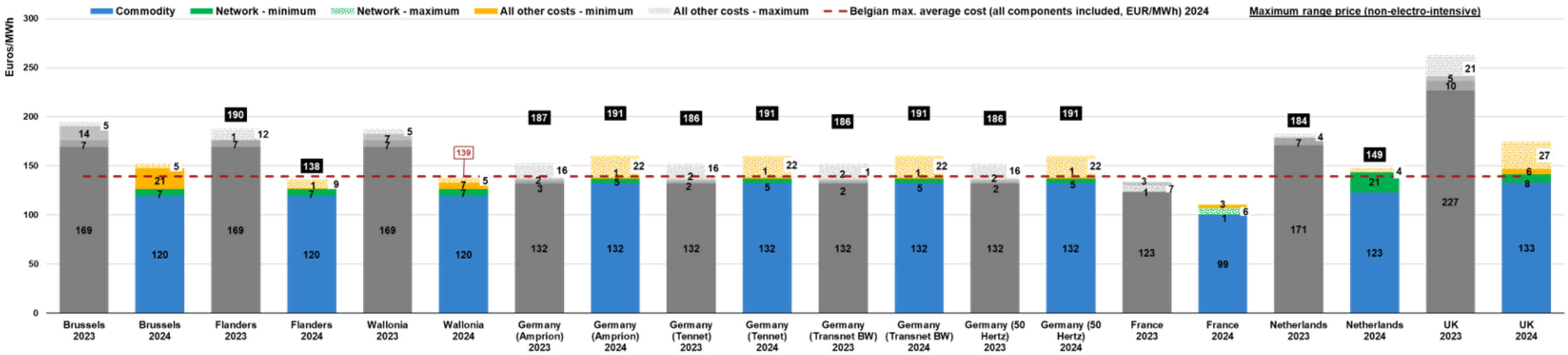
Voor elektro-intensieve profielen E3 en E4 blijft Frankrijk het meest competitieve land vanwege de lage energiekosten. Vlaanderen is de nummer twee, met een klein prijsverschil vanwege de groene certificaten en gecombineerde warmte- en krachtcertificaten. Echter, wanneer kortingen van toepassing zijn, wordt Duitsland competitiever dan het Verenigd Koninkrijk, wat een voordeel is voor Duitse elektro-intensieve bedrijven in vergelijking met niet-elektro-intensieve bedrijven.

In België observeren we dat voor de E3- en E4-profielen Vlaanderen altijd de meest competitieve regio is voor elektro-intensieve consumenten, en op de voet wordt gevold door de andere regio’s voor niet-elektro-intensieve consumenten, wat relatief in lijn is met het resultaat van vorig jaar. Aangezien de energiekosten en netwerkkosten geharmoniseerd zijn over alle Belgische regio's, hangt dit verschil puur af van de component "alle andere kosten". Merk op dat de grootste energieverbruiker in Brussel dichter bij een E3-profiel ligt dan bij een E4-profiel, en het E4-profiel is dus een puur theoretische observatie voor deze regio vanwege het ontbreken van zeer grote industriële consumenten in het Brussels Gewest.

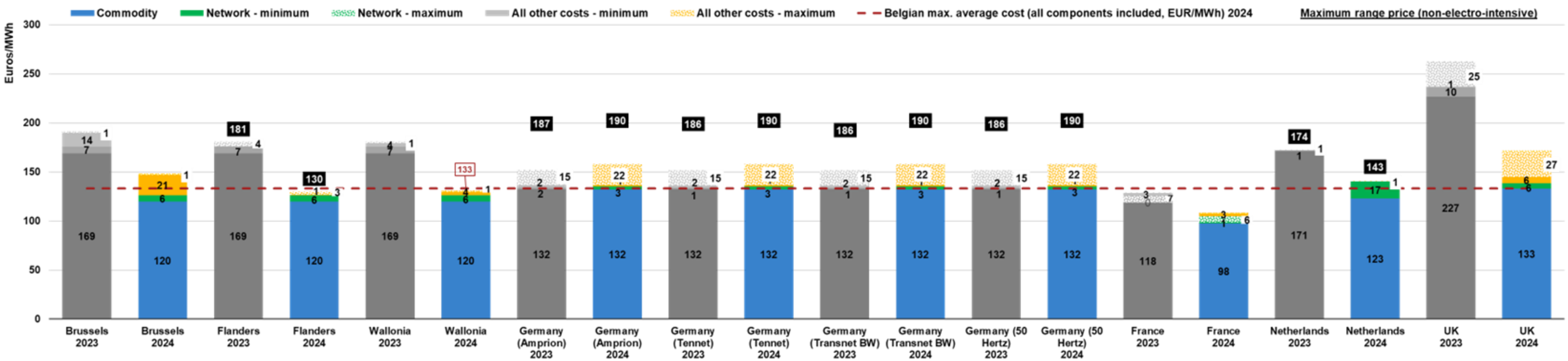
Voor het E3-profiel blijft België, ondanks lagere energiekosten, op de tweede plaats, na Frankrijk, omwille van hogere "alle overige kosten" en dit voornamelijk in Brussel en Wallonië. Het criterium van de elektro-intensiviteit levert niet zoveel reducties op als in Vlaanderen, waar de “alle overige kosten” lager zijn dan in de andere regio’s. België is over het algemeen competitief voor niet-elektro-intensieve profielen na Frankrijk, dat op de eerste plaats staat, gevolgd door Nederland en het Verenigd Koninkrijk op de derde en vierde plaats. De belastingen, heffingen en kosten van certificeringsschema's in België zijn gelijkaardig met die van Duitsland en Nederland als kortingen voor elektro-intensieve consumenten niet worden meegerekend.

Het E4-profiel volgt een vergelijkbare trend als het E3-profiel, waarbij Frankrijk het goedkoopste land is, gevolgd door Vlaanderen, Wallonië en Nederland. Nederland en België hebben vergelijkbare totale elektriciteitsfacturen voor dit profiel, hoewel ze verschillende prijsstructuren hebben. Net als bij het E3-profiel heeft België relatief hoge "alle overige kosten", hoewel vergelijkbaar met Frankrijk en het Verenigd Koninkrijk wanneer rekening wordt gehouden met mogelijke kortingen en afhankelijk van de regio van België. De netwerkkosten voor de profielen E3 en E4 in Nederland zijn extreem hoog: dit komt door een verhoging van de nettarieven door Tennet, de netbeheerder, en het opheffen van de volumecorrectie voor piekverbruikers, waaronder de E3- en E4-profielen vielen tot 2023. Deze veranderingen beïnvloeden de concurrentiepositie van Nederland, waardoor het potentieel de duurste land/regio wordt na Brussel, bij het overwegen van alle kortingen.

Elektriciteitsprijs per component in EUR/MWh (profiel E3)



Elektriciteitsprijs per component in EUR/MWh (profiel E4)



Wat betreft elektriciteit voor industriële consumenten benadrukt het rapport de complexiteit als gevolg van overheidsinterventies die gericht zijn op het verlagen van de elektriciteitskosten voor bepaalde categorieën grote industriële consumenten. Deze interventies hebben tot doel de last van netwerkkosten en de componenten van “alle andere kosten”, zoals belastingen, heffingen en certificatenystemen, te beïnvloeden. België, Frankrijk, Duitsland en Nederland passen belastingverlagingen en certificatenschema's toe op basis van specifieke economische criteria, meestal gerelateerd aan elektro-intensiteit. Als specifieke verminderingen direct kunnen worden toegepast (bijvoorbeeld keuze voor netwerktarieven in Frankrijk), hebben we de resultaten gepresenteerd voor de brede waaier van mogelijkheden. De toepassing van deze verminderingen verandert de concurrentiepositie van andere landen in het onderzoek: het Verenigd Koninkrijk krijgt zo bijvoorbeeld een zeer competitieve positie dit jaar voor grote industriële profielen voor consumenten die aan de verlagingscriteria voldoen, Nederland en Vlaanderen worden iets goedkoper, en Frankrijk blijft de meest competitieve waargenomen regio, wat verder wordt versterkt door deze verminderingen. Ten slotte is Frankrijk het enige land dat de stijging van de energiekosten heeft weten te beperken dankzij het ARENH-mechanisme.

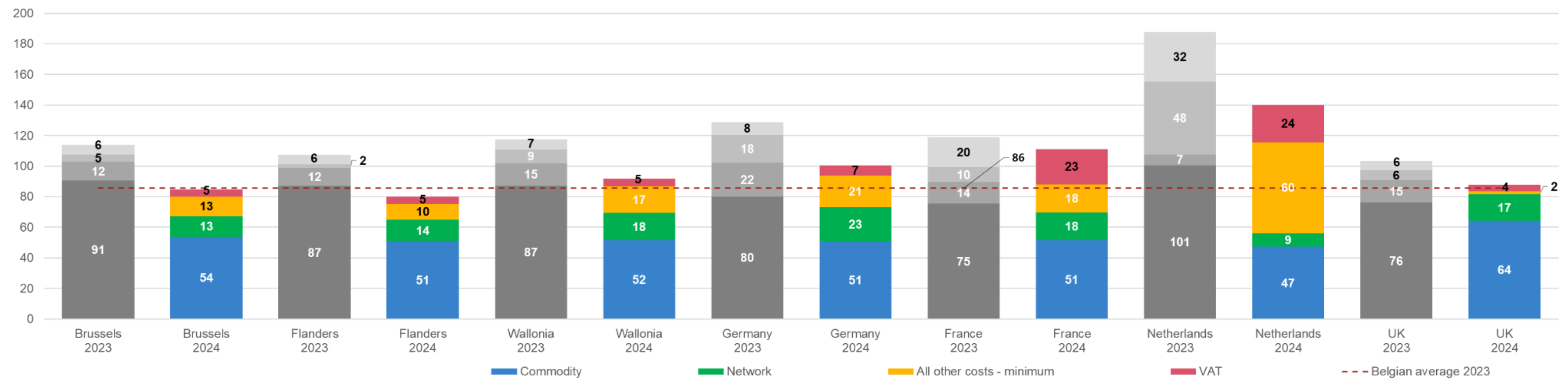
Vergelijking van de aardgasgasprijzen

Vergelijking van de aardgasprijzen voor residentiële en kleine professionele consumenten

Voor residentiële consumenten (G-RES) is België in 2024 het meest competitieve land, kort gevolgd door het Verenigd Koninkrijk. Nederland is het duurste land voor residentiële consumenten, voornamelijk vanwege een aanzienlijk hogere component "alle andere kosten" (die alleen bestaat uit de energiebelasting). De goede resultaten van België kunnen worden verklaard door lage netwerkkosten en een relatief lage BTW-component. Binnen België is Vlaanderen goedkoper dan Brussel en Wallonië vanwege lagere "alle andere kosten". Wallonië heeft de hoogste netwerkkosten en “alle andere kosten”, terwijl Brussel de hoogste grondstofkosten heeft in 2024. Aan de andere kant kan de goede prestatie van het Verenigd Koninkrijk worden verklaard door de laagste component "alle andere kosten", ondanks dat het de hoogste grondstofkosten heeft van alle regio's/landen die worden onderzocht. Zoals vorig jaar al het geval was, staat Duitsland nog steeds in het midden, met prijzen die hoger liggen dan België en het Verenigd Koninkrijk, maar lager dan Frankrijk en Nederland. Vanwege een stijging van de netwerkkosten en de component "alle andere kosten", naast een hoog BTW-tarief in vergelijking met de andere landen, is Frankrijk het op een na duurste land geworden.

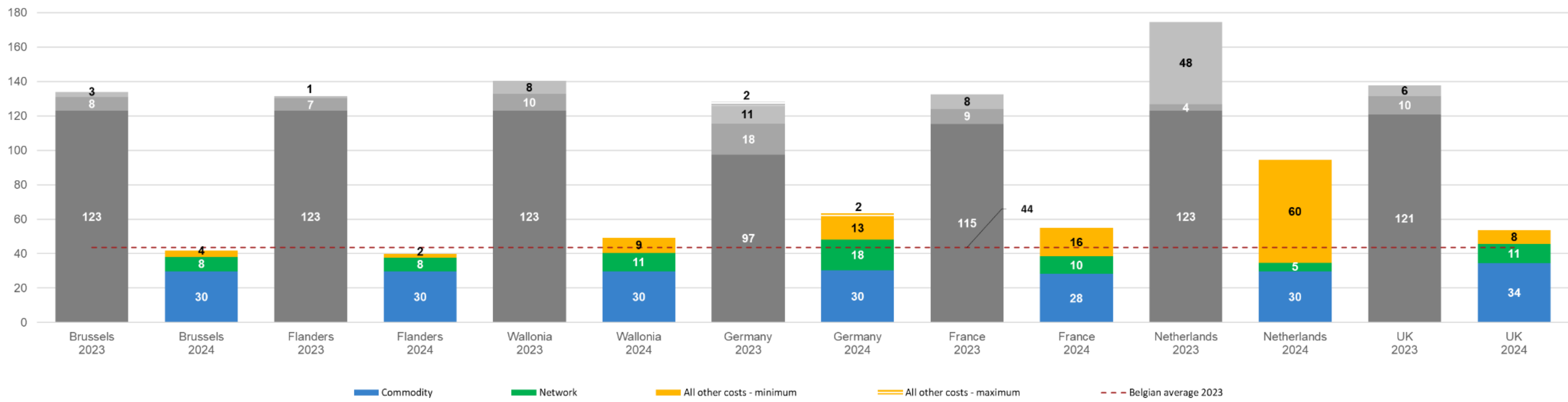
Als we vergelijken met de resultaten van vorig jaar, zien alle landen hun totale aardgasfactuur dalen als gevolg van een aanzienlijke daling van de grondstofkosten. Ondanks de grootste daling van de grondstofkosten, blijft Nederland het duurste land vanwege hogere belastingen en hogere "alle andere kosten" dan de andere regio's/landen die zijn geanalyseerd. Aan de andere kant had het Verenigd Koninkrijk de kleinste daling van de grondstofkosten, maar dit heeft niet voorkomen dat het het tweede meest competitieve land is geworden in 2024 vanwege lage "alle andere kosten" en ook een relatief laag BTW-tarief.

Aardgasprijzen per component in EUR/MWh (profiel G-RES)



Voor professionele consumenten (G-PRO) kan er voor alle landen een daling van de totale kosten worden geobserveerd als gevolg van een sterke daling van de grondstofkosten. Terwijl Duitsland het goedkoopste land was in 2023 (dankzij het prijsplafondmechanisme), is deze positie nu overgenomen door België, mede dankzij lage belastingniveaus (behalve in Wallonië). In België heeft Vlaanderen de laagste totale factuur, gevolgd door Brussel en vervolgens Wallonië. Nederland blijft het duurste land in de analyse, met meer dan twee keer de kosten van het Belgische gemiddelde.

Aardgasprijzen per component in EUR/MWh (profiel G-PRO)



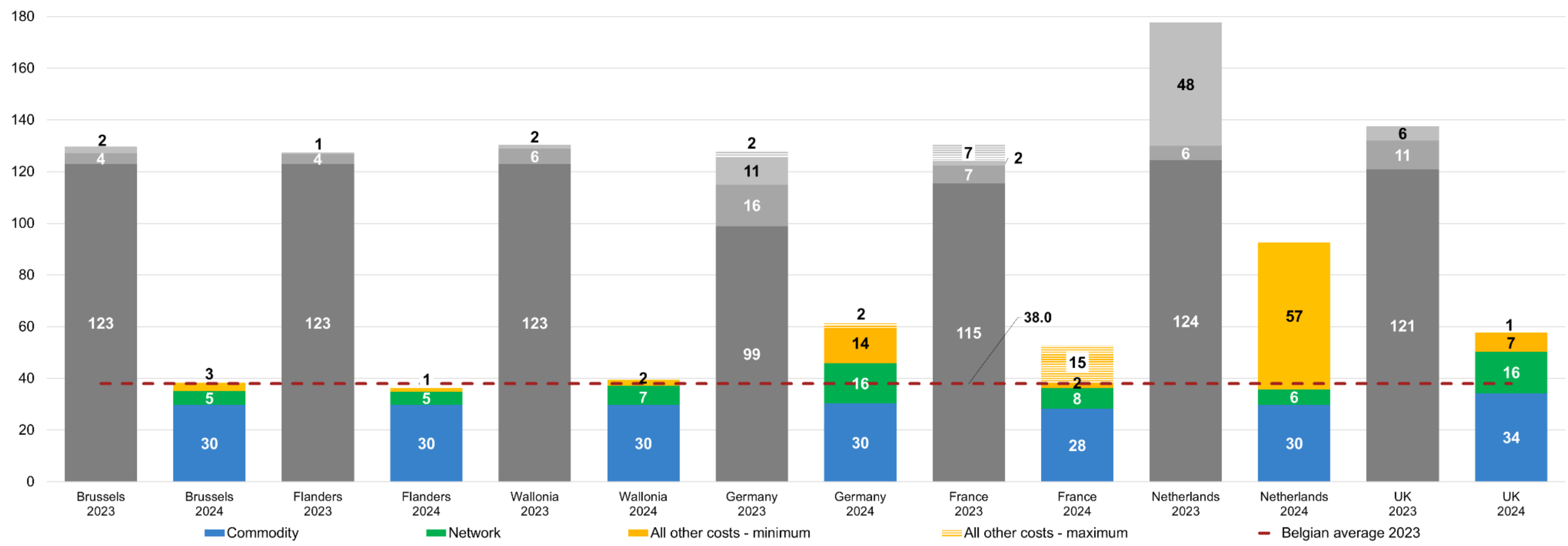
Frankrijk bevindt zich qua prijs in de middenmoot, het is duurder dan België en iets duurder dan het Verenigd Koninkrijk, maar goedkoper in vergelijking met Duitsland en Nederland. Frankrijk kende een sterke stijging van de TICGN[30]-belasting in vergelijking met 2023, wat een negatieve invloed heeft op de totale factuur.

[30] Taxe Intérieure de Consommation sur le Gaz Naturel (Binnenlandse verbruiksbelasting op aardgas)

Vergelijking van aardgasprijzen voor industriële consumenten

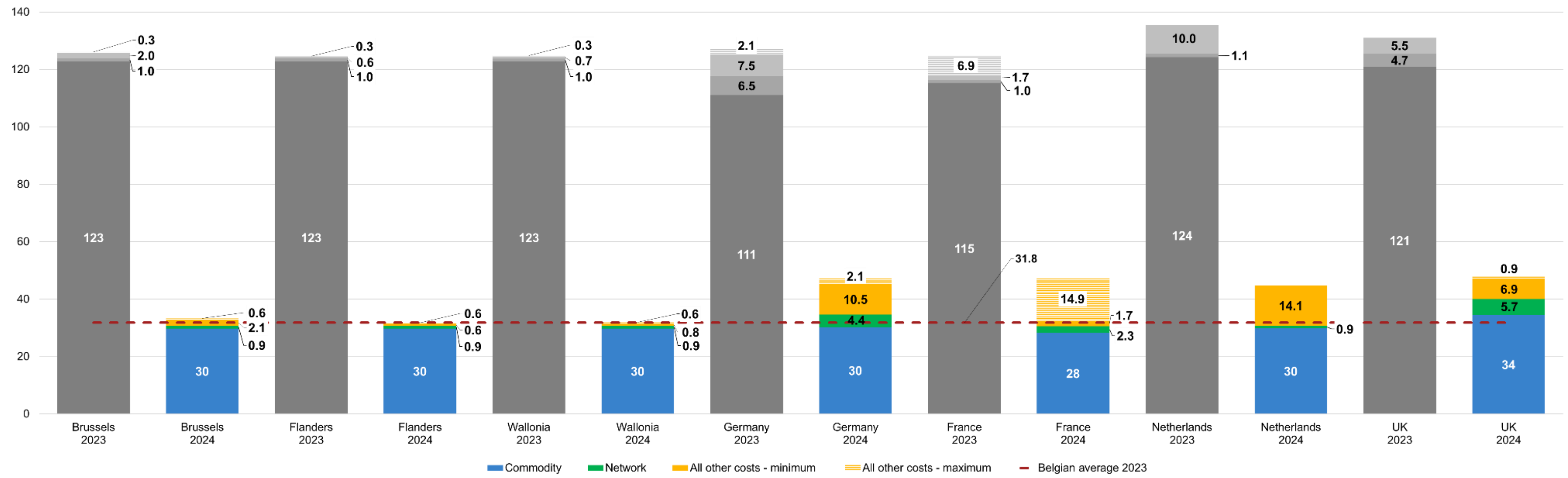
Dit jaar zien we opnieuw een grote daling van de totale jaarlijkse aardgasfactuur voor industriële consumenten, voornamelijk als gevolg van aanzienlijk lagere grondstofkosten. Over het algemeen is België opnieuw redelijk competitief als het gaat om aardgas, dankzij de relatief lage kosten van de componenten “alle andere kosten” en de netwerkkosten. Voor profiel G0 is België veruit het goedkoopste land wanneer kortingen niet worden meegerekend. Hoewel België ook het meest competitieve land blijft als we rekening houden met maximale kortingen, wordt het verschil met Frankrijk wel zeer klein. De aanzienlijke stijging van de “alle andere kosten”, voornamelijk als gevolg van het hogere TICGN-tarief, heeft een grote impact gehad op Frankrijk. De mogelijkheid om een verlaging op deze kosten te verkrijgen, heeft daarom een grote invloed op de totale jaarlijkse factuur en de concurrentiepositie van Frankrijk. Binnen België is Vlaanderen de meest competitieve regio vanwege de laagste netwerk- en andere kosten, terwijl Wallonië de duurste regio is. Nederland is opnieuw het duurste land vanwege de hoge andere kosten (die uitsluitend bestaat uit de energiebelasting), gevolgd door Duitsland. Tot slot ziet het Verenigd Koninkrijk een grote stijging van de netwerkkostencomponent.

Aardgasprijzen per component in EUR/MWh (profiel G0)



Voor het G1-profiel kan een vergelijkbare trend worden waargenomen waarbij België duidelijk het goedkoopste land is wanneer er geen reducties worden meegerekend en met een kleine marge op Frankrijk als deze wel worden meegerekend. Het Verenigd Koninkrijk is het duurste land, gevolgd door Nederland en Duitsland wanneer alle reducties in acht worden genomen. In België zijn de netwerk- en andere kosten relatief stabiel gebleven in vergelijking met de resultaten van 2023, en er kunnen slechts minimale verschillen worden waargenomen tussen de regio's.

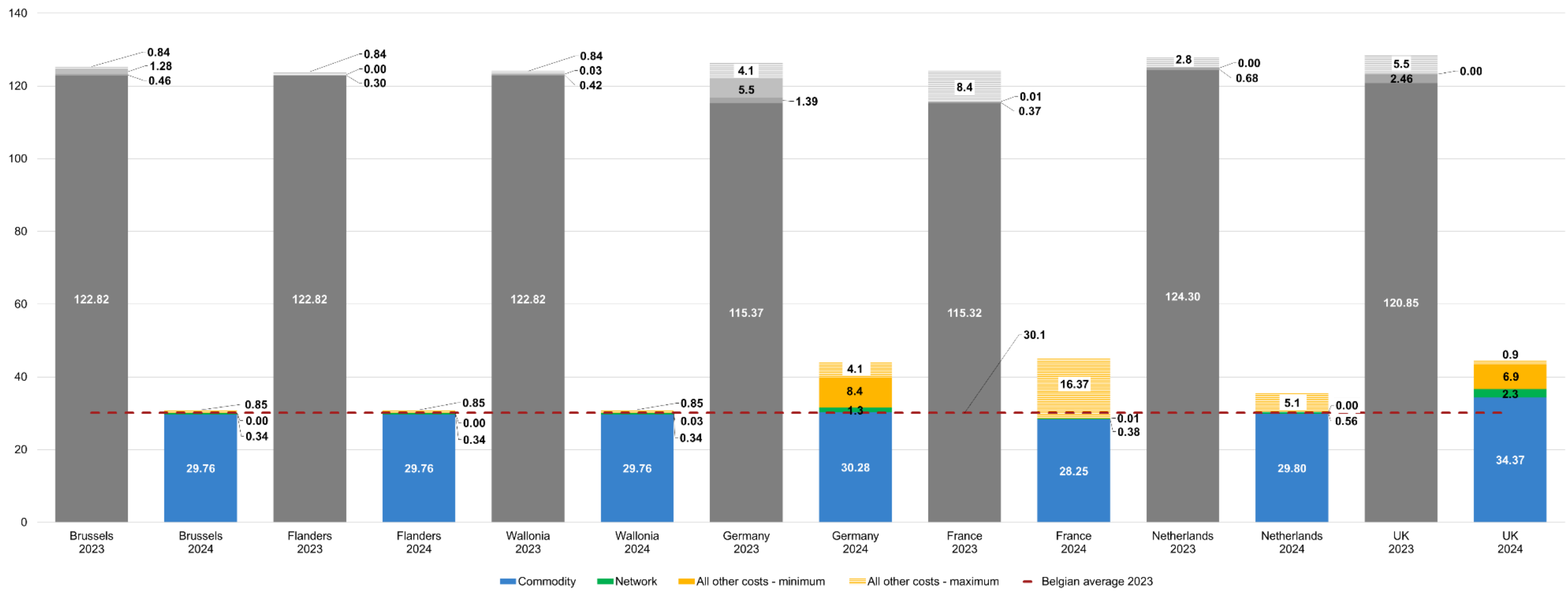
Aardgasprijzen per component in EUR/MWh (profiel G1)[31]



31 Deze studie erkent de aardgasverbruikstarieven die aan industriële verbruikers worden gefactureerd op basis van de consumentenprofielen die in de hypothesen zijn gedefinieerd. Het is daarom belangrijk om te benadrukken dat er mogelijke verschillen kunnen optreden tussen de netwerktarieven die aan industriële consumenten worden gefactureerd (bijvoorbeeld G1- en G2-profielen) in deze studie en de tarieven die zij daadwerkelijk betalen wanneer ze hun contractuele capaciteit overschrijden. De details van deze variatie worden uitgelegd in de studie van 2022 van de CREG: https://www.creg.be/fr/publications/etude-f2716

Voor het G2-profiel is Frankrijk het minst dure land, gevolgd door België en Nederland, wanneer reducties worden meegerekend. Wanneer maximale reducties niet van toepassing zijn, is België het goedkoopste land, gevolgd door Nederland. De grondstofprijzen zijn sterk gedaald voor alle landen, terwijl netwerk- en andere kosten redelijk vergelijkbaar zijn met 2023. Vanwege verhoogde belastingtarieven zijn Duitsland, Frankrijk en het Verenigd Koninkrijk duidelijk de duurste landen.

Aardgasprijzen per component in EUR/MWh (profiel G2)[32]



32 Deze studie erkent de aardgasverbruikstarieven die aan industriële verbruikers worden gefactureerd op basis van de consumentenprofielen die in de hypothesen zijn gedefinieerd. Het is daarom belangrijk om te benadrukken dat er mogelijke verschillen kunnen optreden tussen de netwerktarieven die aan industriële consumenten worden gefactureerd (bijvoorbeeld G1- en G2-profielen) in deze studie en de tarieven die zij daadwerkelijk betalen wanneer ze hun contractuele capaciteit overschrijden. De details van deze variatie worden uitgelegd in de studie van 2022 van de CREG: https://www.creg.be/fr/publications/etude-f2716

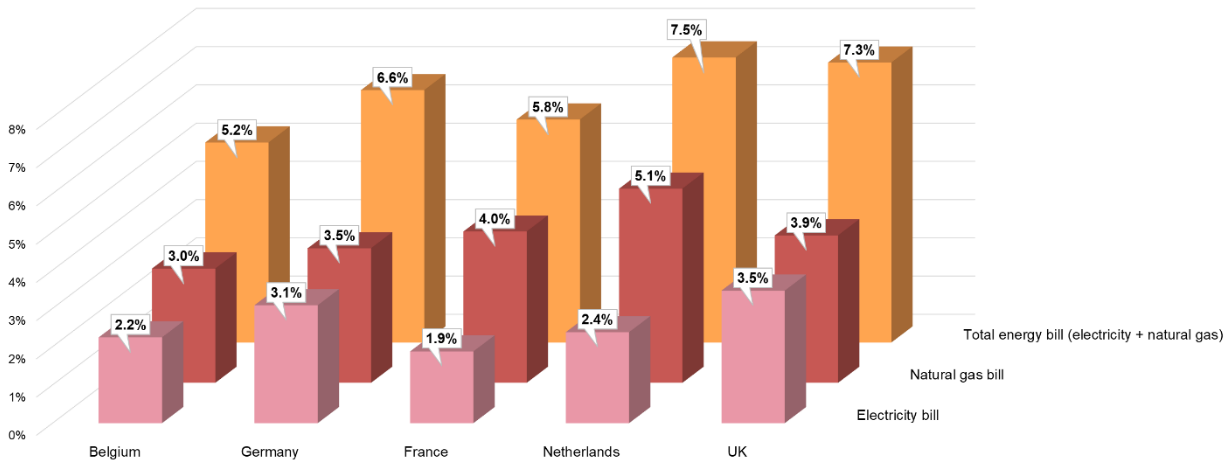
Inspanningen voor het betalen van de energiefacturen voor kwetsbare consumenten

De verschillende maatregelen die de in deze studie onderzochte landen hebben genomen om het effect van stijgende energieprijzen en inflatie voor zowel particuliere als professionele consumenten op te vangen, wordt ook geëvalueerd. Die maatregelen kunnen gaan van sociale tarieven tot directe financiële steun om de factuur van de consument te verlagen. De verscheidenheid van de maatregelen maakt een vergelijking tussen de landen echter complex.

Inspanningsgraad in vergelijking met het gemiddelde beschikbare inkomen (woonlasten afgetrokken)

In deze eerste weergave kijken we naar het gewicht van de energiefactuur op een huishouden met een gemiddeld beschikbare inkomen (2 werkenden), na aftrek van een van de belangrijkste delen van de gezinsuitgaven, namelijk de woonlasten. Onderstaande figuur laat zien dat voor alle landen die onder de studie vallen de elektriciteitsfactuur minder impact heeft op het budget dan de aardgasfactuur.

Belang van de energiefactuur ten opzichte van het gemiddeld beschikbaar inkomen (in %)



Alles bij elkaar genomen is België in januari 2024 het land waar het totale gewicht van de energierefactuur het laagst is in vergelijking met het beschikbaar inkomen (5,2%), voornamelijk vanwege het concurrentievoordeel met betrekking tot aardgas. Frankrijk staat op de tweede plaats met 5,8%, mede door de lage elektriciteitsprijs. Duitsland zit in het midden met een totale jaarlijkse factuur van 6,6% van het jaarlijkse beschikbare inkomen, terwijl het Verenigd Koninkrijk en Nederland achteraan staan met meer dan 7% (respectievelijk 7,3% en 7,5%), waarbij Nederland wordt benadeeld door de hoge aardgasprijzen. Het valt op dat alle landen die in dit onderzoek zijn opgenomen een aanzienlijke daling zien van het belang van de energiefactuur ten opzichte van het gemiddeld beschikbaar inkomen in vergelijking met wat vorig jaar in dezelfde periode werd waargenomen, met een daling van ongeveer 2% (voor Frankrijk) tot meer dan 6% (voor Nederland).

Als we ons richten op de elektriciteitsprijs[33], is Frankrijk het land waar de elektriciteitsfactuur het minst weegt op het jaarlijkse beschikbare inkomen met 1,9% (na aftrek van huisvestingskosten). België staat op de tweede plaats met een gemiddelde van 2,2% van het beschikbare inkomen, gevolgd door Nederland met 2,4%. Duitsland en het Verenigd Koninkrijk zijn de landen waar de elektriciteitsfactuur het meest weegt met meer dan 3% van het beschikbare inkomen.

Bij het kijken naar de aardgasprijzen[34] is België het land waar de factuur het minst weegt in vergelijking met het beschikbare inkomen, met een gemiddelde van 3%. Duitsland staat op de tweede plaats met 3,5%, gevolgd door Frankrijk en het Verenigd Koninkrijk (beide rond de 4%). In tegenstelling tot wat we zien bij elektriciteit, is Nederland hier het land waar de aardgasfactuur het meest doorweegt op het beschikbare inkomen, met iets meer dan 5%.

[33] Als we de facturen voor aardgas en elektriciteit afzonderlijk en niet gecombineerd bekijken.

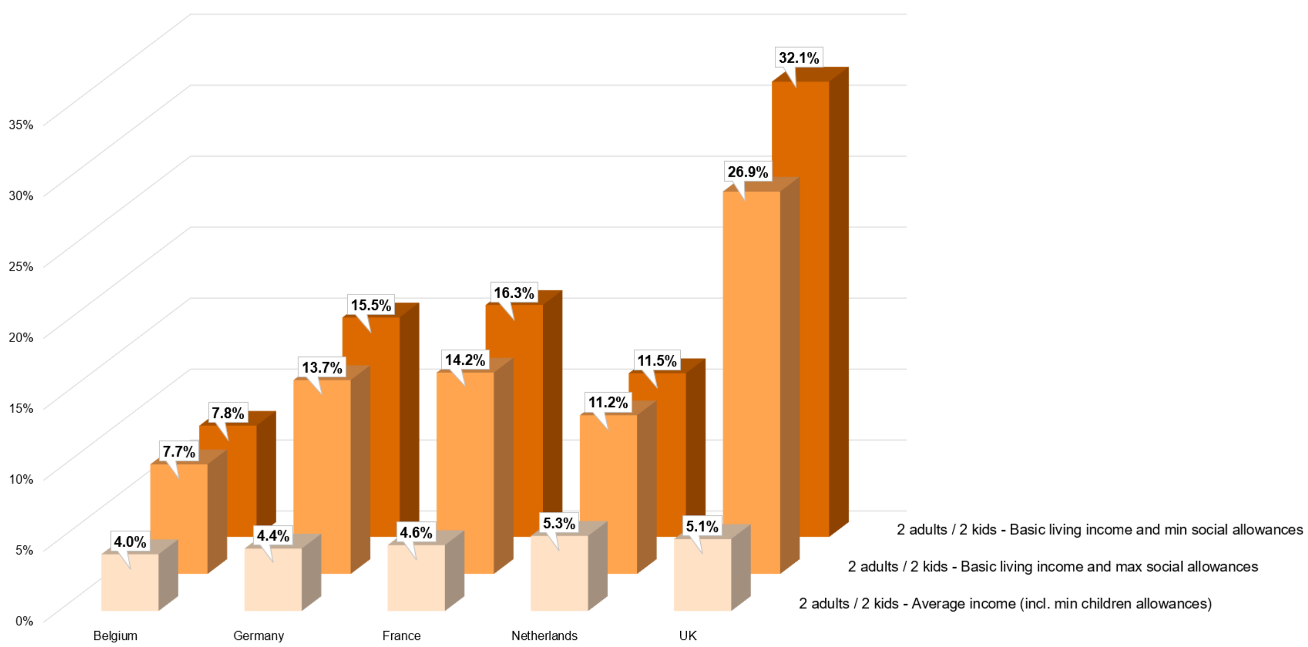
[34] Ibidem

Inspanningsgraad in vergelijking met het totale beschikbaar inkomen

In deze tweede weergave beoordelen we het gewicht van de gemiddelde energiefactuur voor mensen die een gemiddelde inkomen hebben, in vergelijking met het effect ervan op de meest kwetsbare mensen. Hiervoor worden alle kwantificeerbare sociale maatregelen toegevoegd aan het basisinkomen dat ons typische huishouden (2 volwassen ouders en 2 kinderen) zou kunnen verdienen zonder andere inkomstenbronnen. Deze keer trekken we het aandeel van huisvesting niet af van het beschikbare inkomen. Aangezien de meeste huishoudens met een minimuminkomen vaak ook aanzienlijke steun op dat gebied ontvangen, zou dat inderdaad een vertekend beeld van de werkelijkheid geven. Hierdoor neemt het gewicht van de energiefactuur van een gemiddeld huishouden dus automatisch af ten opzichte van de vorige figuur.

Zoals te zien is in de onderstaande figuur, wanneer we de inspanningsgraad voor de totale energiefactuur vergelijken tussen landen voor een huishouden met een gemiddeld inkomen, kunnen we zien dat België dit jaar het land is waar de energiefactuur proportioneel het minst weegt met 4%, gevolgd door Duitsland en Frankrijk met respectievelijk 4,4% en 4,6%. Het Verenigd Koninkrijk volgt met 5,1% en Nederland als laatste met 5.3%.

Inspanningspercentage energiefactuur ten opzichte van het beschikbaar inkomen (in %)



Het is niet verrassend dat de situatie veel ingewikkelder wordt voor huishoudens met bescheiden inkomens. In dat geval kan België dankzij het beschikbaar sociaal tarief een vrij laag gewicht van de energiefactuur in vergelijking met een basisinkomen garanderen. Dit helpt om het aandeel van de energiefactuur rond de 7,7% te houden, wat ongeveer twee keer zo hoog is als wat wordt waargenomen voor een gemiddeld huishouden. Nederland volgt daarna, met een totale energiefactuur die iets meer dan 11% van het beschikbare inkomen bedraagt. Duitsland en Frankrijk staan nek aan nek met een totale energiefactuur van ongeveer 14% tot 16%, afhankelijk van de toelagen die kunnen worden ontvangen. Ten slotte is het Verenigd Koninkrijk het land met de zwaarste factuur in verhouding tot het leefbaar inkomen voor de meest kwetsbare huishoudens, met cijfers variërend van bijna 27% tot meer dan 32% van het beschikbare inkomen. De totale energiefactuur in het Verenigd Koninkrijk kan daarom een onevenredige last vormen voor huishoudens die het meest risico lopen op energiearmoede.

Opmerking: *De in dit hoofdstuk gevolgde aanpak heeft beperkingen, aangezien het gebruikte verbruiksprofiel niet noodzakelijk overeenstemt met het verbruiksprofiel van sommige mensen in een situatie van energiearmoede (zoals een geïsoleerde persoon zonder kinderen bijvoorbeeld). Bovendien houdt het ook geen rekening met het feit dat sommige meer blootgestelde mensen zouden beslissen om minder energie te verbruiken om bijvoorbeeld hun energiefactuur te verlagen. Aangezien het uiteindelijke doel van dit hoofdstuk is de inspanning te bepalen die nodig is om de energiefactuur te betalen (en deze te vergelijken tussen landen om het effect van de energiefactuur in relatieve termen te beoordelen), geloven wij dat deze aanpak echter robuust genoeg is om conclusies te trekken. Hoofdstuk 8 biedt meer inzicht in deze observaties.*

Evaluatie van de Belgische industriële competitiviteit

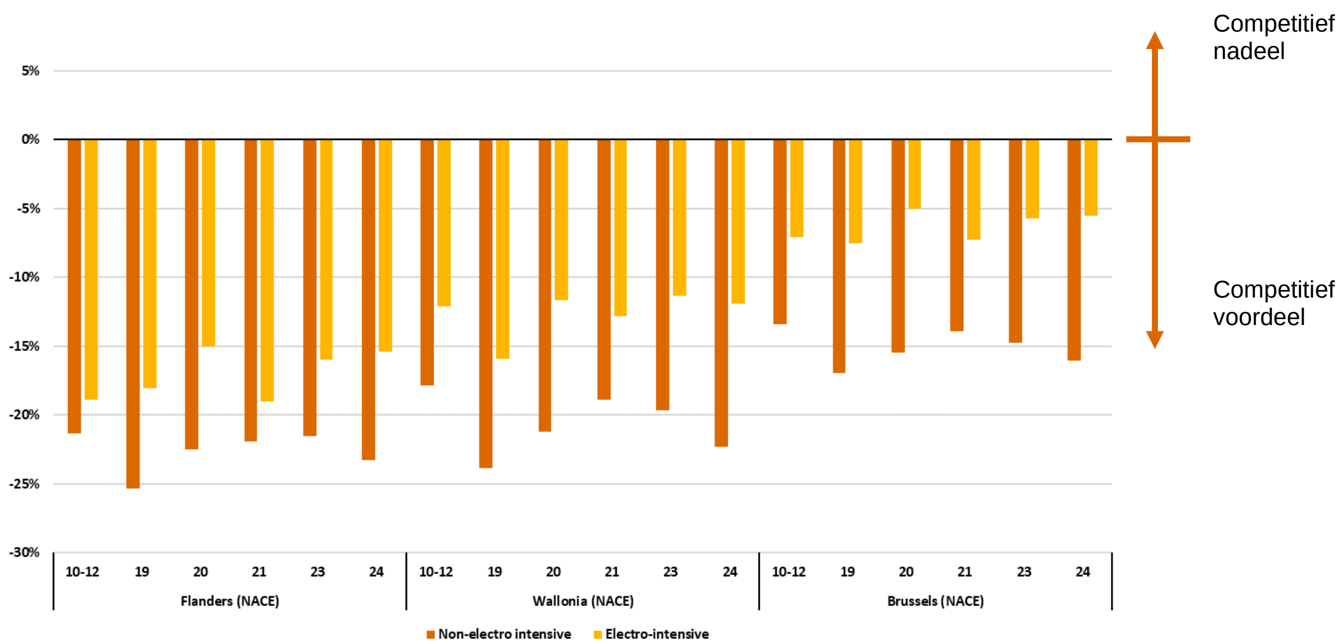
In een laatste hoofdstuk worden sector- en regiospecifieke elektriciteits- en aardgasprijzen geanalyseerd op basis van hun impact op de concurrentiepositie van Belgische industriële consumenten ten opzichte van hun buitenlandse concurrenten. Deze resultaten betreffen industriële consumenten uit de geselecteerde sectoren zoals gedetailleerd in sectie 3.3, namelijk: voeding en dranken (NACE 10-12), cokes en geraffineerde aardolieproducten (NACE 19), chemische producten (NACE 20), farmaceutische producten (NACE 21), productie van niet-metaalhoudende mineralen (NACE 23) en productie van basismetalen (NACE 24). Deze sectoren vertegenwoordigen 0.87% tot 2.26% van de toegevoegde waarde van België en 0.62% tot 2.04% van de totale werkgelegenheid[35].

De resultaten werden gedifferentieerd afhankelijk van de inclusie of exclusie van het Verenigd Koninkrijk in de vergelijking. Wanneer het Verenigd Koninkrijk is opgenomen, wordt het duidelijk dat niet-elektro-intensieve industriële consumenten in België, die concurreren met niet-elektro-intensieve consumenten in naburige landen, een concurrentievoordeel vertonen in de meeste sectoren. Onder de regio's in België profiteert Vlaanderen het meest van de concurrentievoordelen wat betreft de totale energiekosten voor alle sectoren. Echter, het concurrentievoordeel is lager voor alle sectoren en regio's wanneer het Verenigd Koninkrijk wordt uitgesloten.

Voor elektro-intensieve consumenten wordt een verschil waargenomen bij de inclusie en exclusie van het Verenigd Koninkrijk. Alle sectoren in de drie regio's tonen concurrentievoordelen ten opzichte van alle andere landen/regio’s wanneer het Verenigd Koninkrijk is opgenomen. Dit competitief voordeel neemt wel af wanneer het Verenigd Koninkrijk wordt uitgesloten. Voor elektro-intensieve consumenten blijven Vlaanderen en Wallonië competitiever dan hun buurlanden wanneer het Verenigd Koninkrijk wordt uitgesloten, maar dit verandert voor Brussel, aangezien verschillende sectoren een concurrentienadeel hebben. Merk op dat in Brussel verschillende sectoren die in deze studie worden onderzocht, geen significante aanwezigheid hebben in deze regio.

Wanneer het Verenigd Koninkrijk is opgenomen, is de concurrentiepositie van België veranderd ten opzichte van vorig jaar. Vlaanderen, Brussel en Wallonië zien hun concurrentievermogen toenemen, waarbij ze in de meeste sectoren een concurrentievoordeel hebben voor zowel niet-elektro-intensieve als elektro-intensieve consumenten. In dezelfde trend ziet Vlaanderen zijn concurrentievoordeel toenemen ten opzichte van 2023 voor zowel elektro- als niet-elektro-intensieve consumenten, terwijl het de meest competitieve Belgische regio blijft.

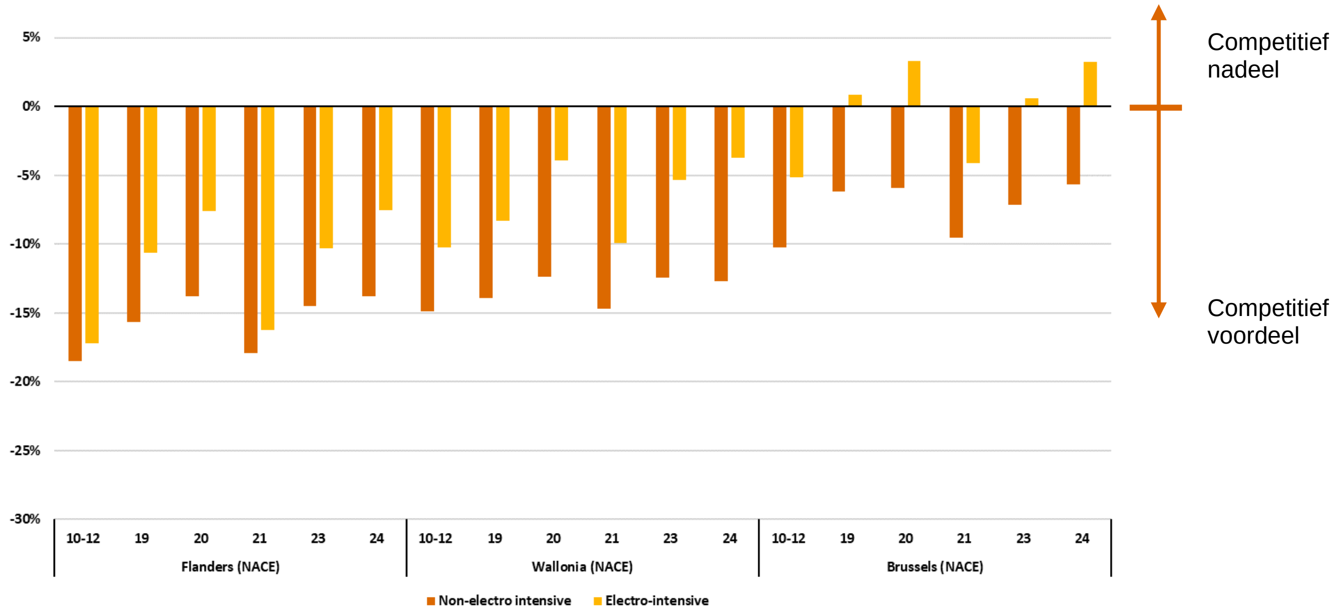
Gewogen verschillen in de energiekost (elektriciteit en aardgas) tussen de Belgische regio’s en de gemiddelde kosten van de buurlanden (inclusief het VK) voor elektro-intensieve en niet-elektro-intensieve consumenten



[35] Nationale waarden uit 2021, verkregen van Eurostat.

Zoals eerder vermeld, wordt het concurrentievoordeel van België minder uitgesproken wanneer het Verenigd Koninkrijk wordt uitgesloten. In feite observeren we, net als in 2023, dat de drie Belgische regio's enigszins aan concurrentievoordeel verliezen ten opzichte van hun buurlanden wanneer het Verenigd Koninkrijk wordt uitgesloten van de analyse, ongeacht de elektro-intensiteit van de consumenten. De omvang varieert echter per sector en regio. In 2024 observeren we dat het al dan niet opnemen van het Verenigd Koninkrijk in de waarnemingen weinig impact heeft op de concurrentiepositie van de voedings- en drankenproductiesectoren in de drie regio's. Dit geldt niet voor de chemische sector, die enig concurrentievoordeel verliest in alle drie de regio's en zelfs een concurrentienadeel wordt in Brussel. België als geheel blijft een sterke concurrent ten opzichte van zijn buurlanden, ongeacht de sector.

Gewogen verschillen in de energiekost (elektriciteit en aardgas) tussen de Belgische regio's en de gemiddelde kosten van de buurlanden (exclusief het VK) voor elektro-intensieve en niet-elektro-intensieve consumenten



Over het algemeen blijven niet-elektro-intensieve consumenten in België profiteren van concurrerende prijzen in vergelijking met hun tegenhangers in de buurlanden. Dit geldt in het bijzonder voor aardgas.

De resultaten benadrukken het potentiële verlies aan concurrentievermogen in de buurlanden als gevolg van het niet nemen of voortzetten van maatregelen en de noodzaak voor Brussel en Wallonië om de nodige maatregelen te nemen om hun concurrentievermogen te behouden in hun industrieën, met name met betrekking tot elektriciteit. Deze conclusie geldt ook voor Vlaanderen, dat inspanningen moet blijven leveren om haar belangrijkste industrieën te ondersteunen en hun concurrentievoordeel te behouden.

In conclusie kunnen deze bevindingen dienen als een eerste basis voor een meer gedetailleerde discussie over mogelijke federale en/of regionale interventies gericht op het gelijkmaken of versterken van het concurrentievermogen van Belgische consumenten[36]. Dit zou acties kunnen omvatten zoals het aanpassen van tarieven en/of belastingen. Wat betreft belastingen, biedt de Europese Commissie een kader via de CEEAG[37] dat kan worden gebruikt voor het ontwerpen en/of aanpassen van belastingen ter ondersteuning van de ontwikkeling van hernieuwbare energie.

[36] De compensatie voor indirecte CO2-emissiekosten (bijvoorbeeld in Vlaanderen, het Verenigd Koninkrijk en Duitsland) maakt geen deel uit van deze studie. Dit schema is gericht op elektro-intensieve consumenten, en verschillen in conclusies kunnen ontstaan wanneer het wordt opgenomen.

[37] Richtsnoeren inzake staatssteun voor klimaat, milieubescherming en energie in de Europese Unie - januari 2022.

2. Introduction

2. Introduction

This report is commissioned by the Belgian federal regulator for electricity and natural gas (CREG) and the three Belgian regional regulators: Brugel (Brussels), the CWaPE (Wallonia) and the VREG (Flanders) – and supported by FORBEG[38]. In the framework of their larger mission of supervising transparency and competition on the market, ensuring market conditions serve the public interest and safeguarding consumers' interests, PwC was asked to conduct a study comparing energy prices for residential, small professional and industrial consumers in Belgium and the neighbouring countries.

The purpose of this study is to compare the electricity and natural gas prices, in total as well as per component, billed to residential, small professional and large industrial consumers in the three Belgian regions (Brussels, Flanders and Wallonia) with those in Germany, France, the Netherlands and the UK. As such, electricity and natural gas prices used in this study were retrieved in January 2024 for all profiles.

In addition to the price analysis, the purpose of this study is to further investigate the impact of energy price differences on two specific consumer groups, namely the vulnerable residential consumers and a selection of industrial sectors important in Belgium. For the vulnerable consumers the report will estimate the effort made by the government(s) and/or other instances to help these customers pay their energy bills. For the industrial consumers we will analyse how the costs incurred by these players impact the Belgian industry. The report also pays a special attention to reduction schemes that are beneficial to electro-intensive industrial consumers qualifying for certain criteria.

This report consists of four different sections.

The **first section** (described in chapters 3 to 5) consists of the actual price comparison for all considered consumers. The methodology used is a bottom-up approach, used to build up the energy cost wherever possible. As such, three main components are described: the commodity price, the network cost, and all other costs (i.e. taxes, levies, and certificate schemes). When it comes to residential consumers, the VAT also needs to be included. Chapter 3 first describes the dataset used in this study by setting the general assumptions employed, defining the consumer profiles considered and finally presenting an overview of the different zones identified in all five countries under review. While the Terms of Reference of this study set the consumer profiles' consumption volume and annual peak power, assumptions were taken to further complete our profiles' characteristics (e.g. contracted capacity, monthly peak, etc.), which are also listed in this section. Then, chapter 4 and 5 provide a detailed description of the deconstructed energy cost for electricity and natural gas, extensively describing the existing regulatory framework.

The **second section** of the report (described in chapters 6 and 7) presents the results per consumer profile, using a twofold approach: how do total energy prices in Belgium compare to the other four countries, and how the different components of the energy price relate to the observed results. While chapter 6 presents the results per consumer profile, chapter 7 draws general conclusions and introduces a first overview of the observed results in terms of competitiveness for Belgian residential, small professional and industrial energy consumers.

The **third section** of this study (described in chapter 8) addresses the efforts made by the government(s) and/or other instances to help vulnerable consumers pay their energy bills. This section particularly focuses on identifying social measures that are implemented by national governments and/or other instances, which are then quantified to derive the financial importance of one's energy consumption over its revenues. Through this, it is intended to illustrate the magnitude of countries' interventions to alleviate the energy cost weighting on vulnerable residential consumers.

[38] FORBEG is the forum of the Belgian electricity and gas regulators. It is an informal consultation body consisting of representatives of BRUGEL, the CREG, CWaPE and VREG.

The **fourth section** of this report (described in chapter 9) provides a detailed analysis of the competitiveness of the Belgian industry in terms of energy cost in the three Belgian regions. Particular attention is brought to the total energy cost for the industry on a macro-economic level where the aggregation of electricity and natural gas prices make up the total energy cost. This investigation is conducted for the six most important Belgian industrial sectors, which are identified through a preliminary exercise that can be found in section 3, and assesses their competitive advantages and disadvantages compared to industries from neighbouring countries, both at a national and regional level. Finally, several general conclusions and recommendations are formulated based on the report’s insights.

A preliminary version of this report was submitted for review to the Belgian federal energy regulator (CREG), the regional energy regulators of Flanders (VREG), Wallonia (CWaPE) and Brussels (Brugel) as well as the national energy regulators of France (CRE), Germany (Bundesnetzagentur), the Netherlands (ACM) and the UK (OFGEM). This final report integrates all remarks formulated by those Regulatory Authorities.

3. Description of the dataset

3. Description of the dataset

General assumptions

We listed below general assumptions necessary for the overall comprehension regarding the selected consumer profiles and countries.

1. ***January 2024.*** This study gives an overview of the prices and tariffs of electricity and natural gas in January 2024 for Belgium, France, the Netherlands, Germany, and the UK.

2. ***Economically rational actors.*** We assume the 13 selected profiles (8 for electricity and 5 for natural gas) are economically rational actors trying to optimise their energy cost when possible.

3. ***Exemptions and reductions.*** In various cases, we noticed the existence of – most of the time progressive – reductions or exemptions on taxes, levies, certificate schemes, or grid usage costs. Whenever economic criteria – such as exercising a well-defined industrial activity or paying a specific part of your company revenue as energy cost – are used to determine the eligibility for those exemptions and reductions, we do not present a single value but a range of possibilities as a result with a minimum and a maximum case. All the computation and graphs reflect the situation applicable in January 2024. Any change taking effect after this date is excluded.

4. ***Commodity prices (B-SME and industrial consumers).*** All commodity prices are provided by the CREG, except for the electricity industrial consumers commodity price in the UK, which was provided by PwC based on Bloomberg market indices.

5. ***Electricity/Natural gas sales margin (B-SME and industrial consumers).*** While using the formula provided by the CREG to compute commodity prices, we do not add any sales margin – both for electricity and natural gas – to ensure better objectivity when comparing these different countries and consumer types. However, such a margin is *de facto* included as we consider offers, products and tariffs available on the natural gas/electricity market.

6. ***Natural gas pressure level and caloric value.*** As later exhibited, (some) industrial natural gas consumers are directly connected to the transport grid but are not connected to the same natural gas pressure level in every country (e.g. the Netherlands). We consider the most plausible pressure level for each country and client profile. We also consider the caloric value of natural gas for each country.

7. ***Exchange rates.*** For the UK, unless explicitly stated otherwise[39], we systematically used the January 2024 average exchange rate to convert British Pounds to Euros, namely 0.8587 GBP/EUR (or 1.1645 EUR/GBP)[40].

8. ***Value Added Tax (VAT)*****.** We consider that VAT is deductible for professionals and is thus only considered for residential consumers (E-RES and G-RES). Besides, as the VAT is considered as a separate component for residential consumers, all prices reported in this document either exclude VAT or specifically mention its inclusion.

[39] This can for example be the case when we refer to converted amounts dating from previous years, as it is the case in the chapter covering the social measures for residential consumers

[40] (European Central Bank, 2024)

9. ***The UK.*** When mentioning the UK, we are referring to Great Britain, including England, Wales, and Scotland, leaving aside Northern Ireland.

10. ***Auto-production*.** In this study, we assume none of the selected profiles produces electricity on their own (on-site electricity production or domestic production). We therefore conclude that electricity consumption and invoicing correspond to one's electricity offtake.

11. ***Meter ownership.*** We assume that residential and small professional consumers do not own their specific meter. However, industrial consumers are considered to own their meter.

12. ***Unique contracts*.** We assume that residential consumers have a contract with a supplier, including all costs.

13. ***Payment method.*** When multiple payment methods exist, the most common option is to be considered for residentials.

14. ***Reductions.*** When it comes to residential consumers, we do not consider reductions such as promotional offers or temporary offers. For industrial consumers, we consider certain exemptions or reductions as specified in the law, for instance.

15. ***Exclusion of products.*** As a rule, each product considered to compute residential consumers' commodity products should be available to all types of residential consumers. For instance, products unavailable during the period of the price comparison, products that require the acquisition of a share, products that require pre-financing, products with a dynamic pricing, products that need to be combined with another contract (e.g. bundled electricity and gas contracts) or products that are only available on certain conditions (e.g. group purchases) are excluded from the price comparison resulting in the selection of another product.

16. ***Digital meter owners*.** If the bill is different for users with a traditional analogue meter compared to users with a digital meter, then only digital meter results are presented. This is for example applicable in Flanders for E-RES and E-SSME profiles.

17. ***Holders of a sectoral (energy efficiency) agreement.*** Some reductions are only applicable for holders of a sectoral agreement. Since we have already taken the assumption that our profiles are economically rational and would thus have a sectoral agreement if they qualify for the conditions (e.g. we presume British industrial consumers to be part of the climate change agreement, therefore leveraging energy efficiency and emission reduction to obtain tax reductions). As a reflection of each country's diversity of companies and of the sectoral agreements penetration rates, we explicitly specify which profiles are considered to qualify and therefore have a sectoral agreement.

Consumer profiles

In this study, we make the distinction between 3 main categories of consumers:

(1) Residential consumers;

(2) Small professional consumers;

(3) Large industrial consumers.

Those different types of consumers are spread into 13 different profiles. We refer to E-RES (electricity) and G-RES (natural gas) as residential consumers, to E-SSME, E-BSME (electricity) and G-PRO (natural gas) as small professional consumers or as small and medium-sized enterprises, and to E0, E1, E2, E3 (electricity) and G1 & G2 as large industrial consumers.

Those profiles are in line with the categories of consumers referred to in article 22bis, §2, of the law of April 29, 1999, relating to the organization of the electricity market, and in article 15/25, §2, of the law of April 12, 1965 relating to the transport of gaseous and other products by pipelines[41]. Their respective characteristics are detailed in Table 1 on the next page.

Working assumptions:

(a) Figures regarding the contracted capacity, the annual peak and monthly peak were assessed based on hypotheses accepted by the steering committee of this study. While this study does not aim at stating these figures represent the exact values for all consumers, we assume they are plausible proxies necessary to compute prices across studied countries and regions. During future potential updates of this study in the years to follow, it is possible that these assumptions evolve to show a more accurate side of the market. Below mentioned figures are derived from values provided by the steering committee based on the following hypotheses:

- **The contracted capacity** is assumed to equal 80% of the connection capacity with a 100% cos φ (up to E1) or 90% cos φ (from E2 to E4);
- **The annual peak** is assumed to equal 80% of contracted capacity for consumers connected to the distribution grid (E-RES to E1);
- **The annual peak** is assumed to equal 100% of contracted capacity for consumers connected to the transmission grid (E2 to E4) as the larger the consumption profile, the more stable ("baseload") the consumption is assumed. These consumers are more likely to precisely know their peak consumption and, therefore, sign for an identical contracted capacity;
- **The monthly peak** is assumed to equal 90% of annual peak for all countries/regions in scope of this study except for the E-RES and E-SSME profiles. For these profiles, the monthly peak is based on empirical data from 2022 provided by VREG. Since 2023, the network costs in Flanders for network users connected to the low voltage grid are based on the monthly peak. In other regions, the monthly (and annual) peaks do not impact the network costs for these consumer profiles.

(b) Whenever possible a distinction is made between day and night tariffs for profiles E-RES and E-SSME. This study assumes a day/night split of 1.6/1.9 MWh for E-RES and a 18/12 MWh split for E-SSME. For E-BSME profile the day/night split is 96/64 MWh, while 1,250/750 MWh for E0 and 6,250/3,750 MWh for E1 profiles.

[41] The last update of these profiles took effect with the publication of the Belgian royal decree dated from September 27, 2023

Table 1: Consumer profiles for electricity

Characteristic	Unit	E-RES (Electricity Residential)	E-SSME (Electricity Small SME)	E-BSME (Electricity Big SME)	E0 (Electricity 0)	E1 (Electricity 1)	E2 (Electricity 2)	E3 (Electricity 3)	E4 (Electricity 4)
Period in scope	-	January 2024	January 2024	January 2024	January 2024	January 2024	January 2024	January 2024	January 2024
Annual demand	MWh	3.5	30	160	2,000	10,000	25,000	100,000	500,000
Consumption profile	-		-	-	Baseload (working days only)	Baseload (working days only)	Baseload (working days only)	Baseload (including weekends)	Baseload (including weekends)
Consumption hours eq.[42]	h/year	-	-	1,600	4,000	5,000	5,000	7,692	8,000
Grid operator	-	DSO (LS)	DSO (LS)	DSO (26-1 kV)	DSO (26-1 kV)	DSO (TransHS)	LTSO	TSO	TSO
Connection capacity	kVA	9.2	46.9	156	781	3,125	6,944	18,056	86,806
Contracted capacity	kW	7.4	37.5	125	625	2,500	5,000	13,000	62,500
Annual peak	kW	5.9	30	100	500	2,000	5,000	13,000	62,500
Monthly peak	kW	4.26	18	90	450	1,800	4,500	11,700	56,250
Metering	-	YMR	YMR	AMR	AMR	AMR	AMR	AMR	AMR

Information provided by the project steering committee

[42] These are the theoretical number of hours of electricity consumption of each consumer, obtained by dividing the annual demand by the annual peak.

Table 2: Detailed view of the connection level of consumer profiles for electricity per country

Profile	Wallonia	Flanders	Brussels	Netherlands	France	Germany	The UK
E-RES	BT sans mesure de pointe HP/HC (<1 kV)	LS piekmeting (<1 kV)	BT (T09) (<1 kV)	Fase 1: 1 x 10 t/m 3 x 25 Ampere	BT ≤ 36 kVA	Niederspannung (<1 kV)	NHH Demand tariff – Domestic two rate (< 6 kV)
E-SSME	BT sans mesure de pointe HP/HC (<1 kV)	LS piekmeting (<1 kV)	BT (T09) (<1 kV)	3 x 80 Ampere	BT ≥ 36 kVA	Niederspannung (<1 kV)	NHH Demand tariff – Small non-domestic customer with two rate (<6 kV)
E-BSME	MT avec mesure de pointe (26-1 kV kV)	26-1 kV Hoofdvoeding (T03)	26-1 kV (TO3) Alim. Principale	Afnemers MS (1-20 kV)	HTA_1 (1 - 40 kV)	Mittelspannung (1 kV - 50 kV)	HH Demand tariff-HV HH Metered (6 - 22 kV)
E0	MT avec mesure de pointe (26-1 kV kV)	26-1 kV Hoofdvoeding (T03)	26-1 kV (TO3) Alim. Principale	Afnemers MS (1-20 kV)	HTA_1 (1 - 40 kV)	Mittelspannung (1 kV - 50 kV)	HH Demand tariff-HV HH Metered (6 - 22 kV)
E1	T-MT avec mesure de pointe (26-36 kV)	Trans-HS Hoofdvoeding (26-36 kV)	Trans MT (26-36 kV)	Afnemers Trafo HS+TS/MS (25-50 kV)	HTA_1 (1 - 40 kV)	Mittelspannung (1 kV - 50 kV)	HH Demand tariff-HV HH Metered (6 - 22 kV)
E2	LTSO (30-70 kV)	LTSO (30-70 kV)	LTSO (30-70 kV)	Afnemers TS (25-50 kV)	HTB_1 (50 - 130 kV)	Umspannung Hoch-/Mittelspannung (50 -110 kV)	EHV EDCM (22 - 132 kV)
E3	TSO (> 150 kV)	TSO (> 150 kV)	TSO (> 150 kV)	TSO (> 150 kV)	HTB_2 (130 - 150 kV)	Hochspannung (220 - 350 kV)	TSO (150 kV)
E4	TSO (> 150 kV)	TSO (> 150 kV)	TSO (> 150 kV)	TSO (> 150 kV)	HTB_2 (130 - 150 kV)	Hochspannung (220 - 350 kV)	TSO (150 kV)

Table 3: Consumer profiles for natural gas

Characteristic	Unit	G-Res[43] (Natural gas Residentials)	G-Pro (Natural gas Professionals)	G0 (Natural gas 0)	G1 (Natural gas 1)	G2 (Natural gas 2)
Period in scope	-	January 2024	January 2024	January 2024	January 2024	January 2024
Annual demand	MWh	17	300	1,250	100,000	2,500,000
Consumption profile	-	-	-	Baseload (working days only)	Baseload (including weekends)	Baseload (including weekends)
Consumption hours eq.[44]	h/year	-	-	3,000	5,000	8,000
Contracted capacity	kW	-	-	-	20,000	312,500
Metering	-	YMR	YMR	MMR	AMR	AMR

Table 4: Detailed view of the connection level of consumer profiles for natural gas per country

Profile	Wallonia	Flanders	Brussels	Netherlands	France	Germany	The UK
G-RES	T2	T2	T2	G4: 0 t/m 10m^3(n)/h	T2	G4	Consumption band < 73,200 kWh
G-PRO	T3	T3	T3	G25: 25 t/m 40m^3(n)/h	T2	G40	73,200 < Consumption band < 732,000 kWh
G0	T4	T4	T4	G100: 40 t/m 65 m^3(n)/h	T3	G100	Consumption band ≥ 732,000 kWh
G1	T6	T6	T5	TSO	T4	G1000	Consumption band ≥ 732,000 kWh
G2	TSO	TSO	TSO	TSO	TSO	TSO	TSO

[43] The annual demand has been updated from 23.26MWh to 17MWh compared to previous iterations of the study in order to take the Belgian royal decree dated from September 27, 2023 into account.

[44] These are the theoretical number of hours of natural gas consumption of each consumer, obtained by dividing the annual demand by the contracted capacity.

Identification of industrial sectors

The macro-economic analysis carried out in this study intends to depict the industrial structure of the Belgian economy as a whole and, more specifically, the economy of the Belgian regions: Brussels, Flanders, and Wallonia. Through this analysis, a certain number of relevant industrial sectors are determined that will be subjected to the natural gas and electricity price comparison.

There are two crucial objectives that justify the selection of sectors for which the price comparison is particularly relevant. First, it is to ensure consistency between the selected industrial profiles and the active industrial sectors. Second, it is to use this macro-economic analysis when assessing the impact of the described results for natural gas and electricity prices on the Belgian economy and its regions.

Throughout this study, we use a variety of macro-economic data relating to the manufacturing industry. This industry can be identified over numerous sectors as defined in the Statistical Classification of Economic Activities in the European Community, commonly referred to as NACE[45].

The industrial structure of a country can generally be grouped into two different parts:

1. The ***manufacturing industry***, including basic industries and all other industrial activities
   (a) Basic industries:

Table 5: Economic activities related to basic manufacturing industries with NACE classification

NACE code	Sector – Economic activity
13 – 15	Manufacture of textiles, wearing apparel, leather, and related products
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
22	Manufacture of rubber and plastic products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals

   (b) Other sectors of the manufacturing industries:

Table 6: Economic activities related to other sectors of the manufacturing industry with NACE classification

NACE code	Sector – Economic activity
10 – 12	Manufacture of food products; beverages and tobacco products
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
31 – 32	Manufacture of furniture; other manufacturing
33	Repair and installation of machinery and equipment

2. The ***extractive industry***, including industries extracting minerals from solid forms (e.g. coal and mineral ores), liquid forms (e.g. oil) or gaseous forms (e.g. natural gas).

[45] NACE : Nomenclature des Activités économiques dans la Communauté Européenne

Throughout this investigation, we decided to solely focus on the manufacturing industry, considering the limited importance (in Belgium) and specific energy consumption profiles of extractive industries.

A four-step approach drives this exercise:

(1) First, we portray the Belgian national and regional industrial structures, focusing on employment, value added and specialisation criteria.

(2) Second, the energy intensity of these previously mentioned sectors is analysed to have a better insight into the energy cost role in the total cost structure among these sectors.

(3) Third, export intensity indicating the exposition level of certain industrial activities regarding international competition and potential relocation risk is exhibited.

(4) Fourth, we present the potential consumption reduction.

Main industrial sectors for the Belgian national and regional economy

In this part, we depict the relative significance of each sub-sector of the national manufacturing industry regarding value added and employment. This inquiry also considers the Belgian economy specialisation level at a national and regional scale in comparison with neighbouring countries. The manufacturing sectors belonging to NACE classification 10 to 33, in Belgium solely, but in Wallonia, Flanders and Brussels as well are under study. While on all sectors mentioned Table 5 and Table 6 are under review, only a few, based on the highest relevant values, are displayed in charts to make it visually understandable.

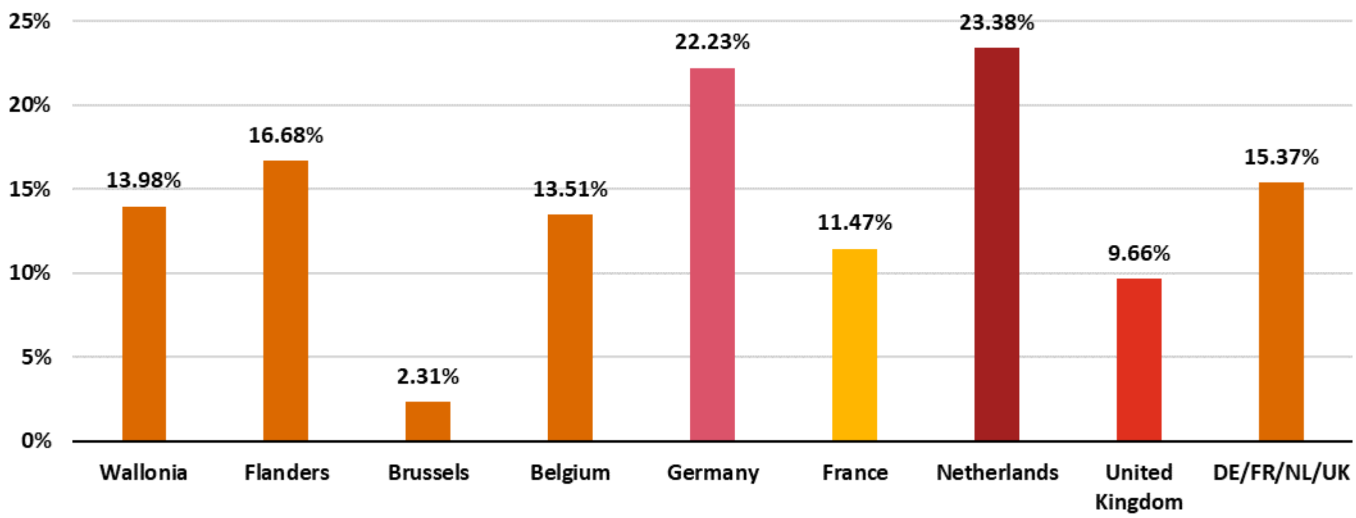
National accounts aggregated per industry coming from Eurostat dataset and the National Belgian Bank (NBB) serve as the basis for the analysis. The datasets used in this study are from 2021.

The importance of the manufacturing industry based on value added

The first investigation intents to determine the relative significance of the Belgian manufacturing industry (NACE 10 – 33) regarding value added. Therefore, we compare the value added of this sector with the total GDP of the regional and national economy. This analysis is benchmarked with the relative importance of the manufacturing industry in each of the neighbouring countries (Germany, France, the Netherlands, and the UK) and their weighted average[46].

Figure 1: Value added of the industry in total GDP displays higher relative importance of the previously mentioned manufacturing industry in the Netherlands than in any other regions, followed by Germany. Noteworthy, Flanders has the third-highest share of value added of the industry in the total GDP amongst all countries and regions from our study panel. At a regional level, only the manufacturing industry in Flanders has a higher "value-added/GDP ratio" than the average for neighbouring countries. Nevertheless, the manufacturing industry is less important in terms of value-added for the Belgian economy than for the average of neighbouring countries - partially due to the weight of the Dutch and German economy.

Figure 1: Value added of the industry in total GDP



Source: Eurostat (2021 data), NBB (2021 data)

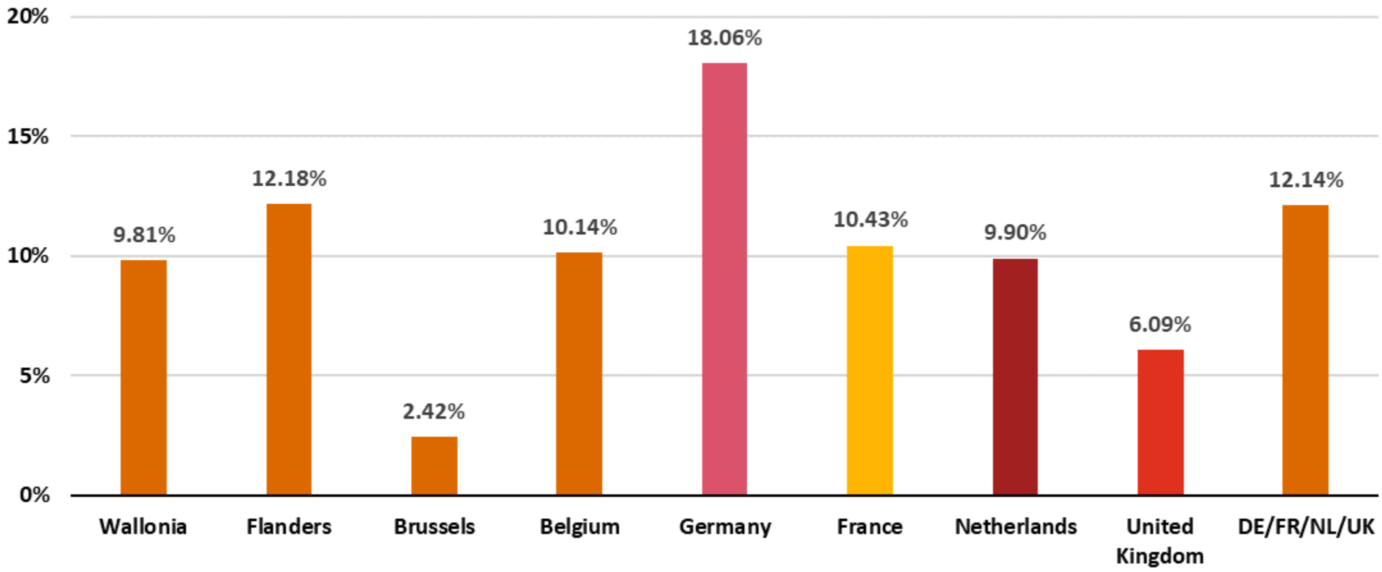
[46] The average is weighed depending on the size of the different economies.

The importance of the manufacturing industry based on employment

The second analysis of this section intends to determine the relative importance of the manufacturing industry in Belgium with regards to employment. We, therefore, compare the employment generated by the previously mentioned manufacturing industry, i.e. NACE 10 to 33 with the employment of the Belgian economy, nationally or regionally.

When examining the relative weight of industrial employment between zones, similar results are obtained as in the previous analysis of the relative importance of manufacturing industry in terms of value-added. The only difference is that, when considering manufacturing industry, Flanders is slightly above the Belgian average in terms of relative employment (Wallonia is very similar to the Belgian average added).

Figure 2: Importance of industry employment on total employment



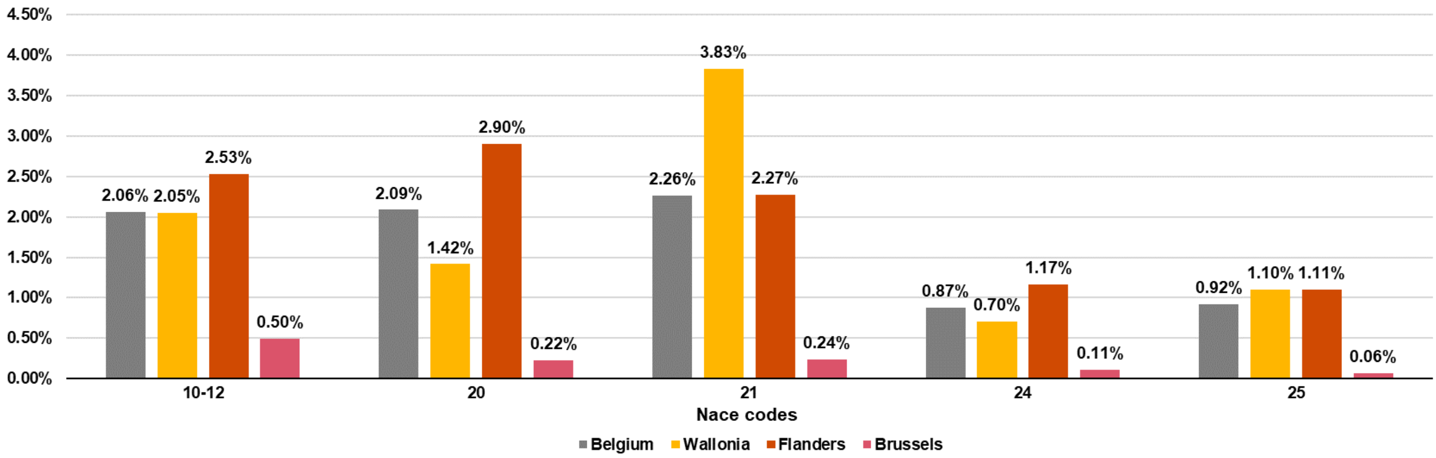
Source: Eurostat (2021 data), NBB (2021 data)

The identification of the most important manufacturing sectors based on value added

The following analysis aims to define the most important industrial sectors in terms of relative value added. Thus, for each sub-sector (within NACE codes 10-33), we compare the creation of value added to the total GDP of the economy (national or regional). The following figure presents the five main sectors of the manufacturing industry (NACE 10-33) in terms of their relative contribution to national or regional GDP. The sector NACE 19 (Manufacture of coke and refined petroleum products) is also considered due to its important weight for Brussels compared to other sectors for this region.

For the Belgian economy, these are the food and drink (NACE 10-12), the chemical (NACE 20)[47], the pharmaceutical (NACE 21), the metalworking (NACE 24) and fabric of metal products except machinery and equipment (NACE 25) sectors. It is interesting to note that the top four sectors for Belgium are also the top four in Flanders and Wallonia. Nevertheless, this analysis highlights important regional differences. Firstly, the chemical sector is important for Flanders in terms of value added (2.9% of total Flanders GDP). Second, the pharmaceutical industry is important for Wallonia and Flanders (3.83% of the total GDP of Wallonia and 2.27M in Flanders). It is also important to note that the petroleum products sector is almost non-existent in Wallonia. Thirdly, Wallonia and Flanders both focuses on the food and drinks sector (2.05% of total Walloon GDP and 2.53% of Flemish GDP).

Figure 3: Value added of most important sectors in terms of GDP



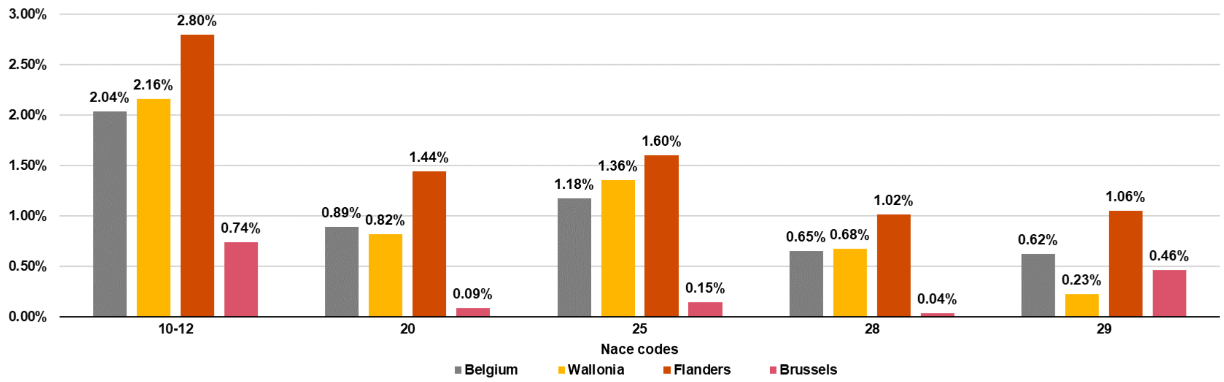
Source: Eurostat (2021 data), NBB (2021 data)

[47] One must be aware that the line between the petrol and chemical sectors might be thin. Therefore, we suggest the following definitions: sector 19 "includes the transformation of crude petroleum and coal into usable products. The dominant process is petroleum refining, which involves the separation of crude petroleum into component products through such techniques as cracking and distillation. This division includes the manufacture of gases such as ethane, propane and butane as products of petroleum refineries" (European Commission, n.d.); sector 20 "includes the transformation of organic and inorganic raw materials by a chemical process and the formation of products. It distinguishes the production of basic chemicals that constitute the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry classes" (European Commission, n.d.).

The identification of the most important manufacturing sectors based on employment

The fourth analysis under this heading aims at identifying the most important industrial sectors in terms of relative employment. Thus, for each sub-segment (within NACE codes 10-33), we compare the level of employment with total employment in the Belgian economy. The regional level analysis is subject to the same computations. As depicted by Figure 4, the food sector (NACE 10-12) is the largest in terms of relative employment, followed by the metalworking sector (NACE 25), at both the national and regional level. It is also interesting to note that the refining sector and the pharmaceutical sector are low labour-intensive, whereas the food and metal industries are high labour-intensive. The lower predominance of the chemical sector in Flanders and the pharmaceuticals sector in Wallonia compared to the previous analysis is also noticeable.

Figure 4: Share of employment in total employment for the main sectors (Nace 10 - 33)



Source: Eurostat (2021 data), NBB (2021 data)

The relative specialisation of Belgian manufacturing sectors compared to other countries

The final analysis in this section focuses on the specialisation indicator for the different sub-sectors of the manufacturing industry (NACE 10-33). The specialisation indicator results from the relative value added[48] comparison of each sector with that of the average of neighbouring economies[49]. When positive, the indicator highlights that the value added created by a specific sector in Belgium (or in one of its regions) is greater than the average value added created in neighbouring countries. Conversely, when a value for a specific sector is negative, the value added created by that sector in Belgium (or in one of its regions) is below the average for neighbouring countries. The specialisation indicator is calculated according to the following formula:

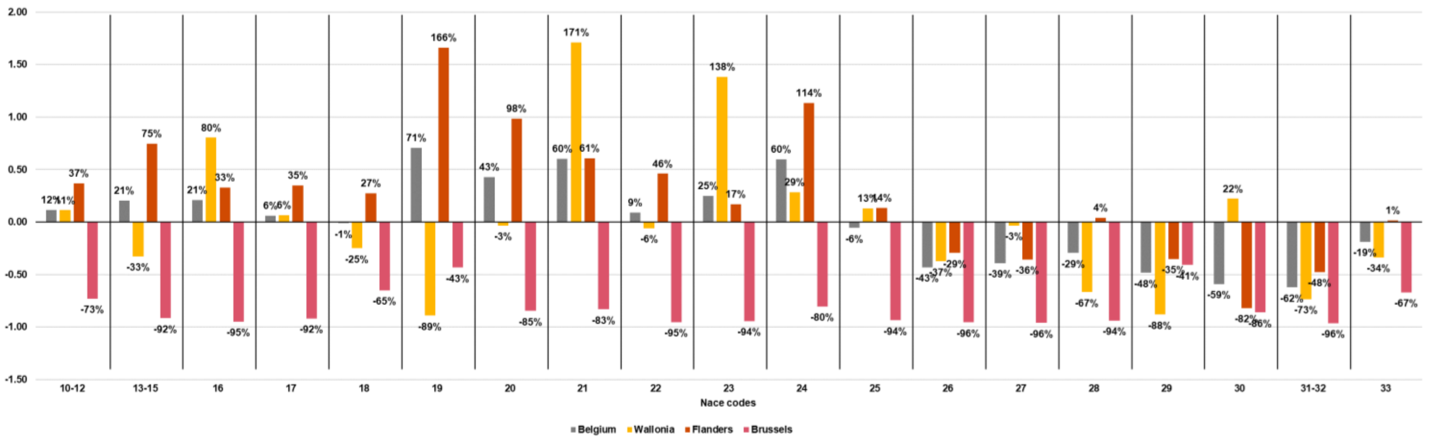
$$Specialisation\ indicator\ for\ Sector_i in\ Region_j = \left(\frac{Relative\ added - value\ of\ Sector_i\ in\ Region_j}{European\ average\ of\ the\ relative\ added - value\ of\ Sector_i} - 1\right)$$

[48] The relative value added is the absolute value added of a specific NACE sector over the absolute value added of all NACE sectors. The data is retrieved from NBB and Eurostat (2021 data).

[49] The European average throughout this section refers to the average of the neighbouring countries under scope in this report: Germany, France, the Netherlands and the United Kingdom.

Figure 5 shows that the pharmaceutical sector (NACE 21) chemicals (NACE 20) are two most essential specialisations of the Belgian economy (specialisation indicator of 2.26 and 2.09 respectively). Of the top five sectors in terms of relative value added, only one is not specialised. This is the NACE 25 which is the fabricated metals products (except machinery and equipment). It is interesting to note that the Belgian economy is more specialised in basic metals than in fabricated metal products, even though the latter is the more important sector in terms of GDP. At a regional level, Wallonia is (besides the pharmaceutical industry) highly specialised in manufacture of other non-metallic mineral products (NACE 23). At the same time, Flanders is (besides the chemical sector) highly specialised in the manufacture of basic metals (NACE 24).

Figure 5: Specialisation indicator compared to the average of neighbouring countries



Source: Eurostat (2021 data), NBB (2021 data), PwC computations

Sectors with the highest energy costs in comparison with total costs and energy intensity

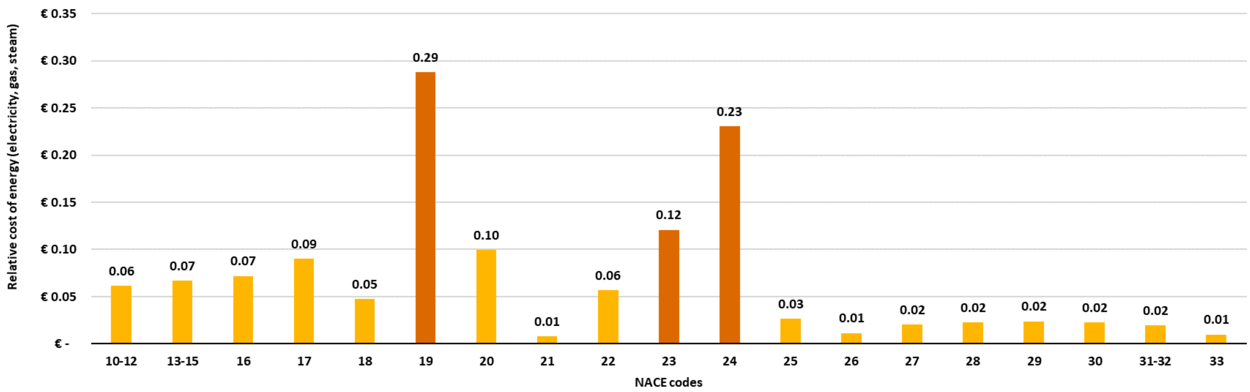
This section seeks to pinpoint the sectors of the manufacturing industry (NACE 10-33) with the highest energy costs. The first analysis is a cost approach which aims to identify the cost of energy (natural gas-electricity-steam) as part of the total value added. The second approach is product-based: we look at the consumption of natural gas and electricity and compare it with the creation of value added.

The first analysis compares the cost of energy (natural gas-electricity-steam) of each sector with the sector's value added. The analysis is based on the input-output tables of the Federal Planning Bureau with figures from 2020.[50] For this purpose, we identify the value of intermediate energy consumption (NACE 35) for each sector of the Manufacturing industry (NACE 10-33). We then divide this figure by the sector's value added.

The following figure (Figure 6) shows the sectors whose energy costs (natural gas-electricity-steam) account for more than 5% of their total value added. For several of the most critical sectors in terms of GDP, the cost of energy (natural gas-electricity-steam) is relatively low. Therefore, these sectors are not represented in the figure below. This is the case for the NACE 21, NACE 25 and until NACE 33. Three sectors stand out as sectors where the cost of energy accounts for a considerable share of total value added. These are the coke and refined petroleum products (NACE 19), other non-metallic mineral products (NACE 23) and basic metals (NACE 24) industries.

[50] Theses input-output tables are published every 5 years.

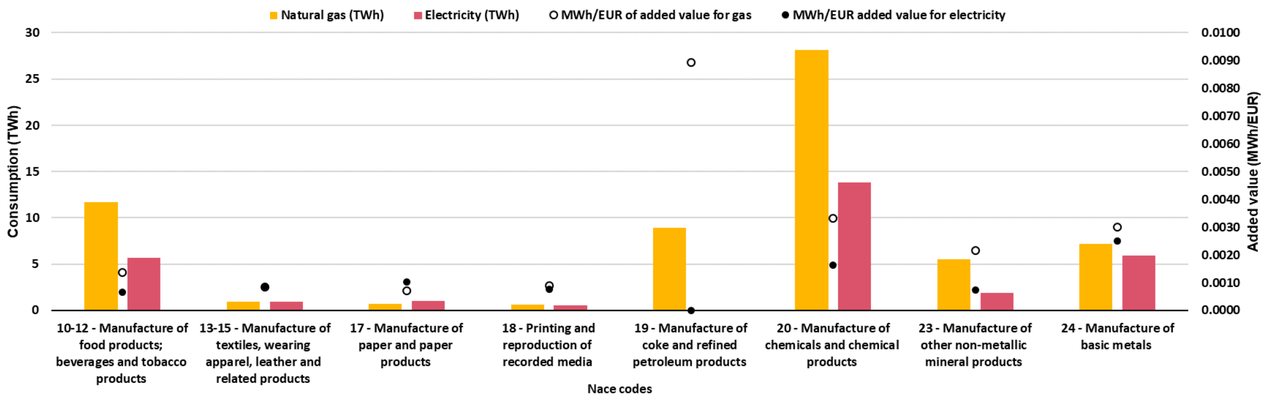
Figure 6: Cost of energy (electricity/natural gas/steam) as part of the total value added



The second analysis consists of identifying the most energy-intensive sectors of the Belgian economy, based on a product approach. Energy intensity is the result of dividing the energy consumption (in MWh) of each sector by its value added (in EUR). The data on the value added of each sector come from Eurostat, while the energy consumption accounts come from the Federal Planning Bureau.

In Figure 7, the Belgian chemicals sector (NACE 20) appears to be, by far, the highest energy consumer (natural gas and electricity) per value added followed by the food and beverages industry (NACE 10-12) and the basic metals sector (NACE 24). The highest natural gas consumer per value added are the same, except for the 3rd position which is taken by manufacture of coke and refined petroleum products industry (the NACE 19). For electricity, the same trend as the general one is observed.

Figure 7: Electricity and natural gas consumption compared with value added creation



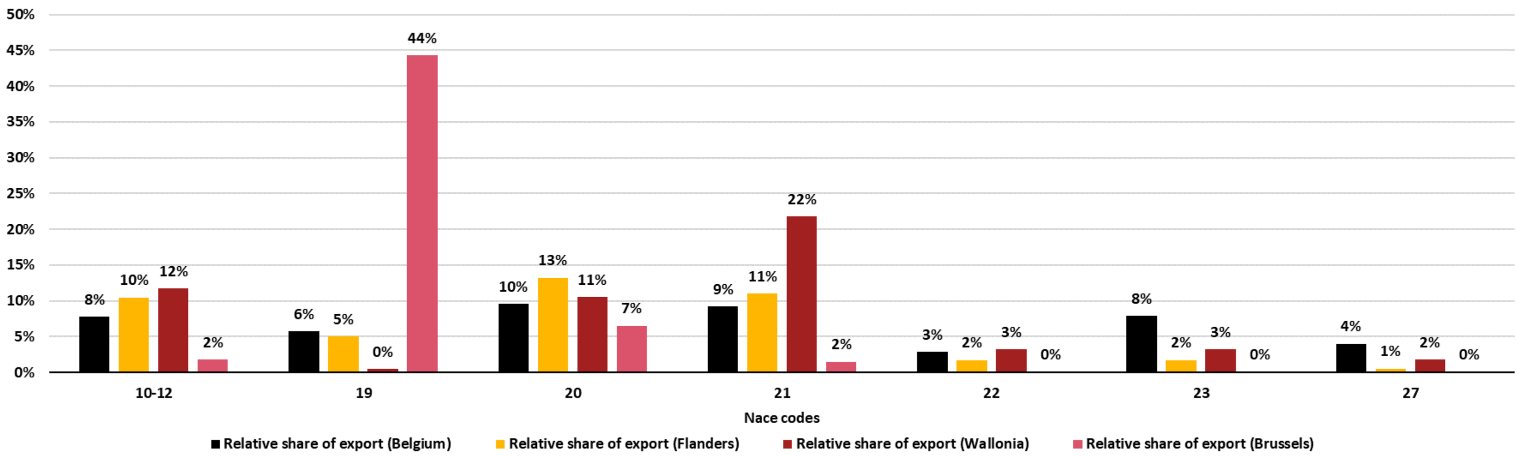
The textile manufacture (NACE 13-15), the paper manufacture (NACE 17) and the printing manufacture (NACE 18) have low energy consumption levels, and average consumption per value added. While the food and beverages industry (NACE 10-12) have relatively low average consumptions per valued added, similar to the NACE 18, NACE 13-15 and NACE 23. The NACE 19 displays the lowest average consumption per value added for electricity. Most industrial sectors have a higher natural gas intensity than electricity intensity. The only exceptions to this observation are the textiles (NACE 13-15) and paper (NACE 17), which have a higher electricity intensity than natural gas.

Sectors most exposed to international competition (including the relocation risk)

In this chapter, we look at the exposure of sectors to international competition, through analysing the relative share of exports to total exports for each industrial sector. Based on data published by the National Bank of Belgium in 2021, we determine the value of exports in each sector and its relative importance in the total exports of an economy (regional or national).

The first 7 manufacturing industry sectors with the highest relative share of exports in the total exports of the Belgian economy are, in descending order, the chemical (NACE 20), the pharmaceuticals (NACE 21), the other non-metallic products (NACE 23), the food and beverages (NACE 10-12), the coke and petrol products (NACE 19), electrical equipment (NACE 27) and rubber and plastic products (NACE 22) sectors. These sectors are, therefore, the most exposed to international competition.

Figure 8: Relative share of exports compared to total exports



The three regions fall under the analysis of these 7 most important sectors in terms of relative exports. The top 3 sectors (each with a relative share of exports >5% of the region's total exports) in Flanders and Wallonia are also among the top 7 sectors in terms of the relative share of exports in Belgium. In Flanders, the chemical sector has the largest relative share of exports (13% of the region's total exports). As far as Wallonia is concerned, the pharmaceuticals (NACE 21) sector stands out as the sector with the largest relative share of exports (22% of total regional exports) followed by the manufacture of food and drinks (NACE 10-12) with 12%. In Brussels, the coke and petrol products sector (NACE 19) is by far the sector with the largest relative share of exports (44% of the region's total exports)[51].

However, this should be considered with caution. Assuming two sectors (A and B) whose exports represent an identical fraction of their sectoral production, if sector A is more substantial than sector B, then the implemented indicator (export of sector I over total exports) logically gives a result more significant for sector A as for sector B while being exposed to a similar relocation risk.

Following, the next figure (Figure 9) seeks to identify for which sectors of the Belgian economy there is a significant risk of relocation. To do so, we compare the value of exports of each sector with the value of the sector's gross output[52]. The more an economic activity depends on exports, the more it is exposed to a risk of relocation (regardless of other physical or geographical criteria). The production data for each sector come from the input-output tables of the Federal Planning Bureau. The data used in this study are from 2020.

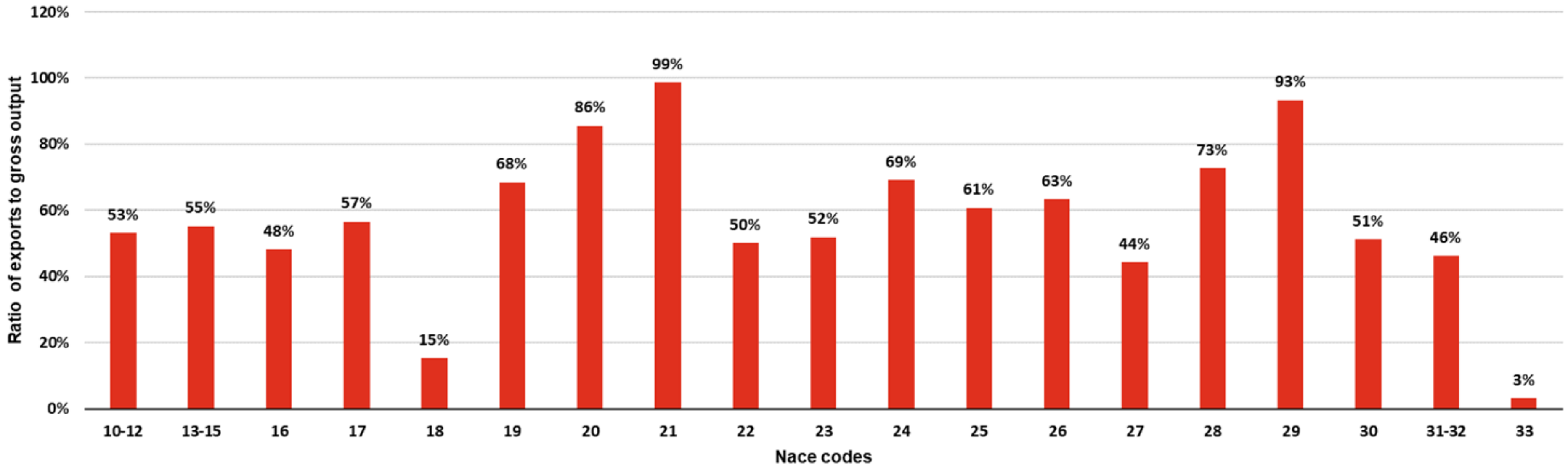
[51] This high share of oil exports certainly comes because of important imports realised in the first place. Petroleum products are the second most important goods imported via the port of Brussels (Brussels studies, 2017).

[52] According to the Federal Planning Bureau, gross output is a measure of an industry's sales or receipts, which can include sales to final users in the economy (GDP) or sales to other industries (intermediate inputs). Gross output can therefore be measured as the sum of an industry's value added and intermediate inputs.

The chart below shows that the sectors of Belgian manufacturing industry with the highest "exports to gross output" ratios are the NACE 21, the NACE 29, the NACE 20, and the NACE 28. The sectors all have a ratio of exports to gross output of more than 70 %, meaning that these sectors are more likely to be at risk to relocate. Recent trends in the world economy, and more specifically on the European level, suggest providing more strategic autonomy in certain manufacturing sectors in order to avoid the relocations to unstable or politically hostile parts of the world[53].

Among others, NACE 33, NACE 18 and NACE 27 are relatively less exposed to the risk of relocation. They each have a ratio of exports to gross output of less than 45%.

Figure 9: Exports compared with gross output



[53] (European Union External Action Service, 2020)

Sectors with the lowest potential in relation to consumption reduction (energy efficiency)

This section aims to identify the sectors of the Belgian economy, which may or may not have the possibility of significantly improving their energy efficiency in the short term. To that end, we compared the energy intensity of each sector of the Belgian manufacturing industry (based on the categorisation of industrial sectors in NACE 2008) with that of the same sectors in neighbouring countries (Germany, the Netherlands and France). The energy consumption (in MWh) per EUR of value added created for each sector measures the energy intensity. The data on the value added of each sector comes from Eurostat (2021 data), while the energy consumption accounts come from the national statistical offices on the same year[54]. Noteworthy, not enough detailed data on energy consumption in the UK were available[55]. This analysis was carried out separately for electricity and natural gas.

Energy efficiency analysis

Sector 'i' of the Belgian economy (b) can be deemed to have the potential for improvement in terms of energy efficiency, compared to sector 'i' in another country (p), if it consumes more energy to produce the same unit of output.

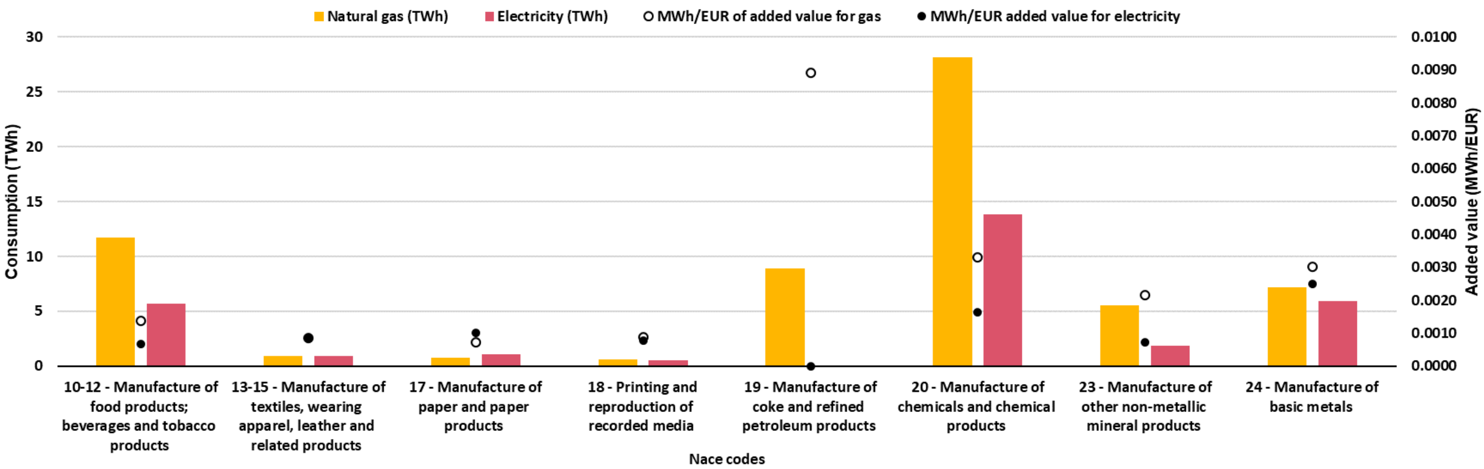
Energy intensity of sector 'i' of the Belgian economy > Energy intensity of sector 'i' of country 'p'

$$\frac{Energy\ consumption_b^i}{Added - value_b^i} > \frac{Energy\ consumption_p^i}{Added - value_p^i}$$

It is worth noting two caveats from a methodological point of view. First, macroeconomic data on a vast scale drives the analysis. It is therefore not possible to draw precise conclusions on a microeconomic basis that relate to a specific economic process. Secondly, we cannot establish a direct link between differences in energy efficiency at the macroeconomic level on the one hand and the capacity to improve energy efficiency on the other. Once again, we must take account of the fact that within sectors and countries, there are significant differences in terms of infrastructure, industrial processes and production that can explain these differences.

As a reminder Figure 10, also presented in section 2, shows that the two main energy-intensive Belgian sectors are the food and beverage industry (NACE 10-12) the base pharmaceuticals industry (NACE 20) - this is particularly the case for the energy intensity of natural gas. The Belgian wood industry is the least energy-intensive sector, as this figure shows when considering both electricity and natural gas.

Figure 10: Electricity and natural gas compared with the value-added creation



[54] Federal Plan Bureau for Belgium, CBS Statline for the Netherlands, De Statis for Germany, and Insee for France.

[55] The energy intensity split between electricity and natural gas is not available.

Figure 11 and Figure 12 show that most Belgian sectors have the potential for improvement in terms of energy efficiency (electricity and natural gas) when compared with the weighted average of neighbouring countries (Germany, the Netherlands and France). This is the case for the food and drink (NACE 10-12), the printing (NACE 18) and the printing (NACE 18) industries, both for natural gas and electricity consumption. These sectors could, therefore, potentially adapt to uncompetitive electricity and natural gas prices with increased energy efficiency.

However, some Belgian sectors do not have the possibility of significantly improving their energy efficiency. This is the case of the NACE 16 and 25 sectors, which respectively represent the wood, the paper, the chemical, and the fabricated metal manufactures. As Figure 11 shows, the energy efficiency gap is particularly large in electricity for non-metallic mineral products (NACE 23), in natural gas for chemical (NACE 20). The higher electricity intensity experienced by France in many sectors greatly influences the high average for electricity in the neighbouring countries.

Notably, data is missing for the coke and refining sector (NACE 19) and basic metals manufacturing (NACE 24).

Figure 11: Electricity consumption compared to the value-added creation

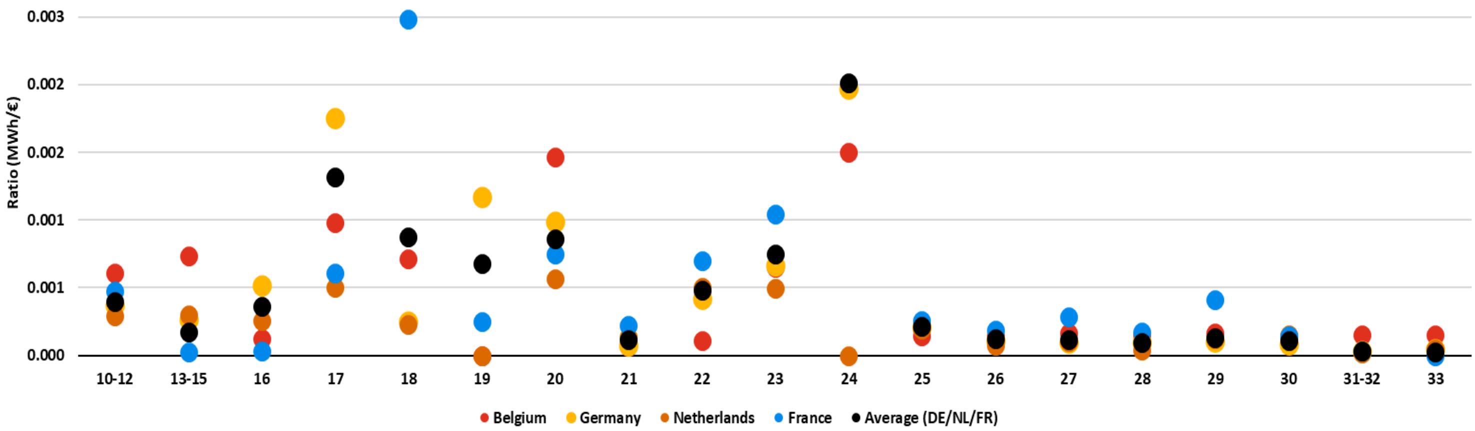
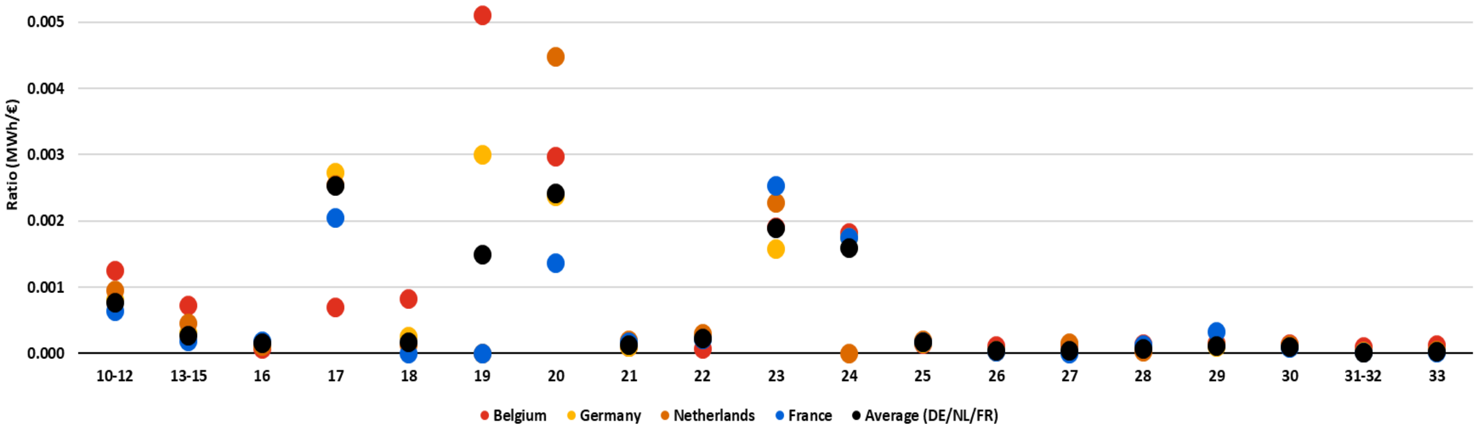


Figure 12: Natural gas consumption compared to the value-added creation



Selection of the most important sectors for our analysis

This section concludes our economic analysis by presenting a selection of the most important sectors related to electricity and natural gas prices and competitiveness.

The methodology we use to select the most important sectors is as follows:

First, we rank sectors from the highest to the lowest results with regards to the analysis: value added, employment, specialisation, cost of energy/value added, electricity consumption (absolute), natural gas consumption (absolute), electricity consumption per unit value added, natural gas consumption per unit value added, exports. In Figure 13, the smaller the number, the higher the ranking of the sector for the analysis. Next, we calculate the ranking score for each sector across all analyses, leading to a final ranking of each sector.

To illustrate this, we show a few examples. The second column illustrates the analysis we present in the section “The importance of the manufacturing industry based on value added”, which concerns the value added of each sector in relation to the total GDP of the economy. We see that the most important sector in terms of relative value added is the chemical sector (NACE 20), which receives a score of 1 in Table 7, followed by the food and beverage industry (NACE 10-12), which receives a score of 2.

For some analyses, rankings for certain sectors are not available. This is mainly the case for analyses that depend on data based on the Belgian energy consumption accounts of the Federal Planning Bureau.

For some analyses, some sectors benefit from the ranking position of another sector. This is notably the case for the pharmaceutical industry (NACE 21), which is often associated with the chemical industry (NACE 20); since for some analyses only combined data for NACE 20-21 codes are available. It also applies for the base and fabricated metal industries (NACE 24-25), which are sometimes analysed together due to the lack of available data.

Only analyses related to national data have been considered. In other words, all sectoral classifications based on regional approaches have been excluded from this matrix.

Finally, the calculation of the average score of all analyses is based on a simple average. No weight was given to any particular analysis, as all analyses were considered important in determining the most important sectors.

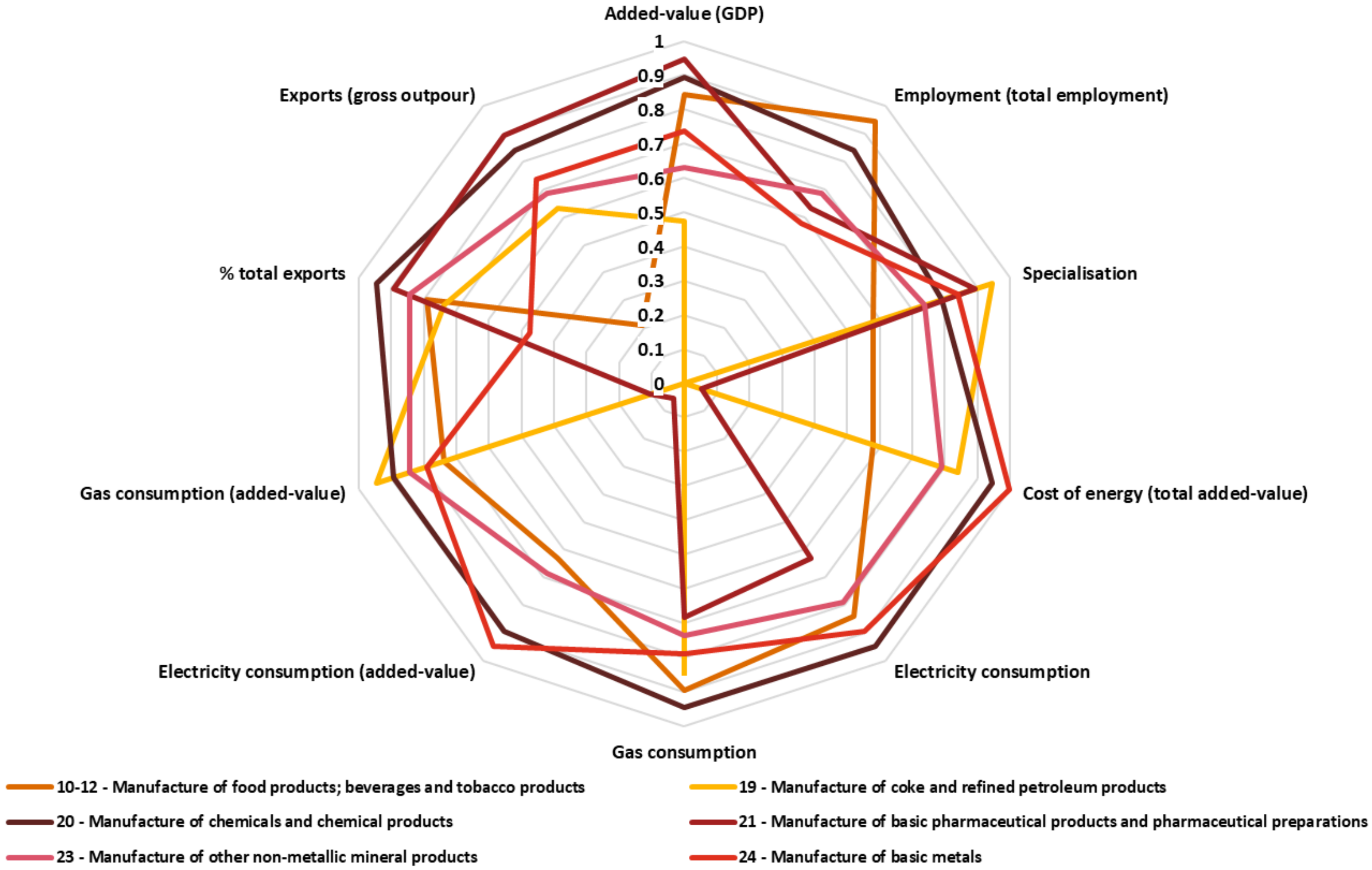
Table 7: Sectors ranking

NACE Code	Final sector ranking	Value added (GDP)	Employment (total employment)	Specialisation	Cost of energy (total value added)	Electricity consumption	Natural gas consumption	Electricity consumption (value added)	Natural gas consumption (value added)	% of total exports	Exports / gross output	Average score
NACE 20	1	2	3	4	18	1	1	2	2	1	3	3.7
NACE 10 – 12	2	3	1	8	11	3	2	7	5	4	15	5.9
NACE 23	3	7	6	5	15	4	5	6	3	3	6	6.0
NACE 24	4	5	8	3	19	2	4	1	4	10	5	6.1
NACE 21	5	1	7	2	1	7	6	18	17	2	2	6.3
NACE 28	6	6	4	14	4	9	11	10	10	16	1	8.5
NACE 13 - 15	7	14	10	7	13	6	7	4	7	9	13	9.0
NACE 25	8	4	2	12	6	8	10	13	12	15	10	9.2
NACE 19	9	10	19	1	16	19	3	19	1	5	7	10.0
NACE 29	10	9	5	17	9	11	12	9	9	12	9	10.2
NACE 17	11	17	17	10	17	5	8	3	8	11	11	10.7
NACE 22	12	8	9	9	10	12	14	17	19	7	8	11.3
NACE 18	13	18	13	11	12	10	9	5	6	18	12	11.4
NACE 33	14	11	12	13	2	13	13	11	13	17	18	12.3
NACE 26	15	13	16	16	3	15	15	14	15	8	16	13.1
NACE 27	16	16	15	15	7	16	16	8	14	6	19	13.2
NACE 31 – 32	17	12	11	19	8	14	17	12	16	13	14	13.6
NACE 30	18	19	18	18	5	18	19	15	11	19	4	14.6
NACE 16	19	15	14	6	14	17	18	16	18	14	17	14.9

With these four criteria in mind, we can conclude that the 5 most important sectors for our analysis are – ranked by importance–: the manufacture of chemicals and chemical products (NACE 20), the food and beverage industry (NACE 10-12), the manufacture of other non-metallic mineral products (NACE 23), the manufacture of basic metals (NACE 24), and the manufacture of basic pharmaceutical products and pharmaceuticals (NACE 21). To these 5 sectors, we also add the manufacture of coke and refined petroleum products (NACE 19), as it is a foreseen in the scope of this study to include it. The next figure depicts the six sectors. The larger the area covered by the sector, the higher the sector ranks in each of the analyses in this chapter.

The radar chart depicts the ranking of the top six sectors, which will later be subjected to a more in-depth analysis. The higher the value on the chart (from 0 to 1), the higher the sectors rank based on the criteria. Those scores matter as they are critical to depict the importance of the manufacturing sectors to the Belgian economy. Our analysis indicates they are possibly profoundly impacted by electricity and natural gas prices differences with the neighbouring countries.

Figure 13: Radar chart of the top six most important sectors



Electricity

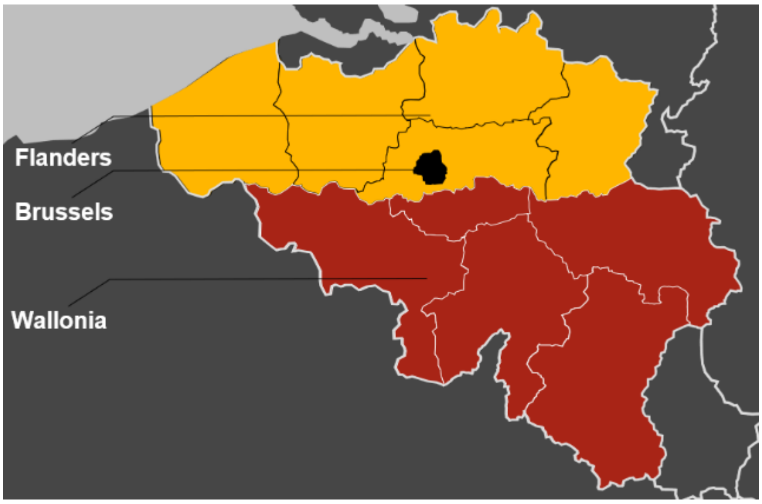
Electricity: Countries/Zone(s)

In this chapter, we aim at determining how a country or a region is organised as a territory. As such, we identify the transmission system operators (TSO) and distribution system operators (DSO) for each country and region. Furthermore, given that variations in prices may be due to local considerations, we specify whether a country is divided into zones for which results are presented individually rather than at national level.

Belgium

Belgium is divided into three regions, Flanders, Wallonia, and Brussels as mapped below.

Figure 14: Belgium national electricity market



Belgium's transmission grid is run by a single operator, Elia Transmission Belgium (ETB)[56], which therefore covers the entire territory. While most charges imposed by ETB as TSO are homogenised across the country, differences appear at regional levels. Consequently, the three regions are individually evaluated as some of their characteristics vary from one another due to the existence of differing (i) distribution charges (regarding E-RES to E1) (ii) transmission charges (regarding E-RES to E1) and (iii) taxes, levies, and certificate schemes (regarding all profiles). Besides, while it is deemed that commodity cost for industrial consumers is interchangeable across Belgium, it is not the case when it comes to residential and small professional consumers.

Brussels

The DSO for electricity in Brussels is unique: Sibelga and is therefore accounting for 100% of the market shares in the region. In 2022, Sibelga supplied 735,889 EAN connection points with electricity (latest data available).[57]

[56] Elia Transmission Belgium is part of the Elia Group.
[57] (Sibelga, 2022)

Flanders

Distribution grids are the responsibility of each Belgian region. The table below displays a review of all DSOs in Flanders that operate on the regional distribution grid and their relative market share. Flanders counts 10 inter-municipal utility companies for electricity which are all operated by a single working company, Fluvius System Operator cv.

Table 8: Electricity distributed and market share for each Flemish DSO (electricity)[58]

DSO	Number of EAN connections (January 2024)	Market share
Imewo	659,154	18.24%
Fluvius Antwerpen	599,979	16.60%
Iverlek	560,878	15.52%
Gaselwest	461,311	12.76%
Fluvius Limburg	459,133	12.70%
Intergem	328,204	9.08%
Iveka	237,996	6.59%
Fluvius West	144,550	4.00%
PBE	97,024	2.68%
Sibelgas	65,749	1.82%
Total	**3,613,978**	**100.00%**

As distribution tariffs vary from one DSO to another, we make use of a weighted average value for all 10 DSOs.

Wallonia

When it comes to Wallonia, there are 11 DSOs, mostly operated by ORES (Ores Hainaut, Ores Namur, Ores Brabant Wallon, Ores Luxembourg, Ores Verviers, Ores Est, Ores Mouscron) and RESA as they account for more than 95% of the market[59]. The distribution tariffs differ between DSOs, and a weighted average is being computed for profiles from E-RES to E1. Even if ORES and RESA represent the DSOs with the broadest coverage, all DSOs in Wallonia are considered in this study. As from 2024, all of ORES tariff sheets actually are the same and do not vary across the different areas served, hence ORES is taken as one DSO instead of 7 smaller entities. TRANS MT[60] is the highest voltage level in Wallonia. As in Flanders, the number of EAN connections for each DSO represents the backbone for the market shares computations. Results obtained this year for Wallonia are based on the latest quarterly data shared by the CWaPE. The amount of EAN connections reaches 1,646,273 at the beginning of 2024[61]. The numbers shown in the table below represent the latest statistics computed.

Table 9: Market share for each DSO in Wallonia (electricity)

DSO	Market share[62]
ORES	73.18%
RESA	23.79%
AIESH	1.09%
AIEG	0.98%
Réseau d'Energies de Wavre	0.96%
Total	**100.00%**

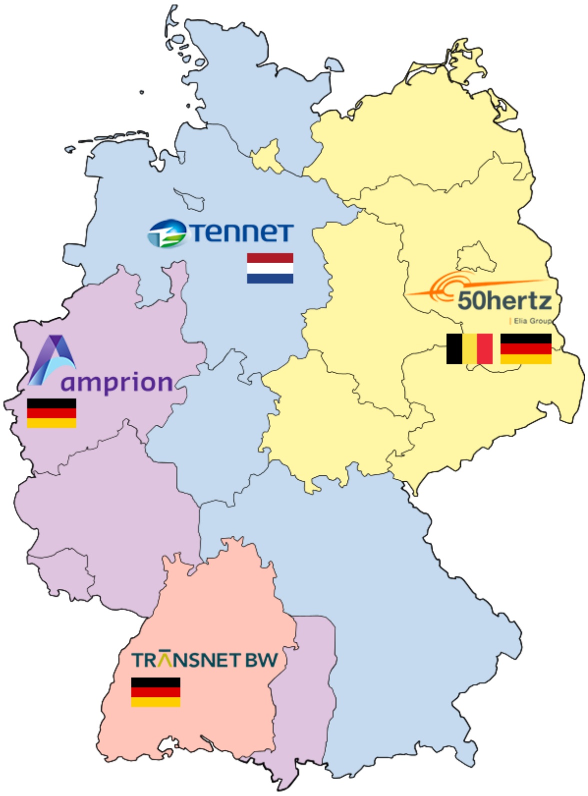
58 Data provided by VREG, situation 1/01/2024.
59 Situation du marché de l'électricité pour le 3ème trimestre 2023. (CWaPE, 2024)
60 See Glossary, p.12
61 Data received from the CREG on the 29th of April 2024
62 Data received from the CWaPE on 18th of January 2024

Germany

Regarding Germany, consumers can participate in a single electricity market. We, therefore, assumed the commodity price is the same in the whole territory for consumers E-BSME to E4 who are highly likely to negotiate their electricity contracts with suppliers. With regards to profiles E-RES and E-SSME, the standard contract ("Grundversorgung") and its supplier depends on the region. Consequently, the commodity cost is determined per DSO region because the standard contract supplier is different.

In Germany, four different TSOs are currently active; the following figure shows their geographical spread.

Figure 15: Map of the German transmission system operators



West Region

Nordrhein-Westfalen, Rheinland-Pfalz and Saarland where Amprion is running the transmission grid.

South-West Region

Baden-Württemberg where Transnet BW is the TSO.

Central Region

Niedersachsen, Hessen, Bayern, Schleswig-Holstein where Tennet operates the transmission grid.

East Region

Former East-Germany and Hamburg where 50Hertz is the local operator.

Regarding the geographical and economic eminence of these four areas (e.g. the smallest region has a similar population size than Belgium as a country), these zones are logically considered the same way we considered the three Belgian areas. We thus separately evaluate them.

The profiles E-RES to E2, similarly to other countries, also pay a distribution cost, which is further discussed in the section "Component 2 – network costs" for the residential profiles and "Component 2 – network costs" for the industrial profiles in Chapter 4 and 5 respectively. These four transmission zones appear to be the most accurate analysis regarding Germany as the country counts around 866 distribution system operators[63]. Considering the high number of DSOs in Germany, this increases complexity in clearing out the picture on German prices. Therefore, for the profiles E-RES to E2 under review (i.e. connected to the distribution grid), we only take the prices from two predominant DSOs (one rural; one urban) for each of the transmission zones. An average distribution price is then derived from the two DSOs' existing prices and is used as a unique price for the transmission zone in question. The table below, summarises studied DSOs and their respective market shares (2019, latest data available).

[63] (Statista, 2023)

Table 10: Market shares of German electricity DSOs[64]

TSO	DSO	Market share
Tennet	Bayernwerk	70.43%
	SWM	29.57%
	Total	**100.00%**
50 Hertz	E-Dis	37.24%
	Stromnetz Berlin	62.76%
	Total	**100.00%**
Amprion	Westnetz	79.36%
	RNG-Netz 2 – Köln	20.64%
	Total	**100.00%**
Transnet BW	Netze BW	84.57%
	Stuttgart Netze	15.43%
	Total	**100.00%**

Contrary to other countries/regions the market shares of the DSOs are not used as weights because they are only a selection of the hundreds of German DSOs. The distribution tariffs of every DSO thus, has the same weight. As regards taxes, levies and certificate schemes, neither do we observe regional differences for electricity consumers, nor do we for local taxes[65].

France

Concerning the electricity market, France is considered here as a single area. Concretely, the same commodity, distribution, transmission and taxes and levies prices apply to the whole territory. With regards to transmission, the RTE ("Réseau de Transport d'Electricité") is the Transmission System Operator (TSO) who oversees the transmission network. In contrast, Enedis constitutes the largest French DSO with an approximate market share of 95%[66] (mainland), while the remaining 5% are shared across local players. We thus consider this sole DSO for all consumer profiles connected to the distribution grid (E-RES to E1).

[64] According to the latest available data from 2019, not publicly available since then.

[65] The Konzessionsabgabe is a local tax that applies to all electricity consumers connected to the distribution grid, but it is fixed on a national level and capped at one single rate for industrial consumers (*Konzessionsabgabenverordnung, § 1-2*). As that tax varies depending on the contract type or the city size, we consider the average paid concession fee.

[66] (Médiateur national de l'énergie, n.d.)

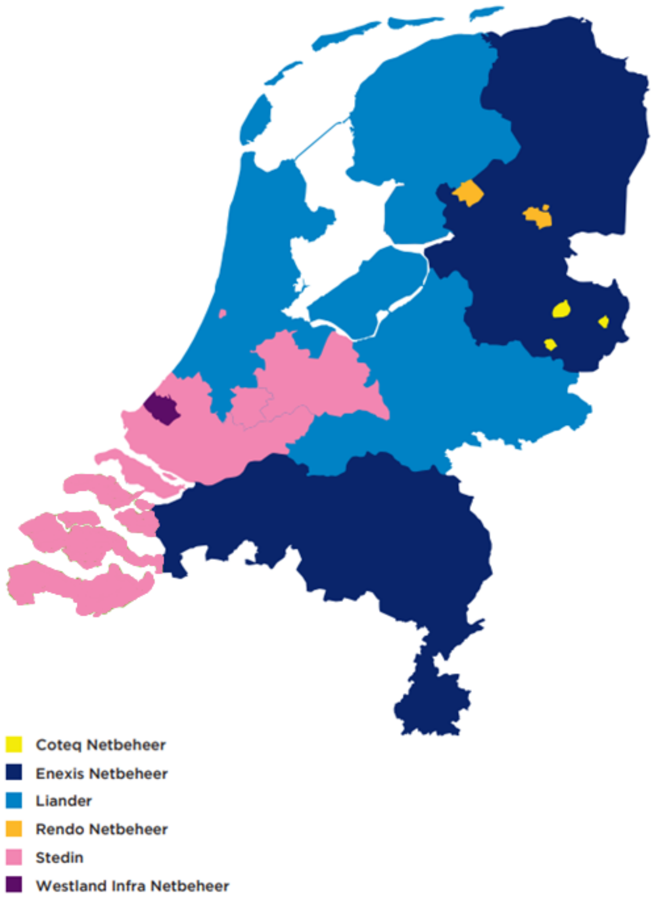
The Netherlands

Like France, the Netherlands is examined as a single zone. No regional differences appear when it comes to commodity costs, taxes, levies, and certificate schemes: it is a single electricity market, and energy is imposed on a national level.

The Netherlands counts only one TSO – TenneT. For this reason, the same pricing methodology is applied throughout the national transmission grid. The network cost for the two largest consumer profiles – E3 and E4 – encompasses the transmission tariffs appointed by TenneT. The Dutch profiles E-RES to E2 are connected to the national distribution grid that provides the entire network below the 110 kV voltage standard. Consequently, the network cost for profiles E-RES to E2 profiles dwell in the distribution tariff imposed by the DSOs.

The Netherlands' distribution network comprises six DSOs with different sizes and prominence, as the map below exhibits. Each DSO applies different and separate tariffs. In this case, distribution costs and transmission costs are aggregated in a cumulated fee.

Figure 16: Map of the Netherlands electricity distribution system operators



These six DSOs differ by the size, number, and type of clients. We thus expose a weighted average of distribution tariffs based on a proxy to evaluate their respective market shares. This proxy consists of the revenues for volumes of electricity sold as indicated by the Authority for Consumers and Markets (ACM), the Dutch Authority for consumers and markets and ensures fair competition between businesses and protects consumer interests [67]. This proxy is then used to approximate the market shares related to each DSO. The table below demonstrates an overview of the DSOs and their market share.

[67] (ACM, 2023)

Table 11: Market shares for each Dutch DSO (electricity)

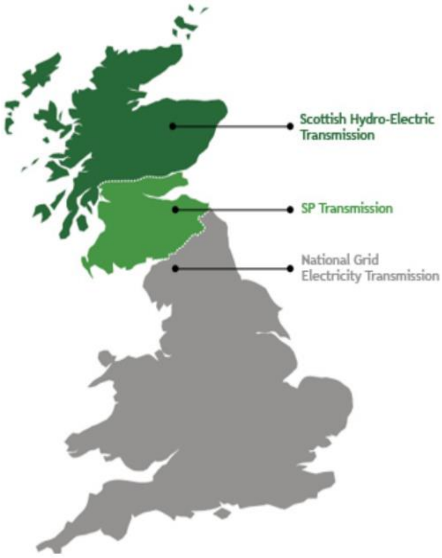
DSO	Market share
Liander	37.44%
Enexis	34.09%
Stedin	25.90%
Westland	1.54%
Coteq	0.64%
Rendo	0.39%
Total	**100.00%**

When combining Liander, Enexis, and Stedin, these companies represent more than 95% of the market shares. Their prices subsequently have a higher impact on the weighted average distribution tariffs.

The UK

Similarly, to France and the Netherlands, the UK is analysed as a single area. Again, commodity costs, taxes, levies, and certificate schemes observe no regional variation as there is one single electricity market and taxes on a national level. The UK has three different transmission system operators: National Grid (for England and Wales), Scottish Hydro Electric Transmission (SHET), and Scottish Power Transmission (SPT).

Figure 17: The UK electricity transmission networks



In addition to these TSOs, six distribution system operators are currently functioning[68]. The TSOs and DSOs rate different tariffs in the fourteen zones that count the UK.

Figure 18: The UK electricity distribution networks

[68] In addition to these large DSOs, the UK also has some smaller Independent Network Operators (IDNO's). These are not considered in this study.

Table 12: TSOs and DSOs in the UK zones

TSO	DSO	Zones
3	**6**	**14**
Scottish Hydro Electricity Transmission (SHE)	Scottish and Southern Energy Power Distribution	Northern Ireland
		Scotland
Scottish Power Transmission (SPT)	SP Energy Networks	Southern Scotland
		North Wales, Cheshire, and Merseyside
National Grid Electricity Transmission (NGET)	Electricity Northwest	Northwest
	Northern PowerGrid	Northeast
		Yorkshire
	UK Power Networks	Eastern
		London
		South East
	Western Power Distribution	East Midlands
		West Midlands
		South Wales
		South West

Concerning network costs – transmission and distribution tariffs for the E-RES to E2 profiles–, we present, once again, a weighted average amount for the fourteen zones.

Table 13: Market shares of the UK electricity DSOs

DSO	Number of connections[69]	Market share
Eastern Power Networks	3,664,189	12.18%
Southern Electric Power Distribution	3,110,203	10.34%
Western Power Distribution East Midlands	2,674,911	8.89%
Western Power Distribution West Midlands	2,505,140	8.32%
Electricity North West Limited	2,405,770	7.99%
London Power Networks	2,375,701	7.89%
Northern Powergrid Yorkshire	2,318,718	7.71%
South Eastern Power Networks	2,319,494	7.71%
SP Distribution	2,010,896	6.68%
Northern Powergrid Northeast	1,614,053	5.36%
Western Power Distribution South West	1,636,981	5.44%
SP Manweb	1,523,255	5.06%
Western Power Distribution South Wales	1,147,345	3.81%
Scottish Hydro Electric Power Distribution	785,183	2.61%
Total	**30,091,839**	**100.00%**

[69] Retrieved from each UK DSO annual report, after which the number of connections has not been consistently expressed in the reports (2021)

Natural gas

Natural gas: Countries/Zone(s)

In this chapter, we aim at determining how a country or a region is organised as a territory. As such, we identify the transmission system operators (TSO) and distribution system operators (DSO) for each country and region. Besides, given that variations in prices may be due to local considerations, we specify whether a country is divided into zones for which results are presented individually rather than at national level.

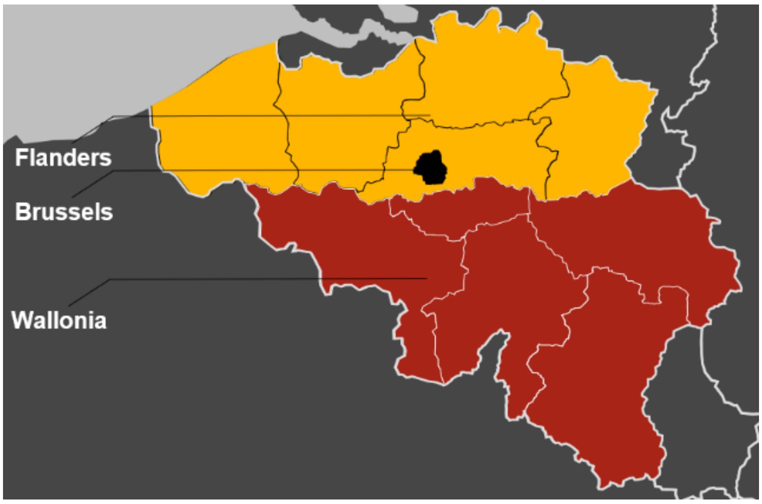
Belgium

No regional variations are observed in Belgium regarding transport and industrial commodity costs. There is a single Transmission System Operator, Fluxys Belgium, resulting in an equivalent transport price across the country.

The transport system is currently directly providing over 144 industrial clients (representing 183 sites)[70], and we consider G2 as part of these direct connections[71].

In a similar fashion as for electricity, a distinct analysis is conducted for the three Belgian regions that are mapped out in Figure 19.

Figure 19: Belgium national natural gas market



Brussels

As for Brussels, there is a single DSO – Sibelga – in this region. Inevitably, it represents 100% of the region's market shares. In 2022, Sibelga supplied 515,715 connection points with natural gas.[72]

[70] Data provided by CREG and Fluxys Belgium, situation on the 1st of January 2024.

[71] None of these clients directly connected to the transport grid is located in Brussels.

[72] Data provided by Sibelga in 2022

Flanders

As exhibited in the consumer profiles, we consider that profiles G-RES (considered as T2) to G1 (considered as T6) are connected to the distribution grid. Flanders counts 10 DSOs for natural gas distribution, 9 operated by their working company Fluvius System Operator cv and one by Enexis[73]. Again, in this case, the distribution tariffs from the DSOs are assigned a weight based on the number of EAN connections for natural gas in the region.

Table 14: Market shares of Flemish natural gas DSOs[74]

DSO	Number of EAN connections (January 2024)	Market share
Imewo	444,648	18.83%
Fluvius Antwerpen	444,192	18.82%
Iverlek	375,895	15.93%
Gaselwest	317,264	13.44%
Fluvius Limburg	287,915	12.20%
Intergem	218,780	9.27%
Iveka	163,048	6.91%
Fluvius West	60,206	2.55%
Sibelgas	48,438	2.05%
Total	**2,360,386**	**100.00%**

Wallonia

Wallonia counts 6 DSOs which are operated by ORES and RESA. However, as of 01/01/2024, the distribution tariffs of all 5 DSOs operated by ORES are harmonised and referenced as ORES ASSETS[75]. The distribution tariffs are thus presented through an average value based on the number of EAN connections. The amount of EAN connections reaches 685,026 in the beginning of 2024[76].

Table 15: Market shares of DSOs in Wallonia for natural gas[77]

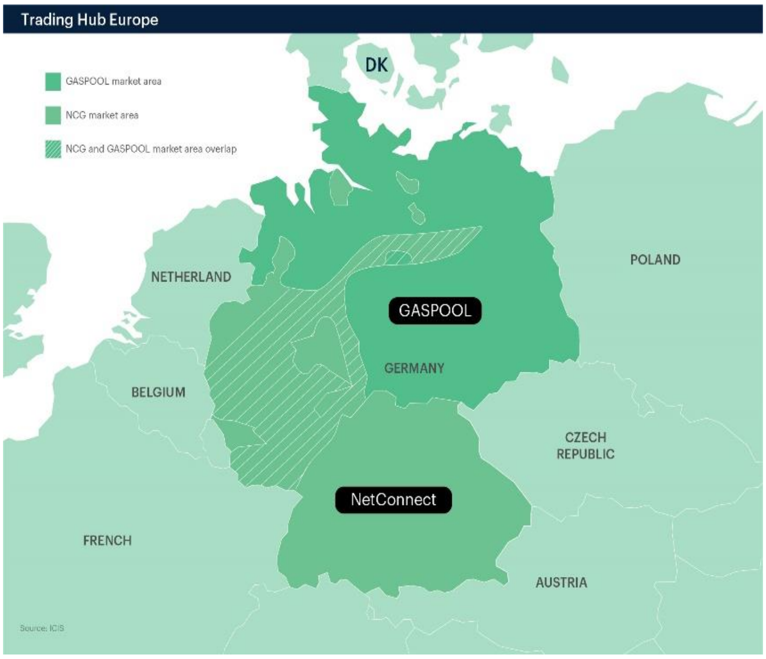
DSO	Market share
ORES ASSETS	67.71%
RESA	32.29%
Total	**100.00%**

[73] Enexis is a Dutch distribution system operator, active in the Belgian enclave of Baarle-Hertog (7,41 km²), but is not considered in the study, since its market share is not substantial.
[74] Data provided by VREG, situation on the 1st of January 2024.
[75] (CWAPE, 2024)
[76] Data received from the CREG on the 29th of April 2024.
[77] Data received from the CWaPE on the 18th of January 2024

Germany

Regarding commodity costs, we consider one market area in Germany, the Trading Hub Europe (THE), which is the result of the merger[78] between *Gaspool* and *Netconnect Germany (NCG)* since 1st October 2021*.* This area is composed of eleven different transmission system operators.

Figure 20: German national natural gas market



The eleven TSOs are the following: Gascade Gastranport, GTG Nord, ONTRAS Gastransport, Nowega, Gasunie Deutschland Transport Services, Bayernets, Fluxys TENP, GRTgaz Deutschland, Terranets BW, Thyssengas and Open Grid Europe.

As of the merger of the two market areas (*Gaspool* and *NetConnect*), we consider a single result for the German natural gas analysis.

Regarding commodity costs, we demonstrate a single value for profiles G-PRO to G2 and compute a product portfolio for residential consumers G-RES that are determined by the DSOs selection we address further in this section.

As for the network costs, transport prices are computed as the average exit tariffs of the eleven TSOs providing directly connected industrial consumers as a bedrock to evaluate the G2 profile tariffs. Other profiles are considered to pay for the distribution, which already integrates transport costs in Germany. The basic contract or "*Grundversorgung*" for natural gas consumers depends on the regional DSO.

With over 700 DSOs[79] within the country, we once again use an average of the distribution tariffs of a large rural and a large urban DSO from each of the four previously defined market areas.

[78] ICIS. (2021, September 27). Topic page: Germany's gas market merger. ICIS. Retrieved from https://www.icis.com/explore/resources/news/2021/09/27/10606635/topic-page-germany-s-gas-market-merger/

[79] (Statista, 2023)

Table 16: German natural gas DSOs[80] (selection)

DSO
Bayernwerk
SWM
E-Dis
NBB
Westnetz
RNG-Netz 2 – Köln
Netze BW
Karlsruhe Netz

At the opposite of the methodology used in other countries/regions, the market shares of the DSOs are not used as weight as they only are a selection of the hundreds of German DSOs. The distribution tariffs of every DSO thus have the same weight. Considering the natural gas price applied to the selected profiles, the sole component that does not produce regional variation is the taxes and levies components.

[80] These DSOs that were selected are slightly different from the DSOs that were selected for electricity. This is because geographical coverage of the distribution of electricity and natural gas are not identical within a certain area. So has Stromnetz Berlin been replaced by Netzgesellschaft Berlin-Brandenburg and Stuttgart Netze by Karlsruhe Netz.

France

France displays a single market area for natural gas, Trading Region France (TRF), since the merger of former market areas PEG Nord and TRS in 2018. Consequently, the French results are presented as a unique price zone. The country has two distinct transport operators, as depicted in Figure 21, which are:

i. GRTgaz is operating in the North, the South-East and the central region.

ii. TEREGA[81] is focusing on the South-West region.

Network costs displayed by both TSOs are weighted based on their annual offtakes to come up with a single price. As for distribution costs, given that GRDF (Gaz Réseau Distribution France) supplies 95%[82] of the country's natural gas, it is considered as the unique DSO whose prices only are used in this study.

As it is the case in some other studied countries, French natural gas transport and distribution costs are integrated – except for consumers directly connected to the grid.

Figure 21: French national gas market

Residential and small professional natural gas contracts appear to be on six different price zones in France, established according to the distance between the nearest natural gas storage centre and the place of consumption, to pass on the difference in transport costs between cities[83].

The lack of information regarding the number of EAN connections per zone led us to select one area – the largest in terms of the number of cities covered (i.e. price zone 1)[84].

Concerning commodity prices, North and South regions are weighted based on their annual volume consumption. As no regional differences in taxes were noticed, France is considered as a single zone.

[81] TIGF became TEREGA in April 2018.

[82] (IEA, 2022)

[83] (Selectra, 2023)

[84] Ibid

The Netherlands

In the Netherlands, we consider the commodity component to be the same within the country since the cease of gas extraction in Groningen the first of October 2023[85]. Previously, suppliers could apply a regional surcharge depending on the distance of the region from Groningen for commodity costs, with ten different areas.

There is a single natural gas market (TTF) in the Netherlands, monitoring and managing all-natural gas entering the Dutch transport system. The TTF was established in 2003 to concentrate natural gas trading in a sole marketplace and offers a single Transmission System Operator – Gasunie Transport Services. The natural gas transport grid directly provides more than 300 industrial clients, assuming that profiles G1 and G2 are among these clients[86]. Hence, we display the Netherlands as a harmonised zone.

Dutch natural gas distribution is ensured by six DSOs whose tariffs are weighted based on their respective revenues stemming from transport services for 2023. These revenues are captured by the *Autoriteit Consument & Markt* (ACM), which is the Dutch Authority for consumers and markets and ensures fair competition between businesses and protects consumer interests.[87]

Figure 22: Map of the Netherlands natural gas distribution system operators

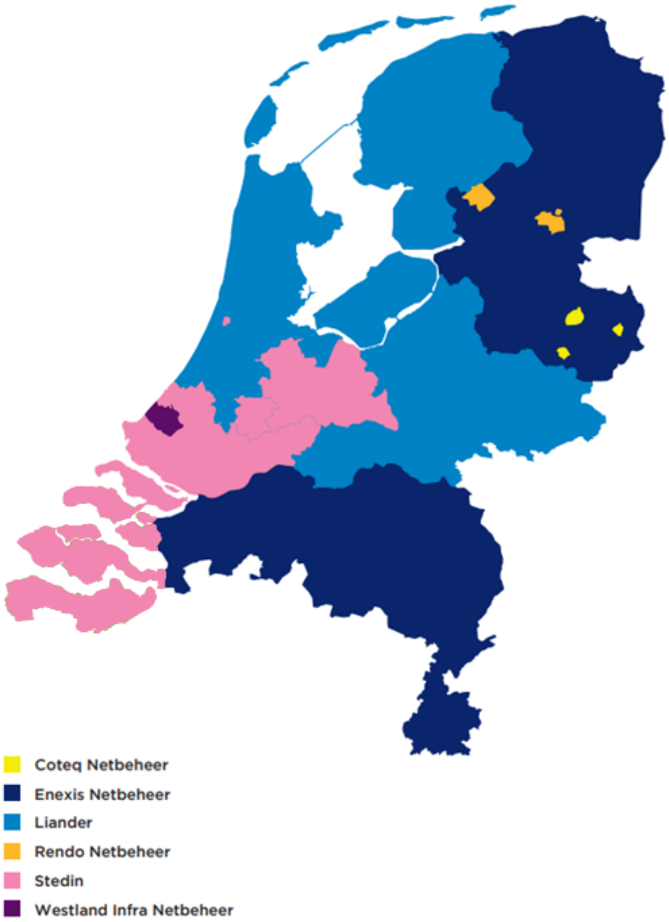


Table 17: Market shares of Dutch natural gas DSOs

DSOs	Market share[88]
Liander	34.36%
Enexis	32.11%
Stedin	28.32%
Coteq	1.97%
Rendo	1.45%
Westland Infra	1.79%
Total	**100.00%**

[85] (Rijksoverheid, n.d.)

[86] Gasunie Transport Services is obliged by the Gas Act (Article 10, paragraph 6b) to provide a direct connection point when the applicant has a flow rate greater than 40 m³(n) per hour (equal to 350.400 m³/year). Considering a 9,77 kWh/m³ as disclosed by Gasunie Transport Services, we estimate that profile G1 has a flow rate of 2.047m³/h (= (2.500.000.000 kWh/9,77)/5000) and G2 of 31.986 m³/h (= (100.000.000 kWh/9,77)/8000). While our profile G0 could have been directly connected to the TSO based on minimum flow rate level (43 m³/h), we decided to assume this consumer remains connected to the distribution grid's highest-pressure category to further represent prices variations across consumer profiles.

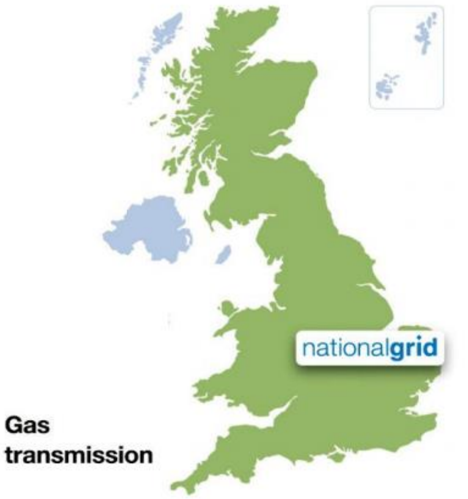
[87] (ACM, 2023)

[88] (ACM, 2023)

The UK

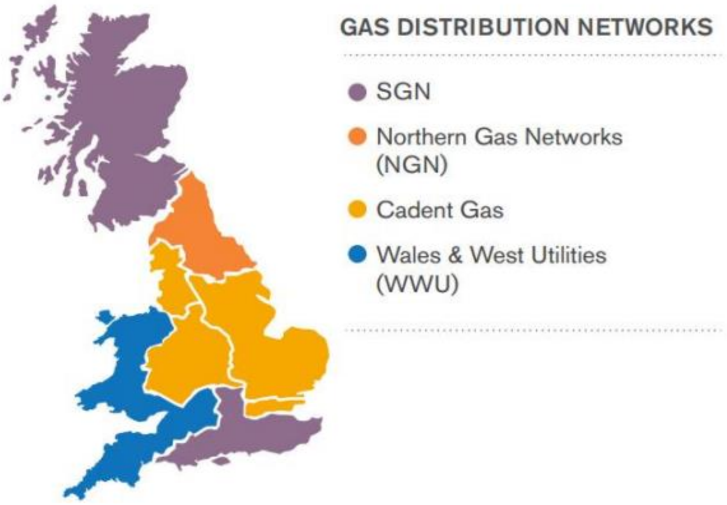
As in some other studied countries, a single zone is determined for the UK regarding natural gas, leaving out Northern Ireland given that there is a single natural gas market (NBP: National Balancing Point) in the UK. Besides, there is a unique natural gas transmission operator, known as *National Grid Gas plc*.

Figure 23: The UK national natural gas market



In addition to this unique TSO, one can find nine regional natural gas distribution networks, owned and managed by the four different operators.

Figure 24: The UK natural gas distribution networks



Additionally, Independent Gas Transporters owns and manages several smaller networks, which are not considered in this analysis.

Table 18 exhibits the market shares of the four British operators serving the nine major distribution networks zones. The specific market shares for these nine geographical zones could not be retrieved. Nevertheless, prices displayed by Cadent Gas and Wales & West Utilities are identical for all their zones, which is why we only use the market share at their global level. Due to the lack of accurate information for each natural gas distribution operator or their connection points, we used a rough estimate of the revenues stemming from their gas transport services in 2023 to calculate the respective market shares. The revenue numbers can be found in their respective annual reports. For SGN different tariffs apply for Scotland and Southern England, therefore only for this operator the market share is split up between the two different zones. Identically to the calculation method for the four British operators, the market share of Scotland Gas Network and Southern England Gas Network is calculated based on their respective revenues. Consequently, 4 DSOs with 5 different price zones and within 9 geographical zones are detailed in the table below.

British prices used in this study are weighted averages of prices found by each DSO.

Table 18: TSOs, DSOs and market shares in the UK zones for natural gas

TSO	DSO	Zones	Market share
1	**4**	**9**	**-**
National Grid Gas	Wales & West Utilities	Wales	11.43%
		Western England	
	Northern Gas Networks	Northeast England	11.12%
	Scotland Gas Networks	Scotland	7.47%
		South England	19.93%
	Cadent Gas	North London	50.05%
		East England	
		Northwest England	
		West Midlands	
Total			**100%**

Summary table on the number of zones per country

Table 19: Summary table on the number of zones per country

Country	Number of zones	
	Electricity	Natural Gas
Belgium	3	3
Germany	4	1
France	1	1
The Netherlands	1	1
The UK	1	1
Total	**10**	**7**

4. Residential and small professional consumers

4. Residential and small professional consumers

This chapter aims at providing an extensive introduction to the prices, price components and the assumptions taken for each country and region. It mainly focuses on residential (E-RES and G-RES) and small professional (E-SSME, E-BSME and G-PRO) consumers of electricity and natural gas. Before delving into the description of regional and national prices, we present the standard methodology used to assess the cost of the commodity.

Methodology

The following section gives more details regarding the implemented method for data collection to construct the European comparison of electricity and natural gas prices for residential and small professional consumers. This methodology only applies for profiles E-RES, E-SSME and G-RES as for other profiles it is deemed that:

- Larger consumers are more inclined to negotiate their contracts with suppliers directly, thereby being offered more tailor-made contracts.
- Comparison websites used for this methodology do not all accept values associated with our consumer profiles, which limits the consistency of the analysis across countries.

Defining the number of products

The market concentration of the retail market (HHI-index) determines the number of selected products for each of the studied areas. According to the HHI-index, the more concentrated a market is (large combined market share of few suppliers), the fewer products are considered. The less concentrated a market is (several suppliers with rather low market shares), the more products are deemed to reflect the market dynamics.

The following table illustrates the number of products selected based on HHI-index:

Table 20: Number of products according to the HHI-index

HHI-index	Description	Number of products
HHI ≤ 1,000	Little concentrated market	5
1,000 < HHI ≥ 2,000	Concentrated market	4
HHI > 2,000	Highly concentrated market	3

The HHI-index for each country and each utility was either fetched from the 2023 Retail Markets Monitoring Report from the CEER (Council of European Energy Regulators), and this needs to be updated with each report release[89]. The countries for which the HHI index is not available in the report, is manually calculated with the following HHI index formula below.

$$HHI = \sum_{i=1}^{n} Market\ Share_{Supplier\ i}^{2}$$

While this methodology provides a balanced perspective of the market prices, one must be aware that it does not entirely depict the market situation given that this exercise limits the number of chosen products. Nonetheless, the consistent methodology used does meet the objective of this study, as it compares the different countries energy prices retrieved according to the same rules.

[89] (CEER, 2023)

Selection of products portfolio

Again, based on the country-specific HHI-index for each utility, we determine several products to be selected. Before elaborating the following methodology, it is essential to define the term: standard product. The latter is considered, in this study, as either the product to which one is subscribed by default (i.e. when no specific action was taken to opt for a particular supplier product) and that secures the continuity of energy supply or the most common product from the market incumbent.[90] As introduced, several products – in addition to the standard product - are picked to constitute the portfolio.

The products were not chosen arbitrarily, but according to a specific following methodology:

- The **first product** to find is the standard product[91] of the market incumbent (historical most prominent supplier);
- The **second product** to consider is the cheapest product on the market, without considering any lump-sum reduction. A price comparison tool[92] is used to fetch the most affordable product in each region[93]. When such tool presents a restrictive picture of the market, the 10 most important suppliers' (in market share) offers are analysed and compared against each other.
- The **third product** to consider is the cheapest product of the market incumbent through the price comparison tool of each respective region. In some instances, these comparison websites may be not up to date and are presenting prices of contracts from a previous month[94];
- The **fourth/fifth product** to consider is/are one/two of the cheapest products of the second-largest supplier that has/have not been considered yet. If no products meeting these criteria are available for this supplier on the market, the same methodology is applied for the third-largest supplier, etc.

[90] In Germany, the term *Grundversorgung* is used, and this product can be defined similarly as in Belgium. In France, the "Tarif bleu", which is regulated by the French government, was used. In the Netherlands, the *Modelcontracten*, which must be approved by the ACM and is thus also regulated, is the Dutch standard product. We took the "Model contract" from Essent, which is the most significant player on the Dutch market (as part of Innogy). In the UK, the standard product of the market incumbent, British Gas, was selected.

[91] The term "standard product" is not used in all the countries under examination so what we took as the standard product of all countries under the scope of this study might have some differences. Since this study starts from the Belgian perspective the Belgian terminology 'standard product' was taken. So as to know, from the Brugel and CWaPe price comparators, the standard product is defined as the "*product applicable to customers who have not signed a supply contract (case of substitute supply or default supply)*".

[92] Price comparison tools employed are specific to each country, except for Belgium where each regional comparison tool is used. The ones used are reported in the respective sections assessing the cost of commodity.

[93] A limitation of this method exists as it is possible that in some cases, suppliers take the new network charges into consideration in their products, which has an impact on the ranking of price comparison tools.

[94] It is possible that in some instances (i.e. in the beginning of the month), price comparison tools do not display the most recent information available at that moment in time. In those cases, prices of contracts from previous months could be considered.

Weight of each product within the product portfolio

The selected products are weighted as follows:

- The switching rate[95] or SR (in %) for each utility in its respective country is the weight associated with the cheapest product. Depending on the country, a distinction is made between the switching rates for household and non-household consumers but without further specifying rates for different profiles of non-household consumers.
- The remaining share (100% - SR) is then used to weight the other products as follows:
  - If the remaining products are two products of the market incumbent, their weights are the remaining share (100% - SR) divided by two[96].
  - If other products from other market players are considered, the normalised market shares of the implicated market players are extrapolated to the remaining percentage (100% - SR)[97] .
  - In the case where more than one product from a specific supplier is selected, we attribute them the same weights (hence has the previously determined weight of the supplier divided by two)[98,99].
- Switching rates were fetched on the Retail Markets Monitoring Report by the Council of European Energy Regulators and make the distinction between residential and small professional consumers.

[95] The switching rate is the rate at which consumers will switch from their current energy contract with a specific supplier for another supplier. As we assume that consumers always look for the cheapest products, this switching rate represents the percentage of consumers opting for the cheapest offer on the market (here, defined as the Product 2).

[96] Example: if the switching rate amounts to 20%, the remaining 80% are used to weigh the two remaining products of the market incumbent, which each account for 40%.

[97] Example: if the switching rate amounts to 20%, the remaining 80% are used to weigh the remaining products. If the market share of the incumbent is 40% and that of the next largest supplier is 20%, in a first step, their market shares are 'normalised' (respectively 40%/60% = 66.67% and 20%/60% = 33.33%). These market shares are then extrapolated to the remaining 80% (respectively 66.67*80% = 53.33% and 33.33*80%= 26.67%.)

[98] Example: In case the switching rate amounts to 20%, and the market incumbent of the previous example has two products selected in the mix, each of its products have a weight of 53.33%/2 = 26.66%

[99] An exception is made for the electricity profiles in France, as most clients still have a regulated product. Therefore, the market share of the regulated product is maintained, and the third product is 100% - the switching rate – the market share of the regulated product.

Electricity

Electricity: Detailed description of the prices, price components and assumptions

For all countries under review, this section details:

1. **Commodity costs** for profiles E-RES, E-SSME and E-BSME;
2. **Network costs** for profiles E-RES, E-SSME and E-BSME;
3. **All other costs** for profiles E-RES, E-SSME and E-BSME;
4. **VAT** for profile E-RES.

Profile	Consumption (kWh)	Connection capacity (kVA)[100]
E-RES	3,500	9.20
E-SSME	30,000	46.90
E-BSME	160,000	156.00

Belgium

Contrary to what is observed in other countries, the Belgian electricity suppliers have quite transparent price sheets. Most of the current price sheets can be found online on each providers website. The price sheets also give a good overview of all charged components.

Component 1 – commodity price

In 2022[101], the HHI of the retail market in Belgium was over 2,700, and according to the methodology, this entails that we consider only three products: the standard product, the cheapest product of the market incumbent, and the cheapest offer on the market. The switching rate in Belgium is 20.8% for households. As no distinctions were made in the CEER report about households and non-households, the same switching rate is assumed for small professionals (E-SSME)[102]. The products of the market incumbent for E-RES and E-SSME thus each weigh (100%-20.8%)/2 or 39.6%.

Table 21: Profile weights depending on the Belgian product

Product	Weight E-RES	Weight E-SSME
Standard product of market incumbent	39.6%	39.6%
Cheapest product on the market	20.8%	20.8%
Cheapest product of the market incumbent	39.6%	39.6%
Total	**100.00%**	**100.00%**

The table below gives an overview of the selected products, based on the consumption and characteristics of the profile, per region and their annual cost. To choose these products, price comparison websites of the respective regional regulators were used: https://vtest.vreg.be/ for Flanders, www.compacwape.be for Wallonia and www.brusim.be for Brussels. These were used to rank the products according to the methodology defined above. Actual prices reported are VAT excluded and reflect the prices for fixed or variable price contracts observed in January 2024 (see *3. Description of the dataset*). In the case of variable contracts, it is important to note that the presented prices are merely estimates of the annual price as the price comparison tools do not know what the exact price will be for the coming year. It is important to note the presentation of prices in Belgium present figures using historical indexation parameters, which differs from the year 2023 where prices gathered used forward-looking parameters.[103]

[100] Methodology to assess connection capacity of each profile can be found in section 3.2. Consumer profiles.
[101] (CEER, 2023)
[102] (CEER, 2023)
[103] This remark is also relevant for natural gas.

Table 22: Annual cost of selected products for profile E-RES in Belgium

Region	Supplier – Product	Contract type (fixed/variable)	Fixed component (EUR/year)	Price for peak consumption (EUR/year)	Price for off-peak consumption (EUR/year)
Brussels	ENGIE – Electrabel Easy	Variable	55.00	249.34	238.15
	ENGIE – Electrabel Direct	Variable	24.85	183.64	182.58
	TotalEnergies - Pixel	Variable	33.02	218.00	216.70
Wallonia	ENGIE – Electrabel Easy	Variable	55.00	249.34	238.15
	Mega – Online Flex	Variable	15.00	162.72	230.51
	ENGIE – Electrabel Direct	Variable	24.85	183.64	182.58
Flanders	ENGIE – Electrabel Easy	Variable	55.00	249.34	238.15
	Trevion – Groene energie full spot	Variable	24.79	142.81	169.59
	Engie – Electrabel Direct	Variable	24.85	183.64	182.58

Table 23: Annual cost of selected products for profile E-SSME in Belgium

Region	Supplier – Product	Contract type (fixed/variable)	Fixed component (EUR/year)	Price for peak consumption (EUR/year)	Price for off-peak consumption (EUR/year)
Brussels	ENGIE - Electrabel Easy Pro	Variable	53.35	2,820.93	1,512.73
	ENGIE - Electrabel Direct Pro	Variable	16.29	2,020.72	1,104.95
	TotalEnergies – Pixel Pro	Variable	33.02	2,452.45	1,368.62
Wallonia	ENGIE - Electrabel Easy Pro	Variable	53.35	2,820.93	1,512.73
	ENGIE - Electrabel Direct Pro	Variable	16.29	2,020.72	1,104.95
	Mega – Online Flex	Variable	15.00	1,830.60	1,220.40
Flanders	ENGIE - Electrabel Easy Pro	Variable	53.35	2,820.93	1,512.73
	Trevion – Groene energie full spot	Variable	36.00	1,606.66	1,071.11
	ENGIE - Electrabel Direct Pro	Variable	16.29	2,020.72	1,104.95

While this methodology provides an objective view of the market situation in Belgium, one must be aware that it does not provide a full overview of market prices. In fact, only three products were considered to depict the Belgian commodity prices, whereas the formulas used by the energy providers to calculate the indexed products might differ among the countries under review[104].

[104] Depending on the country, indexed products might be calculated with forward or with backward looking prices. For example. in Belgium the variable product by Engie is indexed quarterly with an indexation parameter based on the arithmetic mean of the daily ICE Endex quotations during the quarter preceding the quarter of supply.

The commodity price for the E-BSME profile was not extracted from a comparison website but calculated by the CREG according to the following formula.[105] Commodity prices computation rests on market prices and describes the cost of electricity for industrial consumers as of January 2024. CREG used the ICE Endex CAL and the Belpex DAM as national indexes for the computation. For the E-BSME profile, CREG did not include weekend hours of Belpex DAM.

$$\text{Commodity price} = 36.5\%\ CAL\ Y_{-1} + 27.4\%\ CAL\ Y_{-2} + 21.4\%\ CAL\ Y_{-3} + 8.2\%\ Qi_{-1} + 4.2\%\ Mi_{-1} + 2.3\%\ Belpex\ DAM$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two years ahead forward price in 2022
CAL Y_{-3}	Average three years ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

Component 2 – network costs

Transmission cost

All residential profiles reviewed in this study are subject to transmission tariffs. In Belgium, the transmission tariffs are billed by the Belgian TSO, Elia Transmission Belgium (ETB), to the local DSOs. These tariff components are then billed by the DSO to the end-consumer. As there exist grid network losses and production connected to the distribution grids, the tariffs billed to the end-customer are not exactly similar to the one billed to the DSOs by ETB. The table below synthesises the components per region:

Table 24: Network cost components per Belgian region

Brussels	Wallonia
1. Transmission costs	**1.** Tariffs for the management and the development of the grid infrastructure
2. Tariffs for network losses (E-BSME to E4 only)[106]	**2.** Tariffs for network losses (E-BSME to E4 only)

As from 2023, Flanders shows a different picture as the transmission costs are integrated in the distribution network tariffs. They can be found under the following two labels on the tariff sheets:

1. Tariff for use of the grid;
2. Tariff for other transmission costs[107].

[105] The equations are based on an analysis performed by the Belgian federal regulator of the electricity supply contracts of Belgian consumers with a yearly consumption higher than 10 GWh. For 2021, ratios used in the formula were determined as being the average coefficients over three years (2016 to 2018). For the sake of consistency, the coefficients have stayed the same.

[106] We consider that such tariff only applies to E-BSME as commodity is not computed based on a supplier's product, which would cover network losses through its costs. Network losses on the federal transmission grid (380/220/150 kV) are a separate and additional component to the transmission tariffs but are not considered as transmission tariffs as such. Suppliers usually bill these costs as a percentage (fixed every year by the TSO) of the commodity cost. While the costs associated with network losses is not a transmission tariff as such, it is deemed to be a part of the 2nd component in this study.

[107] Unlike in 2023, the allocability of the transmission costs tariffs into "Transmission" and "Other" costs components are not split 76.77% / 23.23%. Instead, they are now respectively split at 64.45% / 35.55%.

Regarding transmission tariffs, regional regulators also differ in terms of timing of tariff adoption. The table below sets out the different adoption dates per region:

Table 25: Adoption date of new tariffs by regional DSOs in Belgium (Residential and small prof. consumers)

Name of the DSO	Effective date
BRUGEL	1 January 2024
CWaPE	1 March 2023

In Flanders, as explained above, there are no more explicit transmission tariffs for distribution network users as from the 1st of January 2023. They are integrated in the budget for the calculation of the distribution tariffs.

For Wallonia, the adoption date of new tariffs by the regional DSOs is done on the 1st of March. Hence, our study considers the tariffs applied as from the 1st of March 2023, going on until the 29th of February 2024.

Distribution costs

When consumers are also connected to the distribution grid, which is the case for all our residential and small professional profiles, distribution tariffs must be added to the transmission tariffs mentioned above. Like transmission costs charged by regional DSOs, each DSO publishes their tariff sheets from which fees were selected based on the voltage level. As our profiles have different voltage levels, we assume that each profile can be characterised as following:

Table 26: Voltage categories of small consumers electricity profiles

Profiles	Brussels	Flanders	Wallonia
E-RES	BT	LS Piekmeting	BT Sans mesure de pointe
E-SSME	BT	LS Piekmeting	BT Sans mesure de pointe
E-BSME	26-1 kV	26-1 kV	MT Avec mesure de pointe

There is a relatively similar component in the distribution sheets of all the DSOs of all regions, namely "Tariff for the use of the distribution grid". This component is composed of three terms:

Table 27: Distribution cost composition in Belgium

Brussels	Flanders	Wallonia
Capacity term (EUR/Year)	Capacity term (EUR/kW, and EUR/kVA for E-BSME)	Capacity term (EUR/kW)
Fixed term (EUR/Year)	-	Fixed term (EUR/Year)
Proportional term (EUR/kWh)	Proportional term (EUR/kWh)	Proportional term (EUR/kWh)

As from the 1st of January 2023, Flanders has adopted a new distribution tariff structure, with significant changes for all network users. For all users, the distinction between day and night tariffs disappeared. For users connected to the low voltage grid (E-RES and E-SSME), a capacity tariff, including a minimum contribution equivalent to 2.5 kW, was introduced. There are several reasons for adopting this tariff such as encouraging consumers to spread their demand during the day in order to ensure an affordable electricity grid in the future, correctly reflecting the costs of the grid maintenance, development, and ensuring that the network costs are shared between network users in a fair manner.

The manner of charging will be done differently depending on the consumer's metering system. For network users with a digital meter, the capacity tariff is based on the monthly peaks, i.e., the highest 15 minutes power measured by the digital meter within each month. For consumers with a traditional analogue meter, the capacity tariff is represented by a fixed term. In this report, the results are presented only for network users with a digital meter ("piekmeting"). The beneficiaries of the social tariff are not directly exposed to the capacity tariff. Next to the capacity term, a small proportional term (EUR/kWh) remains for all low voltage network users.

For users connected to the medium voltage grid in Flanders (E-BSME), the capacity term, which was based on the annual peak until 2022, is now based for 50% on the monthly peak and for 50% on the contracted capacity which can be set by each network user. Penalties apply if the network user exceeds his contracted capacity. There is no more proportional term in the tariff for the use of the distribution grid.

Brussels[108] assesses its capacity term based on consumers' annual peak, while Wallonia considers both the yearly and monthly peaks. The yearly peak is considered as the peak over the last 11 months before invoicing month and makes up for 75% of the component. Monthly peak, the remaining 25%, is determined as the peak of the invoicing month. It is to be noted that the capacity term only applies from consumer E-BSME and in Wallonia there is also a tariff for the regulatory balance since March 1st, 2019.

Furthermore, Wallonia and Brussels regions differentiate these distribution charges according to the time of the day, which is not the case in Flanders after the introduction of the capacity tariff. As such, different prices prevail whether electricity is consumed during daytime hours (from 7 am to 10 pm during weekdays) or night-time (from 10 pm to 7 am during weekdays and all hours during weekends)[109]. Besides, an exclusive night-time tariff exists (same hours as night-time schedule) for consumers equipped with meters only functioning overnight.

Besides, the following components are part of distribution tariffs:

Table 28: Other distribution cost components in Belgium

Brussels	Flanders	Wallonia[110]
Metering costs	Tariff of data management[111]	Regulatory balances
	Tariff for other transmission costs[112]	

Considering tariffs are region- and DSO-dependent, we compute the weighted average for each component. The weights of elements are attributed based on the number of market shares[113] per DSO. All operating DSOs are considered, representing 100% of the EAN connections[114].

[108] In Brussels, the capacity term for "BT sans mesure de pointe" customers is based on the connection point capacity in EUR/kVA.

[109] There are some exceptions in Wallonia for residential customers in a limited number of areas, for which off-peak hours during the week are from 9 pm to 6 am. Based on professional judgement, we believe those exceptions would not impact the results and, therefore, are not considered for the analysis.

[110] Charges for metering activities in Wallonia are built in tariffs for the use of the distribution grid.

[111] In 2019, the Flemish government conferred Fluvius System operator cv the role of data manager with a view to the roll-out of the digital meter, among other things. The activities to be performed by the data manager concern data recorded by all types of meter, not only digital meters, but also analogue and electronic meters. The costs of all these activities will be charged as of 2021 via the data management tariff which replaces the metering costs.

[112] Note that only 64.45% of this tariff is included in the network cost component presented in this report, as this is the share related to the former transmission network tariff components that have been integrated in this new tariff component since January 1st 2024: tariff for market integration, tariff for the management of the electric system, tariff for power reserves and black start. The remaining 35.55% of this tariff component is included in the all other cost component. This is a change compared to 2023.

[113] EAN (European Article Numbering) is a unique code attributed to meters and which indicates a supply point for electricity or natural gas.

[114] The number of EAN connections for Flanders and Wallonia at their 2024 level.

Component 3 – all other costs

In Belgium, several additional fees apply to electricity. Because of the existence of three regions, these costs often have different rates that are only applicable to a specific region. To summarise the above, two aspects must be considered when looking at the other costs. Firstly, there are costs on the federal level and the three regional levels. Secondly, there are PSOs (Public Services Obligations) on one side and taxes, levies, and surcharges on another side. These costs are summarised below with a distinction between average costs to all three Belgian regions and the one's specific per region. As from 2022, it is to be noted that all federal charges are directly invoiced by the energy suppliers to the end-consumer (previously, some charges first passed through the DSOs before reaching the energy suppliers). The proceeds are paid to the Federal Public Service of Finance. The FPS Finance pays the necessary amounts to the Belgian TSO ETB on the one hand, and to the CREG on the other hand. Some regional charges are levied by regional DSOs, others are levied by ETB.

The table below exhibits the first impact caused by regional service obligations because of the grid connection levels. The regions can enforce public service obligations on grid operators running below or equal to 70 kV on their territory (repercussions on profiles E-RES to E2).

Table 29: Overview of voltage distribution to Belgian system operators

Voltage level	Operator in charge	Operator in Belgium
x < 30 kV	Distribution System Operator (DSO)	Several
30 kV < x < 70 kV	Local Transmission System operator (LTSO)	Elia Transmission Belgium in the 3 regions
x > 70 kV	Transmission System Operator (TSO)	Elia Transmission Belgium (federal)

Certificate schemes represent the second regional impact within Belgium that results from the local competence regarding renewable energy obligations matter on their territory. Flanders, Wallonia, and Brussels institute their specific green certificate scheme on all electricity consumers within the affected region (all profiles under review). In addition to assessing Belgium over the three regions, we consider different hypotheses: the consumer profiles E1 to E4 take part in an energy efficiency agreement, and all industrial profiles are affiliated with the sectoral NACE-BEL classification codes 5-33 (all industries).

Tariff rates (excluding VAT) are mentioned when they do not vary depending on the consumer profile and/or the DSO; otherwise, units in which they are expressed are detailed:

Table 30: Other costs for residential and small professional electricity consumers applying in all three Belgian regions

All regions	Profiles
Regional Public Service Obligations (Regional PSOs)	
Regional PSOs on distribution[115]	
a. A general tariff for regional PSOs (expressed in EUR/MWh)	All
Taxes and levies on the federal level	
a. Energy contribution[116] (1.9261 EUR/MWh). b. Special excise duty	a. E-RES and E-SSME b. E-RES, E-SSME and E-BSME

[115] For each region of Belgium, we compute the tariff through a weighted average of each component across all DSO active in the region (weights are given in terms of number of EAN connection per DSO).
[116] Not applicable on E-BSME profile because it has a connection level > 1kV.

As of 1st of January 2022 the federal contribution, offshore contribution, Green Power Certificate contributions and Strategic Reserve contributions have been replaced by the special federal excise duty, still configured this way in January 2024. This means that only the degressive amount of the special excise duty is applicable for this report. From 1st of November 2022 until the 31st of March 2023, the degressive special excise duty has been modified for professional consumers[117] to lower the amounts due on the consumption band up to 1,000 MWh of yearly consumption.

The table below shows the tax rates applied as of January 1st 2024 at the Federal level in Belgium for both residential and commercial profiles regarding the special excise duty.[118]

Table 31: Special excise duty rates in Belgium for residential and commercial electricity consumers

Yearly consumption band	Tax for E-RES (EUR/MWh)	Tax for professional profiles (E-SSME and E-BSME) (EUR/MWh)
Consumption up to 20 MWh	47.48	14.21
Consumption between 20 – 50 MWh	45.46	12.09
Consumption between 50 - 1,000 MWh	44.78	11.39
Consumption between 1,000 – 25,000 MWh	44.11	10.69
Consumption between 25,000 - 100,000 MWh	44.11	2.73
Consumption above 100,000 MWh	36.28	0.50

In addition to these taxes and levies mentioned below, the three Belgian regions also set **certificate schemes** which represent another indirect cost. Although these mechanisms are similar, there are regional differences. Each year, suppliers must reach a certain quota of green certificates, which vary across regions, or they risk being fined. Suppliers charge these additional costs to their customers. We consider the extra "Green Certificate costs" surcharge, calculated based on quotum[119] and average price of certificates[120] for the previous year (2023 in this exercise), in each of the regions. In Wallonia, there is a reduction on the green certificate scheme for holders of a climate change or sector agreement, which we consider applies to profile E1 and above and is therefore not considered for residential and small professional consumers[121].

Flanders also has a reduction on the green certificate scheme which is based on the NACE-code, the total consumption, the gross value added and the energy bill of the company. Besides, while there is a green certificate system for renewable energies in each region, Flanders also has a certification scheme for combined heat/power (WKK).

117 Programme law of December 27th, 2004, as modified by the Programme law of December 26th 2022 and by the Lax of March 19th 2023 reforming taxation on the energy bill.

118 In Section 5 it is further detailed the exemption that is applied to Industrial consumers for this excise duty.

119 (Digitaal Vlaanderen, 2009)

120 (VREG, 2024)

121 See General assumptions.

Table 32: Regional other costs for residential and small professional electricity consumers[122]

Brussels	Flanders	Wallonia	Profiles
Regional Public Service Obligations (Regional PSOs)			
Regional PSOs on transmission			
a. Financing of regional energy policies[123] (E-RES and E-SSME: 1.59 - 7.94EUR/month; E-BSME: 1.11EUR/kVA)	-	a. Funding of support measures for renewable energy[124] (5.9249 EUR/MWh)	All
b. Funding of support measures for renewable energy (5.949 EUR/MWh)	-	-	
Taxes and levies on the regional level			
Regional taxes and levies on distribution			
a. Charges on non-capitalised pensions (0.804 EUR/MWh)	a. Surcharges for distribution[125] (1.734 EUR/MWh)	a. Levy for occupying road network (3.111 EUR/MWh)	All
b. Levy for occupying road network (8.267 EUR/MWh)	b. Other transmission costs related to regional PSOs, taxes and levies on transmission (1.57 EUR/MWh)[126]	b. Corporate income tax (1.20- 4.65EUR/MWh)	
c. Corporate income tax and other taxes (5.386 EUR/MWh)	c. Contribution for the energy fund[127] (9.57– 182.51EUR/month)[128] (all profiles except E-RES)	c. Other local, provincial, regional, and federal taxes, Charges, Surcharges, Fees, and contributions (0.0006 EUR/MWh)	
-	-	d. Levy for the use of the public domain (0.398 EUR/MWh)	
Regional taxes and levies on transmission			
-	-	a. Connection fee (0.075 EUR for the first 0.1MWh; 0.00075 EUR/kWh above 0.1 MWh)	All

Component 4 – VAT

The VAT on electricity has been definitively fixed to 6% since the 1st of April 2023 for residential consumers.

This VAT is not due on the contribution for the energy fund in Flanders and on the connection fee in Wallonia.

[122] The tariffs represented in this table vary depending on the DSO and we have thus chosen to only present the minimum and maximum range of the tariff from the largest (or only) DSO of the region. Sibelga for Brussels, Imewo for Flanders and ORES Hainaut for Wallonia.

[123] (Sibelga, 2024)

[124] In Wallonia a partial exemption of 85% applies for holders of a sectoral energy efficiency agreement, meaning that the E-BSME profile can benefit from this reduction.

[125] The distribution tariff sheets from the DSOs do not include more levels of details regarding the surcharges.

[126] All regional PSOs, taxes and levies that are passed on from the transmission system operator to the distribution system operators are integrated in the "tariff for other transmission costs" component of the distribution tariff in Flanders since 2023. This is the situation on January 1st 2024, calculated as 35.55% of the "Other transmission cost" tariff component.

[127] (Vlaamse Overheid , 2024)

[128] Retrieved from https://www.vlaanderen.be/bijdrage-energiefonds-heffing-op-afnamepunten-van-elektriciteit/tarief-van-de-bijdrage-energiefonds

Germany

Component 1 – commodity price

Germany has a computed HHI-index of 1,910 for the retail market in 2023. The calculations were done using the formula descriped in *section 3. Description of the dataset.* We thus consider four products for both profiles E-RES and E-SSME. However, Germany presents peculiarities leading to separately identifying each mentioned product for each region:

1. As detailed in the methodology section of Germany, different areas are considered because of the existence of price divergences, and all have different standard products called *Grundversorgung*. Product 1 is always the standard product for each of the regions.
2. Products and prices for German E-RES and E-SSME profiles were retrieved from the stromanbietervergleich.net comparator, as well as check24.de. The use of equal split for the weight of products (25%) is assigned to all products in all regions since the market shares of the different providers are not always available.

In previous countries, we have set out which weights are attributed to the chosen products. The table below illustrates the products' weights assigned for German products in 2024 because of the inconsistency of data with the methodology used for the other regions.

Table 33: Profile weights depending on the German product

Product	Weight E-RES	Weight E-SSME
Standard product of the market incumbent	25.00%	25.00%
Cheapest product on the market	25.00%	25.00%
Cheapest product of the market incumbent	25.00%	25.00%
Cheapest product of the second biggest supplier	25.00%	25.00%
Total	**100.00%**	**100.00%**

The prices presented in the following table still integrate taxes (except VAT) and network costs because German suppliers use “all-in tariffs”. The following products and prices were retrieved using the comparison website stromanbietervergleich.net and check24.de.

Table 34: Annual cost of selected products for profile E-RES in Germany

Region	Supplier - product	Grundpreis (EUR/year) [129]	Arbeitspreis [130] without dual tariff (EUR/kWh)	Arbeitspreis without dual tariff (EUR/year)
Bayernwerk	E.ON – Grundversorgung Strom HH	68.65	0.31	981.18
	Vattenfal - Ökostrom12	160.34	0.27	957.94
	Team Energie - Teamstrom grün & günstig	134.02	0.23	817.65
	SWD - Rheinpower Meinstrom 12	181.31	0.24	854.71
SWM Infrastruktur Stammgebiet	SWM – Grund- und Ersatzversorgung HH Lastschrift	128.48	0.52	1,526.47
	SWD – Rheinpower Meinstrom 12	124.13	0.30	893.53
	Vattenfal - Ökostrom12	99.83	0.34	1,002.06
	Team Energie - Teamstrom grün & günstig	76.84	0.29	856.47
E-DIS	E.ON – Grundversorgung Strom HH	137.13	0.56	1,642.94
	Team Energie - Teamstrom grün & günstig	112.64	0.31	917.65
	Vattenfal - Ökostrom12	140.17	0.36	1,057.94
	SWS – Meckpomm Strom 12s	117.88	0.36	1,062.35
Stromnetz Berlin	Vattenfall Sales – Berlin Tarif Berlin Basis Privatstrom	117.88	0.36	1,062.35
	Team Energie - Teamstrom grün & günstig	70.79	0.30	881.46
	SWD – Rheinpower Meinstrom 12	118.08	0.31	918.82
Westnetz	EW Aach – H20 Naturstrom GV HH	119.28	0.38	1,116.76
	Team Energie - Teamstrom grün & günstig	136.84	0.28	835.88
	Vattenfal - Ökostrom12	160.34	0.33	981.47
	SWD – Rheinpower Meinstrom 12	184.13	0.30	872.94
RNG-Netz 2-Köln	SWD - FairRegio Strom Basis	199.72	0.40	1,172.65
	Team Energie - Teamstrom grün & günstig	193.41	0.26	765.88
	Vattenfal - Ökostrom12	220.84	0.31	905.00
	SWD – Rheinpower Meinstrom 12	240.71	0.27	802.94
Netze BW	EnBW Energie– EnBX Komfort HH	119.29	0.37	1,097.35
	Team Energie - Teamstrom grün & günstig	136.84	0.28	835.88
	Vattenfal - Ökostrom12	160.34	0.33	981.47
	SWD – Rheinpower Meinstrom 12	184.13	0.30	872.94
Stuttgart Netze	EnBW – EnBX Komfort HH	119.29	0.37	1,097.35
	Team Energie - Teamstrom grün & günstig	85.41	0.30	889.12
	Vattenfal - Ökostrom12	109.92	0.35	1,031.47
	SWD – Rheinpower Meinstrom 12	132.71	0.31	926.18

[129] Basic price (fixed)
[130] Labour price (variable)

Table 35: Annual cost of selected products for profile E-SSME in Germany

Region	Supplier - product	Grundpreis (EUR/year)	Arbeitspreis (EUR/KWh)	Arbeitspreis (EUR/year)
Bayernwerk	E.ON Energie – UnternehmerStrom Öko 24	192.12	0.38	9,597.00
	Klick Energie – KlickStrom 12 Plus	177.60	0.36	9,078.00
	Vattenfal - Pro Ökostrom 12 Standard	219.96	0.41	10,380.00
	Vattenfall – Profi Ökostrom 12	219.96	0.41	10,398.00
SWM Infrastruktur Stammgebiet	Stadtwerke München –M-Ökostrom Regional DT	133.44	Peak : 0.46 Off Peak : 0.39	Peak: 6,946.20 Off Peak : 3,901.20
	Klick Energie - KlickStrom 12 Plus	109.68	0.38	9,474.00
	Vattenfal - Pro Ökostrom 12 Standard	155.64	0.43	10,773.00
	Vattenfall – Profi Ökostrom 12	177.12	0.43	10,791.00
E-DIS	E.ON Energie – E.ON UnternehmerStrom Öko 24	166.92	0.42	10,605.00
	Klick Energie - KlickStrom 12 Plus	152.16	0.40	10,098.00
	Vattenfal - Pro Ökostrom 12 Standard	198.48	0.45	11,379.00
	Vattenfall – Profi Ökostrom 12	219.96	0.45	11,397.00
Stromnetz Berlin	Vattenfall – Berlin Gewerbe Strom Ersatzversorgung	121.92	0.52	13,053.00
	Klick Energie - KlickStrom 12 Plus	102.36	0.39	9,732.00
	SWM - M-Ökostrom Regional DT	106.20	0.44	11,217.00
Westnetz	EW Aach – EW Aach H20 Naturstrom GV HH	177.84	0.44	11,178.00
	Klick Energie - KlickStrom 12 Plus	181.08	0.37	9,264.00
	Vattenfal - Pro Ökostrom 12 Standard	219.96	0.42	10,560.00
	Vattenfall – Profi Ökostrom 12	219.96	0.42	10,614.00
RNG-Netz 2-Köln	SWD - TradeRegio Strom Basis	257.52	0.49	12,234.00
	Klick Energie - KlickStrom 12 Plus	248.40	0.34	8,550.00
	Vattenfal - Pro Ökostrom 12 Standard	219.16	0.39	9,915.00
	Vattenfall – Profi Ökostrom 12	219.16	0.39	9,957.00
Netze BW	Fair Trade Power Dtl. - Fair Plus HT/NT	207.00	0.43	Peak: 6,530.40 Off Peak: 4,376.40
	Klick Energie - KlickStrom 12 Plus	181.08	0.37	9,264.00
	Vattenfal - Pro Ökostrom 12 Standard	219.96	0.42	10,560.00
	Vattenfall – Profi Ökostrom 12	219.96	0.42	10,614.00
Stuttgart Netze	Fair Trade Power Dtl. - Fair Plus HT/NT	280.83	0.50	Peak: 7,579.80 Off Peak: 5,076.00
	Klick Energie - KlickStrom 12 Plus	119.88	0.39	9,807.00
	Vattenfal - Pro Ökostrom 12 Standard	177.12	0.44	11,094.00
	Vattenfall – Profi Ökostrom 12	177.12	0.44	11,112.00

The commodity price could not be extracted through the comparing site for the E-BSME profile, and we have thus used the data that was provided to us by the CREG[131]. The EEX Futures and EPEX DAM prices are the national indexes employed in the computation. CREG did not take the weekend hours of the EPEX SPOT DE DAM into account for the E-BSME profile.

$$\text{Commodity price}$$
$$= 36.5\%\, CAL\, Y_{-1} + 27.4\%\, CAL\, Y_{-2} + 21.4\%\, CAL\, Y_{-3} + 8.2\%\, Qi_{-1} + 4.2\%\, Mi_{-1} + 2.3\%\, EPEX\ Spot\ DE$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two years ahead forward price in 2022
CAL Y_{-3}	Average three years ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

Component 2 – network costs

The German electricity market is quite different from the Belgian one. The four TSOs exclusively operate on the (extra-) high voltage grid whereas all lower voltage levels are managed by DSOs (often up to 110 kV).

Furthermore, the German price-setting offers less transparency because they use “all-in tariffs”, meaning that the consumer is only presented one tariff without a clear distinction of its components. As described in the dataset, we offer results for four TSO, but since Germany counts more than 800 DSOs[132], a weighted average of 2 DSOs (one rural and one urban) is being presented. This is the case for the E-RES and E-SSME profile. Since the commodity price of E-BSME is computed with a formula, network costs must be added separately. A more detailed description is provided in *Section 5. Component 2 – network costs* E-BSME is subject to the same network costs as the E0 and E1 profiles.

When it comes to the transmission and distribution tariff methodology, German DSOs and TSOs offer a similar structure even though terms are labelled differently. Although every DSO imposes different rates for different ranges of both maximum capacity contracted and electricity consumer, it always involves the same 3 components which are synthesised in the table underneath:

Table 36: Components of the German network costs

Network costs		
Component	**German label**	**Explanation**
Fixed term	Grundpreis	The basic fee expressed in EUR/year.
Proportional term	Arbeitspreis	It depends upon the volume of energy consumed in kWh/year, expressed in cEUR/kWh/year.
Metering	Messstellenbetrieb	The charges are related to the cost of metering and invoicing, fixed prices expressed in EUR/year.

Component 3 – all other costs

Regarding German taxes and levies, 5 surcharges apply on electricity price:

[131] The equations are based on an analysis performed by the Belgian federal regulator of the electricity supply contracts of Belgian consumers with a yearly consumption higher than 10 GWh.
[132] (Prettico, 2019)

(1) The "*KWKG-Umlage*" – Kraft-Wärme-Kopplungsgesetz or Combined Heat and Power Act – is a tax contributing to CHP-plant subsidies. The calculation is based on the present forecast data of DSOs and the Federal office for Economic Affairs and Export Control (BAFA). This cost (2.75EUR/MWh) applies to E-RES, E-SSME and E-BSME[133]. It decreased by 0.82UR/MWh compared to 2023.

(2) The "*StromNEV*" or Electricity Network Charges Ordinance, based on the regulation of charges for access to electricity networks § 19, is a digressive levy to compensate for §19 transmission tariff reductions. This cost (6.43EUR/MWh) applies to E-RES, E-SSME and E-BSME[134]. It increased by 2.26UR/MWh compared to 2023.

(3) The "*Offshore-Netzumlage*" or Offshore Network Levy, is a digressive levy. Several rates apply depending on the consumption level and discounts can be granted from above 1 GWh, which does not concern the profiles under review in this section. We thus use the basic rate (6.56EUR/MWh) for all profiles[135]. It increased by 0.65EUR/MWh compared to 2023.

(4) The "*Stromsteuer*" or Electricity tax, as its translation shows, is a tax on electricity with a standard rate (20.50EUR/MWh) that has remained unchanged since 2003[136].

(5) The "*Konzessionsabgabe*" or Concession fee, is a tax (18.23EUR/MWh) imposed on all users to fund local governments. The municipality size, as well as the contract type of the consumer[137], constitute the criteria regarding the applied rate. Reductions may be granted from a 30 MWh annual offtake.

Component 4 – VAT

Germany introduced a temporary VAT rate reduction on natural gas, but this measure was not extended to electricity. The tax rate on added value of 19% is applicable on electricity consumption for residential consumers[138].

<u>Note:</u> In 2024, there is no more price cap on the electricity, as opposed to 2023.

[133] (Netztransparenz.de, 2024)
[134] (Netztransparenz.de, 2024)
[135] (Netztransparenz.de, 2024)
[136] (Bundesamt für Justiz, 2021)
[137] We distinguish the basic contract, or "*Grundversorgung*", and the other types of contracts.
[138] (VAT Calc, 2023)

France

Component 1 – commodity price

The HHI of the retail market in France was over 5,000 in 2023[139], meaning that only three products are considered: the standard product, the cheapest offer on the market and the most affordable product of the market incumbent. For E-RES profile, as the cheapest offer on the market this year is also the cheapest product of the market incumbent, we had to choose the second cheapest product on the market. In 2023, the switching rate for household products in France was 10%, and the same switching-rate is applied for non-household consumers.[140] The methodology for assigning weights to the products is different for France because most consumers contract the regulated product. The market share for the regulated product is taken as its weight, and the third product has the rest of the weights.

Table 37: French product weights depending on the profile

Product	Weight E-RES	Weight E-SSME
Standard product of the market incumbent	74%	74%
(Second) Cheapest product on the market	10%	10%
Cheapest product of the market incumbent	16%	16%
Total	**100%**	**100%**

In France, consumers are presented with "all-in tariffs" which toughens the extraction of the commodity component. Using the price comparison website that the CRE[141] puts forward, http://comparateur-offres.energie-info.fr, the all-in tariffs were extracted. The commodity cost presented below still includes network and all other costs, but the VAT has already been deducted.

Table 38: Annual cost of selected products for profile E-RES in France

Region	Supplier – Product	Fixed component (EUR/year)	Price for peak consumption (EUR/year)	Price for off-peak consumption (EUR/year)
France	EDF - Tarif bleu - réglementé (particuliers)	159.60	326.40	287.47
	Engie – Elec Référence Verte 1 an	144.48	392.64	192.85
	EDF - Tempo	156.48	233.78	171.89

Table 39: Annual cost of selected products for profile E-SSME in France

Region	Supplier – Product	Fixed component (EUR/year)	Price for peak consumption (EUR/year)	Price for off-peak consumption (EUR/year)
France	EDF - Tarif Bleu - réglementé (professionnels)	555.20	3,571.20	1,928.40
	EDF - Contrat Garanti Marché Public 2 Ans	640.76	3,438.00	562.80
	ENGIE - Electricité Activert 2 an	823.19	2,962.80	1,402.80

The French standard product « Tarif réglementé de vente » is revised twice a year by the CRE and the government and published each 1st of February and 1st of August.

[139] (CEER, 2023)
[140] (CEER, 2023)
[141] The *Commission de régulation de l'énergie* (CRE) or French Energy Regulatory Commission (under its official English title) is an independent body that regulates the French electricity and gas markets.

All consumers in France can benefit from governmental intervention on the commodity costs through a specific mechanism called ARENH[142]. This mechanism, described in detail in *Chapter 5*, enables alternative electricity suppliers (i.e. suppliers different from EDF, the historical electricity supplier in France) to obtain part of the nuclear electricity production from EDF under specific conditions set by the French public authorities.

Component 2 – network costs

As in Germany, the transmission and distribution costs are also integrated as one tariff in France. While this might help consumers to better understand their final bill to pay, it also makes it less transparent by not disaggregating the costs components. There are several DSOs in France, but Enedis has a market share of >95% for continental France.[143] Because of this, it is the only DSO that is considered in France in the present study. Distribution prices in France are known as the 'Tarif d'Utilisation du Réseau Public d'Electricité' (TURPE). Since 1st August 2021 TURPE 6 is in force for an estimated period of 4 years. A yearly update of the new price list, approved by the CRE, comes into force on a yearly basis to take into account inflation and other factors. However, the network costs structure remains exactly the same until the end of TURPE 6. The approved tariffs are applicable from 1st August 2023 to 31st July 2024.[144] The French distribution cost consists of 3 components.

Table 40: Distribution costs in France

Network costs		
Component	**Explanation**	
Management component[145][146]	The management component depends on whether a consumer has a single contract per energy component or not. We assume profiles E-RES and E-SSME opted for exclusive contracts, either electricity only, or natural gas only.	
Component for taking off electricity[147]	Multiple prices options exist varying depending on a utilisation length and temporal differentiators capacity and consumption components. The prices options are:	
	Consumers < 36 kVA (E-RES)	**Consumers ≥ 36 kVA (E-SSME)**
	1. Short use (CU)	1. Short use (CU)
	2. Short use with 4 temporal classes (CU4)	2. Long use (LU)
	3. Medium use with a temporal differentiation between peak and off-peak hours (MU)	
	4. Medium use with 4 temporal classes (MU4)	
	5. Long use (LU)	
Metering tariff[148]	The metering tariff depends on whether the meter is owned by the consumer or not. The assumption is taken that all three profiles (E-RES, E-SSME and E-BSME) do not own their meters.	

Consumers E-RES and E-SSME face different prices options as depicted in the table above. Concerning E-RES, only two price options out of five presented are considered: CU4 and MU4. The reason behind this lies in the heavy usage of 'Linky' smart meters. As we assume residential consumers to be equipped with 'Linky' smart meters from 2020 onwards, CU4 and MU4 are the only price options available. As for E-SSME, it can either opt for CU or LU prices options. In both cases, both price options were calculated. As we cannot anticipate which option our potential consumers will prefer, all options are computed and are presented as a price range.

[142] ARENH stands for *Accès Régulé à l'Electricité Nucléaire Historique*, or *Regulated Access to Historic Nuclear Electricity*
[143] (Enedis, 2024)
[144] (Rte, 2023)
[145] Since 2018, the level of this component also considers the financial compensation paid to suppliers in connection with the management of single-contract customers.
[146] French labelling: Composante annuelle de gestion
[147] French labelling: Composante annuelle de soutirage
[148] French labelling: Composante annuelle de comptage

MU4 and CU both rely on 4 temporal classes: peak hours high season (HPH), off-peak hours high season (HCH), peak hours low season (HPB) and off-peak hours low season (HCB). SLP S21 (E-RES) and SLP S11 (E-SSME) for 2020 were used and resulted in the following allocation to determine the proportion of electricity consumed during each temporal class.

Table 41: Allocation of consumption per temporal class in France

Distribution of consumption per temporal class		
Temporal class	**E-RES**	**E-SSME**
HPH	35%	34%
HCH	11%	12%
HPB	38%	40%
HCB	16%	14%

With regards to profile E-BSME, it falls under the category HTA1 for which 4 prices options are available:

(1) Short use with fixed peak (CU fixed peak);

(2) Short use with mobile peak (CU mobile peak);

(3) Long use with fixed peak (LU fixed peak);

(4) Long use with mobile peak (LU mobile peak);

In a similar fashion to the first two profiles, we computed each price option that is presented as a price range. Given that these price options also depend on temporal classes, allocation of hours was also estimated. However, we used RTE's timeframe (see below) to determine hours allocation, considering that E-BSME does not operate during weekends.

Table 42: Hours per temporal classes in France

Hours per temporal classes		
Temporal class	**Weekdays**	**Weekends**
Peak ("Heures Pointe")	4h/day for three months (December to February)	/
HPH ("Heures Pleines Saison Haute")	12h/day for three months (December to March) + 16h/day for 2 months (March and November)	/
HCH ("Heures Creuses Saison Haute")	8h/day for five months (November to March)	24h/day for five months (November to March)
HPB ("Heures Pleines Saison Basse")	16h/day for seven months (April to October)	/
HCB ("Heures Creuses Saison Basse")	8h/day for seven months (April to October)	24h/day for seven months (April to October)

Component 3 – all other costs

In France, two additional surcharges must be considered for residential and small professional consumers:

Table 43: Other costs in France (E-RES, E-SSME, E-BSME)

Title	Definition	Amount
Contribution Tarifaire d'Acheminement (CTA)	The CTA finances part of the pensions of staff in the energy sector for Electricity and Natural gas Industries. It is only being applied to the subscription part of the tariff (HT)	As from August 2021, the CTA rate has been reduced to 21.93 for residential and small professional consumers that are connected to the distribution grid and are due on the fixed and power component of the network tariffs (E-RES to E-BSME profiles).[149] It has been reduced to 10.11 for consumers connected to the public transport network or distribution grid ≥ 50kV (E0 to E4 profiles). *Note: as network tariffs may vary according to the selected price option, the CTA amount may therefore also vary*
Accise sur l'électricité (TICFE) *It replaces the old CSPE and includes local taxes[150]*	This excise is a tax that applies to all deliveries of electricity to an end user. Its amount is calculated according to the consumption.[151]	The excise duty on electricity is historically of 22.5 EUR/MWh since 2016.

Accise sur l'électricité

Since the 1st February 2022 and until the 31st January 2024, the excise rate is reduced from his 2016 historical value to:

- 1 EUR/MWh for consumers ≤36 kVA (E-RES)
- 0.5 EUR/MWh for consumers >36 kVA and ≤250 kVA (E-SSME)

This measure is part of the tariff shield ("bouclier tarifaire") applicable in France until 1st February 2024 and is therefore still applicable in this year's study.

Component 4 – VAT

Two different VAT rates apply to electricity tariffs, 5.5% and 20%.

For consumers < 36 kVA (E-RES): the reduced 5.5% rate is imposed on the subscription and the CTA, while the standard 20% rate is applied on the consumers' actual consumption[152].

For Consumers ≥ 36 kVA (E-SSME): the standard 20% rate applies to the actual consumption as well as to the Excise on Electricity.

[149] (CRE, 2023)
[150] Local taxes (« *Taxe Départementale sur la Consommation Finale d'Électricité* » (TDCFE) and « *Taxes Communales sur la Consommation Finale d'Électricité* » (TCCFE) no longer exist. The CSPE/TICFE includes the TDCFE since January 1st, 2021. The TCCFE was later included on January 1st, 2023.
[151] More detail about the TICFE is provided in Chapter 5
[152] (Engie, 2024)

The Netherlands

Component 1 – commodity price

In the Netherlands, the HHI-index was 2,000 in 2022[153]. Therefore, we consider three products. These are the standard product, the cheapest product on the market and the most competitive product of the second-largest supplier. The switching rate provided by the CEER is 17% for the Netherlands in 2023 and it is the weight attributed to the cheapest product for both profiles E-RES and E-SSME[154].

Weights are allocated according to the following calculations regarding normalised market shares. The weight of the cheapest product equals the annual switching-rate (17%). The table below presents the applied weights of profiles E-RES and E-SSME.

Table 44: Profile weights depending on the Dutch product

Product	Weight
Standard product of the market incumbent	41.50%
Cheapest product on the market	17.00%
Cheapest product of the second largest player	41.50%
Total	**100.00%**

As no price comparison tool was giving a complete overall picture of the prices and products on the market in the Netherlands, similarly as in the UK, we scouted the 10 largest energy providers and analysed their most competitive offers. The result is the Table 45 for E-RES and Table 46 for E-SSME below.

Table 45: Annual cost of selected products for profile E-RES in the Netherlands

Region	Supplier – Product	Fixed component (EUR/year)	Price for peak consumption (EUR/year)	Price for off-peak consumption (EUR/year)
Netherlands	Essent - Groene Stroom Flexiblel	89.17	343.75	387.95
	Vattenfall – 1 jaar vast	108.96	265.28	242.06
	Essent – Groene Stroom 3 Jaar	99.00	281.60	330.60

Table 46: Annual cost of selected products for profile E-SSME in the Netherlands

Region	Supplier – Product	Fixed component (EUR/year)	Price for peak consumption (EUR/year)	Price for off-peak consumption (EUR/year)
Netherlands	Essent - Groene Stroom Flexible	113.88	3,906.00	2,548.44
	Vattenfall – 1 Jaar Fix	108.96	2,984.40	1,305.60
	Essent – Groene Stroom 3 Jaar	113.80	2,773.80	1,825.20

As already mentioned, the previous methodology applied for our profiles E-RES and E-SSME, whereas CREG used a formula to compute the commodity costs for E-BSME and provided PwC with the data already computed. The computation rests on market prices and describes the cost of electricity for industrial consumers as of January 2024. CREG used the ICE Index CAL and the APX NL DAM as national indexes for the computation.

[153] (CEER, 2023)

[154] No distinction between household and non-household switching rates could be found. Consequently, we use a unique switching rate for both profiles E-RES and E-SSME.

The underneath commodity formula is used for each profile. For E-BSME, CREG did not include weekend hours of APX NL DAM. The CREG provided the data and the formula used for commodities pricing in this investigation.[155]

$$\textit{Commodity price}$$
$$= 36.5\%\,CAL\,Y_{-1} + 27.4\%\,CAL\,Y_{-2} + 21.4\%\,CAL\,Y_{-3} + 8.2\%\,Qi_{-1} + 4.2\%\,Mi_{-1} + 2.3\%\,APX\,NL\,DAM$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two years ahead forward price in 2022
CAL Y_{-3}	Average three years ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

Note: In 2024, the price cap that was in force during the previous year is discontinued. Hence, it is not applied anymore.

Component 2 – network costs

Network prices in the Netherlands are integrated as one tariff and are built on the four components presented in the table below[156]. We take the weighted average of all six distribution zones' prices.

Table 47: Network cost for electricity in the Netherlands (E-RES, E-SSME, E-BSME)

Network costs		
Component	**Dutch labelling**	**Explanation**
Fixed charge	Vastrecht	Fixed basic fee (expressed in EUR/year).
Capacity charge	Capaciteitstarieven	The fixed fee is covering the costs associated with the transmission of electricity. Its height depends on the capacity of the connection (expressed in EUR/year).
Periodical connection tariff	Periodieke aansluitvergoeding	The fixed fee is covering the costs for managing the connection (expressed in EUR/year).
Metering charge	Meettarief	The fixed charges are covering the use and management of energy meters (expressed in EUR/year).

The capacity charge is composed differently for the E-BSME profile:

- Fixed charge depending on the contracted capacity, expressed in EUR/year;
- Variable charge depending on the monthly peak expressed in EUR/kW/month;
- Variable charge depending on the consumption level, expressed in EUR/kWh.

[155] The equations are based on an analysis performed by the Belgian federal regulator of the electricity supply contracts of Belgian consumers with a yearly consumption higher than 10 GWh.
[156] (Autoriteit Consument & Markt, 2024)

Component 3 – all other costs

Unlike previous years, only one surcharge remains in the Netherlands for the profiles discussed in this part of the study, namely the Energy Tax (“Regulerende Energie Belasting”, or REB). In the 2024 Tax Plan, the Dutch government has indeed proposed to simplify the energy tax system even more than the previous year by abolishing the surcharge for sustainable energy and climate transition (“Opslag Duurzame Energie”, or ODE) through its integration in the energy tax (already started in 2023).[157]

The Energy Tax (REB) varies, in a degressive trend, according to the amount of consumed electricity as shown in the table below:

Table 48: Electricity Energy Tax and ODE bands (Netherlands, 2023)[158]

Band	Consumption (in MWh)	Energy Tax (EUR/MWh – VAT excl.)
1	Up to 10	108.80
2	10 - 50	90.37
3	50 - 10,000	39.43
4	> 10,000 (non-professional)	2.54
4bis	> 10,000 (professional)	1.88

Given the consumption level of our profiles under study, they fall into the first three bands: 1 for E-RES, 1 & 2 for E-SSME and 1, 2 & 3 for E-BSME. At the same time, all household will receive a fixed refund on the energy tax, fixed at 521.81EUR excl. VAT in 2024.[159]

Component 4 – VAT

The VAT rate applicable in 2024 has been back to its previous level of 21% since January 1st 2023[160].

[157] (Belastingdienst, 2024)
[158] ibid
[159] ibid
[160] (Expat-Check, 2022)

The UK

Component 1 – commodity price

In the UK suppliers often combine electricity and natural gas in one product, the so-called dual tariff, which is supposed to result in lower prices. Since this is not the case in all the other countries and to have a consistent methodology across the study, we only consider products where electricity is offered by itself. Furthermore, suppliers in the UK generally present all-in tariffs that are not entirely transparent. These tariffs consist of:

- The Standing Charge (fixed element), which is expressed in p/day and covers the fixed costs of the DSO; and
- Unit Rate Charge (variable element), which is expressed in p/kWh and varies according to the energy consumption.

Since we only want the commodity price in this section, network charges, taxes and VAT from these 'all-in tariffs' were extracted. Commodity prices of a supplier are not very different between regions, and for the sake of simplicity, we only look at the commodity price in one region, which is then used for all 14 DSO regions. An Ofgem study from 2015[161] analysed the prices throughout the different regions, and out of this study, Yorkshire appeared to be the median zone in terms of commodity price. For this reason, the selected products come from the Yorkshire region. The network cost, VAT and taxes are deducted from the all-in prices of the Yorkshire region. Like other countries in review, the weighted average of network tariffs for all DSOs are used to determine the network cost.

The products and prices were fetched on the 10 largest energy providers in the UK, due to the lack of reliable and complete comparator, both for E-RES and E-SSME profiles. Since we assume that it correctly represents the energy market for both residential profiles, the weights calculation follows the methodology logic. The situation in January 2024 remains exceptional, and as such most providers only have very limited types of product to offer for residential profiles. As a result, products 3 and 4 were selected as being the most competitive products of the second and third largest suppliers.

The switching rate in the UK is of 2.7% in 2022, which is low compared to previous 5 years. This might be due to the introduction of the price cap by the Government of the UK. This introduction capped the price of the bills to a certain amount, adapted every 3 months. During the years affected by the price cap (from 2019 onwards) coupled with the increase in energy prices, end consumers have had low incentives to switch providers as the products differed less, most of the offers reaching the price cap ceiling. Therefore, the switching rate is the weight taken by the cheapest product on the market. We then compute the normalised market shares of the providers which products were selected, and apply the same formula, for example for the standard product of the market incumbent (100%-2.7%)*54.40/2, or 26%. The same is done for the cheapest of the second largest player and the cheapest of the third largest player.

Table 49: Profile weights depending on the products in the UK

Product	Weight E-RES	Weight E-SSME
Standard product of the market incumbent	26.5%	26.5%
Cheapest product on the market	2.7%	2.7%
Cheapest product of the market incumbent	26.5%	26.5%
Cheapest product of the third largest player	44.3%	44.3%

The prices displayed in the table below are VAT exclusive but still encompasses the network costs and taxes. It is important to mention that the standard products in the UK are governed by two mechanisms put in place. The energy price cap, introduced in 2019 with the objective of reducing the impact of an increase of energy costs on final consumers, and the energy price guarantee.

[161] (Ofgem, 2015)

On the one hand, the energy price cap (came into effect in 2020) sets a maximum price cap that providers of energy can charge consumers for each kWh used and this cap considers all costs components (commodity costs; network costs; policy costs; supplier operating costs and VAT)[162].

On the other hand, the energy price guarantee (came into effect in October 2022) is a measure guaranteeing that a typical household would pay on average 2,245 EUR (1,928 GBP) on their energy bill. It translates as a limit of 0.33 EUR (0.29 GBP) per kWh and a daily standing charge of 0.61 EUR (0.53 GBP) for electricity[163] (rates are averages and depend on the region, payment method and meter type).

Table 50: Annual cost of selected products for profile E-RES in the UK

Region	Supplier – Product	Fixed component (EUR/year)	Price for variable (EUR/year)
UK	British Gas – Standard Variable	232.50	1,079.26
	Utilita – Smart Energy	First 730kWh : 854.03	Remaining: 457.18
	British Gas – Fixed Jan25 v9	225.93	1,053.06
	E.ON – Next Fixed 12m v6	232.52	1,018.16

Table 51: Annual cost of selected products for profile E-SSME in the UK

Region	Supplier – Product	Fixed component (EUR/year)	Price for variable (EUR/year)
UK	British Gas – Standard Variable	232.50	9,250.79
	Octopus Energy – Green Business	246.52	7,566.92
	E.ON – Next Fixed	225.93	9,026.21
	British Gas – Fixed Jan25 v9	232.52	8,727.10

The commodity price of the E-BSME profile could not be extracted from the comparison website and is therefore computed on the market prices and describes the cost of electricity for industrial consumers as of January 2024. We used the APX UK DAM as the national index for the calculation. The CREG provided us with the formula used for commodity pricing and is based on an analysis carried out by the Belgian federal regulator of electricity supply contracts of all Belgian consumers with consumption higher than 10 GWh[164]. We do not use the weekend hours of APX UK DAM for the E-BSME profile.

$$\textit{Commodity price}$$
$$= 36.5\%\, CAL\ Y_{-1} + 27.4\%\, CAL\ Y_{-2} + 21.4\%\, CAL\ Y_{-3} + 8.2\%\, Qi_{-1} + 4.2\%\, Mi_{-1} + 2.3\%\, APX\ UK\ DAM$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two years ahead forward price in 2022
CAL Y_{-3}	Average three years ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

[162] (Ofgem, 2024)
[163] (OFGEM, 2024)
[164] Based on the data available to us from Bloomberg, we used the following indices ELU0YR1, ELU0YR2 and ELU0YR3 to calculate respectively the CAL Y-1, CAL Y-2 and CAL Y-3.

Component 2 – network costs

Transmission costs

The transmission costs in the UK are covered by the Transmission Network Use of System (TNUoS) charges and have two possible options: Non-Half-Hourly (NHH) and Half-Hourly (HH). The E-RES and E-SSME profiles are subject to NHH and E-BSME to the HH rate.

Since the 1st of April 2023 and the introduction of CMP343 by the OFGEM[165], a new component to the transmission costs is to be considered: the non-locational band charges. To lower the impact of a consumer's location on its tariffs, the OFGEM (through the 14 DSOs) decided to substantially lower (or even remove) the NHH and HH charges for all regions. This decrease is compensated by the introduction of these banded charges, to which consumers are assigned depending on their connection capacity (kVA).

Table 52: Transmission costs in the UK

Transmission costs		
Tariff option	**Explanation**	**Profile**
Not Half-Hourly (NHH)	Monthly metered customers are paying a demand rate in function of their electricity consumption, expressed in p/kWh.	E-RES and E-SSME
Half-Hourly (HH)	Metering system, which utilises AMR (automatic meter reading) technology to provide electricity consumption reading. The system sends updated meter reads to the energy supplier every half hour. Customers pay a capacity tariff depending on their connection capacity, expressed in p/kVA/day.	E-BSME
Non-locational banded charges	Daily standing charge customers are paying per site depending on the band they are assigned to. The band is assigned based on the customer's connection capacity (kVA).	E-RES, E-SSME and E-BSME

The NHH tariff is zonal, meaning that the rates differ between all fourteen zones of the UK. We use a weighted average value of these fourteen zonal tariffs as transmission cost for our E-RES and E-SSME profiles.

Distribution costs

Our residential and small professional profiles are subject to these costs but follow a different methodology because it depends on the connection voltage. The distribution costs, called Distribution Use of System (DUoS) tariffs, follow two possible charging methods. Since all of our residential and small professional profiles are connected to the LV-grid, the "Common Distribution Charging Methodology" (CDCM) is applicable.[166] This methodology encompasses the following components:

Table 53: Distribution costs in the UK

Distribution costs	
Component	**Explanation**
Total consumption	A unit charge in p/kWh
Fixed charge	Fixed charge per offtake points in p/MPAN[167]/day
Metering costs[168]	Cost for use and management of your energy meter in p/day or GBP/year

To estimate the UK prices, we took the weighted average (based on the number of connections of DSOs) of the fourteen zonal tariffs to calculate the distribution costs.

[165] (OFGEM, 2022)

[166] (Energy networks association, 2020)

[167] Meter Point Administration Number

[168] Electricity metering charges in the UK are not easily accessible. A proxy was used to account for these charges based on a methodology disclosed by National Grid, the British TSO delivering electricity and natural gas. As electricity and natural gas are frequently offered as one product with a dual tariff, natural gas metering methodology was used as a proxy. Charges are billed as a fixed yearly charge for installation costs recovered via a rental given that we assume our profiles do not own the meters.

Component 3 – all other costs

Four additional costs are applicable on electricity in the UK:

1. Energy suppliers need to account for the cost of the **Energy Company Obligation (ECO)** scheme, which helps to reduce carbon emissions and tackle energy poverty. This ECO scheme “has seen 4 iterations, ECO, ECO1, ECO2, ECO3 and ECO4 […]. The ECO4 Order came into force in July 2022. ECO4 applies to measures installed from 1 April 2022 and will cover a four-year period until 31 March 2026.[169] The cost of the ECO scheme represents, according to Ofgem, around 25% of the electricity invoice.[170]

2. The **Climate Change Levy** (CCL) is applicable to the consumption of electricity and natural gas for businesses in the industrial, public services, commercial and agricultural sectors. This levy is “an environmental tax charged on the energy that businesses use. It’s designed to encourage businesses to be more energy efficient in how they operate, as well as helping to reduce their overall emissions.”[171]

   The following table gives an overview of the rates that are charged to professional consumers regardless of their profile (Residential consumers are exempted from it[172]):

Table 54: Climate Change Levy rates on electricity[173]

Time period	Electricity rate (GBP)	Electricity rate (EUR)
1st April 2023 to 31st March 2024	0.775 p/kWh	0.009 EUR/kWh
1st April 2024 to 31st March 2025	0.775 p/kWh	0.009 EUR/kWh

3. The **Renewables Obligation (RO)** is the cost placed on electricity suppliers in the UK for the large-scale renewable subsidy scheme. Like the Climate Change Levy, the quota and buyout price are determined for a year starting in April. From 1st April 2023 to 31st March 2024, the buyout price per RO Certificate is 32.23EUR (27.68 GBP).

4. The **Assistance for Areas with High electricity distribution Costs (AAHEDC)** levy compensates for high distribution costs in the zone of Northern Scotland (1 of the 14 zones), amounting 0.0489 cEUR/kWh (0.042038 p/kWh) for the period ranging from 1st April 2023 to 31st March 2024.[174]

Component 4 – VAT

Electricity used for residential and domestic purposes is subject to a 5% VAT in Great Britain.[175]

[169] (Ofgem, 2024)
[170] As no exact price could be identified for this cost, a proxy derived from OFGEM’s website is used. We consider ECO to account for the full weight of Environmental and Social Costs component as estimated by OFGEM. (Ofgem, 2024)
[171] (SEFE, 2024)
[172] (GOV.UK, 2022)
[173] ibid
[174] (ESO, 2024)
[175] (Shorts, 2023)

Natural gas

Natural gas: Detailed description of the prices, price components and assumptions

For all countries under review, this section details:

1. **Commodity costs** for profiles G-RES and G-PRO.
2. **Network costs** for profiles G-RES and G-PRO.
3. **All other costs** for profiles G-RES and G-PRO.
4. **VAT** for profile G-RES.

Profile	Consumption (kWh)
G-RES	17,000
G-PRO	300,000

Belgium

Contrary to what is observed in other countries, the Belgian natural gas suppliers have quite transparent price sheets. Commonly the current price sheets can be found online on each providers website. The price sheets also give a good overview of all charged components.

Component 1 – commodity price

In 2022, which is the latest available data for Belgium in the 2023 Retail Markets Monitoring Report [176], the HHI of the retail market in Belgium was over 2,000. According to the methodology, this entails that only three products are considered: the standard product of the market incumbent, the cheapest product of the market incumbent, and the cheapest offer on the market. The switching rate for households in Belgium is 22.4% (G-RES). The products of the market incumbent for G-RES thus each have a weight of (100%-22.4%)/2 or 38.8%.

Table 55: Profile weights depending on the products in Belgium

Product	Weight G-RES
Standard product of the market incumbent	38.80%
Cheapest product on the market	22.40%
Cheapest product of the market incumbent	38.80%
Total	**100.00%**

The table below gives an overview of the selected products per region and their annual cost, which is based on the profile's characteristics. To choose these products, price comparison websites of the respective regional regulators were used[177]. All prices reported are VAT excluded.

Table 56: Annual cost of selected products for profile G-RES in Belgium

Region	Supplier – Product	Contract type (fixed/variable)	Fixed component (EUR/year)	Variable component (EUR/year)
Brussels	ENGIE – Engie Electrabel Easy Indexed TotalEnergies - Pixel ENGIE – Engie Electrabel Direct	Variable Variable Variable	38.50 33.02 16.50	938.08 707.64 837.41
Wallonia	ENGIE – Engie Electrabel Easy Indexed TotalEnergies - Pixel ENGIE – Engie Electrabel Direct	Variable Variable Variable	38.50 33.02 16.50	938.08 707.64 837.41
Flanders	ENGIE – Engie Electrabel Easy Indexed Elegant – BE Nature Flex Gas ENGIE – Engie Electrabel Direct	Variable Variable Variable	38.50 48.58 16.50	938.08 634.00 837.41

While this methodology provides an objective view of the market situation in Belgium, one must be aware that it does not provide a full overview of market prices as only three products were considered to depict the Belgian commodity prices. In addition, due to the limitations of the web comparison tools and the continued uncertainties observed on the energy market, there might be inconsistencies between the regions/countries under review regarding the type of products selected. For example, depending on the country indexed products can be calculated with forward or with backward looking prices. However, we do not believe these differences would impact the overall conclusions of this report.

[176] The 2023 Retail Markets Monitoring Report (CEER, 2023)
[177] Flanders : https://vtest.vreg.be; Brussels : www.brusim.be; Wallonia : www.compacwape.be

The commodity component for the G-PRO profile was not extracted from a comparison site but is based on the prices observed in January 2024 and they are provided by the CREG for the 2024 update. The formula that was used to compute the commodity cost for this profile is the same as the large industrial profiles and is set out in the corresponding segment.[178], which represents their most significant component of natural gas bills.[179] The CREG provided all necessary commodity data and already calculated the commodity cost for G-PRO and all other industrial gas profiles.

Component 2 – network costs

Transport costs

As discussed in the consumer profiles, we assume that G-RES profile is connected on the T2 level and G-Pro on the T3 level. The transport costs disclosed by Fluxys in 2024[180].

Table 57: Transmission cost of Belgian TSO

TSO	Transport cost (EUR/kWh)
Fluxys	0.00153

The transport cost for residential and small professional consumers takes the entry and exit tariffs into account while also taking a weighted average of low (L) and high (H) caloric natural gas.

Distribution costs

Since both G-RES and G-PRO profiles are connected to the distribution grid, distribution tariffs must be considered and therefore added to the transport costs. Like the transport tariffs, the T2 and T3 levels were chosen for respectively G-RES (T2) and G-PRO (T3). Typically, each Belgian region splits distribution tariffs into a different number of components but has at least one common component: *tariff for the use of the network*, which is always composed of*:*

a. Fixed term (expressed in EUR/Year).
b. Proportional term (expressed in EUR/kWh).

Besides, other components are part of the distribution costs, although they vary depending on the region. Brussels includes a tariff for the measuring activities and Flanders includes a tariff of data management and the system management. In contrast, Wallonia only adds a tariff for regulatory balances.

Since tariffs vary between regions and DSOs, a weighted average is computed across all DSOs that are active in the region. The weight is distributed according to the number of EAN connections the DSO owns in the region. In Flanders, all DSOs operated by Fluvius System Operator cv were considered. For Wallonia, all DSOs operated by ORES, as well as RESA, were considered. Both regions' market shares can be found in chapter 3. In Brussels, Sibelga is the unique DSO to be running and therefore selected.

[178] However, it is known that most Belgian industrial consumers' contracts are TTF indexed (CREG, 2022).

[179] This method tackles down the non-intuitive results that were obtained with the previous methodology as a commodity price can undergo heavy variations month to month and therefore lessen significant differences regarding commodity prices between countries considering their distinct situation within a period.

[180] (Fluxys, 2024))

Component 3 – all other costs

There are additional costs in Belgium that can be charged to our natural gas consumers under review. While two additional costs are at the federal level and apply to all profiles, regional costs exist in Brussels and Wallonia. These costs are summarised below with a distinction between common costs to all three Belgian regions and the ones specific per region. It is to be noted that federal charges are levied by suppliers and regional charges are levied by regional DSOs (and invoiced to the suppliers which invoice final customers). Tariff rates are mentioned when they do not vary depending on the consumer profile and/or the DSO; otherwise, units in which they are expressed are detailed:

Table 58: Other costs for residential and small professional natural gas consumers applying to all Belgian regions.

All regions	Profiles
Regional Public Service Obligations (Regional PSOs) on distribution	
a. A general tariff for regional PSOs (expressed in EUR/MWh)	a. G-RES b. G-PRO
Taxes and levies on the federal level	
I. Federal taxes and levies	
a. Energy contribution (0,9978 EUR/MWh) b. Energy contribution (0.54EUR/MWh) c. Special excise duty	a. G-RES b. G-PRO c. G-RES and G-PRO

The table below shows the new Federal special excise duty rates, applied as of the 1st of January 2024for G-RES and G-PRO profiles[181]. The base tariffs for the excise duty can be found in the previous edition of this report. For clarity, we have displayed the tariffs applicable at the effective date of the comparison done. Among these rates, the "counter-cliquet" mechanism adjusts the duty rates based on TTF101 index fluctuations. For example, Q1 2024 excise duty rates varied based on TTF101 values of Q3 2023. There is a 2-quarter gap between the index fluctuation and the excise duty rate change. When the TTF101 index exceeds 100 €/MWh, the special excise duty rate applied to the initial consumption tranche of G-RES, covering usage up to 12 MWh, decreases. Conversely, if the TTF101 falls below 45 €/MWh, the rate for consumption beyond 12 MWh increases.[182]

Table 59: Special excise duty rates in Belgium for natural gas consumers

Yearly consumption	Tax for G-RES (EUR/MWh)
Consumption up to 12 MWh	8.23
Consumption above 12 MWh	8.9925[183]
Yearly consumption	**Tax for G-PRO (EUR/MWh)**
Consumption up to 20,000 MWh	0.66
Consumption between 20,000- 50,000 MWh	0.56
Consumption between 50,000-250,000 MWh	0.54
Consumption between 250,000 – 1,000,000 MWh	0.42
Consumption between 1,000,000 – 2,500,000 MWh	0.22
Consumption above 2,500,000 MWh	0.15

[181] Programme law of December 27th 2004, as modified by the Programme law of December 26th 2022 and by the Lax of March 19th 2023 reforming taxation on the energy bill.

[182] (Service Public Federal Finances, 2023)

[183] The average monthly amount for the TTF101 index fell below 45€/MWh in the first quarter (CREG, 2024), which increases the special excises duty for the consumption beyond 12 MWh for G-RES.

Table 60: Other regional costs for residential and small professional natural gas consumers[184]

Brussels	Flanders	Wallonia	Profiles
Regional Public Service Obligations (Regional PSOs) on transport			
a. Brussels regional public service obligation[185] (0.93or 5.60EUR/month)	-	-	All
Taxes and levies on the regional level			
Regional taxes and levies on distribution			
a. Charges on non-capitalised pensions (0.093 – 0.154 EUR/MWh)	a. Charges on non-capitalised pensions (0.2389EUR/MWh)	a. Levy for occupying road network (1.708 – 1.910 EUR/MWh)	All
b. Levy for occupying road network (1.488 EUR/MWh)	b. Other local, provincial, regional, and federal taxes, Charges, Surcharges, Fees, and contributions (0.0512 EUR/MWh)	b. Corporate income tax (0.765-1.207EUR/MWh)	
c. Corporate income tax and other taxes [186] (0.559 – 0.932 EUR/MWh)	c. Tariff for public service obligations (0,347 – 0,583 EUR/MWh)	d. Other local, provincial, regional, and federal taxes, Charges, Surcharges, Fees, and contributions (0.0029 – 0.0036 EUR/MWh)	
d. Tariff for public service obligations (0,066 - 0,109 EUR/MWh)		e. Tariff for public service obligations (3.218 - 3.677 EUR/MWh)	
Regional taxes and levies on transport			
-	-	Connection fee 0.075 EUR/kWh for the first 1 MWh; then • if yearly consumption < 1 GWh: 0.000075 EUR/kWh • if yearly consumption < 10 GWh: 0.00006 EUR/kWh • if yearly consumption >= 10 GWh: 0.00003 EUR/kWh	All

Component 4 – VAT

Since April 2022, the VAT on natural gas has been temporarily lowered from 21% to 6% for residential consumers. The energy crisis continuing, this measure has been extended several times until 31 March 2023. The federal government announced that as of the 1st of April 2023, the VAT on natural gas will be permanently fixed at 6%. No VAT is due on the connection fee in Wallonia.

[184] The tariffs represented in this table vary depending on the DSO and we have thus chosen to only present the minimum and maximum range of the tariff from the largest (or only) DSO of the region. Sibelga for Brussels, Fluvius Antwerpen for Flanders and ORES Hainaut for Wallonia.

[185] Depends on the calibre of the meter being installed.

[186] Brussels groups the last two regional taxes as one labelled “Financing of Corporate income tax & other taxes”.

Germany

German natural gas suppliers generally present only two tariffs on their tariff sheets, a fixed tariff per month (in EUR/month), the "Grundpreis", and a variable price named "Arbeitspreis" per kWh of natural gas consumed (in cEUR/kWh). Since Germany uses "all-in tariffs", which are less transparent, we deducted the network costs, taxes, and VAT to retrieve the commodity component.

Component 1 – commodity price

The CEER does not set out the German HHI for natural gas suppliers[187], therefore we assume the same distribution of market concentration as for electricity. This would result in the selection of four products: the standard product of the market incumbent, the cheapest offer on the market, the most affordable product of the market incumbent and one of the cheapest products of the second-largest supplier that has not been considered yet. While this approach might pose a limitation, we expect it to have a limited impact on representativeness, given the robustness offered by the regional approach, as four products are selected for every DSO region under study (8 times 4 products). The standard product ("*Grundversorgung*") is offered by a standard supplier, which varies in every DSO region.

For the update of 2024, PwC retrieved the necessary information regarding commodity prices for G-RES through the price comparison tool: stromanbietervergleich.net. Regarding the weights, the same approach as the one used for the electricity profiles is used for this study (same weight is assigned to all the products – 25.00).

Table 61: Profile weights depending on the products in Germany

Product	Weight G-RES
Standard product of the market incumbent	25.00
Cheapest product on the market	25.00
Cheapest product of the market incumbent or the 2nd largest supplier	25.00
One of the cheapest products of the 2nd largest supplier	25.00

Table 62: Annual cost of selected products for profile G-RES in Germany

DSO	Supplier - product	Grundpreis[188] (EUR/year)	Arbeitspreis[189] (EUR/year)
Bayernwerk	E.ON Energie – E.ON Grundversorgung Erdgas	137.39	1,493.46
	MAINGAU – Maingau-GasKomfort	151.26	1,220.19
	E.ON – Erdgas Öko	159.30	1,414.02
	Vattenfall – Easy12 Gas Standard	120.00	1,409.25
SWM Infrastruktur Stammgebiet	Stadtwerke München – Grundversorgung	118.90	1,796.92
	Yippie – Happy Yippie Gas	98.09	1,123.17
	E.ON – E.ON Erdgas Öko	129.28	1,336.17
	Vattenfall – Easy12 Gas Standard	99.81	1,318.69
E-DIS	EWE Vertrieb – EWE Erdgas comfort	170.36	2,211.59
	MAINGAU – MAINGAU GasKomfort	151.26	1,105.79
	E.ON – E.ON Erdgas Öko	223.65	1,256.73
	Vattenfall – Easy12 Gas Standard	220.82	1,207.48

[187] Germany is one of the few European countries that does not monitor this indicator. The other ones are Denmark, Finland, Sweden and Latvia. (CEER, 2023)

[188] Basic price (fixed)

[189] Labour price (variable)

Stromnetz Berlin	GASAG – GASAG ERDGAS Komfort	156.00	1,644.39
	Yippie – Happy Yippie Gas	67.49	1,156.64
	E.ON – E.ON Erdgas Öko	130.57	1,336.17
	Vattenfall – Easy12 Gas Standard	79.63	1,344.11
Westnetz	Thüga Energie – Thüga ClassicGas	120.00	2,135.33
	MAINGAU – MAINGAU GasKomfort	151.26	1,105.79
	E.ON – E.ON Erdgas Öko	136.66	1,367.94
	Vattenfall – Easy12 Gas Standard	99.81	1,358.41
RNG-Netz 2-Köln	RheinEnergie – FairRegio Erdgas Basis	145.00	2,721.59
	MAINGAU – MAINGAU GasKomfort	151.26	1,123.27
	E.ON – E.ON Erdgas Öko	166.94	1,366.36
	Vattenfall – Easy12 Gas Standard	140.19	1,340.93
Netze BW[190]	ENRW Energieversorgung Rottweil – ENRW Grund- un Ersatzversorgung	119.88	1,865.23
	Yippie – Happy Yippie Gas	77.19	1,164.58
	Vattenfall – Easy12 Gas Standard	99.81	1,337.76
	E.ON – E.ON Erdgas Öko	132.06	1,355.23
Stuttgart Netze	EnBW Energie – EnBW ErdgasPlus	91.08	2,049.53
	MAINGAU – MAINGAU GasKomfort	151.26	1,201.12
	E.ON – E.ON Erdgas Öko	114.98	1,504.58
	Vattenfall – Easy12 Gas Standard	79.63	1,487.10

The CREG has provided the values for the G-PRO profile in Germany.

[190] For this provider the report of 2022 looked at the village Weilen. The price comparison tool could not generate results for this village in 2023 (“Es konnten keine Tarife zu Ihren Einstellungen gefunden werden”) so the choice was made for another neighbouring village, i.e. Deilingen (postal code 78586).

Component 2 – network costs

As for the methodology employed for electricity, four rural (1/zone) and four urban DSOs (1/zone), for a grand total of eight DSOs, are selected. As both of our profiles, G-RES and G-PRO are connected to the distribution network; they are thus subject to transport and distribution costs, which are integrated into one single tariff. Besides, we assume these profiles to fall under the category "*Netzentgelte für Entnahmestellen ohne Leistungsmessung*" (or network charges for offtake points without power metering) as their consumption is yearly metered.

The annual charge is comprised of four components as listed below, even if DSOs might use different bands or rates:

Table 63: Distribution costs in Germany

Network costs		
Component	**German label**	**Explanation**
Basic charge	Grundpreis	A fixed basic fee expressed in EUR/year.
Consumption charge	Arbeitspreis	A variable element which depends upon the volume of energy consumed in cEUR/kWh/year.
Metering costs	Messung	Fixed charges related to the cost of metering and invoicing, for which we assume our residential and small professional consumers to have been metered annually.
Metering point operation per counting point charges	Messstellenbetrieb	

German annual charge for natural gas is computed as follows:

$$Annual\ charge =$$

$$Arbeitspreis * (Annual\ Consumption - \ Durch\ Grundpreis\ abgegoltene\ Arbeit) + Grundpreis$$

Where, "*Durch Grundpreis abgegoltene Arbeit*" is the price band bottom level, expressed in kWh.

Depending on the consumers' consumption volumes, they fall under certain categories (the number of categories depends on the local DSO). These categories determine the amount of consumption volume that must be set at a standard rate, while the rest fall under the network cost fares as determined by local DSOs. These volumes are said to be compensated to limit network costs and ultimately, DSOs' remuneration.

Component 3 – all other costs

We flagged three supplementary costs for natural gas consumers in Germany: the "*Energiesteuer*" or Gas tax, the "*Konzessionsabgabe*" or Concession fee and the *"CO2 Steuer"* or Carbon tax:

- The "*Energiesteuer*" or Natural gas tax, is an energy tax that applies at several rates depending on the consumer. This price of 5.50EUR/MWh is the standard rate when using natural gas for heating purposes[191], which is applied for our G-RES profile. Regarding our small professional profile, G-PRO, a reduced rate is ranging from 4.12EUR/MWh to 2.07EUR/MWh as companies fall under other regimes specified by the law when not using natural gas for heating purposes[192].
- The "*Konzessionsabgabe*, or Concession fee, exists for electricity and natural gas depending on the municipality size and the contract type of the consumer. As it is impossible to compute a weighted average of the fee, we calculated a non-weighted mean for the four categories of municipalities. Since the natural gas usage has different associated prices, we computed two rates respectively for our two studied profiles:
  - Natural gas only for cooking and for hot water in municipalities (7.05EUR/MWh): we attribute this usage to strictly residential consumers (G-RES)[193].
  - Natural gas for other purposes (3.05EUR/MWh): we attribute this usage to SME consumers (G-PRO)[194]. As small professionals fall under reduced rates as the law implemented special rates for companies.
- The "CO2 Steuer" or Carbon tax is an energy tax that is applied to the gas used for heating and transport and it is applicable to all consumers profiles under review. The rate amounts to 0.8163 ct/kWh of gas consumed.

Component 4 – VAT

As a measure to combat inflation and to offset the impact of a new gas levy on consumers, Germany decided to temporary reduce the VAT rate applicable on natural gas from 19% to 7%. This reduced rate will apply from 1st October 2022 until 31 March 2024 and is therefore used for residential consumers (G-RES) in this iteration of our study[195].

<u>Note:</u> As of 1st March 2023 (and with a retroactive effect for January and February 2023) until the 31st of December 2023[196], a price cap applied for natural gas as a temporary measure to protect households and other small-scale users from an uncontrolled natural gas price increase. For private households (G-RES) and companies with a historical gas consumption up to 1,500 MWh per year (G-PRO and G0), the natural gas price was capped at 0.12EUR/kWh (including taxes, levies and other charges) for up to 80% of their natural gas consumption of the previous year. Although the cap officially began in January 2023, consumers only started seeing the effect on their bills in March 2023, when they received a rebate on their January and February bills. The policy was extended until April 30, 2024. For the remaining consumption, users had to pay the regular market price.[197] In addition, around 24,000 to 25,000 Industrial companies with a gas consumption above 1,500 MWh/y have also been given relief with a price cap of 0.07 EUR/kWh on 70 percent of their 2021-level gas consumption.[198]

[191] (Bundesamt für Justiz, 2024)
[192] § 54 and § 55 Energiesteuergesetz
[193] (Bundesamt für Justiz, 2024)
[194] (Bundesamt für Justiz, 2024)
[195] (VAT Calc, 2023)
[196] (Die Bundesregierung, 2024)
[197] (Die Bundesregierung, 2022)
[198] (Columbia SIPA, 2023)

France

Component 1 – commodity price

Only three products are considered for the French market since the HHI of the retail market was over 2,000 in 2022, which is the latest available data for France in the 2023 Retail Markets Monitoring Report,[199]. These products are the standard product of the market incumbent, the cheapest product on the market and the most affordable product of the market incumbent. As defined by the methodology, the weight of the most inexpensive option equals the annual switching rate and is 15.6% for household consumers.[200] The weights of the products for the G-RES profile are set out in the table below.

Table 64: Profile G-RES weight for each product

Product	Weight G-RES
Standard product of the market incumbent	60.85
Cheapest product on the market	15.60
Cheapest product of the market incumbent	23.62

To extract the commodity price, we have used the price comparison website that the CRE puts forward, http://comparateur-offres.energie-info.fr. In France, consumers are presented with "all-in tariffs" which toughens the extraction of the commodity component. Therefore, we present the total cost without VAT but with other taxes and network costs.

Table 65: Annual cost of selected products for profile G-RES in France

Region	Supplier – Product	Fixed component (EUR/year)	Variable price based on consumption (EUR/year)
France	ENGIE - Gaz Adapt 1 AN TotalEnergies – Offre Spéciale Gaz EDF - Avantage Gaz Optimisé	209.28 209.28 229.70	1,326.00 1,162.80 1,254.60

As mentioned before, six price zones exist in France. However, given that our consumers' profiles could be randomly dispersed on the territory, the price zone with the most significant number of cities, reflecting, therefore, the majority prices, was used.

In addition, it is worth mentioning that in France, residential consumers and consumers with an annual consumption up to 300 MWh can no longer benefit from regulated tariffs ("*tariffs réglementés*"), as was the case in 2023.

[199] The 2023 Retail Markets Monitoring Report (CEER, 2023)

Component 2 – network costs

Transport costs

Transmission tariffs have the following components:

1. Transport costs (expressed in EUR/MWh).
2. Storage costs (expressed in EUR/MWh) are charged on final residential consumers to finance the cost of storing natural gas to smoothen the seasonal demand effect.

Distribution costs

As stated before, 95% of all distributed natural gas in France is delivered by GRDF (Gaz Réseau Distribution France)[201], which is why GRDF is considered as the sole DSO for this study. Given their annual consumption levels, both G-RES and G-PRO are subject to the tariffs T2. The fare has three components:

1. Subscription (expressed in EUR/year).
2. A daily capacity charge (expressed in EUR/MWh/day).
3. A proportional component (expressed in EUR/MWh).

Component 3 – all other costs

In France, two additional surcharges must be considered for residential and small professional consumers:

Table 66: Other costs in France (G-RES, G-PRO)

All other costs		
Name	**Definition**	**Amount in 2024**
Contribution Tarifaire d'Acheminement: **CTA**	The CTA finances part of the pensions of staff in the energy sector for Electricity and Natural gas Industries.	20.80 for residential and small professional consumers that are connected to the distribution grid and are due on the fixed component of the network tariffs.[202] *Note:* *as network tariffs may vary according to the selected price option, the CTA amount may therefore also vary*
Taxe Intérieure de Consommation sur le Gaz Naturel : **TICGN**	The TICGN is a tax that applies to all deliveries of natural gas sent to an end user. Its amount is calculated according to consumption.	16.37 EUR/MWh. This rate has almost doubled compared to 2023, which is in sharp contrast with its declining trend since 2020.[203]

Component 4 – VAT

A reduced VAT rate of 5.5% applies to the amount of the subscription as well as on the CTA.

The standard 20% VAT rate applies to the amount of consumption as well as on the TICGN.

[201] (Comission de régulation de l'énergie, 2024)
[202] (Le médiateur national de l'énergie, 2024)
[203] (Le médiateur national de l'énergie, 2024)

The Netherlands

Component 1 – commodity price

The HHI-index of the retail market in the Netherlands was higher than 2,000 in 2022, which is the latest available data for The Netherlands in the 2023 Retail Markets Monitoring Report.[204] Therefore, three products are considered: the standard product of the market incumbent, which was the cheapest product of the market incumbent as well, the cheapest offer on the market and one of the cheapest products of the second-largest supplier that has not been considered yet.

The switching rate for households in the Netherlands is 17.20 (G-RES). Furthermore, the normalised market shares of the incumbent and second-largest supplier are 56.25% and 43.75% respectively. This results in the following weights, as shown in Table 67, for each product.

Table 67: Profile weights for each product in the Netherlands

Product	Weight G-RES
Standard product of the market incumbent	46.57%
Cheapest product on the market	17.20%
One of the cheapest product of the second-largest supplier	36.23%
Total	**100.00%**

The products were obtained by consulting a Dutch price comparison website https://www.energieleveranciers.nl/ and energy providers' websites. The products selected for profiles G-RES and their prices are stated in the next tables. These prices exclude charges and taxes.

Table 68: Annual cost of selected products for profile G-RES in the Netherlands

Region	Supplier – Product	Fixed component (EUR/year)	Variable price based on consumption (EUR/year)
The Netherlands	Vattenfall	59.40	784.80
	Frank energie	69.42	600.77
	Eneco	59.40	757.31

The Dutch network is primarily supplied with the low calorific gas (L-gas) in contrast to most of Western Europe (H-gas). As prices in the Netherlands are reported by m³ instead of by kWh, a conversion factor is used. The latter is of 9.77kWh/m³ as all residential and small users, use low caloric natural gas[205].

The commodity price for the G-PRO profile is the January 2024 observed prices for TTF, and the CREG provided all commodity prices data.

[204] The 2023 Retail Markets Monitoring Report (CEER, 2023)

[205] (Gasunie Transport Services, 2024), 1 m^3 under normal conditions (zero degrees Celsius, 1 atm) is considered to have a calorific value of 35.17 MJ (Groningen-gas equivalent) with a conversion factor of 1 MJ= 0.278 kWh.

Component 2 – network costs

As it is the case for electricity, the Netherlands use a combined tariff including four components:

Table 69: Components of network costs in the Netherlands

Network costs		
Component	**Dutch labelling**	**Explanation**
Standing charge	Vastrecht	Fixed basic fee (expressed in EUR/year).
Capacity charge	Capaciteitstarieven	Fixed fee covering the costs associated with the transport of natural gas. Its height depends on the capacity of the connection (expressed in EUR/Year/m³/h).
Periodical connection tariff	Periodieke aansluitvergoeding	Fixed fee covering the costs for managing the connection (expressed in EUR/year).
Metering charge	Meettarief	Fixed charges are covering the use and management of energy meters (expressed in EUR/year).

As the Dutch distribution tariffs are notably dependent on a capacity charge, which is based on the m³ volume consumption, the same conversion factor, as mentioned above, is used.

Component 3 – all other costs

Only one surcharge remains in the Netherlands for the profiles discussed in this part of the study, namely the Energy Tax ("Regulerende Energie Belasting", or REB). In the 2023 Tax Plan, the Dutch government has proposed to simplify the energy tax system by including the rates for the surcharge for sustainable energy and climate transition ("Opslag Duurzame Energie", or ODE) directly in the energy tax. As a result, all ODE rates for the year 2023 are reduced to 0.00EUR (as from this year, the ODE will be formally abolished)[206].

Next to this the Energy Tax has also raised in 2024 as a stimulation measure from the Dutch government. The energy tax for gas has increased, while the energy tax for electricity has decreased. The reasoning behind this is that households would opt more often for electric heat options (e.g. heat pumps), or for sustainable heat options (e.g. geothermal heat).[207]

The Energy Tax (REB) varies, in a degressive trend, according to the amount of consumed gas as shown in the table below:

Table 70: Gas Energy Tax and ODE bands (Netherlands, 2024)[208]

Band	Consumption (in m³)	Energy Tax (EUR/m³ – VAT excl.)
1	Up to 170,000	0.58301
2	170,001 – 1,000,000	0.22378
3	1,000,001 - 10,000,000	0.12855
4	> 10,000,000 (professional)	0.04886

As the Energy Tax is fixed in EUR per volume units (EUR/m³) and not in EUR per energy unit, the calorific value of the used natural gas has an impact on the total amount paid. As stated under "Component 1 – commodity price" of the Netherlands, low caloric natural gas is used, except in around 80 industrial companies, the assumption is made that the profiles G-RES and G-PRO use low caloric natural gas. To determine our profiles' tax categories, we use the same conversion factor of 9.77kWh/m³ mentioned previously.

Given the consumption level of our profiles understudy, G-RES profile falls into band 1 and G-PRO profile can be spread across band 1 and band 2.

[206] (Vattenfall, 2024)
[207] (Belastingdienst, 2024)
[208] ibid

Component 4 – VAT

The VAT rate for natural gas has been back to its previous level since 1st January 2023 of 21%, after a temporary reduction in 2022 when a VAT of 9% applied[209].

<u>Note:</u> *In 2023, a price cap was applied for natural gas as a temporary measure to protect households and other small-scale users from an uncontrolled natural gas price increase. In concrete terms, for up to 1,200 m³ of natural gas used during the whole year, a maximum rate of 1.45EUR/m³ applied in 2023.*[210]

This scheme applied to small-scale users, defined as "everyone with a regular energy connection, like households, small businesses and community associations. The building with the connection must be designated as a home or workplace, however." The price cap also applied to SMEs with a regular connection. The price cap was lifted on January 1, 2024.[211]

[209] (Expat-Check, 2022).
[210] (Government of the Netherlands, 2024)
[211] (Authority for Consumers & Markets, 2023)

The UK

Component 1 – commodity price

In the UK gas suppliers generally present all-in prices that are not transparent. These prices consist of:

- The Standing Charge (fixed element), which is expressed in p/day and that covers the fixed costs of the energy supplier and;
- Unit Rate Charge (variable element), which is expressed in p/kWh and that varies according to the energy consumption.

Since we only want the commodity price in this section, we had to deduct network charges, taxes and VAT from these 'all-in prices'. Commodity prices of a supplier are not very different between regions, and for the sake of simplicity, the commodity price of only one region is used for all 9 DSO regions. An Ofgem study from 2015[212] analysed the costs throughout the different areas, and out of this study, Yorkshire appeared to be the median zone in terms of commodity price. For this reason, the selected products come from the Yorkshire region. The network cost, VAT and taxes are deducted from the all-in prices of the Yorkshire region. Like other countries in review, the weighted average of network prices for all DSOs are used to determine the network cost.

The HHI of the retail market in the UK is between 1,000 and 2,000 in 2023, based on an estimation made for the HHI using the domestic gas supplier market shares in the UK of the third quarter of 2023[213]. This means that four products should be considered: the standard product of the market incumbent, the cheapest product on the market, the cheapest product of the market incumbent and the cheapest product of the second-largest supplier. The energy providers' websites were directly consulted to retrieve the necessary information.

The switching rate for households in the UK is 2.39%. Furthermore, the normalised market share of the incumbent and second-largest supplier on the market amount for 61.95 and 38.05., respectively.

Table 71: Weight for each product in the UK

Product	Weight G-RES
Standard product of the market incumbent	30.23%
Cheapest product on the market	2.39%
Cheapest product of the market incumbent	30.23%
Cheapest product of the second-largest supplier	37.14%

An overview of the products and their respective pricing elements are presented in the table below.

Table 72: Annual cost of selected products for profile G-RES in the UK

Region	Supplier – Product	Fixed component (EUR/year)	Var. price based on consumption (EUR/year)
The UK	British Gas – Standard Variable Tariff	119.80	1,383.61
	Octopus Energy – Octopus Tracker Dec 2023 v1	111.47	825.58
	British Gas – Moving Home Exclusive v7	113.22	1,273.77
	Octopus Energy – Loyal Octopus 12M Fixed Dec 2023 v2	111.47	1,276.07

The commodity price of the G-PRO profile was provided by the CREG. The national commodity price is the result of January 2024 prices.

[212] (Ofgem, 2015)
[213] (Ofgem, 2024)

Component 2 – network costs

Transport costs

Only one TSO, excluding the Northern Islands, operates in the UK: National Grid Gas. The Gas Transmission Transportation Charges are comprised of the following components:

Table 73: Transport costs components in the UK

Network costs (transport)	
Component	**Explanation**
Entry Commodity Charge	A charge per unit of natural gas transported payable for flow entering the system in p/kWh/day
Exit Commodity Charge	A charge per unit of natural gas transported payable for flow exiting the system in p/kWh/day
Commodity charge	A charge per unit of natural gas transported payable for flows entering and exiting the system in p/kWh
Compression Charge	A charge per unit of natural gas transported payable because of the need for additional compression in p/kWh.

National Grid Gas provides a weighted average of the entry and exit capacity tariffs in their Statement of Gas Transmission Transportation Charges[214].

Distribution costs

Both of our residential and small professional profiles (G-RES and G-PRO) must pay distribution tariffs since they are connected to the distribution grid. There are eight natural gas DSOs in the UK, out of which 4 are run by Cadent Gas. The distribution tariff for natural gas is composed of the following components:

Table 74: Distribution costs for residential users and small professionals in the UK

Network costs (distribution)		
Component	**Explanation**	**Profile**
LDZ System Capacity Charge	With charge band for consumption up to 73,200 kWh, calculated using the supply point End User Category (EUC) and the appropriate load factor in p/kWh.	G-RES
	With charge band between 73,200 and 732,000 kWh, calculated using the supply point End User Category (EUC) and the appropriate load factor in p/kWh.	G-PRO
LDZ System Commodity Charge	With charge band for consumption up to 73,200 kWh, calculated using the supply point End User Category (EUC) and the appropriate load factor in p/kWh.	G-RES
	With charge band between 73,200 and 732,000 kWh, calculated using the supply point End User Category (EUC) and the appropriate load factor in p/kWh.	G-PRO
LDZ Customer Capacity Charge	With charge band for consumption up to 73,200 kWh, it is a capacity charge in p/Peak day kWh/day.	G-RES
	With charge band between 73,200 and 732,000 kWh, a fixed charge which depends on the frequency of meter reading, plus a capacity charge based on the registered SOQ.	G-PRO
LDZ Customer Fixed Charges	Only due for supply points with annual consumption between 73,200 and 732,000 kWh/year	G-PRO
Exit Capacity Charges	Capacity charge applied to the supply point like LDZ System Capacity Charge. These charges are applied per exit zone on an administered on peak day basis in GBP/year.	G-RES and G-PRO
Metering charges	Cost for use and management of your energy meter in GBP/year.	G-RES and G-PRO

[214] We have used the weighted averages published in the Gas Transmission Transportation Charges of the NGG valid as from the 1st of October 2023, (National Gas Transmission, 2023)

The capacity terms are based on the estimated maximum daily offtake. This is calculated by dividing the total consumption in a year by the number of days of consumption multiplied by the load factor. This load factor is related to the EUC (End User Category) bands. Each local distribution zone has 33 individual EUC bands that define 9 different consumption profiles based on annual consumption.

The load factors differ depending on the annual consumption of a profile and the local distribution zone. Each DSO has its own load factor percentages, but only Northern Gas Networks discloses its load factors, which we used as a proxy for all other DSOs. The table below depicts the load factors used for profiles G-RES and G-PRO:

Table 75: Load factors for profiles G-RES and G-PRO

Profile	Bands	Threshold (kWh)	Average load factor
G-RES	1	1 – 73,200	34.00%
G-PRO	2	293,001 – 732,000	38.40%

Based on this, the capacity term is computed as follows:

$$annual\ charge = (SOQ * 365\ days) * unit\ rate$$

Where,

$$SOQ = annual\ consumption/(365\ days * Load\ Factor)$$

We considered a weighted average of these components across four active DSOs for natural gas in the UK.

Component 3 – all other costs

One additional cost is applicable on natural gas in the UK:

1. Energy suppliers need to account for the cost of the Energy Company Obligation (ECO) scheme, which helps to reduce carbon emissions and tackle energy poverty. This ECO scheme “has seen 4 iterations, ECO, ECO1, ECO2, ECO3 and ECO4 […]. The ECO4 Order came into force in July 2022. ECO4 applies to measures installed from 1 April 2022 and will cover a four-year period until 31 March 2026. The cost of the ECO scheme represents, according to Ofgem, around 2.46 of the natural gas invoice.[215]

2. The **Climate Change Levy** (CCL) is applicable to the consumption of electricity and natural gas for businesses in the industrial, public services, commercial and agricultural sectors. This levy is “an environmental tax charged on the energy that businesses use. It’s designed to encourage businesses to be more energy efficient in how they operate, as well as helping to reduce their overall emissions.”[216]

   The following table gives an overview of the rates that are charged to professional consumers regardless of their profile (Residential consumers are exempted from it[217]):

Table 76: Climate Change Levy rates on natural gas[218]

Time period	Natural gas rate (GBP)
1st April 2022 to 31st March 2023	0.568p/kWh
1st April 2023 to 31st March 2024	0.672p/kWh
1st April 2024 to 31st March 2025	0.775p/kWh

[215] (OFGEM, 2024)
[216] (SEFE, 2024)
[217] (GOV.UK, 2022)
[218] ibid

Component 4 – VAT

VAT on the consumption of natural gas in Great Britain amounts to 5% for residential consumer.

Note: *An energy price cap is in place in the UK, which set a maximum price cap that energy providers can charge consumers for each kWh used. This cap considers all costs components (commodity costs, network costs, policy costs, supplier operating costs and VAT). The energy price guarantee gava householders the assurance to pay on average £2,500 (2,910.49 EUR) on their energy bill until the end of March 2023. The equivalent per unit level for a typical gas consumer was £0.17kWh (€0.20kWh) with a standing charge of £0.28day (€0.33day) in January 2023.[219] The per unit level for a gas consumer in January 2024 is £0.0742/kWh (€0.086/kWh) with a standing charge of £0.296/day (€0.34day)[220], assuming Direct Debit as payment method[221].*

[219] (Ofgem, 2022)
[220] (OFGEM, 2024)
[221] This is the most common payment method in the UK (Campion, 2024)

5. Large industrial consumers

5. Large industrial consumers

This chapter aims at providing an extensive introduction to the prices, price components and the assumptions taken for each country and region with a particular focus on industrial consumers of electricity (E0 to E4) and natural gas (G0 to G2).

Electricity

Electricity: Detailed description of the prices, price components and assumptions

For all countries under review, this section details:

1. **Commodity costs** for profiles E0, E1, E2, E3 and E4
2. **Network costs** for profiles E0, E1, E2, E3 and E4
3. **All other costs** for profiles E0, E1, E2, E3 and E4

Profile	Consumption (MWh)	Connection capacity (kVA)
E0	2,000	781
E1	10,000	3,125
E2	25,000	6,944
E3	100,000	18,056
E4	500,000	86,806

Belgium

Component 1 – commodity price

Commodity prices computation rests on market prices and reflect the cost of electricity for industrial consumers as of January 2024. The equations are based on an analysis performed by the Belgian federal regulator of the electricity supply contracts of Belgian consumers with a yearly consumption higher than 10 GWh. For E0, E1 and E2, CREG did not include weekend hours of Belpex DAM, while for E3 and E4 CREG included weekdays and weekend hours.

$$\textit{Commodity price} = 36.5\%\, CAL\, Y_{-1} + 27.4\%\, CAL\, Y_{-2} + 21.4\%\, CAL\, Y_{-3} + 8.2\%\, Qi_{-1} + 4.2\%\, Mi_{-1} + 2.3\%\, Belpex\ DAM$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two years ahead forward price in 2022
CAL Y_{-3}	Average three years ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

Component 2 – network costs

Transmission cost

Whether connected to the transmission grid 30-70 kV (Local Transmission System) – profile E2 - or to the transmission network itself – profiles E3 and E4 -, the same transmission tariff structure applies to all our industrial profiles under review in this study. However, in the function of the voltage connection, different rates apply.

The transmission costs in Belgium are fixed by Elia Transmission Belgium and consists of five components:

(1) **Connection tariffs**: charges to operate and maintain the user connection for consumers directly connected to Elia's grid (from E2).[222]

(2) **Tariffs for the operation and the development of the grid infrastructure**: including (i) the tariff for the monthly peak for the offtake, (ii) the tariff for the yearly peak for the offtake and (iii) the power put at disposal.

(3) **Tariffs for the operation of the electric system**: including (i) the tariff for the management of the electric system and (ii) tariffs for the offtake of additional reactive energy (not considered).

(4) **Tariffs for the compensation of imbalances**: including (i) the tariff for the power reserves and black-start and (ii) the tariff for the maintenance and restoring of the residual balance of the individual access responsible parties. The latter includes (a) imbalance tariffs, which are not considered as they are (generally) not explicitly billed by the TSO or by suppliers to end consumers and (b) network losses. Network losses on the federal transmission grid (380/220/150 kV) are a separate and additional component of transmission tariffs. Suppliers usually bill these costs as a percentage (fixed every year by the TSO) of the commodity cost. While the costs associated with network losses is not a transmission tariff as such, it is deemed a part of the transmission cost in this study. Over the last 3 years, the increase in the loss percentage fixed by the TSO from 1.35% to 1.95% in four years ("volume effect")[223] and the increase in the unit commodity price over the same period ("price effect") mostly explain the increase in the network costs in Belgium. The network tariffs as approved by the CREG, are on their end relatively stable over the last three years.

(5) **Tariffs for market integration**: Elia Transmission Belgium provides services such as the development and integration of an effective and efficient electricity market, the operation of interconnections, coordination with neighbouring countries and the European authorities and publication of data as required by transparency obligations. The costs that come from these services are covered by the market integration tariff.

As profiles E0 and E1 remain connected to the distribution grid, transmission costs are charged based on DSOs transmission price sheets in Brussels and Wallonia. Since January 2023, transmission tariffs are included in the DSO's distribution tariff sheets in Flanders, for these profiles, split under the following two components: "tarieven voor het netgebruik" and "tarieven m.b.t. overage transmissienetkosten".

[222] This cost depends on the distance between the connection bay and the consumer. We have taken the assumption that this is 500 meters.

[223] (Elia, 2024)

As the table below sets out, regional regulators adopt transmission tariffs on different dates, with Wallonia being deferred compared to Brussels. As this study analyses the tariffs in force in January 2024, the CWaPE tariff to be used is the one effective for the period ranging from 1st March 2023 to 29th February 2024.

Table 77: Adoption date of new tariffs by regional DSOs in Belgium (Large indus. consumers)

Name of the DSO	Effective date
BRUGEL	1 January 2024
CWaPE	1 March 2023

Since January 2023, Flanders integrated the transmission costs within the distribution tariff components (as explained above). The tariff related to transmission costs is computed based on the budgets of the DSOs for the transmission costs, on a yearly basis and renewed every year on the 1st of January.

Distribution costs

As part of our industrial consumers, 2 profiles (namely E0 and E1) are connected to the distribution grid. Consequently, they are also subject to distribution tariffs, which must be added to the transmission tariffs. Voltage level networks have been determined to both industrial profiles connected to the distribution grid as illustrated below:

Table 78: Voltage level for industrial profiles in Belgium

Profiles	Brussels	Flanders	Wallonia
E0	26-1 kV	26-1 kV Hoofdvoeding	MT avec mesure de pointe
E1	Trans MT	Trans-HS Hoofdvoeding	T-MT avec mesure de pointe

Distribution tariffs from all regions have one similar component: tariff for the use of the distribution grid. For both E0 and E1, such component is decomposed as follows:

Table 79: Tariff for the usage of the distribution grid in Belgium

Brussels	Flanders	Wallonia
Capacity term (EUR/kW)	Capacity term (EUR/kW and EUR/kVA)	Capacity term (EUR/kW)
Proportional term (EUR/kWh)	-	Proportional term (EUR/kWh)
Fixed term (EUR/Year)	-	Fixed term (EUR/Year)

Brussels assesses its capacity term based on consumers' annual peak, Wallonia considers the annual and monthly peaks. The former is considered as the peak over the last 11 months before the invoicing month and make up for 75% of the component while monthly peak, the remaining 25%, is determined as the peak of the invoicing month.

As from the 1st of January 2023, Flanders has adopted a new distribution tariff structure, with significant changes for all network users. For the E0 and E1 profiles, the capacity term, which was based on the annual peak until 2022, is now based for 50% on the monthly peak and for 50% on the contracted capacity which can be set by each network user. Penalties apply if the network user exceeds his contracted capacity. There is no more proportional term in this tariff component.

Additional components are part of distribution tariffs, as described in the following table:

Table 80: Additional components for Belgian industrial consumers

Brussels	Flanders	Wallonia[224]
Metering costs	Tariff of data management[225]	Regulatory balances
-	Tariff for other transmission costs[226]	-

As tariffs differ from region to region and from DSO to DSO, a weighted average is computed. Each DSO's weights are determined according to the number of EAN connections[227] owned by each DSO. While we consider all DSOs operated by Fluvius in Flanders, accounting to 100% of EAN connections, we also consider all DSOs from Wallonia (100% of EAN connections).

Component 3 – all other costs

In Belgium, three different kinds of extra costs apply to electricity: tariffs for Public Service Obligations (PSO), taxes and levies, certificate schemes and other indirect costs. These costs are summarised below with a distinction between common costs to all three Belgian regions and the one's specific per region. It is to be noted that federal charges are levied by the suppliers, and regional charges are levied by regional DSOs.

The table below exhibits the first impact caused by regional service obligations because of the grid connection levels. The regions can enforce public service obligations on grid operators running below or equal to 70 kV on their territory (repercussions on profiles E-RES to E2).

Table 81: Overview of voltage distribution to Belgian system operators

Voltage level	Operator in charge	Operator in Belgium
x < 30 kV	Distribution System Operator (DSO)	Several
30 kV < x < 70 kV	Local Transmission System operator (LTSO)	Elia Transmission Belgium in the 3 regions
x > 70 kV	Transmission System Operator (TSO)	Elia Transmission Belgium (federal)

Certificate schemes represent the second regional impact within Belgium that results from the local competence regarding renewable energy obligations matter on their territory. Flanders, Wallonia, and Brussels institute their specific green certificate scheme on all electricity consumers within the affected region (all profiles under review). In addition to assessing Belgium over the three regions, we consider different hypotheses: the consumer profiles E1 to E4 take part in an energy efficiency agreement, and all industrial profiles are affiliated with the sectoral NACE-BEL classification codes 5-33 (all industries).

[224] Charges for metering activities in Wallonia are built in tariffs for the use of the distribution grid.

[225] In 2019, the Flemish regulator conferred Fluvius System Operator cv the role of data manager with a view to the roll-out of the digital meter, among other things. The activities to be performed by the data manager concern data recorded by all types of meters, not only digital meters, but also analogue and electronic meters. The costs of all these activities will be charged as of 2021 via the data management tariff which replace the metering costs.

[226] Note that only on the 1st of January only 64.45% of this tariff is included in the network cost component presented in this report, as this is the share related to the former transmission network tariff components that have been integrated in this new tariff component since 2023: tariff for market integration, tariff for the management of the electric system, tariff for power reserves and black start. The remaining 35.55% of this tariff component is included in the "all other cost" component.

[227] EAN (European Article Numbering) is a unique code attributed to meters and which indicates a supply point for electricity or natural gas.

Tariff rates are mentioned when they do not vary depending on the consumer profile and/or the DSO; otherwise, units in which they are expressed are detailed:

Table 82: Other costs for industrial electricity consumers applying in all three Belgian regions

All regions	Profiles
Regional Public Service Obligations (Regional PSOs)	
Regional PSOs on distribution[228]	
a. A general tariff for regional PSOs (expressed in EUR/MWh)	E0 and E1
Taxes and levies on the federal level	
a. Special excise duty	All

The table below shows the tax rates applied as of 2023 at the Federal level in Belgium for all commercial profiles. As from April 2023, structural measures of VAT reduction (as explained in the previous chapter) and adapted excise duty apply.

Table 83: Special excise duty in Belgium for Electrical commercial consumers – standard rate

Yearly consumption	Tax for professional profiles (EUR/MWh)
Consumption up to 20 MWh	14.21
Consumption between 20 - 50 MWh	12.09
Consumption between 50 - 1,000 MWh	11.39
Consumption between 1,000 – 25,000 MWh	10.69
Consumption between 25,000- 100,000 MWh	2.73
Consumption above 100,000 MWh	0.50

According to Art. 429§ 1er of the law from 27th December 2004[229] an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial procedures. For the sake of this report, we assumed that profiles E1 to E4 could potentially benefit from this exemption, if they fall within the conditions specified by the law.

[228] For each region of Belgium, we compute the tariff through a weighted average of each component across all DSO active in the region (weights are given in terms of number of EAN connection per DSO).
[229] (Chancellerie du Premier Ministre, n.d.)

Table 84: Regional other costs for industrial electricity consumers[230]

Brussels	Flanders	Wallonia	Profiles
Regional Public Service Obligations (Regional PSOs)			
Regional PSOs on transmission			
Funding of support measures for renewable energy (0.5949 EUR/MWh)	Financing of support measures for renewable energy and cogeneration [231] (0.3722 EUR/MWh)	Funding of support measures for renewable energy[232] (5.9249 EUR/MWh)	E0, E1 and E2
Levy compensating for the use of public highways[233] (0.398 EUR/MWh)	Financing measures for the promotion of rational energy use[234] (0.043 EUR/MWh)	-	
Financing of regional energy policies[235] (1.11 EUR/kVA)	-	-	E0 and E1
Taxes and levies on the regional level			
Regional taxes and levies on distribution			
Charges on non-capitalised pensions (0.217 EUR/MWh)	Contribution for the energy fund[236] (182.51- 1064.64 EUR/month)	Levy for occupying road network (3.111 EUR/MWh)	E0 and E1
Corporate income tax and other taxes (1.169 EUR/MWh)	Surcharges for distribution [237] (0.259 - 0.1918 EUR/MWh)	Corporate income tax (1.199 EUR/MWh)	
-	Other transmission costs related to regional PSOs, taxes and levies on transmission (1.572 EUR/MWh)[238]	Other local, provincial, regional, and federal taxes, charges, surcharges, fees, and contributions (0.00056 EUR/MWh)	
Regional taxes and levies on transmission			
-	Levy for the taxes pylons and trenches in Flanders (0.5429 EUR/MWh)[239]	Connection fee (0.075 EUR for the first 0.1MWh; 0.00075 EUR/kWh above 0.1 MWh)	All
Levy for occupying road network (4.1778 EUR/MWh)	-	-	E2, E3 and E4
-	-	Levy for the use of the public domain (0.398 EUR/MWh)	E0, E1 and E2

Because of the regional quota for green certificates (all regions) and combined heat/power-certificates (only Flanders), there are some indirect costs that are added on the commodity price. The average market price of the certificates over the last 12 months, which means for 2024 from 1st of January 2023 until 31st of December 2023, is considered to estimate the cost of this mechanism. The average values for each region considered are presented in the table below and are based on figures retrieved from the respective regional regulators. To estimate the cost of this mechanism, we also consider the quotas and some associated reductions.

[230] The tariffs represented in this table vary depending on the DSO and we have thus chosen to only present the minimum and maximum range of the tariff from the largest (or only) DSO of the region. Sibelga for Brussels, Imewo for Flanders and ORES Hainaut for Wallonia.

[231] For E0 and E1, this component is integrated in the “tariff for other transmission cost” component of the distribution tariff.

[232] In Wallonia a partial exemption of 85% applies for holders of a sectoral energy efficiency agreement, meaning that to the E-BSME profile can profit from this reduction.

[233] (Sibelga, 2024)

[234] For E0 and E1, this component is integrated in the “tariff for other transmission cost” component of the distribution tariff.

[235] (Sibelga, 2024)

[236] (Vlaamse Overheid , 2024)

[237] The distribution tariff sheets from the DSOs do not include more levels of details regarding the surcharges.

[238] All regional PSOs, taxes and levies that are passed on from the transmission system operator to the distribution system operators are integrated in the “tariff for other transmission costs” component of the distribution tariff in Flanders since 2023. They are calculated as accounting for 23.23% of the “other transmission cost” tariff component.

[239] (Elia, 2023). Only for E2, E3 and E4. For E0-E1, the costs of this tariff are integrated in the "tariff for other transmission cost" component of the distribution tariff (see cell above in the table).

Table 85: Certificate schemes in each Belgian region

Region	**Price & Description**	
Average price of certificate schemes		
Flanders (GC)	97.07 EUR/GC	
Wallonia (GC)	66.65 EUR/GC	
Brussels (GC)	86.59 EUR/GC	
Flanders (CHPC)	24.12 EUR/CHPC	
Certificate schemes		
Brussels	Green certificates	The quota increases every year. As opposed to Flanders and Wallonia, no reduction applies for large industrial consumers in Brussels.
Flanders	Green certificates	Since the introduction of the green certificates, the quota has increased yearly (except in 2018). Between 2019 and 2023, there was no quota change. There was a first reduction of the quota in 2024. In 2025 it will be followed by a larger reduction, after which it will remain constant until 2028. Thereafter, it will decrease yearly until 2031[240]. Flanders also applies progressive quota reductions for large consumers. Part of these reductions are only applicable to large consumers active in certain electro-intensive sectors. Starting from 2023, Flanders applies quota reductions for stand-alone battery systems.
	Combined heat/power certificates	Flanders is the only region that also has these certificates. As seen with the green certificates, the quota also increased every year from introduction to 2016 but will remain steady until 2025, after which the quota will temporarily increase until 2031.[241] Similar to the GC there are also progressive quota reductions for large consumers, partly limited to large consumers active in certain electro-intensive sectors[242]. Starting from 2023, Flanders also applies quota reductions for stand-alone battery systems.
	Cap on GC and CHPC	As of 2019 two caps on green certificates were introduced for certain industrial consumers. However, starting 2021 these have been replaced by a cap combining GC and CHPC: [243] i. The amount due for the costs related to the financing of renewable energy and qualitative combined heat and power is capped at 0.5% of gross value added (average last 3 years) for all consumers with an electro-intensity over 20% for consumers belonging to sectors that are listed in annexes 3 and 5 of the EEAG; ii. The amount due for the costs related to the financing of renewable energy and qualitative combined heat and power is capped at 4% of gross value added (average last 3 years) for all consumers belonging to sectors that are listed in annexe 3 of the EEAG.
Wallonia	Green certificates	The quota has increased every year. Progressive quota reductions apply to large consumers, reinforced by the new regional decree that entered into force on July 1st, 2014. These reductions apply for consumers that have contracted a sectoral agreement and we consider that these reductions only apply from consumer profile BSME.
Computation		
The cost of the GC and CHPC scheme is easily computed by multiplying the average yearly consumption by the average market price of the certificates weighted by the quota. The quota and GC (and CHPC) cost depend on the region. Wallonia and Flanders also have a reduction on quota that must be considered for GC (and CHPC).		

240 (VREG, 2024) (Vlaanderen, 2009)

241 Art. 7.1.11 § 2 Energiedecreet

242 (Elia, 2018)

243 Art. 7.1.11/1 Energiedecreet; The companies listed in Annexe 3 and 5 of EEAG correspond to the companies listed in the Energiedecreet except for Nace 3832 (Recycling of waste) which is listed in Annexe 3 EEAG but not in the Energiedecreet.

Germany

Component 1 – commodity price

Commodity prices computation rests on market prices and describes the cost of electricity for industrial consumers as of January 2024. The equations are based on an analysis performed by the Belgian federal regulator of the electricity supply contracts of Belgian consumers with a yearly consumption higher than 10 GWh. The EEX Futures and EPEX DAM prices are the national indexes employed in the computation. For profiles E0, E1 and E2, we use all hours apart from weekends of EPEX SPOT DE DAM, while for profile E3 and E4, we utilise all hours of EPEX SPOT DE DAM.

$$\textit{Commodity price}$$
$$= 36.5\%\,CAL\,Y_{-1} + 27.4\%\,CAL\,Y_{-2} + 21.4\%\,CAL\,Y_{-3} + 8.2\%\,Qi_{-1} + 4.2\%\,Mi_{-1} + 2.3\%\,EPEX\ Spot\ DE$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two year ahead forward price in 2022
CAL Y_{-3}	Average three year ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

Component 2 – network costs

The four German TSOs exclusively operate on the (extra-) high voltage grid and all lower voltage levels are operated by DSOs (often up to 110 kV).

Our profiles are connected to different voltage levels, and different tariffs thus apply. The profiles are associated with the appropriate voltage level in the following table:

Table 86: Connection voltage for each consumer profile

<table>
<tr><th>Connection voltage (U_n)</th><th>Voltage profile</th><th>Consumer profile</th><th>Grid operator</th></tr>
<tr><td rowspan="3">1 kV ≤ Un ≤ 50 kV</td><td rowspan="3">Medium voltage</td><td>E0</td><td rowspan="5">DSO</td></tr>
<tr><td>E1</td></tr>
<tr><td rowspan="2">E2</td></tr>
<tr><td rowspan="2">Un = 110 kV</td><td rowspan="2">High voltage</td></tr>
<tr><td rowspan="2">E3</td></tr>
<tr><td rowspan="2">220 kV < Un ≤ 350 kV</td><td rowspan="2">Extra-High voltage</td><td rowspan="2">TSO</td></tr>
<tr><td>E4</td></tr>
</table>

German prices are disclosed as integrated tariffs both for transmission and distribution, thereby offering less view on the bill components. As described in the dataset, all four transmission zones are represented, but since Germany counts more than 800 DSOs[244], a weighted average of two DSOs (one rural and one urban) per zone is presented.

[244] (Statista, 2023)

Transmission cost

Like Belgium, the German integrated transmission fees involve three main components:

Table 87: Components of German transmission costs

Transmission costs		
Component	**German label**	**Explanation**
Capacity charge	Leistungspreis	Depends upon the maximum capacity in kW contracted, expressed in EUR/year.
Proportional charge	Arbeitspreis	Depends upon the volume of energy consumed in kWh per year, expressed in cEUR/kWh/year.
Metering costs	Messstellenbetrieb	Charges related to the cost of metering and invoicing; fixed prices expressed in EUR/year.

Since it is assumed that load profiles do not exceed their contracted capacity, no other fees such as capacity excess fees are considered.

In 2024, the transmission tariffs have steeply increased in Germany due to the Government's planned subsidies for the grid fees not being approved by the Federal Constitutional Court: as a result the transmission tariffs have more than doubled between 2023 and 2024[245].

When annual consumption exceeds 10 GWh, important transmission network costs reductions can apply on large industrial consumers. Users with a very abnormal load profile (case by case)[246] get a reduction of max. 90%. Moreover, users who exceed 7,000 consumption hours[247] a year, benefit from reductions, as shown in the table below:

Table 88: Grid fee reduction conditions

Annual consumption	Annual offtake hours	Grid fee reduction
> 10 GWh	≥ 7,000 hours	- 80%
> 10 GWh	≥ 7,500 hours	- 85%
> 10 GWh	≥ 8,000 hours	- 90%

These reductions apply to profiles E3 and E4. We assumed that Profile E3 has a profile of 7,692 hours and pays consequently, only 15% of the grid fee, while this is only 10% for profile E4 (8,000 consumption hours). The costs can be allocated pro-rata to final consumers as a surcharge on network charges. Other profiles do not qualify for the following reasons:

- Profile E-BSME and E0 do not consume 10 GWh in addition to reaching fewer offtake hours, respectively 1,600 hours and 4,000 hours.
- Profile E1 and E2 do consume 10 GWh or more, but their offtake hours are lower (5,000 hours).

Distribution costs

Distribution costs follow an identical pricing methodology as for the transmission grid with similar terminology. Tariffs are also composed of three elements: capacity charge (i.e. "Leistungspreis"), consumption charge (i.e. "Arbeitspreis") and the metering costs ("Messstellenbetrieb"). The tariffs may differ on price or range of maximum capacity contracted and electricity consumed.

245 (Netztransparenz, s.d.)
246 (Bundesamt für Justiz, 2024)
247 See definition in section 0. Consumer profiles.

Component 3 – all other costs

When it comes to German taxes and levies, the case is somewhat more complicated with many exemptions, progressive reductions, and various rates. As stated in the section “3.1 General assumptions”, we expect the consumer to behave in an economically rational manner aiming at the lowest tax rate. Whenever the application of reductions or exemptions depends on economic criteria, not under the full control of the user (energy cost/turnover, energy cost/gross value added, pension payments etc.), we present a range of possible options.

We counted six taxes or surcharges that apply on electricity in Germany:

1. The “*KWKG-Umlage*” – Kraft-Wärme-Kopplungsgesetz or Combined Heat and Power Act – is a tax contributing to CHP-plant subsidies. The present forecast data of DSOs and the Federal office for Economic Affairs and Export - Bundesamt für Wirtschaft und Ausfuhrkontrolle shorten by BAFA – represent the backbone of the computations. There is a specific rate for consumers under certain conditions, below detailed. This applies to all profiles from E0 to E4.

Table 89: KWKG-Umlage tax in Germany[248]

Category	Consumer group	Rates
Category A	All other consumers	**2.75 EUR/MWh**
Category B	If consumption > 1 GWh / year and electricity cost is: • For an extensive list of industrial sectors (annexe 3 of EEAG)[249]: >17% of gross value added [250]	**0,4125 EUR/MWh** (85% reduction) but capped[251] at 0.5% of gross value added (average last three years) for all consumers with electricity cost >20% of gross value added
	If consumption > 1 GWh / year and electricity cost is: • For a less extensive list of industrial sectors (annexe 5 of EEAG): >20% of gross value added	**0,4125 EUR/MWh** (85% reduction) but capped at 4.0% of gross value added (average last three years) for all consumers with electricity cost
Category C	If consumption > 1 GWh / year and electricity cost is: • For an extensive list of industrial sectors (annexe 3 of EEAG)[252]: between 14 and 17% of gross value added (avg. last three years)	**0.55 EUR/MWh** (80% reduction) but capped[253] at 0.5% of gross value added (average last three years) for all consumers with electricity cost >20% of gross value added
		0.55 EUR/MWh (80% reduction) but capped[254] at 4.0% of gross value added (average last three years) for all consumers with electricity cost

A **bottom rate of 0.30EUR/MWh** exists that can benefit some consumers from category B and C. The KWKG bottom rate applied for taxes does not vary depending on the activity sector of the consumer. Regarding our reviewed profiles (E0 to E4), we display a range from the bottom rate to the category C rate for electro-intensive consumers. As for non-electro-intensive consumers, we consider a maximum price based on category A rates.

[248] (Energienetze Apolda, 2016)

[249] (European Commission, 2014)

[250] The notion of gross value added is defined in Annexe 4 of the Environmental and Energy State Aide Guidelines, Communication C200/50 of the European Commission. (European Commission, 2014)

[251] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

[252] (European Commission, 2014)

[253] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

[254] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

2. The “StromNEV”, or Electricity Network Charges Ordinance, based on the regulation of charges for access to electricity networks § 19, is a digressive levy to compensate for §19 transmission tariff reductions. Again, different rates apply to the respective following categories:

Table 90: StromNEV tax in Germany

Band	Electricity offtake	Rates
Band A	Offtake ≤ 1 GWh/year	**6.43 EUR/MWh**
Band B	Offtake > 1 GWh /year	**0.50 EUR/MWh**
Band C	Offtake > 1 GWh/year and manufacturing industry with electricity cost > 4% of turnover	**0.25 EUR/MWh**

For all profiles understudy, we display two possibilities: the consumer can benefit from the Band C rate for his offtake above 1 GWh with the bottom range. Or, he does not qualify for the given conditions in which case Band B rate applies for his offtake above 1 GWh and Band A applied for offtakes up to 1 GWh.

3. The “Offshore-Netzumlage”, or Offshore Network Levy, is a levy to pay for offshore wind power generation units. Several rates apply depending on the band they fall into which depends on the total electricity offtake in a similar way we have seen for the KWKG/CHP surcharge.

Table 91: Offshore-Netzumlage tax in Germany

Category	Consumer group	Rates
Category A	All consumers that do not belong to category B or C	**6.56 EUR/MWh**
Category B	If consumption > 1 GWh / year and electricity cost is: • For an extensive list of industrial sectors (annexe 3 of EEAG)[255]: >17% of gross value added [256]	**0.984 EUR/MWh** (85% reduction) but capped[257] **at 0.5% of gross value added** (average last three years) for all consumers with electricity cost > 20% of gross value added
	If consumption > 1 GWh / year and electricity cost is: • For a less extensive list of industrial sectors (annexe 5 of EEAG): >20% of gross value added	**0.984 EUR/MWh** (85% reduction) but capped[258] **at 4.0% of gross value added** (average last three years) for all consumers with electricity cost < 20% of gross value added
Category C	If consumption > 1 GWh / year and electricity cost is: • For an extensive list of industrial sectors (annexe 3 of EEAG) [259]: between 14 and 17% of gross value added (avg. last three years)	**1.312 EUR/MWh** (80% reduction) but capped[260] at 0.5% of gross value added (average last three years) for all consumers with electricity cost > 20% of gross value added
		1.312 EUR/MWh (80% reduction) but capped[261] at 4.0% of gross value added (average last three years) for all consumers with electricity cost < 20% of gross value added

[255] (European Commission, 2014)

[256] The notion of gross value added is defined in Annexe 4 of the Environmental and Energy State Aide Guidelines, Communication C200/50 of the European Commission. (European Commission, 2014)

[257] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

[258] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

[259] (European Commission, 2014)

[260] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

[261] However, these caps are only applicable if the consumer is part of an energy efficiency system improvement program.

A bottom rate of **0.30 EUR/MWh** exists that can benefit some consumers of the EEG for the Offshore-Netzumlage (Offshore Network Levy).

Regarding our reviewed profiles (E0 to E4), we display a scope from the bottom rate to the category C rate for electro-intensive consumers. As for non-electro-intensive consumers, we consider a maximum price based on category A rates.

4. The “Stromsteuer”, or Electricity tax, as its translation shows, is a tax on electricity. The standard rate is 20.50 EUR/MWh, remaining unchanged since 2003. All applying industrial consumers from the manufacturing industry benefit from a 0.5 EUR/MWh rate, as from January 2024[262]. Initially implemented to fund employees’ pensions, companies may be granted important reductions whether they do not contribute much because of a low number of employees. This becomes the new maximum reduced rate that could be obtained.

   The ‘Spitzenausgleich’, or tax relief for energy-intensive companies (under the §55 of the Energy Tax Act), is discontinued in 2024 as the EU Aid under which this relief was granted[263] is not effective anymore. This tax relief for energy-intensive companies enabled consumers to reduce their energy tax (“Stromsteuer”) to 1.537 EUR/MWh, which is equivalent to a 90% reduction.

   Hence, for all profiles, we exhibit a scope from 0.5 EUR/MWh (exemptions) to 20.50 EUR/MWh.

5. The “Konzessionsabgabe”, or Concession fee, is a tax imposed on all users to fund local governments. The basic rate for industrial consumers is 1.10EUR/MWh[264]. Yet, consumers whose final electricity price (all taxes and grid fees included) remains below a fixed threshold (in 2018: 139.20EUR/MWh, published in December 2019[265]), are exempted from the concession fee.

Germany, contrary to its situation in 2023, did not pursue a price cap strategy as from the 1st of January 2024.

[262] (Gesetze, 2024)
[263] (Bundesministerium der Finanzen, 2023)
[264] (Acteno, n.d.)
[265] (RGC Manager, 2019)

France

Component 1 – commodity price

In France, there is a specific mechanism called ARENH[266] that enables alternative electricity suppliers (i.e. suppliers different from EDF, the historical electricity supplier in France) to get access to the nuclear electricity production from EDF under specific conditions set by the French public authorities. This allows to promote competition in the electricity market, electricity from nuclear energy being historically cheaper to produce.

The maximum aggregated amount made available to suppliers other than EDF under this special scheme is set at 100 TWh/year, with a price of 42 EUR/MWh[267]. That means that if the aggregated requests from suppliers under that scheme exceed the overall volume that can be provided (i.e. 100 TWh/year), then the volume of ARENH transferred by EDF is subject to an adjustment process set by the French Regulatory Commission of Energy (CRE).

It has to be noted that with the exception of the distribution of an additional volume of 20TWh in 2022, nor the mechanism itself nor the parameters used (maximum of 100 TWh/year at 42 EUR/MWh) have changed since January 1, 2012 for the ARENH. In other words, the drop in nuclear production observed in France in 2022 and 2023 did not impact ARENH's distribution parameters.

This mechanism is composed of two different elements: (1) a loopback coefficient (“coefficient the bouclage” in French) and (2) a capping rate (“taux d’écrêtement” in French). The ARENH mechanism implies that the commodity price for a given profile is a combination of the market price and the regulated price, with a capping mechanism in place when the electricity quantity ordered exceeds the threshold of 100 TWh for a given year.

The loopback coefficient

The loopback coefficient defines the share of ARENH right to which each consumer (applicable for E-BSME to E4 profiles) can benefit according to their consumption profile.

Fixed since 2015 at 0.964, the loopback coefficient has decreased to 0.844 (a drop of around 12%) for delivery periods starting January 1st, 2024 and is expected to remain at this level for 2025 as well. This is justified by the drop in nuclear production in the country due to various factors such as unavailable reactors, maintenance needs, etc., leading to a drop in the quantity of nuclear electricity produced.[268]

The capping rate

The capping rate vary from year to year based on the request of electricity made under the ARENH mechanism. The subscribed quantities are based on forecasts made by electricity suppliers on the consumption of their customers residing in France for the following year.[269] If the requested quantities exceed the maximum quantity of electricity available under the ARENH scheme (100 TWh), then a capping rate is applied to take this excess into account and adjust the mechanism accordingly.

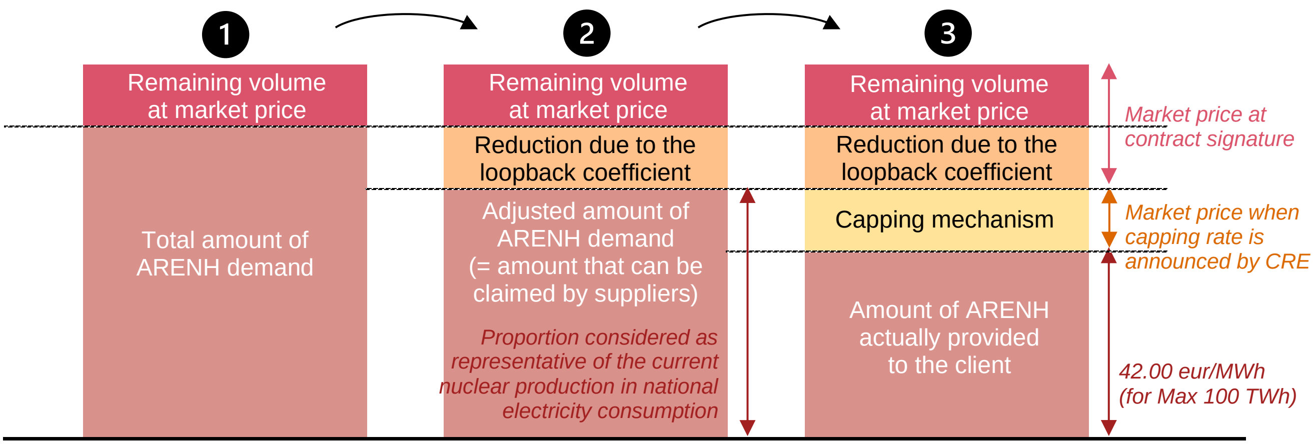
[266] ARENH stands for *Accès Régulé à l’Electricité Nucléaire Historique*, or *Regulated Access to Historic Nuclear Electricity*
[267] (EDF, n.d.)
[268] (Omnegy, 2023)
[269] (Omnegy, 2023)

For 2024, the requests reached 130.41TWh[270] after the adjustment made to the loopback coefficient:

Année de livraison	Date de l'écrêtement	Demandes ARENH (TWh)	Taux d'écrêtement	Prix du marché (CAL+1 le jour de l'annonce)	Impact sur le prix de fourniture pour l'année de livraison considérée (avec un taux ARENH de 75%)
2013	30/11/2012	40			
2014	29/11/2013	36			
2015	28/11/2014	33			
2016	30/11/2015	2			
2017	30/11/2016	30			
2018	01/12/2017	95			
2019	30/11/2018	133	25,0%	57,67	3
2020	29/11/2019	147	32,0%	49,14	2
2021	30/11/2020	146	31,6%	46,59	1
2022	01/12/2021	160	37,6%	169,25	36
2023	01/12/2022	148	32,57%	445,16	98
2024	**01/12/2023**	130	23,32 %	106,55	11

The fact that alternative suppliers cannot obtain the entire volume of electricity requested under ARENH mechanism forces them to obtain the remaining volume from the wholesale electricity market, under less advantageous conditions due to the high price increase observed over the past few years. This is explained in the figure below:

Figure 25: ARENH mechanism applicable in France for electricity under specific circumstances



[270] (EDF, n.d.)

It is also important to understand that the so called "ARENH price" is only applicable for the hours considered as "ARENH hours", which only represent a fraction of the total consumption of any given profile. An overview of the "ARENH hours" is displayed in the table below:

Table 92: Reference period for the ARENH

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekdays only	1 am < x < 7 am												
	All hours												
Weekends and bank holidays	All hours												

Consequently, all the volumes consumed by any given profile outside those hours cannot pretend to the ARENH reduced price. To obtain the most accurate data possible to compute the volume consumed under the ARENH scheme, it is first necessary to assess the total amount of hours eligible for this mechanism to be applied.

To obtain precise results, we include the average amount of bank holidays during the different period to obtain the number of hours under the ARENH scheme for 2024[271]:

	Start date	End date	#days	Corr. Bank holidays	#hours
Weekday (april, may, june, sept, oct, from 1am to 7am)	01/04/2024	31/10/2024	109	104	624
Weekday (july, aug, all hours)	01/07/2024	31/08/2024	45	44	1,056
Weekend & bank holidays (april to oct, all hours)	01/04/2024	31/10/2024	60	66	1,584
			214	**214**	**3,264**

With those parameters, we come up to the following table:

Table 93: Percentage of ARENH hours compared to their overall consumption hours

Profile	Week days	Weekends and Public holidays	% of total consumption hours under ARENH after loopback coefficient adjustment (capping excl.)	% of total consumption hours under ARENH (capping incl.)
Profile E-BSME	✓	✕	13.21%	6.89%
Profile E0	✓	✕	33.03%	17.22%
Profile E1	✓	✕	41.29%	21.53%
Profile E2	✓	✕	41.29%	21.53%
Profile E3	✓	✓	87.81%	45.79%
Profile E4	✓	✓	91.32%	47.62%

If we take the example of a profile E4, that means that if 91.32% of the electricity consumption could theoretically be claimed at the ARENH price (42 EUR/MWh), only 47.62%[272] of the total consumption will ultimately be made available at this price due to the capping. In the context of a significant increase of market prices, the capping therefore induces a significant commodity price increase for each profile.

[271] Bank holidays in France occurring during that period are: Easter Monday ; May 1; May 8; Ascent; Whit Monday ; August 15 (Assumption of Mary). National Day (July 14 falls on a Sunday in 2024).
[272] 91.32% * (1-23.32%), 23.32% being the capping rate applicable for 2024

Taking the example of a profile E4, the commodity price (component 1) of the invoice for this profile can then be computed as following:

*91.32% * (1-23.32%) * ARENH price*

*+ 91.32% * (23.32%) * electricity market price at the time of capping*

*+ (1-91.32%) * electricity market price at contract signature*

For the supply part not covered by regulated prices (ARENH), the electricity market price is based on an analysis of the electricity supply contracts performed by the Belgian federal regulator with a yearly consumption higher than 10 GWh. For E0, E1 and E2 profiles, CREG did not include weekend hours of EPEX SPOT, while for E3 and E4 profiles CREG included weekdays and weekend hours.

It has to be noted that due to the methodology used, we cannot precisely retrieve the electricity market price at the time of capping at contract signature and even less the market price at contract signature. As a workaround, we therefore use here as a proxy the electricity market price provided by CREG for January 2024. Considering that the prices applicable in January 2024 are sufficiently close to those applied in December 2023 (at the time of capping) and to those in force at the time of contract signature in this the case of the residual quantity, this hypothesis is considered sufficiently robust to obtain a value close to reality.

Still taking the example of a profile E4, the commodity price is then simplified in the following way:

70.02% [273] ** ARENH price + 29.98% * electricity market price provided by CREG for January 2024*

The same reasoning applies for all the different profiles in scope of the ARENH mechanism (E-BSME, E0, E1, E2, E3 and E4).

[273] 91.32% * (1-23.32%), 23.32% being the capping rate applicable for 2024

Component 2 – network costs

Integrated transmission and distribution costs

The RTE ("Réseau de Transport d'Electricité") is the Transmission System Operator (TSO) who oversees the transmission network. The French high voltage network starts at 1 kV, as shown in the table below and RTE operates the HTB (> 50 kV) networks.

Table 94: Voltage connection level and voltage domain in France

Voltage connection level (Un)	Voltage domain	
$U_n \leq 1$ kV	BT	Low Voltage domain
1 kV < $U_n \leq 40$ kV	HTA1 (E0, E1)	High Voltage domain
40 kV < $U_n \leq 50$ kV	HTA2	High Voltage domain
50 kV < $U_n \leq 130$ kV	HTB1 (E2)	High Voltage domain
130 kV < $U_n \leq 150$ kV	HTB2 (E3, E4)	High Voltage domain
350 kV < $U_n \leq 500$ kV	HTB3	High Voltage domain

The French transmission tariffs are composed of 3 components which are presented in this table:

Table 95: French transmission tariffs

<table>
<tr><th colspan="4">Network costs</th></tr>
<tr><th>Component</th><th>French label</th><th colspan="2">Explanation</th></tr>
<tr><td>Management component[274]</td><td>Composante annuelle de gestion</td><td colspan="2">The management component depends on whether a consumer has a unique contract or not. We assume profile E-BSME opted for individual contracts.</td></tr>
<tr><td rowspan="6">Component for taking
off electricity</td><td rowspan="6">Composante annuelle de soutirage</td><td colspan="2">Multiple prices options exist varying depending on utilisation length and temporal differentiators with both capacity and consumption components. The prices options are:</td></tr>
<tr><td>HTA</td><td>HTB</td></tr>
<tr><td>1. Short use (CU) with a fixed peak</td><td>1. Short use (CU)</td></tr>
<tr><td>2. Short use (CU) with a mobile peak</td><td>2. Medium use (MU)</td></tr>
<tr><td>3. Long use (LU) with a fixed peak</td><td>3. Long use (LU)</td></tr>
<tr><td>4. Long use (LU) with a mobile peak</td><td></td></tr>
<tr><td>Metering tariff</td><td>Composante annuelle de comptage</td><td colspan="2">The metering tariff depends on whether the meter is owned by the consumer or not. The assumption is taken that concerned industrial profiles (E0 and E1) own their own meters.</td></tr>
</table>

For the consumers that fall under the HTA1 (E0 and E1), there is a similar offering, namely four contract options (see Table 95) based on the offtake in 5 different time slots. The number of hours per time slot was determined based on RTE's timeframe (see Table 96), considering that all these profiles do not operate during weekends. Again, all options were computed and are presented as a price range given that we cannot anticipate what option is preferred by our potential consumers.

[274] Since 2018, the level of this component also considers the financial compensation paid to suppliers in connection with the management of single-contract customers.

Table 96: Hours per temporal classes in France

Hours per temporal classes – RTE Timeframe		
Temporal class	**Weekdays**	**Weekends**
Peak	4h/day for three months (December to February)	n/a
HPH	12h/day for three months (December to March) + 16h/day for two months (March and November)	n/a
HCH	8h/day for five months (November to March)	24h/day for five months (November to March)
HPB	16h/day for seven months (April to October)	n/a
HCB	8h/day for seven months (April to October)	24h/day for seven months (April to October)

The offtake tariffs are a bit more complicated than the other components for profiles falling under HTB (HTB1 for E2 and HTB2 for E3/E4) tariffs. There are additional fees that could have been considered, but we chose not to in this study. Firstly, there are fees for planned and unplanned exceeding of power capacity, a cost for the regrouping of connection, a complimentary fee and emergency power supplies, a fee for reactive energy and a transformation fee. Secondly, there are injection fees, which need to be paid for the injection in the grid. As we assume that the load capacity is constant throughout the year and do not exceed their contracted capacity, the latter components are not taken into consideration.

Since February 2016, a new and relatively complex transmission tariff reduction was introduced to replace the more straightforward transmission tariff reductions that were in place between mid-2014 and late 2015. An update to this reduction was published in April 2021, redefining the eligibility criteria and transmission reduction rates associated. An increase in transmission tariffs finances those reductions billed to the network users who are not eligible for those reductions. Discounts are granted to baseload, “anti-cyclical”, very large consumers and power storage sites connected to the grid according to the principles laid out in the table below.

Table 97: Transmission reductions eligibility criteria and rates

Profiles	Transmission reduction rate	Yearly duration of grid usage	Off-peak grid utilisation	Annual power consumption
Stable profile	81%	7,000h	-	>10 GWh
Anticyclical profile	74%	-	≥44%	>20 GWh
Large consumers	76%	-	≥40% and ≤44%	>500 GWh

Given this framework, we can make the following assumptions for the four consumer profiles under review:

- Profile E0, E1 and E2 are **not eligible** for any reduction, as it does not meet the criteria for stable, anti-cyclical or large consumers.
- Profile E3 **is eligible** for a reduction, as a stable consumer profile. With 7,692 consumption hours per year, the discount can go up to 81%.
- Profile E4 **is eligible** for a reduction, as a stable consumer profile. With 8,000 consumption hours per year, the discount can go up to 81%.

Component 3 – all other costs

As for residential and small professional consumers, there are two surcharges that must be considered for electricity in France:

Table 98: Other costs in France (E0, E1, E2, E3 and E4)

Title	Definition	Amount
Contribution Tarifaire d'Acheminement - **CTA**	The CTA finances part of the pensions of staff in the energy sector for Electricity and Natural gas Industries. It is only being applied to the subscription part of the tariff (HT)	There are two tariffs of the CTA depending on the grid to which the user is connected[275]: • 10.11% for consumers directly connected to the transmission grid (profiles E2, E3 and E4 in France) • 21.93% for all other professional consumers that are directly connected to the distribution grid (profile E0 and E1 in France). *Note: as network tariffs may vary according to the selected price option, the CTA amount may therefore also vary*
Accise sur l'électricité *It is also named TICFE (which is the ex-CSPE)* *It includes local taxes (TCFE)[276]*	The excise is a tax that applies to all deliveries of electricity sent to an end user. Its amount is calculated according to consumption.	The normal rate of the excise on the 1st of January 2024 for professionals is of 22.5 EUR/MWh .
		"**Tariff shield**" Since the 1st February 2022 and until the 31st January 2024, the excise rate is reduced from his 2016 historical value to 0.50 EUR/MWh for professional consumers >250 kVA (E0, E1, E2, E3, E4). *This measure is part of the tariff shield ("bouclier tarifaire") applicable in France until 1st February 2024.*
		The following reductions and exemptions, will be applicable after the 1st of February 2024. Due to the tariff shield applicable on the 1st of January 2024, the 0.5 EUR/MWh value is used for all professional profiles, being the cheapest. Reduction[277] 1) For electro-intensive professionals with a minimum of 0.5% of electro-intensity (EI < 1.5kWh/€ of added value), the reduced rate is **7.5 EUR/MWh.** Exemption[278] 1) Professionals are exempt from this excise, hence fall on the minimum European level of **0.5 EUR/MWh**, when the electricity is used for the following purpose: • metallurgical processes, chemical reduction and electrolysis; • Companies for which electricity accounts for more than half of the cost of a product; • Manufacturing of non-metallic mineral products; • Production of energy products and electricity production; • Compensation for losses on the public electricity transmission and distribution network.

[275] (Selectra, 2024)

[276] Local taxes encompass the TDCFE (« *Taxe Départementale sur la Consommation Finale d'Électricité* » and the TCCFE (« *Taxes Communales sur la Consommation Finale d'Électricité* »), which no longer exist as they are included in the CSPE/TICFE since January 1st, 2021. The TCCFE was later included in the TICFE on January 1st, 2023.

[277] (Ministère de la Transition Écologique et de la Cohésion des Territoires, 2024)

[278] (EDF, n.d.)

The Netherlands

Component 1 – commodity price

Commodity prices computation rests on market prices and describes the cost of electricity for industrial consumers as of January 2024. CREG used the ICE Endex CAL and the APX NL DAM as national indexes for the computation. The underneath commodity formula is used for each profile and is based on an analysis performed by the CREG of all Belgian consumers contracts with a yearly consumption higher than 10 GWh. For E-BSME to E4, CREG did not include weekend hours of APX NL DAM, while for E3 and E4 CREG included weekdays and weekend hours of APX NL DAM. The CREG provided the formulas and the computation of the commodity price. The equations are based on an analysis of all Belgian consumers with a yearly usage higher than 10 GWh, performed by the Belgian regulator of the electricity supply.

$$\textit{Commodity price}$$
$$= 36.5\%\, CAL\ Y_{-1} + 27.4\%\, CAL\ Y_{-2} + 21.4\%\, CAL\ Y_{-3} + 8.2\%\, Qi_{-1} + 4.2\%\, Mi_{-1} + 2.3\%\, APX\ NL\ DAM$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two year ahead forward price in 2022
CAL Y_{-3}	Average three year ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

Component 2 – network costs

Integrated transmission and distribution costs

In the Netherlands, the network costs integrate both transmission and distribution costs. As Dutch TSO, Tennet operates the transmission grid and is responsible for the infrastructure above 110 kV. Hence, profiles E3 and E4 are assumed to be directly connected to the transmission grid, respectively to the high voltage (110-150 kV) and the extra high voltage grid (220-380 kV). Consequently, they are subject to Tennet's tariffs. Concerning the other industrial profiles (E0, E1 and E2) and E-BSME, connected to lower voltages and thus to the distribution grid, they are subject to DSOs 'prices. Similar to the residential profiles in the Netherlands, we use a weighted average of the seven distribution zones because the Netherlands uses an integrated tariff[279].

For all profiles above-mentioned, they involve the same four main components[280]:

Table 99: Network cost component in the Netherlands

Network costs		
Component	**Dutch labelling**	**Explanation**
Fixed charge	Vastrecht	Fixed basic fee (expressed in EUR/year).
Capacity charge	Capaciteitstarieven	Fees are covering the costs associated with the transmission of electricity. They are subdivided into three terms: – Fixed charge depending on the contracted capacity (expressed in EUR/year); – Variable charge depending on the monthly peak (expressed in EUR/kW/month); – Variable charge depending on the consumption level (expressed in EUR/kWh).
Periodical connection tariff	Periodieke aansluitvergoeding	Fixed fee is covering the costs for managing the connection (expressed in EUR/year).
Metering charge	Meettarief	Fixed charges are covering for the use and management of energy meters (expressed in EUR/year).

Moreover, as from the 1st of January 2024, the reduction ("*Volumecorrectie*") on the transmission tariffs that were applicable in the past, is no longer applicable. It was targeting energy-intensive consumers who fulfilled following two conditions (profiles E3 and E4) [281]:

1. The customer exceeds 50 GWh/year in terms of offtake.
2. The operating time exceeds 5,700 hours per year (or 65%) during off-peak hours[282].

The table below illustrates this change:

Table 100: impact of the volume correction measure discontinuation in the Netherlands

Profile	Change in transport costs (%, 2023 – 2024) *Volume correction not included in 2024*	Change in transport costs (%, 2023 – 2024) *Volume correction included in 2024*
E0	+ 28%	+ 28%
E1	+ 26%	+ 26%
E2	+ 17%	+ 17%
E3	+ 179%	+ 82%
E4	+ 2,128%	+ 160%

[279] All industrial profiles are not served by all DSOs. COTEQ and RENDO do not serve consumers similar to our E1 and E2 profiles (from HS voltage level) while Westland does not provide profiles similar to E2 (from TS)

[280] (TenneT, 2020)

[281] (Overheid.nl, 2013)

[282] In the Netherlands, off-peak hours are between 11pm-7am in addition to weekends and bank holidays.

The following can be observed:

1. The increase in transport costs would still reach 160% for the bigger profiles, even if we were to consider the volume correction. Other profiles are also very impacted by the increase in transport costs. This increase in transmission costs is due to Tennet's higher costs of electricity supply, and the financing of its investments in its network with the energy transition in mind[283].
2. Discontinuing the volume correction measure increased transport costs by 179% and 2,128% respectively for E3 and E4 profiles.

Component 3 – all other costs

Unlike previous years, and as it is the case for residential and small professional consumers, only one surcharge remains in the Netherlands, namely the Energy Tax ("Regulerende Energie Belasting", or REB). In the 2023 Tax Plan, the Dutch government has indeed proposed to simplify the energy tax system by including the rates for the surcharge for sustainable energy and climate transition ("Opslag Duurzame Energie", or ODE) directly in the energy tax. As a result, all ODE rates for the year 2023 were reduced to 0 EUR/MWh, and this ODE system has been purely abolished as from the 1st of January 2024.[284] The Energy Tax (REB) varies, in a degressive trend, according to the amount of consumed electricity as shown in the table below:

Table 101: Electricity Energy Tax[285]

Band	Consumption (in kWh)	Energy Tax (EUR/MWh – VAT excl.)
1	Up to 10,000	108.80
2	10,001 - 50,000	90.37
3	50,001 - 10,000,000	39.43
4	> 10,000,000 (non-professional)	2.54
4bis	> 10,000,000 (professional)	1.88

Given the consumption level of our profiles under study, they fall into the following bands: band 3 for E0 and E1, and band 4 for E2, E3 and E4 profiles.

1. Industrial consumers are exempted if they use electricity for chemical reduction or electrolytic and metallurgical processes.
2. Tax discounts are also possible for cooperatives. However, the profiles under study are assumed not to fall under this category.
3. Finally, a tax refund scheme ("teruggaafregeling") is applicable to public and religious institutions such as clinics, schools, sports centres, churches, etc. We assume that our profiles are not part of these specific categories and thus do not take this specific scheme into account.

Several of the criteria that give access to these tax refunds are based upon economic and accounting data, which are not defined for the industrial profiles of this study. Therefore, we present a range of results with an outlier option (maximum rate only applies if the industrial consumer is not energy-intensive and cannot qualify for the full exemption) and a range spanning from the minimal option (totally exempted) to the refund rate (0.50EUR/MWh).

Note: A Tax refund scheme ("teruggaafregeling") was previously applicable for industrial consumers classified as energy-intensive and having concluded a multiple-year agreement with the Dutch government to save energy by improving their energy efficiency. These consumers could, up to the 31st of December 2022, apply for a refund of any tax paid above their consumption of 10,000 MWh after each financial year. However, this has been discontinued as from the end of 2023.[286]

[283] (ACM, 2023)
[284] (Vattenfall, 2024)
[285] ibid
[286] (Belastingdienst, 2024)

The UK

Component 1 – commodity price

Commodity prices computation rests on market prices and describes the cost of electricity for industrial consumers as of January 2024. We used the APX UK DAM as the national index for the calculation. The equations are based on an analysis performed by the Belgian federal regulator of the electricity supply contracts of Belgian consumers with a yearly consumption higher than 10 GWh.

The commodity formula applies to each profile. For profiles E0, E1 and E2, we use all hours apart from weekends of APX UK DAM, while for profile E3 and E4, we use all hours of APX UK DAM[287].

Commodity price

$$= 36.5\% \, CAL\,Y_{-1} + 27.4\% \, CAL\,Y_{-2} + 21.4\% \, CAL\,Y_{-3} + 8.2\% \, Qi_{-1} + 4.2\% \, Mi_{-1} + 2.3\% \, APX\,UK\,DAM$$

Where:

	Explanation
CAL Y_{-1}	Average year ahead forward price in 2023
CAL Y_{-2}	Average two year ahead forward price in 2022
CAL Y_{-3}	Average three year ahead forward price in 2021
Qi_{-1}	Average quarter ahead forward price in the fourth quarter of 2023
Mi_{-1}	Average month ahead forward price in December 2023

We computed the commodity price based on the formula mentioned above, in British Pounds, and then converted the amount to Euros using the January 2024 monthly average exchange rate[288] (also see section "General assumptions"). The values were taken from historical data in Bloomberg, using the APX UK DAM index.

Component 2 – network costs

Transmission cost

As we have described above, the UK's network structure is divided between three TSOs, six DSOs and fourteen identified tariff zones. On a technical level, the grid is organised as follows:

Table 102: Tariff scheme regarding transmission cost in the UK

Transmission costs		
Connection voltage (U_n)	**Operator**	**Tariff scheme**
U_n < 22 kV	**DSO**	Common Distribution charging methodology (CDCM) + Transmission charges (TNUoS)
22 kV =< U_n =< 132 kV		Extra high voltage distribution charging methodology (EDCM) + TNUoS
275 kV =< U_n =< 400 kV	**TSO**	Transmission charges (TNUoS)

[287] The year ahead, two years ahead and three years ahead forward prices are gathered by looking at respectively the ELU 0YR1 BCFV Index (between the 1st of January and 31st of December 2023), the ELU 0YR2 BCFV Index (between the 1st of January and 31st of December 2022) and the ELU 0YR3 BCFV Index (between the 1st of January and 31st of December 2021). Once all values are gathered, the average of these forward prices is done based on Bloomberg's data, in the local currency (GBP). This average entails takes up all values gathered on the index during the period observed.

[288] Exchange rate of 1,1645 EUR/GBP, the average conversion factor over the month of January 2024, according to the European Central Bank is considered.

The voltage of the transmission grid is particularly high, which is why we assume that E-BSME, E0, E1 and E2 are still connected to the distribution grid, but the bigger industrial profiles (E3 and E4) are directly connected to the transmission grid. In the UK transmission charges are known as the Transmission Network Use of System (TNUoS) charges and have two different rates: Half-Hourly (HH) and Non-Half-Hourly (NHH). As only the former applies to our industrial profiles, we only detail this one below.

Since the 1st of April 2023 and the introduction of CMP343 by the OFGEM[289], a new component to the transmission costs is to be considered: the non-locational band charges. To lower the impact of a consumer's location on its tariffs, the OFGEM (through the 14 DSOs) decided to substantially lower (or even remove) the NHH and HH charges for all regions. This decrease is compensated by the introduction of these banded charges, to which consumers are assigned depending on their connection capacity (kVA).

The bands to which consumers are assigned can have different impact on their total electricity bill. If they are located on the lower end of a band, they are paying a daily fee that is higher than what they could pay if they were on the upper end of the inferior band, by reflecting on their electricity consumption. At the contrary, should they be on the upper end of their band, they would pay a daily fee that is advantageous. Hence, as the profiles of this study are fixed we do not assume that they will change their connection capacity to accommodate, resulting in higher or lower fees paid compared to empirical consumer examples.

Table 103: Half-hourly (HH) tariff option in the UK

Transmission costs		
Tariff option	**Explanation**	**Profile**
Half-Hourly (HH)	Metering system, which utilises AMR (automatic meter reading) technology to provide electricity consumption reading. The system sends updated meter reads to the energy supplier every half hour. Customers pay a capacity tariff depending on their connection capacity, expressed in p/kVA/day.	E0 to E4
Non-locational banded charges	Daily standing charge customers are paying per site depending on the band they are assigned to. The band is assigned based on the customer's connection capacity (kVA).	E0 to E4

Since the HH tariffs differ between all fourteen zones of the UK, a weighted average of the transmission costs is presented for all our industrial profiles.

There are also rates applied to cover for network losses, and the UK uses a system similar to the Belgian one (but more dynamic) to apply these costs. The Balancing and Settlement Code Administrator, each half-hour, defines the Transmission losses multiplier (TLM) applicable for offtake and delivery. This cost is added to the bill as a percentage of the commodity cost for offtake and should thus not be part of this component. Yet, even though it is not part of the tariff structure as such, we include it as a network component.

Distribution costs

Distribution costs, which are due for profiles E0, E1 and E2, have a more complex methodology.

Profiles E0 and E1 pay according to the Common Distribution Charging Methodology (CDCM). They are billed for total offtake across all demand time periods and with important differences between peak and off-peak offtake. This methodology encompasses the following components:

[289] (OFGEM, 2022)

Table 104: Distribution costs (CDCM) in the UK

Distribution costs	
Component	**Explanation**
Proportional charge	A unit charge in p/kWh
Fixed charge	Fixed charge per offtake point in p/MPAN[290]/day
Metering costs[291]	Cost for use and management of your energy meter in p/day or GBP/year

As for profile E2, it is charged through the EHV Distribution Charging Methodology (EDCM), which are largely based on capacity with a small element for offtake in the high demand time-period in addition to a fixed charge. The EDCM provides for individual tariffs for each customer depending upon location, demand, generation (type) and capacity. The individual EDCM-rates are made public, which is why we calculated the average individualized EDCM-rates compared to CDCM-tariffs in each of the fourteen zones.

We present the average EDCM-rates on CDCM-tariffs in the fourteen zones as the distribution cost value for profile E2. The following components compose EDCM charges:

Table 105: Distribution costs (EDCM) in the UK

UK	
Component	**Explanation**
Proportional charge	A unit charge for high demand periods, expressed in p/kWh.
Fixed charge	Fixed charge per offtake point in p/day
Capacity charge	Daily Fixed charge function of the contracted capacity, expressed in p/kVA/day
Metering costs[292]	Cost for use and management of your energy meter in p/day or GBP/year

Component 3 – all other costs

Three additional costs are applicable on electricity in the UK:

(1) The **Climate Change Levy** (CCL) is applicable to the consumption of natural gas for businesses in the industrial, public services, commercial and agricultural sectors. This study considers that industrial consumers analysed, are all embodied in the Climate Change Agreement. This levy is "an environmental tax charged on the energy that businesses use. It's designed to encourage businesses to be more energy efficient in how they operate, as well as helping to reduce their overall emissions."[293]

[290] Meter Point Administration Number

[291] Electricity metering charges in the UK are not easily accessible. A proxy was used to account for these charges based on a methodology disclosed by National Grid, British TSO delivering electricity and natural gas. As electricity and natural gas are frequently offered as one product with a dual tariff, natural gas metering methodology was used as a proxy. Charges are billed as a fixed yearly charge for installation costs recovered via a rental given that we assume our profiles do not own the meters.

[292] Electricity metering charges in the UK are not easily accessible. A proxy was used to account for these charges based on a methodology disclosed by National Grid, British TSO delivering electricity and natural gas. As electricity and natural gas are frequently offered as one product with a dual tariff, natural gas metering methodology was used as a proxy. Charges are billed as a fixed yearly charge for installation costs recovered via a rental given that we assume our profiles do not own the meters.

[293] (SEFE, 2024)

The following table gives an overview of the rates that are charged to professional consumers regardless of their profile (Residential consumers are exempted from it[294]):

Table 106: Climate Change Levy rates on electricity[295]

Time period	Electricity rate (GBP)
1st April 2023 to 31st March 2024	0.775p/kWh
1st April 2024 to 31st March 2025	0.775p/kWh

There is a possible reduction of 93% if the energy-intensive consumer has a Climate Change Agreement (CCA). We assume that all industrial profiles (E0 to E4) under this study concluded a CCA.

Given that 7,814 facilities were covered by a CCA in 2017[296] for about 7,700 large businesses (>250 employees)[297], we consider that all industrial profiles from this study are part of a sectoral agreement. Besides, a large spectrum of industrial processes[298] is accepted to be eligible to apply for a CCA, which widens the number of companies that can be considered.

On top of that, there are multiple exemptions regarding the CCL, among others when electricity is a supply[299]:

- for domestic use or used by a charity for its non-business activities;
- used in some forms of transmission;
- to combined heat and power stations;
- for small generating stations (other than combined heat and power) used to generate any electricity that's not self-supplied;
- not used as fuel.

(2) The **Renewables Obligation (RO)** is the cost placed on electricity suppliers in the UK for the large-scale renewable subsidy scheme. Like the Climate Change Levy, the quota and buyout price are determined for a year starting in April. From 1st April 2023 to 31st March 2024, the buyout price per RO Certificate is 27.68GBP (32.23EUR).

(3) The **Assistance for Areas with High electricity distribution Costs (AAHEDC)** levy compensates for high distribution costs in the zone of Northern Scotland (1 of the 14 zones), amounting 0.042038 p/kWh for the period ranging from 1st April 2023 to 31st March 2024.[300]

An additional cost identified in the UK is the one that relates to the capacity market. However, it was decided not to take this cost into consideration for this study. First, because it is paid by the suppliers, who integrate it in their offers and do not disclose the exact amount of the costs. Secondly, because the UK is an outlier in most electricity profiles under review (E1 to E4). The prices in this study can therefore be seen as a slight underestimation of the real electricity cost in the UK, but it does not impact any of the conclusions.

294 (GOV.UK, 2022)
295 ibid
296 (Adelphi, Ecofys, 2018)
297 (GOV.UK, 2020)
298 Defined in the Appendix A of the Climate Change Agreements Operations Manual.
299 (GOV.UK, 2022)
300 (ESO, 2024)

Natural gas

Natural gas: Detailed description of the prices, price components and assumptions

For all countries under review, this section details:

1. **Commodity costs** for profiles G0, G1 and G2
2. **Network costs** for profiles G0, G1 and G2
3. **All other costs** for profiles G0, G1 and G2

Profile	Consumption (in MWh)
G0	1,250
G1	100,000
G2	2,500,000

Belgium

Component 1 – commodity price

Commodity prices, in this document, rest on market prices and reflect the cost of natural gas for industrial consumers as of January 2024 as provided by the CREG. The given prices for profiles G0 to G2, are the result of prices observed in January 2024 at the Zeebrugge Trading Point (ZTP)[301].

$$\textit{Commodity price} \\ = 50\%\ DA\ (day\ ahead) + 50\%\ MA\ (month\ ahead)$$

Component 2 – network costs

Transport costs

According to the consumer profiles, G0 and G1 are connected to the distribution grid. We assume that they are respectively connected at T4 and T6 levels. Concerning G2, as most industrial consumers in Belgium are connected at high-pressure level, we assume that this is also the case for our G2 profile.

Natural gas transport costs have 3 main components for clients directly connected to the transport grid:[302]

(1) Entry capacity fee (border point entry fee);
(2) Exit capacity fee (HP-service fee or RPS[303])[304];
(3) Commodity fee ("energy in cash").

The optional odorization tariff is not considered in the scope of this study. The reasoning is that most industrial consumers in Belgium on the TSO-grid do not need odorization services from Fluxys.

Furthermore, this study acknowledges the natural gas consumption tariffs invoiced to industrial consumers based on the consumer profiles defined in the hypotheses. It is therefore important to clarify that potential disparities occurring between network tariffs invoiced to industrial consumers (i.e., G1 and G2 profiles) in this study and the tariffs they empirically pay, when exceeding their contractual capacity, might differ. The details of this variation are outlined in the 2022 study by CREG[305].

Part of the network in Belgium is supplied with "L-gas" until September 2024. This natural gas has a lower calorific value than the "H-gas" that is used in most of Western Europe. The following table illustrates the repartition of industrial consumers supplied with H- or L-gas depending on their connection to the Distribution (DG) or Transport grid (TG).

Table 107: Natural gas type by grid type for each Belgian region (in%)

	Brussels		Flanders		Wallonia	
Natural gas Type	**DG**	**TG**	**DG**	**TG**	**DG**	**TG**
H-gas	100%	-	70.89	97.13	91.18	98.96
L-gas	-	-	29.11	2.87	8.82	1.04

Source: CREG (2024)[306]

[301] However, it is known that the majority of Belgian industrial consumers' contracts are indexed on TTF (CREG, 2022), which represents their largest component of natural gas bills

[302] Since 2020, the "fix/flex" tariff option does no longer exist and therefore cannot be chosen by directly connected consumers (CREG, 2020).

[303] RPS stands for Reduced Pressure Service which, since 2020, encompasses both former Medium Pressure (MP) and Pressure-reducing stations (DPRS) services.

[304] For exit capacity fee at end-user domestic exit points, HP (High Pressure) tariff option or RPS can be chosen. As 99% of Belgian industrial consumers need to pay HP capacity fees, while the MP capacity fee is due for 31% of the Belgian industrial consumers, the exit capacity was therefore calculated as follows: 0,99* HP-tariff + 0,31*RPS-tariff.

[305] (CREG, 2023) Link to study: https://www.creg.be/fr/publications/etude-f2716

[306] The data regarding the natural gas type by grid type for each Belgian region was provided by the CREG.

The transport tariffs for natural gas in Belgium are largely capacity-based and expressed in EUR/kWh/year. Transport costs vary depending on the type of natural gas consumed, which is why a weighted average of H- and L-tariffs for the G2 profile are computed.

Finally, the commodity fee depends on the annual consumption of the end-user (in MWh/year). It accounts for 0.08% of a theoretical commodity cost per year, based on the Gas Price Reference[307], which is the ZTP average of day-ahead commodity prices, as published by EEX.

Distribution costs

As previously stated, profile G0 and G1 are connected to the distribution grid. Users of the distribution grid are also subject to additional tariffs. The T4 category was selected for our G0 profile and T6 for G1. Since the highest category on the Brussels' distribution grid is T5, this one was selected for the G1 profile.[308] The distribution tariffs are typically divided over 3 components:

(1) Fixed component;
(2) Proportional component;
(3) Capacity component (only Flanders and Wallonia).

Besides, other components are part of the distribution costs, although they vary depending on the region. As such Brussels includes a tariff for the measuring activities and Flanders a tariff of data management, whereas Wallonia adds a tariff for regulatory balances.

The weighted average of each component across all DSOs active in the region is considered since the tariffs differ across regions and DSOs. The weights are based on the number of EAN connections of each DSO. For Flanders, all DSOs under FLUVIUS were considered (100% of EAN connections) and in Wallonia all the DSOs under ORES and RESA (100% of EAN connections). With only one DSO, Sibelga is the DSO used for Brussels.

Component 3 – all other costs

In Belgium, two extra costs are charged to natural gas consumers directly connected to the transport grid; three regional taxes also apply to all profiles studied whereas local taxes and levies can be charged to profiles G0 and G1 given their connection to the distribution grid. These costs can be grouped into two categories, as presented below, where federal charges are levied by the suppliers and regional charges are levied by regional DSOs (and invoiced to the suppliers which invoice final customers): Tariff rates are mentioned when they do not vary depending on the consumer profile and/or the DSO; otherwise, units in which they are expressed are detailed.

Table 108: Other costs for industrial natural gas consumers applying to all Belgian regions

All regions	**Profiles**
Regional Public Service Obligations (Regional PSOs) on distribution	
a. A general tariff for regional PSOs (expressed in EUR/MWh)	G0 and G1
Taxes and levies on the federal level	
II. Federal taxes and levies	
a. Energy contribution[309] (0.54EUR/MWh). b. Special excise duty	a. All b. All

[307] For more information on the Gas Price Reference, please see https://www.fluxys.com/en/natural-gas-and-biomethane/empowering-you/tariffs/tariff_fluxys-belgium-tra-2023

[308] T5 (and not T6) is the highest category for Sibelga network active in Brussels which we use in the scope of this study.

[309] The tariff is reduced to 0,54 €MWh for holders of an EBO or sector agreement. We assume that the reduction applies starting G0.

The table below shows the new Federal special excise duty rates, applicable from the 1st of April 2023 (Loi-Programme 29/12/2023) to G0-G2 profiles. The base tariffs for the excise duty can be found in the previous edition of this report. For clarity, we have displayed the tariffs applicable at the effective date of the comparison done.

Table 109: Special excise duty rates in Belgium for Gas commercial consumers

Yearly consumption	Tax for G0, G1 and G2(EUR/MWh)
Consumption up to 20,000 MWh	0.66
Consumption between 20,000- 50,000 MWh	0.56
Consumption between 50,000- 250,000 MWh	0.54
Consumption between 250,000 – 1,000,000 MWh	0.42
Consumption between 1,000,000- 2,500,000 MWh	0.22
Consumption above 2,500,000 MWh	0.15

According to Art. 429.§ 1er of the law from 27th December 2004[310] an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial processes. For the sake of this report, we assumed that profiles G1 and G2 could potentially benefit from this exemption, if they fall within the conditions specified by the law.

[310] (Chancellerie du Premier Ministre, n.d.)

Table 110: Other regional costs for industrial natural gas consumers[311]

Brussels	Flanders	Wallonia	Profiles
Regional Public Service Obligations (Regional PSOs) on transport			
a. Brussels regional public service obligation[312] (27.98or 72.22EUR/Month)	-	-	G0 and G1
Taxes and levies on the regional level			
Regional taxes and levies on distribution			
a. Charges on non-capitalised pensions (0.004- 0,037 EUR/MWh)	a. Charges on non-capitalised pensions (0.0056 – 0.0435 EUR/MWh)	a. Levy for occupying road network (0.080 – 0.600 EUR/MWh)	G0 and G1
b. Levy for occupying road network (1.488 EUR/MWh)	b. Other local, provincial, regional, and federal taxes, Charges, Surcharges, Fees, and contributions (0.0012 – 0.0093 EUR/MWh)	b. Corporate income tax (0.0332 – 0.315 EUR/MWh)	
c. Corporate income tax and other taxes (0.022 – 0.224 EUR/MWh)	-	c. Other local, provincial, regional, and federal taxes, Charges, Surcharges, Fees, and contributions (0.0004 – 0.005 EUR/MWh)	
Regional taxes and levies on transport			
-	-	Connection fee 0.075 EUR/kWh for the first 1 MWh; then a. if yearly consumption < 1 GWh: 0.000075 EUR/kWh b. if yearly consumption < 10 GWh: 0.00006 EUR/kWh c. if yearly consumption >= 10 GWh: 0.00003 EUR/kWh	All

[311] The tariffs represented in this table vary depending on the DSO and we have thus chosen to only present the minimum and maximum range of the tariff from the largest (or only) DSO of the region. Sibelga for Brussels, Fluvius Antwerpen for Flanders and ORES for Wallonia.

[312] Depends on the calibre of the meter being installed. For G-Pro, G0 and G1 we respectively chose the meters process between 16-25 m^3, 40-65 m^3 and > 160 m^3. Which respectively coincides with 57,48€, 287,64€ and 742,32€, on which VAT is due.

Germany

Component 1 – commodity price

In this study, natural gas commodity prices are estimated based on market prices. As previously mentioned, we consider one market area in Germany, the Trading Hub Europe (THE), which is the result of the merger between Gaspool and Netconnect Germany (NCG).

For all industrial profiles (G0 to G2), as well as G-PRO, the commodity price exhibited in this document is the average of prices collected in each market areas in January 2024. The CREG provided all commodity prices for Germany.

$$\textit{Commodity price} = 50\%\ DA\ (day\ ahead) + 50\%\ MA\ (month\ ahead)$$

Component 2 – network costs

Transport costs

There are 11 TSOs for natural gas in Germany, which all have directly connected clients. While their tariff methodology might be similar, they use different rates. As we consider that profile G2 is directly connected to the transport grid, entry and exit capacity tariffs for all TSOs have been considered in addition to the costs related to metering and invoicing. The transport tariffs comprise in general, the same three components:

Table 111: Components of German transport costs

Transport costs	
Component	**Explanation**
Entry point capacity rate (Einspeisung)	Depends on the contracted entry point and the capacity contracted (in kW)
Exit point capacity rate (Ausspeisung)	Depends on the exit point chosen and the capacity contracted (in kW)
Metering costs (Messung)	Both charges related to the cost of metering, fixed prices (in EUR/year)
Metering point operation per counting point charges (Messstellenbetrieb)	

Distribution costs

Since two of our profiles (G0 and G1) are connected to the distribution grid, they are subject to distribution costs. Since these differ between DSOs, prices from 8 different DSOs (4 rural, 4 urban) are considered. However, the tariffs from the DSOs also integrate the transport tariffs. While we assume profile G0 falls under the category “Netzentgelte für Entnahmestellen ohne Leistungsmessung” (or Network charges for offtake points without power metering) as their consumption is yearly metered, G1 is considered as being in the category “Netzentgelte für Entnahmestellen mit Leistungsmessung” due to its daily metered consumption (or Network charges for offtake points with power metering). These distribution tariffs are generally composed of 5 components:

Table 112: Components of German distribution costs

Distribution costs	
Component	**Explanation**
Basic charge (Sockelbetrag Arbeit/Leistung)	Fixed basic fee, expressed in EUR/year.
Capacity charge (Leistungspreis)	Depends upon the maximum capacity in kW contracted, expressed in EUR/year.
Labour charge (Arbeitspreis)	Depends upon the volume of energy consumed in kWh per year, expressed in cEUR/kWh/year.
Metering costs (Messung)	Charges related to the cost of metering and invoicing, fixed prices (in EUR/year)
Metering point operation per counting point charges (Messstellenbetrieb)	

German annual charge for natural gas is computed as follows:

$$Annual\ charge = [Arbeitspreis * (Annual\ Consumption - \ Durch\ Sockelbetrag\ abgegoltene\ Arbeit) + Sockelbetrag\ Arbeit] + [Leistungspreis * \ (Annual\ Consumption - \ Durch\ Sockelbetrag\ abgegoltene\ Leistung) + Sockelbetrag\ Leistung]$$

Where, *Durch Sockelbetrag abgegoltene Arbeit/Leistung* is the price band bottom levels, expressed in kWh or in kW respectively.

Depending on the consumers' consumption volumes and capacity, they fall under certain categories (the number of categories depends on the local DSO). These categories determine the amount of consumption volume and capacity that must be set at a standard rate, while the rest fall under the network cost fares as determined by local DSOs. These volumes and capacity are said to be compensated to limit network costs and ultimately, DSOs' remuneration.

Component 3 – all other costs

Four further costs were found for industrial consumers in Germany: the "*Biogas-Umlage*" or Biogas levy, the "*Marktraumumstellungsumlage*" or Market Area Conversion Levy, the "*Energiesteuer*", or Gas tax, the "*Konzessionsabgabe*", or concession fee, and the "CO2 Steuer, or carbon tax, which are detailed in the table below.

Table 113: Other costs for large industrial natural gas consumers

All other costs			
Component	**German label**	**Explanation**	**Profiles**
Biogas levy	Biogas-Umlage	A Nationwide standard levy implemented in January 2014. This levy amounts to 0,8381 EUR/kWh/year in 2024.	All
Market Area Conversion Levy	Marktraumum stellungs-Umlage	A burden to balance the conversion costs from L-gas to H-gas, implemented in January 2015. The 2024 levy amounts to 0,6711 EUR/kWh/y.	All
Energy tax	Energiesteuer	This tax has various rates depending on the energy source (e.g. coal, biodiesel, natural gas, bioethanol…), valid since January 1989. For natural gas for industrial consumers, **the standard tax rate is 5.50EUR/MWh**. A reduction of 1.38EUR/MWh can apply, bringing the price down to **4.12EUR/MWh** (= 5.50EUR/MWh -1.38EUR/MWh)[313] As mentioned for the electricity in Germany, based on the amount of pension contributions paid by the company, more reductions can be granted. Initially implemented to fund employees' pensions, companies may be granted important reductions whether they do not contribute much because of a low number of employees. Another cut of 2.28EUR/MWh can be used for natural gas, lowering the rate to 1.84EUR/MWh (= 4.12EUR/MWh - 2.28EUR/MWh); however, it is an 'incompressible' rate. **The minimum tariff** is computed as follows: A 90% reduction on 2.28EUR/MWh represents the maximum cut ((100%-90%) * 2.28EUR/MWh = 0.228 EUR/MWh) to which we add the previous lowest rate (1.84EUR/MWh) reaching **2.068 EUR/MWh** (=0.228 EUR/MWh + 1.84EUR/MWh)[314][315]. These reductions apply depending on the sectorial affiliation of companies. No energy tax applies when the natural gas purpose is not fuel or heating, but as raw material, feedstock part of an industrial process[316].	All

[313] This tax rate hasn't changed in the past years.

[314] Energiesteuergesetz § 54, Energiesteuergesetz § 55

[315] In very specific cases, further reductions are possible. We have not included these in our report.

[316] Energiesteuergesetz § 27

		As the pension payment reduction system is based on economic criteria that are not precise for profile G0 and G1, we exhibit a range from 2,068 EUR/MWh (minimum rate) to 4.12EUR/MWh (standard reduction). As we assume that G2 might consume electricity as feedstock in its industrial processes, we display a scope from 0 EUR/MWh (exemption – only the biogas levy must be paid) to 4.12EUR/MWh (standard reduction)	
Concession fee	Konzessions-abgabe	A tax that also exists for electricity consumption. However, clients with a high-level use (higher than 5 GWh/year) benefit from a total exemption, meaning this tax is not relevant as we study profiles with greater use (i.e., not relevant for G1 and G2) except for G0.[317]	G-PRO and G0
Carbon Tax	CO2 Steuer	An energy tax that is applied to the gas used for heating and transport and it is applicable to all consumers profiles under review. The rate amounts to 0.8163 ct/kWh of gas consumed.	All

Note: As of 1st January 2023 until the 31th of December 2023, a price cap applied for natural gas as a temporary measure to protect industrial customers from an uncontrolled natural gas price increase. For consumers with a historical gas consumption above 1,500 MWh per year (G1 and G2), the natural gas price was capped at 0.07EUR/kWH kWH (excluding taxes, levies and other charges) up to 70% of their natural gas consumption of the previous year. For the remaining consumption, users had to pay the regular market price.[318] This price cap is not applicable anymore in 2024.

[317] This tax rate hasn't changed in the past years.

[318] (Bundesregierung, 2022) (Bundesregierung, 2022)

France

Component 1 – commodity price

France used to work with two market areas (PEG Nord and TRS) regarding natural gas. In 2018, the merger of these areas resulted in the creation of a single zone, TRF (PEG), which we present accordingly as a unique price zone[319]. The commodity prices exhibited in this document are the prices collected in January 2024 as provided by the CREG.

Unlike electricity supply for industrial consumers with a yearly consumption higher than 300 MWh (ARENH), France does not provide a regulated tariff for natural gas supply[320].

$$\textit{Commodity price} = 50\%\ DA\ (day\ ahead) + 50\%\ MA\ (month\ ahead)$$

Component 2 – network costs

Transport costs

As previously stated, there are two Transmission System Operators (TSOs) in charge of the natural gas transport network: GRTgaz and Teréga.

Table 114: TSOs natural gas offtake in France[321]

TSO	Percentage of annual consumption (%)
GRTgaz	87%
Terega	13%

Transport tariffs are built along with the same methodology, and made of three main components for end-users on the transport grid:

Table 115: Transport cost component in France

Transport cost		
Component	**French labelling**	**Explanation**
Fixed charge	Terme fixe de livraison	Applicable per year per delivery station (expressed in EUR/year)
Entry capacity fee	Terme de capacité d'entrée sur le réseau principal	Applicable to daily delivery capacity subscriptions (expressed in EUR/year/MWh/day)
Delivery charge	Terme de capacité de livraison	Applicable to daily delivery capacity subscriptions for industrial consumers (expressed in EUR/year/MWh/day)

[319] On 1 April 2015, a common market area in Southern France, "Trading Region South" (TRS), replaced the former PEG TIGF and PEG SUD. On 1 November 2018, TRS and PEG-Nord merged into a single market area (TRF) with a unique trading hub (PEG or Point d'échange de gaz).

[320] France used to provide regulated selling rates regarding natural gas based on categories for professionals (B2S, TEL S2S/STS) with a higher yearly consumption than 300 MWh. However, this disappeared in December 2015 for industrial consumers.

[321] (Selectra, 2023)

Distribution costs

Profiles G-Pro, G0, and G1 are located on the distribution grid, respectively subject to T3 and T4 tariff option (determined by their annual consumption level). Given that distribution costs integrate transport costs, only these tariffs apply to our G0 and G1 profiles. Only tariffs from GRDF (Gaz Réseau Distribution France) are considered as it delivers 96% of all distributed natural gas in France. The tariff has three components:

Table 116: Distribution cost components in France

Distribution costs		
Component	**French labelling**	**Explanation**
Fixed charge	Abonnement	Applicable per year per subscription (expressed in EUR/year)
Proportional component	Prix proportionnel	Variable component based on consumption (expressed in EUR/MWh)
Delivery charge	Terme de souscription capacitaire journalière	Applicable to daily delivery capacity subscriptions for industrial consumers with annual consumption from 5,000 MWh (expressed in EUR/MWh/day)

Component 3 – all other costs

In France, two surcharges apply on natural gas:

Table 117: Surcharges on natural gas in France

<table>
<tr><th colspan="4">All other costs</th></tr>
<tr><th>Name</th><th>Definition</th><th>Amount in 2024</th><th>Profile</th></tr>
<tr><td rowspan="2">Contribution Tarifaire d’Acheminement : CTA</td><td rowspan="2">The CTA finances part of the pensions of staff in the energy sector for Electricity and Natural gas Industries.</td><td>20.80% on the fixed part of distribution cost + 3.9%[322] on the transport cost (tariff contribution for transport services).</td><td>Profiles G0 and G1</td></tr>
<tr><td>4.71% on the fixed part of the transport cost.[323]</td><td>G2</td></tr>
<tr><td rowspan="2">Taxe Intérieure de Consommation sur le Gaz Naturel : TICGN</td><td rowspan="2">The TICGN is a tax that applies to all deliveries of natural gas sent to an end user. Its amount is calculated according to consumption.</td><td>16.37EUR/MWh.
This rate has been doubled compared to 2023.[324]</td><td>G0, G1, G2</td></tr>
<tr><td colspan="2"><u>Exemptions:</u>[325]
Professionals are exempt from the TICGN when the natural gas is:
• intended for use other than as fuel;
• intended for dual use, i.e. when used both as fuel and for other purposes;
• used as part of a process for manufacturing non-metallic mineral products;
• used to generate electricity (gas power plants);
• used to enable its extraction and production;
• used within premises dedicated to the production of energy products, for the manufacturing of those energy products or the production of the energy necessary for their manufacturing;
• used by biomass recovery companies under certain conditions.</td></tr>
</table>

[322] An additional 3.9% needs to be added to customers on the distribution network for the transport component (4.71%) multiplied by a proportionality coefficient of 83.51%. This results in 20.8% + (4.71% * 83.51%). Source : (CRE, 2023)

[323] (CRE, 2023)

[324] (Selectra, 2024)

The Netherlands

Component 1 – commodity price

For investigated profiles, the commodity prices in the Netherlands provided in this study are the January 2024 observed prices for TTF, provided by the CREG.

$$\text{Commodity price} = 50\%\ DA\ (day\ ahead) + 50\%\ MA\ (month\ ahead)$$

Component 2 – network costs

Transport costs

The Dutch natural gas transport network is operated by the TSO Gasunie Transport Services and serves distribution networks and direct exit points. According to the Gas Act (Article 10, paragraph 6b), it is the duty of the Dutch TSO, Gasunie Transport Services to provide an applicant with a connection point if the connection has a flow rate greater than 40 m^3 per hour. Consequently, we consider that profiles G0, G1 and G2 are directly connected to the transmission network.

Since 2020, transport tariffs have changed of structure. Following the principles of the 'Network code on harmonized transport tariff structures for gas' (NC-TAR), decided by the European Commission, the Netherlands has simplified its tariff's structure. They are therefore only composed of 2 components, which can vary depending on the contracted capacity:

Table 118: Network cost component in the Netherlands

Transport costs	
Component	**Explanation**
Entry capacity fee	Fee depending on the entry point and function of the contracted capacity (expressed in EUR/kWh/year).
Exit capacity fee	Fee depending on the exit point and function of the contracted capacity (expressed in EUR/kWh/year).

The Dutch network is essentially supplied with lower calorific value (L-gas), compared with the natural gas used in most of Western Europe (H-gas). Yet, as the Dutch transport tariffs are fixed in terms of capacity and expressed in EUR/kWh/year, this evens out this calorific value effect. While Gasunie Transport Services used to offer individualised rates for the entry and exit capacity fees, it is no longer the case. One single exit capacity fee as well as one entry capacity fee is used for the directly connected industrial consumers.

Component 3 – all other costs

Unlike 2022 and before, and as it is the case for residential and small professional consumers, only one surcharge remains in the Netherlands, namely the Energy Tax ("Regulerende Energie Belasting", or REB). In the 2023 Tax Plan, the Dutch government has indeed proposed to simplify the energy tax system by including the rates for the surcharge for sustainable energy and climate transition ("Opslag Duurzame Energie", or ODE) directly in the energy tax. As a result, all ODE rates for the year 2023 are reduced down to 0.00EUR and as of this year, 2024, the ODE will be formally abolished.[326]

[326] (Vattenfall, 2024)

The Energy Tax (REB) varies, in a degressive trend, according to the amount of consumed electricity as shown in the table below[327]:

Table 119: Electricity Energy Tax[328]

Band	Consumption (in m^3)	Energy Tax (EUR/m^3 – VAT excl.)
1	Up to 170,000	0.58301
2	170,001 – 1,000,000	0.22378
3	1,000,001 - 10,000,000	0.12855
4	> 10,000,000 (professional)	0.04886

Given the consumption level of our profiles under study, they fall into the following bands: band 1 for G0, band 1-2-3 for G1 and band 1-2-3-4 for G2 profiles.

As the Energy tax is fixed in euros per volume units (EUR/m^3) and not in euros per energy units, the calorific value of the used natural gas has an impact on the total amount paid. We thus use a weighted average in function of the calorific value distribution of all-natural gas industrial users directly connected to the transport grid in the Netherlands. Out of the 328 industrial consumers[329] directly connected to the grid, the following table depicts the allocation of companies using which type of natural gas (H, G or G+)[330] :

Table 120: Companies directly connected to the transport grid in the Netherlands

Natural gas type	Number of companies directly connected to the transport grid	Percentage of companies directly connected to the transport grid per gas type (%)
H-Gas	99	30%
G-Gas	26	8%
G+ Gas	203	62%

As it is the case for electricity, some exemptions and reductions exist for natural gas regarding large industrial consumers:

1. A Tax refund scheme ("teruggaafregeling") is applicable to public and religious institutions such as clinics, schools, sports centres, churches, etc. We assume that our profiles are not part of these specific categories and thus do not take this specific scheme into account.

2. Industrial consumers are exempted if they use naturas gas:
   - not as fuel nor as an additive or filler substance;
   - for metallurgical and mineralogical processes;
   - as fuel for commercial shipping;
   - in the case of Power-Heat Coupling installations ("*WKK* installaties") when gas is used to generate electricity in an installation with an electrical efficiency of at least 30%.

As we do not consider profiles G0 and G1 as consumers using natural gas as a fuel or natural gas that has been used as an additive or filler substance, we present the maximum option (no refund applicable) for both profiles. Considering that G2 can represent a large consumer using natural gas as a feedstock for its industrial processes, we assume that it can be granted an exemption of taxes and we, therefore, present a range between the minimal option (totally exempted from taxes) to the maximum option (no refund applicable) for this consumer profile.

[327] A lowered tariff also exists for agricultural heating installations. We assume our profiles do not benefit from the lowered tariffs.

[328] (Belastingdienst, 2024)

[329] As we could not update the source of this information for this year update, the figures were carried over from the last editions of this report.

[330] G- and G+ Gases are both considered as L-Gas. In this study, they are considered as having the same calorific value and the same conversion factor to kWh, namely 9,77 kWh/m^3.

The UK

Component 1 – commodity price

The National Balancing Point is the referent market index regarding the UK. For all investigated profiles, the national commodity price is the result of January 2024 prices for NBP. The CREG provided all commodity price data.

$$\textit{Commodity price} = 50\%\ DA\ (day\ ahead) + 50\%\ MA\ (month\ ahead)$$

Component 2 – network costs

Transport costs

As already mentioned for our residential and small professional profiles, there is only one TSO in the UK (except for Northern Ireland): National Grid Gas. The Gas Transmission Transportation Charges are comprised of the following components:

Table 121: Transport costs components in the UK

Transport costs	
Component	**Explanation**
Entry Commodity Charge	A charge per unit of natural gas transported payable for flow entering the system, expressed in p/kWh/day.
Exit Commodity Charge	A charge per unit of natural gas transported payable for flow exiting the system, expressed in p/kWh/day.
Commodity charge	A charge per unit of natural gas transported payable for flows entering and exiting the system expressed in p/kWh.
Compression charge	Additional charge payable where natural gas is delivered into the National Grid NTS system at a lower pressure than that required, expressed in p/kWh.

National Grid Gas provides a weighted average of the entry and exit capacity tariffs in their Statement of Gas Transmission Transportation Charges.[331]

Distribution costs

Industrial consumers that are still connected to the distribution grid are also subjected to their tariffs, and this is the case for the G0 and G1 profiles. The UK has eight DSOs for natural gas, amongst which four are owned by Cadent Gas. The distribution tariff for natural gas is composed of four components:

Table 122: Distribution cost components in the UK

Distribution costs		
Component	**Explanation**	**Profile**
LDZ System Capacity Charge	With charge band with 732,000 kWh and above LDZ charges are based on functions, these functions use Supply Point Offtake Quantity (SOQ) in the determination of the charges. The LDZ System capacity charge is expressed in p/Peak day kWh/day and the LDZ System commodity charge in p/kWh.	G0 and G1
LDZ System commodity Charge		
LDZ Customer Capacity Charge	With charge band with 732,000 kWh and above customer, the capacity charge is based on a function related to the registered SOQ. Expressed in p/peak day kWh/day.	
Exit Capacity Charges	A capacity charge applied to the supply point similar to LDZ System Capacity Charge. These charges are applied per exit zone on an administered peak day basis and are expressed in GBP/year.	
Metering charges	A cost for use and management of your energy meter, which is expressed in GBP/year.	

[331] We have used the weighted averages published in the Gas Transmission Transportation Charges of the NGG valid as from the 1st of April 2023, (National Gas Transmission, 2023)

An average of these components is presented across all active DSOs for natural gas in the UK.

The capacity terms are based on the estimated maximum daily offtake. This is calculated by dividing the total consumption in a year by the number of days of consumption multiplied by the load factor. This load factor is related to the EUC (End User Category) bands. Each local distribution zone has 33 individual EUC bands that define 9 different consumption profiles based on annual consumption. The load factors, therefore, differ depending on the annual consumption of a profile and the local distribution zone[332]. Each DSO has its own load factor percentages, but only Northern Gas Networks discloses its load factors, which we used as a proxy for all other DSOs. The table below depicts load factors used for profiles G0, G1 and G2:

Table 123: Load factors for profiles G0, G1 and G2

Profile	Bands	Threshold (kWh)	Average load factor
G0	4	732,001 - 2,196,000	38.20
G1/G2	9	58,600,000 - 99,999,999,999	66.30

Based on this, the capacity term is computed as follows:

$$Annual\ charge = (SOQ * 365\ days) * unit\ rate$$

Where,

$$SOQ = annual\ consumption/(365\ days * Load\ Factor)$$

Component 3 – all other costs

The **Climate Change Levy** (CCL) is applicable to the consumption of natural gas for businesses in the industrial, public services, commercial and agricultural sectors. This levy is “an environmental tax charged on the energy that businesses use. It’s designed to encourage businesses to be more energy efficient in how they operate, as well as helping to reduce their overall emissions.”[333]

The following table gives an overview of the rates that are charged to professional consumers regardless of their profile:

Table 124: Climate Change Levy rates on natural gas[334]

Time period	Natural gas rate (GBP)
1st April 2022 to 31st March 2023	0.568p/kWh
1st April 2023 to 31st March 2024	0.672p/kWh
1st April 2024 to 31st March 2025	0.775p/kWh

[332] Load factors for bands 3 to 9 (from 293 MWh to 58,600 MWh/year) are determined based on a Winter Annual Ratio (consumption between December to March over annual consumption).
[333] (SEFE, 2024)
[334] ibid

6. Presentation and interpretation of results

6. Presentation of results

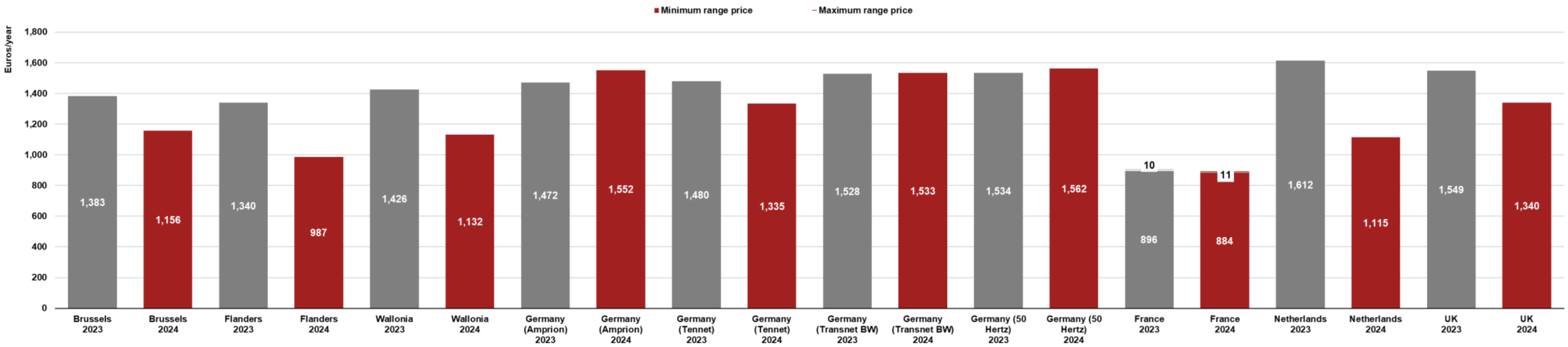
Presentation of figures (Electricity)

Profile E-RES (Electricity)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by a residential consumer (E-RES) in the different studied countries and regions. The results are expressed in EUR/year.

Figure 26: Total yearly invoice in EUR/year for residential consumers (profile E-RES)



Similarly to last year, Belgium is split into three regions and Germany into four regions because of regional differences. The other countries under review – France, the Netherlands, and the UK – are represented as one single result. The reasoning behind the distinction between regions was already set out above with an additional explanation of how the countries organise themselves regarding energy regulation. Furthermore, we show the results of the computations of 2023 (grey) and 2024 (red).

Belgium has stayed the second cheapest country for two years in a row for this profile, after France which has been the cheapest for three years. Compared to 2023 the total invoice has decreased for a majority of the regions (7/10) under review. Even though this is the smallest electricity profile considered in this study, we do notice the price range in France. The price range (minimum and maximum) is the consequence of the possibility to opt for the CU4 or MU4 network cost option which also has an impact on the CTA. The figure below thus shows a range for the network and all other cost components.

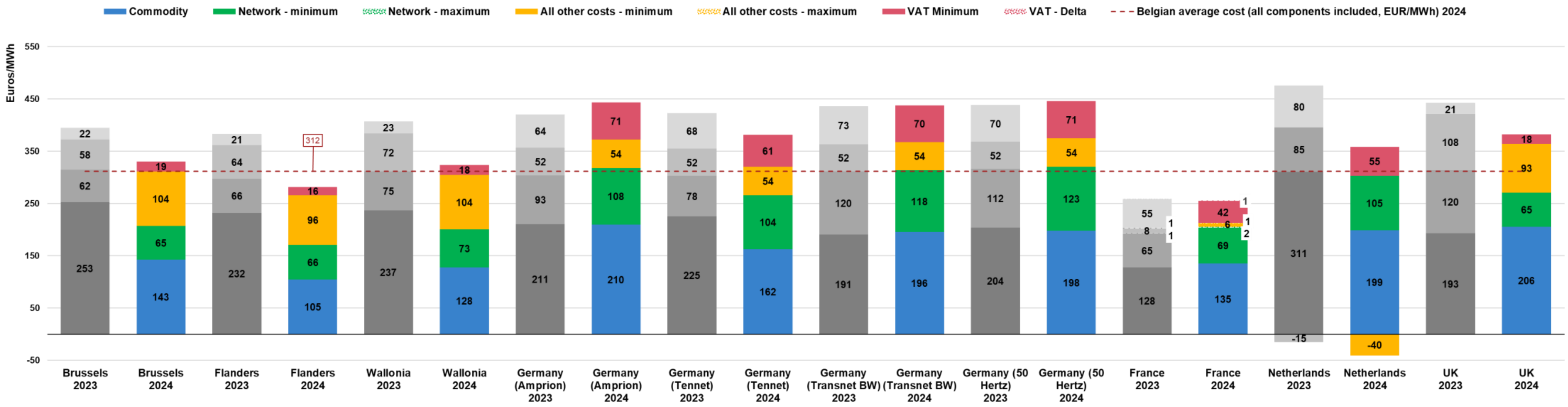
As it will be shown more in detail in the next section with the analysis per component, the large decrease observed for Belgium and the Netherlands in the total invoice can be mainly explained by the change in commodity cost.

Concerning the positioning of the Belgian regions, Flanders is (similarly to last year's study) the most competitive Belgian region, followed by Wallonia and Brussels separated by a small margin.

Breakdown per component

The previous results are further detailed for profile E-RES by the figure underneath, which provides a closer look at the breakdown of the different price components.

Figure 27: Electricity price by component in EUR/MWh (profile E-RES)



The ***commodity component***[335] is by far the lowest in Flanders (105 EUR/MWh) which is also the region/country under review seeing the largest decrease in this component between 2023 and 2024 (-127 EUR/MWh), followed by the Netherlands (-112 EUR/MWh). This year, we observe decreases (Belgium, the Netherlands, and some regions of Germany) and increases (France, some regions of Germany and the UK) of the commodity price. The decrease of the commodity price in Belgium can be explained by the decrease in electricity prices on the markets, which is then reflected in the consumers' bills.

In France, the standard product for residential consumers is regulated by the Government, thus not reflecting the market changes of the commodity price all over Europe. In fact, the "Tarif bleu" has increased by almost 10% in August 2023[336]. In the UK, this component has increased by 13 EUR/MWh compared to 2023. This is the largest increase observed. In the UK, the energy price cap and energy price guarantee, measures introduced by market regulator OFGEM, are supposed to absorb the increase in commodity cost.

[335] While this methodology to estimate commodity costs provide a fair view of the market situation in the respective countries and regions, one must be aware that it does not provide a full overview of the market prices as only three to five products were considered.

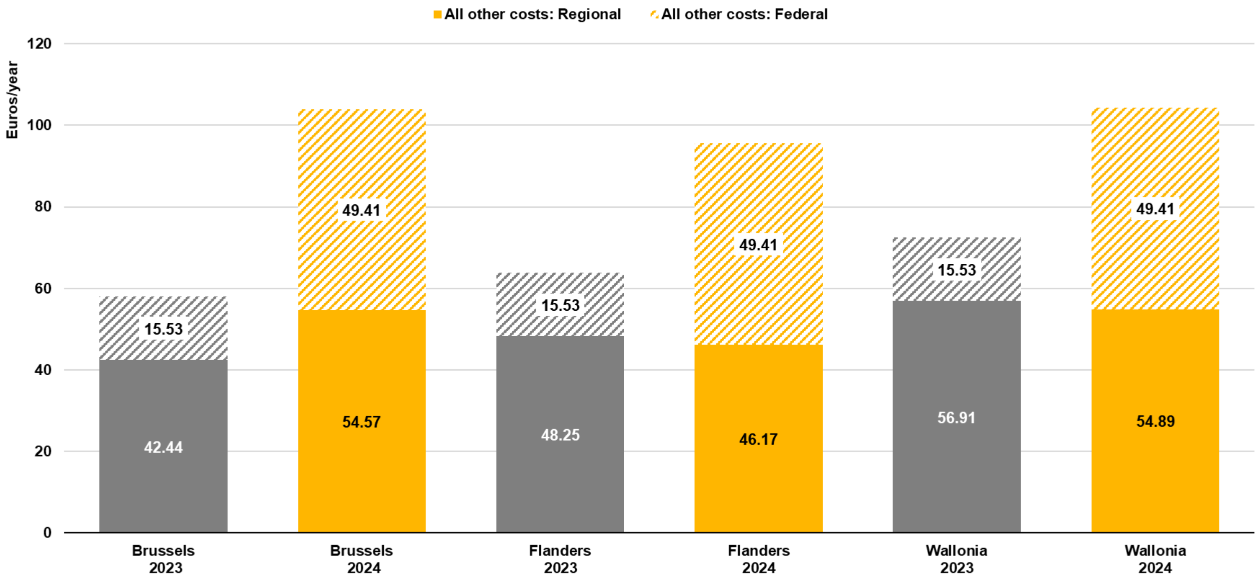
[336] (Selectra, 2024)

The first measure sets the maximum level of prices per kWh of gas and electricity for the default tariff that each energy supplier offers to residential customers.[337] The cap is reviewed four times a year, with the last update in January 2024. The second measure protects customers from increases in energy costs by limiting the amount suppliers can charge per unit of energy used[338].

The ***network cost*** component has slightly increased in most regions/countries under review. The only significative decrease has been detected in the UK, due to the transmission costs (TNUos) methodology having changed in 2023 with the addition of a daily fee and the reduction of the variable tariff. While important network cost reductions are in place for the large industrial profiles in Germany this is not the case for the residential consumers. On the Belgian front we see that the network costs are still the highest in Wallonia. The network cost component is flat in Flanders, while in Wallonia it decreased by 2 EUR/MWh. The position of each region in terms of network costs has remained relatively similar compared to 2023, though Brussels bears the cheapest network costs followed closely by Flanders.

[337] (Ofgem, 2022)
[338] (GOV.UK, 2023)

Figure 28: Regional and Federal all other costs in Belgium in EUR/MWh (profile E-RES)



The ***all other costs component***[339] has increased for most of the regions/countries under review, except for the UK and the Netherlands. In the Netherlands, due to the refund (*Belastingvermindering*) consumers (E-RES and E-SSME) can obtain. This fixed amount of 493.27 EUR/year in 2023 has increased to 521.81 EUR/year in 2024. Therefore, for the E-RES profile in the Netherlands, this negative tax allows to partly offset the increase of the commodity component. This component is the highest in the three regions of Belgium compared to all other regions/countries under review (from 96 to 104 EUR/MWh), which greatly differs from 2023 where Belgium was in the average. In Belgium we have made a distinction between the regional and federal all other costs and we observe that the regional costs were the biggest part of the "all other costs" component in 2023, which is not true for 2024 where there seems to be a rough balance between regional and federal costs in all regions. While the increase in federal costs has been explained, the increase in Brussels regional costs (the highest in the three regions, amounting to 54.57 EUR/MWh) can be explained by the increase of the Public Service Obligations tariffs as well as the green certificates scheme. In the other regions, regional costs have slightly decreased.

Finally, we also must take the ***VAT*** into account since this is a residential profile. The VAT rate is different across two sets of countries. Belgium and the UK have respective rates of 6% and 5%, while the other countries VAT rates oscillate between 19% and 21%. Belgium has permanently reduced its VAT rate to 6% as a measure to alleviate the increase in electricity and gas bills for small consumers, since 2023. The UK has the lowest VAT because of the low rate they apply on energy, followed by France that has the lowest total invoice. For the other countries, VAT mainly depends on the total invoice of the region/country.[340]

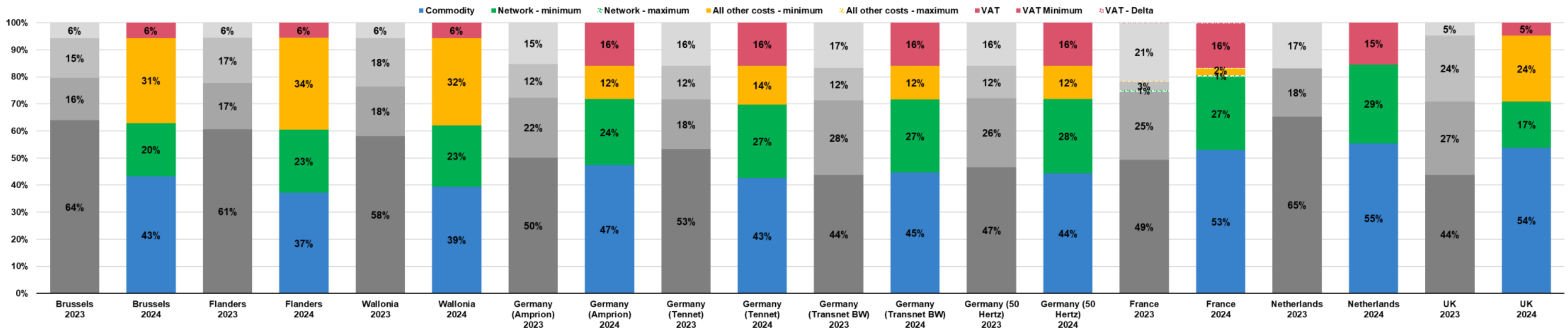
[339] This cost includes taxes, levies and certificate schemes.

[340] The VAT rate is not always applied on the whole total invoice since some tariffs are exempted.

Proportional component analysis

The percentages of the costs for each component can be found in the figure below.

Figure 29: Proportional component analysis for electricity (profile E-RES)



The graph above represents the weights of each component in the total invoice. It is interesting to see how the countries/regions are similar or differ when not looking at the absolute values. In the Netherlands we show the weights of the commodity, network and VAT components **before** deducting the all other costs reduction, since in 2024 the other costs are below zero (- 40.29 EUR) and act as a “discount” of 14% over the total invoice (proportionally less than previous years). Compared to 2023, the price cap of 0.40EUR/kWh has been discontinued due to decrease of the overall bill. Germany has also discontinued its price cap for small consumers since January 2024.

A few things stand out when observing the graph. Firstly, compared to previous years we observe that the share of commodity cost component decreased in all countries, except for France and the UK. The region/country with the lowest share of the network costs are the UK and Brussels (respectively 13% and 20% of the total invoice), which differs from last year. As stated above, the Netherlands do not display the “all other costs” component on the figure since it is below zero, acting as a reduction on the total relative price (explaining the VAT difference between 2023 and 2024). Lastly, when looking at France (i.e. the cheapest country for that profile), we see that there is a remarkable difference regarding the relative importance of the “all other costs” component over the total bill (while excluding the exceptional case of the Netherlands) compare to the other regions/countries under review.

Key findings

The profile of residential consumers (E-RES) suggests the following findings:

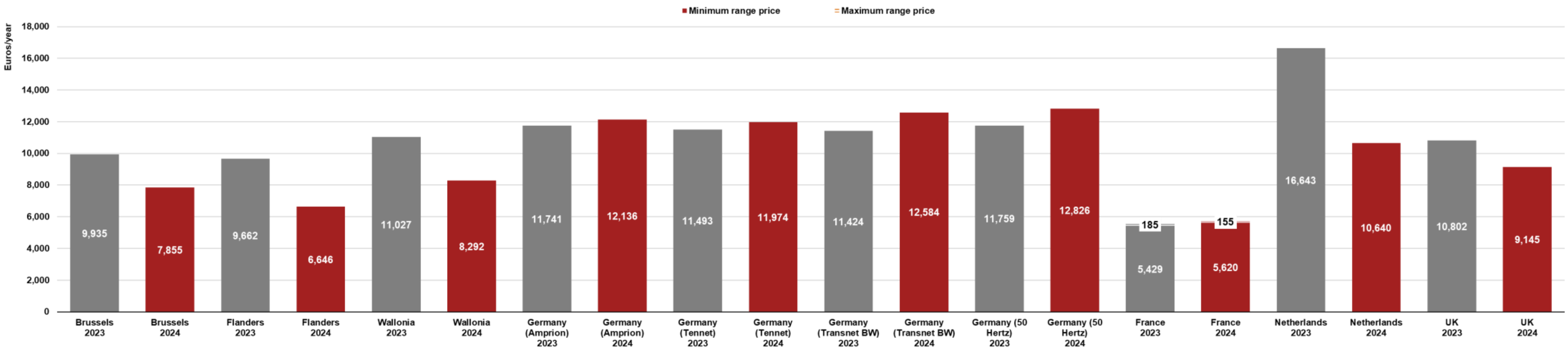
- The **total invoices for the different regions/countries under review show quite some variation**. Unlike last year, Germany is the most expensive country followed by the UK, while France is the least expensive one. The total invoice in France (884 EUR/year) is representing 81% of the total invoice of Belgium regions (1,092 EUR/year). The high cost in Germany can be explained by the discontinuation of the price cap and the increase in network costs, consequences of the German federal measures for 2024 not being approved for the year 2024 which decreased the financial support (specifically on the grid tariffs) of the government towards consumers compared to 2023. We also note that France is the cheapest country because of the “Tarif bleu” regulated product, accounting for most of the market products selected.
- The **relative position of Belgium did remain constant compared to last year**, being the second cheapest country/region under review, after France and closely followed by the Netherlands. Flanders is the cheapest region in Belgium and the second cheapest region among the regions/countries under review. Brussels is the least competitive region of the country for this profile.
- As opposed to previous years, the **commodity component** has taken a lesser proportion in the total invoice paid by residential profiles due to the improvement of market conditions during the year 2023. The UK is the only remaining country with a price cap on the energy bill, though its commodity component is still the highest observed.
- Compared to 2023 the **network costs** component has increased in all regions/countries except for the UK where a steep decrease occurred. From a Belgian perspective, we observe that Brussels has the smallest network cost, followed by Flanders. The relative importance of this component is smaller across Belgium than in France, the cheapest country. On the other hand, it is the lowest in the UK, where the networks costs account for 13% of the total invoice. The decrease of commodity components in most regions and countries is more important than the relatively small increase of network costs across most regions/countries, except in the UK.
- The **all other costs component** plays a big role in the competitive position of the region/country, in particular the tax advantage lowering the total cost in the Netherlands. In Belgium we have made a distinction between the regional and federal all other costs and we observe that the federal costs have increased and do come close to the regional costs for all regions. Flanders has relatively higher overall other costs than Brussels and Wallonia due to lower commodity and relatively similar network costs, making the other costs weigh more in the total balance (even if lower than in the other regions). The Belgian all other costs component is very high, in absolute terms, compared to all regions for E-RES, for two years in a row.

Profile E-SSME (Electricity)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by a small professional consumer (E-SSME) in the different studied countries and regions. The results are expressed in EUR/year.

Figure 30: Total yearly invoice in EUR/year (profile E-SSME)

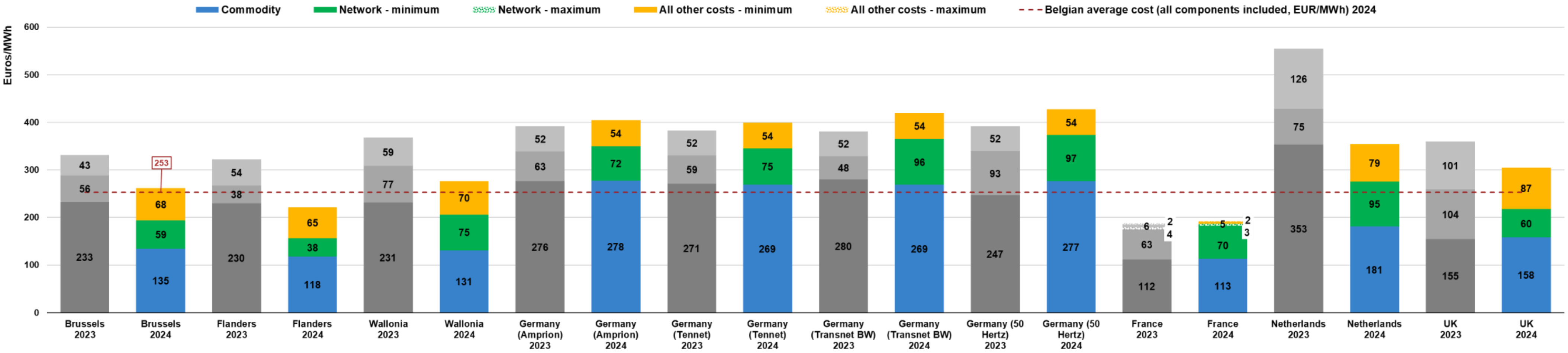


Similarly to the E-RES profile, Germany stays the most expensive country, because of the increase in network costs and the stable commodity costs not following the downward trend compared to neighbouring countries. France is again the cheapest zone, while Belgium and the UK are the second and third least expensive ones. The total invoice has decreased in all countries compared to 2023, except for Germany and France. The biggest decrease (around 6,000 EUR) is observed in the Netherlands which is mainly due to the decrease in commodity costs and partly in the decrease of the other costs components. In Belgium the cost has decreased in all the three regions, mainly due to lower commodity costs. Wallonia stays the most expensive region in Belgium with a 8,292 EUR/year bill, and Flanders the cheapest with a 6,646 EUR/year bill. The breakdown per component below will detail which components have the most influence on the total invoice.

Breakdown per component

The previous results are further detailed for profile E-SSME in the figure below, which provides a closer look at the breakdown of the different price components.

Figure 31: Electricity price by component in EUR/MWh (profile E-SSME)

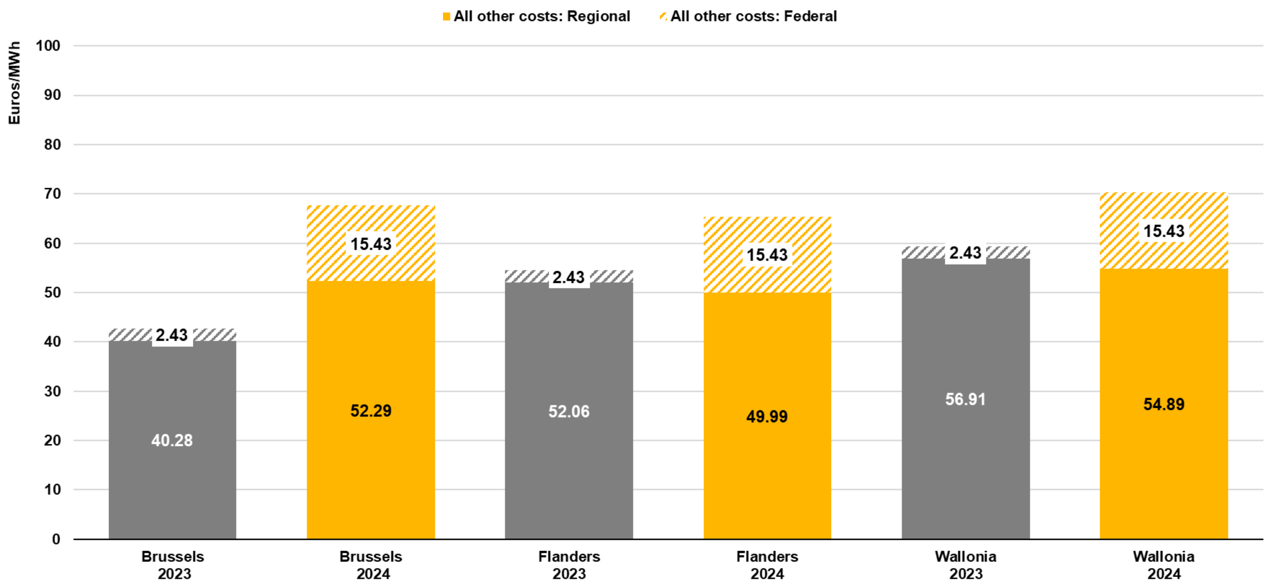


The **commodity component**[341] has decreased in Belgium, some regions in Germany and the Netherlands. The remaining countries have seen their commodity costs stagnate or increase. The largest decrease occurred in the Netherlands (-172 EUR/MWh). The commodity component is the highest in Brussels, across the Belgian regions, and it is always lower than in the other countries except for France which can offer the cheapest price due to the regulated product "Tarif bleu". Germany stays the country (all regions included) with the highest commodity costs, partly due to the price cap discontinuation in 2024.

For the **network component** we can see that it increased for most of the regions/countries under review (7 out of 10), except for Wallonia where a small decrease was noticed, and the UK which saw its TNUoS charges drop due to tariffication methodology changes resulting in a total network costs drop of 44 EUR/MWh to become the 3rd lowest in terms of network charges compared to neighbouring regions/countries under review. Flanders stays the region with the lowest network costs with 38 EUR/MWh, stable compared to 2023, followed by Brussels with 59 EUR/MWh. The largest increase can be observed in the German Transnet BW region where the network component increased by 48 EUR/MWh, followed by the Netherlands increasing by 20 EUR/MWh. For all the other regions the increase is contained to lower amounts. Their costs represent 54% of France, the cheapest country under review. The network cost per MWh is on average smaller than the cost of the E-RES profile. For Belgium, this average network costs represents 67 EUR/MWh for the E-RES profile, while it amounts to 57 EUR/MWh for the E-SSME profiles. Lastly, we see that the ranges of the network costs in France are marginally bigger than the E-RES profile.

[341] While this methodology to estimate commodity costs provides a fair view of the market situation in the respective countries and regions, one must be aware that it does not provide a full overview of the market prices as only three to five products were considered.

Figure 32: Regional and Federal all other costs in Belgium in EUR/MWh (profile E-SSME)



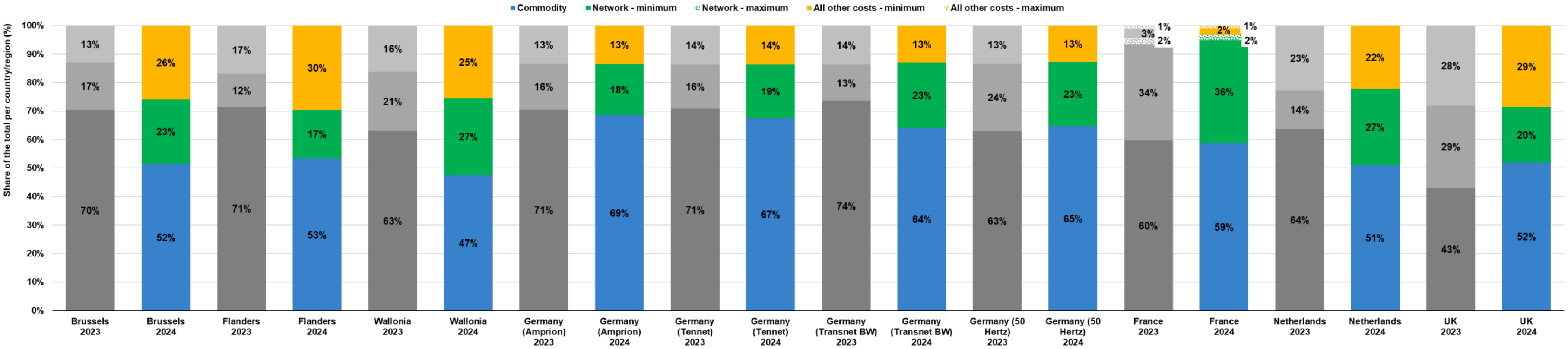
The **all other costs component**[342] is (by far) the lowest in France followed by Germany. The highest is in the UK followed by the Netherlands. We observe that the range in France is marginally bigger compared to E-RES. Whether we consider the minimum or maximum range of France into account, we notice that France stays less expensive than Belgium's three regions and especially Flanders. In Belgium we see that the federal component of all other costs has increased from 2.43 EUR/MWh to 15.43 EUR/MWh between 2023 and 2024, while the regional all other costs components increased by 29% for Brussels. We observe a slight decrease of 2.07 EUR/MWh in Flanders regional other costs and of 2.02 EUR/MWh for Wallonia compared to the previous year. The increase of federal all other costs increase is explained by a main factor: the discontinuation of the federal excise duty temporary reduction on electricity consumption by setting it back to its former level. For Brussels, the regional all other costs component increase is mainly due to the increase of Public Service Obligations tariffs.

[342] This cost includes taxes, levies and certificate schemes.

Proportional component analysis

The percentages of the costs for each component can be found in the underneath figure.

Figure 33: Proportional component analysis (profile E-SSME)



The relative importance of the **commodity component** has decreased in almost all regions/countries (8 out of 10) under review. This component is the most important in all German regions (>64%). The UK is the country where the **network cost** component makes up 20% of the total invoice in 2024, which represents a 9% decrease compared to 2023. Overall, most regions/countries network costs proportion in the invoices takes a bigger part up in 2024 than in 2023, except for the UK and the 50 Hertz region in Germany. Lastly, we observe that **all other costs component** accounts for a larger proportion of the total invoice in Belgium but is very stable compared to 2023 in all the other countries. Belgium's increase is mostly explained by the temporary reductions on the federal excise duty for electricity (to the European minimum of 0.5 EUR/MWh) which were discontinued as from 2024. The percentual analysis shows a low variation of the weight of the all other costs in the total bill among the three Belgian regions, with the three regions having between 25% and 30% of their bill as being other costs, while the main difference still lies in the network costs.

Key findings

The results reported above suggest the ensuing Key findings regarding profile E-SSME:

- **Germany is the most expensive country in 2024**, while it was the second most expensive in 2023. The total invoice is between a minimum of 5,620 EUR/year to a maximum of 12,826 EUR/year in Germany. The lowest bill in Germany is observed in the Transnet region (similarly to 2023), where the lower price of the “Grundversorgung” and minimal network costs drags down the weighted average among the products selected. France is the cheapest country, and it is one of the only products where the commodity component has not followed the general downward market trend, because of the regulated product being already competitive and below commodity market prices, giving no incentives to France to lower its regulated product tariff. The second cheapest country is Belgium (7,597 EUR/year) with a negative difference of 2,613 EUR/year compared to 2023. The gap between France and Belgium is still significant (1,821 EUR on the total invoice), as France accounts for 76% of Belgium’s average total invoice.

- **Flanders remains the most competitive Belgian region**, staying the second cheapest region among the zones under review with a bill of 6,646 EUR/year. The competitive position of Flanders is mainly due to a lower network and commodity costs component. It is followed by Brussels and then Wallonia.

- Compared to last year, the **commodity component** still represents at least half of the energy bill for all the zones under review, reaching even 64% to 69% in German regions. However, the global proportion of this component in the bill compared to the previous year is lower. In Wallonia we observe the lowest relative weight, reaching 47% of the total energy bill. Germany is the country with the highest commodity price in 2024. The largest decrease is noticed in the Netherlands with -172 EUR/MWh for the commodity costs component between 2023 and 2024.

- We observe some variation regarding the **network component**. A variety of network costs component magnitudes across countries with a minimum value of 38 EUR/MWh for Flanders and a maximum value of 97 EUR/MWh for the 50 Hertz region of Germany. In most of the regions under review, the relative weight of the network component over the total bill increased mainly due to the decrease of the commodity component share, except in the UK where the very steep decrease of network costs led to a decrease of its share in the total bill. We observe regional differences in Belgium with regards to the network component, ranging from 38 (Flanders) to 75 EUR/MWh (Wallonia), with Brussels in the middle. In Flanders, the distribution tariff structure implemented in 2023 keeps the region to a significative low level compared to the other regions for this profile.

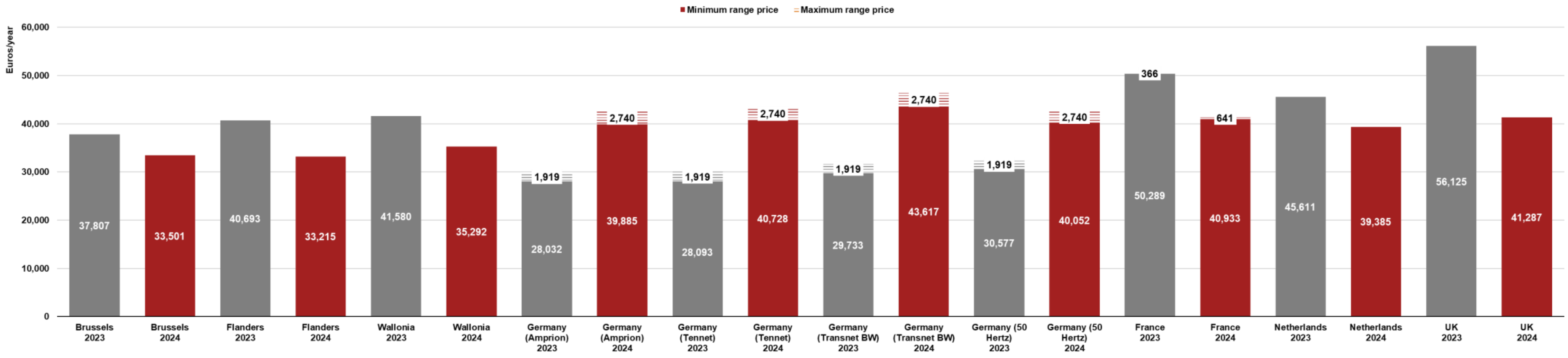
- The **all other costs component** is the highest in the UK and the Netherlands. We observe the highest increase compared to 2023 in Brussels (+25 EUR/MWh), mainly due to the increase of both the federal excise duty on electricity (common to all regions in Belgium) and the regional Public Service Obligations in Brussels. In France we observe that the minimum and maximum ranges do not significantly play a role with the E-SSME profile with regards to all other costs component with a variability of 2 EUR/MWh. Other regions have similar stable levels in 2024 compared to 2023.

Profile E-BSME (Electricity)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by a big professional consumer (E-BSME) in the different studied regions and countries. The results are expressed in EUR/year.

Figure 34: Total yearly invoice in EUR/year (profile E-BSME)



First off, we observe that for the E-BSME profile (and larger profiles) we must take a range into account in Germany, because of a possible reduction of the *Konzessionsabgabe*. This has an impact on Germany's competitive position compared to France, the Netherlands and the UK for this profile and will have a bigger impact with other consumer profiles.

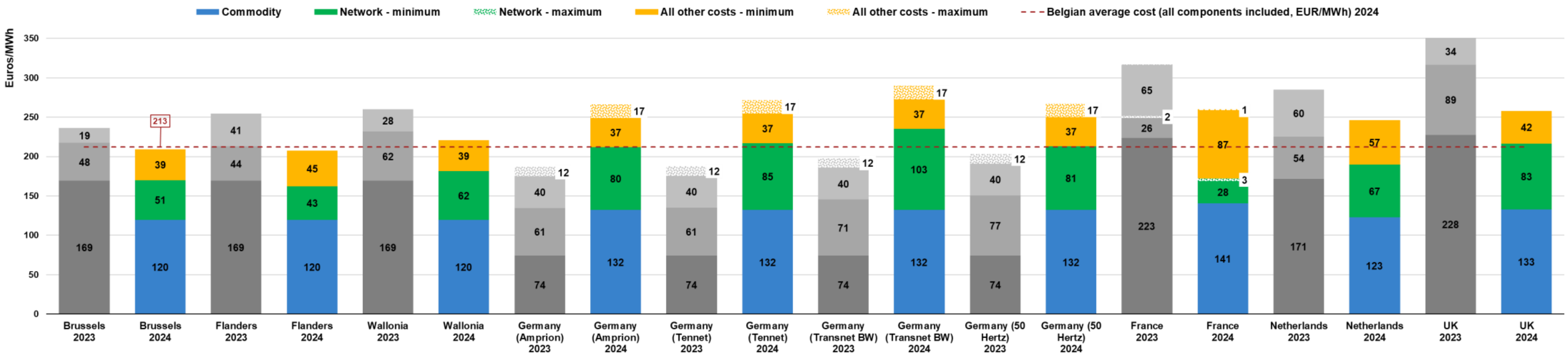
Secondly the total yearly invoice has decreased in all the regions/countries under review, except for all regions of Germany. This is the exact opposite trend compared to 2023 where all total bills increased except for Germany. This decrease in largely part due to commodity prices on the electricity markets having dropped from 2023 levels. The biggest decrease happened in the UK (-25,000 EUR/year), and the largest increase in the Transnet BW region of Germany (+14,000 EUR/year). Germany's regions are the most expensive in 2024 for this profile, which contrasts with 2023 as they were the cheapest. The sharp decrease in the total bill for the UK (as well as most regions/countries) is mainly explained by the lower commodity price compared to the previous year.

The competitive position of all the Belgian regions have increased compared to the E-SSME profile (1st cheapest for the E-BSME profile, 2nd for the E-SSME profile). While Wallonia has remained the most expensive region in Belgium, Flanders ranks as the most competitive region of the country in 2024, and the cheapest region overall.

Breakdown per component

The previous results are further detailed for profile E-BSME in the following figure, providing a closer look at the breakdown of the different price components.

Figure 35: Electricity price by component in EUR/MWh (profile E-BSME)



The **commodity component** decreased for all the regions/countries under review, except for Germany where a steep increase is noticed. The reason for the increase in all of Germany's regions is the discontinuation of the price cap (0.13 EUR/kWh for up to 70% of the historical consumption including VAT) that was set in 2023 and reflected in our methodology[343] as having an impact on the commodity component. This translates to a 78% increase of this component between 2023 and 2024. The highest decrease can be observed in the UK where the commodity component has decreased by 42% (-95 EUR/MWh) compared to 2023 levels. A similar decrease of 37% (-82 EUR/MWh) is also observed in France, while the Netherlands and Belgium's commodity costs component decreased by the same proportion (-29%). Compared to smaller profiles, the costs of this component is computed according to a formula and not by using comparison websites. Hence, this component will remain similar for all bigger industrial profiles (in EUR/MWh), except for E3 and E4 where the formula is slightly adapted to consider a 7 days working week as opposed to a 5 days working week. In France the commodity component is adjusted according to the ARENH principle, hence showing some variation between the industrial profiles.

[343] Starting from the following formula, the variable became the commodity cost, which virtually decreased as all other components are fixed or varying depending on the kWh used by the profile:

$$0{,}13 * Yearly\ Consumption * 70\% = 70\% * (All\ Other\ Costs + Network\ Costs + Commodity\ Costs)$$

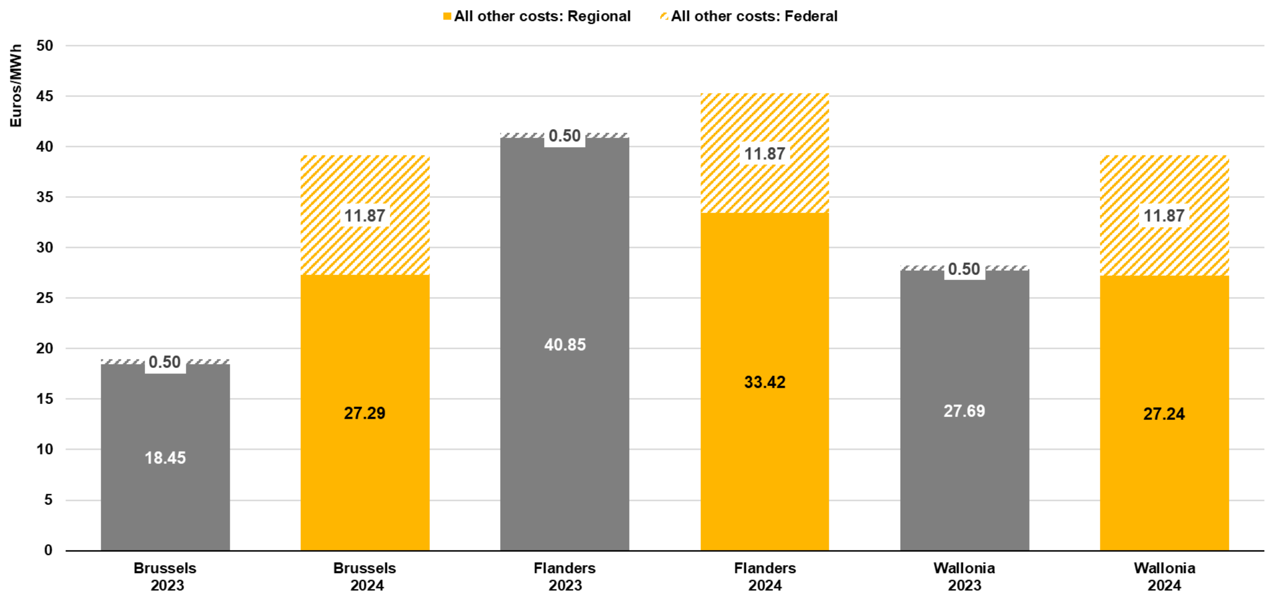
The **network cost** has remained flat or increased in most regions/countries under review, except a noticeable decrease in the UK. A relevant increase of 4 to 32 EUR/MWh in German regions significantly impacts its competitive positioning and make these regions' network components the largest in the regions/countries under review. This is due to measures regarding grid fees not being taken in 2024 and this not alleviating the network costs for consumers.

The network costs in France stay the lowest in 2024 similarly to 2023 with a 28 EUR/MWh cost of the component, followed by Flanders with 43 EUR/MWh. The other regions/countries undergoing a decrease of the network component in 2024, seeing it oscillating between 51 to 103 EUR/MWh, which shows how different network costs structures are across regions/countries. Belgium's position with regards to the network component is as performant as in 2023, as it overall ranks second cheapest after France. Wallonia is the most expensive Belgian region with network costs of 62 EUR/MWh in 2024.

The **all other costs component**[344] is the largest in France, similarly to 2023 though we observe a 34% increase to reach costs of 87 EUR/MWh. In the other regions/countries under review we observe a general stagnation or increase of this component. The highest increase occurs in France (+22 EUR/MWh) and Brussels (+20 EUR/MWh). The increase in France can be explained by the increase of the *certificate capacité* which value varies depending on the capacity utilised by the consumer. Belgium maintains an average competitiveness on all other costs, despite a global increase of the federal excise duty on electricity and an increase of the regional Public Service Obligations tariffs in Brussels. The most competitive region in Belgium is Flanders with 45 EUR/MWh for this component. Both Brussels and Wallonia have an all other costs component value of 39 EUR/MWh. The UK sees its component increase by 23%, reaching 42 EUR/MWh in 2024 which corresponds to the Belgian average and is slightly below the German average when we consider the maximum ranges Germany displays for consumers benefitting from reductions on the *Konzessionsabgabe*. The all other costs price per MWh decreased intensively compared to the small professional profile (E-SSME) in all regions/countries, except for Germany where it is the same cost, but with a potential reduction of 17 EUR/MWh, which represents an increase of 41% compared to 2023.

[344] This cost includes taxes, levies and certificate schemes.

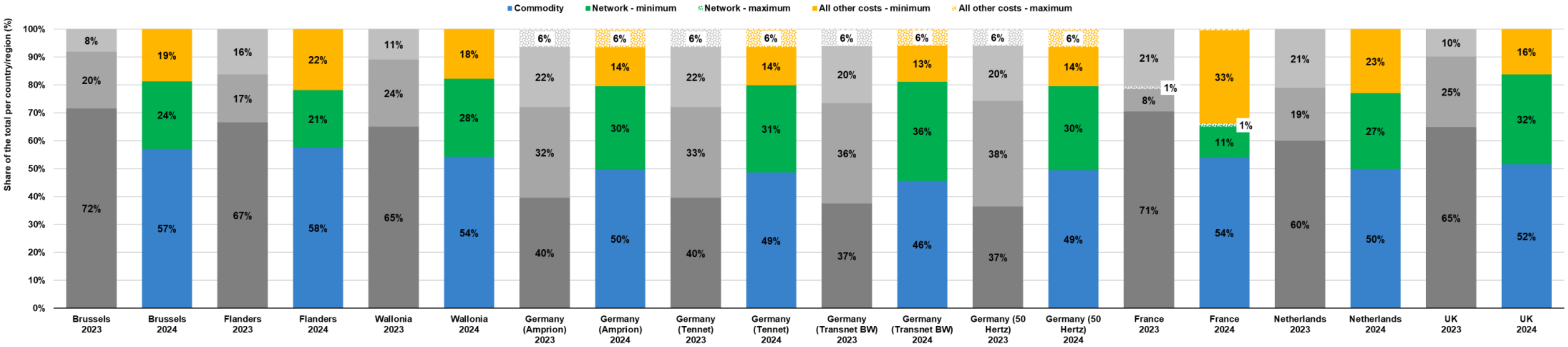
Figure 36: Regional and Federal all other costs in Belgium in EUR/MWh (profile E-BSME)



Proportional component analysis

The percentages of the costs for each component can be found in the figure below.

Figure 37: Proportional component analysis (profile E-BSME)



More distinctively than the previous profiles, the most relevant change we observe for the E-BSME profile in 2024 is the proportional **increase of the all other costs component** coupled with a proportional **decrease of the commodity component** over the total electricity bill, for all countries with exceptions for Germany's cost components relative weights in the total invoice. The commodity component accounts for 46% to 59% of the total invoice, which represents a 13% variability, smaller than the variability of 35% in 2023. This decrease explains the relative increase in weight for the other components in most of the regions/countries under review, even if we observed slight increase in the **network cost** for most regions under review and a bigger increase of the all other costs component. On the Belgian level we observe that Flanders has a higher all other costs, with proportionally smaller **network costs**. The **all other costs component** has become important in France as it now accounts for around 33% (from 21% in 2023) of the total invoice.

Key findings

As for the E-BSME profile, the results demonstrate the ensuing Key findings:

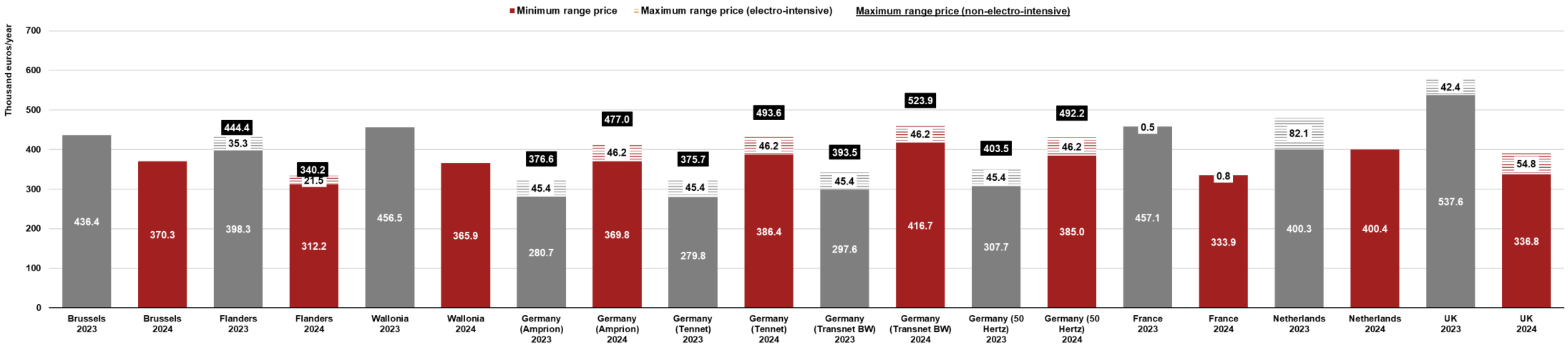
- The **total invoice has decreased in all the regions/countries under review** and ranges from 33 kEUR/year (Flanders and Brussels) to 43 kEUR/year (Germany). All German regions are the most expensive, followed by France, the UK and the Netherlands. Belgium and its three regions are the most competitive country for the E-BSME profile.
- **In Belgium, Flanders is the least expensive region**, followed closely by Brussels, where the higher network costs are compensated by the lower all other costs. All the Belgian regions are less expensive than the other regions in 2024, which has improved since 2023 where they were ranked 2nd after Germany. The lower average network and all other costs are mainly responsible for their competitiveness compared to its neighbours.
- The **commodity component**'s proportion in the bill has decreased compared to 2023, accounting for around half of the total invoice on average in most regions/countries under review. This commodity component variance has become smaller across countries, though it is higher in the UK and lower in Germany.
- The **network costs component** varies across the reviewed regions/countries and goes from 31 (France) to 103 EUR/MWh (Germany Transnet BW). Flanders has the second lowest network costs (43 EUR/MWh), and ranks lower than the other two Belgian regions, though overall Belgium network costs are still cheaper than Germany and the Netherlands.
- The **all other costs component** and the reductions that can be applied are an important factor when determining the competitiveness of a region/country. France's competitive position completely changes compared to all other countries, due to very high all other costs (88 EUR/MWh).

Profile E0 (Electricity)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by an industrial profile E0 in the different studied regions and countries. The results are expressed in kEUR/year.

Figure 38: Total yearly invoice in kEUR/year (profile E0)



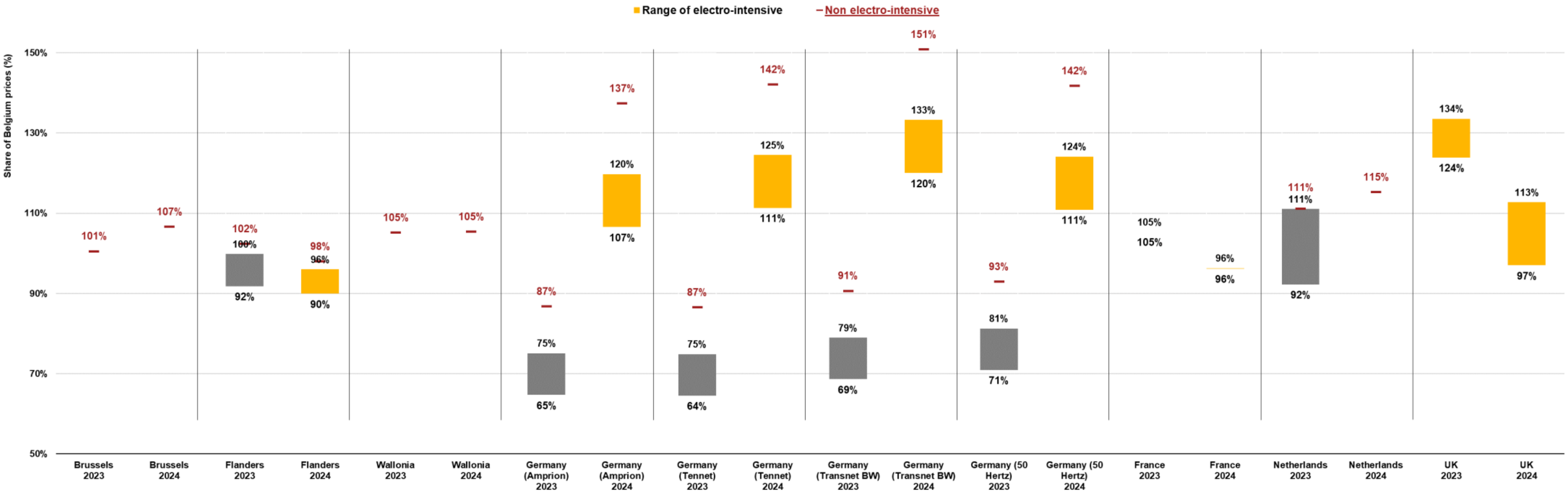
For the E0 profile we must take a range into account in Germany, because of a possible reduction of the *Konzessionsabgabe*, as explained in the E-BSME part. Additionally, a range also appears in the UK with the potential reductions on the *Renewable Obligations* scheme. Lastly, a range is not to consider anymore in the Netherlands due to the *ODE* being integrated in the energy tax.

The total yearly invoice has decreased in all the regions/countries under review, except for all regions of Germany. This is the exact opposite trend compared to 2023 where all total bills increased except for Germany. This decrease in largely part due to commodity prices on the electricity markets having dropped from 2023 levels, but the increase of the network costs also composes a large proportion of this increase. The biggest decrease happened in the UK (-201 kEUR/year), and the largest increase in the Transnet BW region of Germany (+119 kEUR/year). The German regions are the four most expensive regions in 2024, similarly to the E-BSME profile. Depending on the reductions/exemptions, some regions can become more competitive than the Netherlands. The sharp decrease in the total bill for the UK (as well as most regions/countries) is mainly explained by the lower commodity costs compared to the previous year.

The competitive position of all the Belgian regions change compared to the smaller profiles (1st cheapest for the E-BSME profile, 2nd for the E-SSME profile). While Brussels becomes the most expensive region in Belgium in 2024, Flanders remains the most competitive region of the country in 2024. Overall, Flanders is the cheapest region, except for non-electro intensive consumers for which France becomes the most competitive region/country. When taking Belgium's average, France is the cheapest country with 334 kEUR/year while Belgium's average is 347 kEUR/year.

Because of regional differences, Belgium is split into three regions and Germany into four regions. The other countries under review – France, the Netherlands and the UK – are represented as one single result. Below, we compare each region and country's yearly bill with the average Belgian price, which is set at 100. The Belgian average is computed as the mean between Brussels' and Wallonia's single price as well as Flanders' minimum and maximum prices (maximum for non-electro intensive consumers). We have also added a total maximum price range for non-electro-intensive consumers since some reductions/exemptions will start applying on **electro-intensive consumers** from this profile onward.

Figure 39: Total yearly invoice comparison in % (profile E0; Belgium Average 2024 = 100)



Both above figures give us a lot of information about the total invoice and the competitiveness of the different regions/countries depending on the reductions and/or exemptions considered. Because of the large number of ranges different regions/countries have the possibility to be competitive.

With regards to the maximum range of non-electro intensive in 2024, we observe a that Germany is the least competitive with costs oscillating between 137% and 151% of Belgium's total average invoice. When taking into account potential reductions and electro-intensity of this profile for the same country, some regions (50 Hertz, Amprion and Tennet) have a potential of competitivity with the Netherlands, the UK and Brussels. France is for this profile the cheapest with regards to non-electro intensive profiles (96% of Belgium's average), however a very small electro-intensive range does not allow the consumers to find competitiveness against Flanders (90% of Belgium's average). Flanders has the best potential for competitiveness on electro-intensive profiles across all regions/countries, followed by the UK with 97% of Belgium's average.

The competitive position of Germany has significantly deteriorated compared to 2023, partly due to the price cap being discontinued in 2024. The total invoice for non-electro-intensive consumers in Germany (ranging from 477 to 523 kEUR/year) is higher than the other countries (all located below the 400 kEUR/year). However, Germany's attractive measures in reductions and/or exemptions for electro-intensive profiles could make it be more competitive than the Netherlands and to the limit, to the UK.

Flanders has the smallest total invoice amount for consumers that qualify as electro-intensive. The UK is following very closely, with a difference of 26.6 kEUR/year between the two regions/countries. Overall, except the UK with 336 kEUR/year, only France E0 profiles having a minimal total yearly bill of 334 kEUR/year have the possibility to be under the Belgian bill average of 347 kEUR/year.

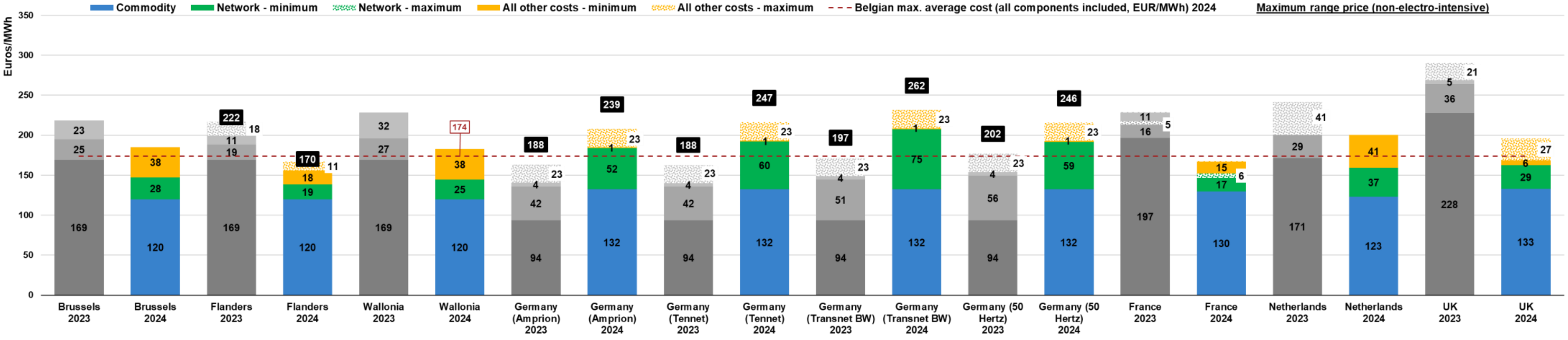
In 2024, the competitiveness of Belgium is strong and on the better side for Flanders, which offers reductions for GC and CHPC. Flanders has the possibility to offer its companies the most competitive bill if the reduction applies, which is an improvement compared to the competitive position of this region in 2023. The competitive position of Flanders and Belgium has thus become better compared to 2023. However, Belgium remains the 3rd most competitive country for electro-intensive profiles, similarly to 2023.

If we only consider the maximum ranges of the electro-intensive consumers, Flanders becomes the 2nd most competitive region/country behind France with a difference of 6 kEUR/year.

Breakdown per component

The previous results are further detailed for profile E0 in the figure underneath, which provides a closer look at the breakdown of the different price components.

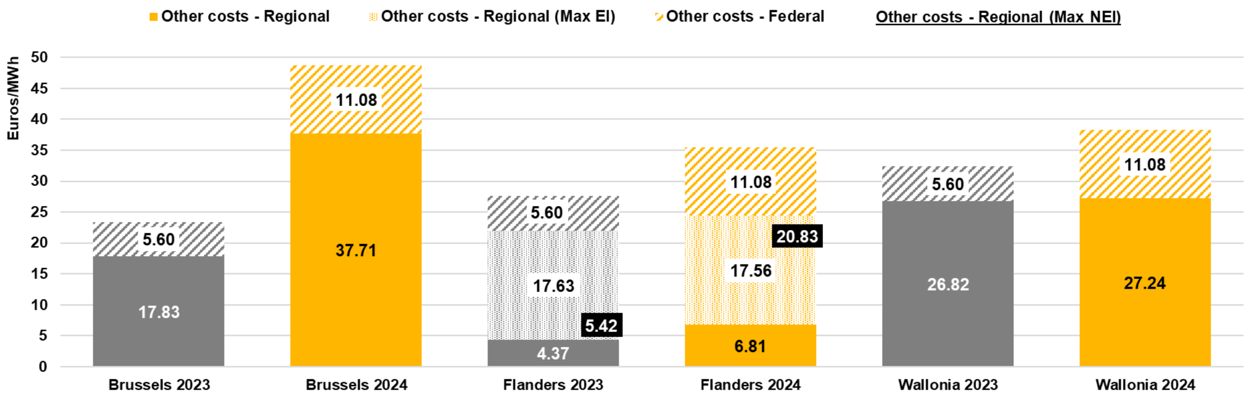
Figure 40: Electricity price by component in EUR/MWh (profile E0)



The **commodity costs component** in Belgium sits below all the other regions/countries under review, while the UK has the highest value similarly to 2023. All commodity costs components are within a range of 120 – 132 EUR/MWh. Due to the removal of the price cap as from 2024, Germany has a worse competitive position on this component than in 2023, where it was the cheapest of all regions/countries. However, on it does not rank more than 10% higher than the cheapest country, Belgium. Like the other profiles examined before we observe, for the E0 profile, a decrease of the commodity price occurred in most regions/countries in 2024. This harmonised decrease and small costs range between the cheapest and most expensive countries for this component makes sense. In fact, as the data comes from the electricity markets themselves which are globally accessible, the prices tend to average, especially for neighbouring countries. Despite the global decrease of this component (except in Germany) the commodity component still accounts for more than half of the total invoice for most regions/countries.

The **network costs component** varies across the regions/countries and we see a clear distinction between regions/countries with relatively low network costs, such as Flanders and France, and those with higher network costs, such as Germany regions with network costs contained between 52 and 75 EUR/MWh. Like the other profiles previously mentioned, the network costs have slightly increased for most regions/countries under review, except for Wallonia and the UK which did see their network costs decrease. Due to a lower commodity cost component for most regions, the relative weight of the network costs over the total invoice has also increased compared to 2023 for the zones analysed. The German region Transnet BW is the zone with the highest network cost (75 EUR/MWh). In France the network cost depends on the price option (i.e. CU fixed peak, CU mobile peak, LU fixed peak or LU mobile peak), depending on the electro intensity profile, is the lowest of all regions with 17 to 24 EUR/MWh closely followed by Flanders with 19 EUR/MWh.

Figure 41: Regional and Federal all other costs in Belgium in EUR/MWh (profile E0)



Lastly, the **all other costs component**[345] shows the most variation across regions/countries and even in their respective region/country since there are multiple reduction/exemption schemes that affect this component. Except for Brussels, Wallonia and the Netherlands, all the regions/countries present a range. The largest is in the UK with 27 EUR/MWh of potential reductions/exemptions. This range has remained constant in Germany and has the potential to make Germany more competitive than Wallonia and the Netherlands when reductions are applied in the Amprion region. For non-electro-intensive, Germany is the least competitive country. When the UK's minimum range is considered, it becomes the 2nd cheapest region/country.

We also note that the size of the all other costs component and the ranges has remained quite similar to last year, except for a 39% decrease in Flanders. The variations observed in this component make the competitive position of the countries less clear and much will depend on which consumers will be entitled to a reduction/exemption. Like previous profiles, the increase of federal costs in all regions of Belgium have lowered Belgium's competitiveness as a whole, making regions' regional costs a differentiator for competitiveness with their neighbours.

[345] This cost includes taxes, levies and certificate schemes.

Impact of Flanders' combined cap on profile E0

The cost of green certificates can have a big impact on the energy price of large industrial consumers. To limit these costs, Flanders introduced two caps, in 2018, on the cost of financing of renewable energies. These caps are proportional to the Gross Value Added (GVA) of the company and thus vary from company to company. Previously this cap was only applicable on GC but since 2021 it is a combined cap that is applicable on GC and CHPC. In the following example, we attempt to illustrate the potential impact of these caps on industrial consumers.

There are two different caps according to the undertaking type of the industrial consumer:[346]

- **Case 1:** Undertakings belonging to sectors listed in annexe 3 or 5 of the EEAG[347] with an electro-intensity above 20%, the amount due for the costs related to the financing of renewable energy and qualitative combined heat and power is capped at 0.50 of the average gross value added (GVA) over the last 3 years;
- **Case 2**: Undertakings belonging to sectors listed in annexe 3 of the EEAG, the amount due for the costs related to the financing of renewable energy and qualitative combined heat and power is capped at 4% of the average gross value added (GVA) over the last 3 years.

Since the cap's financial impact differs according to the last 3 years' average gross value added, it also differs between companies. Therefore, this analysis focuses on identifying the maximum GVA from which each profile (E0 to E4) no longer benefits from the caps (i.e. a reduction in the total cost of GC and CHPC). The computation of GC and CHPC is explained in Section 5.

The results for E0[348] are synthesised in the following table:

Table 125: Flanders' cap on profile E0

	Case 1	Case 2
NACE codes	Annexe 3 or 5 EEAG	Annexe 3 EEAG
Electro-intensity	> 20%	No threshold
Cap (% of GVA)	0.50	4%
Average yearly consumption (E1)	2 GWh	
Scheme cost (without cap)	16.34 kEUR	
Maximum gross value added to benefit from the cap	3.27 MEUR	16.33 kEUR

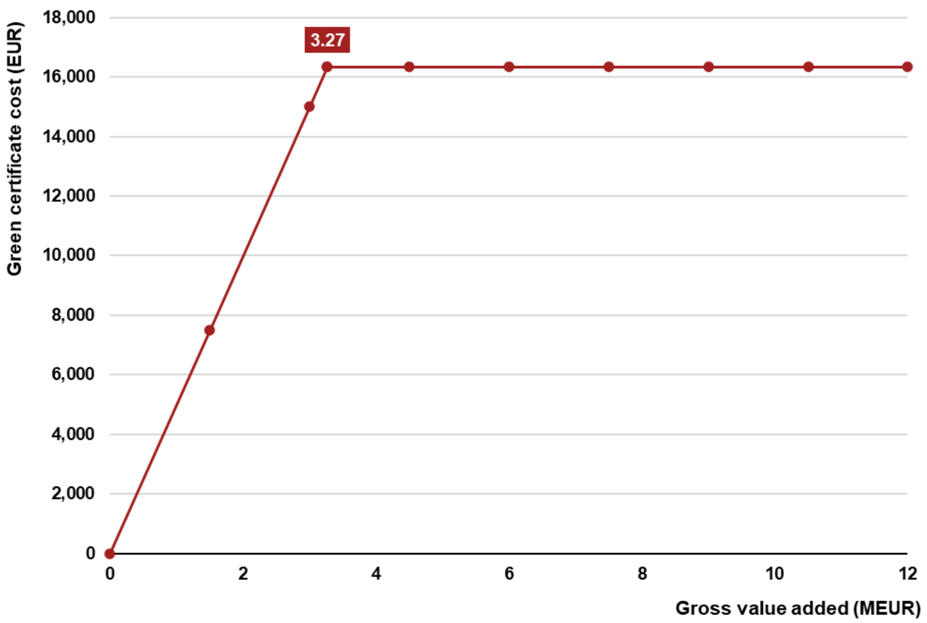
[346] The companies listed in Annexe 3 and 5 of EEAG correspond to the companies listed in the Energiedecreet except for Nace 23 (Manufacture of other non-metallic mineral products).

[347] (European Commission, 2014)

[348] One must be aware that it is less likely that E0-like consumers would fall under the cap application scheme. However, for the sake of the report consistency and the latter analyses, we reflect potential impacts it would have on this consumer.

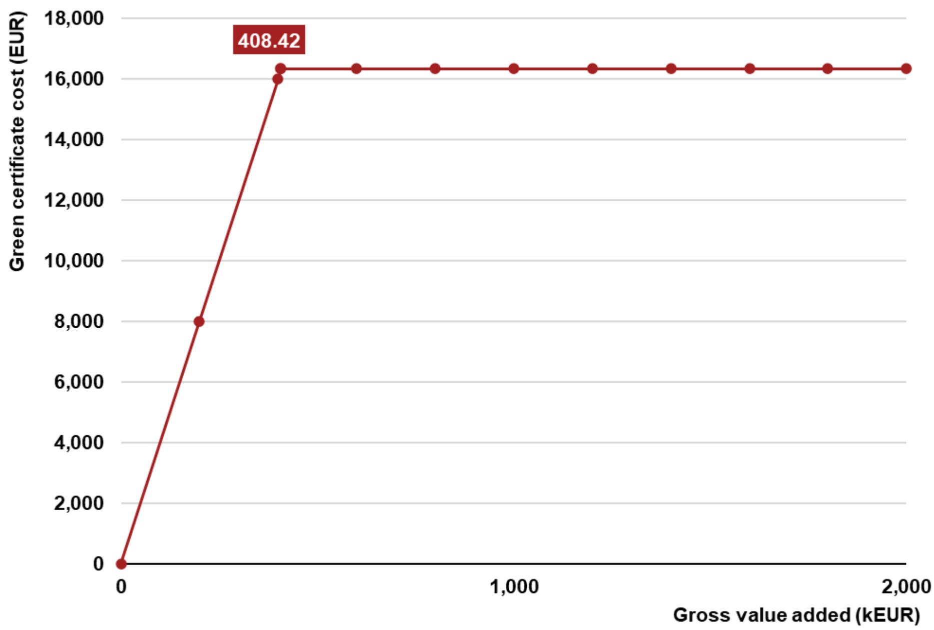
Considering only E0 profiles with NACE codes from Annexe 3 or 5 from the EEAG and with an electro-intensity above 20% (case 1), a company benefits from the application of the cap as long as its gross value added is less than 3,267,376 EUR.

Figure 42: CHPC and GC actual cost for E0 profile (Case 1)



Considering only Profile E0 companies with NACE codes from Annexe 3 from the EEAG (case 2), a company benefits from the application of the cap as long as its gross value added is less than 408,422 EUR.

Figure 43: Green certificate actual cost for E0 profile (Case 2)



Key findings

The analysis of the E0 profile leads us to the following findings:

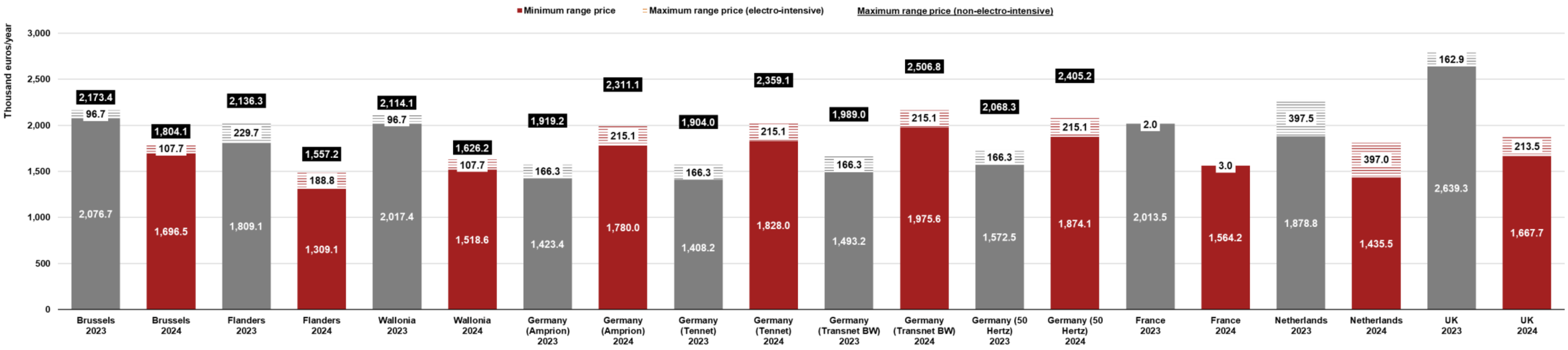
- The **competitiveness of the regions/countries is no longer as clear cut as it was for the smaller profiles, though it remains observable for some regions/countries**. For example, Flanders is more competitive than all of Belgium's regions, France and the UK if reductions/exemptions are granted. However, if they are not, it becomes the 2nd cheapest region/country considered. We observe differences between regions/countries in terms of total electricity bill for this profile, especially when electro-intensity can be applied. The loss of reduction/exemptions in the Netherlands make it less attractive for electro-intensive companies, as it can be placed as the most expensive country on the list if these companies can benefit from exemptions in the other countries.
- **Flanders is the most competitive region thanks to the GC and CHPC reduction schemes**, and lower regional costs than Brussels and Wallonia. Brussels and Wallonia's position is relatively better in the overall picture than in 2023, for non-electro intensives. Germany has, reductions excluded, the highest total invoice of all regions/countries.
- The **commodity component** is less distinctively setting regions/countries apart than previous years due to the decrease observed in 2024. It makes up on average 61% of the total bills rather than 80% in 2023. This component is very similar among regions (between 120 and 133 EUR/MWh), with the UK and Germany being the most expensive.
- The most expensive **network cost** is found in the German Transnet BW region (75 EUR/MWh) and the cheapest possible in France (17 EUR/MWh), which remains constant from 2023 (when including reductions). When excluding reductions, Flanders has the lowest network costs with 19 EUR/MWh. The network costs in Flanders are this year again the lowest of the country, while Brussels is 9 EUR/MWh more expensive, which is 50% more expensive than in Flanders. This is why, while this cheapest region is the most competitive of the regions/countries under review when considering reductions, Brussels falls behind France and remains just in front of the UK. When taking reductions into account for the most intensive grid peak users, France becomes the cheapest region under review with 17 EUR/MWh of network costs.
- In Belgium, Wallonia and Brussels now have the highest **all other costs component,** and Flanders has the smallest, GC and CHPC reduction for large consumers included or excluded. This component has a biggest impact on the competitiveness and the positioning of all the regions/countries. In the Netherlands, not having reductions make a big change, up to 41 EUR/MWh while for electro-intensive consumers in the UK the other costs component amounts to 6 EUR/MWh.

Profile E1 (Electricity)

Total invoice analysis

The first figure below provides a comparison of the total yearly invoice paid by an industrial profile E1 in the different studied regions and countries. The results are expressed in kEUR/year.

Figure 44: Total yearly invoice in kEUR/year (profile E1)



In next page's figure, we compare each region and country's yearly bill with the average Belgian price, which is set at 100. The Belgian average is computed as the mean between Brussels', Wallonia's and Flanders' minimum and maximum prices.

Figure 45: Total yearly invoice comparison in % (profile E1; Belgium Average 2024 = 100)

As depicted in the previous page, the total invoice has decreased in all the regions/countries under review, except for Germany where a large surge occurred. We have bigger ranges than for the E0 profile to consider, but unlike the previous profile Wallonia and Brussels now have price ranges for profiles E1 to E4, because of the exemption to the special excise duty that these profiles could receive[349]. While Germany's ranges for electro-intensive and/or benefactors from reductions/exemptions are stable, the important increase of the network costs (grid fees) and the removal of the price cap, makes of it the most expensive region/country under review. Flanders has the potential to have the lowest bill (1.309 MEUR/year) followed by the Netherlands (1.435 MEUR/year).

Compared to Belgium the competitive position of Germany is worse compared to previous years due to the relative increase in commodity prices and the higher network costs. Even when reductions/exemptions are applied, the German regions are the most expensive. When all reductions are applied, Flanders is most competitive region/country under review, followed by the Netherlands and France. It is important to note that the UK's relative position has improved compared to 2023, due to much lower commodity costs, and it is barely more expensive than Belgium when considering reductions and exemptions.

The difference between electro- and non-electro intensive consumers is also important to note, and it affects the competitiveness of all regions/countries in scope of this study.

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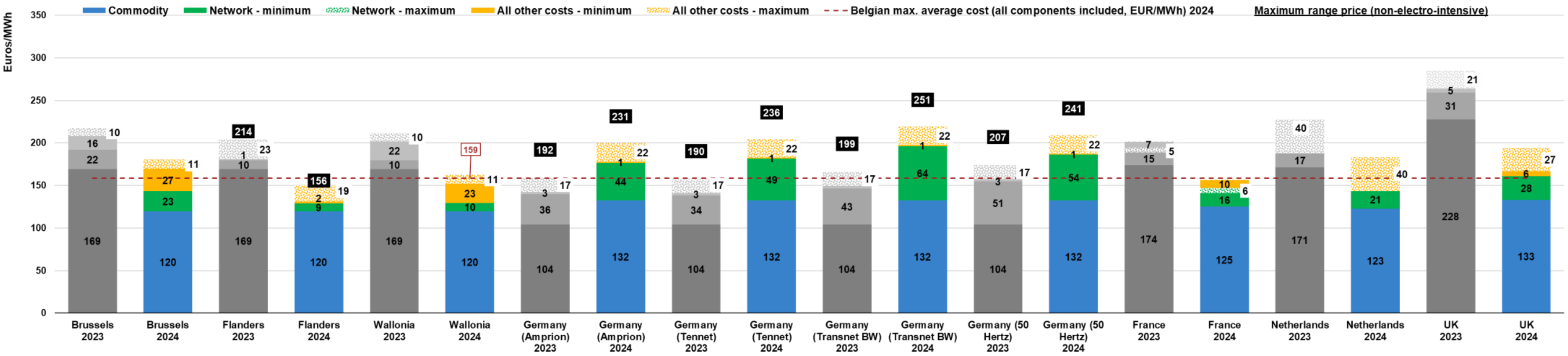
[349] According to Art. 429.§ 1er of the law from 27th December 2004 an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial procedures, thus being considered as "double usage".

Breakdown per component

The previous results are further detailed for profile E1 in the figure underneath, which provides a closer look at the breakdown of the different price components.

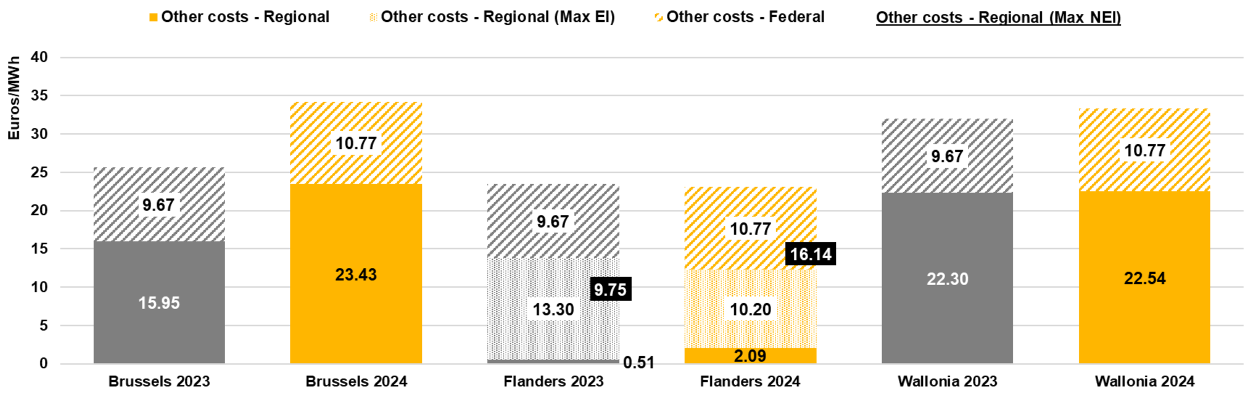
Figure 46: Electricity price by component in EUR/MWh (profile E1)



Like E-BSME and E0, the **commodity component** decreased for all regions/countries and does not vary much across Belgium, France and the Netherlands, similarly to 2023. This component cost revolves around 120 (Belgium) to 125 EUR/MWh (France). The UK stays the most expensive with 133 EUR/MWh (or a decrease of 97 EUR/MWh within a year) while Germany is right below at 132 EUR/MWh. This increase for Germany is due to the capping mechanism being removed in 2024, and thus not limiting the commodity component cost per MWh for residentials and industrials anymore.

The importance of the **network cost** is still making a difference in competitiveness across countries, setting Germany further apart than the other countries as the increase in grid fees is weighing down on the bill. For its regions, it ranges from 44 to 64 EUR/MWh while other regions/countries show network costs varying around 9 to 28 EUR/MWh. As the profiles become more electricity intensive, we notice the generalised decrease of network costs per MWh across all countries in different proportions. This year, Flanders still has the lowest network cost (9 EUR/MWh) followed by Wallonia (10 EUR/MWh).

Figure 47: Regional and Federal all other costs in Belgium in EUR/MWh (profile E1)



The **all other costs component**[350] shows a lot of variation across regions/countries. The range in Germany has increased compared to previous year, from 17 to 22 EUR/MWh. This implies that there is more difference between electro intensive and non-electro intensive consumers due to the general increase in cost of several measures. In the Netherlands there is still a possible full exemption of the other costs component, amounting to 40 EUR/MWh. The qualification as electro-intensive consumer is still very important in Germany as it allows a potential reduction of 22 EUR/MWh. In France, due to the *Bouclier Tarifaire* in place until the February 1st, 2024 the other costs component is very low as well. There is also no difference between electro intensive and non-electro intensive profiles as the minimum electricity excise is applicable to every profile. The UK has the same reduction as the E0 profile, with the *Renewable Obligations* from which it is possible to be exempted, lowering the other costs component from 33 to 6 EUR/MWh. In Belgium, the increase of the federal excise duty back to its former levels shows less signs of impact compared to small profiles as only the lower bands were impacted. The E1 profile having most of its electrical consumption on higher bands not previously diminished, the difference is not impactful between 2023 and 2024. However, there is still for all regions a possible exemption for industrial profiles (E1-E4)[351], which allows to reduce the federal costs for the profiles to 0 EUR/MWh when fully applied.

Impact of Flanders' combined cap on profile E1

The cost of green certificates can have a big impact on energy price for large industrial consumers. To limit these costs, Flanders introduced two caps, in 2018, on the cost of financing of renewable energies. These caps are proportional to the Gross Value Added (GVA) of the company and thus vary from company to company. In the following example, we attempt to illustrate the potential impact of these caps on industrial consumers. Previously this cap was only applicable on GC but since 2021 it is a combined cap that is applicable on GC and CHPC.

Table 126: Flanders' cap on profile E1

	Case 1	Case 2
NACE codes[352]	Annexe 3 or 5 EEAG[353]	Annexe 3 EEAG
Electro-intensity	> 20%	No threshold
Cap (% of GVA)	0.50	4%
Average yearly consumption (E1)	10 GWh	
Scheme cost (without cap)	61.61 kEUR	
Maximum gross value added to benefit from the cap	12.32 MEUR	1.54 MEUR

[350] This cost includes taxes, levies and certificate schemes.

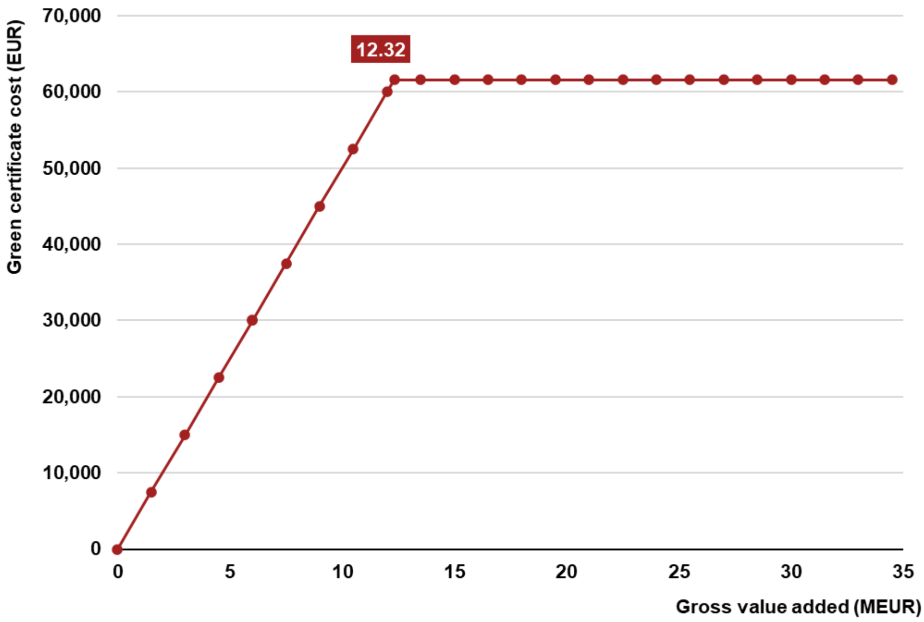
[351] According to Art. 429.§ 1er of the law from 27th December 2004[351]. In fact, an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial procedures, thus being considered as "double usage".

[352] The companies listed in Annexe 3 and 5 of EEAG correspond to the companies listed in the Energiedecreet except for Nace 3832 (Recycling of waste) which is listed in Annexe 3 EEAG but not in the Energiedecreet.

[353] (European Commission, 2014)

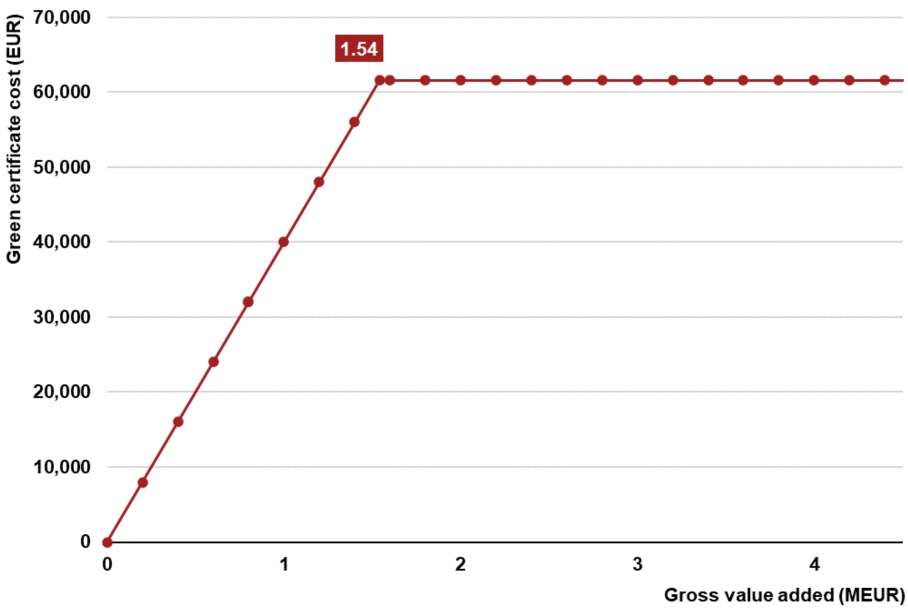
Considering only Profile E1 companies with NACE codes from Annexe 3 or 5 from the EEAG and with an electro-intensity above 20% (case 1), a company benefits from the application of the cap as long as its gross value added is less than 12,322,066 EUR.

Figure 48: CHPC and GC actual cost for E1 profile (Case 1)



Considering only Profile E1 companies with NACE codes from Annexe 3 from the EEAG (case 2), a company benefits from the application of the cap as long as its gross value added is less than 1,540,258 EUR.

Figure 49: CHPC and GC actual cost for E1 profile (Case 2)



Key findings

The analysis of the E1 profile leads us to the following findings:

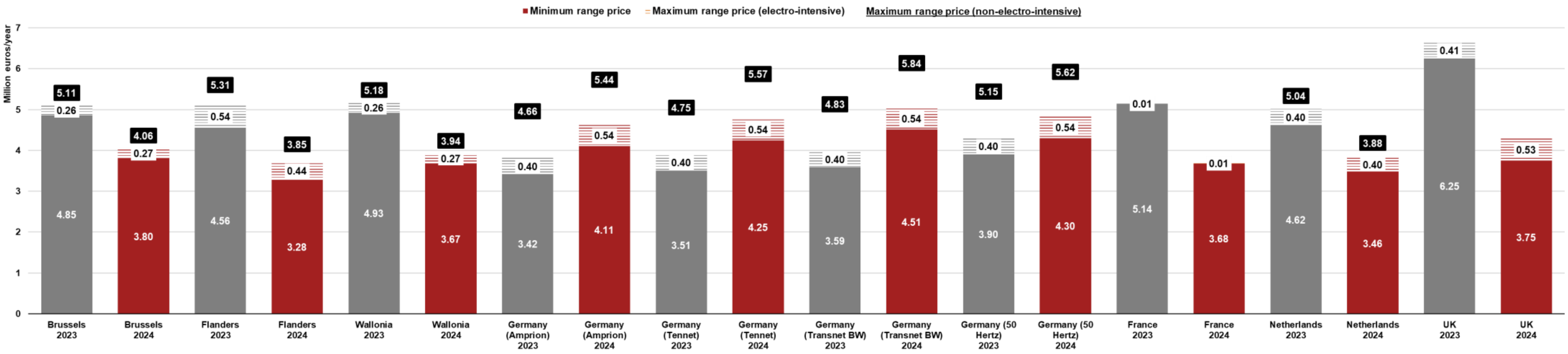
- Taking the costs for non-electro-intensive consumers into account, the spread between Flanders (most competitive) and Transnet BW in Germany (least competitive) varies from a bill of 1.557 MEUR to 2.506 MEUR. The most expensive country, taking electro intensive consumers into account, still remains Germany (all regions), followed by Brussels.
- **In Belgium, Flanders is the most competitive region in 2024** whether reductions/exemptions are considered or not. This can be explained by lower network costs and the potential to have a significantly reduced all other costs component (due to CHPC and GC schemes) compared to the two other Belgian regions.
- The **commodity component** decreased from 2023 to 2024 but does not change significantly across the reviewed regions/countries with the UK being the most expensive with 133 EUR/MWh (- 95 EUR/MWh compared to 2023). All countries see a similar sharp decrease in commodity cost, except Germany which is not under a price cap measure set by the government anymore, and for which the commodity cost appears therefore relatively higher than its 2023 levels, though closely on par with the UK.
- Flanders has the most competitive **network cost** (9 EUR/MWh), as it decreased compared to Wallonia's network costs (10 EUR/MWh) in 2024. The other regions, except Germany, are in the middle average group regarding the competitiveness on this component while Germany's regions are the most expensive on network costs. France has a range of 6 EUR/MWh for the network costs, which if reductions apply, ranks it as the 3rd most competitive with regards to that component (16 EUR/MWh).
- The **all other costs** is a key element setting forward or backward a region/country compared to its neighbours in terms of competitiveness similarly to previous year. When no reductions/exemptions apply, Germany's consumers pay the highest bill, while the UK becomes the 2nd most expensive country. When reductions and exemptions apply, Flanders remains the most competitive though the Netherlands comes up close as 2nd most competitive country. The latter also shows the biggest range for the E1 electro-intensive consumers (40 EUR/MWh). Since the all other costs in France are very small to begin with, even if the reduction for electro-intensive consumers does not apply, they are in a middle-range competitive position, higher than Wallonia and lower than Brussels, and at par with the UK.

Profile E2 (Electricity)

Total invoice analysis

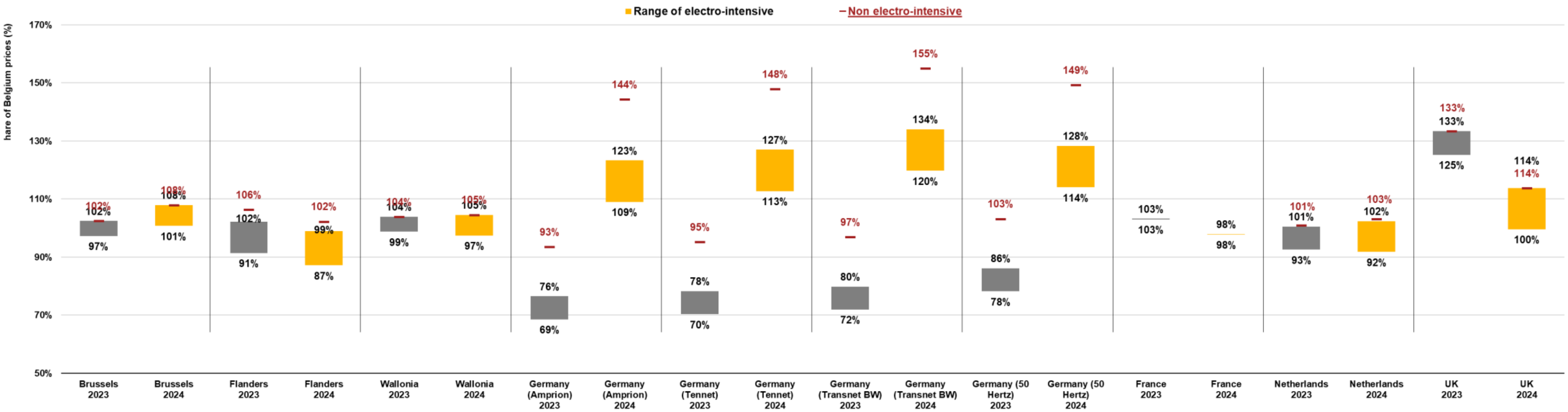
The figure below provides a comparison of the total yearly invoice paid by an industrial profile E2 in the different studied countries and regions. The results are expressed in MEUR/year. The second figure gives the Belgian average of 100% to easily compare the percentual price differences with other countries.

Figure 50: Total yearly invoice in MEUR/year (profile E2)



Below, we compare each region and country's yearly bill with the average Belgian price, which is set at 100. The Belgian average is computed as the mean between Brussels', Wallonia's and Flanders' minimum and maximum prices.

Figure 51: Total yearly invoice comparison in % (profile E2; Belgium Average 2024 = 100)



Firsthand, similarly to all other profiles the general decrease of the electricity bill is observed for all regions/countries under review, except for Germany. This is due to lower commodity costs in 2024 than in 2023.

Regarding the E2 profiles, we notice that Germany is the least competitive country for both electro intensive consumers and non-electro intensives due to the discontinuation of the capping mechanism, as well as higher commodity and network costs. Flanders becomes the most competitive region/country under review for electro-intensive consumers, followed closely by the Netherlands.

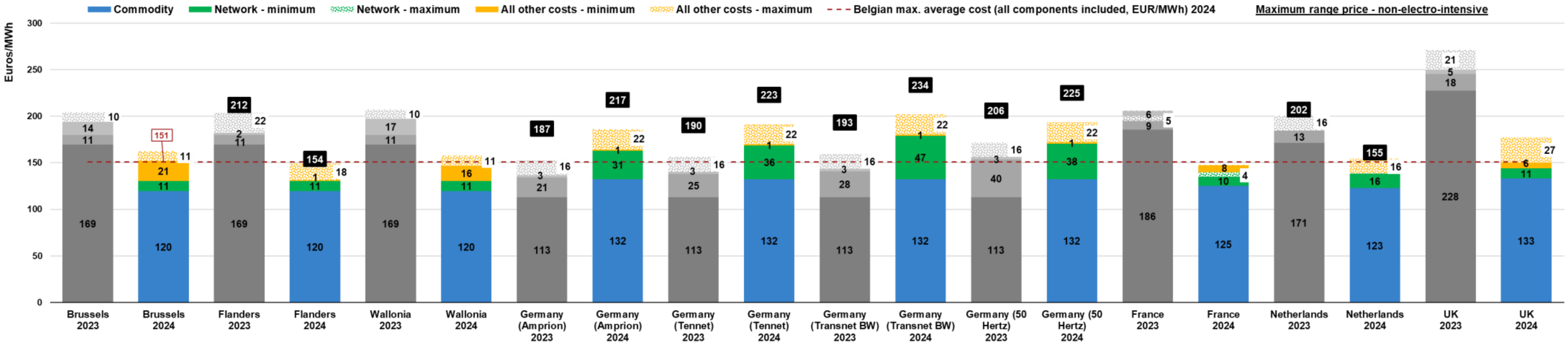
For non-electro intensive consumers, France becomes more competitive than Flanders. This is a change compared to the E1 profile, though the two were already quite close in terms of total electricity bill.

All in all, the stabilisation in commodity prices has led all countries to realign and smoothen the costs differences across regions/countries. The bigger differentiators now being the network costs and all other costs.

Breakdown per component

The previous results are further detailed for profile E2 in the underneath figure, which provides a closer look at the breakdown of the different price components.

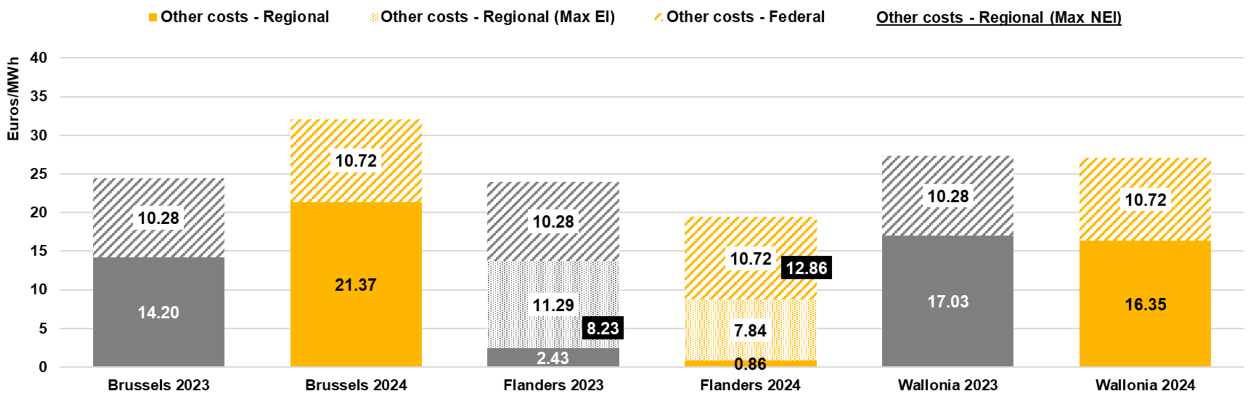
Figure 52: Electricity price by component in EUR/MWh (profile E2)



The **commodity component** is still similar to E-BSME, E0 and E1 profiles. Hence the same observation can be done about more a relatively close commodity cost among the different countries with a maximum spread of 13 MWh between the lowest in Belgium (120 EUR/MWh) and the UK (132 EUR/MWh).

The **network costs component** are suffering from small differences across regions/countries. While the UK and Belgium have the lowest network costs with 11 EUR/MWh, it is closely followed by France with 14 EUR/MWh. The three regions of Belgium have exactly the same network costs, as these are connected to the same TSO. Moreover, as the E2 profile is not connected to the distribution but to the grid network directly, closely followed by Belgium and the Netherlands. Since the E2 profile is no longer connected to the distribution grid, this cost is the same in all the Belgian regions. For Belgium, the transmission tariffs approved by the CREG are stable over the 2023-2024 period, the same goes for France's tariffs approved by the CRE over the same period. Grid losses are included in the costs of network on the federal transmission grid (380/220/150 kV). For the purpose of this study, they considered as a component of network costs and suppliers usually bill these costs as a percentage (fixed every year by the TSO) of the commodity cost. We observe a decrease of network costs in the UK, linked to a change of the tariff methodology for the TNUoS charges in 2023. An increase in the Netherlands and Germany is observed. As mentioned before, grid fees have increased in Germany due to the Government's planned subsidies for the these not being approved by the Federal Constitutional Court. As a result the transmission tariffs have more than doubled between 2023 and 2024. In the Netherlands, a steep increase of transmission costs of around 25% has been noticed for the E2 profile, which is largely due to Tennet's higher costs of electricity supply and financing of its investments.

Figure 53: Regional and Federal all other costs in Belgium in EUR/MWh (profile E2)



Finally, the **all other costs component**[354] varies greatly depending on the region/country and on the consumer profile (electro-intensive or not). On average, all other costs increased compared to 2023, except for Wallonia which remained stable a 27 EUR/MWh and Germany at 22 EUR/MWh. For Wallonia, green certificates price increase is the main reason for this change. Depending on the consumer they might be entitled to a reduction or even an exemption. A range is to consider for every region/country in the review, though it is minimal in France. In Belgium the range is available due to the possible exemption on the special excise duty for profiles E1 to E4, and additionally in Flanders for CHCP and CP schemes. When considering non-electro intensives, France is the most competitive country with low other costs to start from with 8 EUR/MWh of all other costs. However, its low range for reduction/exemptions changes its competitiveness. When considering them, Flanders become the most competitive country (1 EUR/MWh of other costs), followed by the Netherlands when the profile is fully exempted (0 EUR/MWh). While France will in any case at least bill 6 EUR/MWh to their consumers this is not the case in the Netherlands which puts France at a disadvantage regarding this component.[355]

Impact of Flanders' combined cap on profile E2

The cost of green certificates can have a big impact on the energy price of large industrial consumers. To limit these costs, Flanders introduced two caps, in 2018, on the cost of financing of renewable energies. These caps are proportional to the Gross Value Added (GVA) of the company and thus vary from company to company. In the following example, we attempt to illustrate the potential impact of these caps on industrial consumers. Previously this cap was only applicable on GC but since 2021 it is a combined cap that is applicable on GC and CHPC.

Table 127: Flanders' cap on profile E2

	Case 1	Case 2
NACE codes[356]	Annexe 3 or 5 EEAG[357]	Annexe 3 EEAG
Electro-intensity	> 20%	No threshold
Cap (% of GVA)	0.50%	4%
Average yearly consumption (E2)	25 GWh	
Scheme cost (without cap)	128,879.84 EUR	
Maximum gross value added to benefit from the cap	25.77 MEUR	3.26 MEUR

[354] This cost includes taxes, levies and certificate schemes.

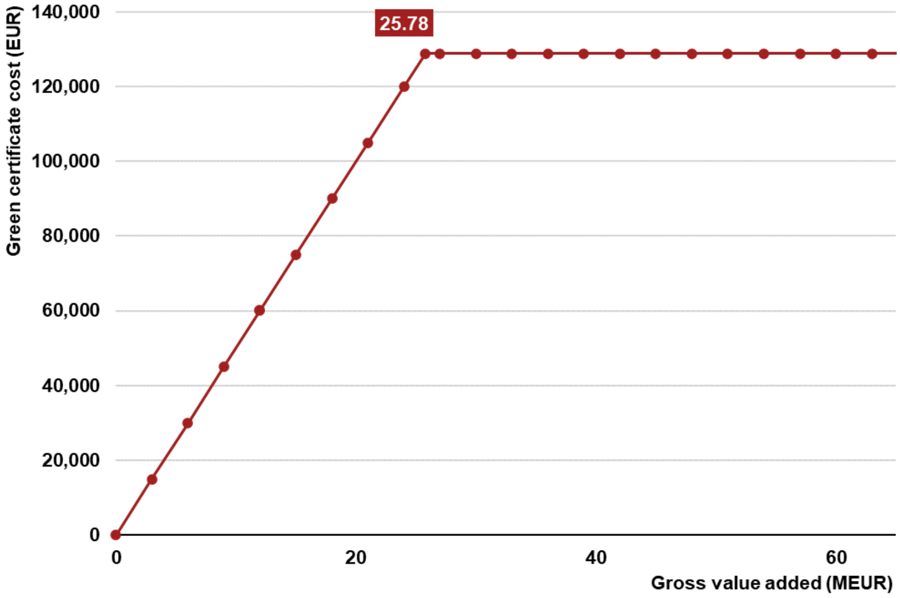
[355] In addition to the degressivity rules and limits that apply the larger profiles (E2 and higher) do not pay a part of the all other costs, namely the part billed through the DSO, which the smaller profiles do pay.

[356] The companies listed in Annexe 3 and 5 of EEAG correspond to the companies listed in the Energiedecreet except for Nace 3832 (Recycling of waste) which is listed in Annexe 3 EEAG but not in the Energiedecreet.

[357] (European Commission, 2014)

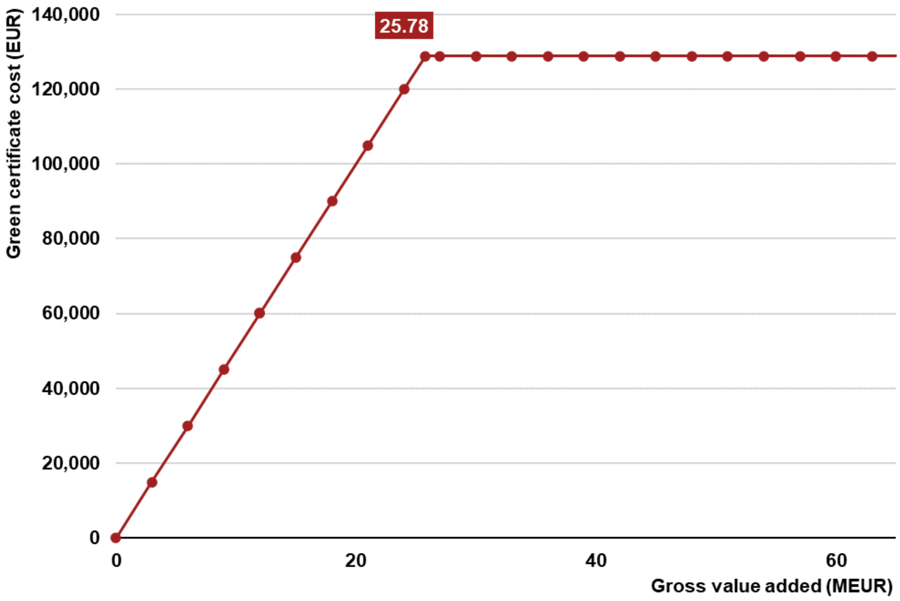
Considering only Profile E2 companies with NACE codes from Annexe 3 or 5 from the EEAG and with an electro-intensity above 20% (case 1), a company benefits from the application of the cap as long as its gross value added is less than 25,775,968 EUR.

Figure 54: CHPC and GC actual cost for E2 profile (Case 1)



Considering only Profile E2 companies with NACE codes from Annexe 3 from the EEAG (case 2), a company benefits from the application of the cap as long as its gross value added is less than 3,221,996 EUR.

Figure 55: CHPC and GC actual cost for E2 profile (Case 2)



Key findings

The analysis of the E2 profile leads us to the following findings:

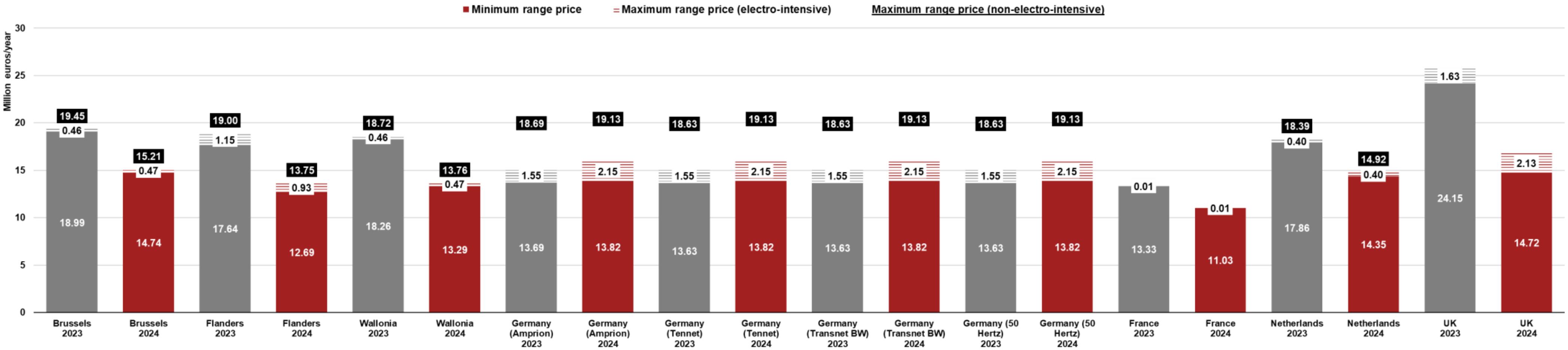
- The total invoices decreased in all regions/countries under review except in Germany, and varies between 3.28MEUR (minimum range in Flanders for electro-intensives) and 5.84 MEUR (Transnet BW in Germany for non-electro-intensives).
- **In Belgium, Flanders is the most competitive region** for electro-intensive consumers thanks to the reductions on the all other costs and its low network costs. For non-electro intensives, it is also the most competitive region of the country which is an improvement compared to 2024. However, the difference is smaller. Since the E2 profile is no longer connected to the distribution grid, the network cost has decreased and is now the same across all Belgian regions.
- The **commodity component** decreases in the same way than for E-BSME to E1 profiles (except for the increase in Germany, same as the other profiles). It also represents the largest share of the invoice bill in 2024 for the E2 profile, accounting for between 56% (Transnet BW) to 85% (France) when looking at non-electro intensive consumers.
- Compared to last year, we notice an increase of the **network cost** components in all regions/countries except in Belgium where stability is perceived and UK where a decrease is noticed. The biggest increase in network costs happens in the Transnet BW region of Germany with + 18 EUR/MWh. The network cost is still significant in Germany and generally higher than the other regions/countries.
- The **all other cost component** still plays its role in determining the competitiveness of the regions. Several regions/countries such as France, the Netherlands, Germany and Flanders support electro-intensive consumers by offering fares reductions. Not falling under these reductions significantly increases the costs. The possibility to be completely exempted from the federal excise duty in Belgium can truly help the competitiveness position of the three Belgian regions up to 11 EUR/MWh, especially compared to the Netherlands and France which are the closest competitors for this E2 profile. The UK also has important potential reductions which positions the country as a competitor with Belgium, France and the Netherlands.

Profile E3 (Electricity)

Total invoice analysis

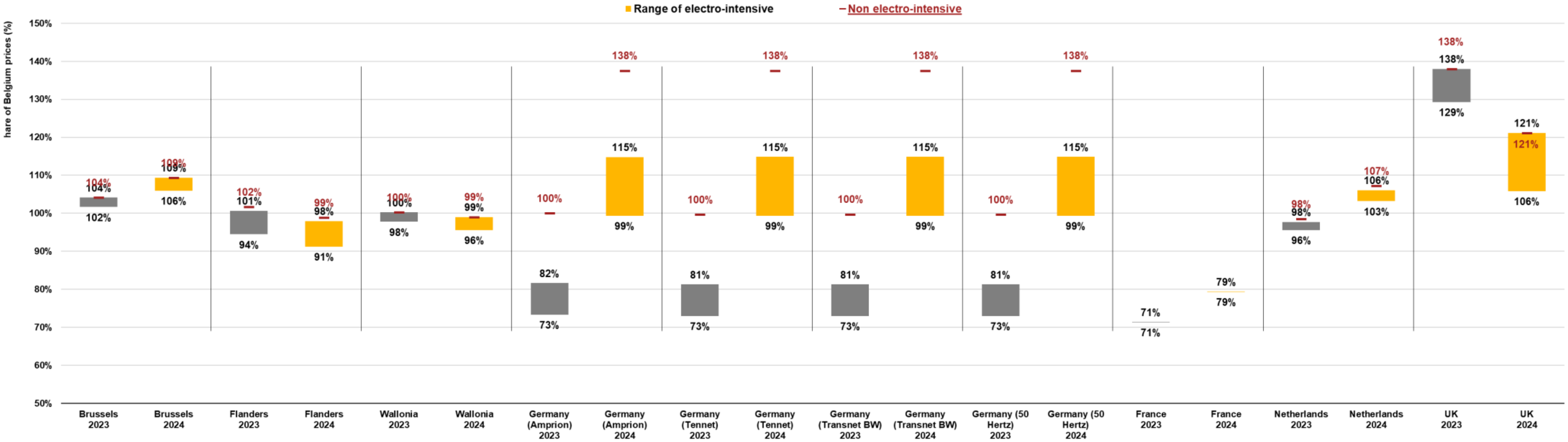
The figure below provides a comparison of the total yearly invoice paid by an industrial profile E3 in the different studied regions and countries. The results are expressed in MEUR/year.

Figure 56: Total yearly invoice in MEUR/year (profile E3)



In next page's figure, we compare each region and country's yearly bill with the average Belgian price, which is set at 100. The Belgian average is computed as the mean between Brussels', Wallonia's and Flanders' minimum and maximum prices.

Figure 57: Total yearly invoice comparison in % (profile E3; Belgium Average 2024 = 100)



The E3 profile total invoices shows a general decrease in most of the regions/countries under review, except in Germany where the same position as for the smaller profiles stands out. In Belgium, Flanders is still the most competitive country for electro-intensives with a higher reduction/exemption range that allows it. For non-electro intensives, it is at par with Wallonia, while Brussels is more expensive in general. The most competitive region/country under review remains, as in 2023, France. This is largely due to the ARENH mechanism in place, enabling lower commodity costs.

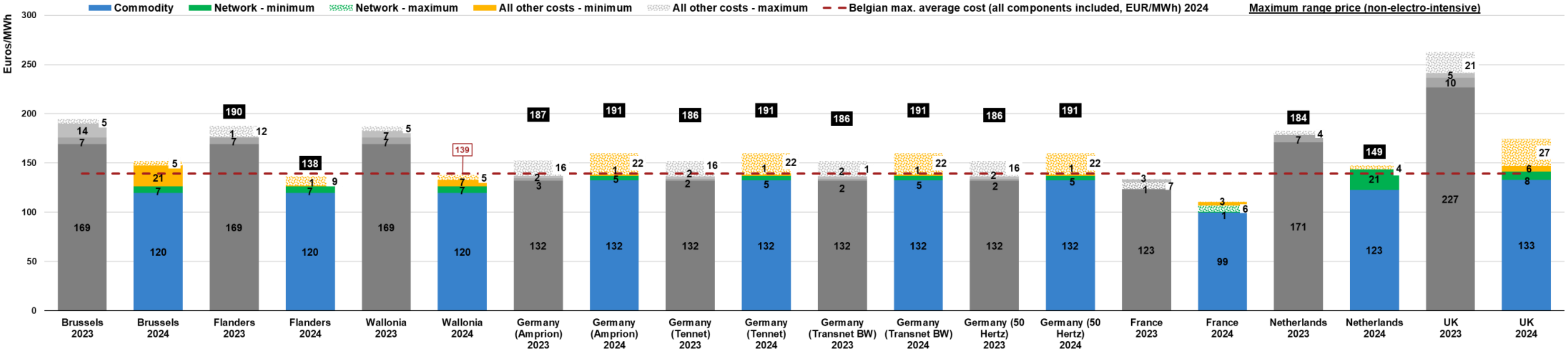
Looking at all the regions/countries, Germany lost its competitive advantage of low commodity costs due to the discontinuation of the price cap in 2024, hence being more expensive than all countries for non-electro intensive profiles, but strongly competitive for the Netherlands, the UK and Brussels. With a lower range, the Netherlands and Brussels still allow some reductions, but it is not as significant as in Germany and in the UK.

Compared to smaller consumption profiles, Belgium is not as competitive due to its larger network and all other costs with lower reduction/exemption ranges.

Breakdown per component

The previous results are further detailed for profile E3 in the figure underneath, which provides a closer look at the breakdown of the different price components.

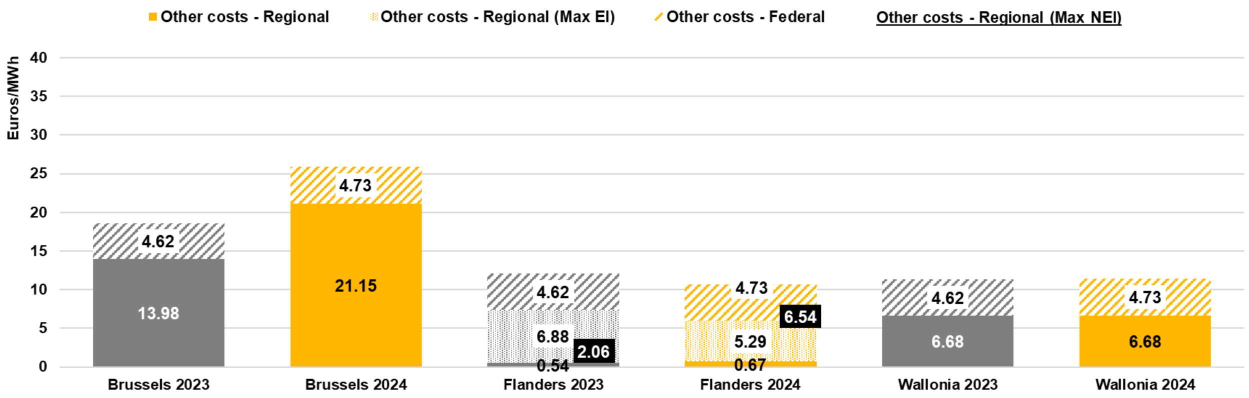
Figure 58: Electricity price by component in EUR/MWh (profile E3)



In comparison to previous consumer profiles, the **commodity component** of consumer E3 differs as we assume that it constantly operates (24/24, 7/7). Consequently, commodity costs are slightly different compared to previous consumption profiles. Globally, a similar situation is encountered across regions/countries with the lowest cost in France followed by Belgium. The commodity price for E3 profiles in France is largely lower than for the previous industrial profiles due to the ARENH mechanism (explained in detail in chapter 5). This explains why France is more competitive than other regions/countries for this profile, while it was average for the smaller profiles. Similarly to 2023, the UK has the most expensive commodity cost (133 EUR/MWh), however it is also the one which decreased the most since 2023 (- 42%). For the E3 profile, the commodity costs in Germany are now stable compared to 2023, whereas it was higher for smaller profiles. This is explained mechanically by the price cap removal, which was last year applied on the commodity component. Like the other profiles, we observe that also for E3, the commodity component now accounts for most of the electricity bill, from 70% of the total invoice in Germany to 90% in France, Flanders and Wallonia.

The **network cost component** has a limited impact on the total invoice and, as said for profile E2, these are now lower and harmonised in Belgium since they are directly connected to the transmission grid and no regional differences must be considered for this profile. The highest network costs are located in the Netherlands, due to the *volume corrections* for large industrials (E3 and E4) being discontinued in 2024, coupled with an increase of transmission costs as explained for the E2 profile. The effect of it has been to triple network costs component for the country (reaching 21 EUR/MWh), and to ultimately decrease its competitiveness. The lowest cost of this component for the E3 profile is reached in Germany hen we do not consider reductions (5 EUR/MWh), but in France if we consider them (1 EUR/MWh). France has reductions due to the choice that consumers can make regarding their use: short-use/long-use and fixed-peak/mobile-peak. Except for the UK where the tariff methodology change (TNUoS grid fees) decreased the value for this component, France and Belgium have had stable or minimally increased network costs, while Germany's costs have increased due to the governmental budget allocation to compensate for a part of the grid fees not being approved. For Belgium, given the fact that the transmission tariffs approved by the CREG are (almost) stable over the 2020-2024 period, the stable network costs component between 2023 and 2024 is normal.

Figure 59: Regional and Federal all other costs in Belgium in EUR/MWh (profile E3)



The minimum rate of the **all other costs component**[358] becomes smaller and smaller for most regions/countries under review, though it remains significant and increased between 2023 and 2024 in Brussels (from 19 EUR/MWh to 26 EUR/MWh), the UK (from 26 EUR/MWh to 33 EUR/MWh) and Germany (from 18 EUR/MWh to 23 EUR/MWh). In the UK, important reductions are granted on the *Renewable Obligations* scheme, alleviating the other costs by 27 EUR/MWh. Germany also has the potential for large reductions of 22 EUR/MWh for electro intensive consumers and those possessing a sectoral agreement. In Brussels, Wallonia and Flanders the reduction on the federal excise duty enables E3 profile consumers with a range of flexibility.

Impact of Flanders' combined cap on profile E3

The cost of green certificates can have a big impact on the energy price of large industrial consumers. To limit these costs, Flanders introduced two caps, in 2018, on the cost of financing of renewable energies. These caps are proportional to the Gross Value Added (GVA) of the company and thus vary from company to company. In the following example, we attempt to illustrate the potential impact of these caps on industrial consumers. Previously this cap was only applicable on GC but since 2021 it is a combined cap that is applicable on GC and CHPC.

Table 128: Flanders' cap on profile E3

	Case 1	Case 2
NACE codes[359]	Annexe 3 or 5 EEAG[360]	Annexe 3 EEAG
Electro-intensity	> 20%	No threshold
Cap (% of GVA)	0.50	4%
Average yearly consumption (E3)	100 GWh	
Scheme cost (without cap)	289,045.34 EUR	
Maximum gross value added to benefit from the cap	57.81MEUR	7.23MEUR

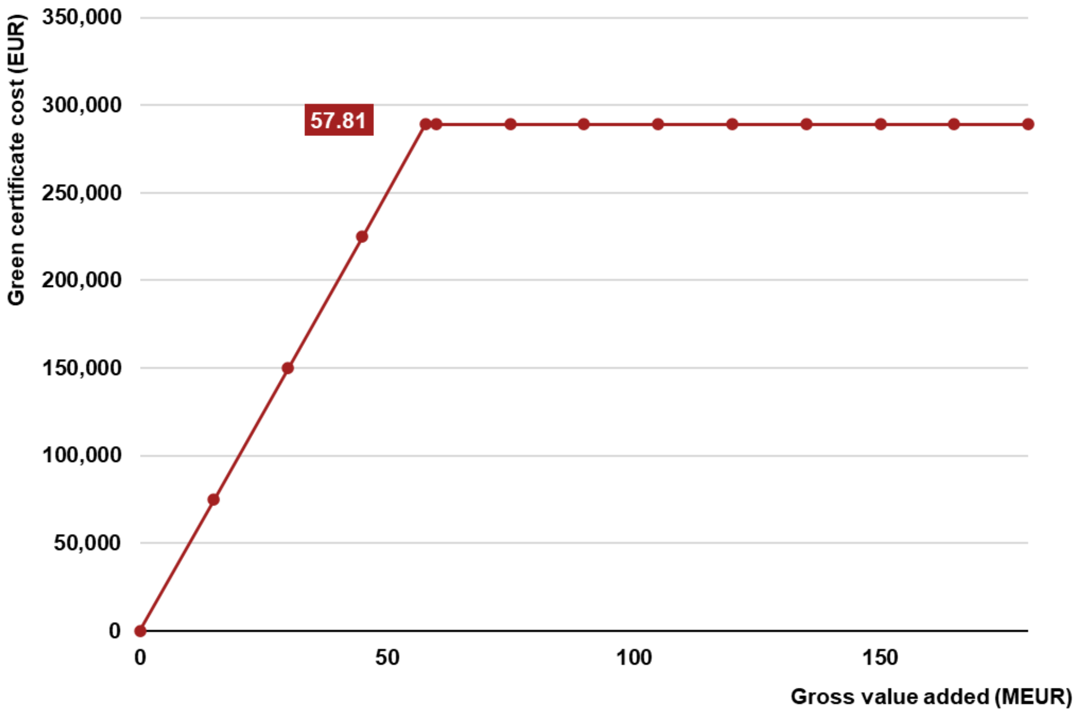
Considering only Profile E3 companies with NACE codes from Annexe 3 or 5 from the EEAG and with an electro-intensity above 20% (case 1), a company benefits from the application of the cap as long as its gross value added is less than 57,809,068 EUR.

[358] This cost includes taxes, levies and certificate schemes.

[359] The companies listed in Annexe 3 and 5 of EEAG correspond to the companies listed in the Energiedecreet except for Nace 3832 (Recycling of waste) which is listed in Annexe 3 EEAG but not in the Energiedecreet.

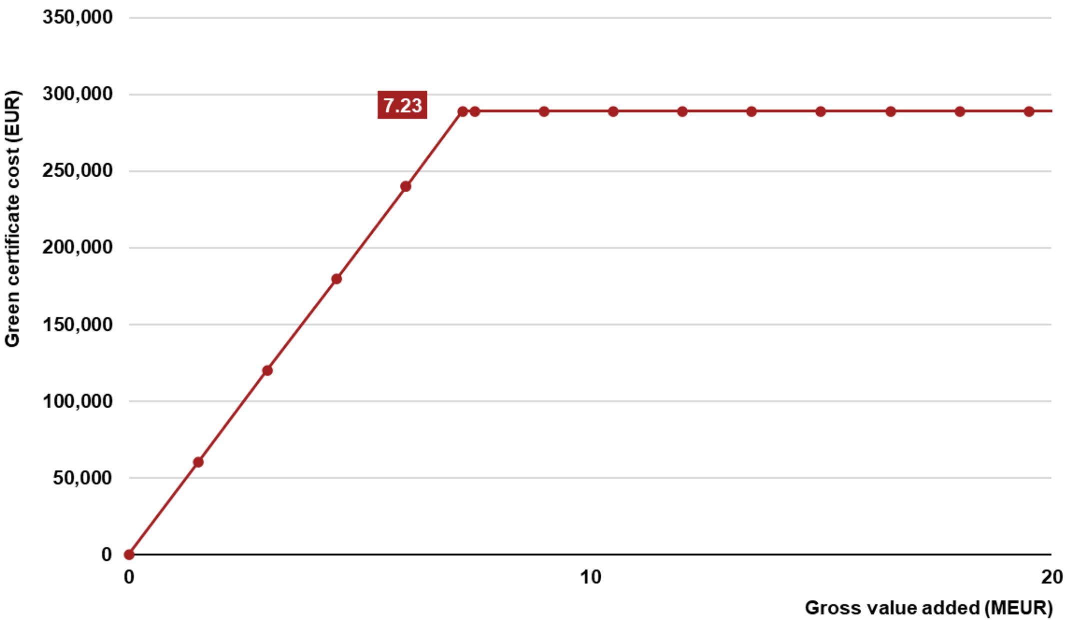
[360] (European Commission, 2014)

Figure 60: CHPC and GC actual cost for profile E3 (Case 1)



Considering only Profile E3 companies with NACE codes from Annexe 3 from the EEAG (case 2), a company benefits from the application of the cap as long as its gross value added is less than 7,226,133 EUR.

Figure 61: CHPC and GC actual cost for profile E3 (Case 2)



Key findings

The analysis of the E3 profile leads us to the following findings:

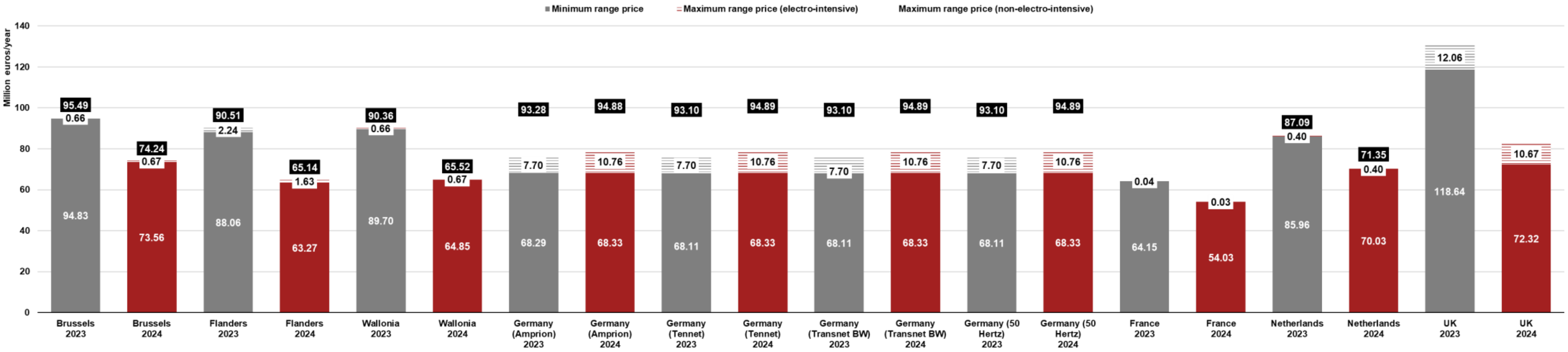
- The total invoice ranges from **11.04 MEUR/year** (min. range in France) to **16.85 MEUR/year** (max. range in the UK) when comparing electro-intensive consumers, while Germany becomes the least competitive with **19.13 MEUR/year** for non-electro-intensive consumers.
- **In Belgium, we observe that Flanders is the most competitive region**, comparing electro-intensive consumers, while it would be at par with Wallonia for non-electro-intensive consumers. Brussels would in both case be the least competitive region. This observation changes from 2023 where Brussels was more competitive against Wallonia. The total invoice has decreased significantly in all regions/countries under review due to the decrease of the commodity component, except in Germany where it remains stable.
- The **commodity cost** is relatively similar for this profile compared to E2, though we estimate the consumers to consume 24/7. We see the lowest cost in France with 99 EUR/MWh. This component makes up most of the invoice, even for non-electro-intensive consumers in France where the commodity component now accounts for 90% of the invoice.
- The network cost is a small component in the total invoice, especially in Germany and the UK. The reductions on transmission costs are based either on electro-intensity or consumption profile criteria. Consequently, the comparison of network costs within countries is seriously impacted, given the high range of possible reductions. Ultimately, France (considering minimum price option) turns out to be the most competitive country because of these reductions. The noticeable increase (300%) of the transmission costs of Tennet as well as the suppression of the *volume correction* mechanism, sets Netherlands as the country/region under review with the highest network costs amounting to 21 EUR/MWh.
- Lastly, the **all other costs component** is the highest in the UK (33 EUR/MWh), followed by Germany (23 EUR/MWh) and Brussels (26 EUR/MWh). The regions/countries considering reductions and even exemption schemes for certain types of consumers allow for more competitiveness with regards to their initial competitiveness rank among the regions/countries under review. Falling under one of these reduction schemes can have a big impact, for example a reduction up to 22 EUR/MWh for electro intensive profiles in Germany.

Profile E4 (Electricity)

Total invoice analysis

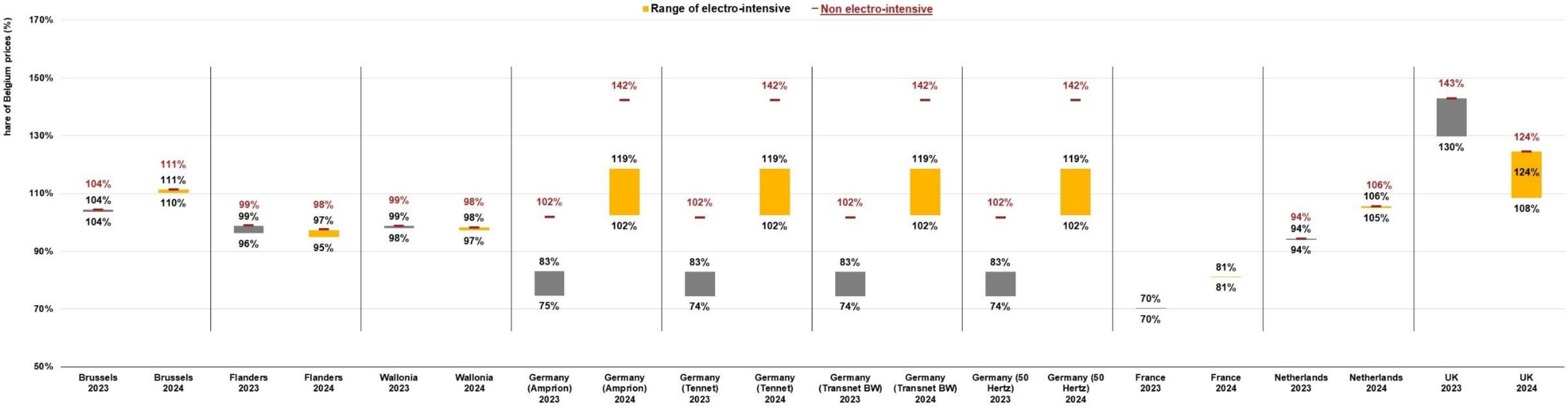
The figure below provides a comparison of the total yearly invoice paid by an industrial profile E4 in the different studied regions/countries. The results are expressed in MEUR/year.

Figure 62: Total yearly invoice in MEUR/year (profile E4)



Below, we compare each region and country's yearly bill with the average Belgian price, which is set at 100. The Belgian average is computed as the mean between Brussels', Wallonia's and Flanders' minimum and maximum prices.

Figure 63: Total yearly invoice comparison in % (profile E4; Belgium Average 2024 = 100)



In 2024, the total invoice has decreased by 20 – 30% in all the reviewed regions/countries compared to 2023. The total invoice ranges **from 54.03** in France **to 86.02 MEUR** in the UK for electro-intensive consumers. For non-electro-intensive consumers, the price ranges from **54.06 MEUR** in France to **94.89 MEUR in Germany**. Like the E3 profile, France still offers the lowest price and the competitive gap with the other regions is more acute. The second most competitive region is Flanders with 64.90 MEUR of total invoice, or more than 10 MEUR more than the maximum price in France. In Belgium, Flanders is similarly to the E3 profile the most competitive region in 2024, followed by Wallonia and Brussels.

While there are a lot of ranges to consider, the difference in competitiveness between Flanders and Wallonia is very small if we take the maximum range for non-electro-intensive consumers into account with respective total invoices of 65.14 and 65.52 MEUR/year. Brussels comes with an invoice of 74.24 MEUR for non-electro intensives.

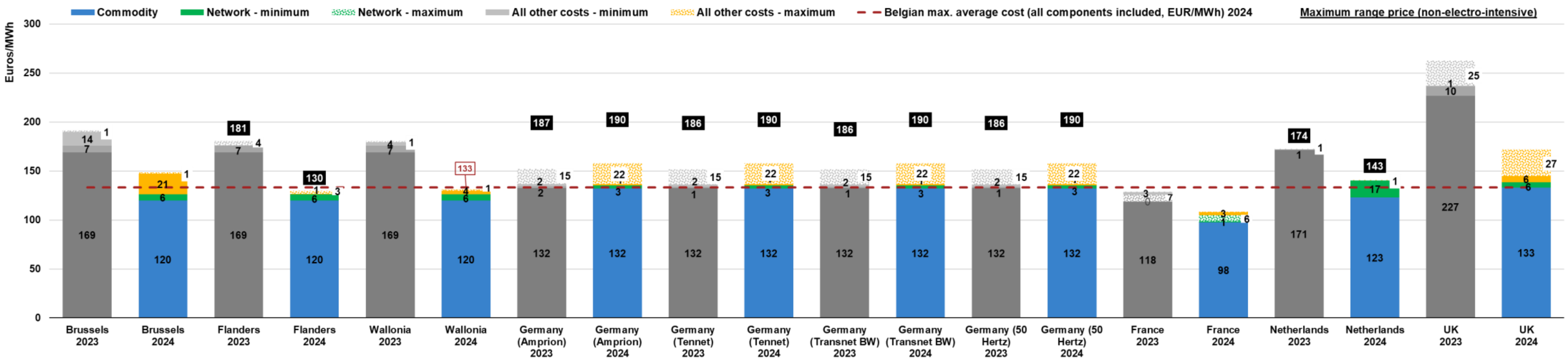
For **electro-intensive profiles** we can conclude that France is the cheapest zone, followed by Flanders and Wallonia. Then Germany, thanks to its potential of reductions and exemptions for electro-intensive profiles, benefits from a wide range. As such, it comes as more competitive than both, the Netherlands and the UK, almost at par with a slight competitive advantage for the Netherlands. Brussels comes last when taking all reductions and exemptions into account, with a total invoice of 73.56 MEUR. For **non-electro intensive profiles**, the picture is clear as the Netherlands is cheaper than all the others, except for France and Flanders. Germany is the least competitive country for the E4 profile. France remains the most competitive, followed by Flanders.

In Germany, the existing variance depends on the relative size of power costs in the consumer’s gross value added. When the average annual electricity cost over the last three years represents less than 14% of the gross value added of an industrial consumer, the consumer inevitably pays the maximum rate, thereby lowering its competitiveness. We also note that the German competitive position (compared to Belgium average) has lowered for E4, like it was observed for E3. The minimum and maximum ranges are now above the **Belgian average of 66,7 MEUR**.

Breakdown per component

The previous results are further detailed for profile E4 in the figure below, which provides a closer look at the breakdown of the different price components.

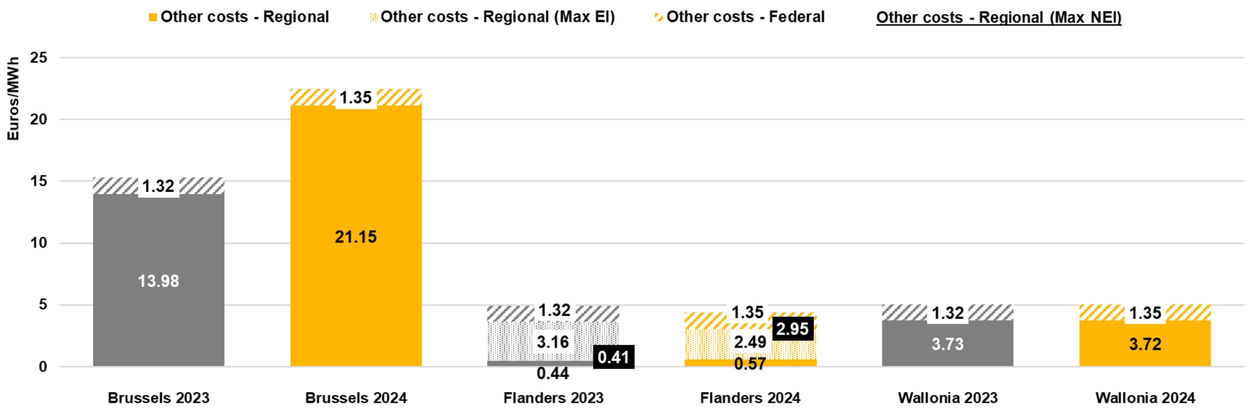
Figure 64: Electricity price by component in EUR/MWh (profile E4)



Commodity costs are identical to costs displayed for E3. Therefore, an identical situation is observed across all the regions/countries. The lowest cost is found in France followed by Belgium and the Netherlands. Conversely, the UK comes as the most expensive country with 133 EUR/MWh. The commodity cost is the biggest component in the total invoice, even for the non-electro intensive profiles in France where this component accounts for almost 90% of the total invoice.

Network costs only represent a limited proportion of the final bill. Only France has kept lower transmission costs given the fact that reductions are granted to large consumers depending on electro-intensity or consumption criteria (from 20% to 90% of reduction). These does not profoundly alter the comparison of network costs in between countries, as France is already the most competitive country. However, the Netherlands is heavily impacted by the increase in network costs and the suppression of the volume correction measure, impacting the biggest consumers the most, with network costs of 17 EUR/MWh. It is the country with the highest network costs in 2024. In Belgium, given the fact that the transmission tariffs approved by the CREG are (almost) stable over the 2020-2024 period, a slight decrease in the network costs component is observed between 2023 and 2024

Figure 65: Regional and Federal all other costs in Belgium in EUR/MWh (profile E4)



While the **all other costs component**[361] can have varying importance among countries, it is mainly dependent on the (non-)electro-intensive nature of consumers. Significant reductions are potentially granted on taxes through reduction schemes which makes the Netherlands and Flanders the regions/countries with the lowest possible tax level. Due to no incentives set forward for electro-intensives, Brussels is the region/country with the highest all other costs component at 22 EUR/MWh.

France remains the most competitive option for non-electro-intensive profiles. As observed previously, Flanders, Germany and France have all three implemented policies that enable electro-intensive consumers to benefit from significant reductions.

Brussels' tax level is above the other Belgian regions. Flanders is the most competitive region, for electro intensive and non-electro intensive consumer wen solely looking at all other costs component.362 Similarly to the other industrial profiles under review, we see a price range also for Brussels and Wallonia due to the possible exemption on the federal excise duty, though it is smaller than Flanders due to the GC and CHCP certificate scheme.

Impact of Flanders' combined cap on profile E4

The cost of green certificates can have a big impact on the energy price of large industrial consumers. To limit these costs, Flanders introduced two caps, in 2018, on the cost of financing of renewable energies. These caps are in proportion to the Gross Value Added (GVA) of the company and thus vary from company to company. As depicted more extensively in section "Impact of Flanders' cap on profile E0", the following exercise attempts to illustrate the potential impact of these caps on the industrial consumers.

Table 129: Flanders' cap on profile E4

	Case 1	Case 2
NACE codes[363]	Annexe 3 or 5 EEAG	Annexe 3 EEAG
Electro-intensity	> 20%	No threshold
Cap (% of GVA)	0.50	4%
Average yearly consumption (E4)	500 GWh	
Scheme cost (without cap)	662,764.84 EUR	
Maximum gross value added to benefit from the cap	132.55MEUR	16.57MEUR

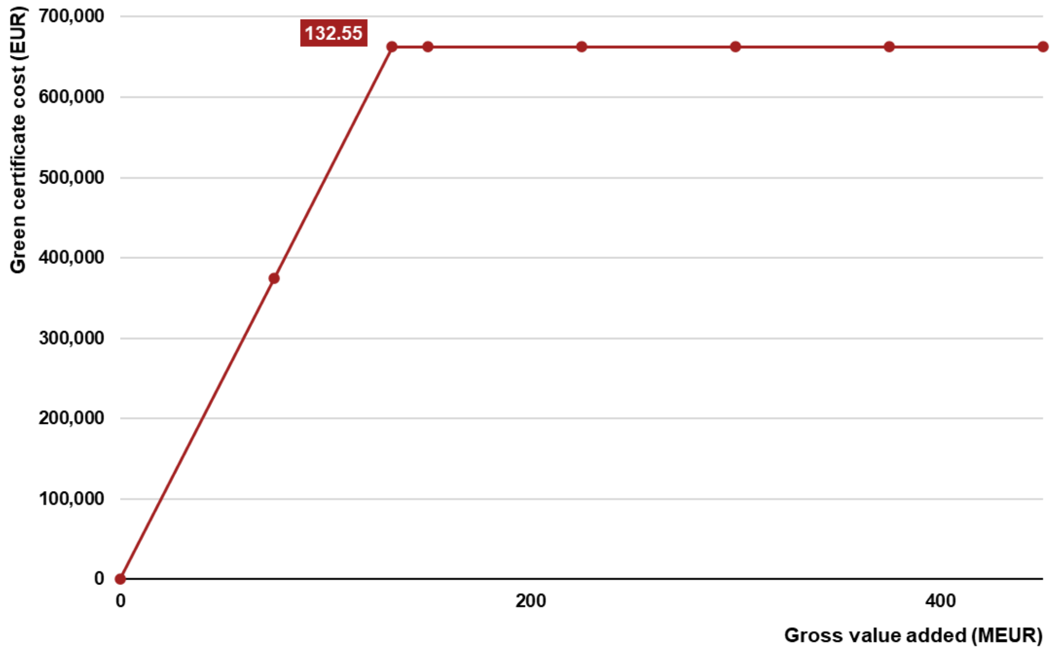
[361] This cost includes taxes, levies and certificate schemes.

[362] In addition to the degressivity rules and limits that apply the larger profiles (E2 and higher) do not pay a part of the all other costs, namely the part billed through the DSO, which the smaller profiles do pay.

[363] The companies listed in Annexe 3 and 5 of EEAG correspond to the companies listed in the Energiedecreet except for Nace 3832 (Recycling of waste) which is listed in Annexe 3 EEAG but not in the Energiedecreet.

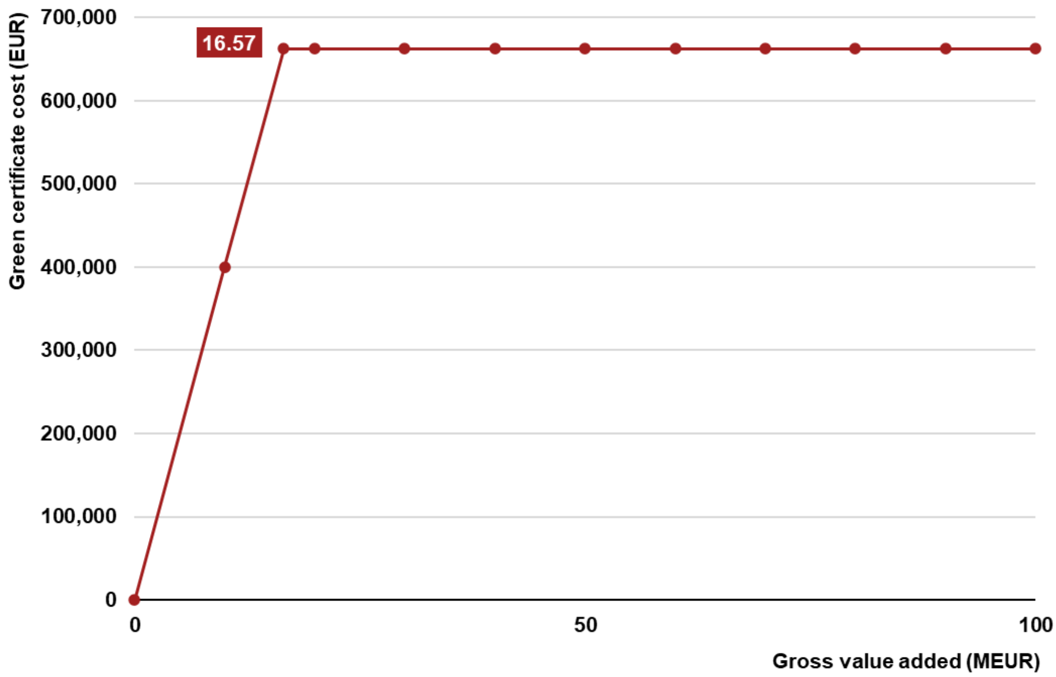
Considering only Profile E4 companies with NACE codes from Annexe 3 or 5 from the EEAG and with an electro-intensity above 20% (case 1), a company benefits from the application of the cap as long as its gross value added is less than 132,552,968 EUR.

Figure 66: CHPC and GC actual cost for profile E4 (Case 1)



Considering only Profile E4 companies with NACE codes from Annexe 3 from the EEAG (case 2), a company benefits from the application of the cap as long as its gross value added is less than 16,569,121 EUR.

Figure 67: CHPC and GC actual cost for profile E4 (Case 2)



Key findings

The analysis of the E4 profile leads us to the following findings:

- The total invoice ranges from **54.03 MEUR in France to 81.49 MEUR in the UK** for electro-intensive consumers and from **54.06 MEUR in France to 94.89 MEUR in Germany**. The total invoice has decreased in all the regions compared to 2023, except in Germany. This is explained by the sharp decrease of the commodity component. Like last year, Flanders is again the cheapest Belgian region, though by a smaller margin than for previous profiles.
- **Commodity costs** represent the most significant component in E4 consumers' final bill, even for non-electro-intensive consumers in Germany where it can account for more than 70% of the total bill. While France has the lowest fares for the commodity component, the UK constitutes the most expensive country, similarly to the other industrial profiles, though almost on par with the UK.
- **Network costs** are a reduced constituent of the electricity invoice, except in the Netherlands in 2024. Further reductions granted on large consumers by countries such as in France lead to competitive disadvantages for other countries. The Netherlands has the most expensive network costs (17 EUR/MWh) due to an increase of grid fees and the suppression of the *volume correction* measure for peak consumers. It is to be noted that all Belgian regions have higher network costs than their neighbours, except for the Netherlands.
- **All other costs** span a vast range of potential levels all very different across regions/countries. However, specific attention is brought to Germany and the UK where electro-intensive consumers may benefit from substantial reductions. It would by itself allow Germany to be as competitive as Belgium, and more than the Netherlands and the UK.

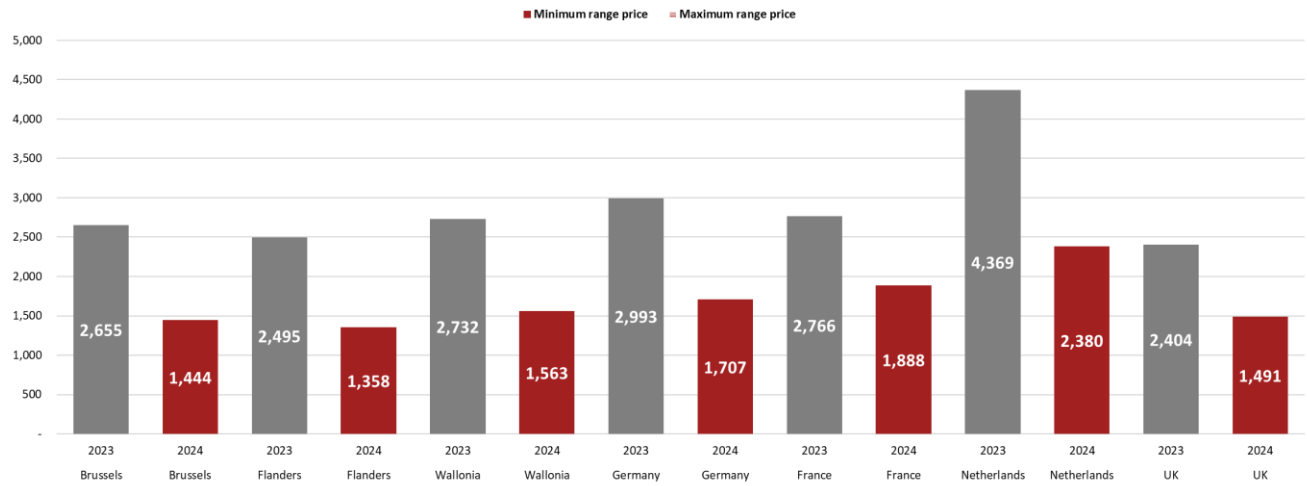
Presentation of figures (Natural gas)

Profile G-RES (Natural gas)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by a residential profile G-RES in the different studied regions and countries. The results are expressed in EUR/year.

Figure 68: Total annual invoice in EUR/year (profile G-RES)



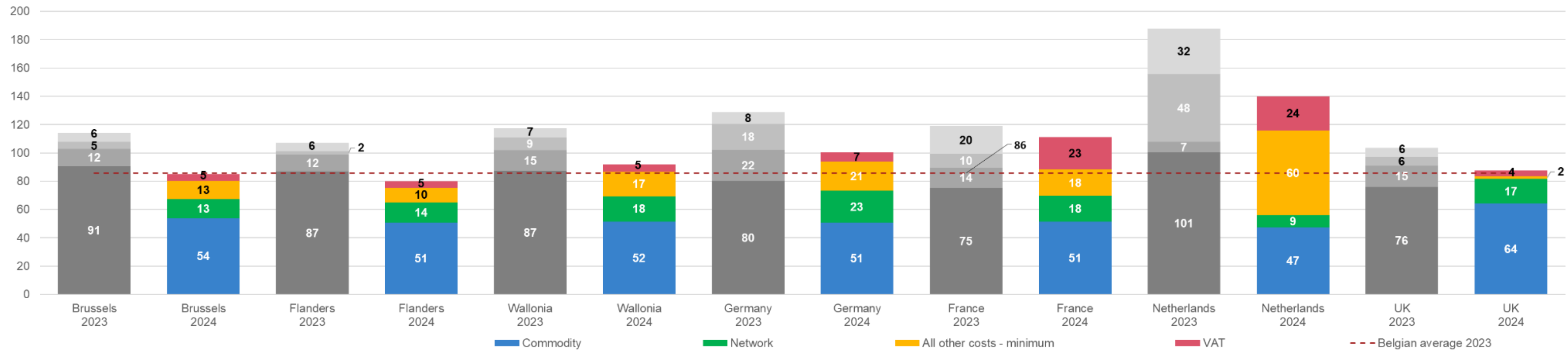
The graph above illustrates a decrease in the total annual invoice across all countries and regions compared to 2023. However, it is important to note that the annual consumption for the G-RES profile has been adjusted from 23.26 MWh/year to 17 MWh/year to better reflect the current situation. As a result, it is difficult to determine whether the decrease in the total invoice is due to lower prices or a reduction in annual consumption. To gain a better understanding of price changes, it is recommended to refer to Figure 69, which displays the natural gas price per component per MWh.

Similar to the previous year, the Netherlands continues to be the most expensive country among all the countries and regions included in this study. However, Flanders has emerged as the most competitive region, taking over the position that was previously held by the UK, which now ranks third in 2024. The shift in rankings can be attributed to a more substantial decrease in commodity prices in Flanders and Belgium compared to the UK. Flanders experienced a decrease of over 40% in commodity prices, whereas the UK saw a decrease of approximately 15% in commodity prices. This significant difference in price reduction explains why Flanders has become the most competitive region, surpassing the UK in terms of affordability.

Breakdown per component

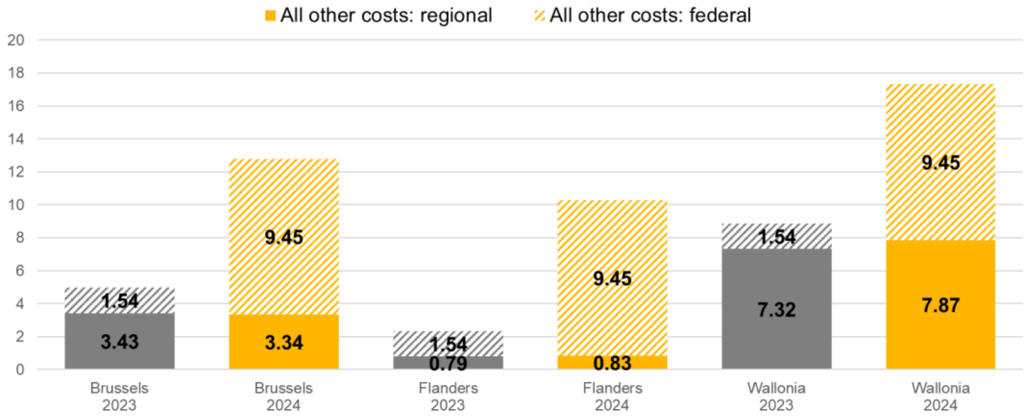
The previous results are further detailed for profile G-RES in the figure underneath, which provides a closer look at the breakdown of the different price components in EUR/MWh.

Figure 69: Natural gas price per component in EUR/MWh (profile G-RES)[364]



[364] To enhance readability, the displayed numbers are rounded up to the nearest whole number.

Figure 70: Regional and Federal all other costs in Belgium in EUR/MWh (profile G-RES)



After accounting for the adjusted profile parameter of annual consumption for G-RES, it is evident that there has been a decrease in the natural gas price per MWh for all countries and regions under observation. This decline can primarily be attributed to a decrease in commodity prices. Notably, the Netherlands experienced the largest drop in commodity prices, with a decrease of over 50%. As a result, the Netherlands now has the lowest commodity component of 47 EUR/MWh among all regions in 2024. This is a significant contrast to 2023 when they had the highest commodity price. On the other hand, the UK, previously the second most competitive region, now has the highest commodity component in 2024, standing at 64 EUR/MWh.

In most of the regions reviewed, the **Network component** is the second most significant component after the commodity component. However, there are exceptions. In the Netherlands, the energy tax under the "all other costs" component is more significant (even the most significant component), while in France, it is the VAT component due to the high VAT rate of 20% on the variable part of the commodity component.

Brussels and Flanders are the second and third most competitive regions, respectively, with network component prices per MWh of 13 and 14 EUR/MWh. The Netherlands remains the most competitive with respect to the network component (9 EUR/MWh). The increase in the network component price per MWh in the Netherlands, from 6 to 9 EUR/MWh, can be attributed to certain subcomponents that have fixed yearly prices, such as *Meettarief* which are now divided by a smaller annual consumption of 17 MWh instead of 23.26 MWh in 2023.

In Belgium there is a difference between the regions regarding this component. Brussels and Flanders are the second and third cheapest regions overall, while Wallonia is the most expensive region in Belgium (18 EUR/MWh) and Germany is the most expensive overall (23 EUR/MWh) regarding this specific component.

Except for the Netherlands and France, the **VAT component** is one of the least significant components for most of the regions. This can be attributed to the reduced VAT rates that are still in effect following measures taken to lower energy bills during the energy crisis in 2022 and 2023.

The UK has the lowest VAT rate with 5%, while the Netherlands has the highest one with 21%. France also applies a reduced VAT rate of 5%, but only on the consumer's subscription and CTA (Contribution Tariff d'Acheminement), the standard VAT rate (20%) being applicable on the variable part of the natural gas invoice.

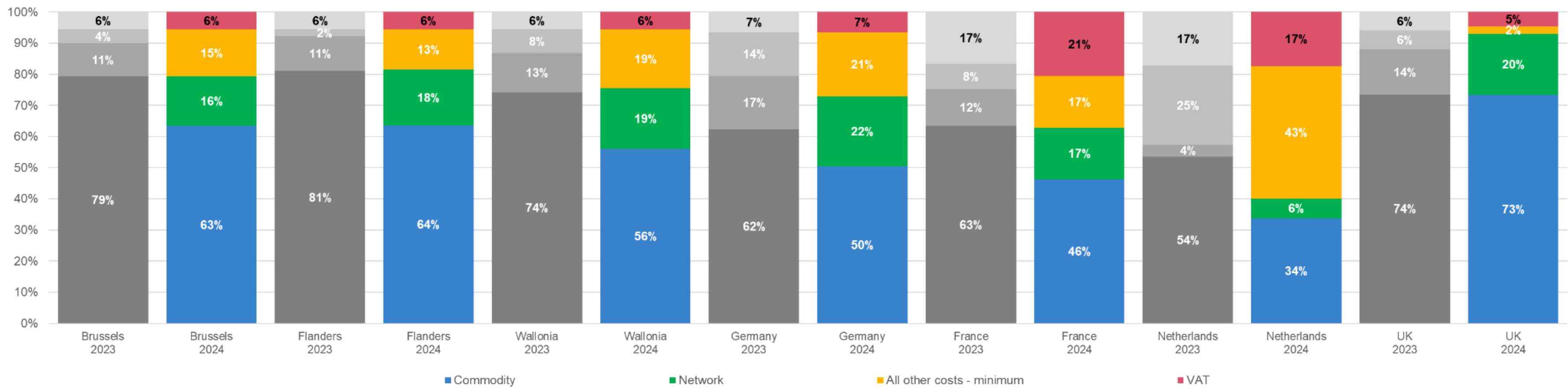
Belgium has also reduced its VAT tariffs, with a rate of 6% charged as of 2023, compared to the 21% rate in 2022. Similarly, Germany has seen a decrease in taxes, with the rate decreasing from 19% in 2022 to 7% in 2023. These adjustments in VAT rates have contributed to the overall reduction in the significance of the VAT component in most regions.

The component where we see the most fluctuation between countries is the **all other costs component**[365]. Considering the Netherlands, the height of their all other costs component, in particular the energy tax which has increased in 2024, makes them the most expensive country under review. In Belgium we made the distinction between regional and federal all other costs and the regional component makes a big difference in the competitiveness between the Belgian regions. The regional all other costs component in Wallonia (7.87 EUR/MWh) is more than twice as high as Brussels (3.34 EUR/MWh) which is 4 times higher than the regional all other cost of Flanders (0.83 EUR/MWh).

[365] This cost includes taxes, levies and certificate schemes.

Proportional component analysis

Figure 71: Proportional component analysis (profile G-RES)



Similar to 2023, the **commodity component** is the most important component in all the regions/countries, except from the Netherlands where the All other costs component became the most significant in 2024. However, the lower commodity prices in 2024 compared to 2023 have resulted in a decrease in the significance of the commodity component on the total invoice. The weight of the commodity component lies between 34% and 73% in 2024.

Furthermore, we see that the importance of the **all other cost component** varies significantly between regions/countries. It falls between 2% and 43%, with on one hand the UK being the country where the **other cost component** is proportionally the least important. On the other hand, the Netherlands, which is clearly an outlier regarding this component since it makes out 43% of the total invoice. Even though the ODE was removed in 2023, the Dutch government increased to Energy Tax even further in 2024 to encourage more sustainable energy options. Furthermore, we see that this component became significantly more important in Belgium because of higher federal taxes as a result of the “counter-clique” mechanism[366].

We do see that the importance of the **network component** differs between regions/countries, but the Netherlands remains the country where the weight of this component is the lowest among the regions under review.

The weight of the **VAT** component is very similar among all countries except for France and the Netherlands. In Belgium the VAT rate of 6% applies since April 2022. Germany has decreased the VAT rate on natural gas to 7% since 1 October 2022.

[366] The counter-clique mechanism is a system that adjusts federal excise duties based on the movement of prices. When prices fall below a specific threshold, as was the case in 2024, the mechanism increases the excise duties. Conversely, when prices rise above a certain threshold, the mechanism decreases the excise duties. This mechanism helps to stabilize the impact of price fluctuations on federal excise duties. (Service Public Federal Finances, 2023)

Key findings

The results reported above suggest the ensuing Key findings regarding profile G-RES:

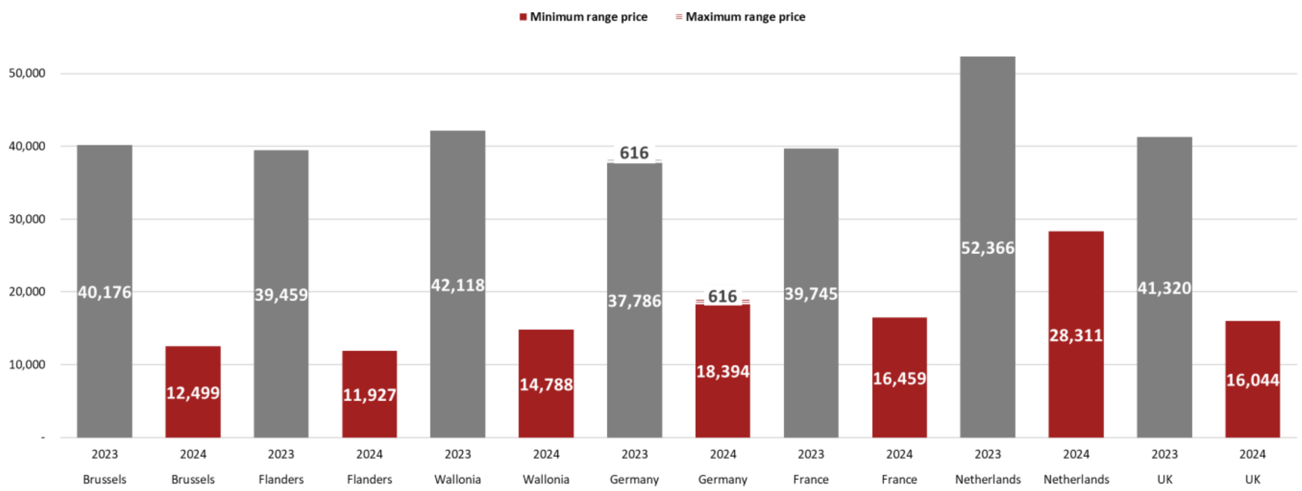
- Comparing 2023 and 2024 we see that the total invoice has decreased in all countries and regions, with the biggest change being a decrease of 1,964 EUR/year in the Netherlands. The decrease in the commodity price and in the VAT are the main reasons of this trend in all the regions/countries under review. Although it should be mentioned that a revised annual consumption of 17MWh (instead of 23.26MWh) was considered for the profile G-RES, which decreased the total invoice because of a lower consumption level.
- In 2023, the UK was the most affordable country for the G-RES profile. However, this is no longer the case in 2024, primarily because of the commodity component in the UK being notably higher compared to the other regions and countries under review. While closely followed by the UK, Belgium (average) has become the cheapest country under review.
- Flanders is now the cheapest (Belgian) region, because the **regional all other costs component** is (much) higher in the other two Belgian regions.
- In 2024, the **commodity component** in the energy bill has significantly decreased, making it less significant in proportion. In the Netherlands, the all other cost component has even become the most important factor.
- The **network cost component** varies importantly between regions/countries with figures ranging between 6% (the Netherlands) and 22% (Germany) of the total invoice of the regions/countries under review.
- Lastly, the **all other cost component** plays a key role, together with the commodity component, in determining the competitiveness of a region/country regarding the G-RES profile. The low network cost in the Netherlands is largely compensated by a high all other costs component.

Profile G-PRO (Natural gas)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by a professional profile G-PRO in the different studied regions/countries.

Figure 72: Total annual invoice in EUR/year (profile G-PRO)



The annual invoice has significantly decreased for all regions/countries under review in 2024 for the G-PRO profile. The annual invoice for G-PRO is the cheapest in Flanders, followed closely by Brussels. Wallonia stands on a greater distance from the other two Belgian regions but is still notably cheaper than all other countries under review. The Netherlands remains the most expensive countries here, with the Netherlands (the most expensive country) being almost three times more expensive than the cheapest region (Flanders). As it was the case for the G-RES profile, the Netherlands is still an outlier because of the “all other costs” component, in particular the energy tax, which will also become more apparent in the figure below detailing the different components.

Breakdown per component

The previous results are further detailed for profile G-PRO in the figure underneath, which provides a closer look at the breakdown of the different price components.

Figure 73: Natural gas price per component in EUR/MWh (profile G-PRO)

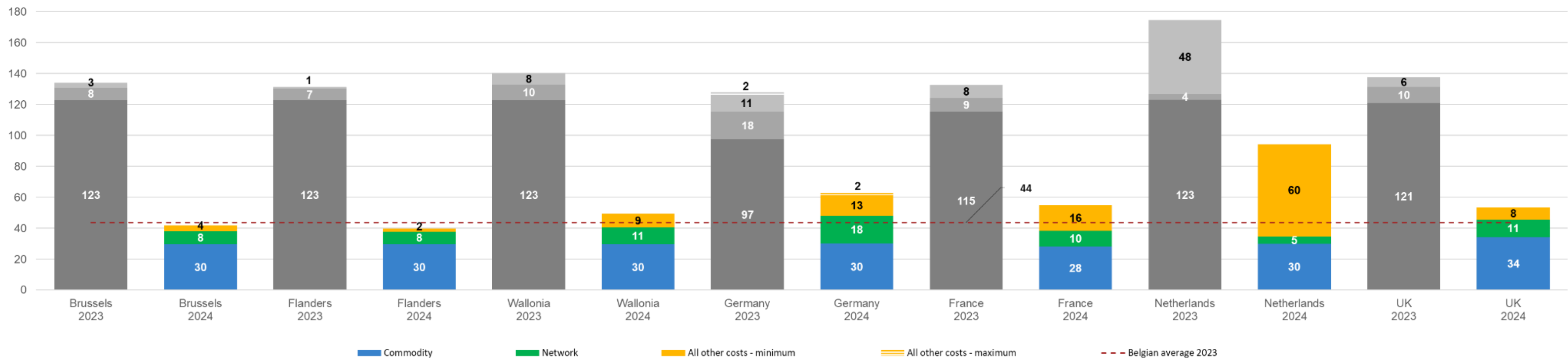
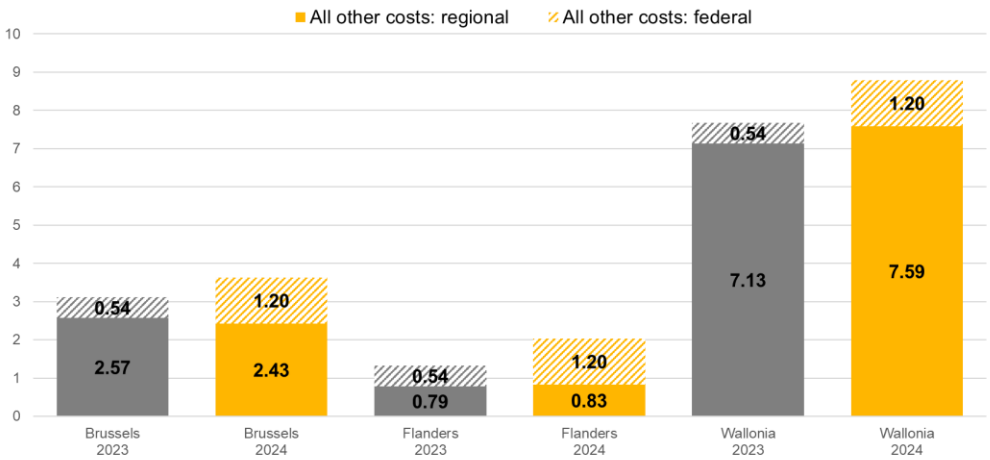


Figure 74: Regional and Federal all other costs in Belgium in EUR/MWh (profile G-PRO)



The first component we will analyse is the **commodity component** which has been computed according to the market price and not through comparison websites. This explains why the commodity cost does not alter between the Belgian regions for the G-PRO profile and onwards. In 2024, there has been a significant decrease in the commodity component cost across all regions compared to 2023. In Belgium, specifically, the commodity cost was more than four times lower in 2024. Similar declines were observed in other countries as well.

It is worth noting that the commodity component is quite similar across regions, with most regions having a commodity cost of 30 EUR/MWh. However, there are exceptions. France has the lowest commodity component at 28 EUR/MWh, while the UK has the highest at 34 EUR/MWh.

There are a few observations that can be made regarding the **network cost component**. The smallest network costs are observed in the Netherlands, followed by Belgium, France and the UK, with Germany having the highest network costs. Differences among Belgian regions are however present. The most expensive network cost (Wallonia, 11 EUR/MWh) is 3 EUR/MWh higher than the cheapest network cost (Flanders, 8 EUR/MWh). All in all, we see that the network cost component has remained stable between 2023 and 2024 for all countries and regions reviewed.

Lastly, we have the **all other costs component**[367] which is one of the components that has the most effect on the overall position of the region/country. The regions/countries, that have the lowest all other costs is Flanders, followed by Brussels and then the UK, closely followed by Wallonia. While this component is the by far the highest in the Netherlands, France and Germany stand in the middle of the pack.

Additional observations must be made regarding Germany and the Belgian regions. First, in Germany the range on the *Energiesteuer* has not changed between 2023 and 2024 because the taxes and the reductions have stayed the same. The other taxes have slightly increased with the exception of the *Marktraum*, which decreased. Second, in Belgium, there is a distinction between regional and federal all other costs, and it is evident that the regional cost in Wallonia is significantly higher (7.59 EUR/MWh) compared to Flanders (0.83 EUR/MWh) and Brussels (2.43 EUR/MWh). This difference is mainly due to the regional PSO (Public Service Obligation) in Wallonia.

Additionally, in France, the other cost component has doubled, which can be attributed to the TICGN[368] tax, which saw a significant increase from 8.37 EUR/MWh to 16.37 EUR/MWh. Furthermore, the other cost component for the Netherlands also increased by 25% due to an increased energy tax rate in 2024.

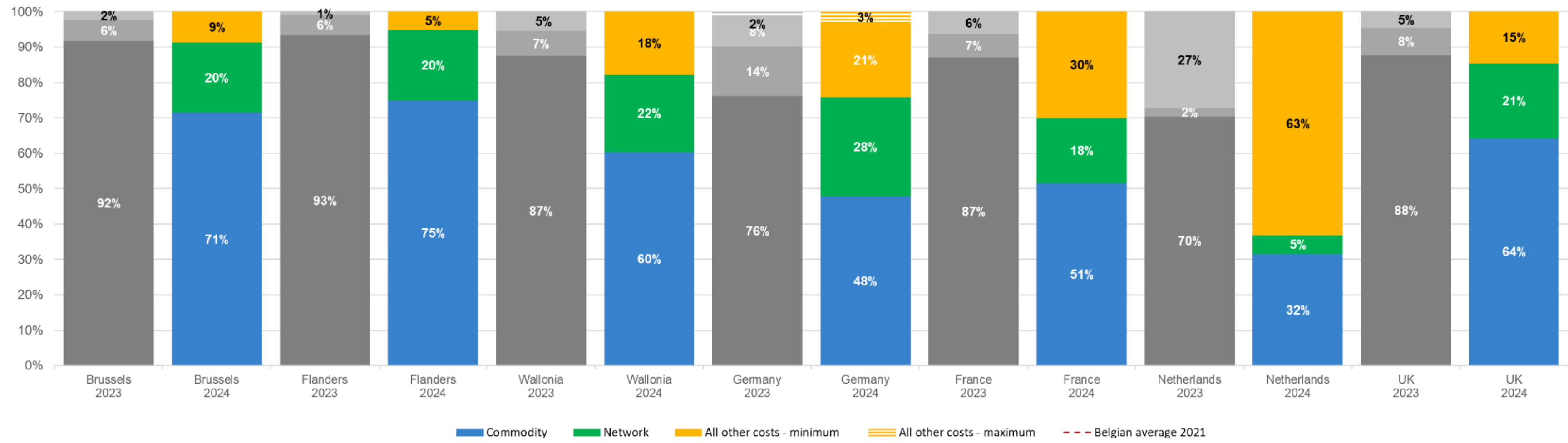
[367] This cost includes taxes, levies and certificate schemes.

[368] Taxe Intérieure de Consommation sur le Gaz Naturel

Proportional component analysis

The percentages of the costs for each component can be found in the underneath figure.

Figure 75: Proportional component analysis (profile G-PRO)



The figure above clearly shows that the commodity loses importance in all regions/countries due to its significant decrease. In the Netherlands, the commodity component is not the most important anymore. It has only a share of 32% on the Dutch natural gas bill for G-PRO, while the “all other cost” component accounts for 63%. In the other regions, the share of the commodity cost ranges from 48% (Germany) to 75% (Flanders). As a result of decreasing commodity prices, the other components gain importance on the natural gas bill for G-PRO for all regions.

Key findings

The results reported above suggest the ensuing Key findings regarding profile G-PRO:

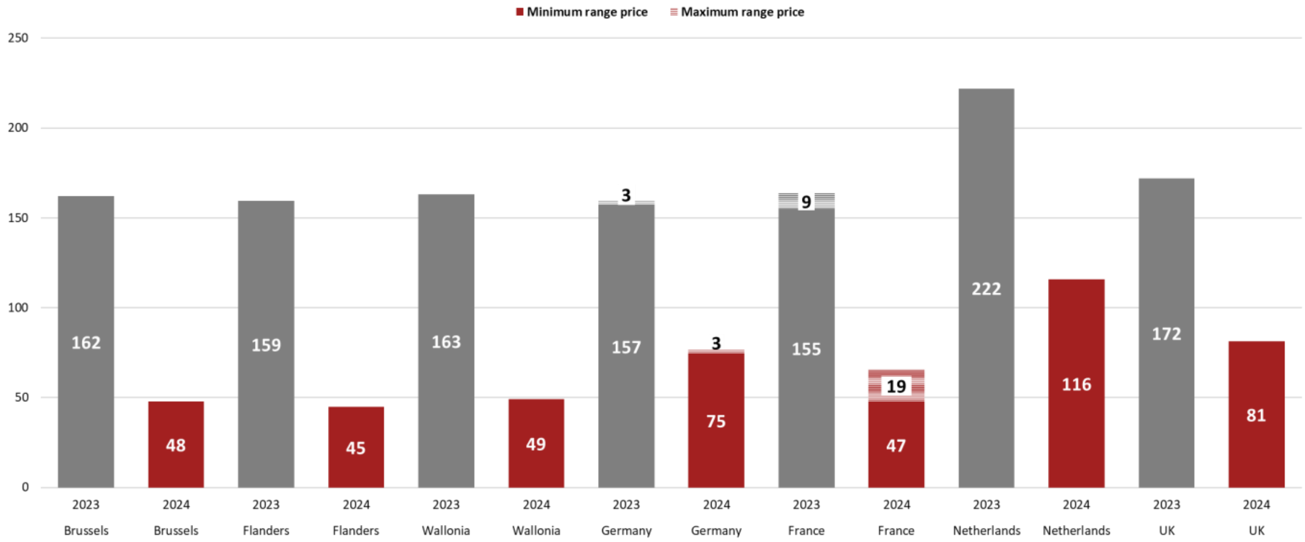
- The total annual invoice for the G-PRO profile has significantly decreased in 2024 compared to previous years for all regions/countries under review. This is mainly due to a large decrease in the commodity component.
- In terms of the G-PRO profile, the Netherlands remains the most expensive country, with the annual invoice being almost three times more expensive than the cheapest region, which is Flanders.
- The **commodity cost component**, which is computed according to the market price, has significantly decreased in 2024 across all regions compared to 2023. Most regions have a commodity cost of 30 EUR/MWh, with exceptions such as France having the lowest at 28 EUR/MWh and the UK having the highest at 34 EUR/MWh.
- The **network cost component** varies among countries, with the Netherlands having the smallest network costs, followed by Belgium, France, and the UK. Among Belgian regions, Wallonia has the highest network cost, which is 3 EUR/MWh higher than the cheapest region, Flanders. The network cost component has remained stable between 2023 and 2024 for all countries and regions reviewed.
- The **all other cost component** has a significant impact on the overall position of each region/country. Flanders has the lowest all other costs, followed by Brussels and on a slightly greater distance by the UK and Wallonia. The Netherlands has the highest all other costs, while France, Wallonia, and Germany fall in the middle. The all other cost component for the Netherlands increased by 25% in 2024 due to an increased energy tax rate.

Profile G0 (Natural gas)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by an industrial G0 profile in the different studied regions and countries. The results are expressed in kEUR/year.

Figure 76: Total yearly invoice in kEUR/year for industrial consumers (profile G0)



For the G0 profile the annual invoice has significantly decreased for all regions/countries under review. Furthermore, Germany is not the only region/country with a price range anymore since we take the possibility of a reduction of the TICGN in France starting with the G0 profile.

The overall positioning of the regions and countries have mostly stayed the same, except for Belgium, which has improved its competitiveness compared to last year. Flanders is now the top competitive region, even when we consider possible price cuts in France. France comes in second after considering these reductions, with Brussels and Wallonia closely following. Despite Wallonia remaining the priciest region in Belgium, it's still more competitive than almost all other countries, except for the cheapest prices in France. Additionally, Germany has faced a significant setback in competitiveness. In 2023, Germany was the second most affordable country, not far behind France in terms of competitiveness. However, by 2024, Germany has become significantly more expensive compared to all regions in Belgium and France. The Netherlands, the UK, and Germany still lag far behind other regions and countries.

Figure 77: Total yearly invoice comparison in % (profile G0; Belgium average (each year) = 100%)

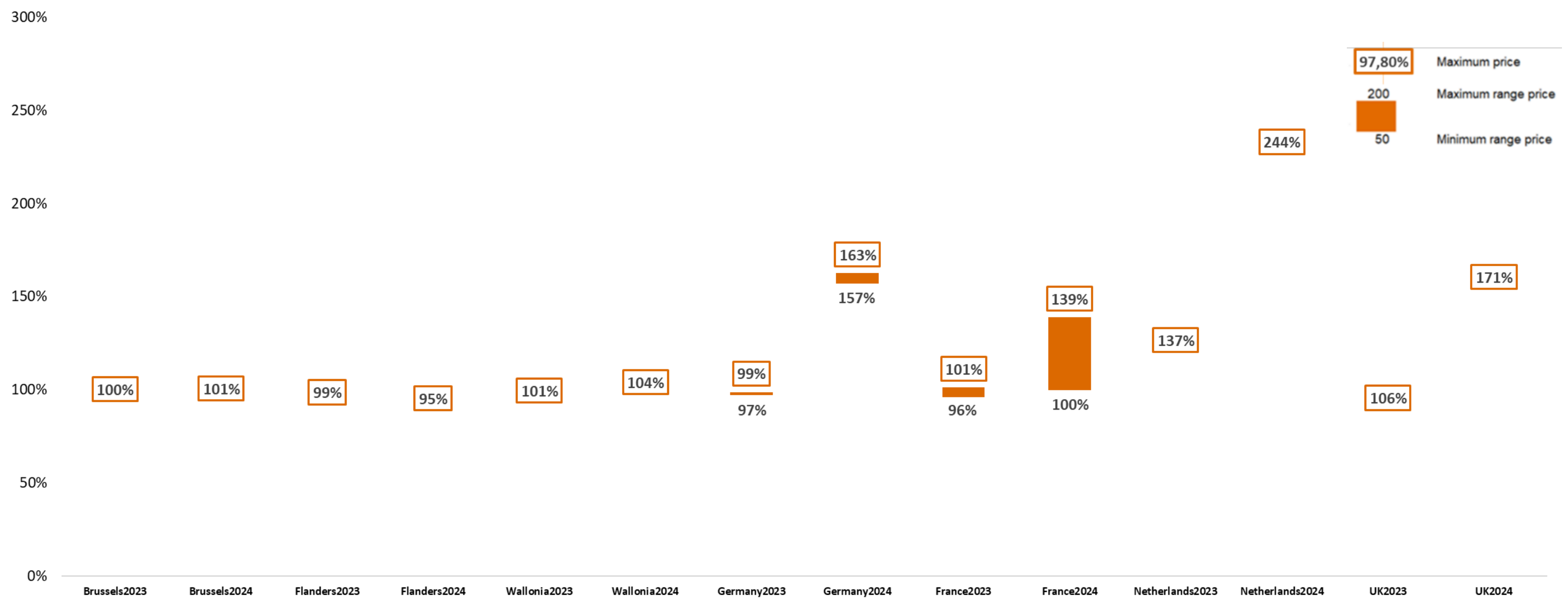


Figure 77 takes the Belgian average and positions the other regions/countries against this average to see if they are above or below or both if there is a range to consider. The figure shows the result for 2023 and 2024 and we have thus taken the Belgian average of their respective year into account. This figure gives a good idea of the competitivity of a region/country compared to Belgium. Overall, we see that the competitiveness of our neighbouring regions/countries has decreased compared to Belgium since the percentual difference between the total invoice of the neighbouring country has increased considerably compared to last year. Only France is still more or less competitive than Belgium depending on the reduction in 2024. The Netherlands, which was the least competitive country under review in 2023, saw its total invoice go from 37% to 144% above the Belgian average. The UK, the Netherlands and Germany are well above the Belgian average.

Breakdown by component

The previous results are further detailed for profile G0 in the figure underneath, which provides a closer look at the breakdown of the different price components.

Figure 78: Natural gas price by component in EUR/MWh (profile G0)

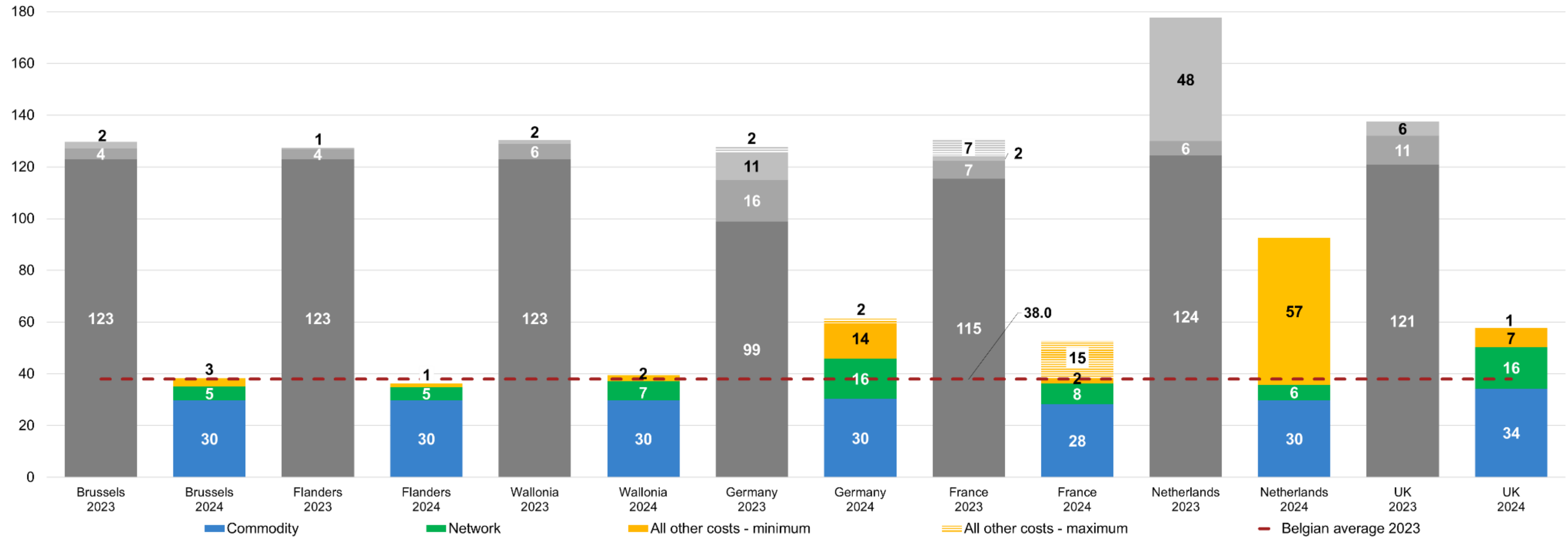
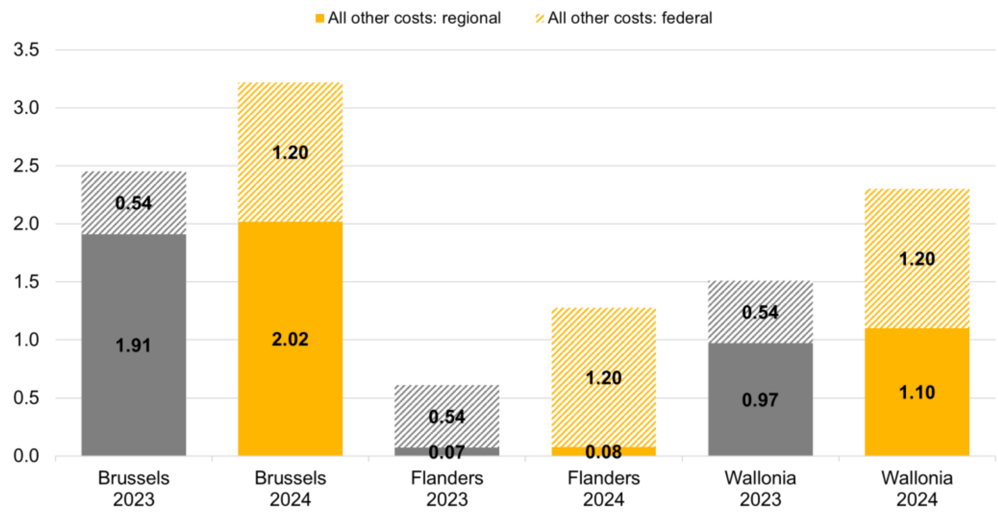


Figure 79: Regional and Federal all other costs in Belgium in EUR/MWh (profile G0)



Since the **commodity cost** is based on the market price and this is the same for all the bigger consumer profiles (G-PRO - G2) the price per MWh will remain the same.

The **network cost** remains a significant component of the total bill in the UK and Germany. In Belgium, the network costs are generally low on average. In Wallonia, however, the network costs are 40% higher than Flanders and Brussels, which overall have the lowest network costs of all regions and countries under review.

Lastly, the **all other costs component**[369] has some important variations since last year in Belgium, we observe an increase in both regional surcharges as federal taxes and PSO's. Germany, the UK and the Netherlands have also seen a (more notable) increase in their "all other cost" component because of increases in the rates for *Biogas-Umlage* and *CO2 Steuer* in Germany (+27%), the Climate Change Levy in the UK (+17%) and the energy tax in the Netherlands (+19%)[370]. While both Germany, France and the UK have a price range, falling under the reduction scheme is much more beneficial in France, especially since the increase in the TICGN standard rate which doubled compared to 2023.

The competitive position of Germany and the UK compared to other regions and countries will remain unchanged regardless of whether the reduction is applied or not. However, the application of all reductions in France can have an impact on its competitive position. If these reductions are implemented, it would make France slightly more competitive than Wallonia and Brussels. In any case, Flanders remains, however, the cheapest of all regions and countries.

[369] This cost includes taxes, levies and certificate schemes.

[370] Taking into account all possible reductions.

Key findings

The first industrial natural gas profile (G0) analysis leads to the following findings:

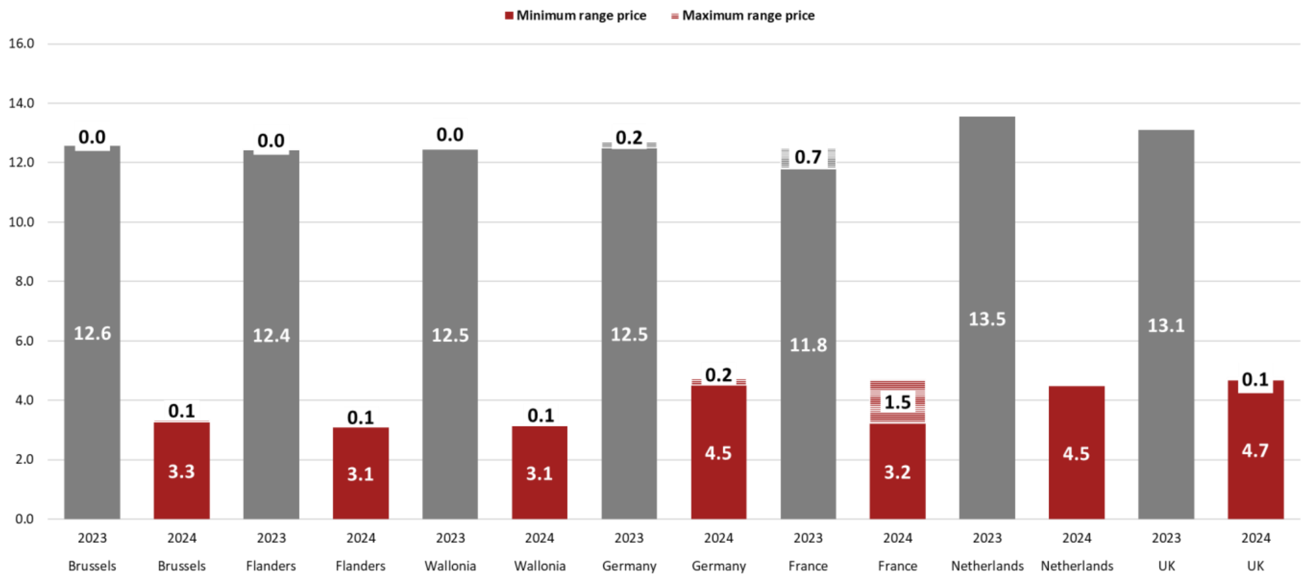
- Like the smaller profiles (G-RES and G-PRO) the total yearly invoice for the G0 profile has significantly decreased in 2024 compared to previous years for all regions/countries under review.
- In terms of the G0 profile, Germany has become significantly more expensive compared to all regions in Belgium compared to 2023. The Netherlands remains the least competitive country, while Flanders is the cheapest region in 2024, even when applying all reductions in France.
- The **commodity cost component** remains the same for all bigger consumer profiles (G-PRO - G2). The commodity cost per MWh is consistent across regions and countries, with most regions having a cost of 30 EUR/MWh. France has the lowest commodity cost at 28 EUR/MWh, while the UK has the highest at 34 EUR/MWh.
- The **network cost component** varies among countries and regions. In Belgium, the network costs are generally low on average, except for Wallonia, where they are 40% higher compared to Flanders and Brussels. The Netherlands has the lowest network costs among the regions, while Germany and the UK both have the highest.
- The **all other cost component** has important variations across regions and countries. Flanders has the lowest all other costs, followed by Brussels and the UK. The Netherlands has the highest all other costs, while France, Wallonia, and Germany fall in the middle. The all other cost component for the Netherlands increased by 19% in 2024 due to an increased energy tax rate. Due to this high other cost component, the Netherlands is the least competitive country. Furthermore, there is now a range for Germany, France and the UK, we see that only the possible reduction in France can change the competitive position of the regions/countries. The regional differences regarding this component are losing importance in Belgium compared to the G-PRO profile.

Profile G1 (Natural gas)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by an industrial G1 profile in the different studied countries and regions. The results are expressed in MEUR/year. The second figure gives the Belgian average natural gas invoice, presenting the percentual price differences with other countries.

Figure 80: Total yearly invoice in MEUR/year for industrial consumers (profile G1)



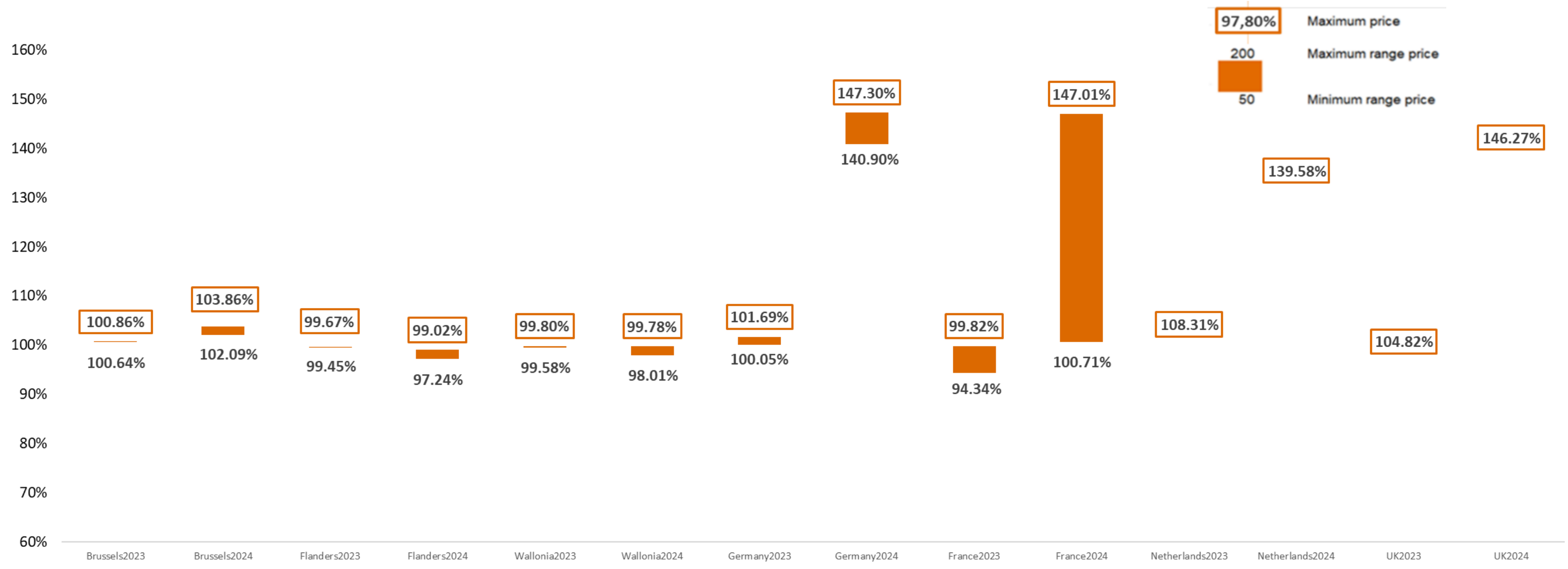
In terms of G1 profiles, a similar pattern can be seen as with other professional profiles. In 2024, there is a notable decrease in the total invoice across all countries and regions. Flanders (3,118,871 EUR), closely followed by the other Belgian regions (Brussels: 3,274,339 EUR and Wallonia: 3,143,453 EUR) stands out as the most affordable region, even when considering the reductions. Among the Belgian regions Brussels is the most expensive. When taking into account the possible reductions, the UK is the most expensive country, closely followed by Germany and the Netherlands.

As stated in Section 5, for profiles G1 and G2 in the three Belgian regions, we show a price range, due to the possible exemption of the federal excise duty. Therefore, the minimum price shown is the one taking the full exemption into account, while the maximum is including the full cost of this federal cost for these two profiles[371]. The Belgian average used in the following figures for G1 and G2, considers both the minimum and the maximum, as done for the industrial electricity profiles. In addition, we observe a price range for the UK as well, which is linked to an exemption from the Climate Change Levy.

[371] According to Art. 429.§ 1er of the law from 27th December 2004[371] an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial procedures, thus being considered as “double usage”. For the sake of this report, we assumed that profiles G1 and G2 could potentially benefit from this exemption, if they fall within the conditions specified by the law.

Below, we compare each region and country's yearly bill with the average Belgian price, which is set at 100. The Belgian average is computed as the mean value from each region's yearly bill and since the figure has the results of 2023 and 2024, we take the average of their respective year into account.

Figure 81: Total yearly invoice comparison in % (profile G1; Belgium average (of each year) = 100)



Like the analysis for G0 we observe that the competitive position of Belgium is improving compared to 2023. We observe a divergence from the Belgian average for all countries under review, being 0.71% to 47.3% more expensive than Belgium. As stated above, there is now a price range for the three Belgian regions. When this profile is exempted from the Federal excise duty, the Belgian competitiveness improves even more compared to the other countries.

Breakdown by component

The previous results are further detailed for profile G1 in the figure underneath, which provides a closer look at the breakdown of the different price components.

Figure 82: Natural gas price by component in EUR/MWh (profile G1)

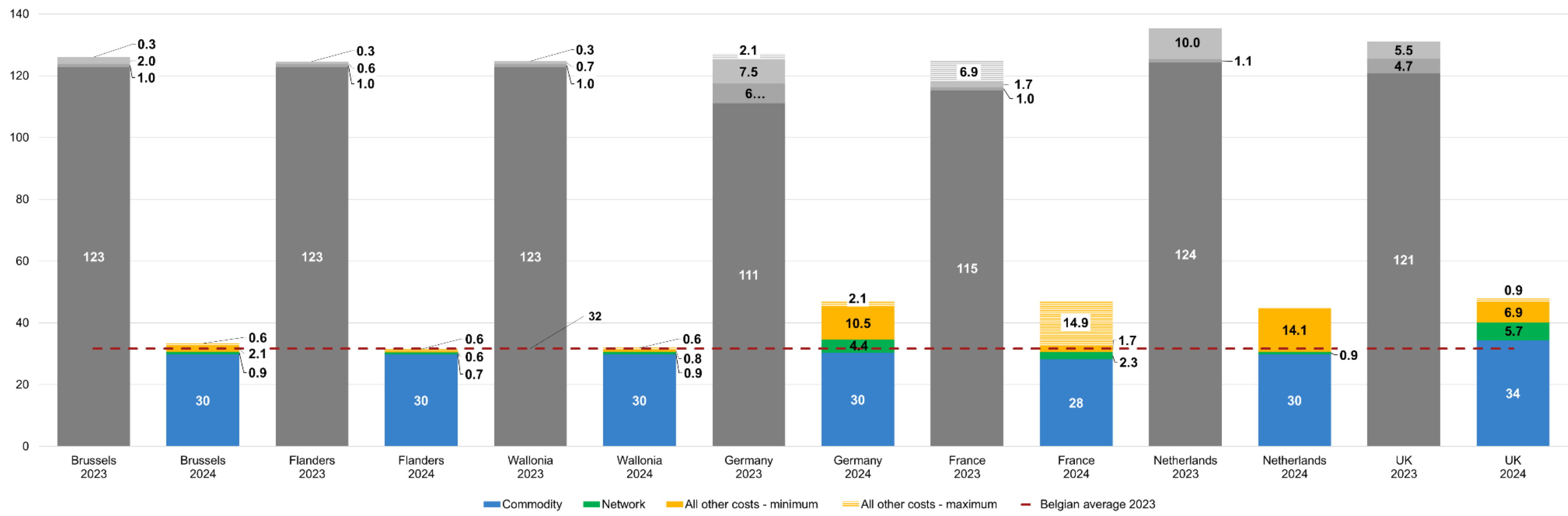
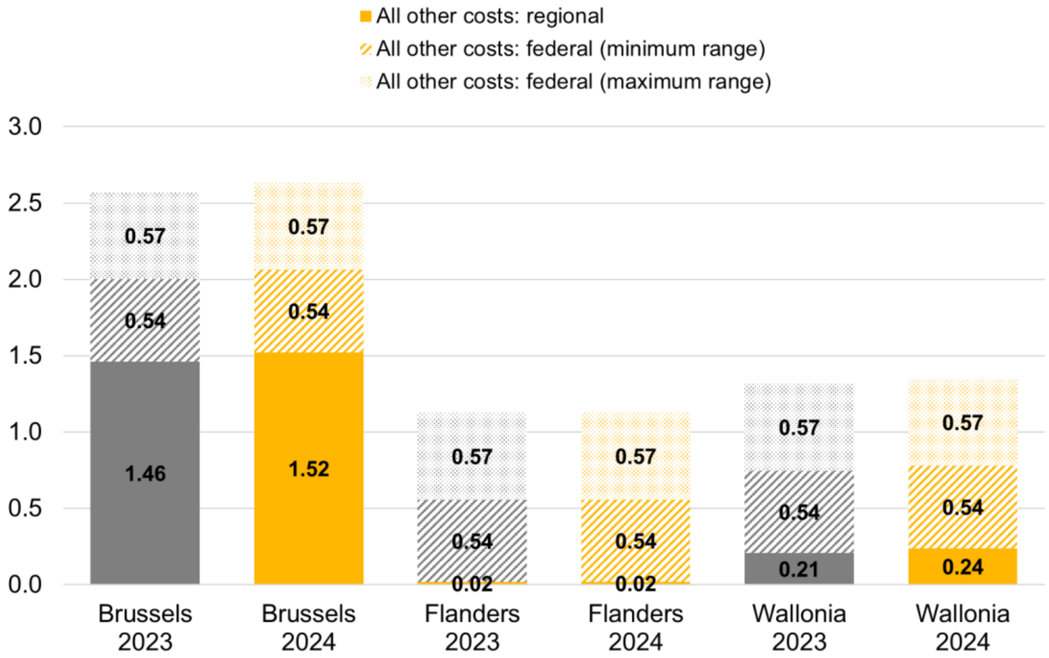


Figure 83: Natural gas price by component in EUR/MWh (profile G1)



Similar to the previous professional profiles, the importance of the **commodity component** has decreased in 2024 and is again almost aligned over all regions and countries observed, with France being slightly cheaper at 28 EUR/MWh and the UK slightly more expensive at 34 EUR/MWh.

When it comes to **network cost component**[372], it can be observed that Belgium and the Netherlands have the smallest network costs. The UK still has the highest network costs, followed by Germany (after having switched places compared to 2023). The network costs for the UK are 5.5 EUR/MWh, while for Germany it is 4.4 EUR/MWh. However, the share of network costs on the total invoice remains relatively small for all countries.

The **all other costs component**[373] has notably increased in the Netherlands, the UK, Germany and France (maximum range) in 2024 as was the case for the G0 profile. In France, the reduction on the TICGN still plays an important role in the overall positioning of the country compared to the other regions/countries. In Belgium, the distinction between federal and regional all other costs component makes it clear that the regional cost is almost non-existent in Flanders and relatively small in Wallonia while in Brussels this cost is still greater than the federal all other costs component. The possibility for G1 profile to be exempted by the federal excise duty can help the competitiveness of the Belgian regions, although based on the results in this study, we don't observe an impact on the ranking.

[372] This study acknowledges the natural gas consumption tariffs invoiced to industrial consumers based on the consumer profiles defined in the hypotheses. It is therefore important to clarify that potential disparities occurring between network tariffs invoiced to industrial consumers (i.e., G1 and G2 profiles) in this study and the tariffs they empirically pay, when exceeding their contractual capacity, might differ. The details of this variation are outlined in the 2022 study by CREG: https://www.creg.be/fr/publications/etude-f2716

[373] This cost includes taxes, levies and certificate schemes.

Key findings

The second industrial natural gas profile (G1) analysis leads to the following findings:

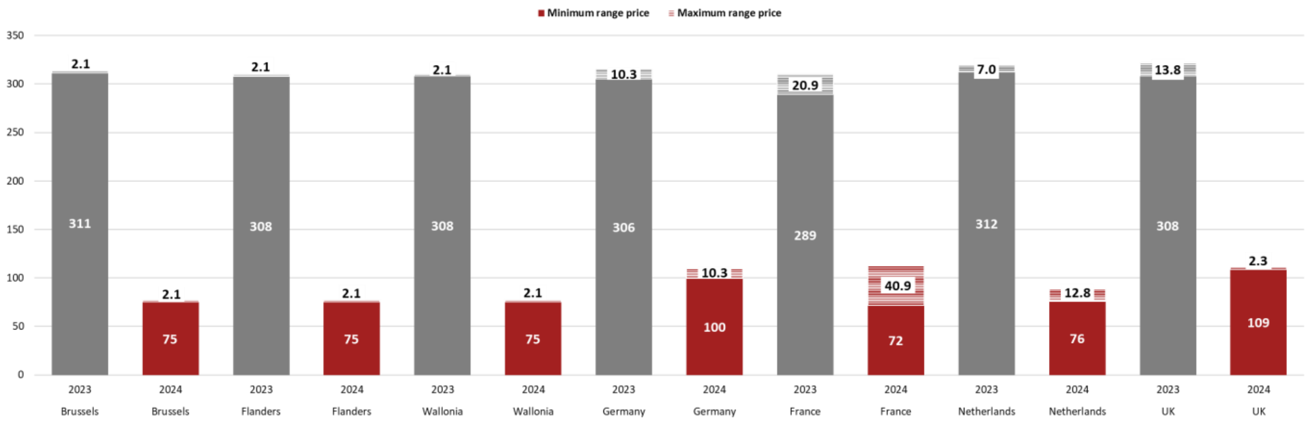
- The total yearly invoice for the G1 profile has shown a notable decrease in 2024 compared to previous years for all countries and regions under review.
- In terms of the G1 profile, Flanders stands out as the most affordable region in 2024, followed closely by the other Belgian regions and France. Brussels is the most expensive region in Belgium. The UK, Germany and the Netherlands are remarkably more expensive than Belgium and France, with the UK being the most expensive.
- The **commodity cost component** has decreased in 2024 across all regions compared to 2023. Most regions have a commodity cost of 30 EUR/MWh, with exceptions such as France having the lowest at 28 EUR/MWh and the UK having the highest at 34 EUR/MWh.
- The **network cost** is clearly still the lowest in Belgium and the Netherlands, where they are almost negligible. The UK and Germany have notably the highest network costs.
- Lastly, the **all other costs component** is very important regarding the competitive position of the region/country. In the Netherlands there is a big decrease compared to the G0 profile, but it is still the country among the ones reviewed in which the all other costs component is the highest if we take into account the reductions in France. The maximum range for France, as for G0, has almost doubled because of the significant increase in the TICGN rate.

Profile G2 (Natural gas)

Total invoice analysis

The figure below provides a comparison of the total yearly invoice paid by an industrial G2 profile in the different studied countries and regions. The results are expressed in MEUR/year. The second figure gives the Belgian average natural gas invoice, with the aim of presenting the percentual price differences with other countries.

Figure 84: Total yearly invoice in MEUR/year for industrial consumers (profile G2)



The G2 profile is the largest natural gas consumer under review and the first observation is that every region/country has a price range for this profile. The range in Belgium is the result of a possible exemption for feedstock consumers on the energy contribution and of the special excise duty. In the UK the G2 profile, similar to G1, can benefit from an exemption from the climate change levy which is why they also have a range. Lastly, we have the Netherlands that always had the highest all other costs component that offers an exemption of the energy tax. When considering all exemptions, France emerges as the most competitive country with a rate of 72 EUR/MWh. The Belgian regions and the Netherlands follows closely behind with a rate of 75 and 76 EUR/MWh respectively. This is a significant increase in competitiveness compared to last year when both the Netherlands and Belgium were considered the least and second least competitive countries, respectively.

Now that every region/country has potential reductions and/or exemptions to consider the competitiveness of a region/country is more ambiguous since it depends on the profile of the consumer. This becomes clear in the figure below (Figure 85). This figure takes the Belgian average as a base and compares the total invoice of the neighbouring countries with the Belgian average. As we have done with all the previous profiles, the 2023 results are set out against the 2023 Belgian average and the same logic applies to 2024.

Figure 85: Total yearly invoice comparison in % (profile G2; Belgium average (of each year) = 100)

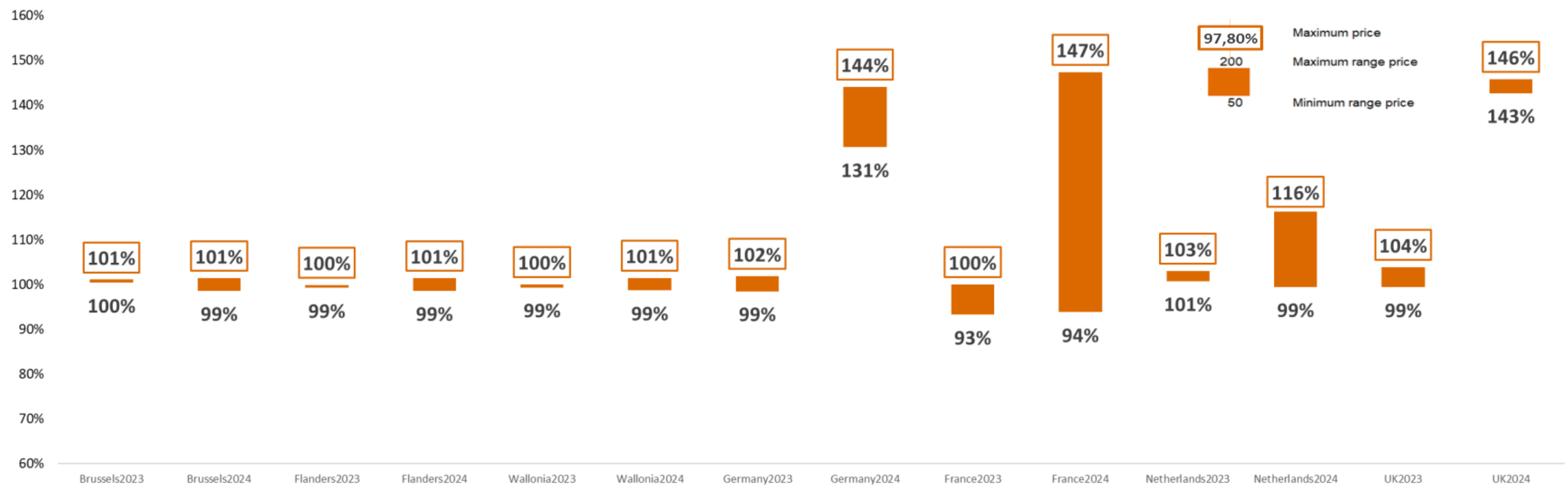


Figure 85 shows that France, Germany and the UK have lost their competitive edge and the possibility to be cheaper than the Belgian average in 2024. Additionally, it is worth noting that there is a significant range in France for the G2 profile. This is primarily due to the potential exemption for the TICGN (Taxe Intérieure de Consommation sur le Gaz Naturel), which has resulted in the rate doubling in 2024.

Breakdown by component

The previous results are further detailed for profile G2 in the underneath figure, which provides a closer look at the breakdown of the different price components.

Figure 86: Natural gas price by component in EUR/MWh (profile G2)

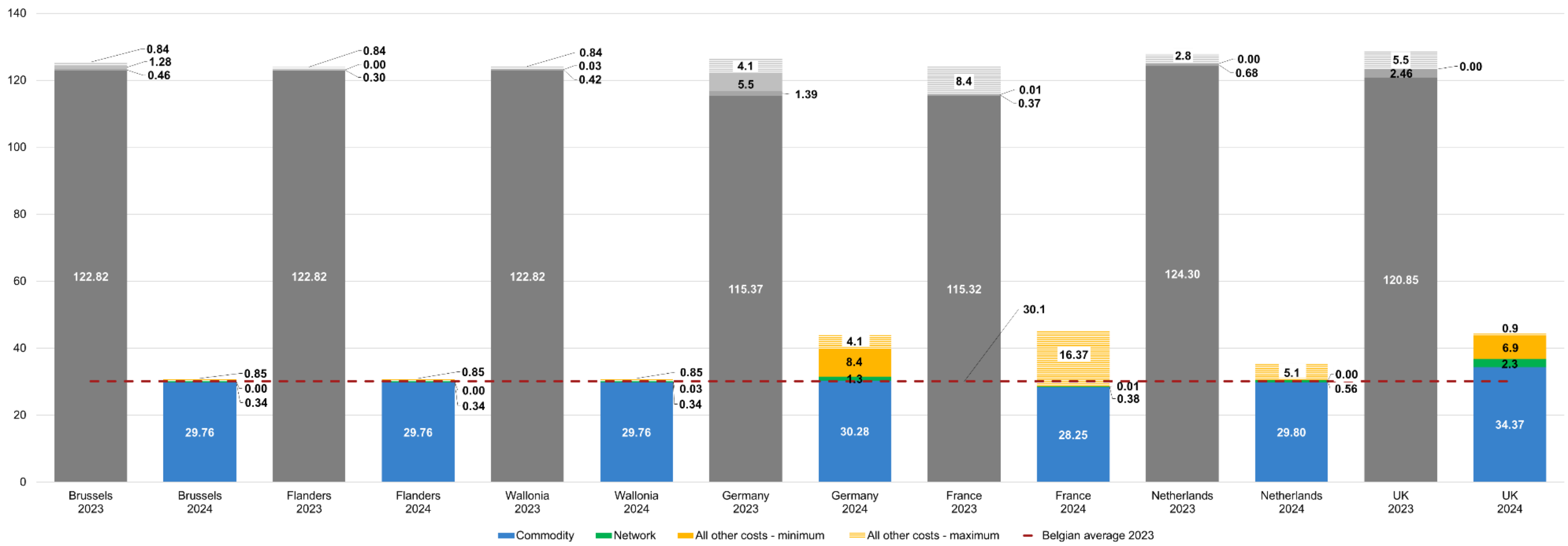
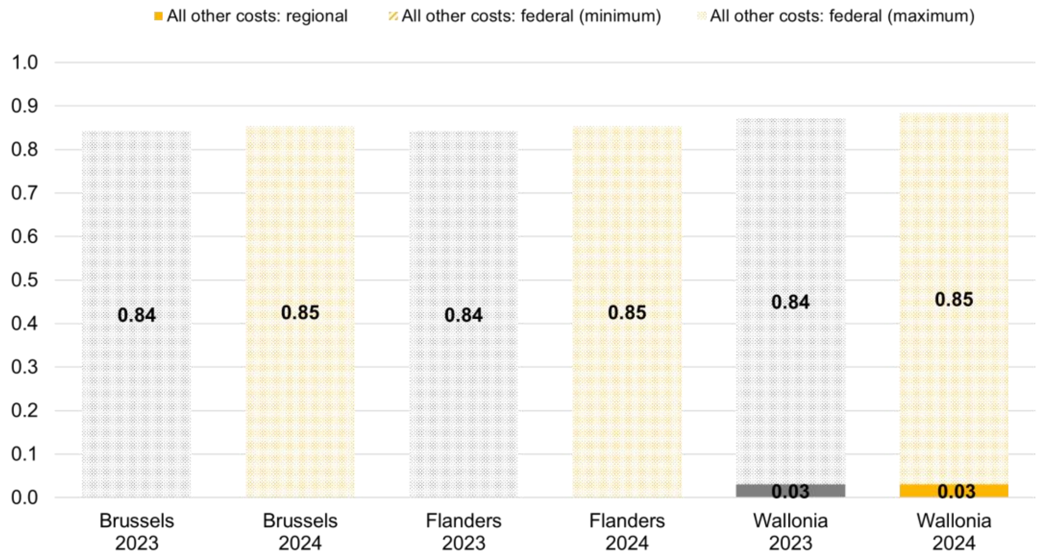


Figure 87: Natural gas price by component in EUR/MWh (profile G2)



The figure with the breakdown per component clearly shows that the **commodity component** still makes up most of the total invoice in all regions/countries under review. Once again, the commodity price is rather similar from one region to another except for the UK which has a more notable, higher commodity costs of 34.37 EUR/MWh.

When comparing the different components in EUR/MWh we observe that the **network cost**[374] plays a relatively minor role in the overall total invoice for all countries.

Lastly, the **all other costs component**[375] still plays a big role in defining the competitiveness of the regions/countries, in whether the reduction(s) applies or not. When the reduction applies this component becomes negligible in every region/country except for Germany and the UK where it still has a role to play (8.4 EUR/MWh and 6.9 EUR/MWh respectively). Like for the G1 profile, a possible exemption for G2 profile with regards to the federal excise duty[376] can be applied. When this is the case, the overall Belgian competitiveness is even improved, with Wallonia only having a small regional part.

[374] This study acknowledges the natural gas consumption tariffs invoiced to industrial consumers based on the consumer profiles defined in the hypotheses. It is therefore important to clarify that potential disparities occurring between network tariffs invoiced to industrial consumers (i.e., G1 and G2 profiles) in this study and the tariffs they empirically pay, when exceeding their contractual capacity, might differ. The details of this variation are outlined in the 2022 study byCREG : https://www.creg.be/fr/publications/etude-f2716

[375] This cost includes taxes, levies and certificate schemes.

[376] According to Art. 429.§ 1er of the law from 27th December 2004 an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial procedures, thus being considered as “double usage”. For the sake of this report, we assumed that profiles G1 and G2 could potentially benefit from this exemption, if they fall within the conditions specified by the law.

Key findings

The biggest industrial natural gas profile (G2) analysis leads to the following findings:

- In 2024, similar to 2024, the competitiveness clearly depends on the possible reductions applied in each country/region. Overall, we observe a convergence between regions/countries with an exception for Germany and the UK which clearly have higher prices due to larger other costs.
- The **commodity cost** was fairly consistent across all countries and regions under review, with an exception for the UK which reports a higher commodity cost of 34.37 EUR/MWh.
- Overall, the **network cost component** no longer has a significant impact on the strategic positioning of a region/country for the G2 profile.
- The **all other costs component** shows large variations that will impact the competitive position of all regions/countries. Germany sees his competitiveness deteriorate due to the carbon tax, which accounts for almost half of the all other costs component in 2024.

7. Energy prices: Conclusions

7. Energy prices: Conclusions

Electricity

Residential and small professional consumers

(1) For most regions and countries under review, the decrease in the commodity cost for residential consumers is a common denominator compared to the situation of January 2023, Germany being the country where this drop is the least significant. Most of the countries' governments under review have alleviated or removed the energy price caps, government refunds or temporary lowered VAT rates. With a commodity price lowering down, it has become an opportunity for governments to reset the tax levels, certificate schemes and levies to normal pre-crisis levels to fund future measures. This side effect partially cancel the benefits of a reduced commodity price, but not in full, and therefore still alleviates the burden of the electricity bill for residential consumers in most countries. The differences observed on the final bill across countries are more significant than what was observed last year, which makes the competitivity analysis clearer. In 2024, we do however notice a convergence for the E-BSME profile, unlike last year. Since we used the commodity market prices for this profile and these are relatively similar across the regions/countries, this convergence is logical.

(2) The three regions in Belgium are on average more competitive than the other countries for the E-RES, E-SSME and E-BSME profile, except compared to France which, thanks to the regulated product, keeps a low electricity bill for E-RES and E-SSME. Belgium is the second cheapest country for all residential and small professional profiles, and the most competitive one for the E-BSME profile. On the other side, Germany as a whole is the most expensive country for all considered profiles. Within the country, Tennet is the cheapest German region but remains more expensive than the UK and the Netherlands for the E-RES and E-SSME profiles. Flanders is the most competitive Belgian region for all residential and small professional profiles because of the lower regional all other costs and lower network costs, while Brussels is at par with Wallonia for E-RES profile and more competitive than Wallonia for the other profiles due to lower network costs.

(3) To compare the profiles, it is best to look at the cost for a megawatt hour. It becomes clear that small professional consumers usually pay less than residential consumers for electricity. The reason for this being twofold. There is first the impact of VAT. As we take the assumption that VAT is deductible for professional profiles and since it can reach up to 21% of the total invoice depending on the country, it makes obviously a difference when it is removed from the invoice. When removing the VAT component, it appears however that E-RES and E-SSME still show a cost gap as the difference in network costs and other levies and schemes remains consequent. Some tariffs being dependent on connection levels, we can therefore observe a difference between E-RES and E-SSME on one hand and E-BSME on the other hand. Additionally, we can also see that the commodity, network and all other costs all tend to decrease for larger consumers.

Industrial consumers

(1) The commodity cost is a very important component for the industrial profiles. It becomes even more important for the largest industrial consumers where reduction and/or exemptions are applied on network and all other costs. Like for residential and small professional profiles, the commodity price is the component that decreased the most in all countries compared to January 2023 for industrial consumers. Given the methodology followed, the industrial commodity costs decreased in a lesser proportion. The commodity cost often makes up more than 70% of the total invoice and up to 90%. For all regions/countries under review, the commodity costs accounts for a smaller share of the total energy bill than observed in January 2023, except in Germany where the price cap discontinuation already played a role to stabilise the commodity costs. The general decrease of the commodity price explains the partly converging trend between the regions/countries under review in terms of total invoice. The UK has the highest commodity cost for all E0 to E4 profiles, while France bears the smallest due to the ARENH mechanism that helps lowering the price down. The commodity cost remains the same from E0 to E2, but very slightly changes for E3 and E4 since we assume that these profiles consume 24/7 (except for France).

(2) The reductions and exemptions on network and all other costs greatly vary between regions/countries and profiles and have an important impact on the competitiveness of the regions/countries. These reductions are especially important in Germany, the UK and Flanders. When consumers need to pay the maximum amounts, France is the most competitive together with Flanders, depending on the profile. This goes the same way when reductions and exemptions apply, except for E3 and E4 profiles where France always remains the most competitive country. The advantageous position of Flanders is explained by reductions starting with E0, which allows to compete with other regions/countries that offer large(r) reductions such as the UK and Germany. A clear distinction between electro- and non-electro-intensive consumers can also be observed. Numerous regions/countries (Flanders, France, Germany and the UK) have designed mechanisms to support electro-intensive consumers by offering lower fares, the cheapest prices being observed in France and Flanders. Compared to last year, the federal excise duty still allows the three Belgian regions to benefit from an exemption for profiles E1 to E4. This enables Brussels and Wallonia to be slightly more competitive than the Netherlands and/or the UK for some profiles.

(3) Looking at the competitiveness of the Belgian regions, we observe that when all reductions apply for electro-intensive consumers, Flanders is the most competitive region within the country. When comparing electro-intensive consumers across countries, we see that the most competitive region remains also Flanders for E0, E1 and E2 profiles. France becomes the most competitive country for the largest industrial consumers (E3 and E4 profiles). Brussels and Wallonia lack of competitiveness for electro-intensive consumers can be explained by the small all other costs components range compared to the most competitive regions, namely France, the Netherlands and the UK. This is however not the only driver as for very large consumers (E3 and E4 profiles), the commodity component takes the majority of the total invoice. As a country, when comparing the total invoices for the non-electro-intensive consumers, Belgium appears to be the second cheapest, at par with the Netherlands, while France tends to always be cheaper.

Summary

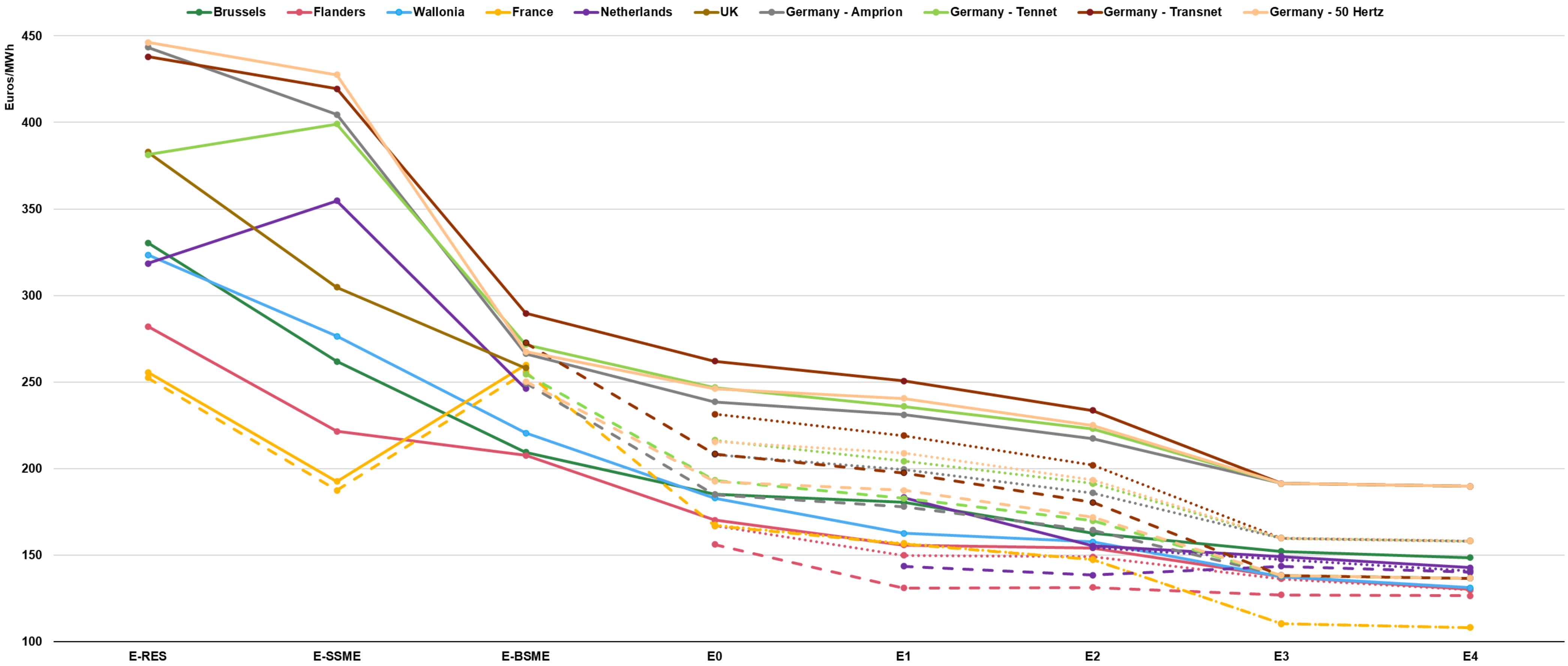
Figure 88 depicts the global trend followed by yearly electricity bills once considered across all countries and regions simultaneously. Solid lines may represent three different kinds of prices depending on countries: a unique price, a maximum price due to a range of possibilities in network and/or tax prices (e.g. France for residential and small professional consumers) or a maximum price for non-electro-intensive consumers as from profile E0. Dotted lines symbolise maximum prices for electro-intensive consumers (from profile E0), whereas dashed lines showcase the minimum prices observed.

For E-RES and E-SSME profiles, all regions/countries, except for Germany, see their energy bill declining compared in comparison with the situation observed last year, mainly due to falling commodity costs in (almost) all countries under review. The German exception can be explained by the non-compensation of abandoned measures, an increase in transport costs, and the removal of the price cap on the commodity price. The difference in electricity costs between E-RES and E-SSME on the one hand and the larger profile on the other hand are decreasing in 2024, as E-BSME and above profiles see their bill decrease less than small consumers (especially in the UK, the Netherlands and Belgium). Thirdly, due to the general decrease of the commodity price and the change in measures put in place in countries compared to 2023, we observe a pronounced convergence of the electricity bill between the regions/countries under review, in particular for larger industrial consumers.

The general decreasing trend seems to indicate that, in all countries, electricity costs on commodity markets have generally dropped. Moreover, governments have chosen to adapt measures, taxes and levies on electricity differently depending on the profile: the smaller the profile, the higher the change per unit of electricity consumed. This reflects a cost burden transfer from large consumers to small consumers, but is also related to the network that the consumer is connected to. The higher the connection level of the consumer the lower the network cost.

The taxing mechanisms, as identified by the splitting of lines (i.e. multiple pricing possibilities) from profile E0 and designed to support electro-intensive consumers, also indicate a transfer of electricity costs from electro-intensive consumers to non-electro-intensive consumers as the former face much higher fares. Overall, France is the only country to differentiate all profiles as prices differ on selected pricing options as of consumer E-RES, while most regions applying this differentiation do it as from the E-SSME or E-BSME profiles. When looking at Belgium, we do see a difference in the price (total energy bill in EUR/MWh) evolution for the residential and small professional profiles. The price steadily decreases from E-RES to E-SSME in all Belgian regions. For all three regions the price decreases much more between E-SSME and E-BSME. This happens mainly because the E-BSME profile is connected to a higher voltage level than E-SSME, from LS to MS, and the higher the voltage level the lower network costs, and all other costs.

Figure 88: Electricity yearly bill in EUR/MWh per profile



Natural gas

Residential and small professional consumers

(1) In comparison with the situation observed in January 2023, the most notable difference in the gas bill for residential and small professional consumers is a significant decrease in commodity prices across all regions and countries. Additionally, the price cap mechanisms that were previously in place in some countries are no longer active. While the commodity cost remains the primary component of the natural gas bill for most countries, its importance has decreased due to the drop in prices observed. However, for G-RES in the UK, the share of commodity cost has remained relatively unchanged (73% observed in January 2024 compared to 74% one year earlier) as the decrease in commodity cost observed elsewhere is not visible here. As a result of lower commodity prices, the role of other cost components and network costs has become more significant in all countries under review. Additionally, it is worth noting that the other costs component has seen an increase in most regions and countries under review. This can be attributed to higher tax and levy rates that are included under the other costs component. This increase, combined with lower commodity prices, has for example made the other costs component the most important in the Netherlands for both G-RES and G-PRO, with respective shares of 42% and 63%. Due to these high other costs, the Netherlands remains by far the most expensive country for both profiles.

(2) There are some regional differences in Belgium that have an impact on the competitiveness of the Belgian regions compared to each other, but also when comparing to the other countries under review. Belgium is the most competitive country for G-PRO and G-RES. When looking at G-RES, we see that Flanders is the most competitive region followed by Brussels in second place and Wallonia is in third. A same trend can be observed for G-PRO. The regional differences observed are the result of larger network costs in Wallonia and higher regional all other costs in Wallonia and Brussels.

(3) To further compare the two residential and small professional consumers, we must look at the price they pay per MWh. We see that the professional consumers pay less per MWh in all countries and regions under review. The reason behind this is twofold. First the absence of VAT for the professional consumers helps to mechanically reduce the total invoice price. Second, we also see that the commodity and network costs per MWh are also lower for professional consumers.

Industrial consumers

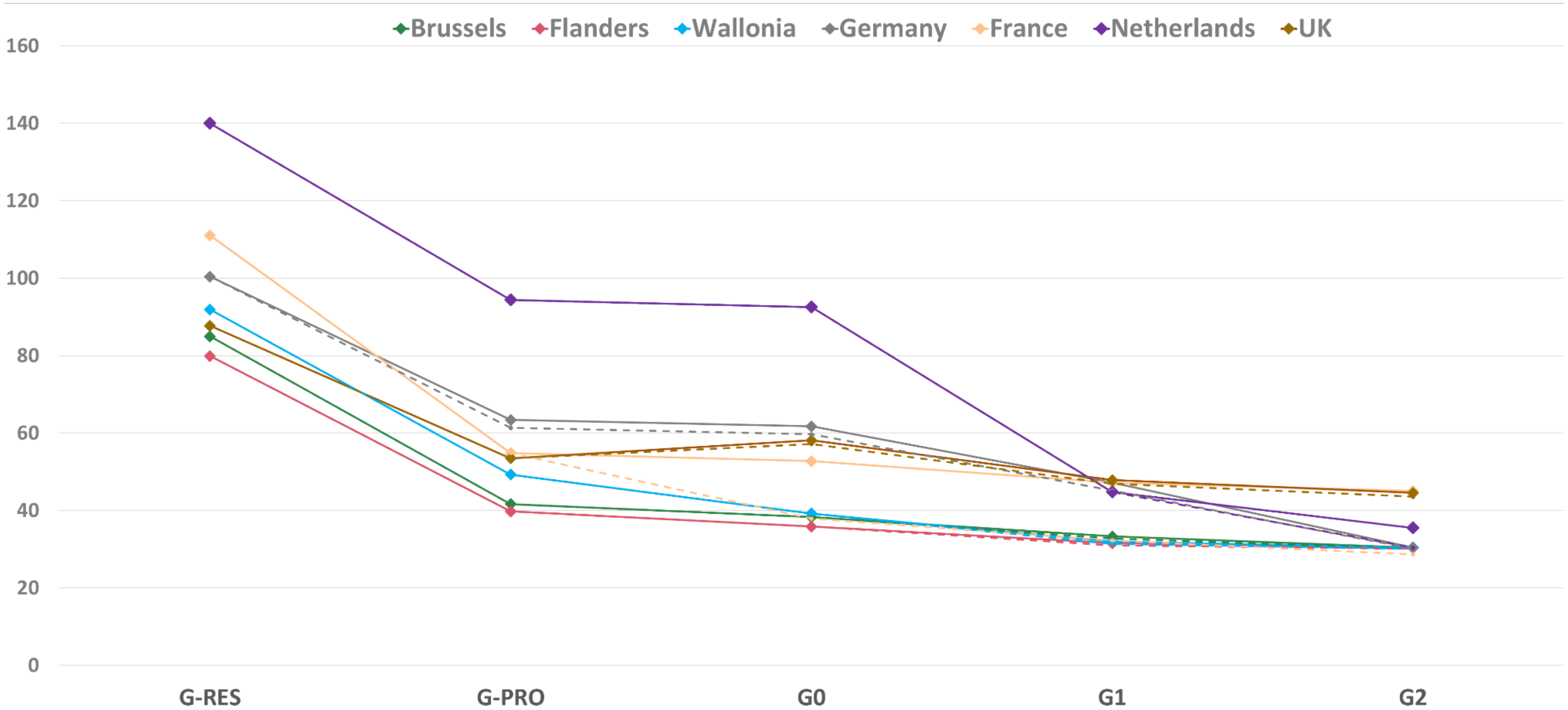
(1) The commodity component for industrial natural gas consumers has also significantly decreased in comparison with the situation observed last year, similarly to what is observed for residential profiles. The differences in commodity costs across regions and countries are relatively small, with France being slightly cheaper and the UK slightly more expensive. In Belgium, the differences between regions are smaller compared to electricity, especially for G1 and G2 where the difference is almost negligible. Flanders is the least expensive region in Belgium for all industrial profiles and also the cheapest region of all regions/countries under review for G0 and G1. When considering the minimum range, France remains the cheapest country among all regions and countries under review for G2 profile. Additionally, in the Netherlands, the "all other costs" component makes up around 60% of the invoice for G0, but this cost decreases significantly for G1 and G2 profiles.

(2) The differences between the G0, G1 and G2 profiles are very small. There is some variation regarding the competitiveness of the regions, Belgium being the most competitive one for the smaller profiles (G0 and G1), and the Netherlands and France being more competitive for G2 profiles when taking into account the minimum amount that can be paid. The application of the ranges of the all other costs is crucial in determining the competitiveness of the region. For the G2 profile, the UK and Germany are however clearly the least competitive, even when the minimum ranges are taken into consideration.

Summary

Similarly to what was displayed for electricity, the figure below depicts the global trend followed by natural gas yearly bills once considered across all countries and regions simultaneously. Solid lines represent unique or maximum prices, whereas dashed lines represent minimum prices.

Figure 89: Natural gas yearly bill in EUR/MWh per profile



As for electricity, an overall decreasing trend can be observed in this figure, implying a bigger natural gas cost burden for small consumers compared to larger ones: as a general rule, the smaller the profile the higher the cost per unit of natural gas consumed. The only (minor) exception being the UK, whre the G0 profile pays a slightly higher fare than G-PRO one. All countries under review do offer reductions and/or exemptions for profile G2: if less clear than for electricity, consumers not benefitting from these reductions and exemptions may bear the financial costs to ensure lower prices for consumers eligible to these reductions and exemptions (i.e. feedstock consumers) – yet in a less pronounced fashion. Germany is the only country to offer different pricing options for all professional consumers, while France starts from G0 profile onwards and Belgium allows since 2022 for G1 and G2 profiles to be exempted from the federal excise duty. (In the case of Belgium, this is however almost imperceptible at the scale of this figure)

Competitiveness score

Throughout this report, we addressed complex situations with a lot of nuances that we intend to present in a simplified manner. For this reason, we have drawn up competitiveness scorecards that give a clearer representation of how competitive Belgium/Brussels/Flanders/Wallonia is, regarding a certain profile, compared to neighbouring countries/regions.

Methodology

Results presented in this section were derived following two approaches: a national and a regional approach. The first method (national) compares figures obtained for Belgium with the other four countries from our study, namely Germany, France, the Netherlands and the UK. Belgian values were estimated by using the arithmetic average of all three Belgian regions. The second approach (regional) compares each Belgian region with the foreign regions and countries. While this leads Belgian regions to be compared with the same four countries previously mentioned for natural gas, seven countries and regions are used when it comes to electricity: Amprion (Germany), Tennet (Germany), Transnet BW (Germany), 50 Hertz (Germany), France, the Netherlands and the UK.

Electricity

Residential and small professional consumers

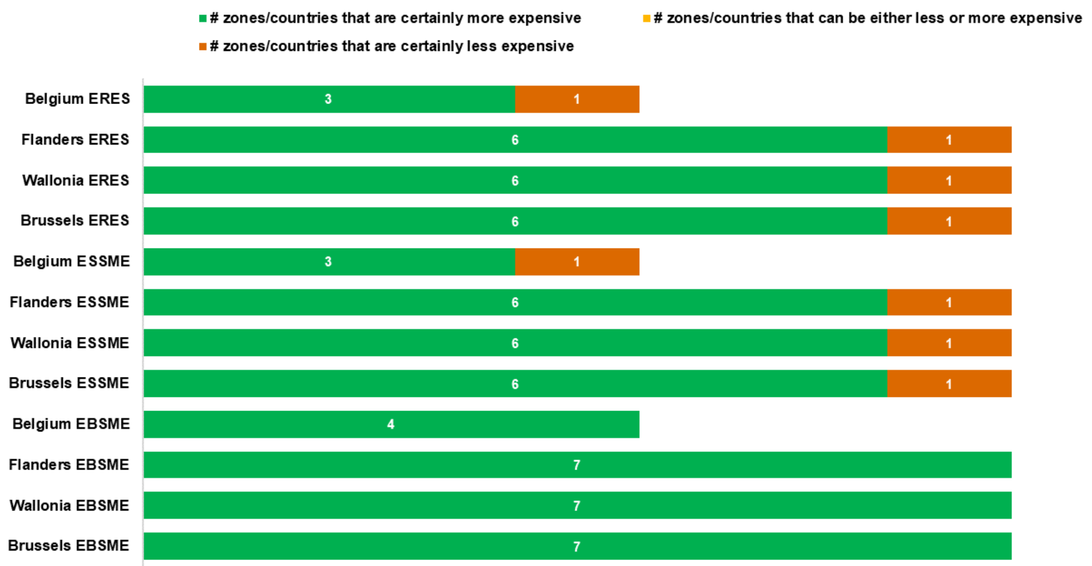
Firstly, we discuss the competitive position of the regions/countries for residential and small professional consumers under review. Before going more in-depth, we can already note that for the residential and small professional profiles the competitiveness of a region/country is clearly identifiable and does not depend on certain qualifications of the consumers as it can be seen under the industrial profiles.

On the national level, Belgium is very much competitive regarding the E-RES and E-SSME profiles, as only France is less expensive due to low levies and taxes overall. For E-RES to E-SSME profiles, the Brussels region has more competitivity issues with the Netherlands. As we move to the E-BSME profile, the competitiveness increases for the individual regions in Belgium as they mainly compete with each other rather than with neighbouring countries. In fact, the three regions have the lowest possible bills compared to their neighbours. This competitiveness in Belgium is due to lower commodity costs for industrials, and lower taxes and levies. Germany has the advantage potential reductions already, making it slightly competitive for France and the Netherlands.

On the regional level, the prices are more advantageous in Flanders, the cheapest Belgian region for E-RES and E-SSME due to lower commodity and network costs. For the E-BSME profile, the spread is very small across regions, though Flanders is the cheapest and Wallonia the most expensive, as opposed to 2023. Wallonia's higher network costs make the region the least competitive in Belgium regarding E-BSME.

Compared to 2023, Flanders, Wallonia and Brussels have become more competitive for all countries in scope. The only change is that the whole Germany country has become more expensive than all three regions of Belgium for E-BSME in 2024, which was not the case in 2023.

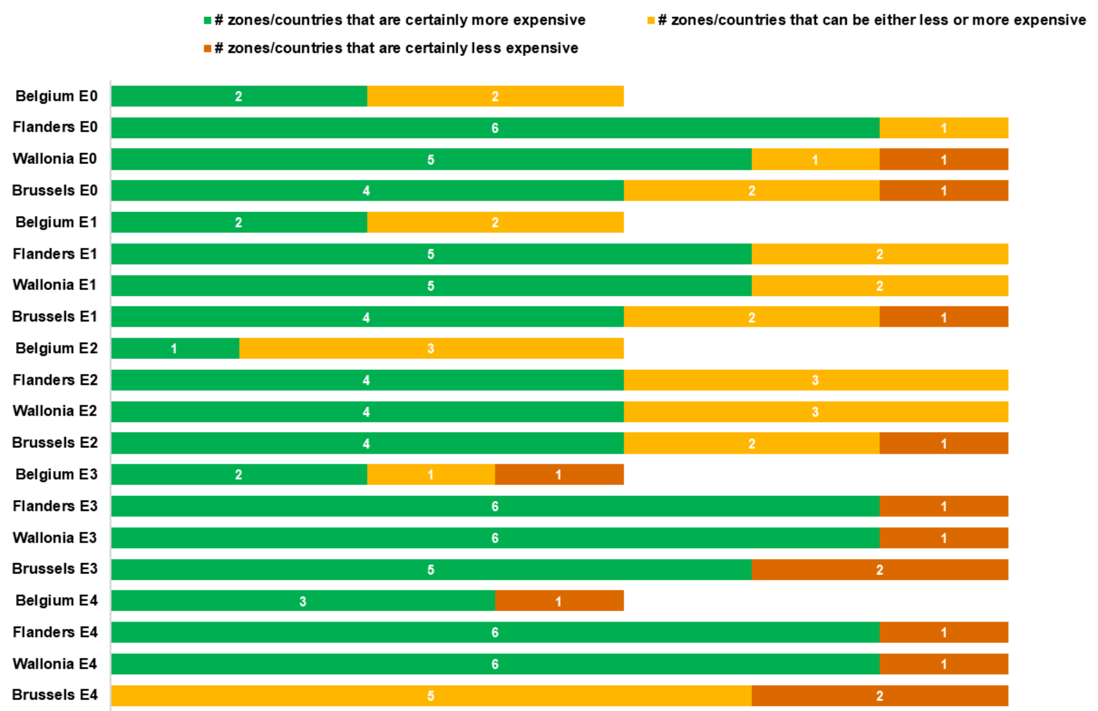
Figure 90: Competitiveness scorecard for residential and small professional electricity consumers (profile E-RES, E-SSME and E-BSME)



Large industrial consumers

Hereunder, we have set out the scorecards for every industrial profile (profiles E0 to E4), which gives an overall overview but also a specific one for electro- and non-electro-intensive consumers. The competitive position is more complex to grasp for our industrial profiles, compared to the residential and small professional profiles, the competitiveness of a region/country cannot always be determined in a binary approach (certainly less or more expensive). Comparing the scorecards of the industrial profiles we see that the complexity mainly stems from the electro-intensive consumers where there are different reductions to consider.

Figure 91: Competitiveness scorecard for industrial electricity consumers (profiles E0 – E4)



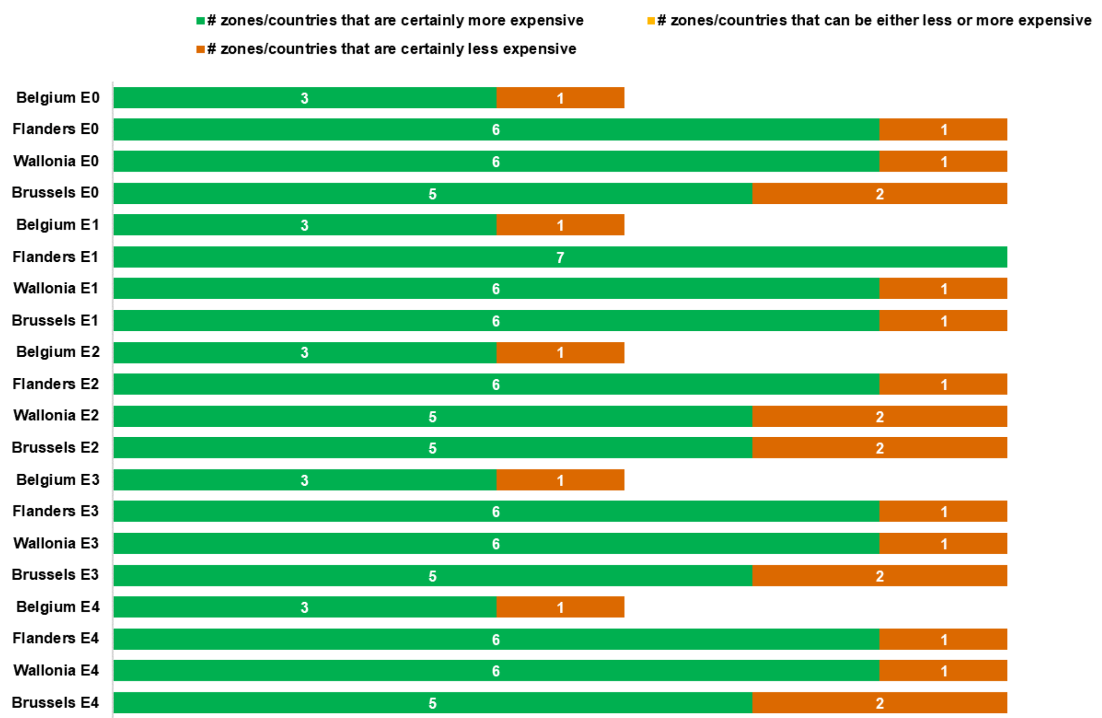
Before going into detail of the first figure, we note that Belgium as a whole and each of its regions are always cheaper than Germany for E0 to E2 profiles. For E3 and E4 profiles, it becomes less clear to distinguish the competitiveness of the country as a whole compared to the other countries. Another general observation we can make is that Flanders is the most competitive region of the country, though Wallonia is as close to Flanders as could possibly be for E3 and E4 profiles. France is always more competitive than Belgium and its most competitive region (Flanders) for E3 and E4 profiles. It provides with certainty more prices for E0, E3 and E4 profiles.

Given the large number of countries/regions that can be either less or more expensive, it is difficult to draw conclusions based on the previous figure: therefore, we also present scorecards that detail the competitive position of Belgium and its regions for non-electro-intensive and electro-intensive consumers. We firstly analyse the competitive situation for the non-electro-intensive consumers.

Since there are no ranges for non-electro-intensive consumers, the competitive position of each region and country is much clearer. In general, the higher the consumption profile, the more competitive Belgium is, and particularly its regions of Flanders and Wallonia for non-electro intensives. For Brussels, the larger the profile, the more uncertainty and the least competitive the region is. This is due to the lack of incentives for large companies to land in Brussels, as the all other costs components remains high. The main reason for it is the low presence of industries in Brussels, hence the low number of mechanisms allowing them to lower the electricity costs. On the international level, France is less expensive than Flanders for the E3 and E4 profiles due to the ARENH mechanism lowering the commodity costs. While Germany lags behind for E0 to E2 profiles, it offers much lower network costs for large industrials, and thus makes the competitive landscape less clear for Brussels, the Netherlands and the UK, as these regions/countries seem to be on par. The determining factor of competitiveness remains the all other costs.

When comparing the scorecard on industrial non-electro intensive consumers from 2024 with the one from 2023 we notice that the competitive position of Belgium and its regions changed. For all of Belgium's region, the competitiveness has increased compared to the neighbours (except for Brussels E3 and E4 profiles which have stabilised). For E3, we notice that the competitiveness of Belgium and its regions improves due to low base network and all other costs. While other countries offer incentives for electro-intensive companies, Belgium has a low base network costs and all other costs, which offers less flexibility, but has the advantage of providing more incentives to non-electro intensive profiles, which would not benefit from reductions and exemptions abroad.

Figure 92: Competitiveness scorecard for industrial non-electro-intensive consumers (profiles E0 – E4)

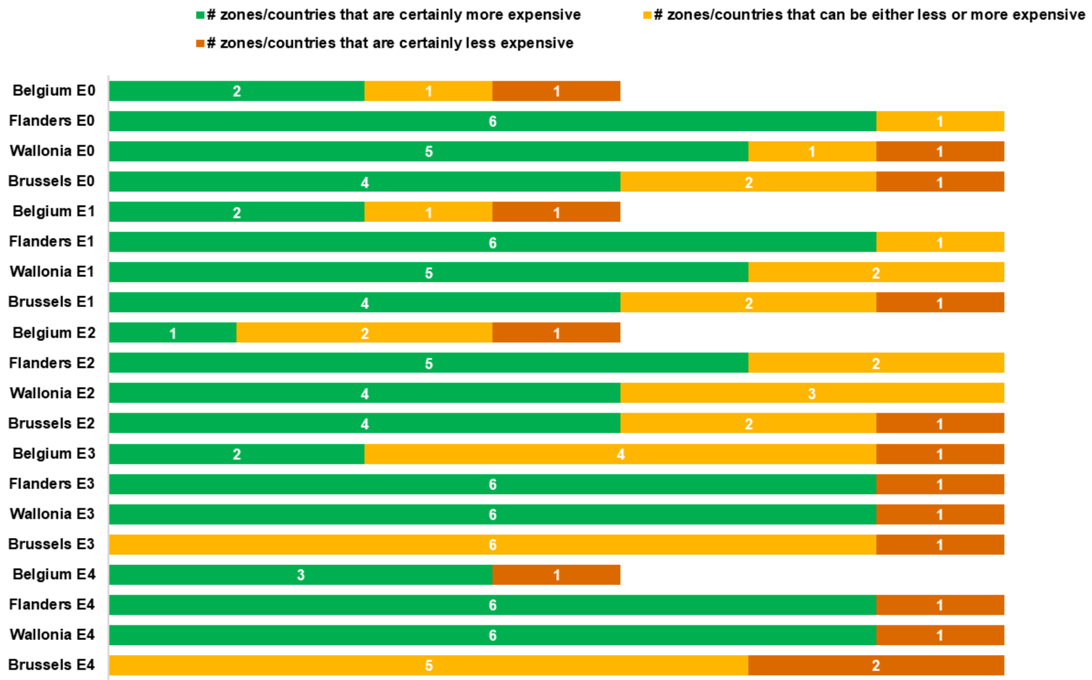


As we noted before, the complexity and ambiguity of the competitive position of Belgium and its regions is mainly because of the potential reductions for electro-intensive consumers. The country that is certainly more expensive is Germany, similar to the general scorecards. Regarding the UK, as it offers a wide range of potential reduction, it heavily depends on the eligibility of companies. If they are eligible, the UK becomes very competitive for the E0 to E2 profiles, but less for the E3 and E4 profiles, except for Brussels where it is a threat. This is due to a higher commodity component, taking a bigger part in the total invoice as the consumption profiles get larger. As for the E3 profile, a shift occurs and France becomes much more competitive, overtaking a tensed situation between Belgium and France and becoming the cheapest on the market. The Netherlands is cheaper for E0-E2, as it allows for substantial reductions. However, the steep increase in grid fees and the suppression of the volume correction in 2024 leads to a high network costs. Thus, decreasing its competitivity for larger E3 and E4 profiles.

Within Belgium, we notice that the competitive position of Flanders regarding electro-intensive consumers is better than Wallonia and Brussels until the E2 profile. For the E3 and E4, Wallonia and Flanders are neck-to-neck, due to similar costs structures, and the only differentiator being regional incentives. We also note that the reductions measures, alleviating the all other costs component, in Flanders make the electro-intensity range larger, offering a possibility for end-consumers to benefit from lower costs than in the other regions. Although, for most profiles Flanders and Wallonia have competitive prices, there is in some instances uncertainty regarding their competitive position, due to a lower electro-intensity range than the Netherlands, the UK or Germany, mainly for smaller industrial profiles.

When comparing the scorecard on industrial electro intensive consumers from 2024 with 2024, we notice that the competitive position of Belgium and its regions did improve.

Figure 93: Competitiveness scorecard for industrial electro-intensive consumers (profile E0 – E4)



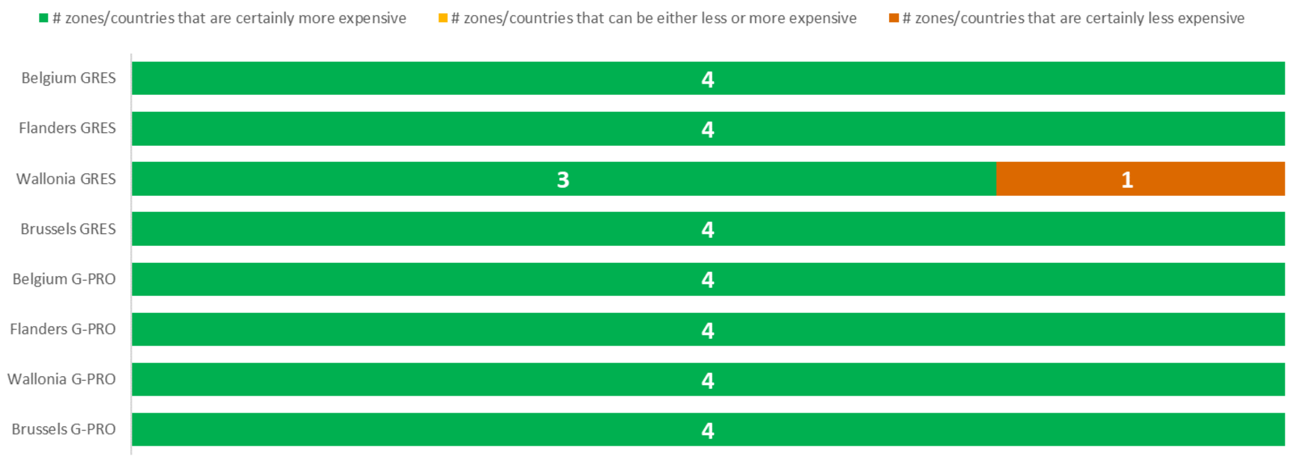
Natural Gas

Residential and small professional consumers

Figure 94 shows Belgium's competitiveness regarding natural gas. Belgium is the cheapest country with regards to the G-RES – and G-PRO profile. On a regional level, for G-RES and G-PRO, Flanders is more competitive than the other Belgian regions. In addition, Flanders is also more competitive than all other countries considered for both profiles. Wallonia is clearly the most expensive Belgian region, but still only less competitive than the UK for G-RES profiles.

With the help of this scorecard, we can conclude that the competitive position of Belgium for G-PRO improved since 2023, but slightly decreased for G-RES in 2024.

Figure 94: Competitiveness scorecard for residential and small professional natural gas consumers (profile G-RES and G-PRO)

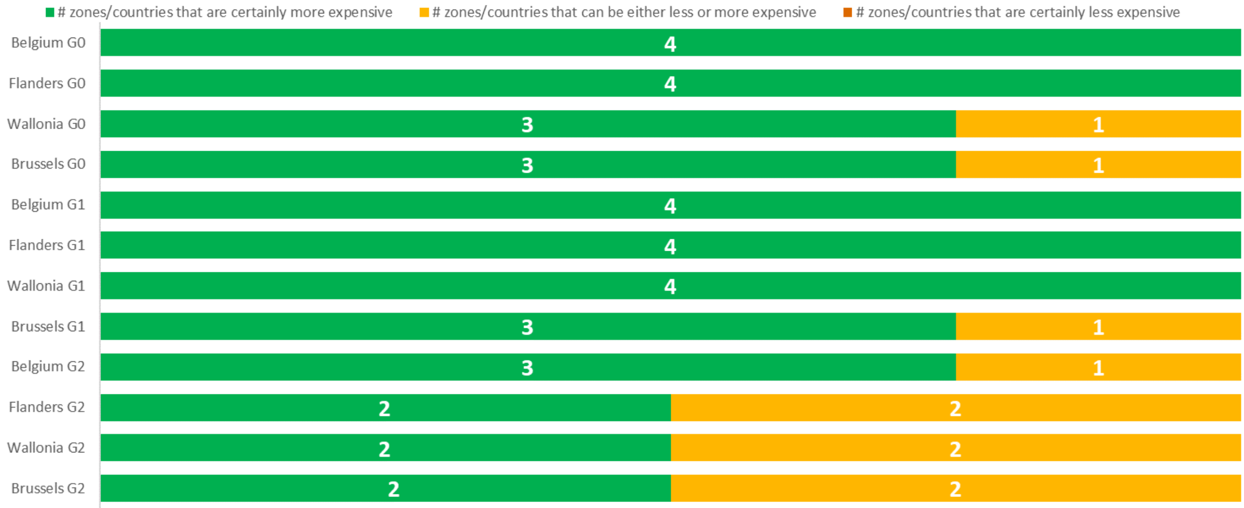


Large industrial consumers

Belgium and its regions demonstrate competitiveness across all industrial profiles compared to the other countries being reviewed. Belgium, especially Flanders, is particularly competitive for profiles G0 and G1. Wallonia is cheaper than Brussels for G1, but when it comes to G0 and by a small margin for G2, Brussels emerges as the more competitive option between the two regions. It is worth noting that the difference in competitiveness among the three regions is almost negligible for G2.

In 2023, France was the most affordable country for all industrial profiles when considering the minimum range, although in 2024 this is only valid for the G2 profile. Belgium now also demonstrates good competitiveness for profiles G0 and G1, emerging as the most competitive country under review. However, for profile G2, France may surpass Belgium in terms of competitiveness, particularly when considering the minimum range.

Figure 95: Competitiveness scorecard for industrial natural gas consumers (profile G0 – G2)



The tax burden for electricity and natural gas consumers

When presenting the results, the importance of the third component (all other costs) was already set forward. It is thus interesting to compare the variations of this component across countries and for all consumers and particularly, its evolution because of reductions.

Electricity

Residential and small professional consumers

The all other costs component bears a significant importance on residential and small professional consumers' bills, and great variances can be observed across regions/countries. The general trend seems to indicate that the larger the consumer, the lower the tax rate. If reductions apply in certain countries (Belgium, France, Germany and the Netherlands), they are granted based on criteria directly related to consumers' annual offtakes or the nature of professional consumer's activity.

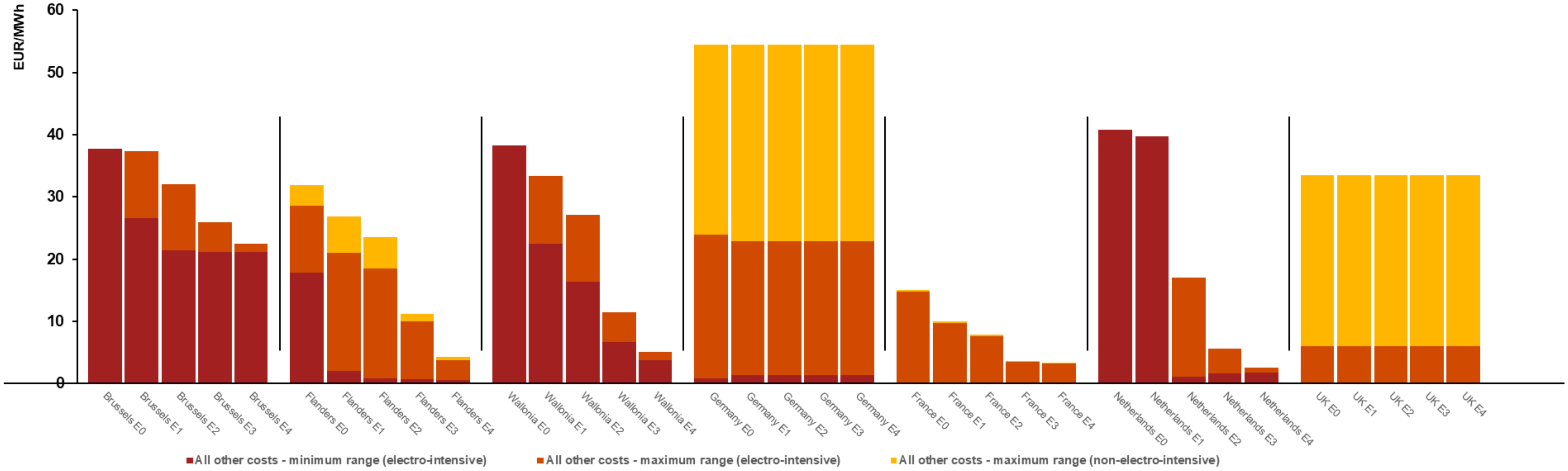
Large industrial consumers

It was observed that depending on the countries' tax regimes, electro-intensive and non-electro-intensive consumers could be charged differently. This differentiation entails competitive (dis)advantages across regions/countries when they introduced electro-intensity criteria to lower industrial consumers' tax burden. It is thus interesting to compare the variations of this component across regions/countries from our studied panel.

In the figure below, the full red bars represent the minimum amount of taxes that each consumer profile must pay in the specific country/region. The full orange bar indicates the minimum-maximum cost range where different options are possible. Lastly, there is a yellow bar which represents the difference between the minimum and maximum cost for non-electro intensive consumers. This last bar is only applicable in Flanders, Germany, France and the UK.

For this 2024 update, we also added a maximum range for Brussels and Wallonia for profiles E1 – E4, since an exemption is available for the federal excise duty. For the sake of readability of the figure below, we considered the minimum, red bar in the figure below, the amount of all other costs without the excise duty, for the three Belgian regions. We included the full amount of the excise in the electro intensive range so that it is also included in the minimum for non-electro intensive profiles.

Figure 96: Variance of the all other costs component in EUR/MWh (profile E0 - E4)



Firstly, we observe that the component is different in all Belgian regions and that only Flanders displays variable prices between non-electro- and electro-intensive consumers, while the three Belgian regions are all impacted by the exemption on the federal excise duty in the same way for E1 – E4 profiles. While the extent of the reductions differs, we see a decreasing trend across all countries/regions, namely that the larger the consumption, the lower the tax burden. For the UK and Germany, this does not seem to be true. Indeed, the all other costs component does not vary between profiles as no specific threshold depends on the consumption level. This explains, among others, the less competitive position of the UK and Germany compared to all other regions/countries under review on that component. We also observe a shift towards electro-intensity criteria regarding the allocation of the tax burden, namely in Belgium, Germany and France. The higher competitiveness of Flanders compared to the other Belgian regions results from this shift made by the region when implementing the cap on the costs related to the green certificate and CHCP quota. In Germany, qualifying as an electro-intensive consumer significantly lowers the importance of the component in the total electricity cost. If France remains quite high for non-electro-intensive consumers, German's fares might indicate that non-electro-intensive consumers could finance the cost of reductions granted to electro-intensive consumers as the taxes soar to a maximum that is more than 4 times greater than for electro-intensive consumers.

Belgian federal and regional authorities mainly grant reductions and/or exemptions on taxes, levies and certificate schemes based on the level of electricity offtake, and not on the level of electro-intensity of an industrial consumer, except in Flanders with the cap on the financing of renewable energy and at the federal level with exemptions of the special excise duty[377]. This could entail that Wallonia and Brussels' taxes, but also federal taxes, favour consumers that are not particularly affected by a lack of competitiveness of electricity prices given the lower prices they benefit from in comparison with other countries, while consumers that are more at risk suffer from significant disadvantage compared to their electro-intensive counterparts in neighbouring countries. For Brussels, this must be nuanced as it is a very urban region where the number of large industrial consumers is limited.

In Belgium, delving further into this component composition highlights that for Brussels and Wallonia, the cost of regional green certificates is the top-most tax component – apart from profile E4 in Brussels.[378] This is also the case for Flanders if we consider the non-electro-intensive consumers. This tends to emphasise that regional strategies largely support the financing of renewable energies through taxes included in the electricity bill. In Brussels the "levy for occupying road network" is one of the two most important components for profile E3 and E4.

Natural gas

Residential and small professional consumers

As it was the case for electricity, the all other costs component bears a significant importance on residential and small professional consumers' bills, and great variances can be observed across regions/countries. For natural gas too, the general trend seems to indicate that the larger the consumer, the lower the tax rate. If reductions apply in certain countries, they are granted based on criteria directly related to consumers' annual offtakes or the nature of professional consumer's activity.

Large industrial consumers

Tax rates imposed on industrial consumption of natural gas are relatively low. If reductions and exemptions may be granted on taxes, one can observe that taxes are less numerous, and conditions of applications are less complex.

[377] In Flanders, the compensation for the indirect CO2 emissions is eligible for consumers belonging to electro-intensive industries. However, this mechanism and similar emissions compensation schemes existing in other countries were not part of this study.

[378] See 5.1 Electricity: Detailed description of the prices, price components and assumptions Belgium Component 3 – all other costs (p.162)

Impact of reductions on network costs

Electricity

When presenting the results of the electricity and natural gas costs, it was observed that network costs are quite small for the largest industrial profiles but might play a significant role when comparing the overall competitiveness of a country/region. As such, we detail below the importance reductions on network costs may have for countries.

Residential and small professional consumers

There is no reduction in force on network costs for electricity residential and small professional consumers.

Large industrial consumers

The figures below set out the reductions that can be granted in the regions/countries under the review and which might affect their global competitiveness. The dark orange bar represents the full transmission tariff while the yellow bar represents the transmission tariffs after reductions.

Belgium, the Netherlands and the UK do not offer any reduction on the network cost component, but in the other countries under review, large baseload consumers such as E3 and E4 from this study can benefit from a transmission tariff reduction up to 80% (Germany). It should be clear from the figures below that these reductions have a significant impact on the network costs eventually paid by industrial consumers. A change compared to 2023 is the discontinuation of the volume correction in the Netherlands, that E3 and E4 profiles benefitted up from 2023. This explains the sudden increase in network costs in the Netherlands between 2023 and 2024.

Figure 97: Network costs reduction in EUR/MWh (profile E3)

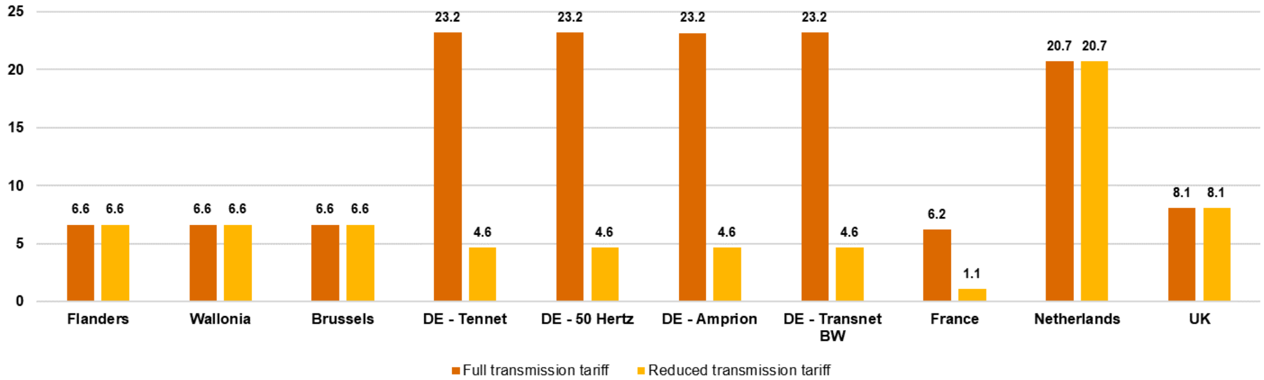
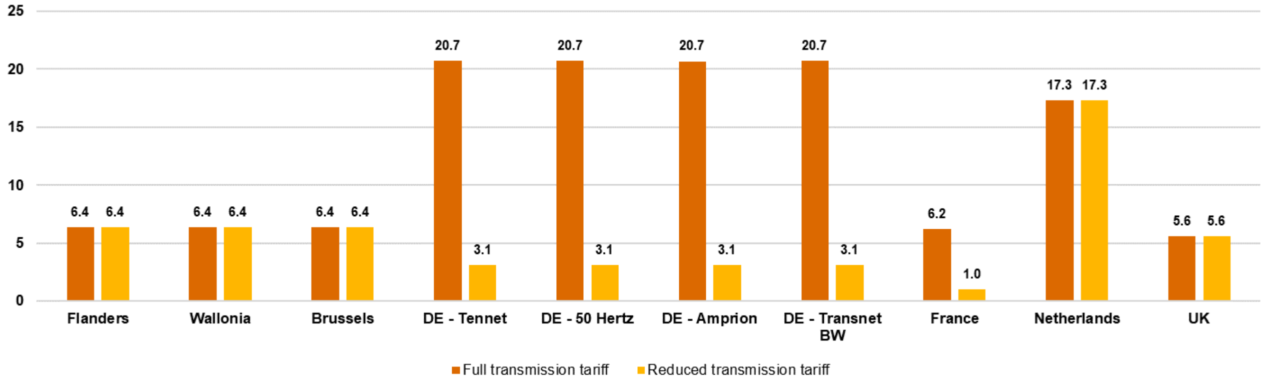


Figure 98: Network costs reduction in EUR/MWh (profile E4)



The reductions in Germany and France must be financed. This is done differently in both countries. While France compensates these reductions with the transmission tariff itself (through regulatory accounts, for instance), Germany created a separate levy (the “StromNEV §19- Umlage”) to pay for the reduction. This levy is due by all consumers, but the large consumer profiles benefit from a large reduction. We can, therefore, state that high transmission tariffs in Germany are not the consequence of the reductions, but rather the cause. This reduction also explains the higher competitiveness of Germany when it comes to larger consumers.

Natural gas

There exists no reduction for natural gas’ network costs for residential, small professional consumers and industrial consumers as identified by this study.

8. Comparison of social measures for residential consumers

8. Comparison of social measures for residential consumers

Impact of social measures

For all countries under review, we provide an extensive analysis of social measures that were implemented to financially support households that are exposed to energy poverty, which develops "as a result of energy-inefficient buildings and appliances, high energy expenditures, low household incomes and specific household needs"[379]. Depending on the country, the concept varies but globally targets households with difficulties to afford their energy bills. As social measures are most frequently designed to tackle energy as a whole, we consider financial measures applying as such, and therefore including both electricity and natural gas. This chapter explores the impact of potential reductions on total energy bills for residential consumers (E-RES and G-RES) across countries and regions under review.

Methodology

As this exercise is based on the assessed energy bills from this study, it is important to mention that the objective of this task is not to reflect real consumer profiles. The residential profiles (3,500 kWh of electricity and 17,000 kWh of natural gas) used in this study can be considered as "standard" consumption profiles for a 2 parents-family with 2 children. Figures reported with regards to the living income in this study therefore always refer to a four-members household including 2 adult parents and 2 children.

The cross-country comparison of social measures is based on a two-step approach:

(1) Extensive desk research is conducted to identify all the social measures that are offered to households by the countries in scope of this study to help coping with their energy bills. We also focus our analysis on the other social measures that can help a household composed of 2 adult parents and 2 children to increase its living wage. While measures are considered at national level in most countries, Belgium is a specific case were measures need to be assessed both at the federal and regional levels.

(2) The energy bills (including electricity and natural gas) are then weighted against the households' income to compare the households' energy effort rate across the different countries in scope of this study[380]. We make a distinction here between:

- Countries' effort rates compared to the average disposable income, housing costs excluded; and
- Countries' effort rates compared to a total living wage, by comparing the energy bill impact on average incomes and on low incomes households.

The approach followed this year is in line with the previous iteration of this report. As it was already the case in previous years' studies, we acknowledge that there is an inherent bias in the approach followed due to the fact that data relating to average household income in 2023 are not yet available for all the countries falling within the scope of the study. For this reason, we are therefore forced to compare the prices of electricity and natural gas paid by consumers in January 2024 to average household incomes for the year 2022 (the most recent year for which consolidated figures are available at the time of writing).

As the aim of this chapter is to compare the relative effort required by households to pay their energy bill, this bias does not prevent us from drawing robust conclusions regarding the positioning of each country in relation to its neighbours.

[379] (European Commission, 2020)

[380] In France, the ONPE defines the energy effort rate as the "share of total energy expenditure in the household's disposable income". (ONPE, 2020)

Identification of social measures and living income within studied countries

Belgium

Social measures

Residential consumers may benefit from several measures to lower their energy bills. The present section covers all social measures existing in Belgium while distinguishing common federal measures from specific regional ones. In Belgium, support for households mainly depends on the granting of a specific status: federal or regional protected consumer, which is broader. This status enables households to meet eligibility criteria to benefit from social measures.

Federal level - Belgium

<u>Social tariff</u>

The social tariff for electricity and/or natural gas is a reduced tariff reserved for specific categories of households. It corresponds to the lowest commercial tariff on the market[381], associated to the lowest distribution costs in the country, and is the same for all energy suppliers and distribution system operators. The price increase of social tariff for electricity is capped to 10% per quarter and to 20% compared to the average of the previous four quarters. The price increase of social tariff for natural gas is capped to 15% per quarter and to 25% compared to the average of the previous four quarters. As it is set every three months, we consider the social tariff in force for January 2024.

At the federal level, residential households that meet one of the following two conditions can be recognised as "**federal protected consumers**" and benefit from the social tariff:

- Be a residential end customer from category 1, 2A (Federal), 2B (Regional), 2C (Regional) or 3;
- Be the tenant of a social apartment (category 4).

These categories are described below:

- **Category 1**: households benefiting from one of the below allocations from the Public Social Welfare Centre (PSWC)[382]:
  - Social integration income;
  - Financial social assistance equivalent to the social integration income;
  - Social assistance partially or fully covered by the State;
  - An advance on the income guarantee for the elderly or a disabled person's allowance.
- **Category 2A (federal level)** : households benefiting from one of the below allocations from the FPS Social Security:
  - Allowance for the disabled people due to permanent work incapacity of 65%;
  - Income replacement allowance;
  - Social integration allowance;
  - Allowance for third party assistance.
- **Category 2B (regional level)** : households benefiting from one of the below allocations:
  - <u>Walloon Region:</u> allowance for assistance to the elderly, via the Agency for Quality Life (AVIQ);
  - <u>Brussels-Capital Region:</u> allowance for assistance to the elderly, via Iriscare ;
  - <u>German-speaking community:</u> allowance for assistance to the elderly, via FPS SS DGPH
  - <u>Flemish Region:</u> care budget for elderly people in need of care (formerly: allowance for assistance to the elderly) via the "Zorgkas".

[381] Only active products offered by energy suppliers having a market share of minimum 1% of the Belgian residential customers are considered. Grouped purchases and products offered by energy cooperatives are excluded. Only distribution zones with minimum 1% of the population are taken into account.

[382] Centre public d'action sociale (CPAS) / Openbaar Centrum voor Maatschappelijk Welzijn (OCMW)

- **Category 2C (regional level)**: households benefiting from one of the below allocations:
  - Walloon Region: an additional family allowance for children suffering from a physical or mental disability with a minimum score of 4 points in pillar 1 of the medico-social scale (recognition established by the AVIQ);
  - Brussels-Capital Region : an additional family allowance for children with a physical or mental disability with a minimum score of 4 points in pillar 1 of the medico-social scale (recognition established by Iriscare);
  - German-speaking community: an additional family allowance for children with a physical or mental disability with a minimum score of 4 points in pillar 1 of the medico-social scale (recognition established by the Dienststelle für Selbstbestimmtes Leben);
  - Flemish Region: via "Opgroeien, team Zorgtoeslagevaluatie", a care supplement for children with specific support needs with a minimum score of 4 points in pillar 1 of the medico-social scale.
- **Category 3**: households benefiting from one of the below allocations from the Federal Pension Service:
  - Income guarantee for the elderly (GRAPA/IGO);
  - Allowance for assistance to the elderly;
  - Allowance for the disabled due to permanent work incapacity of 65%;
  - Allowance for assistance from a third party.
- **Category 4** (only for natural gas): households are tenants of a social apartment whose natural gas heating depends on a collective installation, in a building managed by:
  - A social housing corporation;
  - Regional housing corporations;
  - Social housing companies approved by the regional governments (Vlaamse Woningfonds, Fonds du Logement des Familles nombreuses de Wallonie, Fonds du Logement de la Région de Bruxelles-Capitale)
  - Public Social Welfare Centre.

Since July 1st 2023, according to the Law of March 19th 2023 reforming taxes on the energy bill[383], **residential protected customers** have been subject to the federal excise duty on electricity and natural gas as defined in art 429 § 2 of the law from 27th December 2004.[384] They are however granted a lower rate than non-protected customers. (e.g. 2.77 EUR/MWh vs 8.23 EUR/MWh for the first slice 0-12 MWh/year)

End of the temporary measures to offset the rise in energy prices:

Between October 2021 and December 2022, the federal government took a series of temporary measures to offset the rise in energy prices and reduce household energy bills that are now discontinued.[385]

VAT on electricity and natural gas bills permanently lowered from 21% to 6%

In February 2022, the Belgian Federal government agreed on a temporary reduction to the VAT from 21% to 6% for residential consumers on electricity for the months of March until September, and in mid-March it was decided to extend that measure to natural gas from April until September included. However, for technical and organisational reasons, those measures were only applied to monthly bills from April 2022 for both electricity and natural gas. The energy crisis continuing, those measures were extended a first time until end of 2022 and then until 31 March 2023. [386] Since 1 April 2023, the VAT on electricity and natural gas has been permanently fixed at 6%[387].

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[383] (FEDERALE OVERHEIDSDIENST FINANCIEN, n.d.)

[384] (Chancellerie du Premier Ministre, n.d.)

[385] The following measures which were still applicable in last year's study are now terminated :
- The two basic packages for gas (270 euros and 405 euros);
- The two basic packages for electricity (122 euros and 183 euros);
- The extension of the social tariff to beneficiaries of the increased intervention from February 1st 2021 to June 30th 2023;
- The granting of a 'heating bonus' of 100 euros net to holders of a residential electricity contract;
- The granting of a single lump sum of 80 euros to federal protected customers to help the most precarious households.

(SPF Economie, 2024)

[386] (Energyprice.be, 2023)

[387] (FEDERALE OVERHEIDSDIENST FINANCIEN, n.d.)

Regional level - Brussels

The granting of ***regional protected customer status*** is a regional provision aimed at protecting vulnerable people who are in default of payment. In Brussels, anyone in an overdue situation (reminder stage, formal notice) with their gas and/or electricity supplier can apply for regional protected customer status. To be granted this status, an application must be made to the CPAS, Brugel or Sibelga. There is an exception in the case of households that are entitled to the federal social tariff and are in default with their commercial supplier (cf. Order of 17 March 2022). The latter are automatically transferred to Sibelga 60 days after the aforementioned formal notice is sent. This semi-automation applies if the people concerned have received a formal notice and owe more than €150 for an electricity or gas bill, or more than €250 for a single bill for both sources of energy.

Regardless of the channel through which the request is made, households must be committed to a process of clearance/mediation of the existing energy debt and must not exceed a certain income ceiling. At CPAS level, they must not be the subject of a social investigation.

The status is valid for 5 years and the conditions of eligibility are reviewed every 2 years. However, it ends as soon as the debt is paid. The person/household then returns to his commercial supplier, because during the protection period, SIBELGA becomes their social supplier.

If you receive the following regional allocations, you can also benefit from the federal social tariff (category 2B and 2C[388]):

- Allocation for the elderly (IRISCARE)
- Additional family allowance for children with a physical or mental disability with a minimum score of 4 points in pillar 1 of the medical-social scale.

Besides the reduced tariff, households do not pay any rental charges on electricity and/or natural gas meters.

The social tariff granted to additional regional categories – in comparison with federal categories – is financed by DSOs PSO’s tariffs.

Regional level - Flanders

In Flanders, residential households can only be recognised under the **federal protected consumer** status as no additional regional categories of consumers exist to benefit from the social tariff.

However, if you receive the following regional allocations, you can also benefit from the federal social tariff (category 2B and 2C[389]):

- A care budget for older people in need of care (Zorgkas)
- Additional family allowance for children with a physical or mental disability with a minimum score of 4 points in pillar 1 of the medical-social scale.

[388] Categories considered for social tariffs, (CREG, 2024)
[389] ibid

Besides that, households facing financial difficulties may be granted the below-listed measures:

Table 130: Flanders social measures

Flanders Social Measures		
Measures	**Explanation**	**Eligibility criteria/Conditions of application**
Pre-paid meters[390]	Meter that works as a conventional meter but with a prepayment function. The consumer is either subject to the maximum social tariff or a fixed price (average price of commercial suppliers).	Such meter is placed when: • Fluvius is the energy supplier, and consumer is in payment default.391 • DSO becomes an energy supplier as a commercial supplier terminates the contract due to payment default, and consumer does not have a new supplier after 45 days. Minimum energy supply for pre-paid meters: • Electricity: pre-paid meters for electricity are equipped with a 10 Ampere function that switches on when all credit (including emergency credit) has been used. This function can, however, be switched off when a household fails to charge his meter for a certain amount of time. • Natural gas: during the winter months (1/11 – 31/03), PSWCs can be asked for financial help to have a minimum natural gas supply. The decision to grant financial help is discretionary to each PSWC and based on a review of each applicant's profile. If granted, financial help is provided every two weeks, and the extent of the help depends on the consumer status (protected customer or not) and house. Emergency credit: Every consumer of a pre-paid meter is awarded an emergency credit. The amount of this credit is determined as following:[392] • Normal emergency credit: EUR 75 for both energy types • Temporary increase: between July 2023 and June 2024, the amount has been raised to EUR 110 for both electricity and natural gas • An additional increase in emergency credit for natural gas between 1/7/23 and 30/6/24 => EUR 110.
Payment plan	A payment plan can be planned when a household faces financial issues to pay for its electricity and/or natural gas bills.	Such a mechanism can be activated either: • Upon household's demand; • Upon the supplier's initiative in the event of formal notice following the non-payment of an invoice. As the payment plan depends on each household's situation, this social measure is presented in this study in a qualitative manner.
Payment exemptions	Consumers recognised as federal protected consumers are exempted from paying the: • Bijdrage energiefonds (or Energieheffing)[393]; • Costs related to reminders or notices of default.	Meeting federal protected consumers conditions.

[390] (Vlaamse overheid, 2020)

[391] This changed from the 1st July 2022. From then on, the prepayment function will be activated in the distribution for electricity for everyone who contacts the DSO directly.

[392] Energiebesluit (Art.3.1, §5 and 5.4.1, §6)

[393] (Vlaamse Overheid, 2020)

Regional level - Wallonia

Wallonia may grant a "**regional protected consumer**" status to households which are in:

- Educational guidance of a financial nature from the PSWC;
- Debt mediation with a PSWC or an approved debt mediation centre;
- Collective debt settlement.

Furthermore, if you receive the following regional allocations, you can also benefit from the federal social tariff (category 2B and 2C[394]):

- A care budget for older people in need of care (AVIQ)
- Additional family allowance for children with a physical or mental disability with a minimum score of 4 points in pillar 1 of the medical-social scale.

Table 131: Wallonia social measures

Walloon Social Measures		
Measures	**Explanation**	**Eligibility criteria/Conditions of application**
Social tariff	The social tariff for electricity and/or natural gas is a reduced tariff reserved for specific categories of households. It has the lowest commercial tariff on the market associated to the lowest distribution costs of the country, and is the same for all energy suppliers and distribution system operators. The price increase of social tariff for electricity is capped to 10% per quarter and to 20% on an annual basis. The price increase of social tariff for natural gas is capped to 15% per quarter and to 25% on an annual basis. As it is set every three months, we consider the social tariff in force for January 2024. In addition to the reduced tariff, households do not pay any rental charges on electricity and/or natural gas meters. The social tariff granted to additional regional categories – in comparison with federal categories – is financed by DSOs PSO's tariffs.	Federal and regional protected consumers can benefit from the social tariff. For regional protected consumers, social tariff can only be granted if they are supplied by the DSO.
Pre-paid meters	Meter that works as a conventional meter with a prepayment function. The prepayment meter is free of charge if requested by the PSWC or in case of a move if the consumer had a prepayment meter in his former place. Pre-paid meters placement costs are free for: • Unprotected consumers with payment default from 100 euros (electricity) or 150 euros (natural gas). • Federal or regional protected consumers.	Such meter is placed: • Upon any consumer's demand; • Upon PSWC's demand; • Upon supplier's demand in case of payment default from 100 euros (electricity) or 150 euros (natural gas). Federal or regional protected consumers who have pre-paid meters: • Are directly provided in electricity and natural gas by their DSO; • Are provided with meters equipped with a power limiter (only for electricity) to ensure a minimum supply. The guaranteed minimum supply is only activated at the request of the PSWC; • Can receive financial assistance to recharge their natural gas budget meter during the winter period if they encounter payment difficulties. The decision to grant winter assistance is overseen by the local energy commission.

[394] Categories considered for social tariffs, (FOD Economie, n.d.)

Payment plan	A payment plan can be planned when a household faces financial issues to pay for its electricity and/or natural gas bills.	Such a mechanism can be activated either: • Upon household's demand; • Upon the supplier's initiative in the event of formal notice following the non-payment of an invoice. The supplier must propose a reasonable payment plan to his customer and inform him that he can benefit from the assistance of the PSWC in his negotiation. The collection procedure is suspended if a reasonable payment plan is concluded or until the PSWC can make a socio-budgetary analysis of the customer and intervene, if necessary, in the payment of the customer's debt. No fee can be claimed for a reasonable payment plan. Furthermore, a limit is set on the collection costs that can be claimed by suppliers from customers under the non-payment procedure[395]. As the payment plan depends on each household's situation, this social measure is presented in this study in a qualitative manner.

Disposable income and living wage

According to Eurostat, Belgium's ***gross adjusted disposable income corrected for PPP*** for 2022 reached 29,684 EUR[396]. This value is used to weigh energy's relative share in a residential consumer's income. From the latter, 18.0% are dedicated to housing[397] that is deducted, resulting in a corrected gross disposable income of 24,341 EUR for all three Belgian regions.

In Belgium, the living wage ("revenu d'intégration") is under the responsibility of PCSWs. They may grant such revenues to low-income people that meet all the following conditions:

(1) The person must be of Belgian nationality or:
   a. a European citizen (or a family member with European nationality), and have the right of residence for more than three months;
   b. a foreigner registered in the population register;
   c. a recognized refugee;
   d. a stateless person;

(2) The person must live in Belgium and be legally resident;

(3) The person must be of legal age (18) or:
   a. a minor emancipated by marriage;
   b. an unmarried minor who is responsible for one or more children;
   c. a minor who is pregnant;

(4) The person must not have enough financial resources and not able to obtain them on his own;

(5) The person must be willing to work unless health reasons or special reasons related to one's situation prevent from doing so;

(6) The person must have asserted all his entitlement to other social benefits, such as unemployment.

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395 According to the March 30th, 2006 Walloon Government decrees on public service obligations in the electricity and natural gas markets (respectively Art. 30 ter and Art. 33 ter), the collection costs cannot exceed the sum of: the outstanding balance due on overdue invoices, any contractual interest, capped at the legal rate and any collection costs for unpaid invoices, capped at 7.5 euros for a reminder letter and 15 euros for a letter of formal notice. The total costs claimed for sending reminders and letters of formal notice or for non-payment may not exceed 55 euros per year and per energy.

396 (Eurostat, 2024)

397 (Eurostat, 2024)

The amount of this living wage varies depending on one's conditions as presented below:

- **Category 1**: a person living with one or more other people with whom they constitute a common household;
- **Category 2**: a person living alone;
- **Category 3**: a person responsible for a family with at least one unmarried minor child.

The minimum amount that can be claimed by a household of four people (2 adults and 2 children) with social revenues in Belgium is 1,707.11 EUR (category 3)[398].

In addition, child allowances are granted in Belgium to any household with children. These extra allowances increase the maximum potential living income perceived by Belgian low-income households (including the possibility of a financial aid for disabled children). Depending on the region, these allowances might change as follows[399]:

- **Brussels**: for a two-children household, allowances for small children under 5 years old would reach a minimum of 493.91 EUR/month[400] to reach a maximum of 553.43 EUR/month[401] for children following higher education.
- **Flanders**: for a two-children household, allowances for small children under 4 years old would reach a minimum of 498.00 EUR/month[402] to a maximum of 534.01 EUR/month[403] for children above 18 years old following higher education.
- **Wallonia:** for a two-children household, allowances for small children under 4 years old would reach a minimum of 503.27 EUR/month[404] to a maximum of 541.88 EUR/month[405] for children above 17 years old following higher education.

The minimum amount that can be claimed by a household of four people (2 adults and 2 children) with social revenues in Belgium is therefore ranging from a monthly minimum of 2,201.02 EUR to a monthly maximum of 2,260.54 EUR for Brussels, from a monthly minimum of 2,205.50 EUR to a monthly maximum of 2,241.12 EUR for Flanders, and from a monthly minimum of 2,210.38 EUR to a monthly maximum of 2,210.89 EUR for Wallonia.

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[398] Allocation for a couple in charge of minimum one minor child in October 2023, (POD Maatschappelijke Integratie, n.d.).

[399] (KidsLife, 2023)

[400] Considering the 2024 system, this situation is a minimum situation when the children are between 0-11 years old (179,27 EUR/month per child). Plus, if parents have gross yearly revenues <37,9 kEUR, extra allowances are granted (47,80 EUR/month for a first child between 0 and 11; 83,66 EUR/month for the second). Finally, an additional age allowance is granted yearly and reaches 23,43 EUR/year per child between 0 and 5. Allowances for large households are not considered as this starts from 3 children.

[401] Considering the 2024 system, this situation is a maximum situation when the children are between 18-24 years old following higher education (+191,22 EUR/month per child). Plus, if parents have gross yearly revenues <37,9 kEUR, extra allowances are granted (59,76 EUR/month for the first child; 95,61 EUR/month for the second child). Allowances for large households are not considered as this starts from 3 children.

[402] Considering the 2024 system, this situation is a minimum situation when the children are below 18 (176,66 per child). Plus, if parents have gross yearly revenues <36,3 kEUR, extra allowances are granted (70,50 EUR/month per child). An additional 22,08 EUR/year per child (schoolbonus) is also granted for children under 4 years old.

[403] Considering the 2024 system, this situation is a maximum situation when the children are born before 2019 and above 18 (101,69 + 63,40 EUR/month for the youngest child ; 188,16 + 28,72 EUR/month for the second child). Plus, if parents have gross yearly revenues <36,3 kEUR, extra allowances are granted (69,12 EUR/month per child). An additional 63,67 EUR/year per child is granted if child goes to school.

[404] Considering the 2024 system, this situation is a minimum situation when the children are between 0-17 years old and born after 2020 (185,24 EUR/month per child). Plus, if parents have gross yearly revenues <37,9 kEUR, extra allowances are granted as social supplement (+66,44 EUR/month perchild). An additional 24,87 EUR/year per child is granted if children go to school who are between 0-5. Allowances for large households are not considered as this starts from 3 children.

[405] Considering the 2024 system, this situation is a maximum situation when the children are between 18-24 years old and born before 2020 (+114,49 EUR/month for the first child, + 211,85 EUR/month for the second child). Plus, if parents have gross yearly revenues <37,9 kEUR, extra allowances are granted as social supplement (+77,28 EUR/month per child). An additional 137,29 EUR/year per child is granted if children go to school and are at least 18 years old and household benefits from the social tariff. Allowances for large households are not considered as this starts from 3 children.

Germany

Social measures

To support consumers in the context of the energy crisis, a “defence shield” package amounting to 200 billion euros was approved in Germany in December 2022. The measures came into force as of the 1st of March 2023, and would normally have lasted until April 2024[406] [407]. However, due to problems in the country’s budget, the measures came to an end already in December 2023[408].

Extraordinary electricity costs or debts can, however, be covered by the social welfare office/jobcentre in the following exceptional cases[409]:

- The threat of the electricity supplier to cut off the electricity.
- Electric heating systems, decentralised hot water production.
- If a subsequent payment from the annual electricity settlement cannot be made.

Cash payments for back payments or accrued electricity debts are generally made in the form of loans, in rare cases aid is granted, and partial loans and partial aid are also possible. A loan can only be refused if it can be proven that the high electricity costs are due to their own fault.

If the water heating is operated with electricity, there is a claim for additional demand. In the case of a flat with electrically operated heating systems, only the actual, reasonable heating costs are covered.

These measures are difficult to quantify in this study because they are discretionary and applicable on a case-by-case basis. Consequently, no social measures with regards to the reduction of electricity and natural gas bills can be used in this exercise. However, we do depict the difference in effort rates for low-income consumers compared with other consumers in more prosperous conditions.

Disposable income and living wage

Germany’s ***gross adjusted disposable income corrected for PPP*** amounted to 32,129 EUR in 2022[410]. As housing costs are estimated to be 24.5% of Germany’s disposable income[411], we obtain a corrected gross disposable income of 24,257 EUR.

Regarding low-income consumers, Germany was previously offering the ‘*Arbeitslosengeld II*’ – ALG II in short – (or Unemployment Benefit II) and the ‘*Sozialgeld*’ (or Social Security Benefit) as part of the benefits for securing living and thus part of the benefits for securing a decent minimum subsistence level[412]. ALG II and SGB II were merged under the Hartz IV law, and then replaced since 1 January 2023 by a new “citizen income” (*Bürgergeld*).[413] This led to a significant increase of the standard rate received people in need in Germany[414].

The basic standard monthly rate in force in 2024 is 563 EUR and applies if you are single and/or a single parent and run your own household. A monthly amount of 506 EUR per person is granted for partners with no other revenues who are living together (90% of the standard benefit). The standard rate for children old living in a household under that scheme in 2024 is 471 EUR/month for between 14 and 17 years, reaches 390 EUR for children between 6 and 13 years old, and 357 for children up to 5 years. [415]

Besides that new “citizen income”, additional financial supports can be granted under certain circumstances but depending on a case-by-case basis.[416]

[406] (AA, 2022)
[407] (Clean Energy Wire, 2022)
[408] (Clean Energy Wire, 2023)
[409] (Betanet.de, 2019)
[410] (Eurostat, 2024)
[411] (Eurostat, 2024)
[412] Bundesministerium für Arbeit und Soziales, 2021
[413] (The Federal Government, 2022)
[414] ibid
[415] (Die Bundesregierung, 2024)
[416] Further financial support mechanisms exist but cannot be precisely quantified in the scope of this study.

The minimum amount that can be claimed by a household of four people (2 adults and 2 children) with social revenues in Germany is therefore estimated at 1,726 EUR with two small kids whereas the maximum amount reaches 1,954 EUR with 2 older children. For the minimum amount, the “citizen income” (*Bürgergeld*) allocation and the child allowances for 2 children below 5 years old (as it represents the minimum possible amount) are here considered. For the maximum account, we take the child allowances granted for 2 kids between 14 and 17 years old as it represents the maximum amount that can be claimed.

France

Social measures

France implemented social measures to help households considered in "energy poverty" ("précarité énergétique"). To be considered as vulnerable, a household or person must face "difficulties in obtaining the supply of energy necessary to meet his or her basic needs in his or her home because of inadequate resources or housing conditions"[417]. Objectively speaking, three criteria are defined to measure energy poverty:

(1) Energy effort rate ("Taux d'effort énergétique (TEE)"):
   a. More than 8% of income is spent on energy;
   b. Households are part of the poorest 30% of the French population (first 3 income deciles).

(2) Low income, high expenses indicator ("Indicateur bas revenus, dépenses élevées"): the household is considered in the situation of "energy poverty" if they have:
   a. An income below the poverty line or 60% of national median income;
   b. Energy expenditures, compared to their housing size (m^2) or family composition, are higher than national median energy expenditures.

(3) Feeling of discomfort: a subjective indicator that assesses people's feelings towards thermal (dis)comfort and economic vulnerability.

To counter energy poverty, France replaced social tariffs with an energy voucher ("chèque énergie") in 2018. This energy voucher is a direct financial help that households are to use to pay for their energy bills, regardless of their heating means (electricity, natural gas, fuel, wood, etc.). The amount perceived depends on the level of income and the composition of the household. For 2023, any household whose Reference Tax Income (RTI) is below 11,000.00 EUR per consumption unit (CU) was eligible to this energy voucher.

In 2024 a energy voucher will be sent again to affected households to help them pay their bills. As the dates and methods for sending this check, as well as details on the households concerned, were not yet available at the time of writing (they will be made available as soon as a decree is published), it was not possible to update the below table for 2024.[418]

The table below therefore depicts the amount that could be perceived by households in 2023 and that could still be used by March 31st 2024[419].

Table 132: France energy vouchers amounts applicable in 2023

Energy Voucher 2023				
Consumption Unit (CU)	**RTI < 5,700 EUR/CU**	**RTI between 5,700 and 6,800 EUR/CU**	**RTI between 6,800 and 7,850 EUR/CU**	**RTI between 7,850 and 11,000 EUR/CU**
1 person (1 CU)	194 EUR	146 EUR	98 EUR	48 EUR
2 people (1 CU + 0,5 CU)	240 EUR	176 EUR	113 EUR	63 EUR
≥ 3 people (1 CU + 0,5 CU + 0,3 CU for each additional person)	277 EUR	202 EUR	126 EUR	76 EUR

In France there is also a fund that helps people regarding different housing costs aspects. This aid can take many forms, e.g. payment of first rent, payment of the costs regarding the opening of meters (gas, electricity, water), etcetera. This additional support is however n quantifiable as established on a case-by-case basis, and is thus not considered for the computation of social measures.

417 (Ministère de la Transition écologique et solidaire, 2020)
418 (Ministère de l'économie et de la souveraineté industrielle et numérique, 2024)
419 (République Française, 2024)

Disposable income and living wage

The ***gross adjusted disposable income corrected for PPP*** for France was 29,125 EUR in 2022[420]. Furthermore, we deduct housing costs that are deemed to be 18.1%[421] of France's disposable income (2022 value, latest data available). Therefore, we estimate a corrected gross disposable income of 23,853EUR.

France implemented a living income, called "Revenu de Solidarité Active" (RSA) since 2009, which targets low-income people. To benefit from this allowance, one must respect several conditions that are listed hereafter:

- Be over 25 years old or of 18 if the applicant has a dependent or unborn child or if he can prove 2 years of full-time equivalent professional activity in the last 3 years;
- No age requirement exists for people who are responsible for the care of one or more children (or unborn children);
- Permanent residence in France. Stays outside France must not exceed 3 months;
- For European Union nationals: a valid residence permit is required;
- For people of foreign nationality, the applicant must have been legally resident in France for at least 5 years;
- The average monthly income for the 3 months preceding the application of the entire household must be less than the amount of the RSA corresponding to the composition of the family;
- Entitlement to other aid (e.g. specific solidarity allowance) must have been claimed as a matter of priority.

Similarly to Belgium and Germany, the amount granted by France to low-income citizens varies according to the person's conditions (e.g. isolated or not). In France this revenue is called "Revenu de solidarité active" (RSA - *active solidarity income*). This amount increases with the number of children that we assumed to be limited to two here, leading to a RSA amount of 1,276.29 EUR/month for 2024.[422] In addition, France also grants family allowances to all households with a minimum of two children[423]:

- Family allowances: paid without conditions as from the second dependent child residing in France. Their amount is modulated according to the resources of the household or the person in charge of the children, and the number of children (142.70EUR for 2 children in 2024). They can be completed by an additional amount of 71.35EUR for each child above 14 years old.
- Back-to-school allowance: provided on an income-basis for any child attending school and aged from 6 to 18 years old. The amount of the allowance for school year 2024 ranged from 400.09EUR/year (for a child from 6 to 10 years old) to 436.79EUR/year (for a child from 15 to 18 years old).

The minimum monthly amount that can be claimed by a household of four people (2 adults and 2 children) with social revenues in France is therefore estimated at 1,419 EUR with two small kids whereas the maximum amount reaches 1,634 EUR with 2 older children studying. For the minimum amount, the "Revenu de solidarité active" allocation and the standard child allowance (for children below 14 years old, as it represents the minimum possible amount) have been solely considered, where the additional amount for children above 14 years old and the 'back-to-school' allowance for children above 15 years old have been added on top for the maximum amount that can be claimed.

[420] (Eurostat, 2024)
[421] (Eurostat, 2024)
[422] (Aide-social.fr, 2024)
[423] (CLEISS, 2024)

The Netherlands

Social measures

End of the price cap for electricity and natural gas

Since January 1, 2024 the price cap for electricity and natural gas has disappeared and Dutch households are therefore not protected anymore against energy prices rise. [424]

One-off allowance for low-income households deleted

Since January 1, 2024 the one-off extra help of up to 1,300 EUR for low income families is also gone, although people can now appeal to an emergency fund ("Noodfonds Energie") for help under specific conditions. [425]

Discount on the energy tax

A reduction of the energy tax for each residential electricity connection was put in place in 2022. This tax discount on energy taxes will go up for 2024, from an amount of 596.86EUR in 2023 to an amount of 631.39this year. [426]

Disposable income and living wage

According to Eurostat, the Netherlands' ***gross adjusted disposable income corrected for PPP*** reached 30,283 EUR for 2022[427]. With a 22.6% share of disposable income for housing costs[428], the Netherlands has a corrected gross disposable income of 23,439 EUR.

The Dutch government introduced a social minimum ("*sociaal minimum*")[429] that represents the minimum amount a person needs to make a living. In case a person who is entitled to the above-mentioned energy tax discount does not reach the social minimum, a supplement can be granted[430] for low-income people to make up for the social minimum. For the year 2024 the social minimum is 2,069.30 EUR/month for married people or equivalent.[431] We will therefore use this amount as the basis for our computations.

Additionally, several financial support incomes exist for low-income people to address different basic needs:

- A **housing allowance ("*huurtoeslag*")**[432]: allowance granted to low-income people to help them pay for their rent. To be granted this allowance, the following criteria must be met[433]:
    a. Rent is below 879.66EUR (for people >23 years old or with a child) or 454.47EUR (for people between 18 and 23 years old);
    b. The rented housing is a self-contained living space;
    c. The income of the person and his partner/co-inhabitants is not too high. This limit depends on the person's rent, age and composition of the household;
    d. Assets are below 36,952.00 EUR/person or 73,904.00 EUR for partners together;
    e. The person must live in the Netherlands, be registered at the municipality and have (or the partner/co-residents) the Dutch nationality or a valid residence permit;
    f. The person must be ≥ 18 years old;
    g. The person must have a signed tenancy agreement, pays the rent and can prove it with bank statements;
    h. Other specific situations may slightly change applying rules if the person is under 18 years old, is cared for at home, has a large household, is disabled, etc.

  This allowance differs from one to another (depending in particular from incomes of the household and the number of children), with an estimated average of 34.00 EUR/month in 2024.[434]

[424] (DutchNews, 2023)
[425] ibid
[426] ibid
[427] (Eurostat, 2024)
[428] (Eurostat, 2024)
[429] (Rijksoverheid, 2020)
[430] Toeslagenwet.
[431] (UWV, n.d.)
[432] (Belastingdienst, 2023)
[433] (Dienst Toeslagen Ministerie van Financiën, n.d.)
[434] (Woonbond.nl, 2023)

- A **Care allowance *("Zorgtoeslag")***[435]: this allowance is a contribution to help support the costs of people's Dutch health insurance. To be granted this allowance, people must meet the following criteria in 2023[436]:
    a. Be ≥ 18 years old;
    b. Have Dutch health insurance;
    c. Have an income < 37,469.00 EUR (lone person) or < 47,368.00 EUR (partners);
    d. Have the Dutch nationality or a valid residence permit;
    e. Have a maximum (combined) assets of 140,213.00 EUR (177,301.00 EUR for partners).
    f. Other specific situations may slightly change applying rules be a military, detained, foreign student, not having a fixed address, etc.

  For 2024, partners with a net income of less than 26,500 EUR/year would be granted a total monthly amount of 236.00EUR.[437] This amount is degressive and depends on the income of the household. As this amount is conditional on the subscription of a health insurance, we do not consider it here in the calculation of the minimum disposable income.

There are two allowances for children that can be added on top of those measures:

- **Regular child allowances**[438] ("*kinderbijslag*"): allowance that can range in 2024 from 279.49EUR/quarter (children between 0 to 5 years) to a maximum of 399.27EUR/quarter (children aged between 12 to 17 years old) per child and per quarter.
- **Child budget allowance**[439] *("kindgebonden budget")*: people having children can benefit from an additional allowance their income (and the partner's income) are not too high and if their total assets are not too high neither (On January 1, 2024, a single parent may not have more assets than 140,213.00 EUR, and no more than 177,301.00 EUR for a couple). The amount granted depending on a lot of parameters, it is however not possible to calculate a precise amount as part of this study.

The minimum monthly amount that can be claimed by a household of four people (2 adults and 2 children) with social revenues in the Netherlands is therefore estimated at 2,525.63 EUR with two small kids (below 5 years old) whereas the maximum amount reaches 2,605.48 EUR with 2 older children (12-17 years old). For the minimum amount, the "Sociaal minimum" is combined with a "huurtoeslag" of 34 EUR/month and the regular child allowances for two children under 5 years old. For the maximum monthly amount, we take into consideration the higher regular child allowance for children from 12 to 17 years old.

[435] (Zorgwijzer, n.d.)
[436] (Zorgwijzer, n.d.)
[437] ibid
[438] (Sociale Verzekeringsbank, 2023)
[439] (Rijksoverheid, 2022).

The UK

Social measures

In the UK, households are considered to be energy poor, when[440]:

- Energy costs are above average (> national median level)[441];
- If that amount was to be spent, households would be left with a residual income[442] below the official poverty line, which is of 60% of national median income.

To further delimit energy poverty, the UK also considers the average energy poverty gap, defined as the reduction in the energy bill that the average energy-poor household needs to not be classified as energy poor[443].

Several measures exist in the UK to support households in a situation of energy poverty:

The Warm Home Discount Scheme[444]

This allowance is a direct financial support to a lower energy bill. It was introduced to replace social tariffs in 2011. This measure gives a 150 GBP (174.68 EUR) rebate on energy bills in winter 2023 (and then applicable in January 2024) for certain categories of people. While some people are automatically granted this help, others must apply.

Mainly two groups of people can apply to this scheme:

- Core group: low-income pensioners that receive a Guarantee Credit via the Pension Credit[445], i.e.:
  - People have reached State Pension age (66 or 67 depending on birth date);
  - People over State Pension age are getting Universal Credit (help to pay for living costs[446]).

- Broad group households at risk of energy poverty. Five cases determine a person/household's belonging to the broad group[447]:
  - People receiving Income Support;
  - People receiving an Income-related Employment and Support Allowance;
  - People receiving an Income-based Jobseeker's Allowance;
  - People receiving child tax credit based on an annual income not exceeding 16,190 GBP (18,853.26 EUR).

The Cold Weather Payment[448]

This is a direct financial support to lower energy bill only offered during periods of extremely cold weather. When the average temperature in the area is recorded or forecast to be at or below zero degrees Celsius for 7 consecutive days. The state is offering an allowance of GBP 25.00 (29.11 EUR) for each 7-day period of very cold weather between November 1, 2023 and March 31, 2024. To qualify, households must be getting one of the following allowances:

- Pension Credit,
- Income Support,
- Income-based Jobseeker's Allowance,
- Income-related Employment and Support Allowance,
- Universal Credit,
- Support for Mortgage Interest.

[440] This definition was introduced in 2013 and is in application in England. Officially, remaining countries part of the UK (Northern Ireland, Scotland and Wales) still use the old definition where a household is living in energy poverty if, to heat their home to a satisfactory standard, they spend more than 10% of their household income on fuel.

[441] Costs required to have a warm, well-lit home, with hot water and the running of appliances. An equivalisation factor is applied to reflect that households require different levels of energy depending on who lives in the property. This term encompasses various energy goods (e.g. natural gas).

[442] Residual income is defined as equivalised income after housing costs, tax and National Insurance. Equivalisation reflects that households have different spending requirements depending on who lives in the property.

[443] (Department for Business, Energy & Industrial Strategy, 2020)

[444] (GOV.UK, n.d.)

[445] (GOV.UK, n.d.)

[446] (GOV.UK, n.d.)

[447] (GOV.UK, n.d.)

[448] (GOV.UK, n.d.)

For all above-listed allowances, people/households must also meet the conditions listed for the Warm Home Discount Scheme.

Considering the potential variable amount, we use here the average amount of 7-day periods triggered on average in 2023 in the UK (5 periods of 7 days in a row with negative temperatures)[449] to provide an estimate.

The Winter Fuel Payment[450]

This payment is a direct financial support to lower energy bill aiming elderly people. To be granted this allowance, the following criteria must be met:

A person can receive this allowance if they were born before September 25, 1957, they can receive between 250.00 GBP (291.13 EUR) and 600 GBP (698.70 EUR) to help pay heating bills. This is called the "winter fuel payment." The amount received includes a "cost of living allowance for retirees". This is between 150.00 GBP (174.68 EUR) and 300 GBP (349.35 EUR). This additional amount will be received during the winter of 2023 to 2024. This is in addition to any other cost of living payments you receive with your benefit or tax credits.

In case the person did not live usually in the UK, the person must have lived in Switzerland or a European Economic Area (EEA) country and have a genuine and enough link to the UK (work, facility, etc.) to qualify for this payment.

The ECO scheme[451]

This scheme helps to reduce carbon emissions and tackle energy poverty. The ECO scheme "has seen 4 iterations […]. The ECO3 scheme closed on 31 March 2022 and the ECO4 Order came into force in July 2022. ECO4 applies to measures installed from 1 April 2022 and will cover a four-year period until 31 March 2026".
To be eligible for the ECO scheme, households should at least benefit from[452]:

- Child Tax Credit
- Working Tax Credit
- Universal Credit
- Pension Guarantee Credit
- Pension Savings Credit
- Income Support
- Income-based Jobseeker's Allowance (JSA)
- Income-related Employment and Support Allowance (ESA)
- Child Benefit
- Housing Benefit

If the person has their own house, it must have an energy efficiency rating of D, E, F or G to be eligible.

If the person rents from a private landlord, the house must have an energy efficiency rating of E, F or G to be eligible. You must have the owner's permission to do the work.

[449] (GOV.UK, 2023)
[450] (GOV.UK, n.d.)
[451] (Trustmark, n.d.)
[452] (Ofgem, 2024)

Disposable income and living wage

The ***gross adjusted disposable income*** for the UK amounted for 26,698 EUR in 202 [453,454,455].

With a 27.6% share of disposable income for housing costs in 2022 according to a recent study[456], the UK has a corrected gross disposable income of 19,329 EUR

The UK provides a living wage ("Universal Credit")[457] to help low-income people cover their living costs. To be entitled to this allowance, people must respect all below-listed criteria[458]:

- Have either no income or a low income, with a maximum of 16,000.00 GBP (18,632.00 EUR) in savings;[459]
- Not being in full-time paid work (<16 hours a week, and, if any, a partner working <24 hours a week);
- Not being eligible for Jobseeker's Allowance or Employment and Support Allowance;
- Living in England, Scotland or Wales;
- Be between 16 and legal pension age, and at least one of the following:
    - Pregnant;
    - A lone parent (including a lone adoptive parent) with a child under 5;
    - A lone foster parent with a child under 16;
    - A single person looking after a child under 16 before they're adopted;
    - A carer;
    - Be on maternity, paternity or parental leave;
    - Be unable to work and receiving Statutory Sick Pay, Incapacity Benefit or Severe Disablement Allowance;
    - Be in full-time education (not university), aged between 16 and 20, and a parent;
    - Be in full-time education (not university), aged between 16 and 20, and not living with a parent or someone acting as a parent;
    - Be a refugee learning English;
    - Be in custody or due to attend court or a tribunal.

As it is the case with the other countries in scope of this study, the UK provides to poverty-exposed citizens some form of revenue. In the UK, this revenue is called "Standard allowance". For a couple, this amount ranges in 2024 from 458.51GBP (533.93 EUR) for both people if you live with your partner and are both under 25 years old to 578.82GBP (674.04 EUR) for both people if you live with your partner and at least one person is 25 years old or above[460].

Extra amounts are granted for children, with two different child benefits rates: 24.00 GBP (27.95 EUR) per week for an eldest or only child and 15.90GBP (18.52 EUR) per week for any additional child[461]. (For the computations, we multiplied those amounts by 52 weeks and then divided the amount in 12 to get an amount per month)

The minimum monthly amount that can be claimed by a household of four people (2 adults and 2 children) with social revenues in the UK is therefore estimated at 631.41 GBP (735.31 EUR) for a couple under 25 years old with two small kids whereas the maximum amount reaches 751.72 GBP (875.42 EUR) for a couple above 25 years old with 2 older children.

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[453] (Eurostat, 2024)

[454] As data relative to UK are not anymore displayed in reports from Eurostat since 2020, we used for a relevant comparison the 2021 official data provided by the UK government (21.589 GBP) and convert this amount to EUR using the standard ECB 2021 conversion rate of 0,8596 GBP/EUR.

(European Central Bank, 2024)

[455] (Office for National Statistics, n.d.)

[456] (The Intermediary, 2022)

[457] (GOV.UK, n.d.)

[458] (GOV.UK, n.d.)

[459] To convert this amount and the ones of the other allowances, we come back to the January 2024 average exchange rate of 0.8587 GBP/EUR.

[460] (GOV.UK, n.d.)

[461] (GOV.UK, n.d.)

Energy effort rates comparison

Based on the above-mentioned information, we present four charts designed to compare effort rates of residential consumers to pay for their energy bills. The energy effort rate can be understood as “the share of total energy expenditure in the household's disposable income”[462]. The higher this share is, the more effort one makes to pay for the energy and the less can be spent on other goods and services.

It is important to note that the results presented in this section do not take into consideration one-off reductions on energy bill that may apply in some countries as the amount such allowances often vary a lot depending on the households’ characteristics.

Energy effort rates compared to the average disposable income (housing costs deducted)

Disposable income reflects the purchasing power of households and their ability to invest in goods and services or save for the future, by accounting for taxes and social contributions and monetary or in-kind social benefits. With house prices and rents rising, the cost of housing this represents more than ever a significant share of household spending as it is shown below. To reflect more precisely the weight of the energy bill on household’s disposable incomes, the average share of housing costs is here retrieved from the disposable income as shown in the table below[463].

All data for EU countries were extracted from Eurostat at national level with the most recent data available at consolidated level. For the adjusted gross disposable income of households per capita (corrected for purchasing power parity) for EU countries, 2022 were the latest figure available at the time of writing [464]. For the share of housing costs in comparison with the disposable income, the latest data available at a consolidated level for EU countries were related to 2022 as well[465].

For the UK, we had to use official data from the British government[466] and desktop research[467] as Eurostat do not include the UK in its dataset anymore. We then converted the amounts from GBP to EUR using the 2022 average EUR to GBP conversion rate[468] as we were referring to 2022 figures.

Using such an approach for the UK has some caveats as the amount retrieved cannot directly be adjusted with the purchasing power parities (PPP), but as the analysis is focused on the relative weight of the energy bill compared to the gross disposable income of households, we do not believe it has an impact on the conclusions provided in this study. This analysis allows us to measure the relative weight of the energy bill against the average disposable income for all countries in scope of this study.

Table 133: Adjusted gross disposable income of households per capita in EUR, housing costs deducted

2022 Data (see above for sources)	**Belgium**	**Germany**	**France**	**Netherlands**	**UK**
Adj. gross disposable income of households per capita, corrected of PPP (EUR)	29,684	32,129	29,125	30,283	26,698
Share of housing costs in disposable income (%)	18.0%	24.5%	18.1%	22.6%	27.6%
Adj. gross disposable income of households per capita, housing costs deducted (EUR)	**24,341**	**24,257**	**23,853**	**23,439**	**19,329**

462 (ONPE, 2020)

463 It must be noted that we do not do the split here between Belgian’s regions. This limitation is dictated by the Eurostat data availability at national level only.

464 (Eurostat, 2024)

465 (Eurostat, 2024)

466 (Office for National Statistics, n.d.)

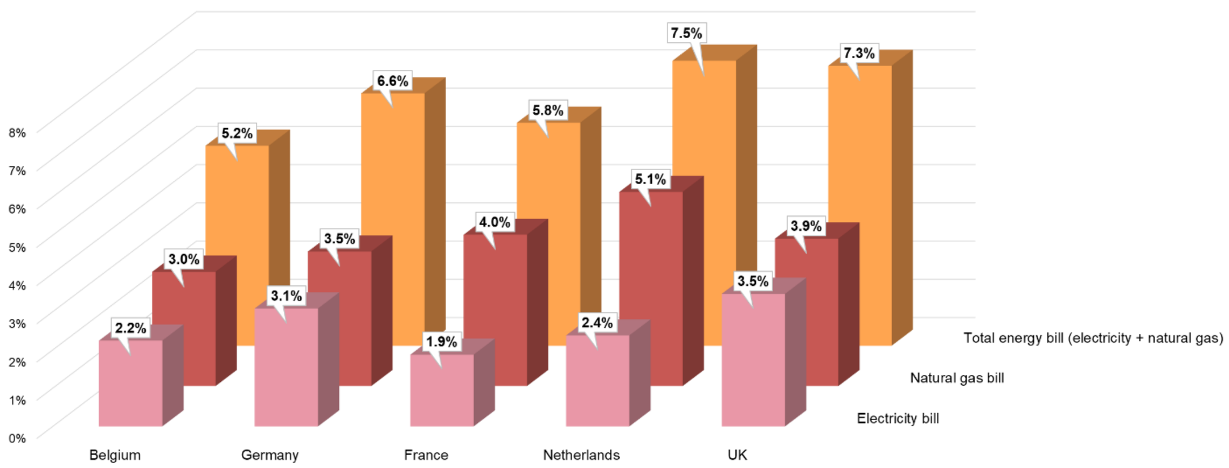
467 (The Intermediary, 2022)

468 (European Central Bank, 2024)

Taking the disposable income of households – housing costs deducted – as a basis, the figure below looks closer at the weight of the energy bill on a household with an average disposable income (2 working people). A split is done between the weight of electricity and natural gas.

When we compare the weight of the total energy bill against the average disposable income – housing costs deducted – for countries in scope of the study, we can see that for all countries the electricity bill has a lower impact on budget than the natural gas invoice.

Figure 99: Importance of energy bill compared to average disposable income (housing costs deducted, in %)



All in all, Belgium is in January 2024 the country where the total weight of the energy bill is the lowest in comparison with disposable income (5.2%), mainly due to a competitive advantage regarding natural gas. France comes second with 5.8%, pulled down by the low price of electricity. Germany sits in the middle with a total annual bill reaching 6.6% of the annual disposable income while the UK and the Netherlands bring up the rear with more than 7% (7.3% and 7.5% respectively), the Netherlands being penalised by its high prices for natural gas. It must be noted that all countries in scope of this study see a significant drop of the energy bill weight in comparison with what was observed last year at the same period, with a drop ranging from around 2% (for France) to more than 6% (for the Netherlands).

If we focus on the price of electricity[469], France is the country where the electricity bill weights the least with 1.9% of the annual disposable income (housing costs deducted). Belgium comes second with an average of 2.2% of the disposable income, closely followed by the Netherlands with 2.4%. Germany and the UK are the countries where the electricity bill weights the most with more than 3% of the disposable income.

When looking at natural gas prices[470], Belgium is the country where the bill weighs the least in comparison with disposable income, with an average of 3%. Germany comes second with 3.5%, closely followed by France and the UK (both around 4%). In an opposite trend than what we see for electricity, the Netherlands is here the country where the natural gas bill is weighting the most, with just above 5% of the disposable income.

[469] Considering natural gas and electricity bills taken separately and not in combined plans
[470] Ibid

Energy effort rates compared to disposable incomes: average income vs. low income

In a second analysis, we aim to compare the countries' average energy bill against:

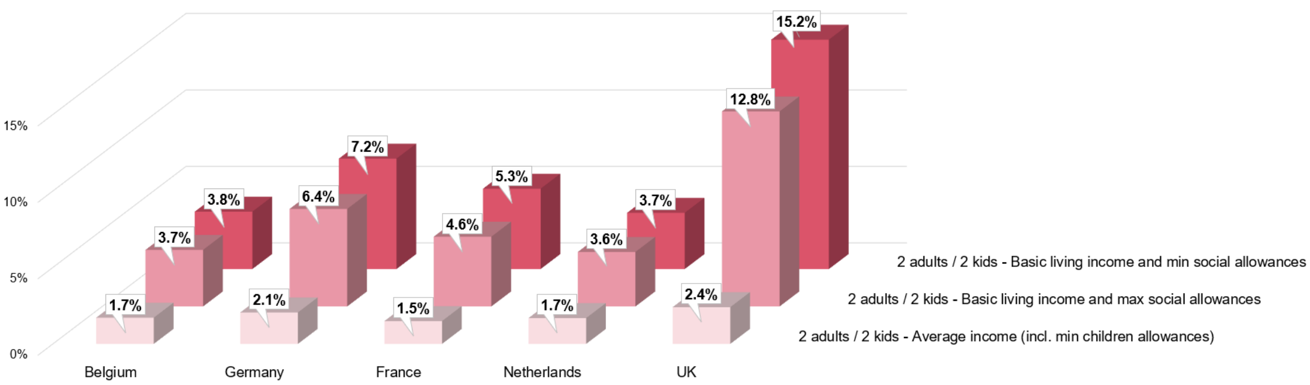
(1) The revenues of a household made of 2 adults perceiving the average country income, and 2 children allowing them to perceive the minimum available level of children allowances;
(2) The revenues of a household made of 2 adults, both perceiving the country's basic living income, and 2 children allowing them to perceive the minimum level of social allowances.
(3) The revenues of a household made of 2 adults, both perceiving the country's basic living income, and 2 children allowing them to perceive the maximum level of social allowances.

This allows us to assess the weight of the average energy bill on people earning the country's average income against the impact it has on the most vulnerable people. To do so, based on the above-mentioned research, all social measures that can be quantified are added to the basic income that our typical household (2 adult parents and 2 children) could earn without having other sources of revenue. We believe that this situation represents a worst-case scenario, but it allows us to provide a rather good overview of the impact on the energy bill on the most exposed consumers.

This time we do not deduct the share of housing from the disposable income. As most households with minimum incomes also often benefit from significant aid in that area too, that would indeed provide a biased picture of reality. By doing so, the relative weight of the energy bill for a household with 2 adults earning the country's average income will therefore decreases compared to the previous figure[471].

Figure below show the electricity effort rate compared to the living income for the 3 scenarios mentioned.

Figure 100: Electricity effort rate compared to living income (in %)



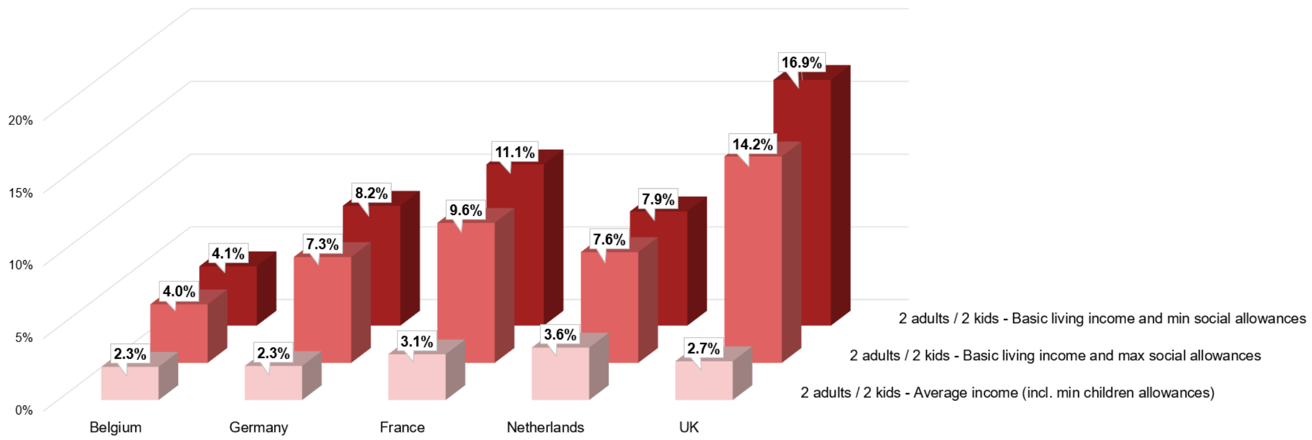
When comparing the effort rate for electricity across countries for a household with an average income, we can see that France remains the country where the electricity bill weights proportionally the least (1.5%), followed once again by Belgium and the Netherlands, both at around 1.7%. Germany follows at 2.1% while the UK comes last, with a weight of the electricity reaching 2.4%.

Things change however when we consider households with the lowest incomes. In that case, Belgium can maintain a rather low weight of the electricity bill compared to a basic income in the country thanks to its social tariff, keeping the weight of the electricity bill around 3.7% of the available income, tied with the Netherlands which has a similar (but marginally lower) percentage. With an electricity bill ranging from 4.6 to 5.3% of the available income depending on the number of social allowances received, France stands in the middle of the pack. Germany comes next with a higher effort rate ranging from around 6.4% to 7.2%. The UK's situation is much worse than before when it comes to low-income households. In this case the electricity bill weighs indeed from 12.8% to 15.2% of the household available living income, which is even worse than the situation observed last year at the same period by about 3%. This can be explained by the low amount of substitute revenue for low-income households in the country.

[471] On top of that, the minimal social measures associated with the 2 kids also help to increase the total income available, even if often only at a margin.

If we focus on the natural gas bill, the results are a bit different. As already mentioned, the gas bill weighs more heavily on the household budget than the electricity bill. The figure below illustrates that.

Figure 101: Natural gas effort rate compared to living income (in %)

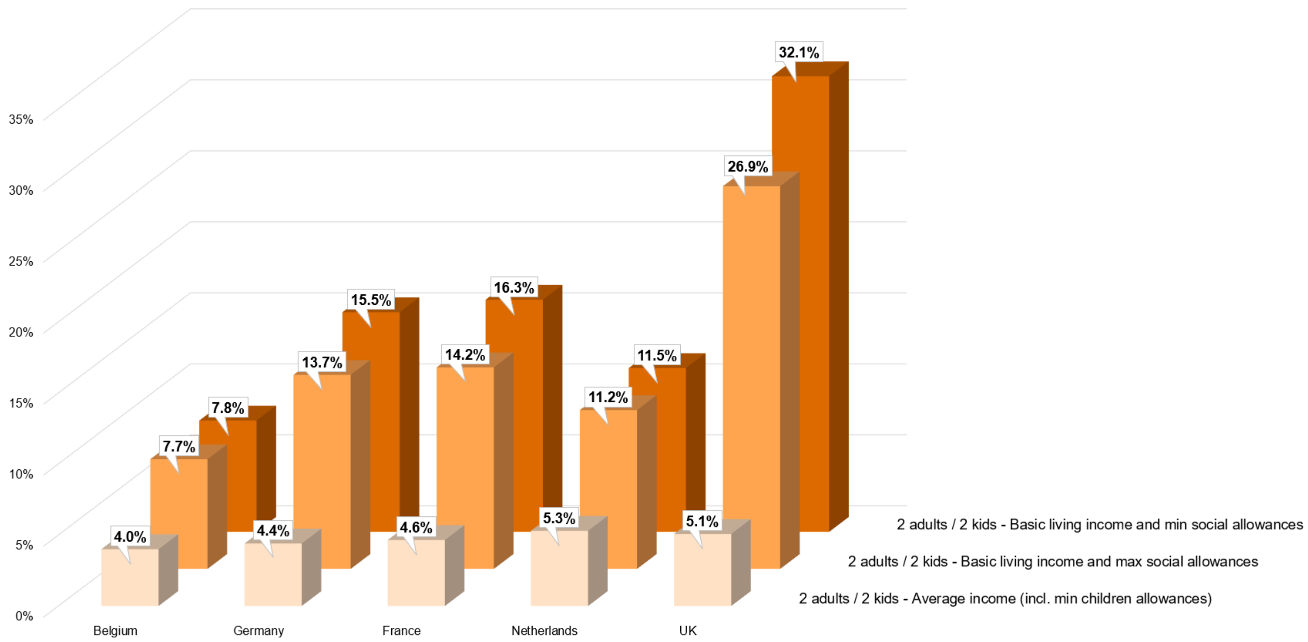


When comparing the effort rate for natural gas across countries for a household with an average income, We can observe that this time it is Belgium and Germany who are tied with 2.3% of the living income. The UK follows with 2.7%, France comes next at 3.1% and the Netherlands bringing up the rear here with 3.6%.

Things change a bit when we consider households with the lowest incomes. In that case, Belgium is once again able to maintain a low weight of the natural gas bill compared to a basic income thanks to an available social tariff, which helps to keep the weight of the natural gas bill at around 4%. Germany and the Netherlands come next, but with an almost doubled value, with a natural gas bill counting for around 8% of the available income depending on the number of social allowances received. The situation worsens for France in such a scenario with a weight of the natural gas bill that ranges from 9.6% to 11.1%. Finally, the UK is once again the country with the heaviest bill in relation to living income for the most exposed households, with figures ranging from 14.2% to almost 17% of available income. If this represents a small drop in comparison with last year for the UK, the weight of the natural gas bills remains a serious issue for the most vulnerable households. This situation for the UK can once again be explained by the low amount of substitute revenue for low-income households available in the country.

All in all, if we look at the total picture by adding up the electricity and natural gas bills, the main observations remain relevant as shown in the figure below:

Figure 102: Total energy bill effort rate compared to living income (in %)



When comparing the effort rate for the total energy bill across countries for a household with an average income, we can see that Belgium is this year the country where the energy bill weights proportionally the least with 4%, closely followed by Germany and France with 4.4% and 4.6% respectively. The UK comes next with 5.1%, with the Netherlands bringing up the rear with 5.3%.

Unsurprisingly, the situation becomes much more complicated for households with modest living incomes. In that case, Belgium can maintain a rather low weight of the energy bill compared to a basic income thanks to a social tariff available. This helps to keep the weight of the energy bill around 7.7%, which is around twice as what is observed for an average household. The Netherlands comes next, with a total energy bill counting for a bit more than 11% of the available income. Germany and France stand neck and neck with a total energy bill weighting from around 14% to 16% depending on the allowances that can be perceived. Finally, the UK is the country with the heaviest bill in relation to living income for the most exposed households, with figures ranging from almost 27% to more than 32% of available income. The total energy bill in the UK could therefore have a disproportionate burden on households most at risk of energy poverty.

<u>Important note:</u> The approach followed in this section has limitations as it does not necessarily correspond to the consumption profile of some people in the situation of energy poverty (such as an isolated person without children for instance). Furthermore, it doesn't take either the fact that some more exposed people would decide to consume less energy to lower their energy bill for example. On top of that, we are comparing the January 2024 energy bill in comparison with 2022 disposable income, which is inducing another bias, especially for a country such as Belgium where an automatic index is applied on wages. The ultimate objective of this chapter being to determine the effort rate needed to pay the energy bill (and compare it across countries to assess the impact of the energy bill in relative terms), we believe this approach is however robust enough to draw conclusions.

Conclusion

All countries in scope do provide financial support and/or social measures aimed at helping consumers having difficulties in supporting energy costs. From our analysis, it appears that the position of Belgium is better than other countries under review for the modest revenues thanks to a social tariff which is not available anywhere else. Even if the gap between social tariff and commercial tariff has decreased since last year, this system remains the most advantageous one observed across all countries in scope of this study. Even when this social tariff is not applicable, Belgium still has on average the lowest effort rates for both electricity and gas combined this year.

Within Belgium, Flanders is the region where the energy bill weights the less, followed by Brussels and finally Wallonia. At the other end of the spectrum, the UK is the country where the energy bill weights the most, whether a household has a minimum income or an average income.

In all countries in scope the governmental intervention through the granting of some sort of living income and social measures aimed at reducing one's energy expenses have a significant impact on lowering the financial burden for households, but the lowest incomes obviously remain the most vulnerable to the current energy crisis.

As Belgium still displays the highest living incomes between the countries analysed when housing costs are deducted, it directly helps dilute the efforts made to pay for energy. Besides, the existing and extended social tariff further supports vulnerable households as this significantly reduces their energy expenses.

Within Belgium and considering both living incomes, a tendency can be highlighted as Flanders and Brussels tend to display lower effort rates than Wallonia for both electricity and gas. The effort rates of the three Belgian regions tend however to converge once social measures are considered, for both electricity and gas.

Limitations of the analysis

This analysis has potential limitations that were already outlined in the previous pages. The study scope covers the comparison of households' energy effort rates depending on their disposable income. Various scenarios can be elaborated to reflect the weight of energy prices against disposable income. By using figures at national level, we cannot take into consideration the regional differences in disposable incomes. Furthermore, taking the assumption that a standard household is made of two working people that do earn their country's average disposable income is also a shortcut.

Then, minimum and maximum basic living incomes were estimated for each country based on a two-adults and two-children household only earning the minimum income available in the country. If a clear direction was given by considering all basic incomes and potential allowances for this type of household, no real common measure exists between the countries and regions under study and the observed situation may be completely different for people living alone for example. This entails increasing comparison difficulties. Moreover, we do not include here potentially "extreme" cases (e.g. highest level of child disability) as it may not be highly representative of a country or region's situation as few families might be concerned by all the measures in effect simultaneously.

At the reading of this analysis' conclusions, one must bear in mind the limitations mentioned here before. In this regard, complementary research must be conducted to consolidate the results obtained. As such, conducting similar research based on the first deciles of the average household income from the E-SILC study could offer a harmonised measure to derive households' lower incomes. Besides, considering the number of households impacted by each governmental intervention would be necessary. We notably refer to studies from the CEER[472] to do so.

[472] (CEER, 2023)

9. Competitiveness of the Belgian industry in terms of energy prices

9. Competitiveness of the Belgian industry in terms of energy prices

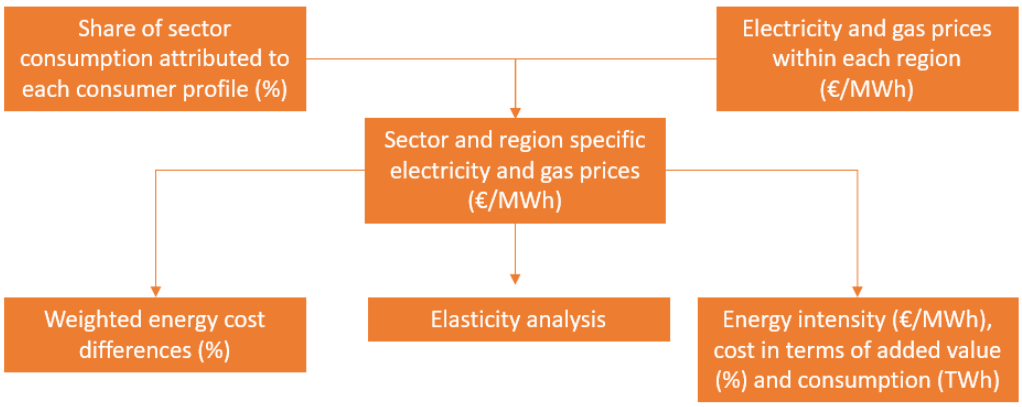
Competitiveness analysis

Methodology

When writing the 2024 edition of this report, the six most prominent industrial sectors in Belgium in the scope of an energy price comparison were selected: the chemical industry (NACE 20), the food & beverages industry (NACE 10-12), the manufacture of non-metallic mineral products (NACE 19), the basic metals industry (NACE 24) and the pharmaceutical industry (NACE 21). On top of the selected industries, an additional relevant manufacturing industry was added: the coke and petroleum products (NACE 23). In the previous chapters of this report, the gas and electricity prices were compared with those of Belgium's neighbouring countries: Germany, France, the Netherlands, and the UK.

In this chapter, the information gathered in previous chapters is combined to analyse the competitiveness of the six most important sectors in Belgium. The reasoning behind the analysis is detailed in the following figure.

Figure 103: Methodology flowchart



The electricity and natural gas prices in Flanders, Wallonia and Brussels are first combined with the distribution of the different consumer profiles over the six most important sectors, resulting in sector- and region-specific electricity and natural gas prices. Then, these prices are used to calculate two important variables, through two separate pathways. The first pathway computes a weighted energy cost difference, which combines electricity and natural gas prices in one single measure. It makes it possible to compare energy prices of a certain sector (within a certain region) with that of the average of the neighbouring countries. The second pathway elaborates on the energy intensity, which expresses the energy cost of a certain sector and region in terms of added value.

This chapter is structured around this flow chart, which is further detailed in the following sections.

Sector- and region-specific electricity and natural gas prices

In the previous chapters, the electricity and natural gas prices for the Belgian three regions were collected. Since the aim of this chapter is to analyse the competitiveness of these prices for the six most important sectors, it is necessary to define a method which uses these regional prices and expresses them at the sectoral level. That is done by combining the regional electricity and natural gas prices with the breakdown of consumer profiles by sector. They are based on data provided by the CREG and show how the consumer profiles are broken down by sector[473], which consumer profile is the most predominant within each sector and therefore which one has the greatest impact on electricity and natural gas prices for that sector.

The relative frequency of each consumer profile per sector (obtained by multiplying the absolute number of profiles by the consumption of each profile[474] [475] and dividing it by the total consumption per sector) is presented in the tables below. As it can be seen in the following table, E4 is the predominant profile in the manufacture of coke and refined petroleum products (NACE 19) and in the manufacture of basic metals (NACE 24). The E3 profile is the most prominent in the manufacture of chemicals (NACE 20) and in the manufacture of other non-metallic mineral products (NACE 23). For the food products, beverages and tobacco products (NACE 10-11-12) and pharmaceuticals (NACE 21), the main profile represented is E2. The prices of these predominant consumer profiles have the largest effect on electricity prices for each of the six five sectors. Table 135 shows that, the G2 profile is predominant in the chemicals (NACE 20), manufacture of non-metallic mineral products (NACE 23) and the basic metals (NACE 24) sectors, while G1 profile is preponderant for the food and beverages (NACE 10-12), the petroleum products (NACE 19) and the pharmaceutical (NACE 21) sectors.

The first column, for each profile, of the table underneath refers to absolute frequencies (#), while the second column, for each profile, of the same table refers to relative frequencies weighted by consumption profiles (%).

Table 134: Distribution of electric consumer profiles per sector

Code NACE - Sector	E0 (2-10 GWh/year)[476]		E1 (10-17,5 GWh/year)		E2 (17,5-62,5 GWh/year)		E3 (62,5 -300 GWh/year)		E4 (>300 GWh/year)	
	#	%	#	%	#	%	#	%	#	%
NACE 10-11-12 - Manufacture of food products, beverages and tobacco products	57	5.1%	46	20.9%	49	55.7%	4	18.2%	0	0.0%
NACE 19 - Manufacture of coke and refined petroleum products	3	0.6%	2	1.6%	0	0.0%	2	16.3%	2	81.5%
NACE 20 - Manufacture of chemicals and chemical products	34	1.7%	20	5.2%	20	12.9%	16	41.4%	3	38.8%
NACE 21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations	7	4.6%	6	20.1%	5	41.8%	1	33.5%	0	0.0%
NACE 23 - Manufacture of other non-metallic mineral products	22	2.7%	11	7.0%	17	26.9%	10	63.4%	0	0.0%
NACE 24 - Manufacture of basic metals	15	1.1%	3	1.1%	10	8.9%	10	35.6%	3	53.4%

Source: CREG (2024), PwC Computations

[473] To identify the proportion of E0 companies, thanks to the CREG data, we extrapolated the proportion of big companies in the E0 profile by also using Statbel data sources.

[474] The data in both tables based on billing data from the CREG for all consumers with an offtake of more than 2 GWh of electricity or 1,25 GWh of natural gas per year.

[475] For electricity – E0: 2GWh, E1: 10GWh, E2: 25 GWh, E3: 100GWh, E4: 500GWh; For natural gas – G0: 1,25GWh, G1: 100GWh, G2: 250 GWh

[476] The split between E0 and E1 is different from the other profiles split, due to a lack of data for companies consuming less than 10 GWh/year. We estimated the E0 number of companies and relative consumption based on the Belgian companies' landscape while the other profiles are based on data given by the CREG.

Table 135: Distribution of gas consumer profiles per sector

Code NACE - Sector	G0 (1.25-10 GWh/year)		G1 (10-1.000 GWh/year)		G2 (>1.000 GWh/year)	
	#	%	#	%	#	%
NACE 10–12 - Manufacture of food products; beverages and tobacco products	0	0.0%	17	100.0%	0	0.0%
NACE–19 - Manufacture of coke and refined petroleum products	1	0.1%	15	99.9%	0	0.0%
NACE–20 - Manufacture of chemicals and chemical products	2	0.0%	29	18.9%	5	81.2%
NACE–21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations	0	0.0%	1	100.0%	0	0.0%
NACE-23 – Manufacture of other non-metallic mineral products	3	0.1%	14	35.9%	1	64.0%
NACE–24 - Manufacture of basic metals	1	0.0%	13	34.2%	1	65.8%

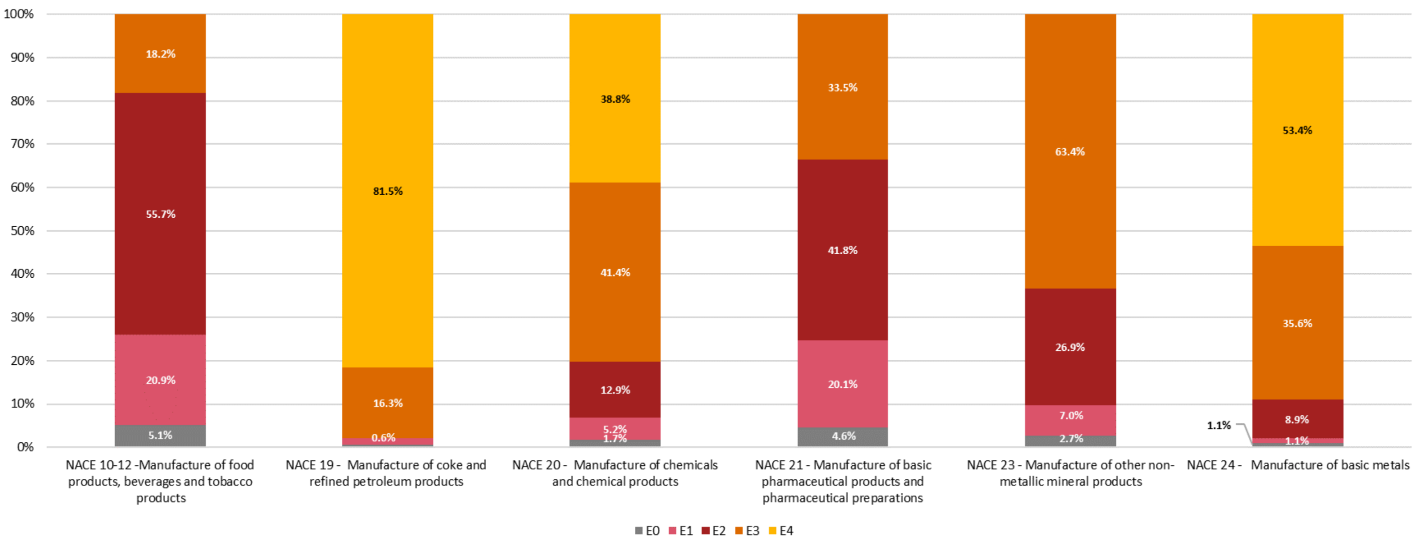
Source: CREG (2024), PwC Computations

As an example, the absolute frequencies for the food and beverage (NACE 20) sector are 34 for E0. This means that 34 consumers have a quantity of invoiced electricity like the consumption of profile E0, 20 consumers for E1, 20 consumers for E2, 16 consumers for E3 and 3 consumers for E4. Multiplying these numbers by their respective consumption and summing them, results in theoretical total electricity consumption on the sector level of 3,868 GWh. Expressed in relative frequencies, 1.7% of the total consumption is represented by profile E0, 5.2% by E1, 12.9% by E2, 41.4% by E3 and 38.8% by E4.

For natural gas, there are 2 consumers of profile G0, 29 for G1 and 5 for G2. Multiplying these numbers by their consumption and summing both up, results in total theoretical consumption for the sector of 15,402.5 GWh. This reflects a relative frequency of 0.0% for G0, 18.9% for G1 and 81.2% for G2.

Along with the same logic, the relative frequencies of the consumer profiles for the other sectors have been calculated and are presented again in the two following figures. As it is clear from the figure below, the E1 profile is relatively more active in the pharmaceuticals (NACE 21) and food and beverage (NACE 10-11-12). For the E3 and E4 profiles, the predominance in the sectors of chemicals (NACE 20), non-metallic mineral (NACE 23) and basic metals sectors (NACE 24) is explained by the energy-intensity nature of the sector.

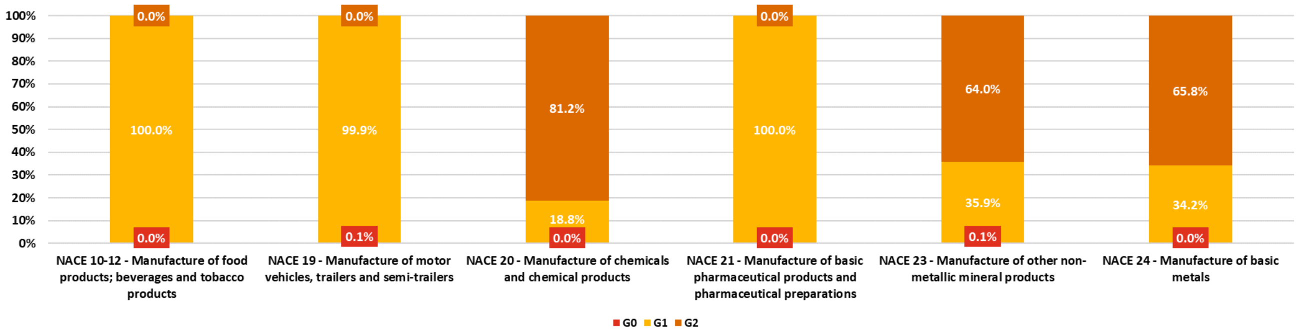
Figure 104: Share of sectoral electricity consumption attributed to each consumer profiles



Source: CREG (2024), PwC Computations

Based on the chart provided, it can be seen that G1 is the most common profile in half of the sectors, namely NACE 10-12, NACE 19, and NACE 21. However, in some other sectors, G2 has a higher relative frequency than G1, although there are only a few G2 consumer profiles represented. This can be attributed to the significant volume of natural gas consumption by these profiles. For instance, in the manufacturing sector for basic metals and non-metallic mineral products, one company alone accounts for approximately 65% of the total consumption in this sector, leading to a substantial relative frequency of G2.

Figure 105: Share of sectoral natural gas consumption attributed to each consumer profile



Source: CREG (2024), PwC Calculations

As previously stated, these relative frequencies can be used together with the electricity and natural gas prices for each region to calculate sector and region-specific electricity and natural gas prices (in EUR/MWh). This is done by summing the multiplications of the prices retrieved for each consumer profile and their relative frequencies according to the formulas below:

$$P_{elec}\ for\ Sector_i\ in\ Region_j = \sum_{X=0}^{4} (Price\ for\ E_X\ in\ Region_j * Relative\ frequency\ of\ E_X\ in\ Sector_i)$$

$$P_{gas}\ for\ Sector_i\ in\ Region_j = \sum_{X=0}^{2} (Price\ for\ G_Y\ in\ Region_j * Relative\ frequency\ of\ G_Y\ in\ Sector_i)$$

When comparing those regions and sector-specific prices to the European average[477], they can be expressed as price differences with the European average. We have calculated the average prices of electricity and natural gas in the neighbouring countries according to the following formulas[478]:

$$European\ average\ of\ P_{elec}\ for\ Sector_i = \sum_{X=0}^{4} (Average\ price\ for\ E_X\ in\ neighbouring\ countries * Relative\ frequency\ of\ E_X\ in\ Sector_i)$$

$$European\ average\ of\ P_{gas}\ for\ Sector_i = \sum_{X=0}^{2} (Average\ price\ for\ G_Y\ in\ neighbouring\ countries * Relative\ frequency\ of\ G_Y\ in\ Sector_i)$$

$$X_{ij} = \left(\frac{P_{elec}\ in\ Sector_i\ in\ Region_j\ - European\ average\ of\ P_{elec}\ in\ Sector_i}{European\ average\ of\ P_{elec}\ in\ Sector_i}\right)$$

$$Y_{ij} = \left(\frac{P_{gas}\ in\ Sector_i\ in\ Region_j\ - European\ average\ of\ P_{gas}\ in\ Sector_i}{European\ average\ of\ P_{gas}\ in\ Sector_i}\right)$$

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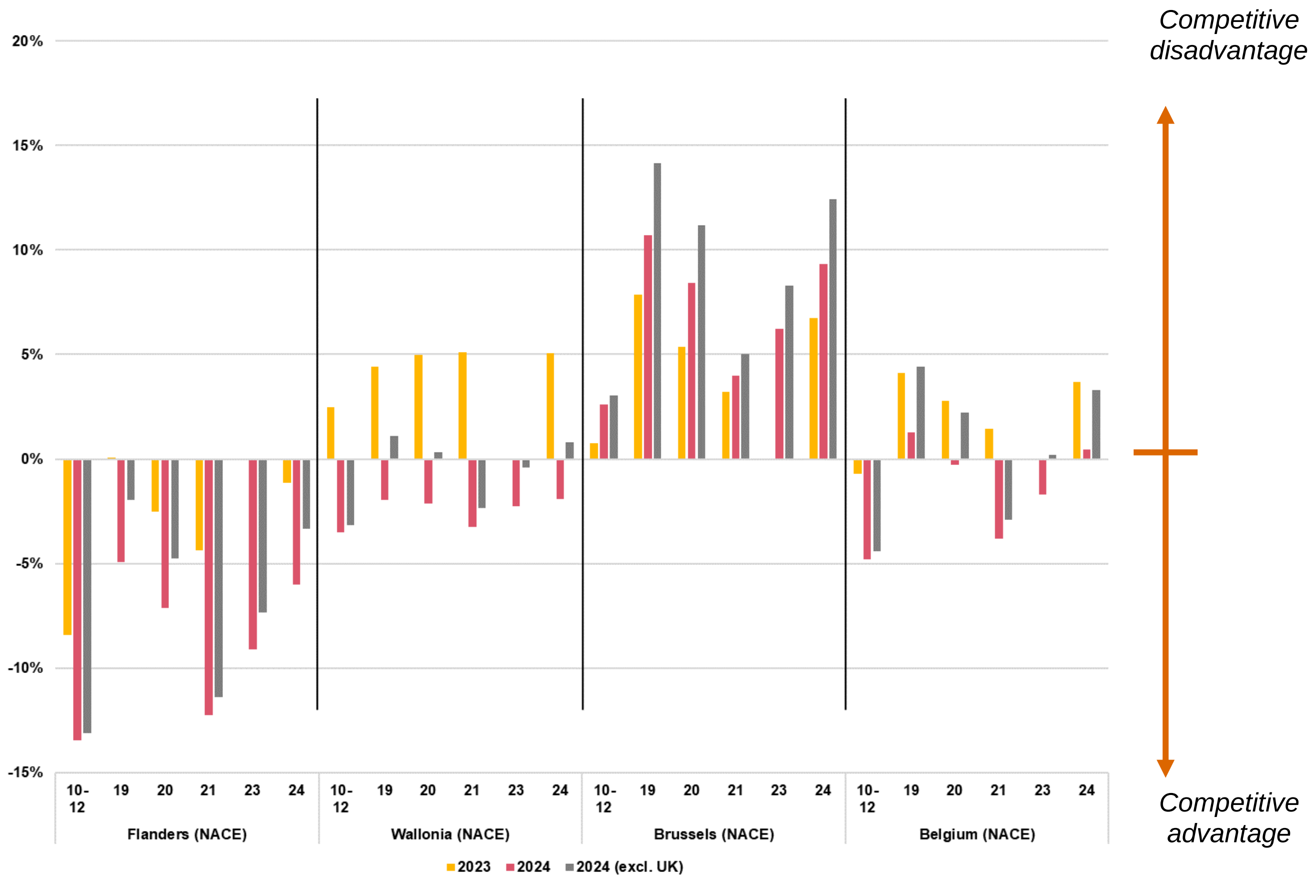
[477] The European average throughout this section refers to the average of Germany (average of the four regions for electricity in Germany), France, the Netherlands, and the United Kingdom, for both electricity and natural gas.

[478] We have used the same share of sectoral electricity and natural gas consumption attributed to each consumer profile to calculate the average price of electricity and natural gas in the neighbouring countries. This way we assume that the different consumer profiles are equally distributed in the sectors under scope of the neighbouring countries.

Electricity and natural gas price differences (in %) measure the difference in price for a certain sector *i*, in a certain region *j* with the European average. These electricity and natural gas price differences in relation to the average in Belgium's regions and neighbouring countries, specific to a sector or region, are presented below and are illustrated in Figure 106 (for electro-intensive consumers), Figure 107 (for non-electro-intensive consumers) and Figure 108 for natural gas consumers.

Electricity price differences for electro-intensive consumers

Figure 106: Electricity price differences for electro-intensive consumers compared with the average in the neighbouring countries



Source: PwC Calculations (2024)

Inclusion of the UK

One can observe on the above figure, that electricity prices differ substantially from sector to sector and region to region. Belgium globally faces a mixed competitive advantage when it comes to comparing electro-intensive consumers. Flanders appears to be the most competitive region in 2024 in Belgium, no matter the sector of activity. The reason is the cap on the cost of the green certificates which helps in reducing the electricity bill in Flanders for the industrial profiles, as well as the lower network costs for smaller industrial profiles. The cap instituted in Flanders leaves the NACE 10-12 as the most significant advantage for Flanders whereas the NACE 19 and 24 sectors are the smallest from all studied sectors for the region, though it is still a competitive advantage. Flanders welcomes relatively more easily companies in the food manufacturing industry, compared to Wallonia and Brussels. In Wallonia, the situation has improved compared to 2023, with an increased global competitiveness in all sectors. The NACE 10 to 12 and the NACE 21 are the sectors benefitting the most from this increase in competitiveness within the region. In the case of Brussels, this region is probably a theoretical case due to the limited number of industries on its territory, but the same outcome is observed.

Regarding the evolution of competitiveness, there is an important increase in competitiveness for Flanders and Wallonia, while the situation has worsened for Brussels. Like the conclusions already drawn in "Chapter 6: Presentation of results", in 2024 we observe a general convergence among the European regions/countries under review because of the general decrease of the commodity cost. However, Belgium has seen its situation improving between the years 2023 and 2024, carrying a better competitive advantage (or less disadvantageous) in 2024, all sectors included. In 2024, on the other hand, Brussels has seen its theoretical competitive situation decrease in all sectors, compared to an already disadvantageous position in 2023.

Exclusion of the UK

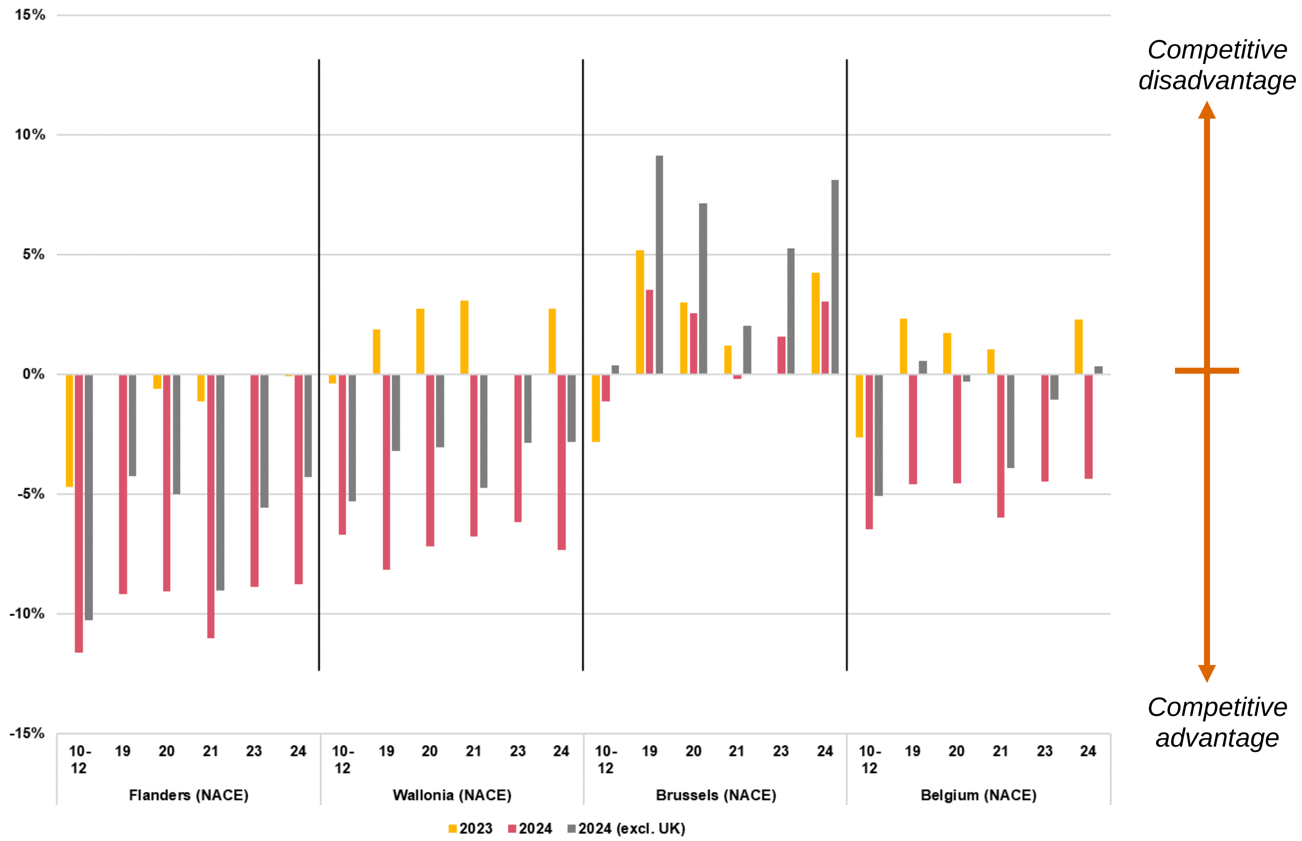
On the same figure, when considering the exclusion of the UK from the observations, we notice that the continental competitiveness of Belgium is decreasing. The presence of the UK decreases the relative competitiveness of Belgium on all industries. The steepest decrease in competitiveness for Belgium is observed in the sectors of coke and petroleum products, as well as chemicals.

On a regional level, Flanders and Wallonia observe a slight decrease of their competitive advantages in the food and beverages as well as the pharmaceutical sectors, when the UK is excluded. The most important decrease is in the manufacture of chemicals coke and refined petroleum products (NACE 19). Where Wallonia has a competitive advantages when including the UK from the observations, excluding it highlights potential competitive advantages on the coke and refined petroleum products (NACE 19), chemicals (NACE 20) and basic metals manufacture (NACE 24). On the upside, its competitiveness is maintained for the food and beverages sector (NACE 10-11-12), similarly to Flanders's. Brussels follows the same trend than the other regions, for all the sectors, except that all sectors have competitive disadvantages for the industries under review.

As a general rule of thumb, the sector of pharmaceuticals is impacted in a very limited way by the removal of the UK from the observations. Indeed, the pharmaceutical sector in Belgium seems to not suffer from the position of the UK in the competitiveness analysis.

Electricity price differences for non-electro-intensive consumers

Figure 107: Electricity price differences for non-electro-intensive consumers compared with the average in the neighbouring countries



Source: PwC Calculations (2024)

Inclusion of the UK

From the above figure, one can observe that Belgium's competitiveness regarding non-electro intensive companies from the industries analysed is much better off in 2024 than in 2023, all industries included, except in Brussels where the opposite occurs. With the inclusion of the UK in the analysis, all sectors analysed show that Belgium has a competitive edge over its land- and sea-neighbouring countries. The sectors with the strongest advantage are the food and beverages as well as the pharmaceutical industries. In Belgium, Flanders remains the most competitive region among all, whereas Wallonia is following closely, and Brussels has competitive disadvantages for all sectors except for the food and beverages sector.

Flanders displays a strong competitive advantage in 2024, for all NACE codes in scope. Its most prominent competitive advantages are the same as Belgium as a whole. Its lesser competitive advantages are in the manufacture of coke and refined petroleum, as well as the basic metals.

When comparing the two figures regarding the electricity price differences, we observe that non-electro intensive profiles in Belgium have a global competitive advantage in all sectors in 2024. This is due to the smaller increases in Wallonia and Brussels, compensating for the larger increase in competitiveness of Flanders this year. Regarding electro intensive profiles, we see that competitiveness increases as well for most of the sectors under review.

Overall, Belgium is today more competitive than the neighbouring countries. The competitive advantage is higher with non-electro intensive profiles compared to electro-intensive profiles on country level.

Exclusion of the UK

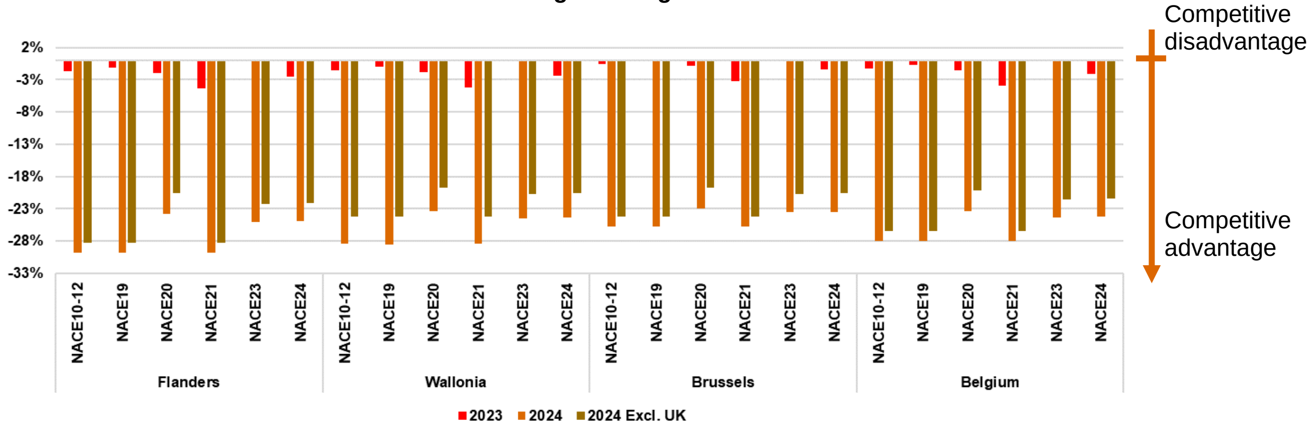
When excluding the UK from the observations, Belgium has a net competitive advantage in half of the sectors under review: the NACE 10-12, NACE 21 and NACE 23. While there is a significant competitive advantage for all sectors when the UK is considered in the analysis, excluding the UK tends to slightly lower this competitive advantage, turn advantages in disadvantages or worsen the competitive disadvantages. The exclusion of the UK affects all regions, and thus the country, in the same two-folded way with (1) a slight decrease of competitiveness for the NACE 10-11-12 and NACE-21, (2) as well as a decrease in competitiveness by 3 to 5% for all other sectors under review.

The impact on a regional level is to lower the sectorial competitive advantage of Flanders and Wallonia. However, both regions still possess competitive advantages in all sectors with non-electro intensive profiles. While this was also true for Flanders, this was not the case for electro-intensive profiles in Wallonia. The latter has proven to have, in 2024, more resiliency with non-electro intensive profiles. Brussels on the other hand, suffers from increased competitive disadvantages when removing the UK from the review.

On a country level, while the exclusion of the UK from the observations for the electro-intensive profiles did result in competitive disadvantages for Belgium, this is not true for non-electro intensives. Only small disadvantages occur for the NACE 19 and NACE 24 industries, while the rest (even if low) still retain their competitive advantages. Again, the food and beverages and the pharmaceuticals industries are strong, not matter the electro-intensity of the companies present in the industry.

Natural gas price differences for consumers

Figure 108: Natural gas price differences for natural gas consumers in comparison with the average in the neighbouring countries



Source: PwC Calculations (2024)

From the figure above, it is evident that natural gas prices in Belgium are considerably more competitive than in neighbouring countries across various sectors and regions. Belgium has experienced a significant boost in competitiveness compared to 2023, primarily due to a substantial decrease in commodity costs in 2024. As a result, the relative importance of other components, such as network costs and all other costs (which includes taxes, levies and certificate schemes), has increased on the total invoice. Notably, Belgium consistently maintains the lowest levels of these elements, further enhancing its competitive advantage. It can also be observed that the competitive advantage of Belgium and all regions slightly decreases when excluding the UK. This can be explained by the fact that the UK is the most expensive country under review for profile G1 and G2 and second most expensive country for profile G0.

Electro-intensive and non-electro-intensive consumers

In the previous and following sections, two different results in terms of energy price differences are presented: one shows the comparison within electro-intensive consumers, and the other shows the comparison within non-electro-intensive consumers. The first, valid for the electro-intensive consumer, compares prices in each region of Belgium with the lower range of prices observed in neighbouring countries; assuming that, in each of the neighbouring countries, the 'competitors' of Belgian industrial consumers meet the national electro-intensity criteria and therefore benefit from significant reductions in several components of the electricity price, as shown in the following table.

Table 136: National electro-intensity criteria

Country/Region	Criteria
Germany	For consumers of most industrial sectors: when electricity cost >14% of gross value added.
The Netherlands	Industrial consumers classified as being energy-intensive and concluded a multiple-year agreement with the Dutch government to save energy by improving their energy efficiency[479].
France	Substantial reductions for the excise duty (down to 0.5 EUR/MWh) on electricity exist for industrial consumers for which the electro-intensity represents at least 0.5% of their value added. For example, for a consumer of 10 GWh/year, a value added of 45 MEUR or less in the annual accounts is necessary to qualify for this criterion (i.e. the excise is at least 0.5% of the value added). In 2024, this criterion does not apply as on the 1st of January the tariff shield reduced the excise duty to the European minimum of 0.5 EUR/MWh, not making differences for electro-intensity profiles.
Belgium	In addition, industrial consumers from the three regions for both electricity and natural gas can be exempted from the federal special excise duty. In fact, according to Art. 429.§ 1er of the law from 27th December 2004[480] an exemption is foreseen when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial procedures.
Flanders	Reductions exist for industrial consumers with an electro-intensity of more than 20 % for the sectors listed in Annex I of the CEEAG (cap of 0.50% of gross value added) and for all consumers belonging to the sectors listed.[481]
All countries	All countries/regions under review in this study have introduced CO2 compensation scheme for indirect emissions costs that companies are obliged to pay according to the EU ETS system (or UK ETS system). This cost is alleviated for electro-intensive companies according to the own countries schemes (e.g., in the UK[482], in Flanders[483] or Germany[484]). These schemes have not been included in the 2024 study.

The second result, on the contrary, is valid for non-electro-intensive industrial consumers in Belgium. It compares prices in the three Belgian regions with the upper range of prices observed in neighbouring countries, assuming that, in each of the neighbouring countries, the "competitors" of Belgian industrial consumers do not meet the national electro-intensity criteria and therefore pay the maximum price.

Whenever a series of results in neighbouring countries was available, we compared the prices in the three Belgian regions to the middle of the range of neighbouring countries.

At the Belgian level, there is a lack of publicly available information, making it impossible to identify the importance of electro-intensive enterprises in each of the industrial sectors studied. However, it is possible to give an indication at the purely macroeconomic level as to the electro-intensity (and natural gas intensity) of the sector. It must be made clear that behind these figures, at the macroeconomic level, lies a great complexity in terms of specific sub-sectors and consumer profiles. They do, however, highlight the sectoral energy intensity in Belgium and the severity of the criteria in neighbouring countries.

[479] An energy-intensive enterprise is an enterprise for which energy or electricity costs represent more than 3 % of the total value of production or for which energy and mineral oil taxes represent at least 0.5 % of the value added. (Overheid.nl, 2020)

[480] (Chancellerie du Premier Ministre, n.d.)

[481] Only for industry (NACE 5-33) and deep frost alimentary (46391 and 52100) and Cargo handling in seaports (NACE 52241).

[482] (Gov.uk, 2024)

[483] (Vlaamse Regering, 2023)

[484] (European Commission, 2022)

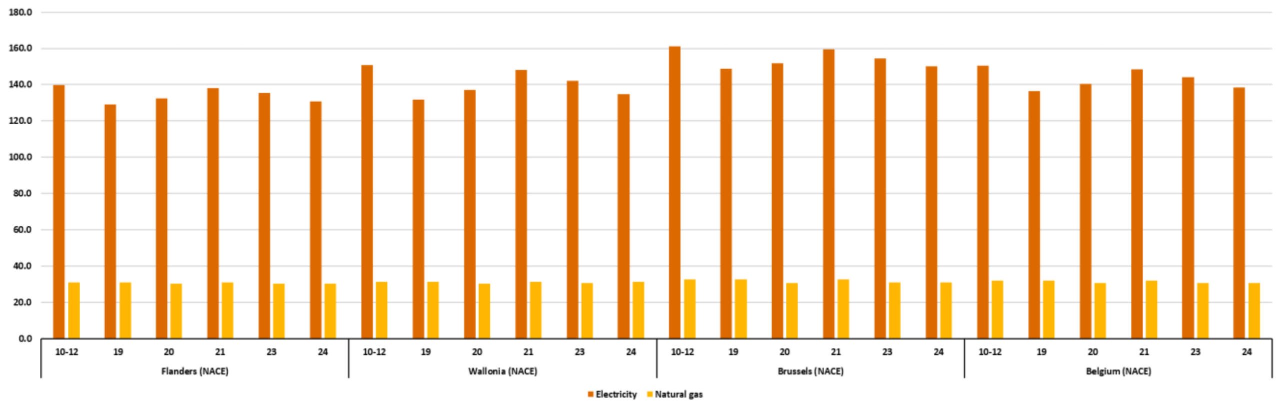
To get an idea of the relationship between the electro-intensity criteria of the neighbouring countries and the level of electro-intensity in Belgium and its 6 main sectors, we first introduce in this section the concept of energy cost based on:

- The electricity and natural gas prices for each sector and region (EUR/MWh) on the one hand (Figure 109);
- Energy intensity or MWh/EUR of value added for both electricity and natural gas per sector on the other hand (Figure 110).

The cost of energy reflects the cost of electricity and natural gas for the sector as a whole in terms of value added.

As it can be seen in the following figure, electricity prices are the highest for the NACE 10-12, followed by NACE 21 due to important energy consumption with a high added value created per MWh for NACE 21. Natural gas prices present a flattened curve with similar price levels among sectors. NACE 10-12 is highest for natural gas too, with NACE 19 on second place.

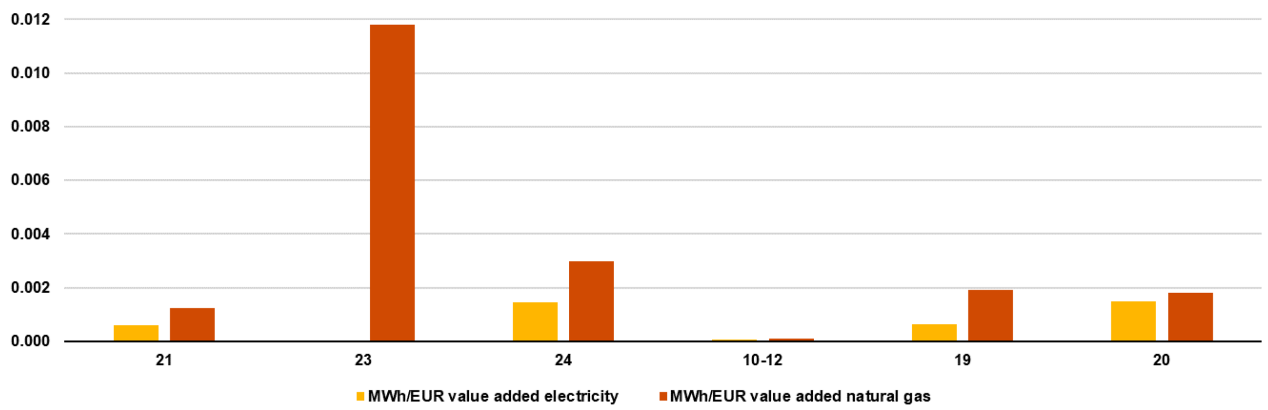
Figure 109: Sector and region-specific electricity and natural gas prices in 2024[485]



Source: PwC Calculations (2024)

As shown in Figure 110, the energy intensity is higher for natural gas than for electricity and varies depending on the sector. Sectors with high values in MWh/EUR value added are considered as energy-intensive, as is the case for NACE 23 and NACE 24 regarding electricity. NACE 19 and NACE 23 seem to be contrasting cases: while they are natural gas-intensive sectors, they have almost the lowest electricity-intensive sectors.

Figure 110: Energy intensity per sector in Belgium in 2024



Source: Federal Planning Bureau, Eurostat (2022), PwC Calculations

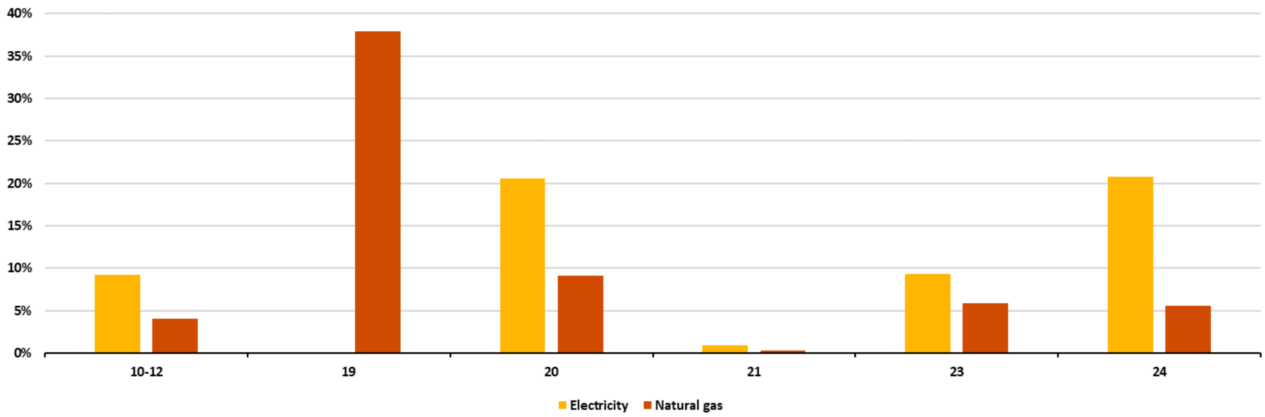
485 This graph is based on average price values between electro-intensive consumers and non-electro-intensive consumers.

Combining sector- and region-specific electricity and natural gas prices with energy intensity figures produces a measure that represents the cost of electricity or natural gas as a percentage of value added (presented in Figure 111). These data are extracted according to the following formulas:

$$Electricity\ cost\ for\ Sector\ i\ in\ Region\ j\ (\%\ of\ added\ value)$$
$$= P_{elec}\ for\ Sector\ i\ in\ Region\ j * Energy\ intensity\ (electricity)\ for\ Sector\ i$$

$$Natural\ gas\ cost\ for\ Sector\ i\ in\ Region\ j\ (\%\ of\ added\ value)$$
$$= P_{gas}\ for\ Sector\ i\ in\ Region\ j * Energy\ intensit\ (natural\ gas) for\ Sector\ i$$

Figure 111: Energy cost as % of value added in Belgium in 2024



Source: Federal Planning Bureau, Eurostat (2022), PwC Calculations

The figure above shows that natural gas cost as a percentage of value added is lower than that of electricity, except for the NACE 19, which is probably a natural-gas intensive sector and barely requiring electricity. This is due to the relative decrease of prices for electricity compared to the natural gas in 2024. Furthermore, it can be observed that the cost of energy in relation to value added is highest in the NACE 19 and NACE 20, while the cost of energy, in general, is lowest for the NACE 21 sector in Belgium.

As mentioned above, in Flanders, Germany, France and the Netherlands, certain industrial consumers can claim reductions or exemptions from their energy taxes, based on national criteria. Most of these criteria are related to the cost of energy as a percentage of value added. For example, in Germany, the criterion for a lower tax regime is the cost of electricity exceeding 14% of value added. As shown in the above figure, the sectors NACE 10-12, NACE 20, NACE 23 and NACE 24 are the sectors in Belgium which achieve an electricity cost of more (or almost) than 10% at sector level. However, as these are aggregated figures that hide information on the level of industrial consumers, some individual industrial consumers may have a higher-than-average electricity intensity and therefore must compete with the so-called electro-intensive consumers in neighbouring countries. As will be seen in the next section, these energy-intensive companies could be at a significant advantage compared to their European competitors.

Weighted energy cost differences

The graphical representation of the energy prices in the regions/countries under review are interesting to see what the origin of the cost differences are. However, they cannot tell us whether or not the cost of energy as a whole is advantageous. It depends on the amount of electricity and natural gas consumed throughout the production process. As this information is publicly available, we detail in this section how to combine the differences in electricity and natural gas prices with the consumption volumes of both types of energy into a single measure: the weighted energy cost difference. This measure compares the overall cost of energy in each sector and region with the European average[486]. If an industrial company consumes a lot of electricity and almost no natural gas during its process, it is highly likely that electricity prices will have a significant impact on its energy bill.

The weighted energy cost difference is calculated according to the below formulas[487]. The two first formulas are helpful to better understand the final computation, which is the relative energy cost difference expressed in percentage.

$$Energy\ cost\ difference\ for\ Sector_i\ \ in\ Region_j\ \ (in\ \frac{EUR}{MWh})$$

$$= \frac{(European\ average\ of\ P_{elec}\ for\ Sector_i\ *\ X_{ij}) * C_i + (European\ average\ of\ P_{gas}\ for\ Sector_i\ *\ Y_{ij})}{C_i + 1}$$

$$Energy\ cost\ difference\ for\ P_{energy}\ for\ Sector_i\ \ (in\ \frac{EUR}{MWh})$$

$$= \frac{(European\ average\ of\ P_{elec}\ for\ Sector_i\ *\ C_i + European\ average\ of\ P_{gas}\ for\ Sector_i}{C_i + 1}$$

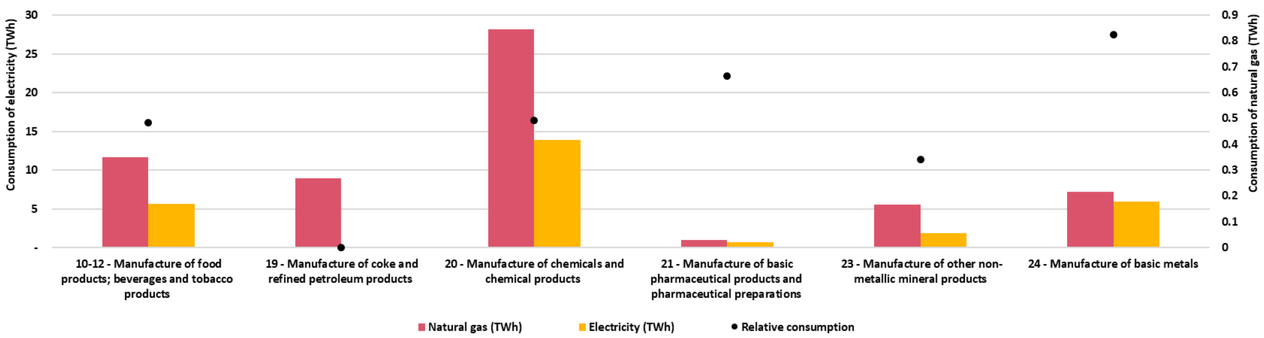
As mentioned previously, using the two formulas above, we compute the energy cost difference thanks to the following formula:

$$Weighted\ energy\ cost\ difference\ for\ Sector_i\ for\ Region_j\ (in\ \%)$$

$$= \frac{European\ cost\ difference\ for\ Sector_i\ \ in\ Region\ _j}{European\ average\ of\ P_{energy}\ for\ Sector_i}$$

The relative consumption (C_i) used in the first equation to calculate the energy cost difference is the ratio of the total volume of electricity to the total volume of natural gas consumed in each sector. It represents which of the two types of energy is used more intensively during the production process. It is calculated based on the macro-economic data from the energy consumption accounts that we have recovered for each sector (from the Federal Planning Bureau). Figure 112: Energy consumption per sectorFigure 112 gives an overview of relative consumption by sector.

Figure 112: Energy consumption per sector



Source: Federal Planning Bureau, PwC Calculations

[486] The European average throughout this section refers to the average of the neighbouring countries under scope in this report: Germany, France, the Netherlands and the United Kingdom

[487] Where X_{ij} refers to the electricity price for Sector i in Region j and Y_{ij} refers to the natural gas price for Sector i in Region j

The volume of each energy type consumer by sector is presented on the left axis, while the relative consumption (volume of electricity divided by the volume of natural gas) is presented on the right axis. It is clear that the 6 most important sectors have a relative consumption of less than 1, which means that these most important sectors consume more natural gas than electricity during the production process. For NACE 24, consumption is relatively balanced (relative consumption of 0.83), but within NACE 20, NACE 23 or even more in NACE 19, natural gas consumption is at least double compared to electricity consumption[488].

Relative consumption plays an important role in the calculation of the weighted energy cost differences since the lower the value of C_i (i.e. the more natural gas is consumed compared to electricity fed during the production process), the greater the importance of natural gas prices in the total cost of energy and in the calculation of the weighted energy cost differences is.

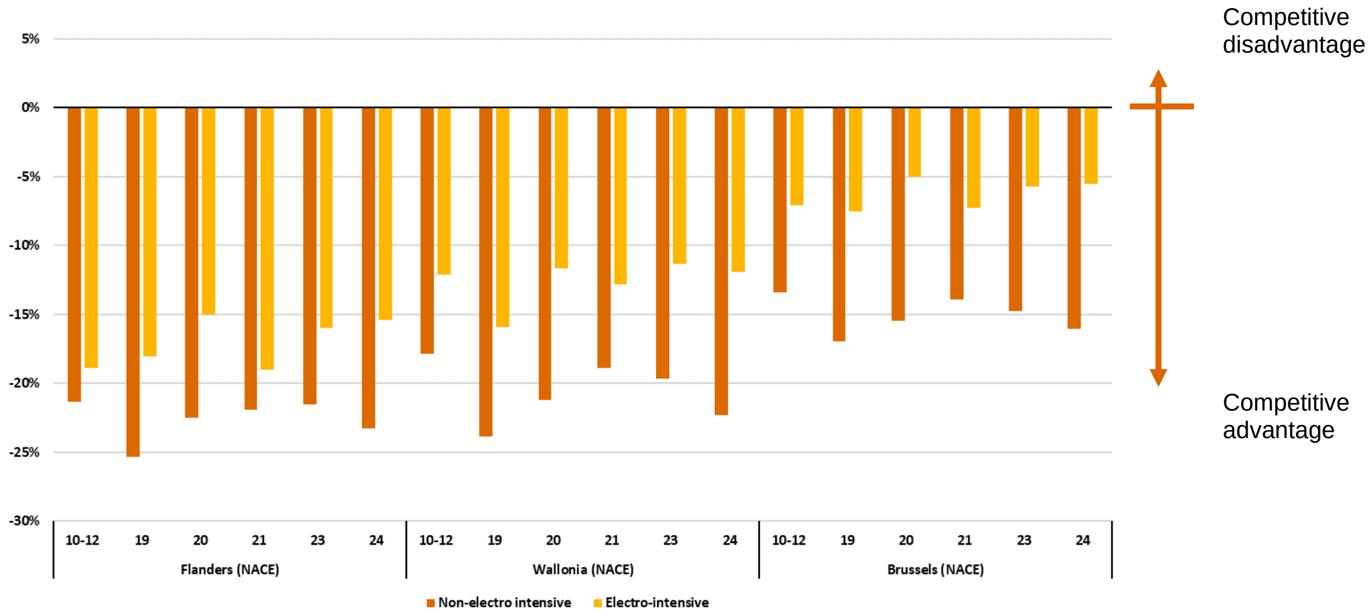
The results of the electricity and natural gas price differences for electro-intensive and non-electro-intensive consumers and the calculation of the weighted energy cost differences are presented in Table 137. These electricity and natural gas price differences have been calculated for the whole sector. As they are presented at a macro level, they may hide important differences between industrial consumers in the same sector.

Table 137: Results for every industrial sector in Flanders, Wallonia and Brussels compared to the average prices in Germany, France, the Netherlands and the UK (2024)

Region	Sector	Electricity price difference (electro-intensive)	Electricity price difference (non-electro-intensive)	Natural gas price difference	Relative consumption	Weighted energy cost difference (electro-intensive)	Weighted energy cost difference (non-electro-intensive)
Flanders	NACE 10-12	-14.45%	-15.17%	-26.71%	0.49	-18.88%	-18.48%
	NACE 19	-12.85%	-21.22%	-26.73%	0.00	-18.05%	-15.68%
	NACE 20	-13.45%	-19.11%	-17.98%	0.49	-14.98%	-13.85%
	NACE 21	-14.60%	-16.08%	-26.71%	0.66	-18.99%	-17.93%
	NACE 23	-13.82%	-17.10%	-20.05%	0.34	-15.96%	-14.55%
	NACE 24	-13.00%	-19.81%	-19.84%	0.83	-15.38%	-13.84%
Wallonia	NACE 10-12	-4.39%	-10.28%	-25.74%	0.49	-12.10%	-14.90%
	NACE 19	-10.08%	-20.30%	-25.75%	0.00	-15.95%	-13.97%
	NACE 20	-8.54%	-17.28%	-17.67%	0.49	-11.63%	-12.41%
	NACE 21	-5.51%	-11.85%	-25.74%	0.66	-12.84%	-14.74%
	NACE 23	-7.03%	-14.45%	-19.58%	0.34	-11.34%	-12.51%
	NACE 24	-9.11%	-18.49%	-17.13%	0.83	-11.90%	-12.72%
Brussels	NACE 10-12	1.63%	-4.96%	-28.72%	0.49	-7.11%	-10.28%
	NACE 19	1.51%	-10.19%	-28.74%	0.00	-7.51%	-6.23%
	NACE 20	1.16%	-8.78%	-28.17%	0.49	-5.00%	-6.00%
	NACE 21	1.42%	-5.74%	-28.72%	0.66	-7.27%	-9.53%
	NACE 23	0.85%	-7.53%	-28.31%	0.34	-5.73%	-7.18%
	NACE 24	1.21%	-9.48%	-28.28%	0.83	-5.54%	-5.73%

[488] NACE 19 does of course consume electricity even if it cannot be clearly displayed in the figure. Based on Eurostat data, the quantity of electricity consumed by this sector has been decreasing in recent years. (Eurostat, 2024)

Figure 113: Sectoral weighted energy costs differences (electricity) between the Belgian regions and the average of 4 European countries (Germany, France and the Netherlands, including the UK) for electro-intensive and non-electro-intensive consumption



All sectors in Belgium enjoy a competitive advantage in terms of differences in weighted energy costs when comparing electro intensive and non-electro intensive consumers. This is especially the case for Flanders, which gains the most competitiveness from it, while Wallonia is also at a competitive advantage, though slightly lower. For Brussels, the overall competitiveness is relatively good as well. We observe only one sector (NACE 20) below the 5% threshold of competitiveness in the region, while the other sectors stand above.

- Electro-intensive consumers: industrial consumers in all sectors in Flanders who compete with electro-intensive consumers in neighbouring countries have a competitive advantage ranging from 15% to 18%. Regarding Wallonia, electro-intensive consumers face highly competitive advantages in all sectors, from 11.5% to 16% compared to neighbouring countries. All regions taken together; electro-intensive consumers of the NACE 19 enjoy the highest combined competitive advantage.

  The same situation as in the other regions applies for Brussels, with a competitive advantage for the same segment is of 5%.

- Non-electro-intensive consumers: for industrial consumers in the three Belgian regions which are in competition with non-electro-intensive competitors in Germany, France, the Netherlands and the UK, the situation is the same as for the electro-intensives. In the three regions, the manufacture of coke and refined petroleum products (NACE 19) and chemicals (NACE 24) has the most advantageous weighted energy cost. This is due mainly to the importance of the E4 profiles, less expensive profiles than E0-E3.

The differences in weighted energy costs for non-electro-intensive consumers remain negative (advantageous) for all regions and sectors in Belgium, as opposed to 2023 where the production of chemicals (NACE 20) and pharmaceuticals (NACE 21) in Wallonia was at a competitive disadvantage. Compared with non-electro intensive consumers in neighbouring countries, weighted energy prices in Belgium are 14% lower than the average in neighbouring countries (increase of 19% of the maximum competitiveness compared to 2023).

Weighted energy cost differences when excluding the UK

A comparison of energy prices in the Belgian regions in relation to the average of the four neighbouring countries studied enables us to address some of the complexity of the results presented in previous sections. Most importantly, we observed in 2024 that the UK enables a better competitivity of Belgium's regions in the sectors under review. Particularly in the case of electro-intensive consumers. The reason is that non-electro intensive consumers benefit from a better competitive advantage in Belgium, than electro intensive consumers, due to mechanisms in place in neighbouring countries reducing levies and taxes when meeting criterion. These mechanisms do exist in Belgium (i.e. exemption of the excise duty on electricity) and there are more in Flanders (i.e. green certificates scheme) but it provides less competitive advantages compared to other countries' measures. Therefore, it is interesting and relevant to do the same exercise in terms of total energy price differences between the Belgian regions and neighbouring countries without taking the UK into account.

If the UK is excluded from the price comparisons, the situation at the sectoral level is relatively similar for consumers in Belgium benefiting already of a competitive advantage, though this advantage is becoming less important as a whole. The weighted average highlights an overall good scope of competitiveness in all regions, better in Flanders and less pronounced in Brussels. However, the price-difference for electro-intensive consumers on the NACE 19, NACE 20 and NACE 24 in Wallonia, turns to a competitive disadvantage for electro-intensive consumers relying on electricity only. Though it is not a huge disadvantage, it still exists and goes around 0.12% to 1.04% of price difference. This difference is technically not enough to incentivise a company to relocate to another country, as mentioned in the risks before. These consumers who are competing with the so-called electro-intensive consumers in neighbouring countries do not offer strong enough incentives to palliate to neighbouring countries' measures of attractiveness.

For consumers in Belgium who solely rely on electricity and compete with non-electro-intensive consumers in neighbouring countries, the situation is better than for electro intensive consumers and in line with the weighted energy cost difference. Indeed, the industries showing signs of competitive disadvantages for electro-intensive profiles in Wallonia, turn to competitive advantages of 2% to 5%.

When looking solely at natural gas, we observe that Belgium is extremely competitive and, whatever the industry or the region, provides a price difference that is at least of 11% with the neighbouring countries. It is less than when the UK is included in the observations but remains extremely positive for Belgium's competitiveness.

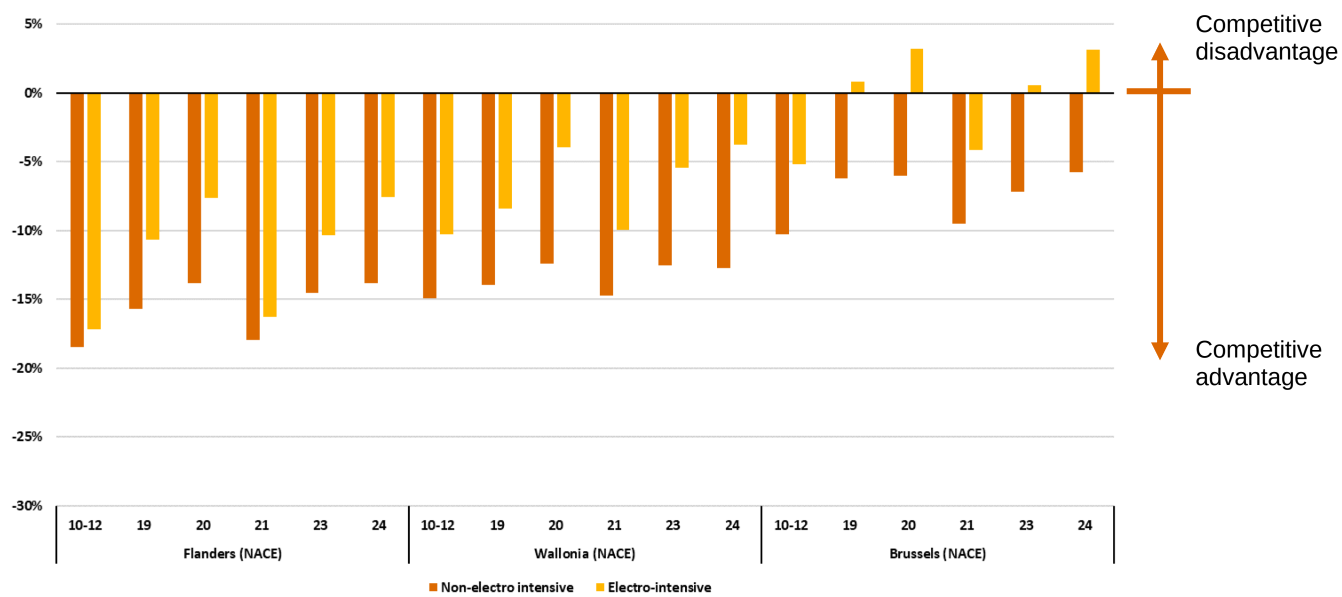
The weighted difference does not sensitively affect the general conclusion, as it provides more stability and a robust competitive advantage for countries using both electricity and natural gas on an industrial setting. Though, it is important to note that the weighted average might benefit to Flanders and Wallonia to some extent, due to the very important spread in attractiveness when combining both commodities.

The results of the comparison for (non-)electro-intensive consumers are shown in the below table. The differences in weighted energy costs for electro-intensive and non-electro-intensive consumers are shown in the below figure.

Table 138: Results for every industrial sector in Flanders, Wallonia and Brussels compared to the average prices in Germany, France and the Netherlands, excluding the UK (2024)

Region	Sector	Electricity price difference (electro-intensive)	Electricity price difference (non-electro-intensive)	Natural gas price difference	Relative consumption	Weighted energy cost difference (electro-intensive)	Weighted energy cost difference (non-electro-intensive)
Flanders	NACE 10-12	-13.50%	-10.71%	-23.94%	0.49	-17.21%	-18.48%
	NACE 19	-2.08%	-4.35%	-23.97%	0.00	-10.69%	-15.68%
	NACE 20	-5.25%	-5.36%	-12.16%	0.49	-7.63%	-13.85%
	NACE 21	-11.95%	-9.63%	-23.94%	0.66	-16.28%	-17.93%
	NACE 23	-7.90%	-6.11%	-15.03%	0.34	-10.36%	-14.55%
	NACE 24	-3.62%	-4.45%	-14.72%	0.83	-7.58%	-13.84%
Wallonia	NACE 10-12	-3.32%	-5.56%	-22.93%	0.49	-10.29%	-14.90%
	NACE 19	1.04%	-3.24%	-22.95%	0.00	-8.39%	-13.97%
	NACE 20	0.12%	-3.22%	-11.82%	0.49	-3.99%	-12.41%
	NACE 21	-2.58%	-5.07%	-22.93%	0.66	-9.92%	-14.74%
	NACE 23	-0.65%	-3.11%	-14.52%	0.34	-5.43%	-12.51%
	NACE 24	0.70%	-2.87%	-11.85%	0.83	-3.78%	-12.72%
Brussels	NACE 10-12	2.76%	0.03%	-19.62%	0.49	-5.19%	-10.28%
	NACE 19	14.06%	9.04%	-19.65%	0.00	0.80%	-6.23%
	NACE 20	10.74%	6.72%	-11.12%	0.49	3.22%	-6.00%
	NACE 21	4.56%	1.51%	-19.62%	0.66	-4.17%	-9.53%
	NACE 23	7.78%	4.73%	-13.20%	0.34	0.55%	-7.18%
	NACE 24	12.12%	7.87%	-12.97%	0.83	3.17%	-5.73%

Figure 114: Sectoral weighted energy costs differences (electricity) between the Belgian regions and the average of 3 European countries (Germany, France and the Netherlands, excluding the UK) for electro-intensive and non-electro-intensive consumption



Elasticity

In this section, Belgium's relative competitiveness in terms of electricity and natural gas prices is further explored through the elasticity of demand. Previously, prices charged to industrial consumers in the 3 Belgian regions (Brussels, Flanders and Wallonia) and in 4 countries (France, Germany, the Netherlands and the UK) were estimated. The concept of elasticity of demand aims at depicting the expected reaction in terms of demand, following a change in prices or consumed quantities. This exercise becomes particularly interesting in order to help design efficient energy policies. The elasticity of demand, in this study, is evaluated from a price perspective. This reaction can be transcribed into the following equation[489]:

$$The\ elasticity\ of\ demand = \frac{\%\ change\ in\ quantity\ demand}{\%\ change\ in\ price\ demand} = \frac{\frac{\Delta\ Quantity}{Quantity} * 100}{\frac{\Delta\ Price}{Price} * 100}$$

Conceptually, the price elasticity of demand helps to assess how demand adapts to price variations. Changes can be looked at from two time-horizon perspectives: in the short term and in the long-term. In the short-term, price elasticity of demand attempts to reflect energy consumption changes resulting from new prices. In the long-term, price elasticity of demand, which generally tends to be higher (more elastic demand) aims at reflecting rather structural changes in behaviour from the considered industrial consumers. However, when prices are high and regardless of the elasticity and the short-term or long-term changes in behaviours, a limit to adaptation and adjustments in energy demand exists from where industries would potentially consider shutting down or relocating their activity elsewhere with lower prices.

This section aims at assessing industrial consumers' price elasticity with regards to energy demand. By doing so, it is assumed to observe how industrial consumers react to price and adapt quantities.

As such, regardless of other factors that may contribute to the decision, the objective of this exercise is two-fold: it intends to evaluate the likelihood for a company to either leave or come to Belgium[490] because of energy prices differences. Concretely, this section tries to answer the following questions:

1. Is Belgium attractive to foreign industrial consumers with regards to power and natural gas prices?
2. Are other countries attractive to Belgian industrial consumers with regards to power and natural gas prices?

To that end, the elasticity of demand based on the price paid for both electricity and natural gas is used to observe the potential reaction of our industrial consumers. Based on the literature review that is later explained, it is assumed to consider the energy bills as a whole, thereby aggregating electricity and natural gas bills as both elasticity estimates (inelastic demand) are relatively similar. However, previously derived results led us to understand that significant price differences exist between non-electro-intensive and electro-intensive consumers.

When considering electricity, non-electro-intensive companies currently face relatively lower prices in Belgium than in other countries considered in this study. This means that these consumers should have, at the moment, higher incentives to come to Belgium from an electricity price perspective only. With this in mind, we attempt to grasp the consumption variation they could face between abroad and Belgium, given the current price differences and up to what maximum price, they are expected to remain in Belgium. Conversely, electro-intensive consumers are here looked at as companies that could potentially relocate their activity from neighbouring countries to Belgium in case prices appear to be lower in Belgium. As several countries under study implemented financial measures to support such consumers, they often benefit from more advantageous conditions abroad than in Belgium. Concretely, we assess what consumption adjustments these consumers would benefit from if they were to leave these countries and how important would their price change should they consider operating a move in Belgium.

[489] This formula means that for every increase in energy prices of 1%, energy consumption falls by the respective proportion identified.

[490] Given that the competitivity analysis highlighted the top five sectors in Belgium, it was decided to assess the impact of elasticity at the Belgium level. However, this exercise could be more nuanced, would it be conducted considering the economic fabric of each region specifically.

Considering the two different questions we want to answer, which are to evaluate to what extent consumers are either inclined to come to Belgium or at risk of leaving Belgium, prices employed play a significant role[491]. Given the different observation angles, different prices derived from previously detailed results are used. Maximum applying prices are used to estimate the probability to come to Belgium due to sufficiently low prices. Therefore, we use maximum prices paid by non-electro-intensive and natural gas consumers for consumers potentially coming to Belgium. Inversely, we employ minimum applying prices for electro-intensive consumers and natural gas consumers for consumers at risk of leaving Belgium. Our approach thus distinguishes two types of consumers that are categorised into two consumers categories based on the prices paid:

- ***High range consumers***: maximum prices paid by non-electro-intensive consumers for electricity + maximum price paid for natural gas;
- ***Low range consumers***: minimum prices paid by electro-intensive consumers for electricity + minimum price paid for natural gas.

In this context, Belgium's top six sectors used in the competitivity analysis are considered[492].

Methodology

This exercise was conducted through a four-step approach:

(1) Through a literature review, presented below, elasticity rates are determined.

(2) Based on existing results, the difference between countries in the average total energy bills is computed per sector. To do so, we aggregate the final electricity and natural gas bills as elasticity rates employed to apply for energy considered as a whole. The total consumption volumes and the distribution of companies per profile were identified through data provided by the Federal Planning Bureau. For each sector, each country's final bill was ultimately evaluated considering the average electricity and natural gas consumer weighted by the proportion of energy used per profile and the associated price per unit of energy (EUR/MWh)[493].

(3) Then, for each sector, we compute the magnitude of energy demand variation that would exist for the two consumer groups. This variation is estimated both in absolute and relative terms based on countries' price differences and considering the elasticity of demand. While results for high range consumers (i.e. non electro-intensive) depict their energy demand variation in Belgium if a foreign consumer were to leave Belgium, results for low range consumers (i.e. electro-intensive) represent Belgian companies' energy demand variation if they were to leave Belgium. In both cases, companies would face lower energy consumption, given the current price differences.

(4) Finally, for each sector, we estimate the maximum price up to which a company is expected to remain in its current country following a variation in the quantity of consumed energy. As such, a high range of consumers' figures displays the maximum foreign price that foreign non-electro-intensive consumers are ready to accept while facing a decrease in their energy consumption. Conversely, we estimate the maximum rise in Belgian prices that Belgian consumers are willing to accept prior to considering leaving the country due to a decrease in their energy consumption. To derive the maximum price, a fixed threshold is set to determine the maximum decrease in quantity, which can be understood as the maximum acceptable company's consumption reduction due to multiple reasons such as energy efficiency, lower activity, etc. From that maximum price, it is assumed that industrial consumers start considering shutting down or relocating their activities in case they can find lower energy prices elsewhere.

Through this methodology, we expect to determine how sensitive companies are to price changes considering the sector they are active in and the existing prices in countries under study.

[491] One could assume that a company might only transfer part of its production volume or production assets to another country to benefit from more advantageous prices. However, given the macro-level of this analysis, we do not have enough information to consider partial transfers and consider the risk for a company to relocate.

[492] The identification of these five sectors was performed in chapter 3.3.

[493] Considering a specific sector - NACE 19 for instance - there are 2 E1-like consumers out of 88. Knowing that they consume about 20 GWh out of 179 GWh consumed by industrial consumers from the sector, it represents 1.6% of the total industrial consumption. With an estimated maximum price of 169.65 EUR/MWh in Brussels (see profile E1 in chapter 6) the electricity bill per company weighted by the profile's relative consumption in the total sector consumption is computed as follows: 169.65*(88/2)*1.6% or 1.194.433 EUR electricity bill. Replicating this for each industrial profile, the sector total energy (electricity and natural gas) bill is eventually computed by including the natural gas bill.

Literature review

Various academic papers have worked on energy price elasticity, providing a wide literature on the topic. While many research studies are relevant to this report, none identified could exactly meet our needs. Consequently, a selection of studies covering related topics was selected and used to derive values that could be used as proxies for this exercise. As research studies on elasticity are usually conducted at a macro-level and tend to aggregate large amounts of data from several countries, it was also decided to select papers covering industrialised or European countries in the priority given the considered countries for this study.

Most papers consider energy as a whole without narrowing it down to types of energy goods. As such, Labandeira et al. (2017)[494], a meta-analysis of 416 papers from 1990 to 2014, estimated price elasticity of demand for energy to be ranging from -0.22to -0,224 in the short-term (ST), from -0,6 to -0,652 in the long-term (LT)[495]. However, the latter figures are not specific to industrial consumers whose energy price elasticity of demand would be of -0,166 on the short-term and of -0,508 on the long-term. Therefore, it can be understood that industrial consumers' price elasticity tends to be lower than when considering all consumers (e.g. households). Considering energy as a whole regardless of the time horizon, Trinomics (2018)[496] derive similar results with a relatively inelastic price demand for industrial consumers of -0,2 where Adeyemi & Hunt (2007)[497] estimate an elasticity of -0,22.

As this study focuses on both electricity and natural gas demand, it was decided to further detail elasticities to reflect differences in terms of industrial consumers' dependence towards both types of energy goods rather than sole energy. As no specific study could be found doing this, particularly for industrial consumers, figures were approximated from existing research studies. Labandeira et al. (2017)[498] observed short-term and long-term price elasticities for both electricity and natural gas. While the former is estimated to range from -0,209 to -0,231 (ST) or from -0,677 to -0,686 (LT), natural gas price elasticity is estimated to range from -0,216 to -0,239 (ST) or from -0,614 to -0,850 (LT). As mentioned here-above, this study reflects price elasticity on an economy-wide perspective. Consequently, we expect those figures to be lower (i.e. relatively less elastic demand in the short run) for industrial consumers, as suggested in previously introduced papers. Both short-term tendencies can be confirmed through other studies such as Horáček (2014)[499], benchmarking 36 studies, which evaluates electricity price elasticities to range from -0.16to -0.21and Bilgili (2013)[500], conducted on OECD countries, that deems that price elasticity of natural gas on the economy is of -0,318 to -0,345.

Additional attention was brought to identify papers that would assess the elasticity of demand for industrial consumers specifically and on those making the distinction between energy-intensive and non-energy-intensive sectors when possible. In this perspective, Chang et al. (2019) conducted this analysis of data from 20 OECD countries in 16 industries.

Authors classified industries as follows:

Table 139: Classification of industry according to energy-intensity by Chang et al. (2019)

Energy Intensity	Industry
Energy-Intensive	Non-ferrous metals; Iron and steel; Chemical and petrochemical; Non-metallic minerals; and Paper, pulp, and printing
Non-energy-intensive	Fishing, Mining and quarrying, Commercial and public services, Non-specified (industry), Wood and wood products, Agriculture/forestry, Transport equipment, Textile and leather, Construction, Machinery, and Food and Tobacco

[494] (Labandeira, 2017)

[495] While no specific definition is provided for short-term or long-term, it is assumed to be based on several papers to be of 1-2 years for the short-term and about 5 years for the long-term.

[496] (Trinomics, 2018)

[497] Adeyemi, O.I. and L.C. Hunt, 2007. Modelling OECD industrial energy demand: Asymmetric price responses and energy-saving technical change

[498] (Labandeira, 2017)

[499] (Horáček, 2014)

[500] (Bilgili, 2013)

Their estimates resulted in price elasticity for energy demand for:

- ***Energy-intensive group***: in the ST, values range from -0,029 to -0,200 and, in the LT, values range from -0,128 to -0,529.
- ***Non-energy-intensive group***: in the ST, values range from -0,078 to -0,165 and, in the LT, values range from -0,210 to -0,594.

As we observed, results differ from one paper to another. This can be due to models used, data employed or scope of the study. Even if absolute values are different, tendencies observed are similar and serve as the basis for our choices of parameters. The following table synthesizes study scopes and estimated values:

Table 140: Summary of elasticities of price demand from the literature review

Articles	Focus	Energy good	Energy-intensity	Short-term elasticity	Long-term elasticity
Labandeira et al. (2017)	Economy	Energy	All	[-0,224; -0.22	[-0,652; -0,6]
	Economy	Electricity	All	[-0,231; -0,209]	[-0,686; -0,677]
	Economy	Natural Gas	All	[-0,239; -0,216]	[-0.85 -0,614]
	Industrial consumers	Energy	All	-0,166	-0,508
Trinomics (2018)	Industrial consumers	Energy	All	-0,2	/
Adeyemi & Hunt (2007)	Industrial consumers	Energy	All	-0,22	/
Horáček (2014)	Economy	Electricity	All	[-0.21 -0.16	-0,43
Bilgili (2013)	Economy	Natural Gas	All	-0,318	-0,345
Chang et al. (2019)	Industrial consumers	Energy	Energy-intensive	[-0,2; -0,029]	[-0,529; -0,128]
	Industrial consumers	Energy	Non-energy-intensive	[-0,165; -0,078]	[-0,594; -0,210]

From this literature review, it appears clear that setting a fixed value on elasticity is sensitive and largely variable. Therefore, to limit bias from the determination of parameters values, we use the average from values observed in the literature for both time-horizons. Estimated parameters are as follows:

- Average short-term price elasticity of demand: **-0,193**;
- Average long-term price elasticity of demand: **-0,525**.

As short-term price elasticity of demand appears to be relatively inelastic, companies are less likely to relocate because of energy price changes in the short run. While this statement does hold in the long-term as well, the suspected impact is already much more significant. Therefore, this exercise only makes use of the average long-term price elasticity value as the parameter. Concretely, this means that for every 1% increase in energy prices, energy consumption falls by 0.525%.

Results

Consumption changes due to price variations

First and foremost, the total energy bills for an average industrial consumer in each specific sector were computed. To do so, the distribution of companies per profile and per sector, the proportion of energy they consume in the total volume of energy consumed per sector and the associated cost per unit per profile were used. Table 141 indicates average energy bills that were identified both in absolute and proportional terms. For high range consumers, foreign prices are compared to Belgium's average bill as we evaluate Belgium's attractivity towards foreign consumers (i.e. a positive percentage indicates financial incentive to move to Belgium because of higher foreign prices). Conversely, we evaluate the risk for Belgian low range consumers to relocate due to lower foreign prices (i.e. a negative percentage indicates financial incentive to leave Belgium because of lower foreign prices compared to Belgium's). Colour codes are used to ease the reading of the table. Green highlights positive situations for Belgium – either a price-based interest to come to or remain in Belgium - whereas red depicts negative cases for Belgium – either a price-based interest to leave Belgium or to remain abroad.

Table 141: Total energy (electricity and natural gas) bills in absolute and relative terms (compared to Belgium average)[501]

Sector	Consumer range	Belgium (average)	Germany		France		The Netherlands		The UK	
		(EUR)	(EUR)	%	(EUR)	%	(EUR)	%	(EUR)	%
Nace 10-12	High	8,388,968	11,863,848	41%	9,124,715	9%	9,713,410	16%	10,654,337	27%
	Low	7,972,378	9,835,335	23%	7,634,106	-4%	9,336,795	17%	9,829,835	23%
Nace 19	High	61,247,773	85,221,077	39%	50,598,282	-17%	64,317,826	5%	75,213,152	23%
	Low	60,207,967	62,494,017	4%	49,090,543	-18%	63,923,011	6%	66,067,393	10%
Nace 20	High	95,294,711	135,754,047	42%	118,310,098	24%	106,878,202	12%	131,047,907	38%
	Low	93,901,636	114,657,269	22%	84,803,133	-10%	96,062,906	2%	124,022,134	32%
Nace 21	High	10,000,553	13,984,009	40%	10,284,178	3%	11,413,767	14%	12,616,482	26%
	Low	9,534,280	11,333,308	19%	8,793,667	-8%	11,034,946	16%	11,541,667	21%
Nace 23	High	60,059,604	85,966,943	43%	81,862,346	36%	68,954,435	15%	84,965,450	41%
	Low	59,004,102	75,534,469	28%	55,115,177	-7%	60,341,671	2%	81,917,598	39%
Nace 24	High	93,011,044	131,970,039	42%	108,757,731	17%	103,109,080	11%	125,548,611	35%
	Low	91,633,499	108,932,199	19%	81,316,602	-11%	94,267,768	3%	117,464,750	28%

Overall, Belgium seems to offer lower prices than most other countries for high range consumers for all sectors except for the NACE 19. For instance, Germany's prices are above 39% higher than Belgium's for all sectors when analysing high consumer ranges. The case is slightly difference in France, where this difference magnitude is lesser, and even opposite for the NACE 19 industry where Belgium's prices are 17% higher. Regarding low consumer ranges, the overall situation is similar though the price difference is lower with other countries. Belgium offers lower prices compared to its neighbours (e.g., between 2% and 17% compared to the Netherlands) but higher prices than France on all sectors (e.g., from 4% to 18% more). The biggest differences can be seen in Germany, where for NACE 23 Belgium is offering prices that are 43% lower.

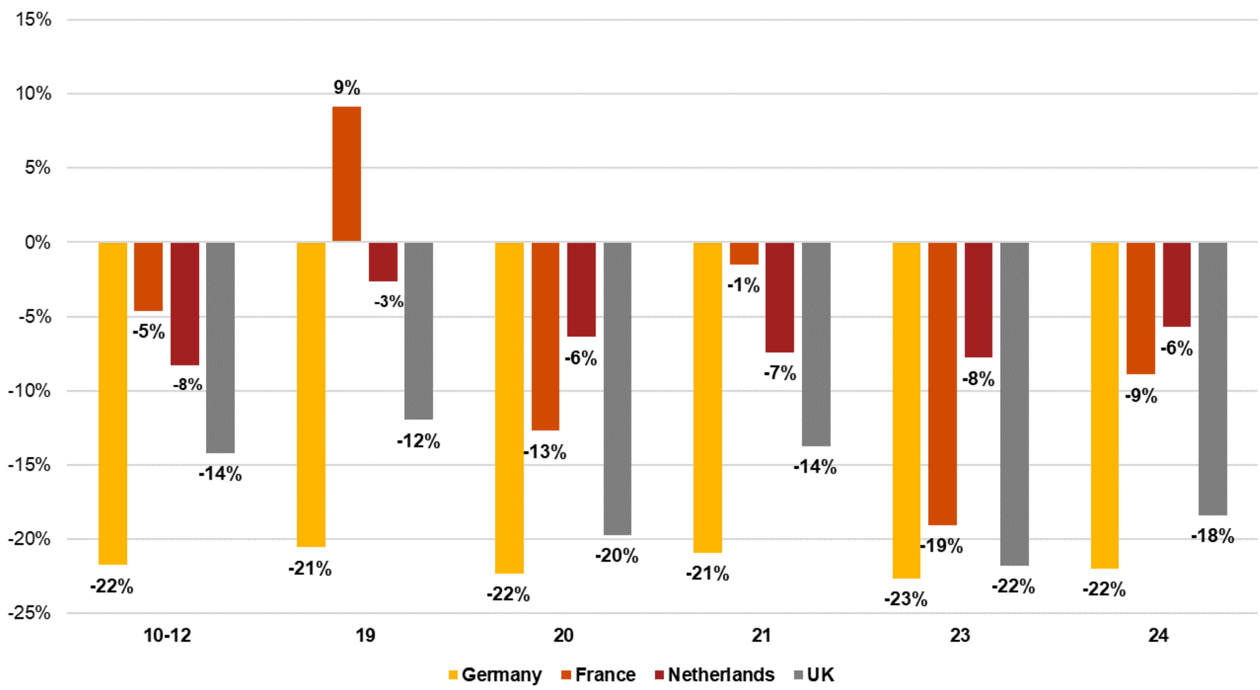
Compared to 2023, one of the most noticeable differences is that Belgium offers more attractive prices over all industries and compared to all other countries. Belgium still has a challenger in France, and especially for low consumer ranges for which France is able to drive the bill price down better. However, there is a huge improvement in scale when looking at the magnitude of the changes compared to 2023, in favour of Belgium. Another big change in 2023 is the important relative increase in prices in Germany, which is way less competitive than the year before.

[501] As reminder, high range consumers are composed of non-electro-intensive and natural gas consumers for which we use the maximum applying prices. Low range consumers are composed of electro-intensive and natural gas consumers for which we use the minimum applying prices.

In addition, like the conclusions drawn in the previous sections, the decrease in the commodity costs across the regions/countries under review contrasts with the trend observed of 2022 and 2023. This year, a convergence among the different territories with regards to the total energy bills has been observed.

From these price differences, we can derive consumption variation given the assumed price elasticity of demand of -0,525 (see Literature review from the elasticity section). Figure 115 attests for these variations (in %) for high range consumers (i.e., the maximum applicable price range for non-electro-intensive and natural gas consumers) whereas Figure 116 details consumption changes for low range consumers (i.e., the minimum applicable price range for electro-intensive and natural gas consumers) compared to Belgium average.

Figure 115: Change in energy (electricity and natural gas) consumption for "high range" consumers in the neighbouring countries compared to Belgium (i.e. maximum applicable prices for non-electro-intensive and natural gas consumers)



Results depicted here-above demonstrate the increased competitiveness of Belgium in the high range with regards to foreign companies' consumption. As prices are lower in Belgium, foreign companies usually observe positive price differences compared to Belgium. Given that the elasticity term displayed preceding is negative, a negative change in consumption is expected for foreign high range consumers regardless of the sector considered. Only France stands out with a positive 9% on a particular sector, NACE 19.

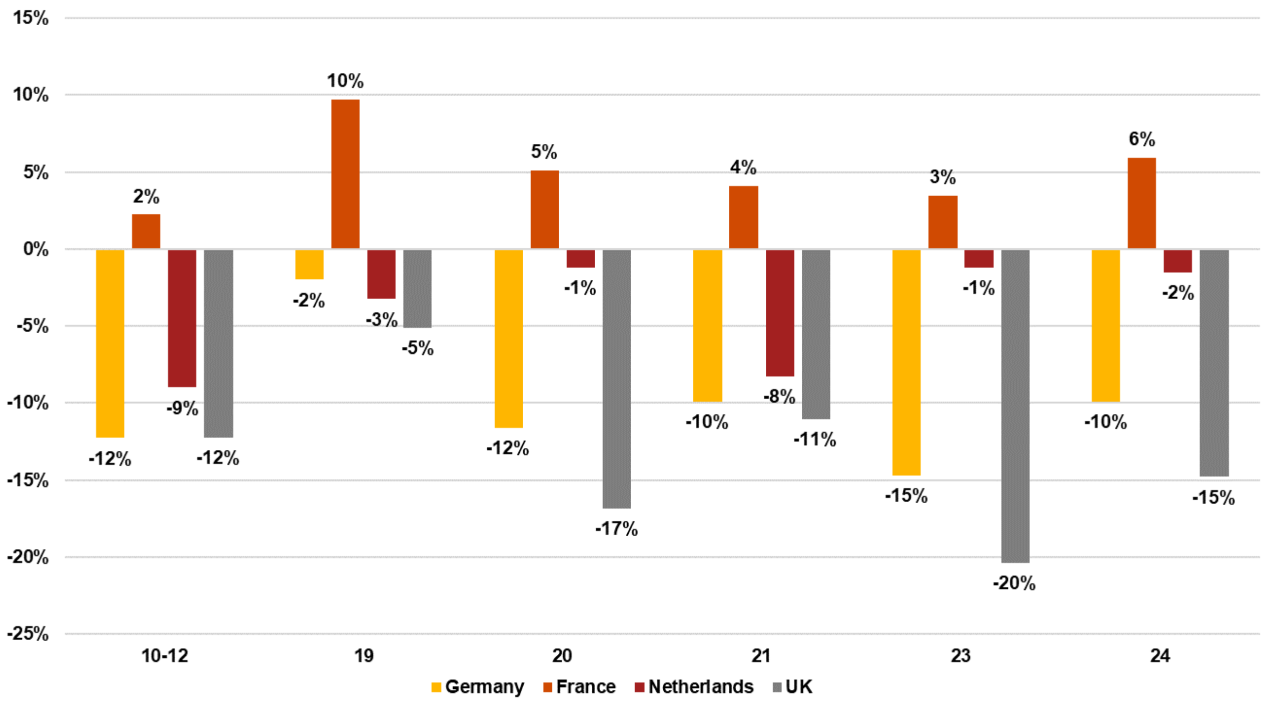
On the one hand, UK and Germany appear to be the countries from where consumers are currently the most affected by higher prices (from -21% to -23% change in demand depending on the sector for Germany, and -12% to -20% for the UK). On the other hand, France and the Netherlands are the least impacted, depending on the industry. For NACE 19 and for NACE 21 (slightly higher prices in France), French prices are better aligned than Belgium's, which is not true for the other industries, similarly to the Netherlands.

Figure 115 demonstrates that high range of consumers would be better off in Belgium in most cases. Except in France for NACE 19, it can be asserted that lower consumption levels are reached abroad compared to what they could consume in Belgium. In terms of sectors, results are quite stable, though we observe stronger sectors (NACE 10-1, NACE 23 and NACE 24) depending on the country. Overall, sectors 23 would be one of the most affected (except in France and to a lesser extent the Netherlands) whereas sector 19 (coke and refined petroleum) would be relatively less impacted. We do observe more convergence between the countries under review, though less important for Belgium seeing the huge imbalance in consumption competitiveness.

In opposition to high range results, low range results expose a more fragmented image. All Belgian consumers would experience higher consumption price levels if they were to leave Belgium, with the exception of France for all sectors under review. France is very competitive compared to Belgium for this low range consumers, as the consumption would actually increase ranging from 2% (NACE 10-12) to 10% (NACE 19) compared to a company located in Belgium. The Netherlands is also a strong competitor, for the NACE 19, 20, 23 and 24 with a change in energy consumption between -1% and -3% for the NACE 23, 24 and 19.

The below graph depicts the situation with regards to the low range of consumers. We observe for this figure a convergence of energy bills among the regions/countries under review, with two outliers: France and Belgium. For example, the UK is still less competitive than Belgium in a relatively same extent than Germany. The average variation in consumption is now -10% compared to a 6% to 9% in 2023.

Figure 116: Change in energy (electricity and natural gas) consumption for "low range" consumers in the neighbouring countries compared to Belgium (i.e., the applicable minimum price for energy-intensive and natural gas consumers)



The potential relocation of high/low range consumers

So far, we have derived potential consumption change because of price variations. This was estimated through the price differences in energy bills across countries and the application of the elasticity term based on the elasticity formula previously detailed. The opposite exercise is now conducted.

From a determined change in consumption, we estimate the maximum prices that are acceptable for one consumer prior to deciding to leave their country. In addition to short-term and long-term adjustments of consumption, it is considered that a demand reduction limit applies, above which we assume that the industry will start considering shutting down activities or relocating, provided that a location with lower prices exists. Therefore, we identify the maximum acceptable demand reduction limit, from which a bigger reduction in demand would imply more than energy efficiency measures and output adaptation changes. As Figure 115 and Figure 116 identify the resulting change in consumption from the currently estimated energy bills, we assume that it also indicates the maximum acceptable change in consumption. Taking the average from values displayed in Figure 115 and Figure 116 we obtain -9%. Therefore, we decided to set a consumption reduction threshold of 10% (i.e. a consumer is ready to accept a 10% reduction in consumption before deciding to leave the country).

Since we intend to determine structural price differences resulting from reductions granted by public authorities on taxes or transmission tariffs as observed in this study, the applicable elasticity for this exercise is the long-term price elasticity of demand.

Consequently, both Belgian and foreign companies are expected not to relocate when the maximum acceptable prices reach an increase up to 19.04% of current prices:

$$Elasticity\ of\ demand = \frac{\%\ change\ in\ quantity\ demand}{\%\ change\ in\ price\ demand}$$

$$-0.525 = \frac{-10\%}{\%\ change\ in\ price\ demand}$$

$$\%\ change\ in\ price\ demand = \frac{-10\%}{-0.525} = 19.04\%$$

High range foreign consumers might consider it economically rational to relocate in Belgium because of lower energy prices. Foreign prices should be higher by more than 19.04% than Belgian prices as foreign consumers are likely to remain abroad up to that maximum acceptable price. Table 141 casts light on the current price differences across countries and Table 142 synthesises countries where high range consumers are likely to be inclined to move to Belgium. The latter countries are highlighted in green, whereas red indicates that Belgium has no relocation option for the considered country based on the 19.04% maximum acceptable price.

Table 142: Relocation possibilities for high range consumers

Sector	Germany	France	Netherlands	The UK
10-12				
19				
20				
21				
23				
24				

As opposed to what was observed in 2023, Belgium would now represent an attractive location for relocation for industries from all sectors both in Germany and the UK, instead of the UK only. Companies belonging to sectors NACE 20 and NACE 23 in France would also be potentially interested in relocating to Belgium. Companies from all countries in Belgium would be willing to relocate to the Netherlands as the price difference is less than 19.04%.

The picture is less straightforward for low range consumers. In fact, only consumers from Germany and the UK belonging to NACE 10-12, NACE 20 and NACE 23 would be interested in relocating to Belgium as the price difference is more than 19.04%. The companies belonging to NACE sector 21 would also be willing to relocate from the UK to Belgium, looking only at these numbers. However, all companies from the sectors under review active in Belgium could potentially be interested in moving to either France or the Netherlands, as the price difference is deemed attractive enough (less than 19.04% more expensive).

Table 143: Relocation possibilities for low range consumers

Sector	Germany	France	Netherlands	The UK
10-12				
19				
20				
21				
23				
24				

Differently from last year, in 2024 it appears that low range Belgian consumers do have financial incentive to leave the country for the Netherlands and France, and partially for the others. However, Belgium still incentivises its strongest industries and attracts foreign companies on a purely price-based decision. Like high range consumers, these conclusions can be explained by the convergence of energy bills observed at European level in 2024 due to the general decrease of the commodity cost, while Germany and the UK are outliers in some observations.

Key findings

It results from this analysis that we can answer to our first two questions originally set:

1. **Is Belgium attractive to foreign high range industrial consumers?**

   In 2024 Belgium appears to be more attractive for non-energy intensive industries than other countries. The price differences are rather competitive, except for France and the Netherlands. The price difference might be sufficient as a financial incentive to generate industry relocation towards Belgium for Germany and the UK, should this decision only be based on electricity and natural gas prices and ignoring all other potential decision factors. As such, high range consumers from all sectors in the UK and Germany are particularly likely to find prices lower enough in Belgium to consider relocating to Belgium as they all are getting closer to their maximum acceptable price. On the other hand, French (depending on the industry) and Dutch (all) industries cannot justify a relocation to Belgium on a purely price-based decision.

2. **Are other countries attractive for Belgian low range industrial consumers?**

   Belgium can benefit from more attractive fares for energy-intensive industries in particular industries, given that prices observed in the UK and Germany are high enough to justify a relocation towards Belgium. This is not true for France and the Netherlands for all sectors, as prices are not that significantly different. Therefore, in 2024 low range industrial consumers in foreign countries do not have enough financial incentive to relocate to Belgium, when coming from France, the Netherlands or in specific industries such as coke and petroleum manufacture, or pharmaceuticals.

Conclusions and recommendations

Conclusions on the competitiveness of the economy

While it is necessary to be cautious about the exact impact of the results highlighted in that chapter since they are based on a multitude of data at the macro level, some conclusions can nevertheless be drawn:

(1) The most striking conclusion is the more beneficial situation for all important industrial sectors in Belgium when they are in competition with non-electro-intensive consumers in neighbouring countries than when they compete with electro intensive consumers in neighbouring countries. However, it is important to mention that the price spread between Belgium and the other countries under review has shifted from a competitive disadvantage in 2023 into a competitive advantage in 2024. Different conclusions can be made for non-electro-intensive consumers and electro-intensive consumers, depending on the region observed.

First, the non-electro-intensive consumers. Industrial consumers in Belgium, that compete with non-electro-intensive consumers in neighbouring countries, including the UK, have a higher competitive advantage in terms of the total cost of energy (natural gas and electricity combined). This is the case even when excluding the UK (outlier) from the equation. This decreases the competitive advantage in certain proportions for all sectors and regions under review. The situation in Belgium is clearly more beneficial for non-electro-intensive consumers than in 2023, when Belgium had a clear competitive disadvantage even when excluding, or not, the UK.

Secondly, we observe a similar trend when comparing the cost of electro-intensive consumers with their counterparts in neighbouring countries that benefit from reductions and/or exemptions. Where in 2023, Belgium would face a competitive disadvantage when the UK was excluded in all regions, this changed drastically in 2024, as Belgium now has a competitive advantage for all industries, except against France in some instances. Only in Brussels a small competitive disadvantage can be observed in NACE sectors 20, 21 and 24. Flanders is overall the most competitive of the regions, commodities being analysed separately or combined.

Thirdly, Belgium's competitive position subsequently changed compared to last year, the competitive disadvantages have converted into competitive advantages, especially for Wallonia, while the competitive advantages already present for Flanders in 2023 have further increased in 2024, and its disadvantages have turned into advantages. Therefore, it can be concluded that the risk of relocation has significantly decreased, and the opportunity might arise of companies relocating (back) to Belgium, when looking form a price only point of view.

In countries where discounts are granted to electro-intensive consumers, the government shifts investment from non-electro-intensive to electro-intensive sectors, as required by the European Commission's Guidelines on State aid for energy and the environment. This change is the (indirect) result of an economic protection measure (authorised by the EC) aimed at electricity-intensive consumers. In the scenario with entry criteria (e.g., Flemish system), where individual electro-intensity targets at company level must be met, this change benefits only certain electro-intensive legal entities within the section 4.11.3.1 of the CEEAG[502].

(2) Regarding natural gas, we observe that the overall position of Belgium compared to its neighbouring countries is still advantageous in 2024 for professional customers. In fact, this year Belgium can still offer lower prices than most other countries for the professional customers, and the overall decrease in commodity cost of natural gas explains the convergence of the natural gas bills between the countries analysed.

(3) The position of Brussels in terms of total energy costs for the industry generally remains less advantageous than in Flanders and to a smaller extent Wallonia. This situation is particularly striking for industrial sectors manufacturing chemicals, pharmaceuticals, and basic metals (NACE 20, 21 & 24). Wallonia now faces a competitive advantage for all of its sectors.

[502] (European Commission, 2022)

Recommendations

The problem of competitiveness on the total cost of energy that we observed in 2023 has drastically changed in 2024. While electro-intensive industrial consumers might benefit from competitive prices in specific locations, the situation is better for Belgium's competitiveness than it has been in the past. As shown in the presentation of the results, this increase in competitiveness lies in the cost of electricity, and in the three components of the cost of electricity: lower commodity price and relatively small all other costs components for the larger profiles.

As recommended previously, the most direct and tangible impact can be exerted on the third strand: taxes, charges and certificate systems. Currently, in all three regions, significant efforts are being made to mitigate the impact of taxes, levies and certificate systems on competitiveness. In contrast to France, Germany and the Netherlands, these efforts are generally made without considering the electro-intensity of industrial consumers. In 2024, the quantity of electricity taken off the grid remained the overriding criterion that has been used at the federal level and at regional level (quota of green certificates, public service obligations) to protect the competitiveness of the cost of electricity for industrial consumers. Nevertheless, Flanders now considers electro-intensity since the introduction in 2018 of a cap on the amount due to the costs related to the financing of renewable energy for electro-intensive consumers. In addition, as of 1st January 2022 electricity and natural gas industrial consumers from the three Belgian regions can also be exempted from the federal special excise duty when electricity and gas are not used only for heating and transport, but also for metallurgic or chemical industrial process that are by definition electro-intensive.

In other words, from a fiscal point of view, in addition to the cap system introduced in Flanders in 2018 and the exemption of special excise duty introduced by the federal State in 2022 and updated in 2023, the Belgian federal and regional authorities mainly grant tax reductions and/or exemptions based on the quantity of electricity taken off the grid, and not on the electro-intensity level of an industrial consumer. Nevertheless, Flanders introduced an indirect CO2 emissions costs compensation scheme in 2023, targeting electro-intensive consumers. The impact of that mechanism is not taken into account in this study.

Consequently, this results in significant competitive advantages for companies competing with non-electro-intensive consumers in France and Germany, while at the same time these reductions may not have a sufficient impact on the total cost of energy to protect electro-intensive industrial consumers in Wallonia and Brussels from competition from their counterparts in France, the Netherlands and Germany.

An additional difference observed this year, is the higher network costs that Belgium's regions suffer compared to other countries such as France and Germany for the largest E3 and E4 profiles. They tend to be higher because no reductions are foreseen.

Our economic impact analysis leads us to support the following assertion:

Consumers that are not particularly affected by a lack of competitiveness of electricity prices are somewhat protected in Belgium given the tax schemes designed in Flanders, Brussels and Wallonia (also valid for federal taxes), while electro-intensive consumers are more at risk and they could suffer in Wallonia and Brussels from a disadvantage compared to their electro-intensive counterparts in neighbouring countries, even if this gap has lowered compared to last year due to lower commodity process and comparatively low costs on schemes, taxes and levies for the largest industrials.

General objective should be to generate a move towards more competitive total energy prices for industrial electro-intensive consumers, while (partly) preserving the current competitive advantage for non-electro-intensive consumers. Considering the recent decrease of electricity and natural gas prices, this objective should be further pursued as electro-intensive consumers are likely to be more impacted by other countries competitivity measures.

We would like to reiterate several points that have been previously stated and that are takeaways of the analysis:

(1) In the case of Belgium, in view of the competitive natural gas prices for the professional customers, it seems important to focus on electricity intensity and not on energy intensity as a whole.

(2) The introduction of electro-intensity criteria can be combined with a minimum offtake condition under which no reduction is allowed.

(3) The introduction of too many layers of different access criteria and levels of reduction (as is the case for the energy excise in France) may have a negative influence on the assessment of the effectiveness of the measures. This may also reduce the predictability of tax revenues.

(4) One should be aware of possible negative side-effects. Granting access to certain reductions depending on the load profile (as is the case for reductions in network charges in Germany and France) may have the negative effect of discouraging the development of demand response and/or energy efficiency.

In conclusion, Belgium has made significant strides in enhancing its competitive position, particularly concerning electricity and natural gas prices when compared to neighbouring countries. The improvement in natural gas competitiveness stands out, largely driven by reductions in commodity prices.

However, it is crucial to adopt a nuanced perspective when evaluating Belgium's competitive landscape. While the focus has primarily been on traditional natural gas, the emergence of alternative gases such as hydrogen and biogas introduce additional dimensions to the equation. Understanding and incorporating these evolving energy trends are essential for a comprehensive assessment of Belgium's competitive position in the energy market.

Moreover, amidst the backdrop of Europe's declining competitive edge in the global industry, it is imperative to remain vigilant. The potential ramifications of industrial relocation outside of Europe underscore the need for strategic planning and proactive measures to maintain competitiveness in an increasingly globalized environment.

In essence, achieving a robust competitive position requires a multifaceted approach that considers not only traditional energy sources but also emerging alternatives and global market dynamics.

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