

Electricity cost assessment for industrial consumers

For the Ministry of Climate Policy and Green Growth

Bonn, 01.08.2025

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Agenda

1 Background and objective of the study

2 Management Summary

3 Quantification of electricity cost components for 2025

4 Outlook and country comparison for 2030

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Introduction, background and objective

- In 2024 E-Bridge benchmarked industrial electricity costs for EZK across the Netherlands, Belgium, Germany and France. The Ministry for Climate Policy and Green Growth (KGG) seeks an expanded update for 2025 that adds further countries (Denmark, UK, US, China), consumer types (DSO level) and reflects new market- and policy developments.
- The objective of the study is the analysis and investigation of the status and development of electricity cost for large and small/medium size industrial companies with different load-profiles and flexibility levels.
- The study has focused on the following outcome and deliverables for the Netherlands, Belgium, Germany, France, United Kingdom and Denmark, with a high-level benchmark against USA and China where data permit:
  - Network costs for industrial users (EUR/MWh)
  - Taxes, levies, possible subsidies and exemptions
  - Electrical wholesale cost based on spot- and forward market prices

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Structure of the report

- This report focusses on **quantification of all cost components for different customers / user profiles for selected countries in 2025**
  - Assessed countries: The Netherlands, Germany, France, Belgium, Denmark, the United Kingdom, the United States, and China
  - User profiles: The results were derived for two large consumers connected to the TSO grid and two medium sized consumers connected to the DSO grid.
- **Chapter 2 summarizes the most important conclusions.**
- **Chapter 3 is therefore the core focus of the report**
  - Profiles for all European countries are analyzed in chapter 3.2 – 3.5 and also includes a comparison between 2024 and 2025 while US and China are analyzed in 3.6. For China, evaluation of medium size industry is not in scope of the report.
  - Subchapter 3.7 provides country comparisons and conclusions.
- **Chapter 4 provides an outlook for 2030** comprising policy trends, assumptions and corresponding quantifications and comparisons.

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The effective power costs for large industry consumers in NL lead to a competitive disadvantage

- This research provides a benchmark of effective electricity cost for large and medium industrial customers with different flexibility levels and connections to the extra high or high voltage grid.
- **Assessed countries**: The Netherlands, Germany, France, Belgium, Denmark, the United Kingdom, the United States, and China
  Despite sharing overarching goals of emissions reduction and renewable energy integration, each country prioritizes differently between industrial competitiveness, cost recovery, and climate objectives, resulting in significantly divergent cost implications.
- **User profiles:** The results were derived for two large consumers connected to the TSO grid and two medium sized consumers connected to the DSO grid. On the TSO level we assess a large baseload industry consumer (1 TWh consumption, profile a) and a large-scale electrolyser (1.2 TWh, profile B) while we analyze both a flexible and a non-flexible medium size industry consumer on DSO level (both 12 GWh, non-flexible one is profile C while the flexible one is profile D). The non-flexible one behaves like a baseload from Monday to Friday.
  - **Large baseload industry on TSO level ("profile A"):** For the large baseload consumers on TSO-level, France has the lowest effective electricity cost whereas Netherlands has rather high ones. Within Europe, only Denmark and the UK stand out with an even higher effective electricity cost primarily driven by the absence of carbon price compensation in Denmark and a generally high level of commodity costs in case of the UK. In comparison, Germany and Belgium offer competitive costs due exemptions, and carbon price compensation. France's cost advantage is achieved by low commodity costs especially because of the ARENH scheme* and low network charges.
  - **Electrolyser on TSO level ("profile B"):** Electrolyser's cost assessment reveal rather similar results, differing from large baseload industry only regarding lower commodity cost than large baseload in all countries except France. Germany provides strongest incentives for electrolysers due to comprehensive exemptions.
  - **Medium industry on DSO level:** For the medium industry consumer (**non-flexible, "profile C"**, and **flexible, "profile D"**) again France has the lowest effective electricity costs whereas Germany and the UK have the highest. The Netherlands sorts itself in the midfield behind Denmark and Belgium.



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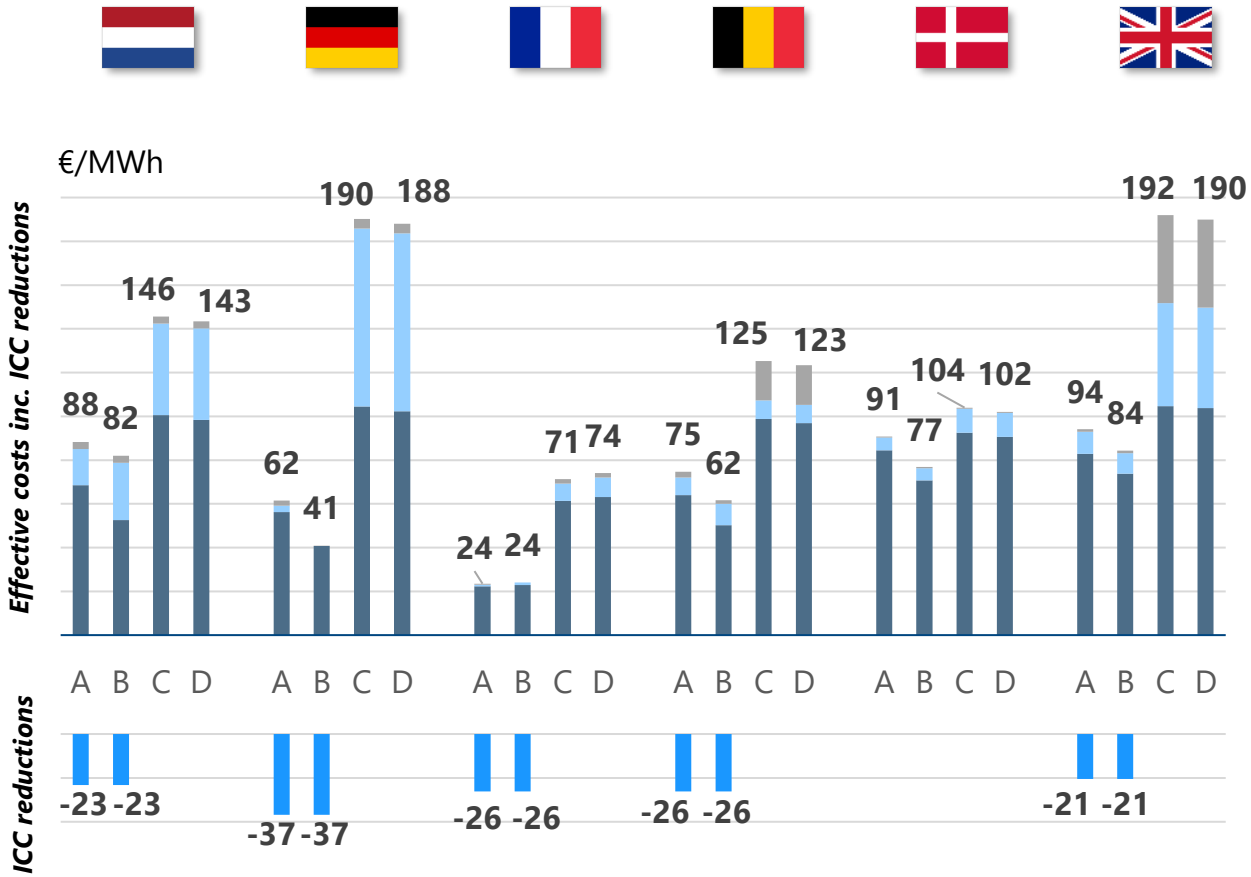
*Costs of ARENH are indirectly shifted to other customers. Valuation of risks of France's nuclear strategy enabling low costs is not within the scope of this study.

The overview of **2025**'s effective electricity costs of selected consumers highlights the impacts of ICC and other exemptions for large consumers, especially in NL, DE and FR

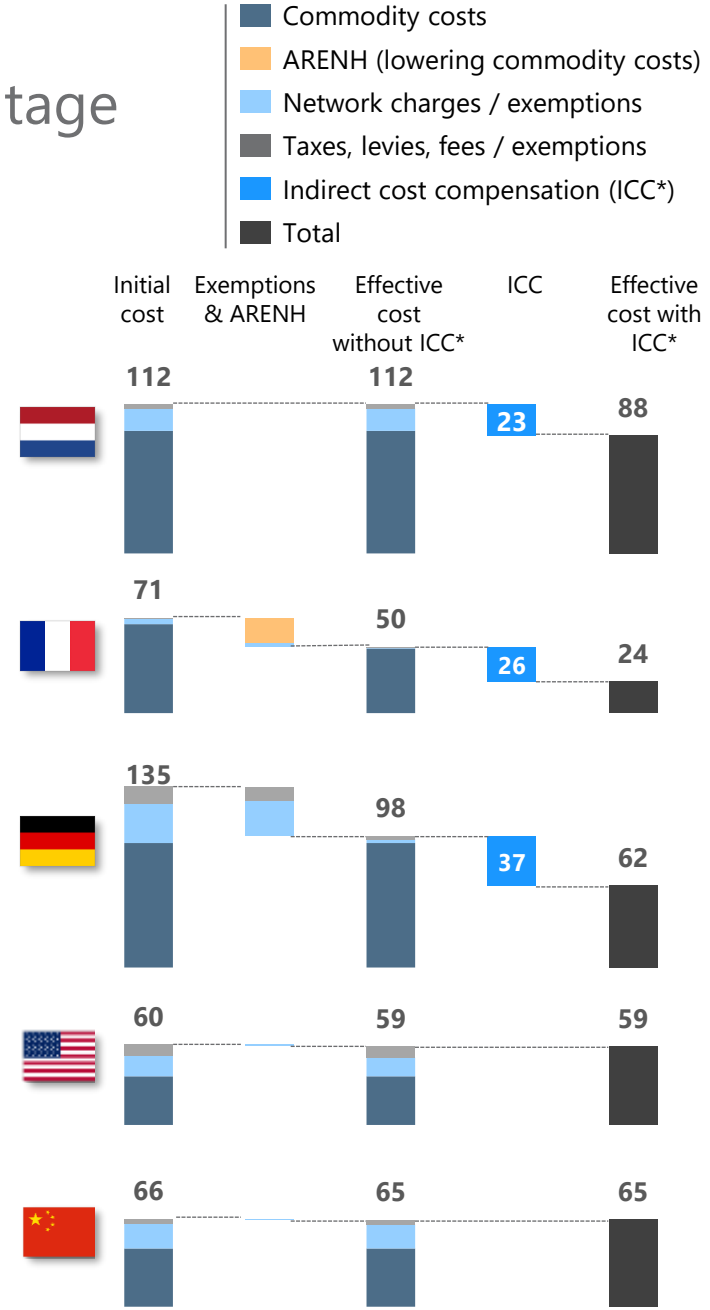
- **Within Europe, large baseload industry users (A) in the Netherlands pay 13-64 EUR/MWh more for their electricity than in France, Germany or Belgium but 3-6 EUR/MWh less than competitors in Denmark (which has no ICC) and the UK**. Germany and France have significantly lower costs due to generous exemptions for network charges, and ARENH and ICC, which puts the Netherlands at a clear competitive disadvantage (even under consideration of ICC for NL).
- **Flexible electrolysers (B) in the Netherlands have to pay the highest costs due to a rather unflexible network charge regime**. In contrast, electrolysers in Germany benefit from comprehensive exemptions. Countries with high shares of renewable energy (primarily NL, DE, BE, DK; secondarily the UK) enable the use of low RES-driven power prices.
- **Dutch medium size industry customers (C & D) have rather high electricity cost; yet Germany and the UK have even higher ones.** Since the **flexibility level was assumed to be rather low** (30 % demand-shift for two hours per day) they could not benefit from low prices at weekends (we assumed production from Monday to Friday), medium flexible industry profile D does not offer strong costs saving potential.*
- **Both medium size industry customer types do not benefit from ICC, as we assumed this user to be active in a non-ICC applicable sector.** Network charge exemptions are not applicable neither in any of the countries (either in general, like in the Netherlands or at least not for these profiles). Consequently, network charges significantly increase total costs, notably in the Netherlands, Germany, and the UK. Taxes, levies and fees are comparable for most users, except for the significantly higher charges for industry customers in Belgium and the UK.



* Please note: we assumed only TSO consumers benefit from new Dutch options for time-of-use network tariffs cf. slide 19

For large industry customers (profile A), competitive disadvantage of The Netherlands is given in comparison to US and China

- **While Germany provides comprehensive exemptions for taxes, levies, fees and network charges, the Netherlands do not. This leads to a competitive disadvantage of 64 to 33 EUR/MWh** (in comparison to the other investigated countries).
- The reintroduction of the Dutch ICC in 2025 only partially mitigates the overall cost gap, as the ICC* instrument benefits countries with a CO_2-intensive power mix, such as Germany, more.
- **France** is pursuing a different decarbonization strategy, which allows for low network charges, but still has exemptions that reduce the majority of network charge costs. In addition, the French ARENH scheme (in place until end of 2025) offers the industry access to low-opex nuclear power. Yet, as the amount is limited this leads to higher commodity costs for other customers (in FR and secondary also in rest of EU).
- **For large industrial customers on TSO level, both taxes, levies and fees as well as network charges of the Netherlands are comparable to U.S. and China. Yet, consumers in these two countries still have considerably lower electricity costs since U.S. and China both provide low commodity costs, which do not fully account for emission costs**.
- In the U.S.** cheap shale-gas–based generation anchors wholesale prices while other costs are moderate. Shale gas is abundant and relatively low-cost (10-14 EUR/MWh), leading to a shift away from coal and older conventional gas fields. In addition, only parts of PJM's regions consider limited CO_2-costs.
- Cost advantages of China*** can be explained analogously to U.S. Yet, low commodity costs are coming from (mostly) cheap domestic coal (5-13 EUR/MWh) and a very limited consideration of emission costs (CO_2-market with very low prices and only for inefficient plants).
  - While base tariffs for provinces such as Guangdong are published, the **actual prices baseload large industrial customers pay are often negotiated behind closed doors and not publicly disclosed**; even statutory levies must be pieced together from scattered government circulars.

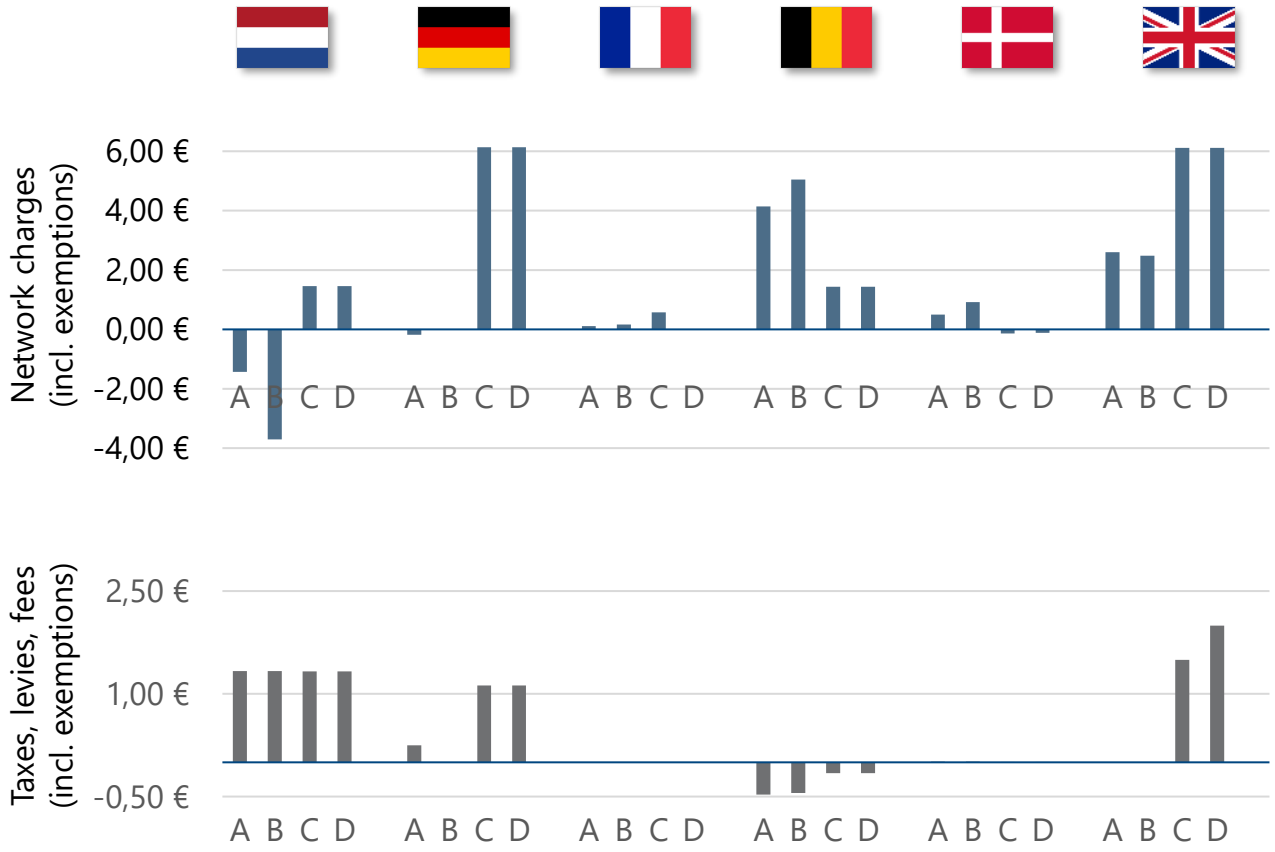


*Indirect Cost Compensation (ICC) – only applicable in selected sectors: e.g. production of various metals, hydrogen, chemicals, wood and paper).
**please note that we have focused on PJM area in U.S. PJM is located close to the Marcellus and Utica shale basins – two of the most prolific shale gas regions in North America. [Source]
***For China, we focused on Guangdong / Pearl-River-Delta.

Cost developments between 2024 and 2025 in RES-dominated countries reveal the impact of higher network expansion costs – yet they affect customer groups differently there

- In **the Netherlands medium sized-industry faced an increase in both network charges and taxes, levies and fees while large industry's network charges even slightly declined**, because the capacity charge of the TSO network charges decreased. The largest impact comes however from the introduction of time-of-use tariffs and the resulting opportunity to lower the charge on the monthly peak. Because of this especially the electrolyser pays less network charges in 2025.
- **Analogously, this holds true for Germany** but with more significant increases of network charges for medium-sized industry but only minor increases for large industry.
- **While France and Denmark offer rather stable conditions Belgium and UK faced strong network charge increases**. In Belgium, the increase of the large industry is greatest while UK's medium size industry network charges increased similar as in Germany.
  - However, Belgium partly mitigates the impact through lower taxes, levies, and fees — primarily due to a slight decrease in the regional levy in Flanders and reduced quotas for green certificates.
  - In UK taxes, levies and fees increased for mid-sized industry as well.

Change of non-commodity costs* from 2024 to 2025

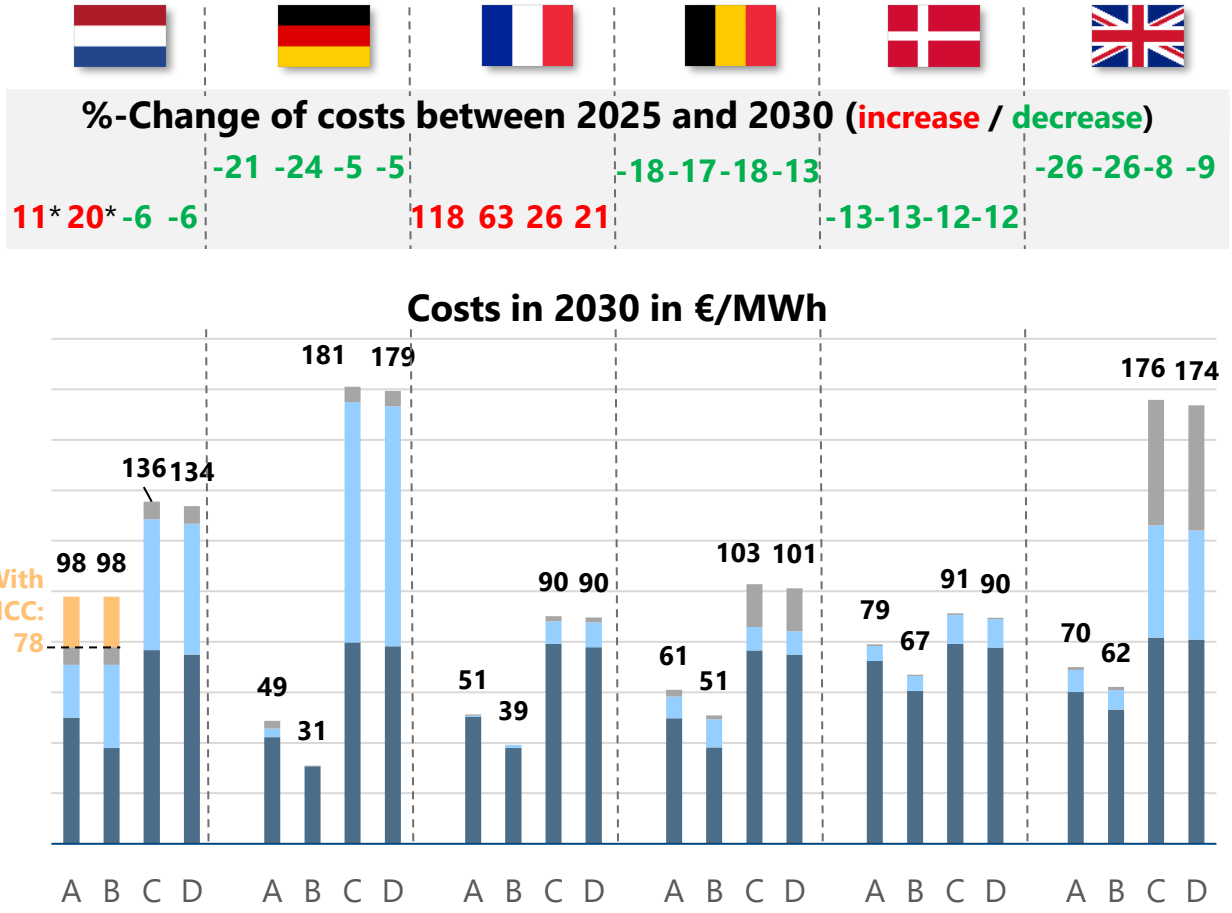


A: Large Baseload Industry (TSO-level) with ICC
B: Electrolyser (TSO-level) with ICC
C: Medium non-flexible Industry (DSO-level)
D: Medium flexible Industry (DSO-level)

*ARENH is excluded here for the sake of greater comparability.
Please note that results for profiles C and D depend on assumptions (applicable exemptions)

While the competitive disadvantage for Dutch large industry remains substantial until 2030, RES strategy helps to narrow the gap. Additional options remain available.

- **RES strategies in all European countries** (except France) **will decrease effective costs due to lower power prices in the order of magnitude of 10 €/MWh.**
- **Large industrial baseload consumers in the Netherlands are expected to continue facing one of the highest electricity costs in 2030 among the countries analysed, driven by the absence of ICC and high network charges** (without exemptions mitigating infrastructure cost risks). An extension of ICC could close the gap to other countries by ~20 €/MWh**.
- **In Germany and Belgium, rising network tariffs – driven by extensive grid expansion projects – pose a growing challenge,** but their impact is expected to be substantially softened through continued well-established exemptions for energy-intensive industries. Yet, important "German Mittelstand" may face highest cost in Europe if exemptions are not applicable (like assumed in profile C and D; e.g. no ICC application).
- **France is likely to maintain low costs through 2030**, although its cost advantage derived from the **ARENH scheme will end**. Still, French consumers will continue benefiting from relatively low commodity prices, taxes and network charges.
- **Electricity costs in the UK and Denmark are expected to remain among the highest in Europe.** However, UK benefits most from RES-driven cost decline (~20 €/MWh).



*without Indirect Cost Compensation

**estimation based on current calculation method (using expected CO2 price 2030 & fallback efficiency benchmark 2030).

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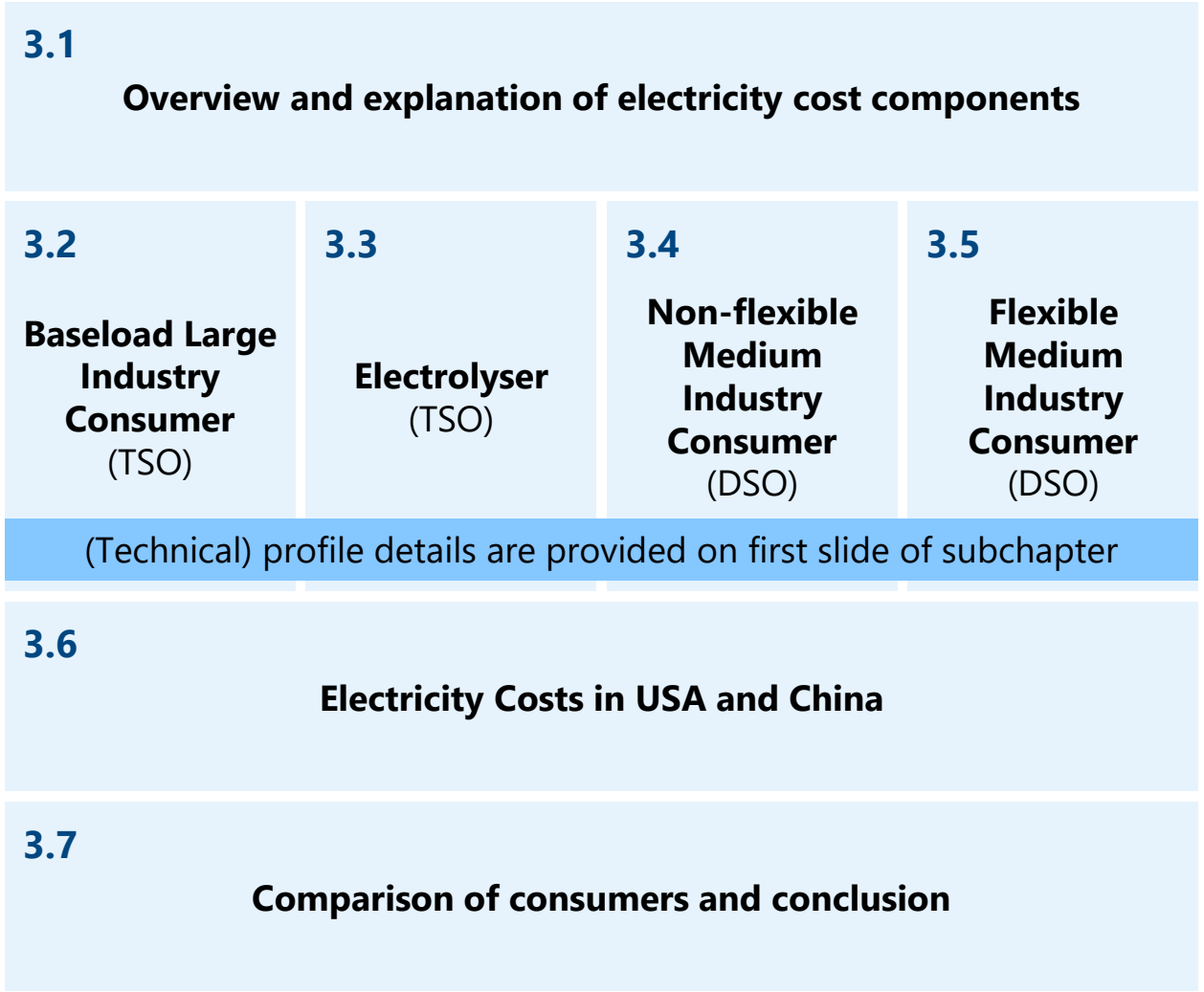
Chapter 3 contains the quantification of all assessed user types

- In **Chapter 3.1** a detailed overview of the different components of the taxes, levies and fees and the network charges is given.
- In the **Chapters 3.2 to 3.5** these components are quantified specifically for the four different user types and for each of the analysed countries.
- In **Chapter 3.6** the results are compared to the analysed non-European countries for which a detailed quantification is not possible due to a lack of reliable data.
- **Chapter 3.7** contains the main conclusions of the quantification of the electricity costs for the different users.
- **Chapter 3.6** contains a direct comparison of the effective electricity costs of the four different users per country to show the impact of the behaviour and the different voltage levels on the electricity price.



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Mapping of wholesale prices / commodity cost

Method:

- Commodity cost are derived from power wholesale markets for the relevant consumer profiles.
- 2025: The spot- and future market prices as published by the relevant power exchanges* have been used.
  - Day-ahead spot prices as determined and published until 31.05.2025.
  - Future price quotes as published and determined by EEX for the period 01.06. - 31.12.2025 (June 2025).
- 2030: Future price quotes as published and determined by the relevant power future exchanges (EEX) have been used.
  - Future prices quotes for the period 01.01. - 31.12.2030 (June 2025).

Adjustment of for selected consumptions profiles:

- Commodity cost have been adjusted and scaled for the selected consumer profiles with a respective profile factor based on 2024 hourly spot price distribution:
  - TSO Baseload consumer – baseload prices (8000 FLH)
  - TSO Electrolyser – adjusted baseload price by electrolyser profile (4818 FLH)
  - DSO non-flexible consumer - baseload prices (6000 FLH)
  - DSO flexible – adjusted base price by flexible profile (4615 FLH)



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*EPEX Spot, Nordpool, EEX,

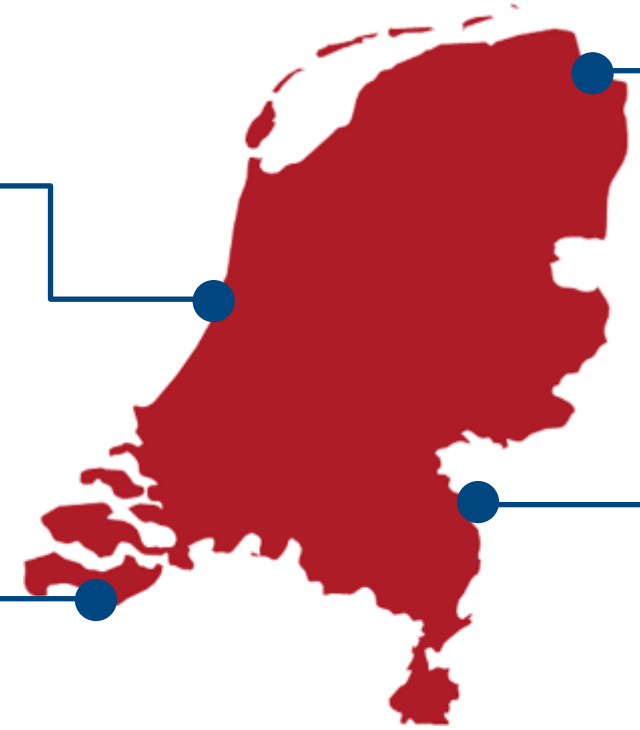
Country introduction – Netherlands

- **Netherlands is one uniform bidding zone (NL)**

  We cover the whole NL bidding zone, one of Europe's most liquid power markets and large cross-border links to DE, BE, NO & GB.

- **TSO TenneT**

  Operates the 110–380 kV transmission grid, ensures system balance and manages the wholesale market platforms (including intraday and balancing).



- **DSO Liander**

  We focus on Liander's "HS 25–50 kV" tariff – the highest standard distribution level available to large industrial consumers.

- **Current policy watch-list**

  Netcode & Tariff Reform 2024-27
  Start of time-of-use tariffs on DSO level (expected 2027)

Netherlands: Explanation table for taxes, levies, fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Taxes	Energy Tax Source	3.21 EUR/MWh	Reduced tax for companies with over 10 GWh consumption Is determined every year	1.88 EUR/MWh	
Exemptions	Energy tax reduction Source	524.95 EUR	Per connection Is determined every year	521.81 EUR	

Netherlands: Explanation table for TSO & DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Vastrecht Source	TSO: 12,478.96 EUR	Fixed basic fee per year	Same as 2025	=
Network Charges	Contracted Capacity Source	TSO: 54.99 EUR/kW	Paid on the contracted maximum capacity Tariff for the extra high voltage level	60.65 EUR/kW	↓
Network Charges	Charge on monthly peak Source	TSO: 7.14 EUR/kW/month	Paid on the actual monthly peak Tariff for the extra high voltage level Can be reduced through the time-of-use tariffs	6.91 EUR/kW/month	↑
Network charges	Periodical connection charge	TSO: 1200 EUR/MW*km*a	Derived from this study where they calculate with 480 kEUR for a 400 MW battery This charge is individually calculated by TenneT for customers on the extra high voltage level	Same as 2025	=
Network Charges	Vastrecht Source	DSO: 230 EUR/month	Fixed basic fee per year	Same as 2025	=
Network Charges	Contracted Capacity Source	DSO: 3.80 EUR/kW/month	Paid on the contracted maximum capacity Tariff for the extra high voltage level	DSO: 3.61 EUR/kW/month	↑
Network Charges	Charge on monthly peak Source	DSO: 5.23 EUR/kW/month	Paid on the actual monthly peak Tariff for the extra high voltage level	DSO: 4.57 EUR/kW/month	↑
Network charges	Periodical connection charge Source	DSO: 1056 EUR/month	Covers the cost of maintaining and administering the physical network connection	DSO: 1002 EUR/month	↑

Flexibility instruments in the Netherlands

	Time-of-Use Tariffs	Time-Block-Based Transmission Rights	Time-Dependent Transmission Rights (TDTR)	Fully Variable Transport Right (VVTR)
Explanation	Different weighting factors bring incentives to shift consumers' load to off-peak times (of the grid/system) to reduce charge on consumers' monthly peak. Currently only applicable on TSO level – **each consumer connected to TSO level must apply this tariff once the system operator implements it.**	Large consumers - on DSO level with connections of 3 x 80 MVA or higher - can obtain a contract that gives them a fixed part of the day or a fixed period of the year of transmission capacity in exchange for a discount.	Consumers are granted full transport rights for at least 85% of the time and may be limited to 15% of the time in exchange for a substantial discount.	Agreement whereby members are allocated transport capacity outside grids' / systems' peak times at a discount on the net tariff
Mechanics	▪ By shifting consumption customers can reduce their network charge on the monthly peak load ▪ Five different levels indicate grids' / systems' peak and off-peak times. Each is weighted with an individual factor (cf. next slide) ▪ For each hour, the maximum average peak of the quarterly hours is multiplied with the factor. Thereby, the monthly peak relevant for network charges is derived.	▪ Current pilot contracts have a night block and a summer/winter block in which consumers can obtain transmission rights for lower grid tariffs.	▪ Contract with guaranteed capacity 85% of the time, in the remaining 15% the capacity can be limited between 0.1 and 100% decided by TenneT (with at least 24 hours' notice) ▪ Compensation based on individual negotiation	▪ The available capacity of the grid is determined on a daily basis by network operator and can be allocated throughout the day to all consumers with VVTR (of the same voltage level)
Go-live	▪ Start on TSO level in Jan 2025 ▪ Start on DSO level expected for 2027	▪ End of 2025 by the latest	▪ TenneT will offer TDTR from 1st October, 2025 ▪ Offer of 9.1 GW capacity (total)	▪ Supposed to start in February 2025, but currently not technically possible (Source)
Benefit for users	▪ Up to 30-40% savings on the network charge on monthly peak	▪ Discounted grid tariffs according to percentage of access*	▪ Up to 50% discount on grid tariffs (Standardized in the "tarievencode" by ACM)	▪ Discounted grid tariffs (Standardized in the "tarievencode" by ACM)

This study will only consider time-of-use tariffs, as the other instruments are individual contracts that cannot be quantified for a generic consumer.

*e.g. 12 out of 24 hours provides a 50% discount; 6 out of 24 hours provide a 75% discounts. You get invoiced according to the grid access.
Sources: [1], [2]

Netherlands: Calculation of the charge on monthly peak with time-of-use tariffs

With the time-of-use tariffs consumers on the TSO level can reduce their charge on monthly peak by shifting consumption to off-peak periods.

Calculation of the monthly peak with time-of-use tariffs:

For every hour of the year, a weighting factor is defined and multiplied with the (average*) load of each quarter hour within this hour. The weighted load for each quarter hour ***i*** is therefore calculated by:

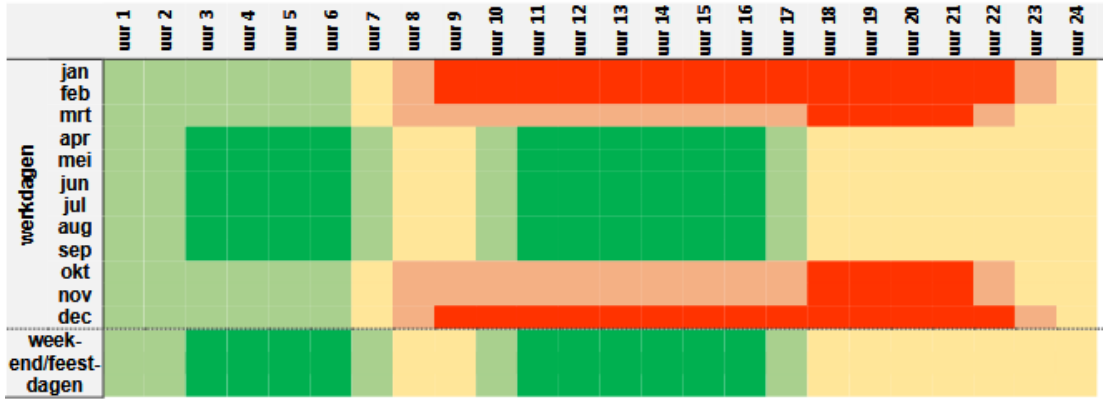
$$weighted\ load_i = factor_i\ * load_{i,\max \text{ average } load\ of quarterly\ hours\ in\ hour}$$

For each month the highest weighted load is used to determine the monthly peak and thereby, the network charge on the monthly peak.

For baseload users the weighting factor will always be the highest possible factor of each month resulting in an average factor of 0.9 over the year. Through flexibility consumers can obtain a lower factor and therefore a lower grid charge.

***Please note that we do not have final evidence about this assumption. Yet, [1] refers to "quarterly hour value[s]" and we did not find further information about this. In fact, it could also be the real peak of each time unit which would of course lead to higher peaks.**

Tariff levels throughout the year (Source: ACM)



	Tariff level	Weighting factor
	1	1.0
	2	0.9
	3	0.8
	4	0.7
	5	0.6

Sources: [1], [2]

Netherlands: Calculation of the compensation on CO_2 component of electricity price

Method:

- For this study the general fallback efficiency benchmark is used: Starting from 0,8 in 2021 the factor is reduced by 1.09% annually from 2022.
  → 0.774 for compensation of costs from 2024 (for 2025: 0.766)
- Compensation is paid for the previous year, so the calculated value on this slide refers to the compensation for 2024.

Calculation:

- Aid intensity: 75%;
- Country specific CO_2 emission factor for the Netherlands: 0.45 tCO_2/MWh (see Annex VI for calculation)
- Efficiency benchmark: 0.774
- EUA price for the accounting year 2024: 89.29 EUR/tCO_2 (Source)

→ Compensation of: 89.29 EUR/tCO_2 * 0.45 tCO_2/MWh * 0.75 * 0.774 = **23.32 EUR/MWh**



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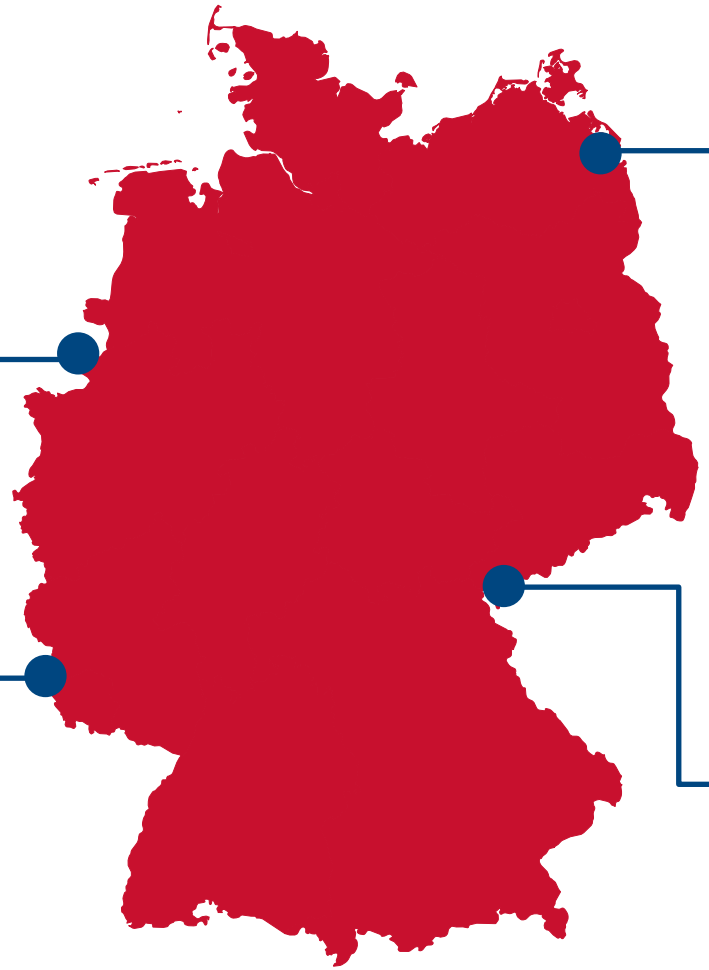
Sources: [1], [2], [3]

Country introduction - Germany

- **Germany + Luxembourg are one bidding zone (DE/LU)**

  A single day-ahead & intraday price applies nationwide. The zone hosts Europe's largest power market and is linked to nine neighbours (NL, BE, FR, CH, AT, CZ, PL, DK, SE).



- **DSO Westnetz**

  We focus on the "HS 110 kV" (Hochspannung) tariff – the highest standard DSO level for large industrial sites.

- **TSO 50Hertz, TenneT, Amprion, TransnetBW**

  Operates the 220–380 kV transmission grid and jointly apply a harmonised nationwide transmission-use-of-system charge set by BNetzA. Large customers therefore pay identical EUR/kW + EUR/kWh rates regardless of TSO area.

- **Current policy watch-list**

  Restructure of the network carges mechanisms incl. reliefs 2024-28 (BNetzA) Industry power price announced in coalition contract of current government

Germany: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Taxes	Energy Tax	0.50 EUR/MWh 0 EUR/MWh for Electrolysers	Reduced tax for companies § 9b StromStG Electrolysers are fully exempt	Same as 2025	=
Levies/Fees	Concession Fee	1.10 EUR/MWh	Levy to the municipalities in return for the use of public roads and paths for the installation of power lines	Same as 2025	=
Exemptions	Relief on concession fee § 2 KAV	1.10 EUR/MWh	Relief on concession fee if electricity costs > 210.40 EUR/MWh Source	Same as 2025	=
Levies/Fees	Surcharge for special grid utilisation Source	15.58 EUR/MWh for the first 1 GWh For exceeding consumption either a) 0.50 EUR/MWh or b) 0.25 EUR/MWh if electricity costs > 4% of revenue	Former § 19 StromNEV levy. Levy to compensate grid operators for the reduction in revenue resulting from the grid fee relief for electricity-intensive industry and since this year also for additional costs due to the integration of renewable energies	6.43 EUR/MWh for the first 1 GWh Strong increase due to inclusion of more costs	↑
Levies/Fees	Offshore-levy Source	8.16 EUR/MWh 0 EUR/MWh for Electrolysers	Levy to promote the construction and operation of offshore connection lines	6.56 EUR/MWh 0 EUR/MWh for Electrolysers	↑
Levies/Fees	CHP-levy Source	2.77 EUR/MWh 0 EUR/MWh for Electrolysers	Levy to promote the generation of electricity from CHP	2.75 EUR/MWh 0 EUR/MWh for Electrolysers	↑
Exemption	Exemption from CHP- and Offshore-levy for electrolysers	Relief of 100%	Electrolysers that produce green hydrogen are fully exempt from the levies § 25 EnFG	Same as 2025	=

Germany: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Exemptions	Relief on CHP- and Offshore-levy § 31 EnFG	Sector list 1 (Annex II): ▪ Limitation to 15% of the levies ▪ Further limitation to 0.5% of gross added value ▪ Limitation only until levies reach 0.50 EUR/MWh Sector list 2 (Annex II): ▪ Limitation to 15% of the levies, when significant portion of energy use from RES ▪ Further limitation to 0.5% of gross added value when significant portion of energy use from RES, otherwise 1% ▪ Otherwise limitation to 25% of the levies ▪ Limitation only until levies reach 0.5 EUR/MWh and not below	Relief for electricity cost-intensive industries to limit the levies in order to maintain their international competitiveness	Same as 2025	=

Germany: Explanation table for TSO & DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Fixed charge Source	TSO: 127.74 EUR/kW*a 0 EUR/MWh for Electrolysers	Paid for the yearly peak Electrolysers are fully exempt	158.98 EUR/kW*a 0 EUR/MWh for Electrolysers	↓
Network Charges	Variable charge Source	TSO: 13.3 EUR/MWh 0 EUR/MWh for Electrolysers	Paid for consumption Electrolysers are fully exempt	11.20 EUR/MWh 0 EUR/MWh for Electrolysers	↑
Exemptions	Individual network charges § 19 Abs. 2 StromNEV	TSO: Offtake hours ≥ 7000h: 80% reduction Offtake hours ≥ 7500h: 85% reduction Offtake hours ≥ 8000h: 90% reduction	Network charge relief for energy intensive industries Percentage equals the maximum reduction possible, the actual reduction can be lower	Same as 2025	=
Network Charges	Fixed charge Source	DSO: 206.88 EUR/kW*a	Paid for the yearly peak	DSO: 189.16 EUR/kW*a	↑
Network Charges	Variable charge Source	DSO: 3.70 EUR/MWh	Paid for consumption	DSO: 4.20 EUR/MWh	↓

Germany: Calculation of the compensation on CO_2 component of electricity price

Method:

- For this study the general fallback efficiency benchmark is used: Starting from 0.8 in 2021 the factor is reduced by 1.09% annually from 2022.
  → 0.766 for compensation of costs from 2025 (for 2024: 0.774)
- Compensation is paid for the previous year, so the calculated value on this slide refers to the compensation for 2025.
- This study does not assume that the supercap applies.

Calculation:

- Aid intensity: 75%;
- Country specific CO_2 emission factor for Germany: 0.72 tCO_2/MWh (see Annex VI for calculation)
- Efficiency benchmark: 0.766
- EUA price for the accounting year 2024: 89.29 EUR/tCO_2 (Source)
- Super cap: When remaining indirect costs after compensation of 75% exceed 1.5% of the company's gross value added, the exceeding part is also compensated.
- Although a "base amount" of 5% of the relevant EUA price, but at least 5 EUR/tCO_2, is excluded from the super cap.

→ Compensation of: 89.29 EUR/tCO_2 * 0.72 tCO_2/MWh * 0.75 * 0.766 = **36.93 EUR/MWh**



E-Bridge competence in energy

Additional sources: [1], [2], [3]

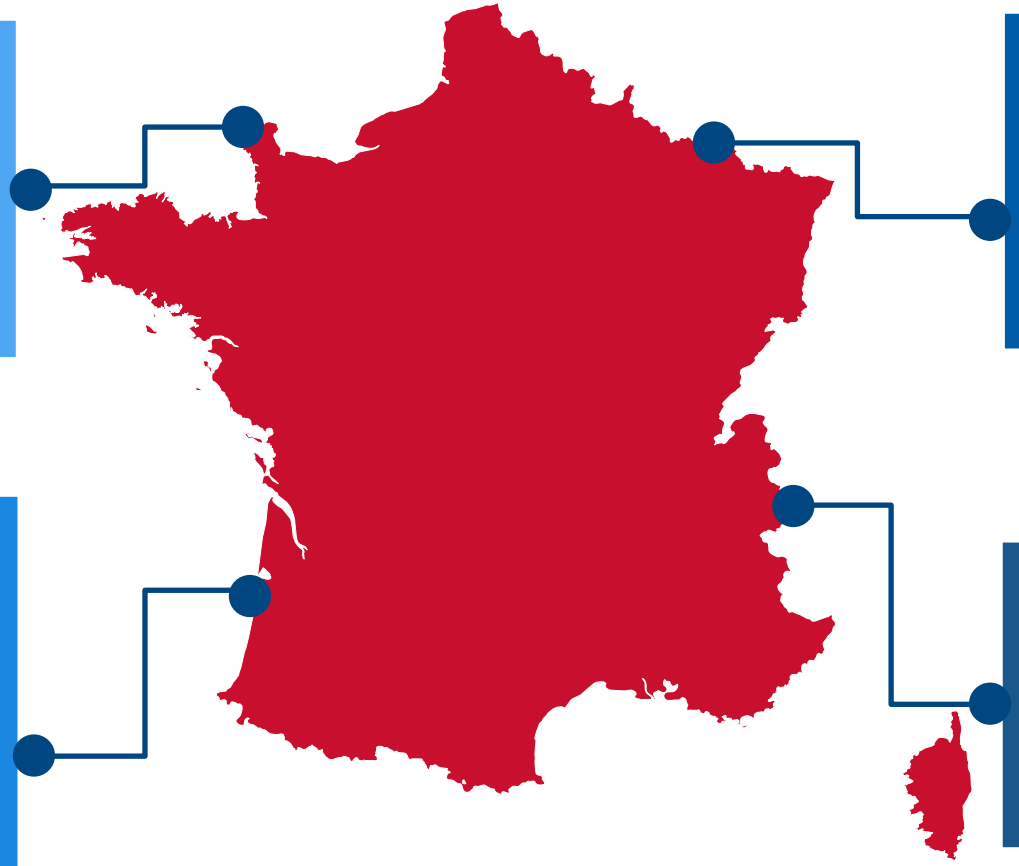
Country introduction - France

- **France is one bidding zone (FR)**

  A single day-ahead & intraday price applies nationwide. The zone combines Europe's largest nuclear fleet with strong hydro and growing offshore links to GB, BE, DE, ES & IT.

- **TSO RTE**

  Operates the 63–400 kV network and applies a uniform nationwide transmission tariff (TURPE HTB) set by CRE. All high-voltage users pay the same EUR/kW capacity and EUR/MWh energy components, regardless of location.



- **DSO Enedis**

  Runs the **15–20 kV HTA** and low-voltage grids across 95% of mainland France. We focus on its **"HTA ≥250 kVA"** tariff band – the highest standard distribution level available to large industrial consumers.

- **Current policy watch-list**

  TURPE 7 (2025-29): CRE plans higher locational signals and a larger capacity share in DS tariffs.
  End of ARENH scheme in Dec 2025.

France: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Electricity production costs	The ARENH scheme	ARENH price: 42 EUR/MWh For detailed calculation see here	100 TWh of energy from nuclear power plants can be obtained at a fixed price of 42 EUR/MWh Amount of energy that can be obtained at ARENH price by the individual customer depends on share of consumption hours during ARENH hours	Same as 2025	=
Taxes	Energy Tax (TICFE/CSPE) L312-65	**Energy intensive companies** Electro-intensity ≥ 0.5% → 7.50 EUR/MWh Electro-intensity ≥ 3.375% → 5 EUR/MWh Electro-intensity ≥ 6.75% → 2 EUR/MWh **Sector exposed to international competition** Electro-intensity ≥ 0.5% → 5.5 EUR/MWh Electro-intensity ≥ 3.375% → 2.5 EUR/MWh Electro-intensity ≥ 6.75% → 1 EUR/MWh **Sector with risk of carbon-leakage** Electro-intensity ≥ 13.5% → 0.50 EUR/MWh Electrolysers: 0,00 EUR/MWh	▪ Standard tax rate: 22.50 EUR/MWh for large industry and 26.23 EUR/MWh for medium sized industry (L312-37) ▪ Reduced rates for energy-intensive industries described in article L312-65 (Annex III) ▪ Additional reduced rates for companies exposed to international competition (L312-72, Annex III) ▪ Additional reduced rates for companies with risk of carbon leakage (L312-73, Annex III) ▪ Electrolysers are exempt from energy tax (L312-65, L321-66)	Same as 2025	=
Taxes	CTA Source	10.11% of fixed grid charges	Contribution Tarifaire d'Acheminement (CTA) Applied to the fixed part of the TURPE grid tariff (management + metering) to finance pensions in the energy sector	Same as 2025	=

France: Explanation table for TSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network costs	Management Component Source	11,545.32 EUR/year	Annual administration component	10,032.24 EUR/year	↑
Network costs	Component for taking off electricity Source	4.10 EUR/MWh	Annual withdrawal component	3.50 EUR/MWh	↑
Network costs	Metering tariff Source	3,800.04 EUR/year (when RTE owned) 682.20 EUR/year (when self owned)	Annual metering component	3,302.04 EUR/year (when RTE owned) 592.80 EUR/year (when self owned)	↑
Exemption	Network charge reduction Source	Reduction rate: ▪ Stable profile: 81% ▪ Anticyclical profile: 74% ▪ Large consumer: 76%	Stable profile: > 7000h and > 10 GWh consumption Anticyclical profile: off-peak network utilisation rate greater than or equal to 0.44 and > 10 GWh consumption Large consumer: >500 GWh consumption; off-peak network utilisation rate ≥ 0.40 and < 0.44;	Same as 2025	=

France: Explanation table for DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network costs	Management Component Source	499.80 EUR/year	Annual administration component	484.68 EUR/year	↑
Network costs	Consumption component: Consumption Part Source	Depends on the individual consumption in the five different time windows. Sum of consumption in time window multiplied with factor of time window For detailed calculation see next slide.	Consumption charges based on consumption in different time windows	Increase of off-peak factors lead to higher consumption charges	↑
Network costs	Consumption component: Power Part Source	Depends on the individual peak load in each of the five different time windows. For detailed calculation see next slide.	Power charges based on peak load in different time windows	Increase of peak factors lead to higher charges on power	↑
Network costs	Metering tariff Source	376.39 EUR/year	Annual metering component	364.84 EUR/year	↑

France enables its industrial consumers to obtain a large share of nuclear power at a regulated low price through the ARENH scheme

The ARENH scheme (Accès Régulé à l'Electricité Nucléaire Historique, ARENH) enables electricity suppliers different from EDF to obtain part of the nuclear electricity production from EDF under specific conditions set by the French public authorities.

Method:

- The total amount of obtainable energy is capped at 100 TWh (25% of the historical yearly nuclear production) with a price of **42 EUR/MWh**.
- The amount of purchasable at the ARENH price depends on consumption during the ARENH hours (see table). The share of consumption hours in the total ARENH hours multiplied by a reduction coefficient (0.844 since 1 January 2024) results in the share of total consumption that can be covered with electricity at the ARENH price.
- If suppliers apply for more than 100 TWh in total, the amount the individual supplier (and therefore assumably also each individual consumer) receives gets reduced additionally. For 2025 suppliers applied for 134.93 TWh, this results in a reduction of 25.89%.

		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Weekdays	Hours between 1 and 7 AM												
	All hours												
Weekend + bank holidays	All hours												

Future of the ARENH scheme:

The scheme expires at the end of 2025 and will be replaced by a new scheme, the "Versement du Nucléaire Universel".
The new mechanism introduces a tax on the use of nuclear fuel for electricity production, applied when the income from the operation of EDF's nuclear plants exceeds a certain threshold. If the income exceeds this "taxation threshold," 50% of the revenue above this threshold will be collected. If the income surpasses a second, higher threshold, called the "capping threshold," 90% of the revenue above this second threshold will also be collected. Additionally, a "universal nuclear payment" is planned to be collected and redistributed to end consumers, forming in essence a price cap on nuclear energy. Details on the thresholds and the universal nuclear payment are yet to be decided. (Source)

Source: EDF, DFBEW

France: Calculation of the Consumption component of the DSO network charges

The consumption component is split into a consumption part (EUR/MWh) and a power part (EUR/kW) which depend on consumption and peak load in the five time-windows shown in the picture on the right.

The tariffs are divided into "long-term" (LU) and "short-term" (CU) tariffs based on the consumption profile. The eligibility depends on load-factor: CU is allowed only when annual utilisation is ≤ 2500 h, otherwise LU applies. **For the both DSO consumers in this study the LU charges apply.**



Calculation of the consumption component:

The consumption part is calculated by multiplying the consumption in each time window with the respective factor and summing the five values together.

Calculation of the power component:

With b_i being the peak load in the time window PS_i:

$$b_1 * PS_1 + \sum_{i=2}^{5} b_i * (PS_i - PS_{i-1})$$

If the peak in PS_1 is 1 MW and the peak in PS_2 is 1.5 MW, this means that the factor of PS_1 has to be multiplied with 1 MW and the factor of PS_2 with 0.5 MW.

	Peak Hours (PS1)	High Season Peak (PS2)	High Season Off-Peak (PS3)	Low Season Peak (PS4)	Low Season Off-Peak (PS5)
CU €/kW	14.41	14.41	14.41	12.55	11.22
CU €/kWh	5.74	4.23	1.99	1.01	0.69
LU €/kW	35.33	32.30	20.39	14.33	11.56
LU €/kWh	2.65	2.10	1.47	0.92	0.68

Sources: Method, Numbers

France: Calculation of the compensation on CO_2 component of electricity price

Method:

- For this study the general fallback efficiency benchmark is used: Starting from 0.8 in 2021 the factor is reduced by 1.09% annually from 2022.
  → 0.766 for compensation of costs from 2025 (for 2024: 0.774)
- Compensation is paid for the previous year, so the calculated value on this slide refers to the compensation for 2025.
- This study does not assume that the supercap applies.

Calculation:

- Aid intensity: 75%;
- Country specific CO_2 emission factor for France: 0.51 tCO_2/MWh (valid until 2025, will be updated for the 2026-2030 period, see Annex VI for calculation)
- Efficiency benchmark: 0.766
- EUA price for the accounting year 2024: 89.29 EUR/tCO_2 (Source)
- Super cap: When remaining indirect costs after compensation of 75% exceed 1.5% of the company's gross value added, the exceeding part is also compensated.
- Compensation from super cap may not exceed 25% of the indirect costs occurred

→ Compensation of 89.29 EUR/tCO_2 * 0.51 tCO_2/MWh * 0.75 * 0.766 = **26.16 EUR/MWh**



E-Bridge competence in energy

Additional sources: [1], [2], [3]

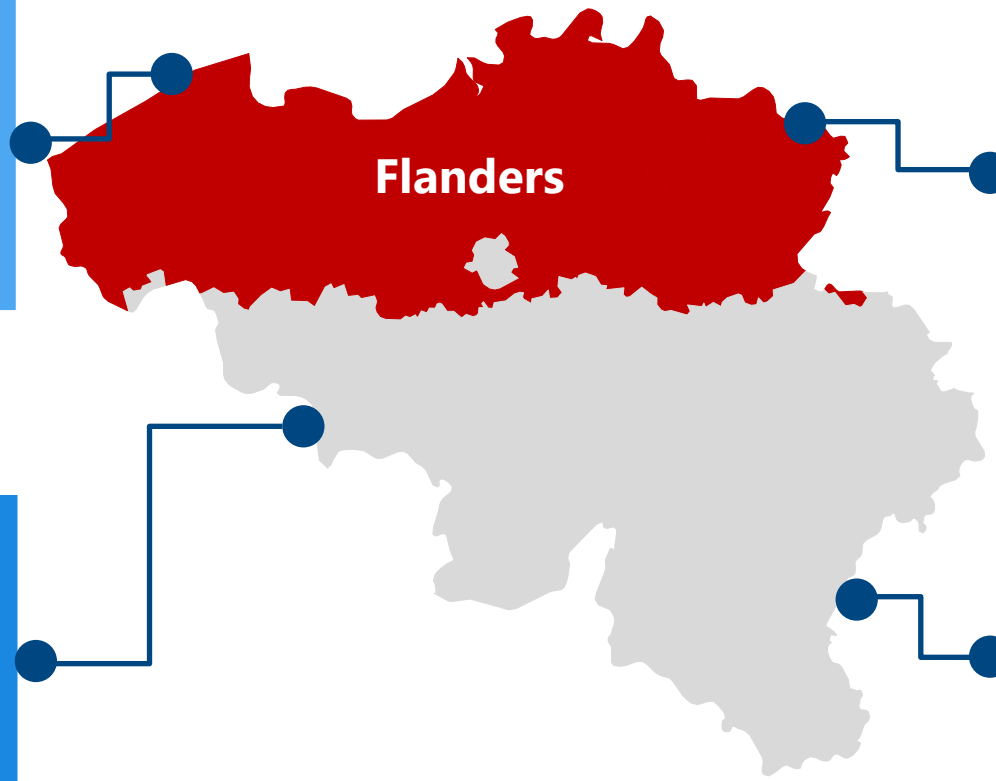
United Kingdom: Explanation table for TSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Half-Hourly Demand Tariffs Source	Midlands: 3.53 (EUR/kW) Eastern: 1.31 (EUR/kW) South Wales: 8.12 (EUR/kW) South East: 6.57 (EUR/kW) London: 8.74 (EUR/kW) Southern: 8.93 (EUR/kW) South Western: 11.95 (EUR/kW)	Locational based tariff. Applies on demand in the three half hours of the year with the highest network load. The average HH gross tariff is set at 10.03 EUR/kW Source	Average: 7.67 EUR/MWh	
Network charges	Non-Locational demand residual charges	Demand >189 GWh: 15,114.20 EUR/Site/day (Source, Source)	Charge to participate all consumers in the costs of the transmission network regardless of their location. Applies in addition to the HH tariffs.	14,123.74 EUR/Site/day	
Network charges	Balancing Services Use of System Source	18.53 EUR/MWh	Paid by all consumers to recover the cost of day-to-day operation including the cost of balancing the electricity transmission system. Applies from October 2025 to March 2026	12.69 EUR/MWh	
Relief	EII Network Charging Cost Compensation (NCC) Source Source	60% compensation of network charges	Exemption for Energy Intensive Industries (Source)	Same as 2025	

Country introduction - Belgium

- **Belgium is one bidding zone (BE)**

  A single day-ahead & intraday price applies nationwide. We focus on Flanders which hosts most of the country's petro-chemical and auto clusters and is strongly interconnected with NL, FR & DE.



- **DSO Fluvius**

  Manages the **15–36 kV** MS and LV networks across all five Flemish provinces. We model its **"MS ≥ 1 MW"** tariff class – the highest standard distribution level for industrial sites.

- **TSO Elia**

  Operates the 70–380 kV network and levies a uniform federal transmission tariff (TAR 2024-27) approved by CREG, so large users face identical EUR/kW + EUR/MWh charges nationwide.

- **Current policy watch-list**

  Tariff reset 2025-28: CREG shifting DSO charges toward capacity component
  Announced policy plans by new Belgian government to lower grid tariffs for energy-intensive industry

Belgium: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Taxes	Special excise duty (On federal level) Source	0-20 MWh: 14.21 EUR/MWh 20-50 MWh: 12.09 EUR/MWh 50-1000 MWh: 11.39 EUR/MWh 1,000-25,000 MWh: 10.69 EUR/MWh 25,000-100,000 MWh: 2.73 EUR/MWh > 100,000 MWh: 0.50 EUR/MWh Electrolysers: 0.00 EUR/MWh	Special excise duty for commercial consumers For each segment the respective excise duty has to be paid and accumulated in the end Electrolysers are exempt from the special excise duty (Art. 429)	Same as 2025	=
Levies	Levy for the taxes, pylons and trenches Source	0.4669 in EUR/MWh	Regional levy	0.5429 in EUR/MWh	↓
Certificate schemes	Green Certificates	97.40 EUR/MWh * 11.0%	Quota: 11.0% (Art. 7.1.10) Only 11.0% of the consumption must be covered by certificates, Prices from Elia	98.11 EUR/MWh * 18.0%	↓
Exemption	Reduction of Green Certificates	Consumption from 1 to 20 GWh: 47% Consumption from 20 to 250 GWh: 80% Consumption above 250 GWh: 98%	The consumption that has to be covered can be reduced additionally (Art. 7.1.10)	Same as 2025	=
Certificate schemes	Cogeneration Certificates (CHP)	20.98 EUR/MWh * 14%	Quota: 14% (Art. 7.1.11) Only 14% of the consumption must be covered by certificates, Prices from Elia	21.92 EUR/MWh * 11.2%	↓
Exemption	Reduction of Cogeneration Certificates	Consumption from 1 to 20 GWh: 47% Consumption from 20 to 100 GWh: 50% Consumption from 100 to 250 GWh: 80% Consumption above 250 GWh: 85%	The consumption that has to be covered can be reduced additionally (Art. 7.1.11)	Same as 2025	=

Belgium: Explanation table for TSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Tariffs for the management of the electric system Source	2.5949 EUR/MWh	Management charge	0.2992 EUR/MWh	
Network Charges	Tariff for the monthly peak offtake Source	0.3950 EUR/kW	Each month the ten highest peaks measured are excluded. Tariff is then applied to the highest peak measured during the month	0.1986 EUR/kW	
Network Charges	Tariff for the yearly peak offtake Source	9.8260 EUR/kW	Each month the ten highest peaks measured are excluded. The tariff is then applied to the highest peak measured during the annual peak tariff period	4.9552 EUR/kW	
Network Charges	Tariff for the power put at disposal Source	7.5485 EUR/kVA	Tariff on the power that is made available (similar to Tariff on contracted capacity in NL)	3.7292 EUR/kVA	
Network Charges	Tariff for the control energy and black-start Source	1.8861 EUR/MWh	Tariff to compensate imbalances	1.8002 EUR/MWh	
Network Charges	Tariffs for market integration Source	0.7425 EUR/MWh	Tariffs for electricity market integration	0.3646 EUR/MWh	

Belgium: Explanation table for DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Tariffs for data management Source	56.56 EUR/a	Management charge	95.73 EUR/a	
Network Charges	Tariff for the monthly peak offtake Source	4.93 EUR/kW/month	Tariff is applied to the highest peak measured during the month	3.45 EUR/kW/month	
Network Charges	Tariff for the power put at disposal Source	43.61 EUR/kVA	Tariff on the power that is made available (similar to Tariff on contracted capacity in NL)	33.73 EUR/kVA	
Network Charges	Tariffs for public service obligations Source	4.90 EUR/MWh	Share of transmission costs covered via tariffs for legally required services (e.g. social tariffs, green energy, universal access). Source	3.94 EUR/MWh	
Network Charges	Surcharge rates Source	0.25 EUR/MWh	Share of transmission costs passed on through surcharges for system-related measures (e.g. capacity mechanism or RES schemes). Source	0.33 EUR/MWh	

Belgium: Calculation of the compensation on CO_2 component of electricity price

Method:

- For this study the general fallback efficiency benchmark is used: Starting from 0.8 in 2021 the factor is reduced by 1.09% annually from 2022.
  → 0.766 for compensation of costs from 2025 (for 2024: 0.774)
- Compensation is paid for the previous year, so the calculated value on this slide refers to the compensation for 2025.
- This study does not assume that the supercap applies.

Calculation:

- Aid intensity: 75%
- Country specific CO_2 emission factor for Belgium: 0.51 tCO_2/MWh; (valid until 2025, will be updated for the 2026-2030 period, see Annex VI for calculation)
- Efficiency benchmark: 0.766
- EUA price for the accounting year 2024: 89.29 EUR/tCO_2 (Source)
- Supercap: When remaining indirect costs after compensation of 75% exceed 1.5% of the company's gross value added, the exceeding part is also compensated.
- Compensation with supercap may not exceed aid intensity of 90%.

→ Compensation of 89.29 EUR/tCO_2 * 0.51 tCO_2/MWh * 0.75 * 0.766 = **26.16 EUR/MWh**



E-Bridge competence in energy

Additional sources: [1], [2]

Country introduction – Denmark

- **Denmark is split into two bidding zones (DK1 West, DK2 East)**

  We focus on **DK1 (West Denmark)** due to its large industrial base and mature wholesale market liquidity.



- **DSO Cerius**

  Covers the **50 kV and 66 kV** networks in the Copenhagen metropolitan and Zealand areas. We focus on the **A-høj** (high-voltage) tariff category at **50/66 kV** – the highest standard DSO level for large industry.

- **TSO Energinet**

  Responsible for high-voltage **(132–400 kV)** transmission, balancing and market facilitation.

- **Current policy watch-list**

  Network Tariff Reform (2026+): Energinet consultation to shift from energy-based to capacity-based transmission tariffs for high-voltage consumers.

Denmark: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Taxes	Electricity Tax (Elafgift) Source	Normal tariff: 96.48 EUR/MWh Reduced tariff: 0.54 EUR/MWh	Valid if the company is: - is VAT-registered - uses electricity for eligible process purposes - has 100% VAT-liable turnover (i.e. sells only to B2B or taxable markets)	Normal tariff: 101.97 EUR/MWh Reduced tariff: 0.53 EUR/MWh	
Fees	Balance responsibility fee (BRPs) Source	Balancing fee = 0.13 EUR/MWh Weekly fee (per BRP) = 30 EUR/ week	- Covers the processing of meter data and financial settlement of imbalances. - Charged it to the Balance Responsible Party, who passes it through in the supply invoice.	Same as 2025	

Denmark: Explanation table for TSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Transmission tariff (standard consumers) Source 1 Source 2	7.50 EUR/MWh	Charge for using the high-voltage transmission network (132-400 kV) Uniform across DK	9.1 EUR/MWh	
Network Charges	Reduced transmission tariff (> 100 GWh/year) Source 1 Source 2	3.50 EUR/MWh	Discounted tariff for large industrial consumers with limited grid access	4.6 EUR/MWh	
System Charges	System tariff (standard consumers) Source 1 Source 2	9.90 EUR/MWh For the share above 100 GWh: 0.99 EUR/MWh	Covers system services, market operations, IT and security of supply	8.6 EUR/MWh For the share above 100 GWh: 0.68 EUR/MWh	
System Charges	System subscription Source 1 Source 2	24.40 EUR/year	Annual fixed charge per metering point in the transmission network	Same as 2025	

Denmark: Explanation table for DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024
Network Charges	Transmission tariff (standard consumers) Source	8.20 EUR/MWh	Transmission grid tariff for consumers in distribution networks	9.93 EUR/MWh
System Charges	System tariff (standard consumers) Source	9.90 EUR/MWh For the share above 100 GWh: 0.99 EUR/MWh	Covers system services, market operations, IT and security of supply	6.85 EUR/MWh For the share above 100 GWh: 0.68 EUR/MWh
Network Charges	Variable energy tariff Source	The consumption follows the official hour-bands = 1.35 EUR/MWh	Time-of-use tariff for 50/66 kV users; weights taken from "Tarifmodel 3.0" hour count. Cerius (and every DSO on "Tarifmodel 3.0") defines its three price-bands purely by clock-rules.	Approximately 2.35 EUR/MWh
Network Charges	Capacity charge ("Effektbetaling") Source	0.50 EUR/MWh	Monthly fee on contracted demand (5 MW); pays for high-voltage feeder capacity.	Was introduced in 2025
Network Charges	Net subscription (meter fee) Source	319.12 EUR/year	Fixed annual charge for the HV consumption meter; no volume exemption.	320.40 EUR/year

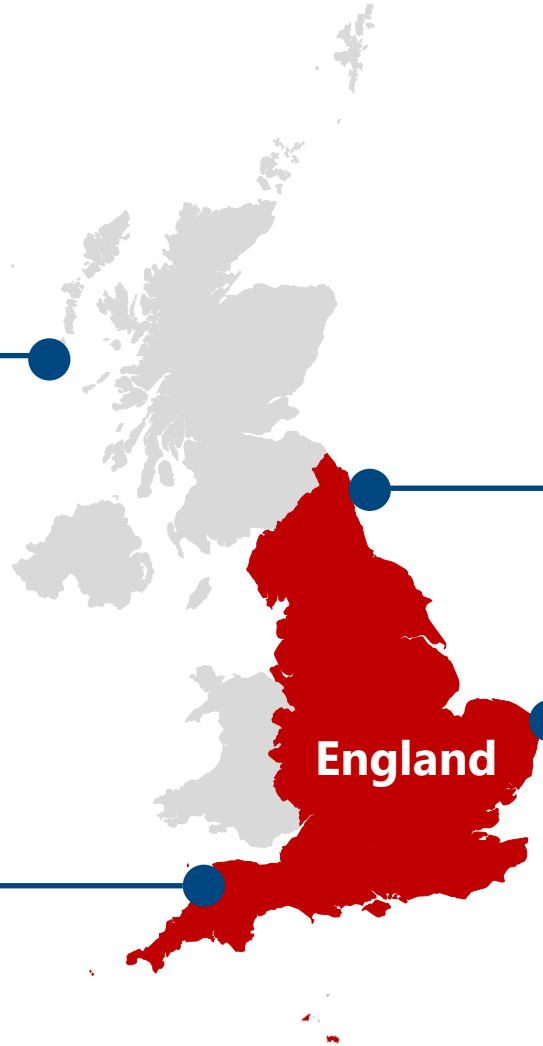
Country introduction – United Kingdom

- **Great Britain is one bidding zone (GB)**

  UK comprising of England, Scotland and Wales (known as GB) clear at a single day-ahead & intraday price while Northern Ireland trades separately in SEM.

- **TSO ESO**

  Dispatches the **275/400 kV** network owned by NGET, SP Transmission and SSEN Transmission. Large demand users face a uniform (£/kW + £/MWh) TNUoS demand charge set under Ofgem's RIIO-T2 price control.



- **DSO Electricity North West**

  Operates the **132/33 kV** and **11 kV** networks across North-West England. We focus on its **HV < 33 kV** demand band – the highest standard DSO tariff available to energy-intensive sites.

- **Current policy watch-list**

United Kingdom: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Levies/Fee	Climate change levy Source	9.15 EUR/MWh Penalty for non-registration: 295 EUR	Reduction of the CCL charges when entering into a CCA with the Environmental Agency Climate change agreements (CCL) ▪ reduction of 92% in the CCL rate paid on electricity bills	Same as 2025	=
Levies/Fee	Renewables Obligation (RO) Source	Buy-out price: 79.13 EUR/ROC Obligation level (England/Wales/Scotland): 0.493 ROCs/MWh	Suppliers are obligated to source a minimum share of electricity from renewables. If not met, a buy-out price per ROC must be paid. Exemption from the indirect costs of the Renewables Obligation of 100% possible for energy intensive industries Source	Buy-out price: 76.38 EUR/ROC Obligation level (England/Wales/Scotland): 0.491 ROCs/MWh	↑
Levies/Fee	AAHEDC (Assistance for High Distribution Costs) Source	0.49 EUR/MWh	Compensation mechanism to support regions with high distribution costs	0.50 EUR/MWh	↓

United Kingdom: Explanation table for DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation	Value of 2024	
Network Charges	Consumption charge Source	Depends on the individual load in each of the three different time windows. For detailed calculation see next slide.	Consumption charges based on load in different time windows	Red and Amber time band increased from 2024	↑
Network charges	Capacity Charge Source	110.31 EUR/MVA per day	Charge on the maximum capacity	39.32 EUR/MVA per day	↑
Network charges	Fixed Charge Source	65 EUR/day per Site	Fixed charge	220.30 EUR/day per site	↓
Network charges	Residual charging bands Source	22,989.43 EUR/year per site	Charge to participate all consumers in the costs of the network regardless of their location.	79,662 EUR/year per site	↓
Network charges	Balancing Services Use of System Source	18.53 EUR/MWh	Paid by all consumers to recover the cost of day-to-day operation including the cost of balancing the electricity transmission system. Applies from October 2025 to March 2026	12.69 EUR/MWh	↑
Relief	EII Network Charging Cost Compensation (NCC) Source Source	60% compensation of network charges possible	Exemption for Energy Intensive Industries (Source)	Same as 2025	=

United Kingdom: Calculation of the consumption charge of the DSO network charges

The consumption charge depends on consumption in three different time windows, as presented in the top table.

The charge for each time window depends on the voltage level and connection capacity. For the analysed distribution system operator (DSO) consumer profiles in this study, the voltage level is high voltage (HV) and the connection capacity is 4,500 kVA. Therefore, the prices for 'Band 4' apply (see the table at the bottom).

The resulting charges for the three time-windows, as well as the fixed and capacity charges, are listed in the middle table. The residual charge per MPAN can be seen in the table at the bottom.

Time Bands for LV and HV Designated Properties

Time periods	Red Time Band	Amber Time Band	Green Time Band
Monday to Friday (Including Bank Holidays)	16:00 to 19:00	09:00 to 16:00 19:00 to 20:30	00.00 - 09.00 20.30 - 24.00
Saturday and Sunday		16:00 to 19:00	00.00 - 16.00 19.00 - 24.00

	Red/black unit charge €/MWh	Amber/yellow unit charge €/MWh	Green unit charge €/MWh	Fixed charge €/MPAN/day	Capacity charge €/MVA/day
HV Site Specific Band 4	64.64	8.46	0.44	65	110.31

Voltage of Connection	Band	Units	Lower Threshold*	Upper Threshold*	Residual Charge per MPAN (€)
Designated Properties connected at HV	1	kVA	0	422	1,595.78
	2	kVA	422	1,000	4,325.77
	3	kVA	1,000	1,800	9,058.27
	4	kVA	1,800	∞	22,989.43

Sources: Numbers

Exchange rate: 1 GBP = 1.1811 EUR (2024)

United Kingdom: Calculation of the compensation on CO_2 component of electricity price

Method:

- The government uses the average UK ETS allowance price for the previous fiscal year (April 2023 - March 2024) and combines it with the fixed Carbon Price Support (CPS) rate to derive a single carbon cost.
- If the installation's total indirect CO_2 cost exceeds 5 percent of the larger of its Gross Value Added (GVA) or its total production costs (excluding electricity), it passes the "5 % filter test" and may receive compensation.
- For all sectors listed in Table 1 of the UK guidance, the aid-intensity (subsidy) rate is 85%.
- For this study the general fallback efficiency benchmark of 0.8 is used.

Calculation:

- Input parameters (2024 → paid 2025)
  - UK ETS average 2023-24 price: 40.06 £/tCO_2
  - Carbon Price Support rate: 18.00 £/t
  - CO_2 Emission factor (DESNZ): 0.44 tCO_2/MWh
  - Aid intensity for eligible SIC codes: 85%
- CO_2 cost calculation
  - Combined carbon price: 40.06 + 18 = 58.06 £/tCO_2
  - CO_2 cost per MWh: 58.06 × 0.44 = 25.54 £/MWh

→ Compensation of 25.54 £/tCO_2 * 0.44 tCO_2/MWh * 0.85 * 0.8 = **17.37 £/MWh**
→ **17.37 £/MWh = 20.52 €/MWh**



E-Bridge competence in energy

Sources: [1], [2]

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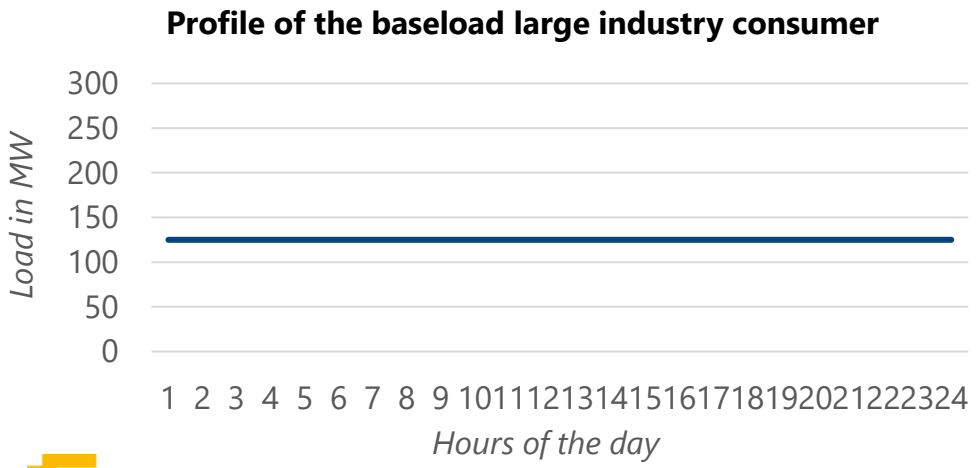
Assumptions for baseload large industry consumer profile (Profile A)

General assumptions

- Consumption per year: 1,000,000 MWh (1 TWh)
- Full load hours: **8000 h**
- (Monthly) peak load & contracted capacity: 125 MW
- Connection to the highest voltage grid level (TSO) of the transmission grid in each country (220/380KV)
- Level of electro-intensity: maximum level assumed for the relevant countries (Germany, France, UK)



Country specific assumptions*



- Length of connection is 0.5 km (relevant for periodical connection charge)



- For individual grid tariffs the highest possible reduction of the applying step is assumed (e.g. for FLH ≥ 8000h the full 90% reduction is assumed)
- Sector of List 1 or List 2 + significant use of energy from RES, i. e. qualification for a reduction of the CHP and offshore levy (Annex II)



- Metering device is owned by RTE
- Energy-intensive company with exposition to international competition and carbon leakage (relevant for energy tax) (Annex III)
- For the reduction of the network charges the "stable profile" applies



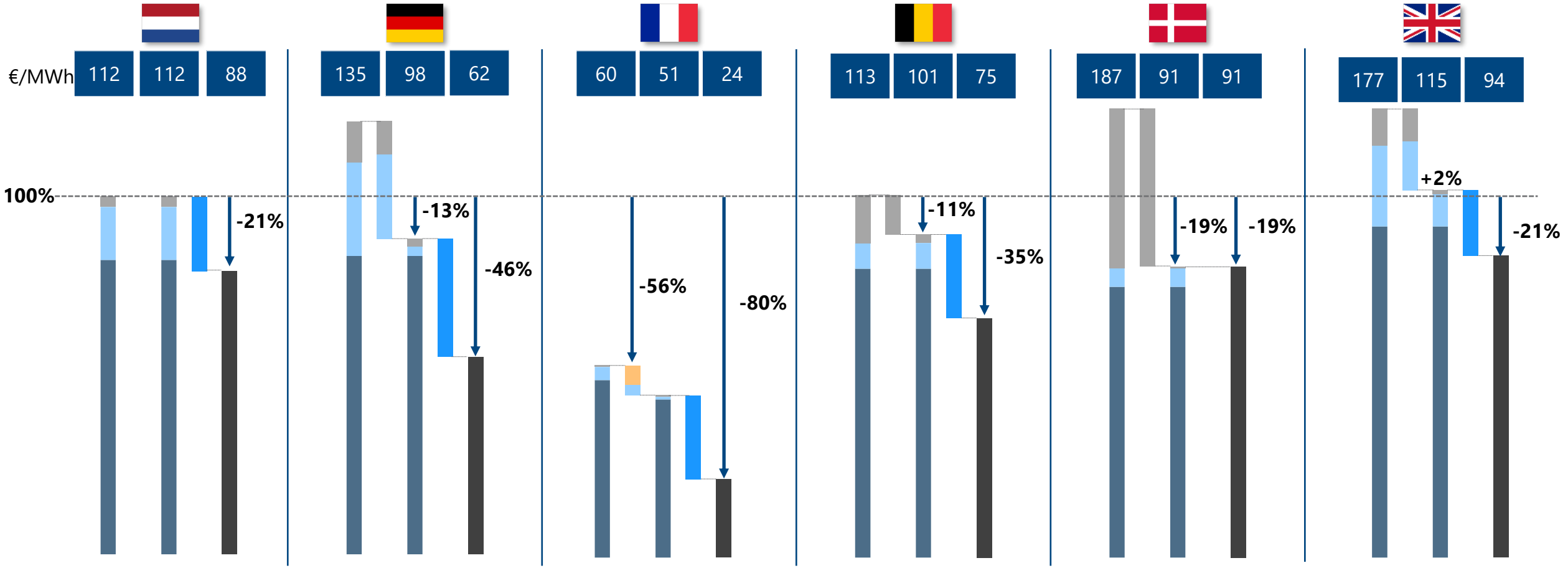
- Energy-intensive company eligible for Energy Intensive Industry (EII) certificate (List in Annex IV)



- No specific assumptions

* These assumptions are valid for all countries but only relevant in the country they are assigned to

Baseload large industry: **Effective electricity costs** with and w/o indirect cost compensation in **2025**



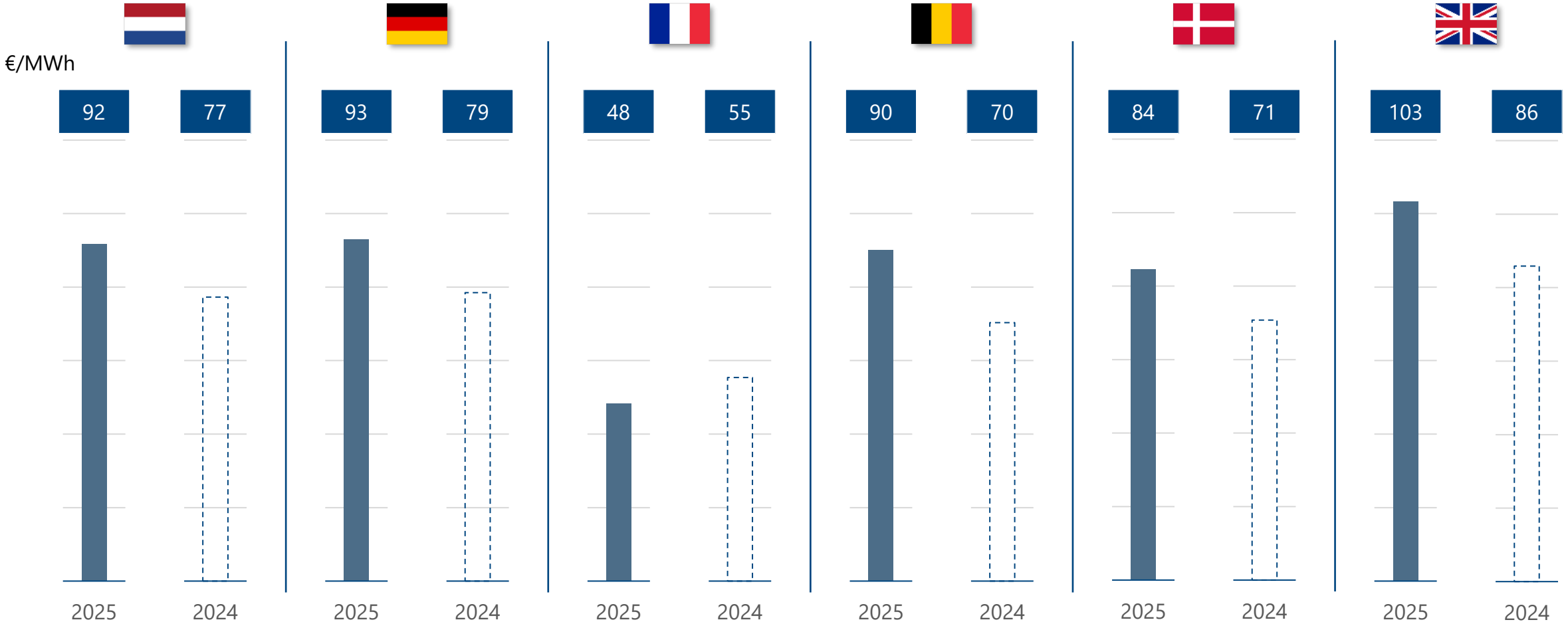
Baseload large industry:
1 TWh/a, 8000 FLH
125 MW capacity

Taxes, levies, subsidies and exemptions
Network charges and reductions
Electrical energy costs
ARENH (lowering energy costs)
Indirect cost compensation*
Price with indirect cost compensation

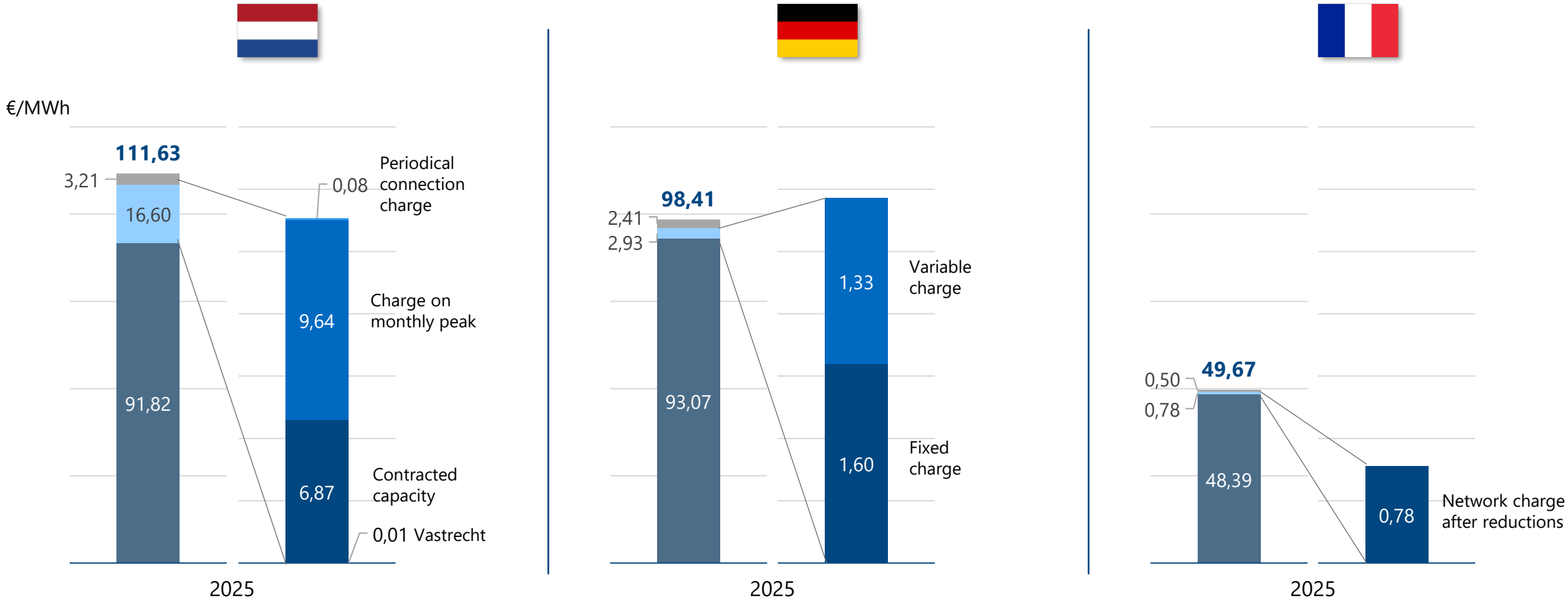
Percentage level: Difference compared to the Netherlands.

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

Baseload large industry: **Commodity prices 2025** versus 2024



Baseload large industry: **Network charges** divided by component in **2025**



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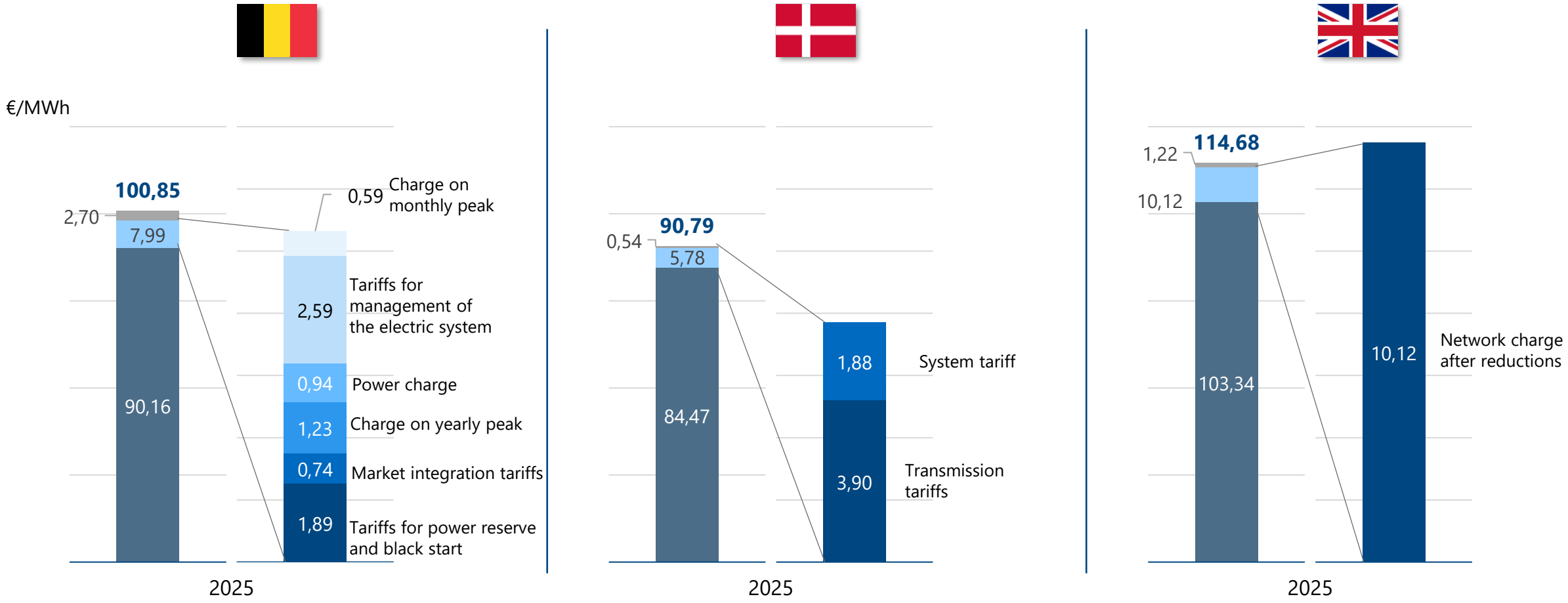
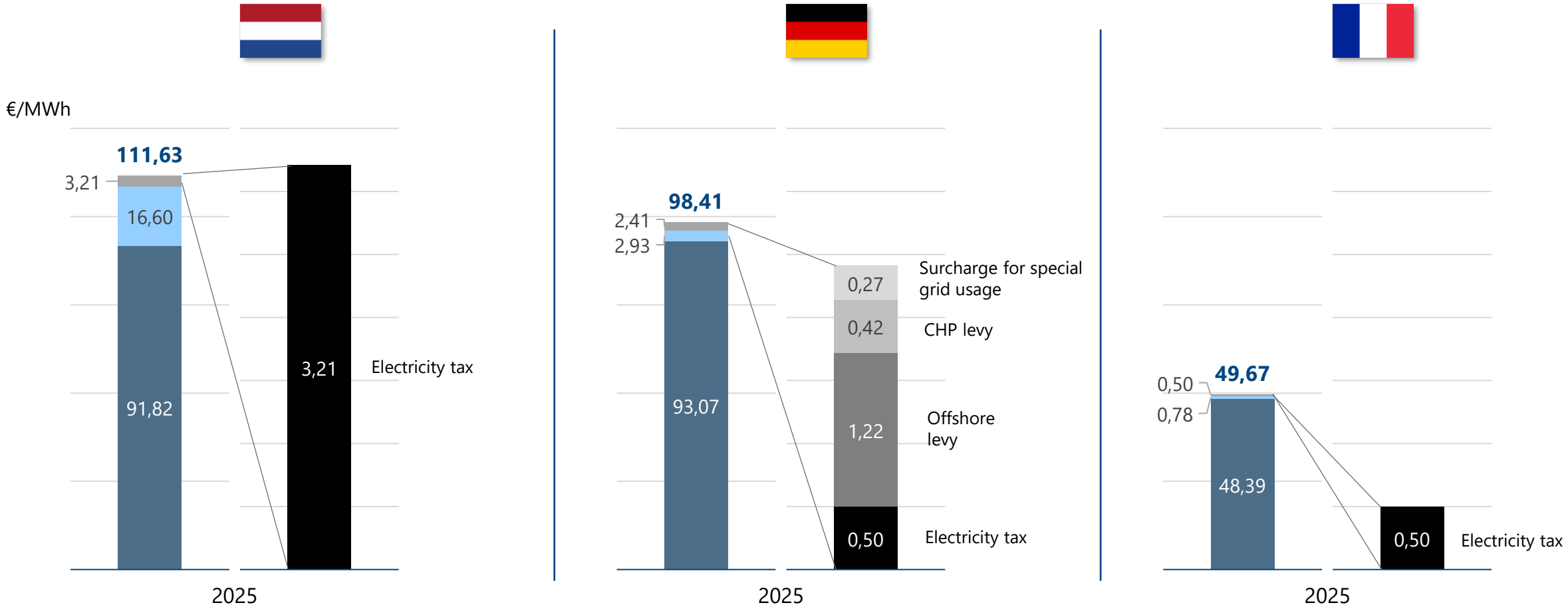
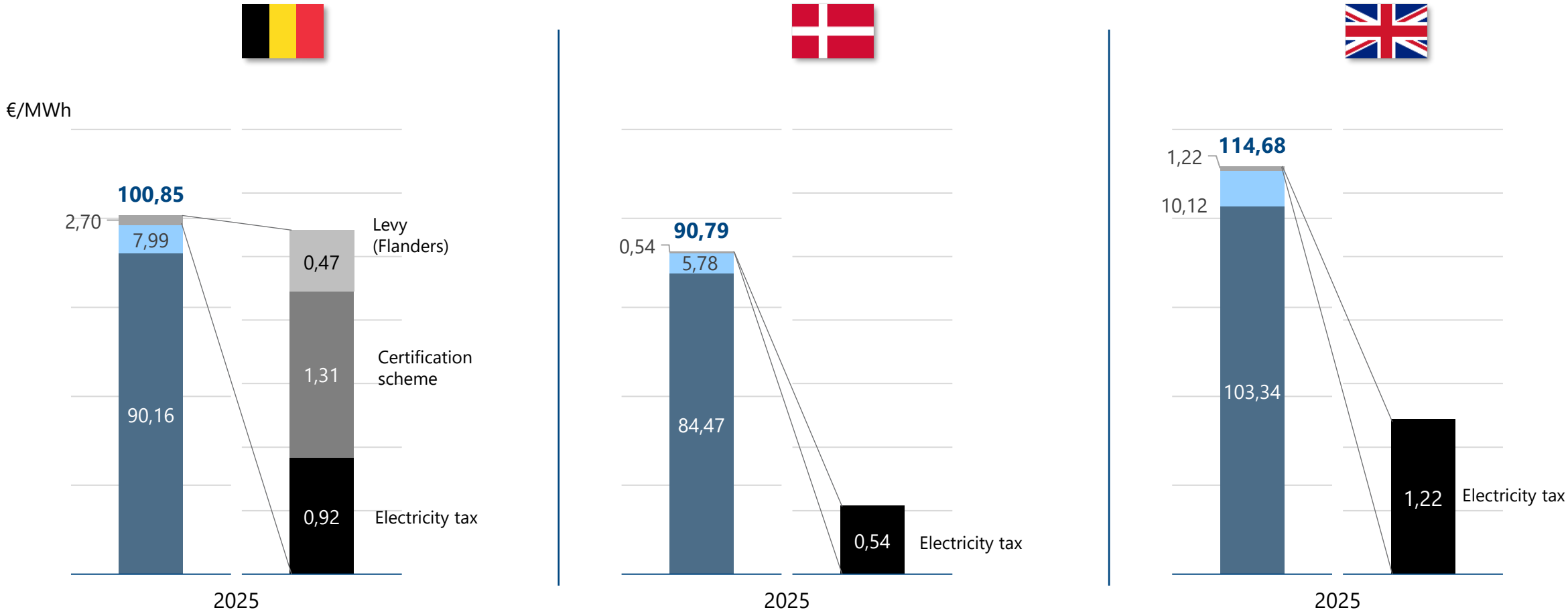


Baseload large industry: **Taxes, levies and fees** divided by component in **2025**



Baseload large industry: **Taxes, levies, fees** divided by component in **2025**



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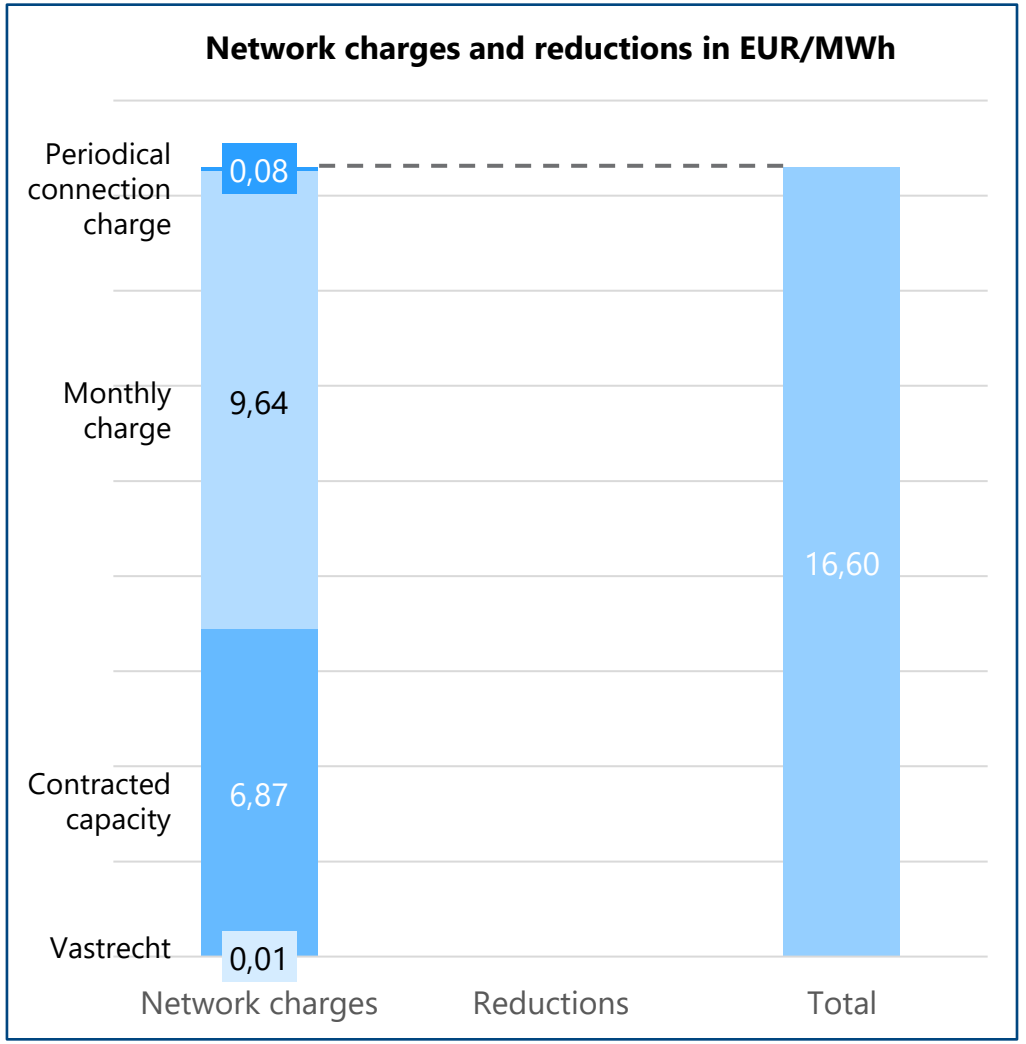
Netherlands: Network charges for a baseload large industry (1 TWh/a) in **2025**

Network charges

- Vastrecht: 12,478.96 EUR/a → **0.0125 EUR/MWh**
- Contracted capacity: 54.99 EUR/kW
  - Contracted Capacity/Peak load: 125 MW → **6.87 EUR/MWh**
- Charge on monthly peak: 7.14 EUR/kW/month
  - Average monthly peak load: 125 MW
  - Average weighting factor (time of use): 0.9

  → **9.64 EUR/MWh**
- Periodical connection charge: 75,000 EUR/a → **0.08 EUR/MWh**

→ Network charges amount to **16.60 EUR/MWh**



Netherlands: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

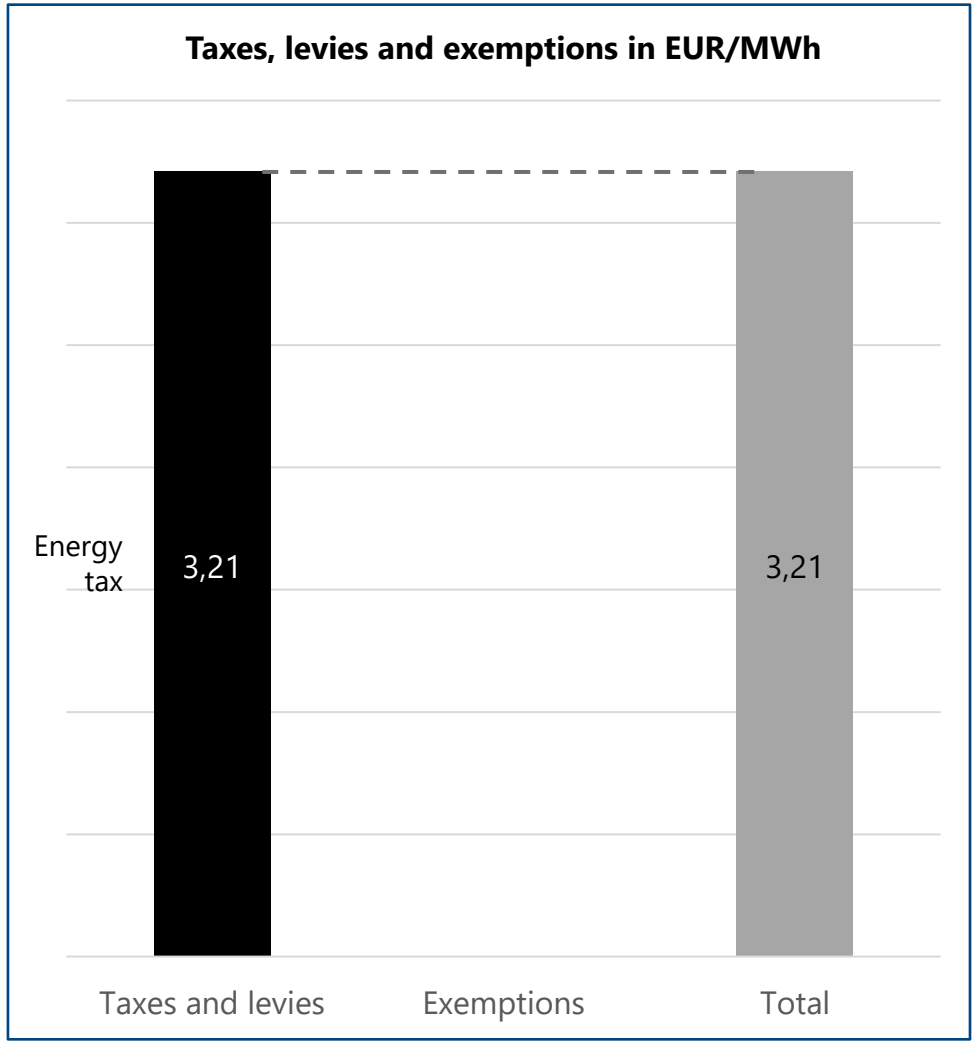
Taxes, levies and fees:

- Energy tax: **3.21 EUR/MWh**

Exemptions:

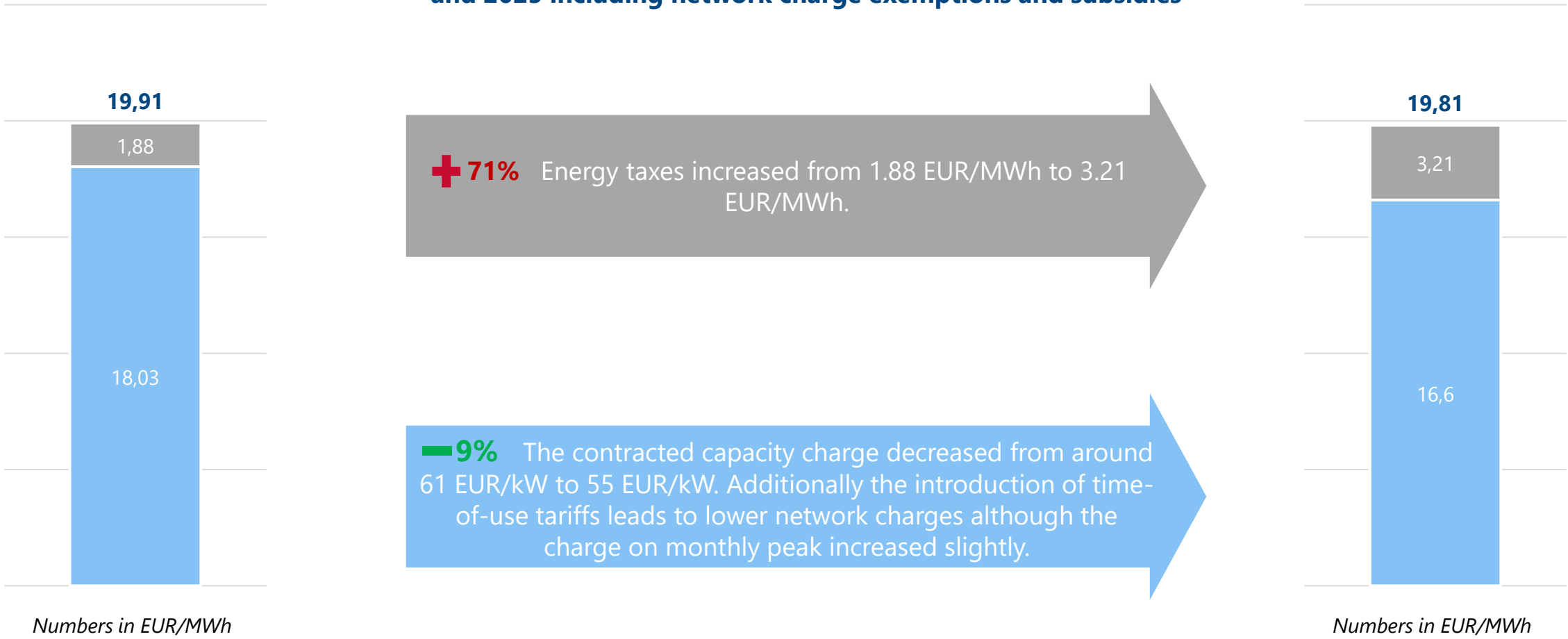
- Energy tax reduction: **524.95 EUR → 0.0005 EUR/MWh**

→ Only taxes apply in the amount **3.21 EUR/MWh**



Netherlands: The non-commodity components of the electricity costs increased – increase of the electricity tax offsets the decrease of network charges

Comparison of electricity costs for a baseload large industry in 2024 and 2025 including network charge exemptions and subsidies



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Germany: Network charges for a baseload large industry (1 TWh/a) in **2025**

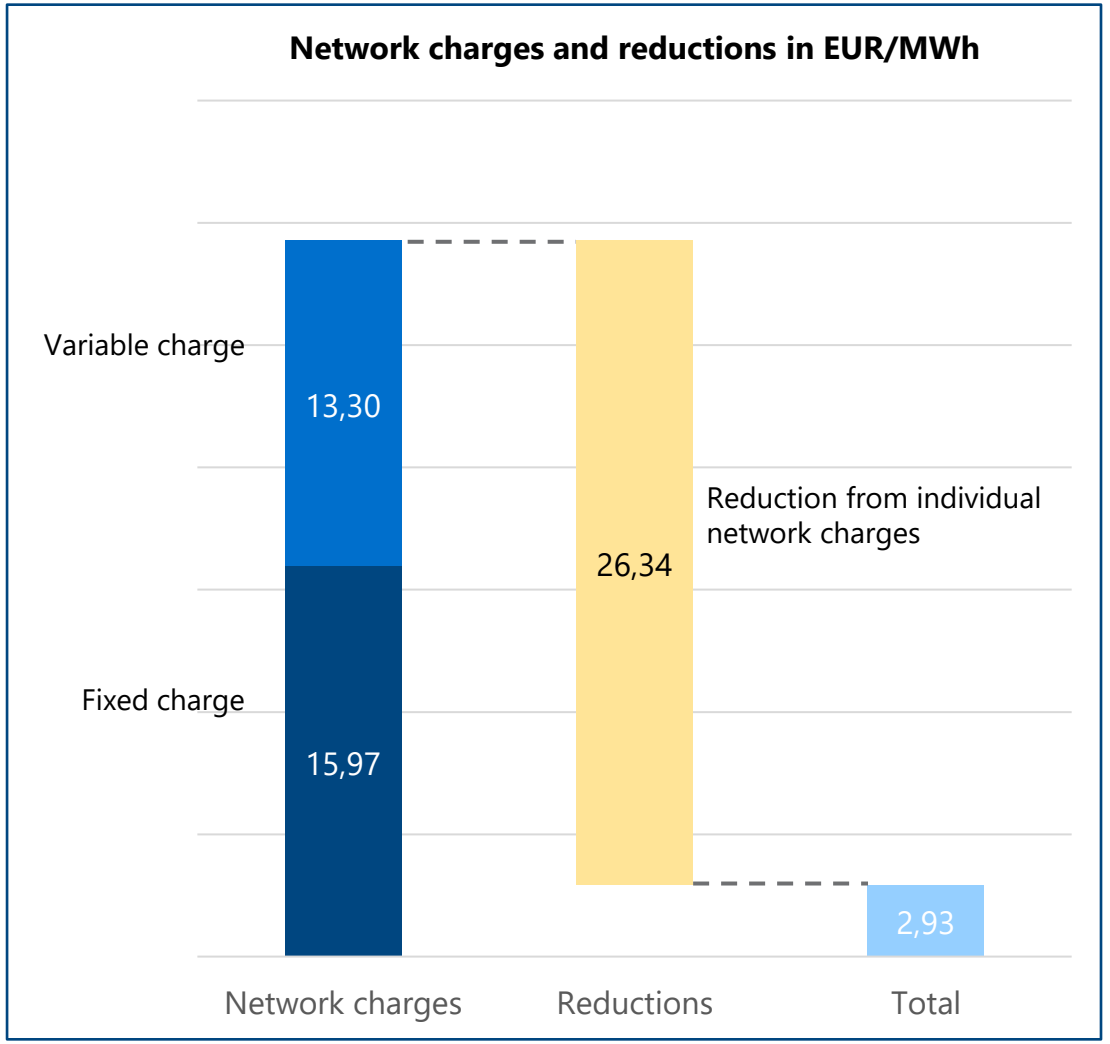
Network charges

- Fixed charge: **127.74 EUR/kW**
  - Peak Load: 125 MW → **15.97 EUR/MWh**
- Variable charge: **13.30 EUR/MWh**

Network charge reduction

- Individual network charges for >8000 FLH: 90% reduction possible → **26.34 EUR/MWh**

→ Resulting network charges: **2.93 EUR/MWh**



Germany: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

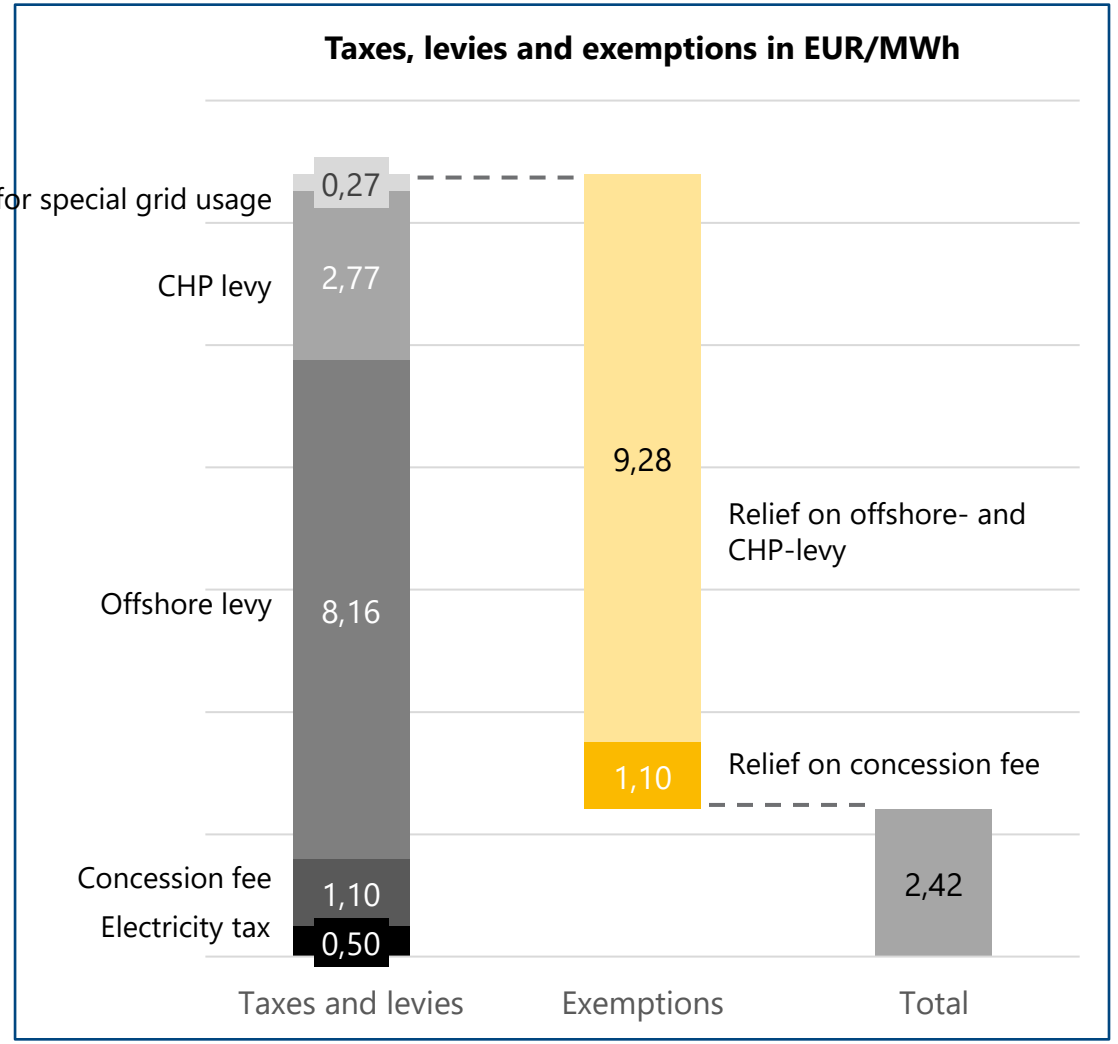
Taxes, levies and fees:

- Electricity tax: **0.50 EUR/MWh**
- Offshore-levy: **8.16 EUR/MWh**
- KWK-levy: **2.77 EUR/MWh**
- Surcharge for special grid usage:
  - **15.58 EUR/MWh** for the first 1000 MWh
  - For every MWh exceeding this: **0.25 EUR/MWh**
  - For 1 TWh → **0.27 EUR/MWh**
- Concession fee: **1.10 EUR/MWh**

Exemptions:

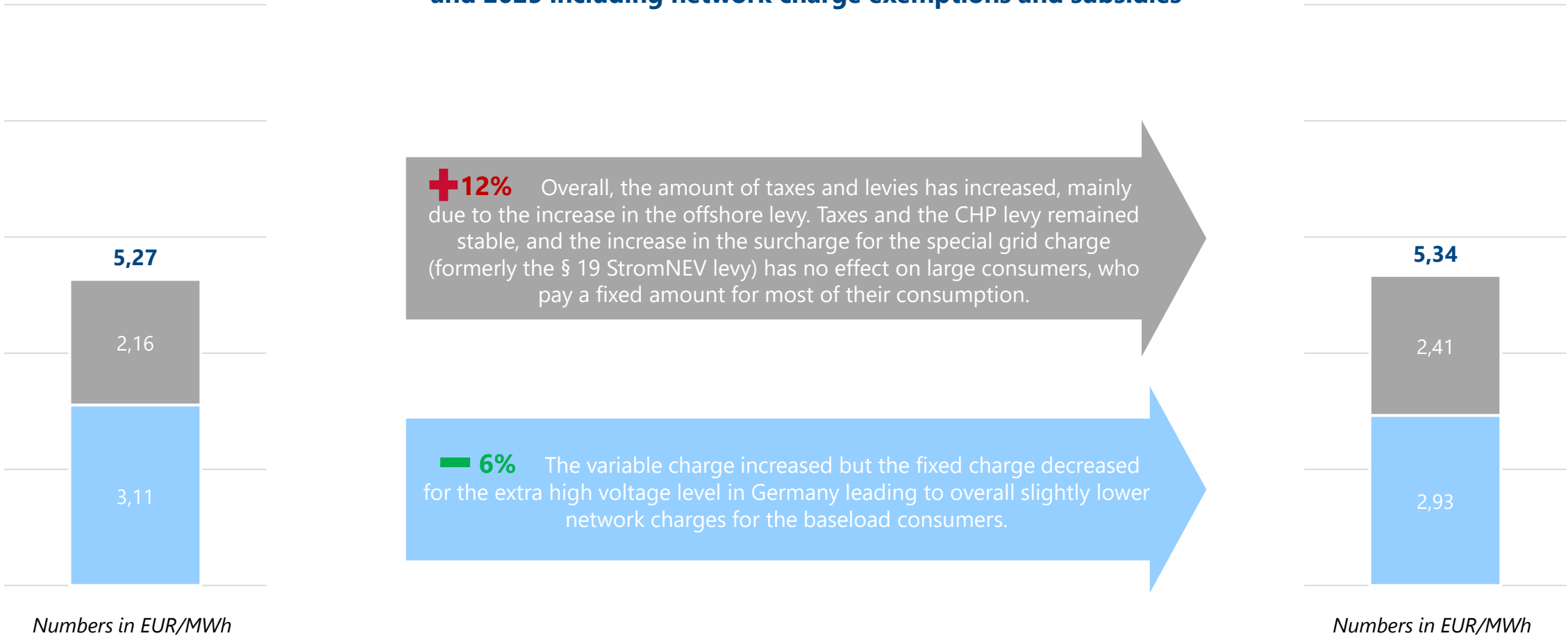
- Relief of **100%** of the concession fee → **1.10 EUR/MWh**
- Relief of **85%** of the offshore and CHP levy for energy consumption over 1000 MWh (not the first 1000 MWh)
  → **9.28 EUR/MWh**

→ Resulting taxes, levies and fees: **2.42 EUR/MWh**



Germany: The non-commodity components of the electricity costs increased slightly – increase of levies offsets the decrease of network charges

Comparison of electricity costs for a baseload large industry in 2024 and 2025 including network charge exemptions and subsidies



Numbers in EUR/MWh

Numbers in EUR/MWh

Taxes, levies and fees Network charges

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France – Influence of the ARENH scheme on commodity prices of baseload large industry

The amount of energy available at the ARENH price is limited to 100 TWh. If the requested amount is higher than 100 TWh, a reduction for all parties applying is necessary.

- Requested amount of energy for 2025: **134.93 TWh** (Source)
- Necessary reduction: (134.93 TWh – 100 TWh) / 134.93 TWh = **25.89%**

The amount of ARENH available to a consumer depends on its consumption profile, and more specifically on its consumption during the so-called "ARENH" hours (see Source for overview of ARENH hours)

- Baseload large industry consumer has constant load
  → 8000 h / 8760 h = **91.32%**

Resulting percentage of consumption that can be obtained under ARENH scheme including the capping:

- 91.32% * (1 – 25.89%) = **67.68%**

Resulting commodity price for baseload large industry:

- Commodity price: 67.68% * ARENH price + 32.32% * market price
  → 67.68% * 42 EUR/MWh + 32.32% * 66.69 EUR/MWh = **49.98 EUR/MWh**



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France: Network charges for a baseload large industry (1 TWh/a) in **2025**

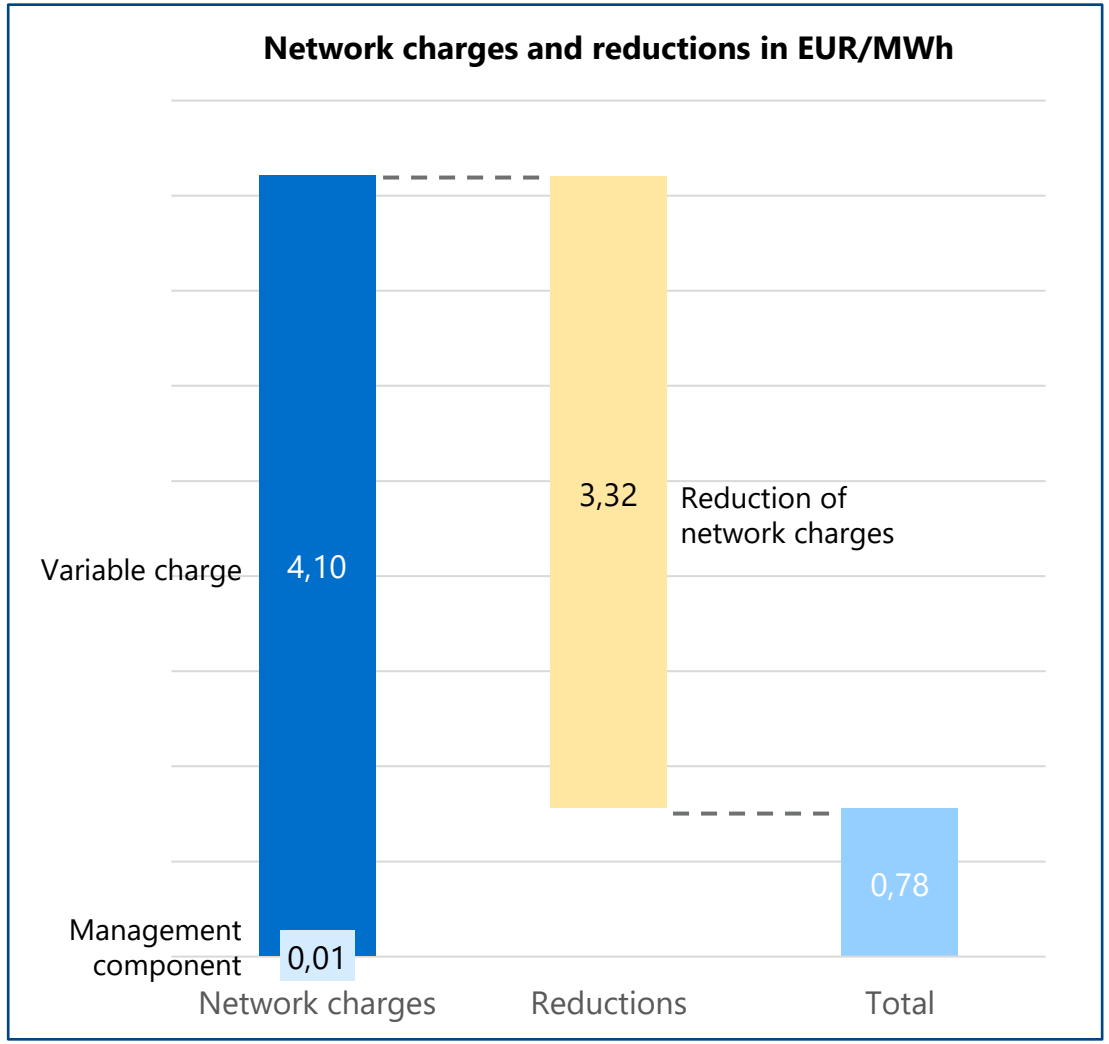
Network charges

- Management Component: **11,545.32 EUR/year**
  - Consumption: 1 TWh → **0.01 EUR/MWh**
- Metering charge: **3,800.04 EUR/year**
  - Consumption: 1 TWh → **0.0038 EUR/MWh**
- Variable charge: **4.10 EUR/MWh**

Network charge reduction

- For >7000 FLH: 81% reduction
  - Charges: 4.10 EUR/MWh → **3.32 EUR/MWh**

→ Resulting network charges: **0.78 EUR/MWh**

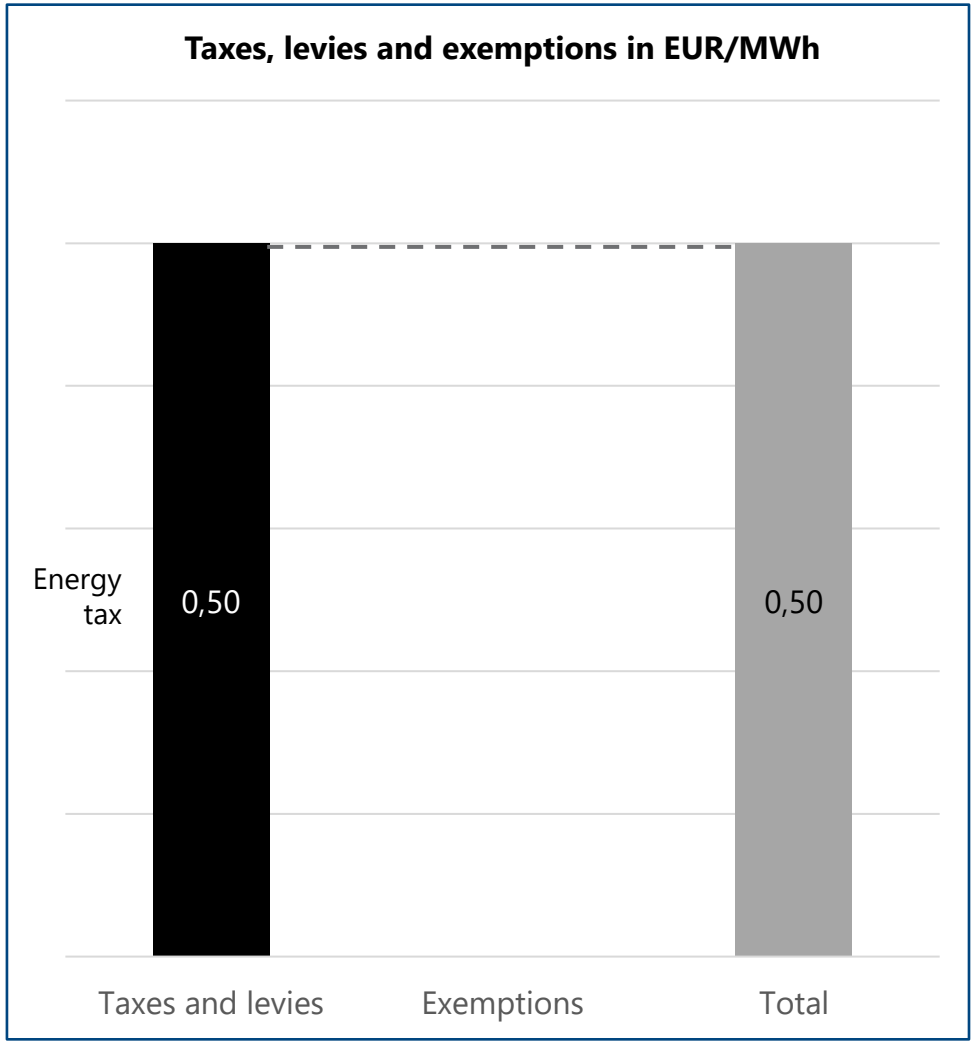


France: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

Taxes, levies and fees:

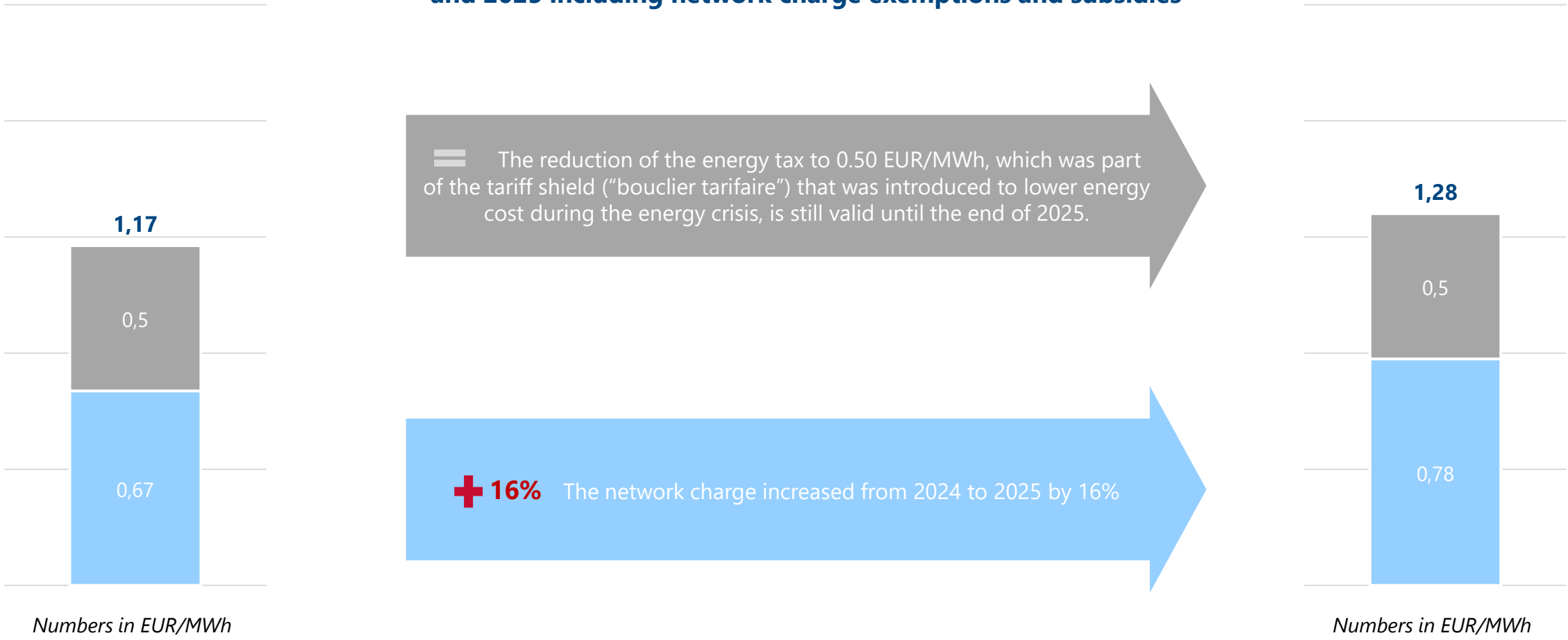
- Energy tax:
  - Sector with risk of carbon leakage & electro-intensity > 13.5%
    → **0.50 EUR/MWh**
- CTA: **10.11%** of the fixed part of the network charges
  - Management and Metering cost → **0.0015 EUR/MWh**

→ Only taxes apply in the amount **0.50 EUR/MWh**



France: The non-commodity components of the electricity costs increased – while taxes and levies remained stable, the network charges increased

Comparison of electricity costs for a baseload large industry in 2024 and 2025 including network charge exemptions and subsidies



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Belgium: Network charges for a baseload large industry (1 TWh/a) in **2025**

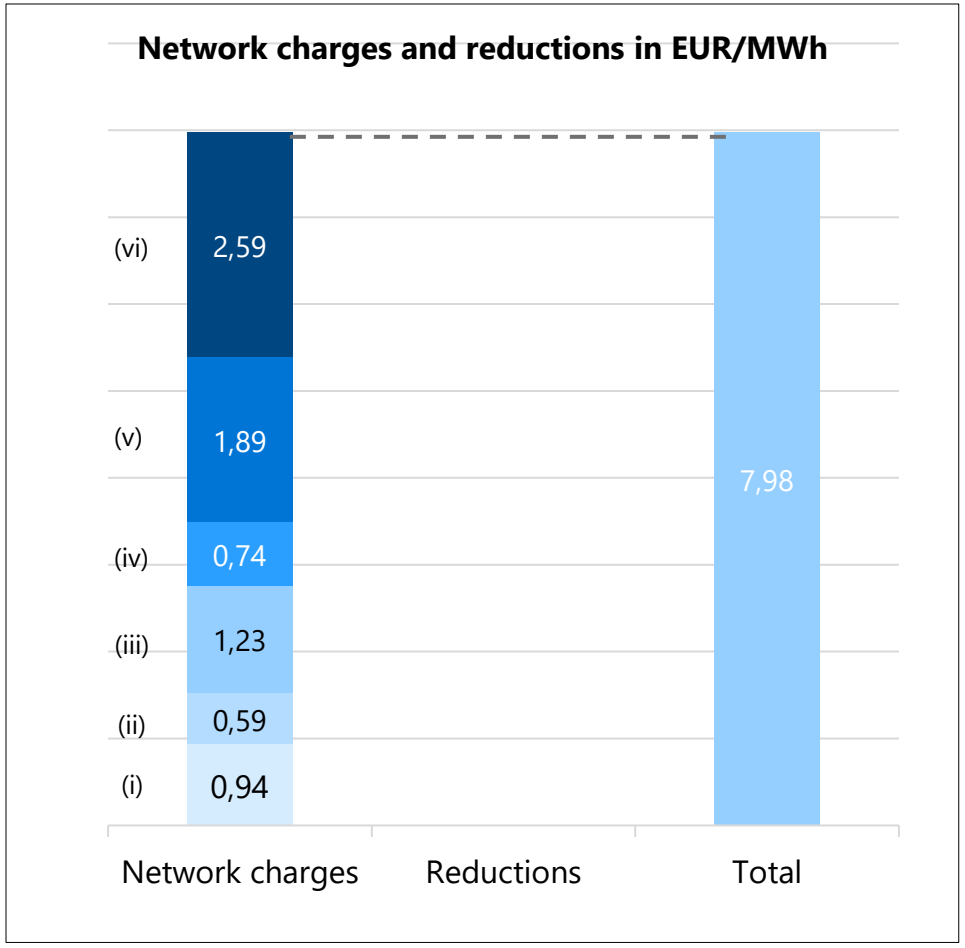
Fixed charges

- Tariff for the power put at disposal (i) -> **0.94 EUR/MWh**
- Tariff for the monthly peak for the offtake (ii)
  - Peak load: 125 MW -> **0.59 EUR/MWh**
- Tariff for the yearly peak for the offtake (iii) -> **1.23 EUR/MWh**

Variable charges

- Tariff for market integration (iv) -> **0.74 EUR/MWh**
- Tariff for the power reserves and black-start (v) -> **1.89 EUR/MWh**
- Tariff for the management of the electric system (vi) -> **2.59 EUR/MWh**

→ Network charges amount to **7.98 EUR/MWh**



Belgium: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

Taxes, levies and other costs:

- Special Excise Duty: **0.92 EUR/MWh**
- Levy for the tax's pylons and trenches: **0.47 EUR/MWh**

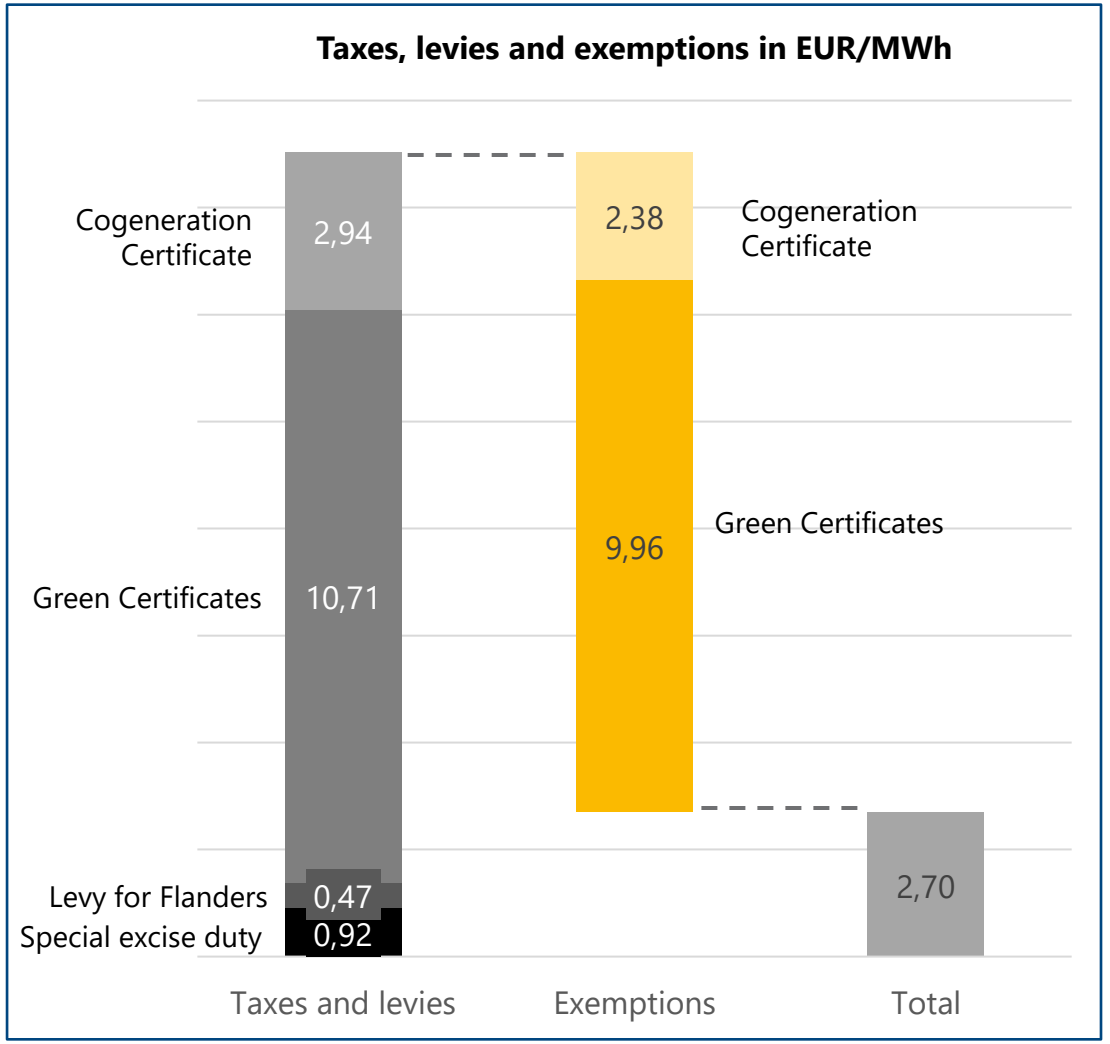
Certification scheme

- Green Certificates: 97.40 EUR/MWh * 11%
  → **10.71 EUR/MWh**
- Cogeneration: 20.98 EUR/MWh * 14.0%
  → **2.94 EUR/MWh**

Exemptions

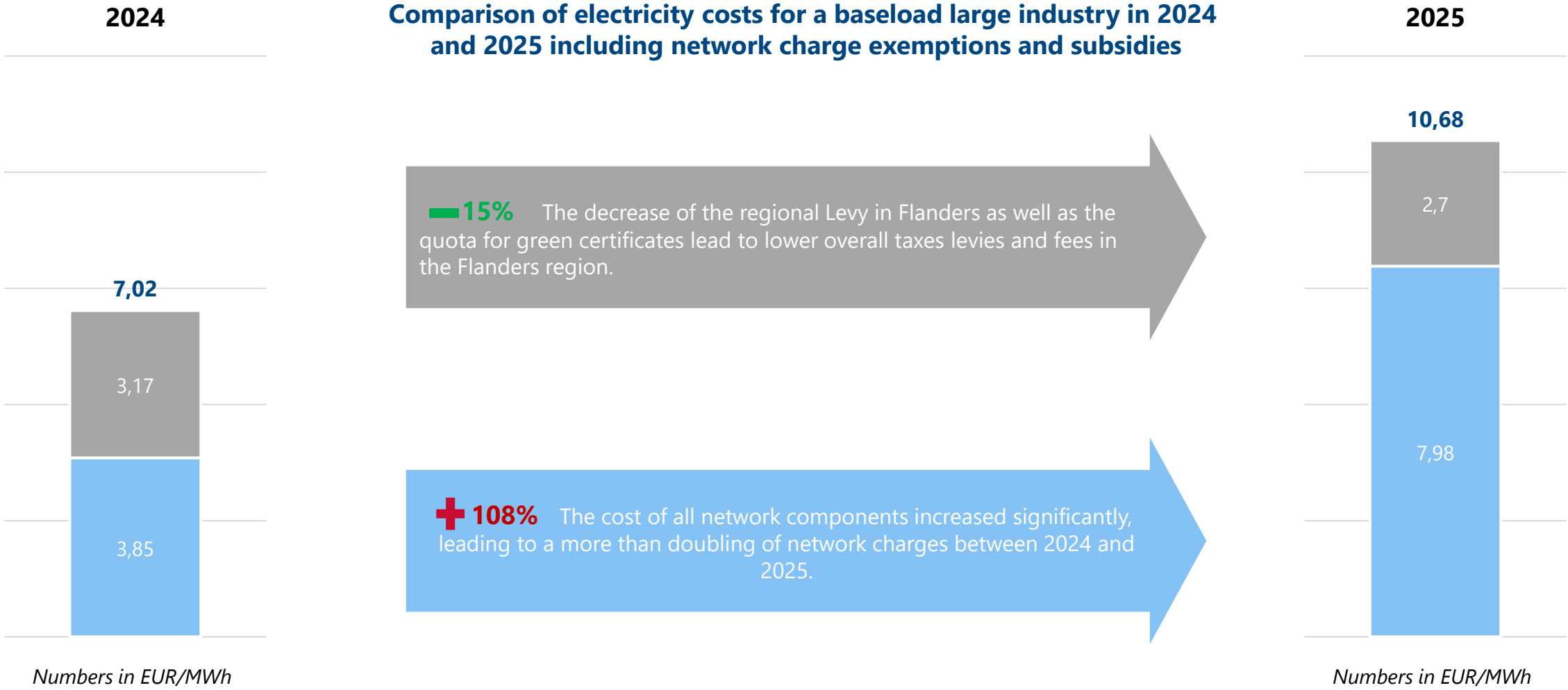
- Green Certificates: reduction of 93% → **9.96 EUR/MWh**
- Cogeneration: reduction of 81% → **2.38 EUR/MWh**

→ Resulting taxes and levies: **2.70 EUR/MWh**



Belgium: The non-commodity components of the electricity costs increased significantly as the network charges increased offsetting the decrease of taxes and levies

Comparison of electricity costs for a baseload large industry in 2024 and 2025 including network charge exemptions and subsidies



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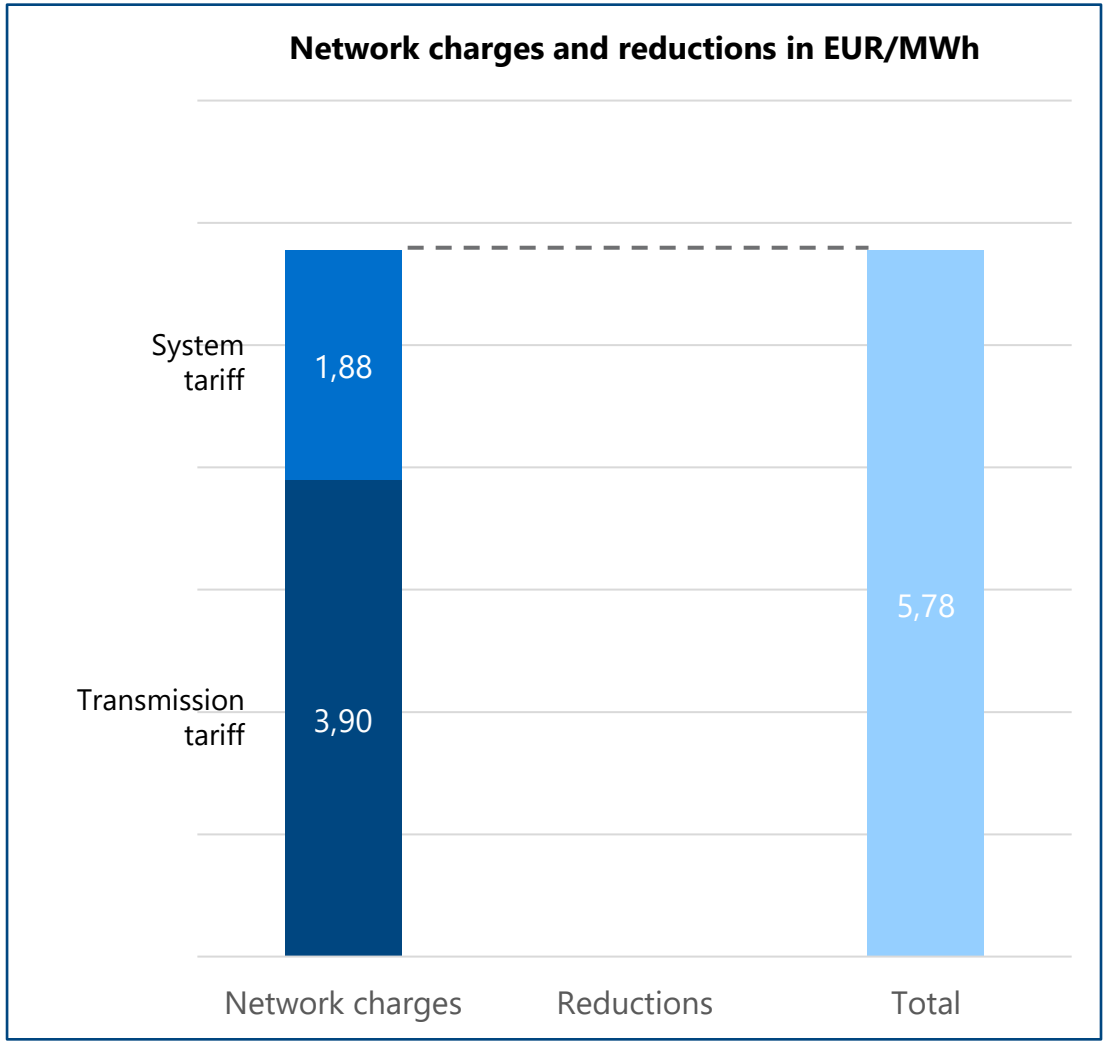
Denmark: Network charges for a baseload large industry (1 TWh/a) in **2025**

Network charges

- Transmission tariff:
  - First 100 GWh: **7.50 EUR/MWh**
  - Exceeding consumption: **3.50 EUR/MWh**
  - → Resulting network charges: **3.90 EUR/MWh**
- System tariff:
  - First 100 GWh: **9.90 EUR/MWh**
  - Exceeding consumption: **0.99 EUR/MWh**
  - → Resulting network charges: **1.88 EUR/MWh**

→ Resulting network charges: **5.78 EUR/MWh**



Denmark: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

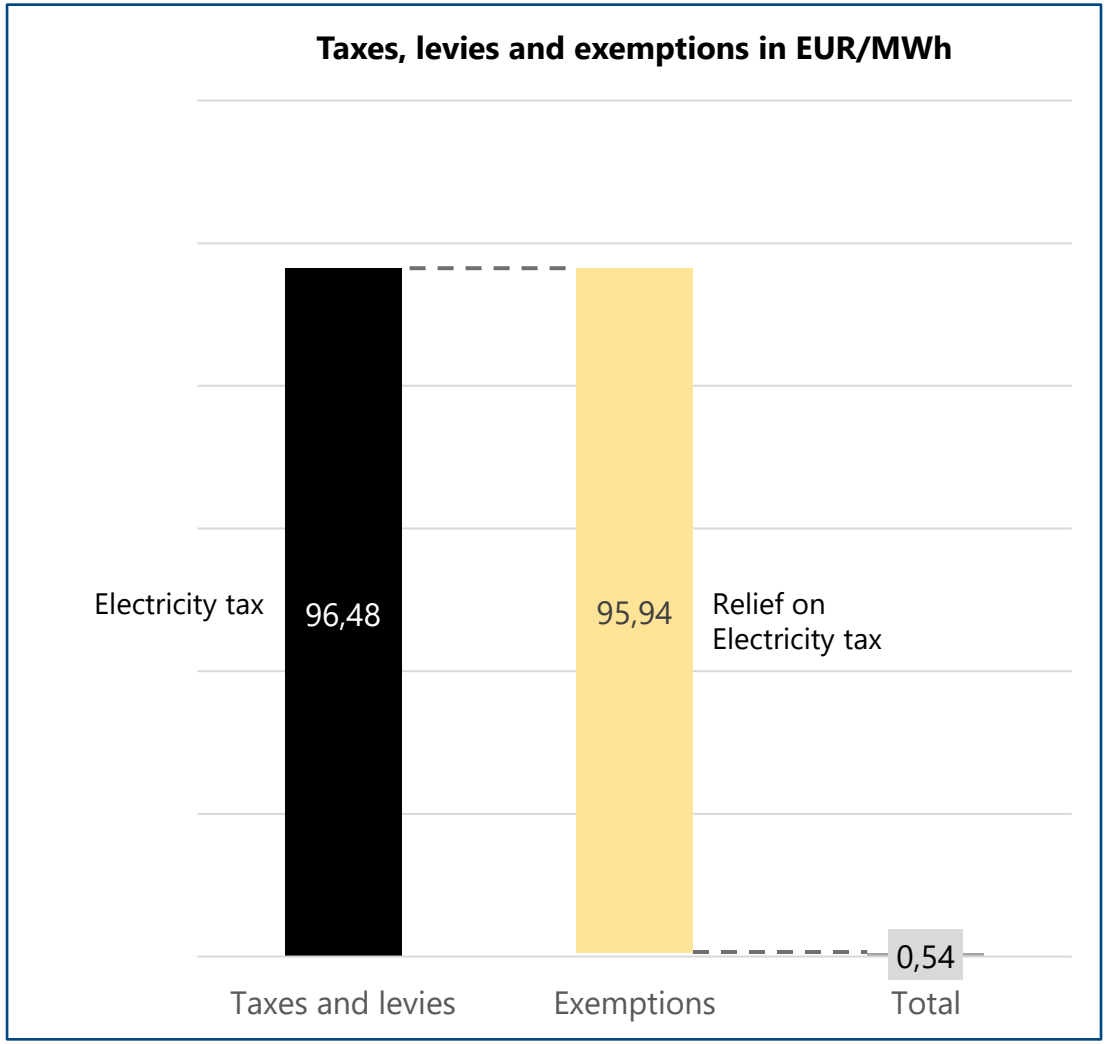
Taxes, levies and fees:

- Electricity tax: **96.48 EUR/MWh**

Exemptions:

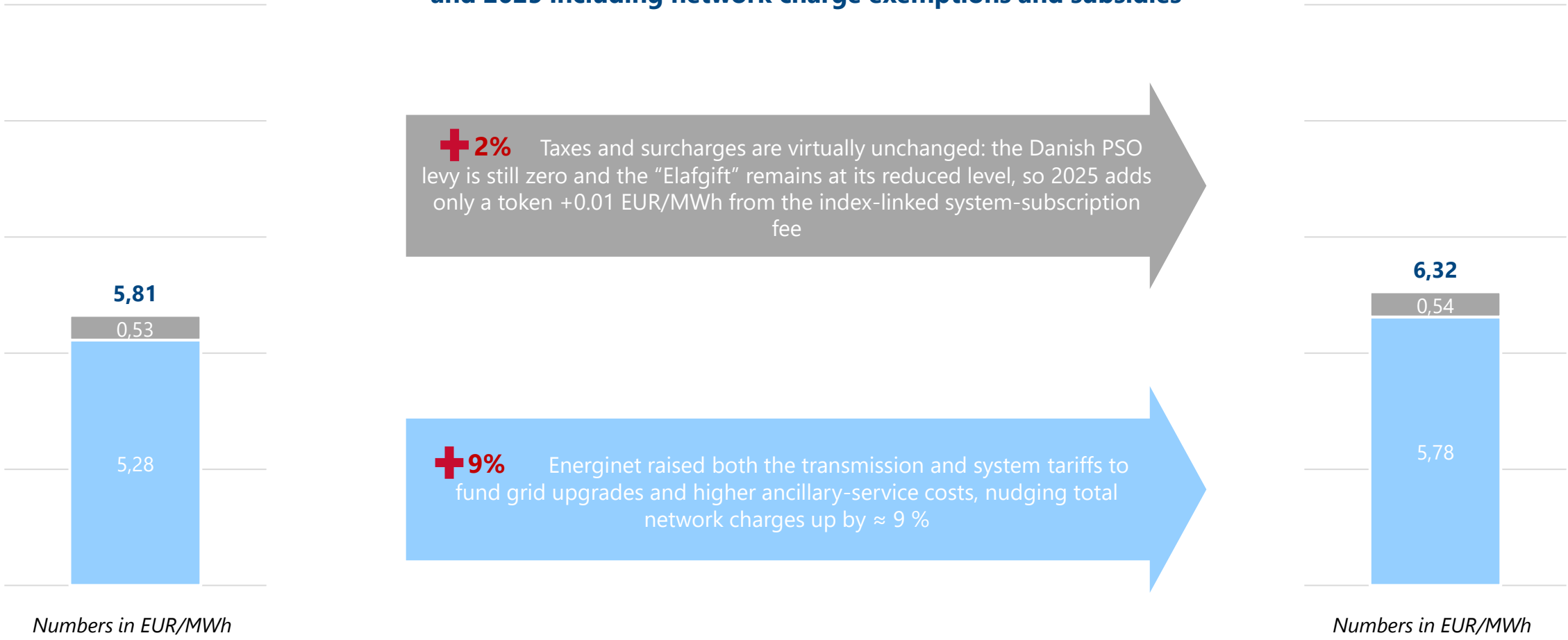
- Relief of **everything but 0.54 EUR/MWh**

→ Resulting taxes, levies and fees: **0.54 EUR/MWh**



Denmark: The non-commodity components of the electricity costs rose slightly, as higher TSO network charges outweighed the virtually unchanged taxes and surcharges.

Comparison of electricity costs for a baseload large industry in 2024 and 2025 including network charge exemptions and subsidies



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United Kingdom: Network charges for a baseload large industry (1 TWh/a) in **2025**

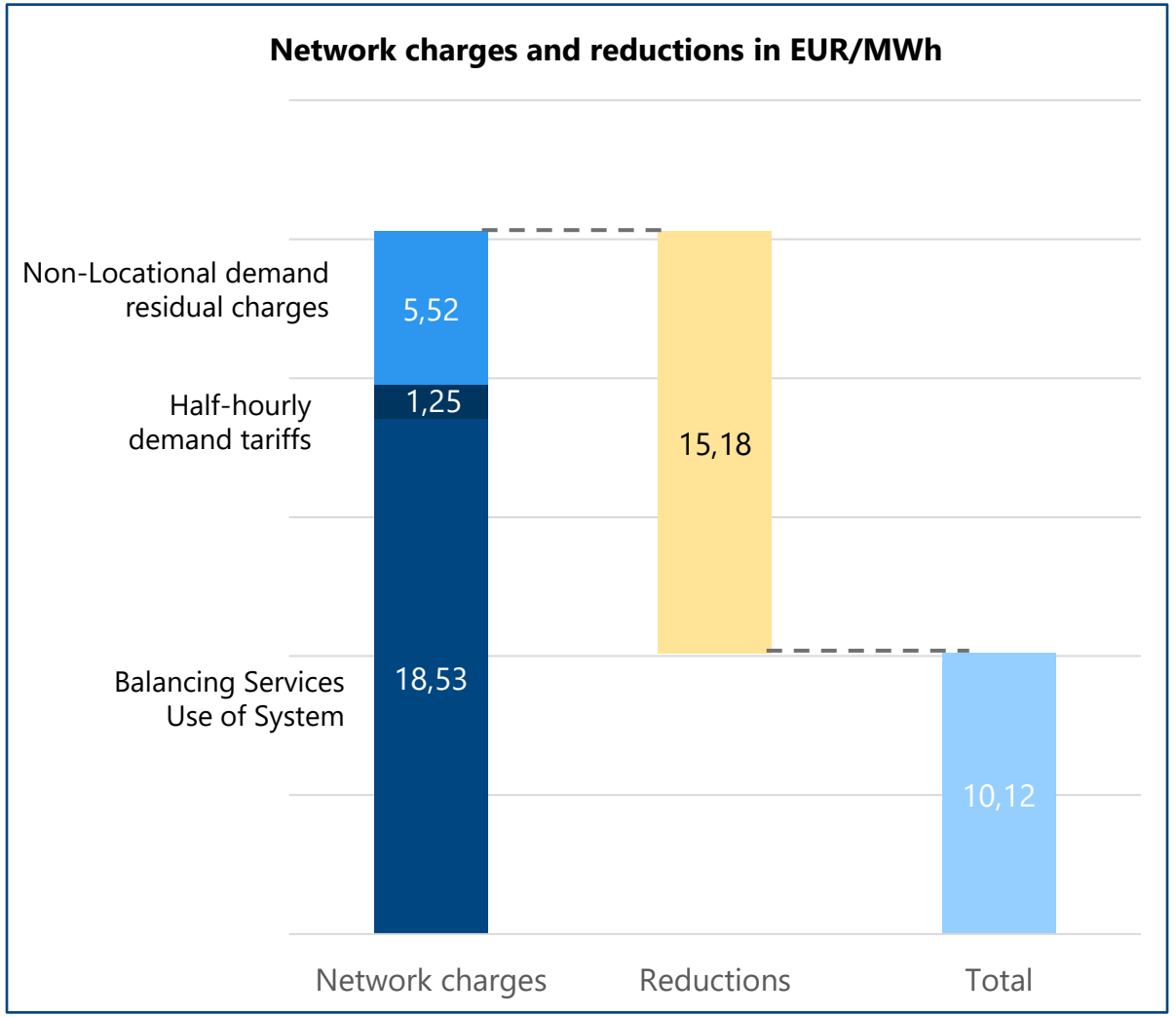
Network charges

- Half-hourly demand tariffs: 10.03 EUR/kW → **1.25 EUR/MWh**
- Balancing Services Use of System: **18.53 EUR/MWh**
- Non-Locational demand residual charges: **5.52 EUR/MWh**

Network charge reduction

- EII Network Charging Cost Compensation (NCC) - **60%** compensation on network charging costs

→ Resulting network charges: **10.12 EUR/MWh**



United Kingdom: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

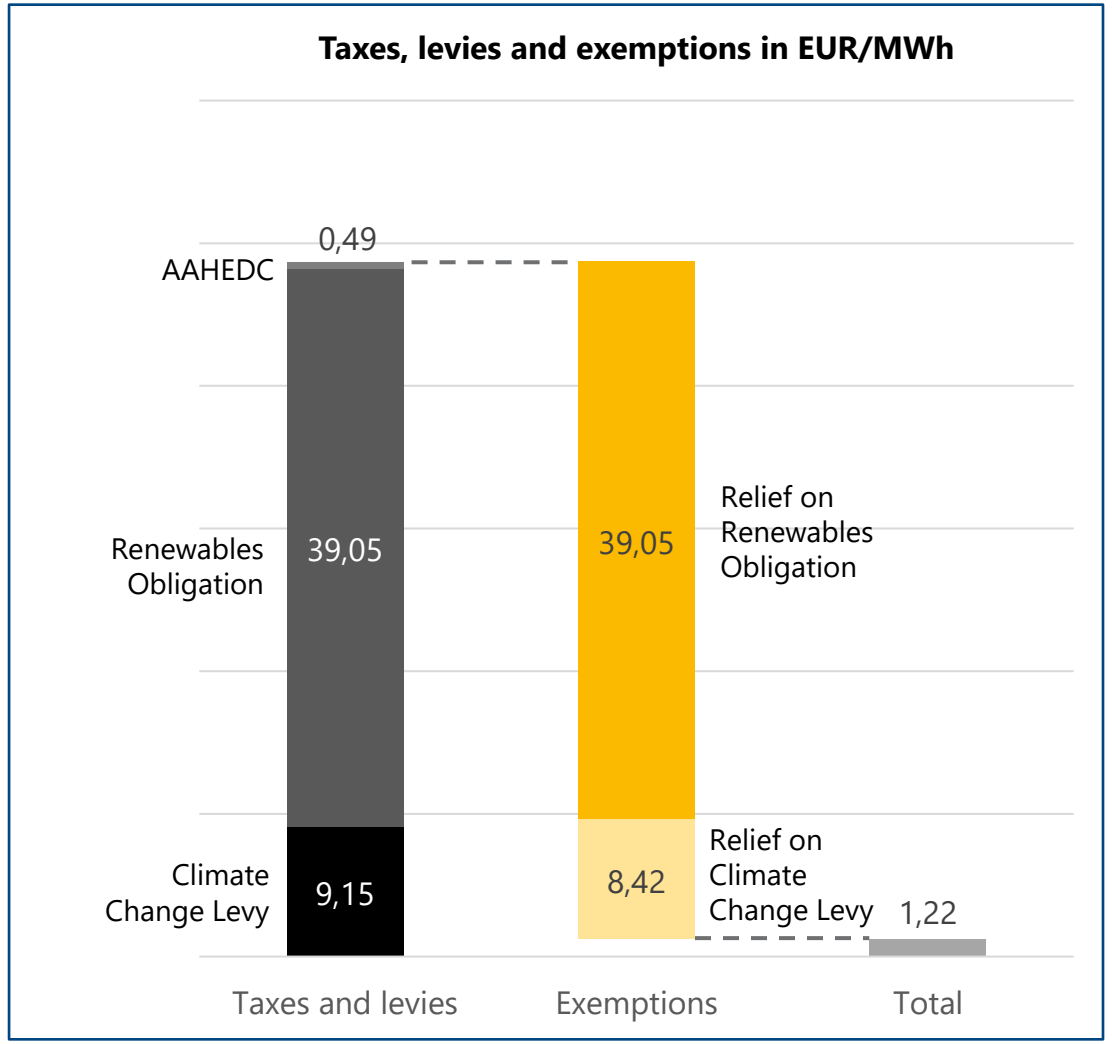
Taxes, levies and fees:

- Climate Change Levy: **9.15 EUR/MWh**
- Renewables Obligation: **39.05 EUR/MWh**
- Assistance for High Distribution Costs (AAHEDC): **0.49 EUR/MWh**

Exemptions:

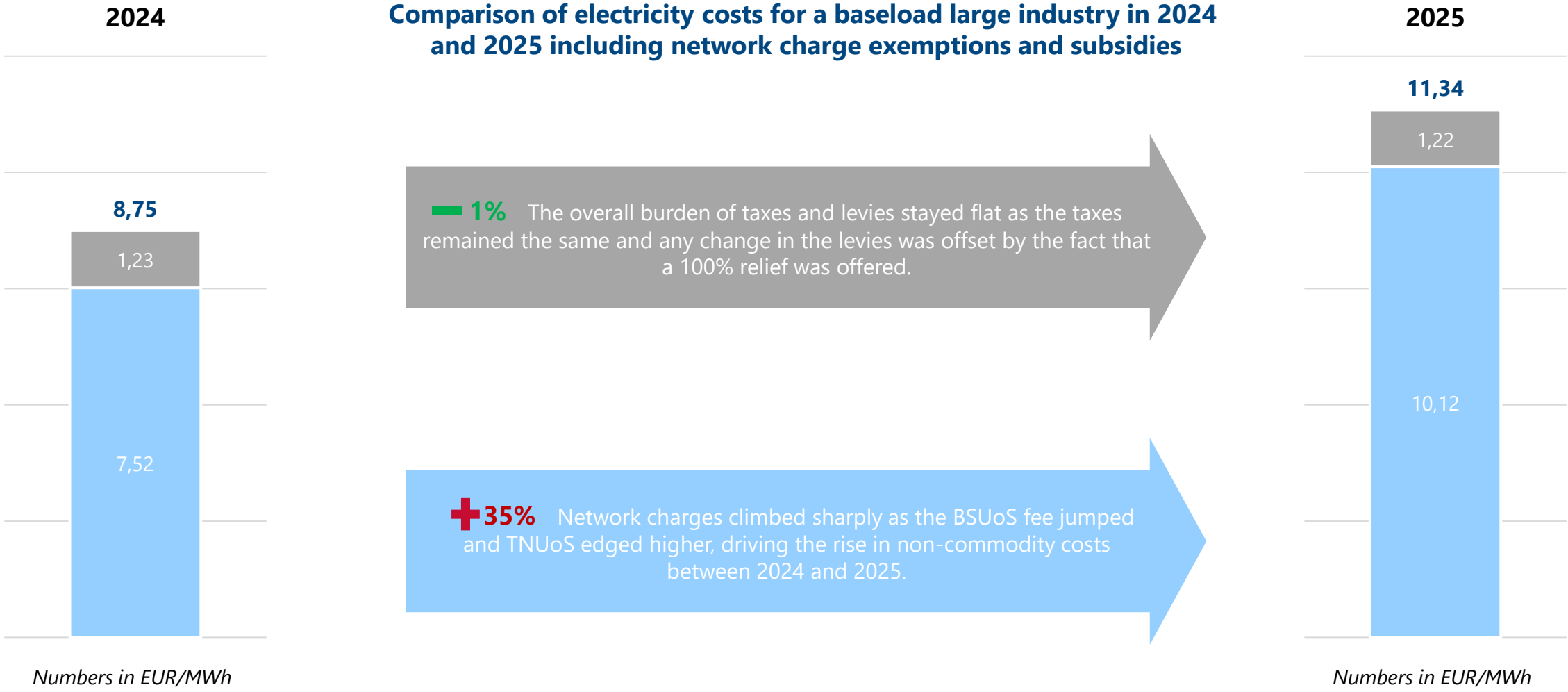
- Relief of 92% on Climate Change Levy: **8.42 EUR/MWh**
- Relief of 100% on Renewable Obligation: **39.05 EUR/MWh**

→ Resulting taxes, levies and fees: **1.22 EUR/MWh**



United Kingdom: The non-commodity components of electricity costs increased, as higher TSO balancing and network charges outweighed the virtually unchanged levies

Comparison of electricity costs for a baseload large industry in 2024 and 2025 including network charge exemptions and subsidies



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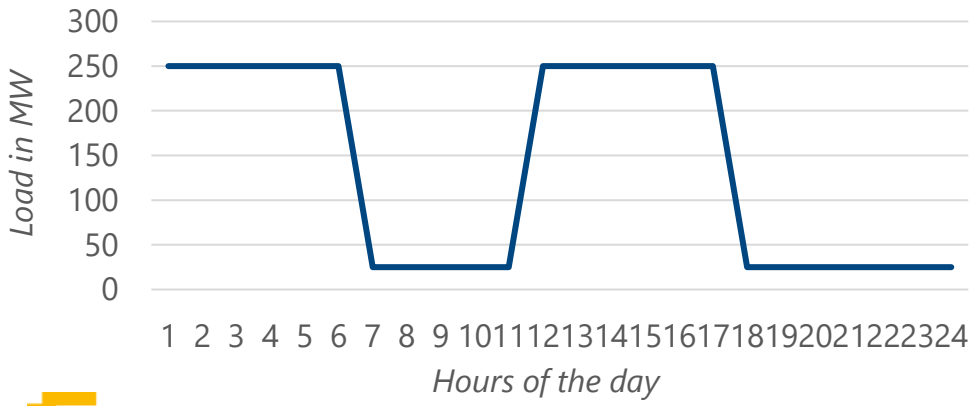
Assumptions for the Electrolyser profile (Profile B)

General assumptions

- Consumer is an **Electrolyser**, as an example for a flexible user
- Consumption per year: 1,200,000 MWh (1.2 TWh),
- (Monthly) peak load & contracted capacity: 250 MW
- Full load hours: **100% load from 0:00-06:00 and 11:00-17:00 h; 10% load all remaining hours → Total**: **4818 h**
- Connection to the highest voltage grid level (TSO) of the transmission grid in each country (220/380KV)
- Level of electro-intensity: Maximum level assumed for the relevant countries (Germany, France, UK)

Profile of the electrolyser



Country specific assumptions*

- Length of connection is 0.5 km (relevant for periodical connection charge)

- Electricity Cost > 4% of revenue, resulting in a § 19 StromNEV-levy of 0.25 EUR/MWh for the consumption above 1 GWh
- Sector of List 1 or List 2 + significant use of energy from RES, i. e. qualification for a reduction of the CHP and offshore levy (Annex II)

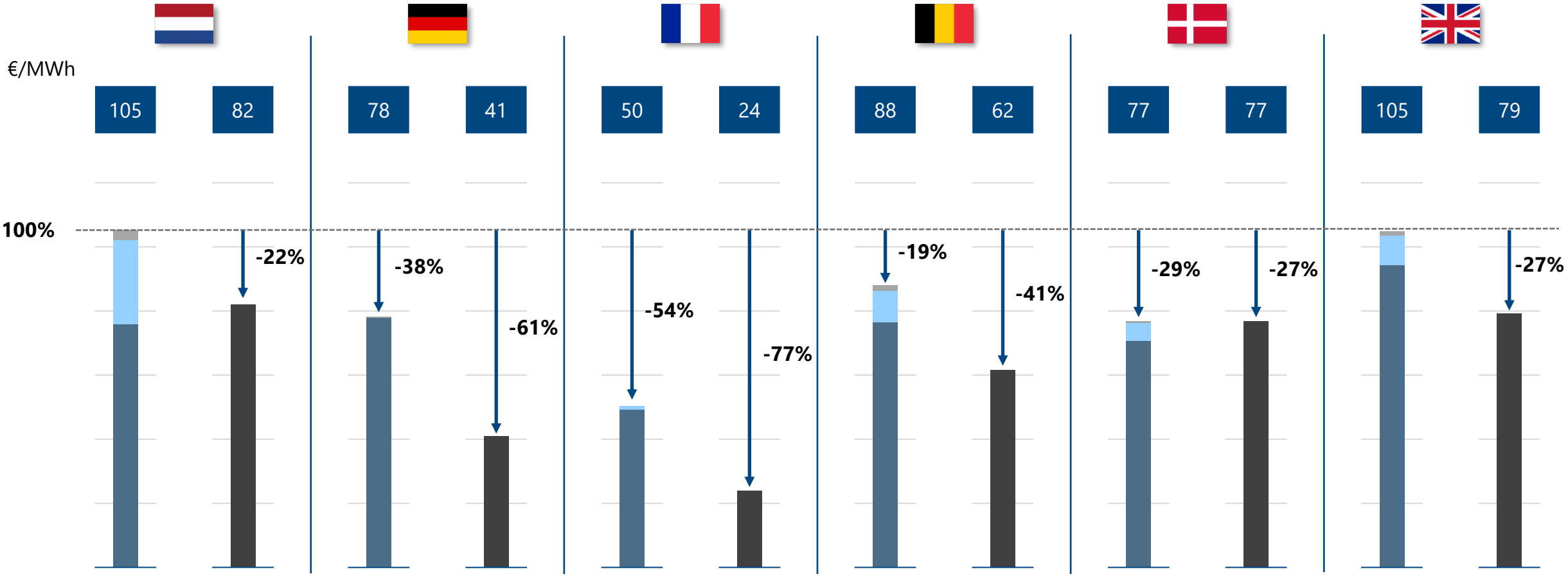
- Metering device is owned by RTE
- Energy-intensive company with exposition to international competition and carbon leakage (relevant for energy tax) (Annex III)
- For the reduction of the network charges the "anticyclical profile" applies

- Energy-intensive company eligible for Energy Intensive Industry (EII) certificate (List in Annex IV)

- No specific assumptions

* These assumptions are valid for all countries but only relevant in the country they are assigned to

Electrolyser: **Effective electricity costs** with and without indirect cost compensation in **2025**



Electrolyser:
1.2 TWh/a, 4800 FLH
250 MW capacity

Price without indirect cost compensation

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

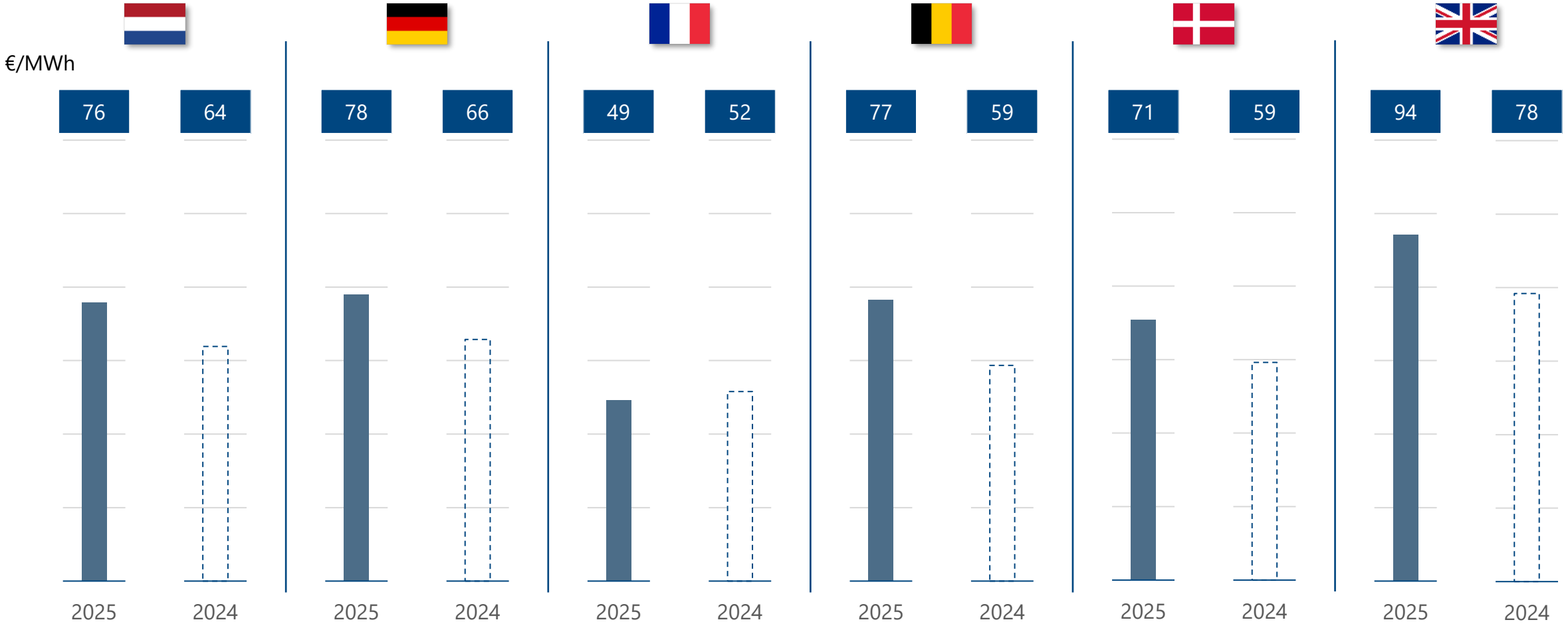
Price with indirect cost compensation*

- Price with indirect cost compensation

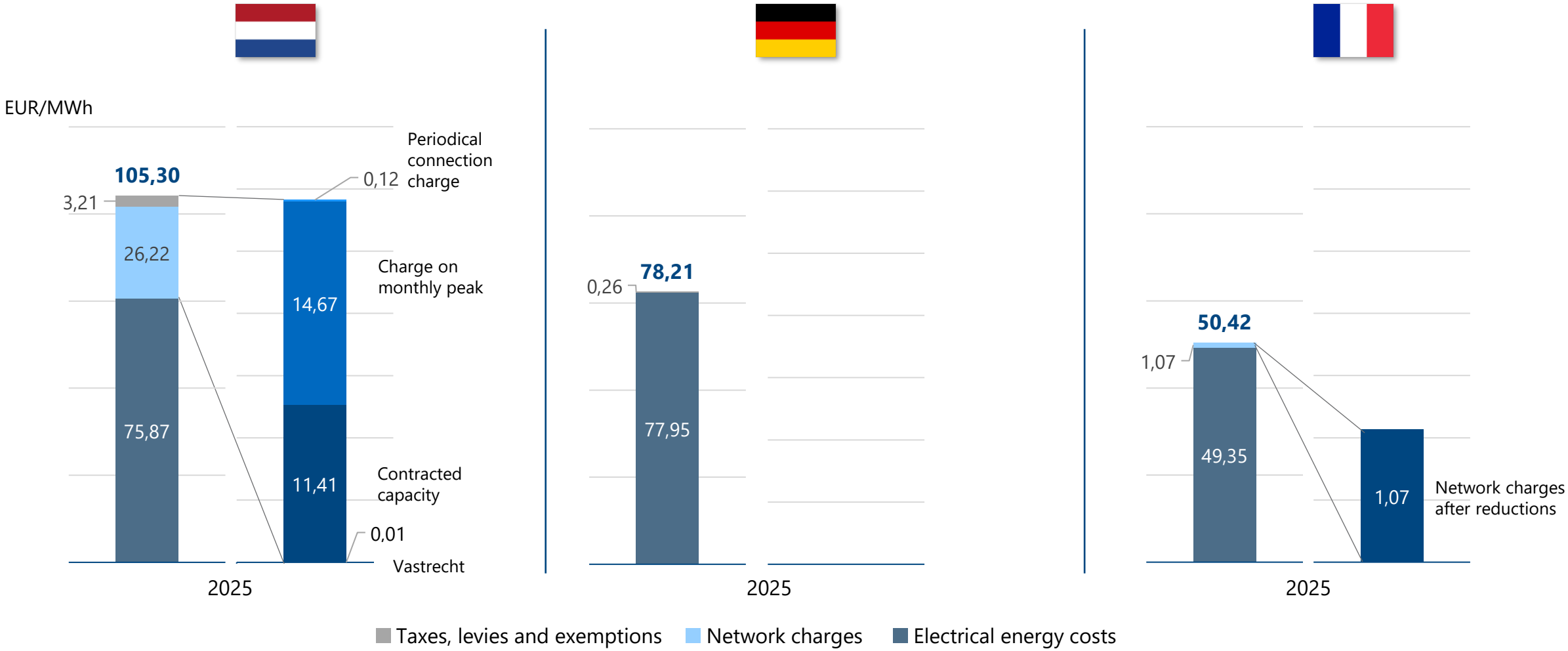
Percentage level: % difference compared to the Netherlands.

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

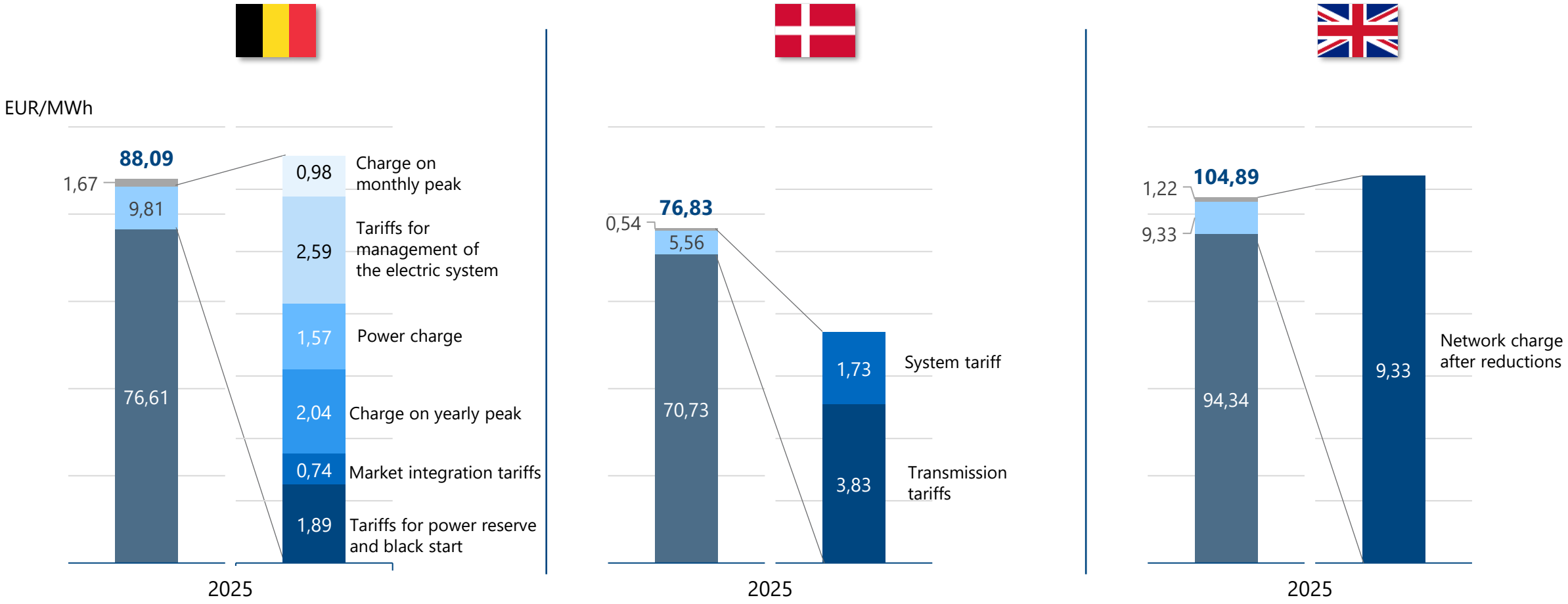
Electrolyser: **Commodity prices 2025** versus 2024



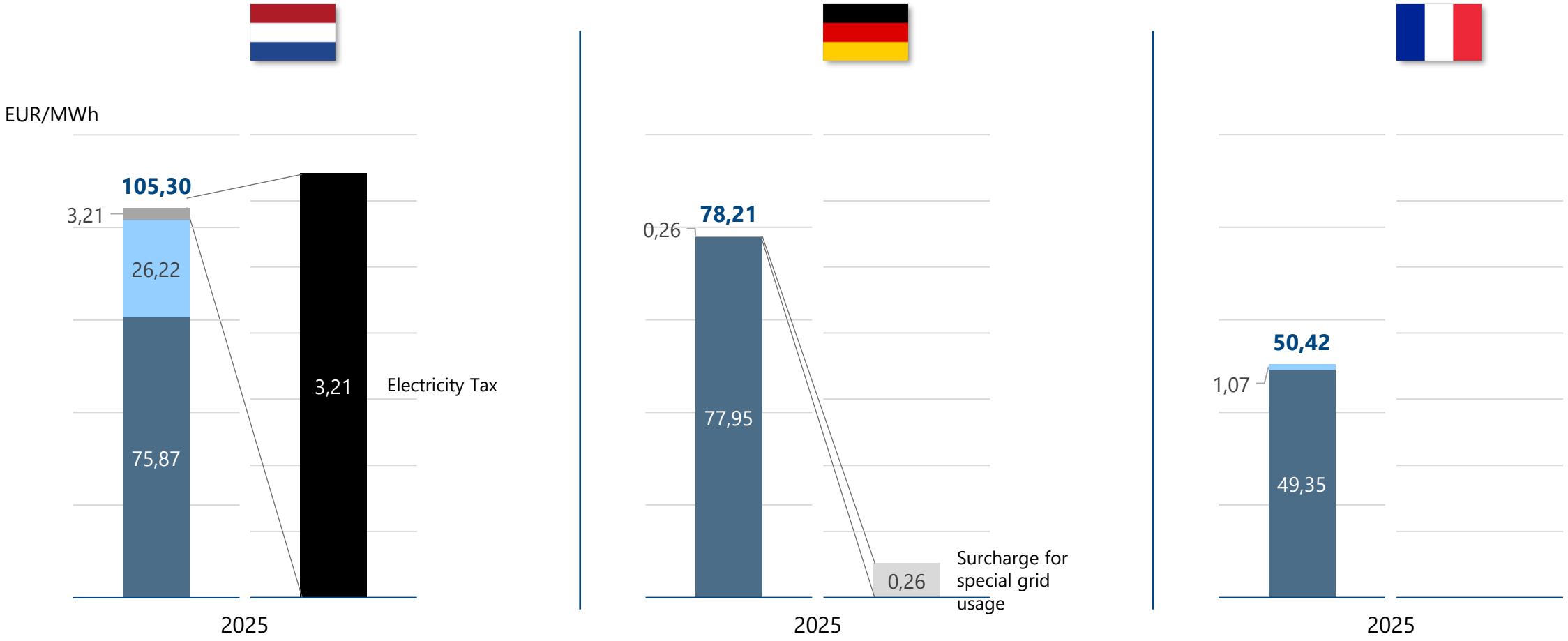
Electrolyser: **Network charges** divided by component in **2025**



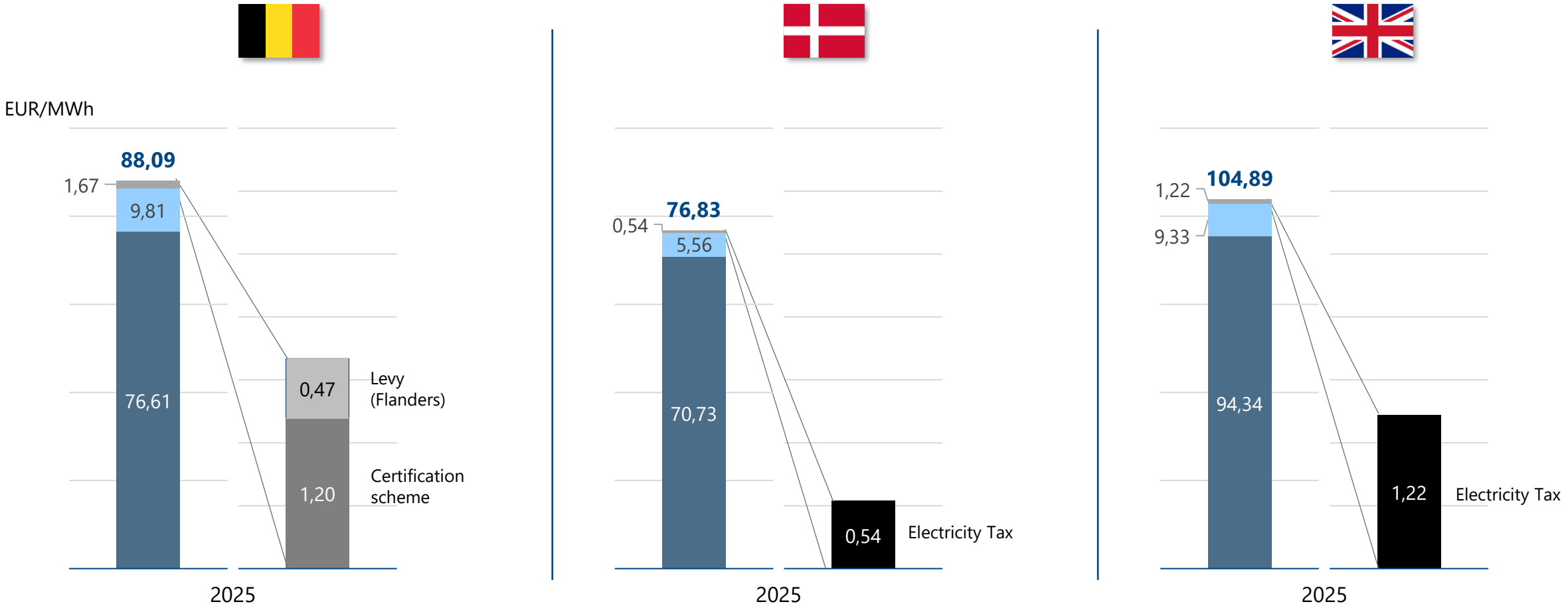
Electrolyser: **Network charges** divided by component in **2025**



Electrolyser: **Taxes, levies, fees** divided by component in **2025**



Electrolyser: **Taxes, levies, fees** divided by component in **2025**



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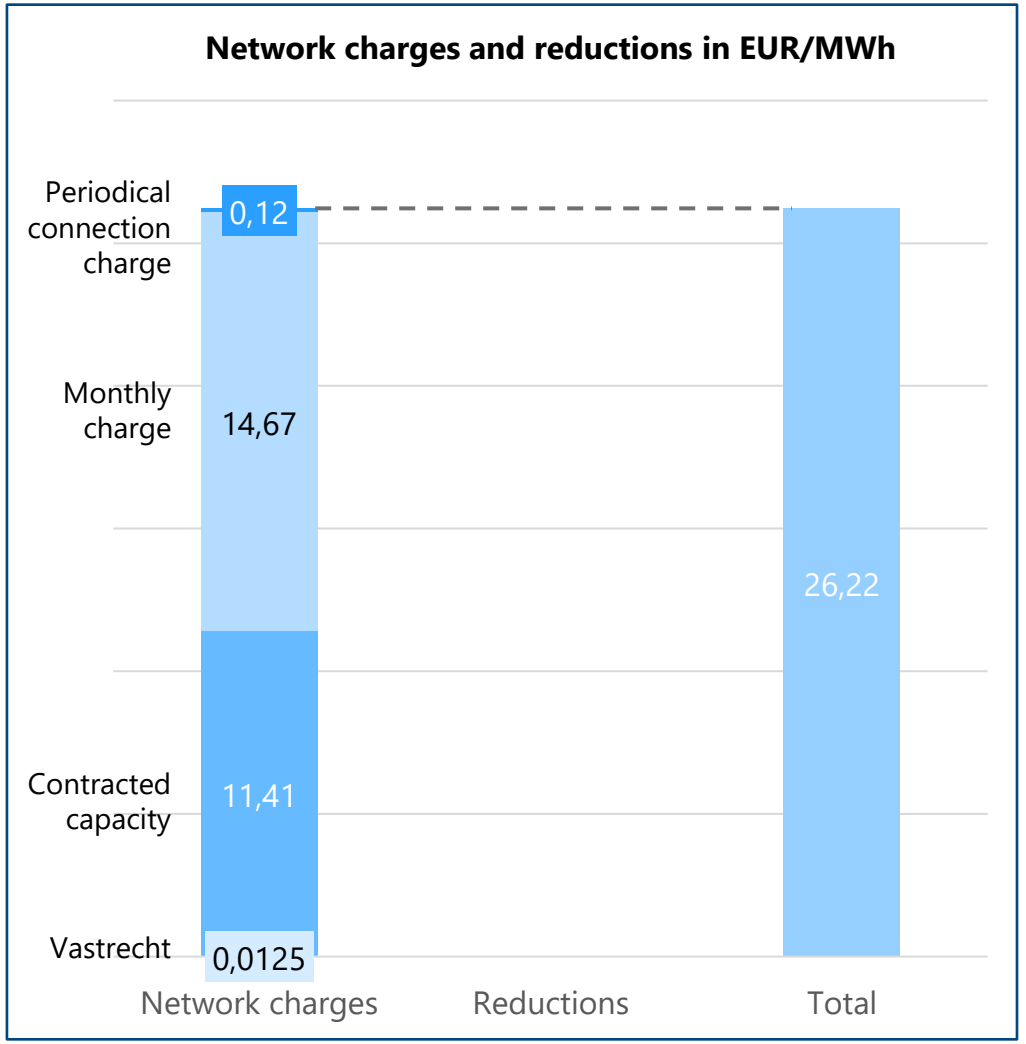
Netherlands: Network charges for an electrolyser in **2025**

Network charges

- Vastrecht: 12,478.96 EUR/a → **0.0125 EUR/MWh**
- Contracted capacity: 54.99 EUR/kW
  - Contracted capacity/Peak load: 250 MW → **11.41 EUR/MWh**
- Charge on monthly peak: 7.14 EUR/kW/month
  - Average monthly peak load: 250 MW
  - Average weighting factor (time-of-use): 0.825

  → **14,67 EUR/MWh**
- Periodical connection charge: 75,000 EUR/a → **0.12 EUR/MWh**

→ Network charges amount to **26.22 EUR/MWh**



Netherlands: Taxes, levies and exemptions for an electrolyser in **2025**

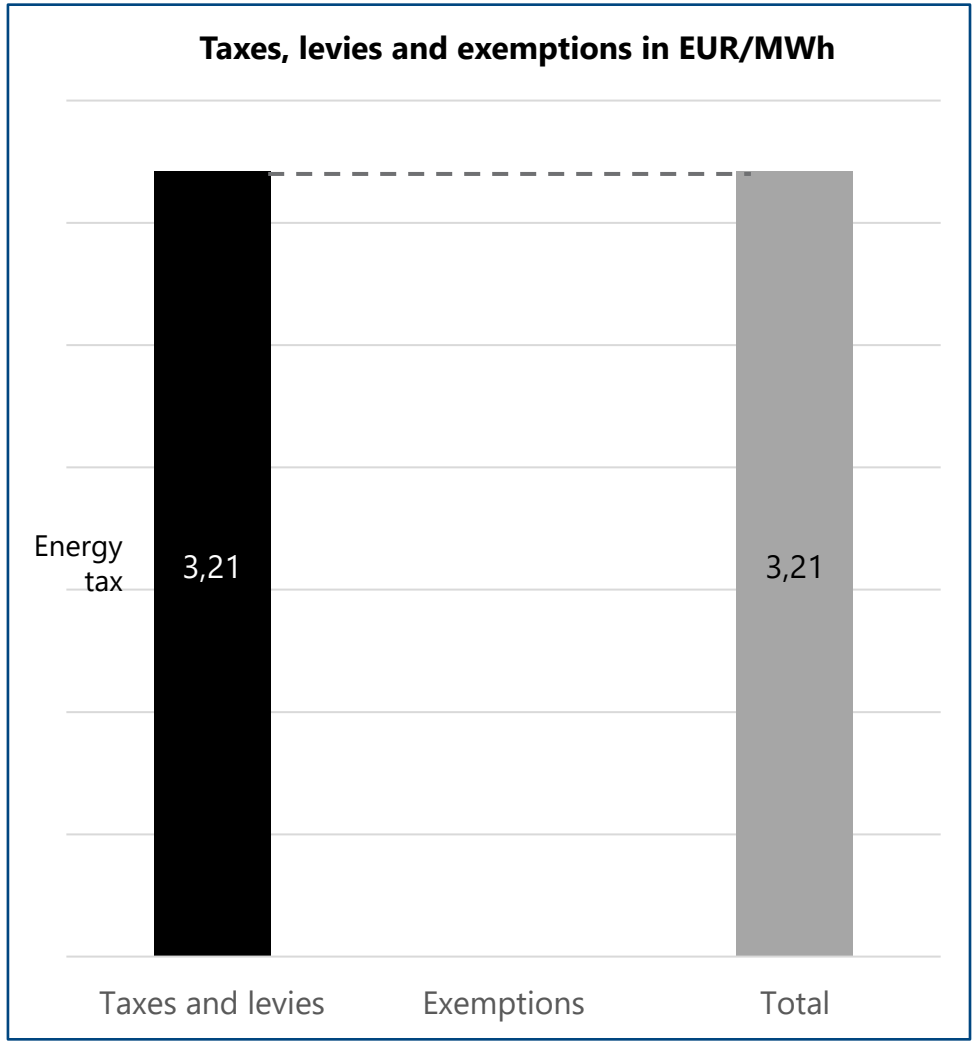
Taxes, Levies and fees:

- Energy tax: **3.21 EUR/MWh**

Exemptions:

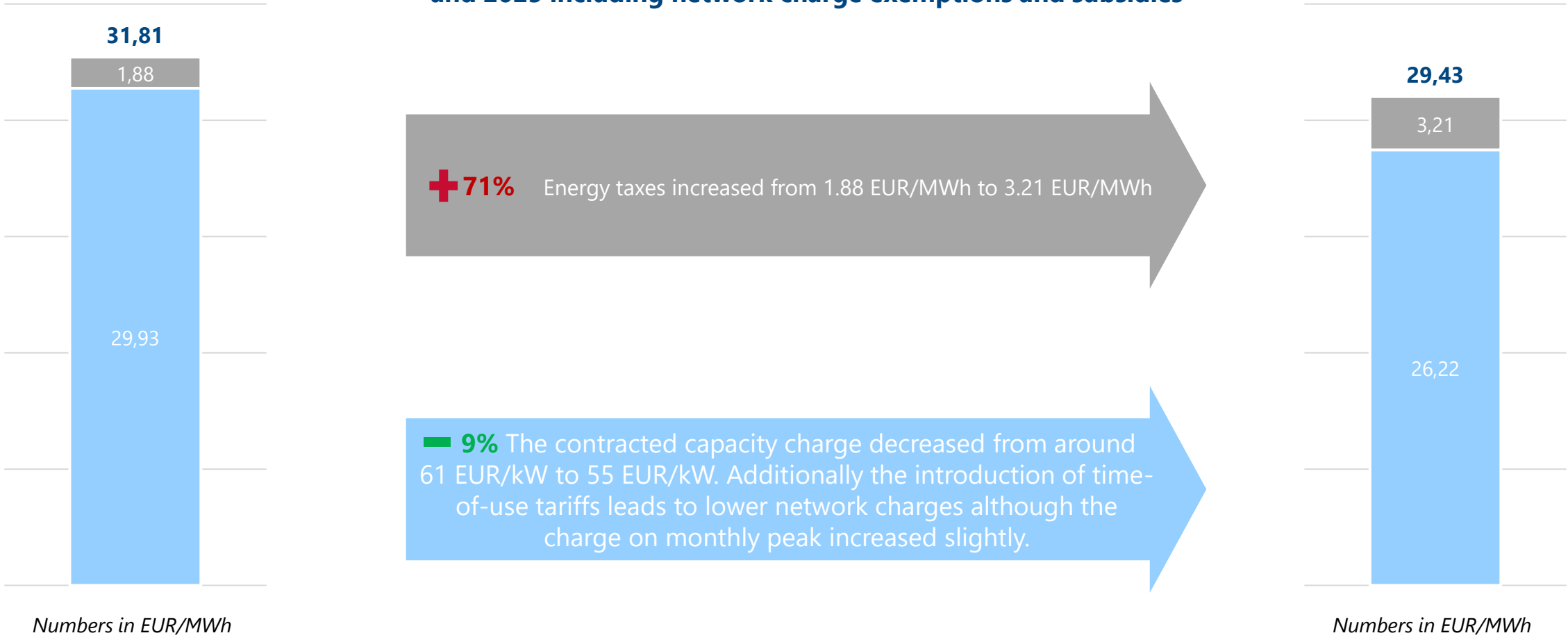
- Energy tax reduction: **524.95 EUR → 0.0005 EUR/MWh**

→ Only taxes apply in the amount **3.21 EUR/MWh**



Netherlands: The non-commodity components of the electricity costs increased – increase of the electricity tax offsets the decrease of network charges

Comparison of electricity costs for an electrolyser in 2024 and 2025 including network charge exemptions and subsidies



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Germany: Network charges for an electrolyser in **2025**

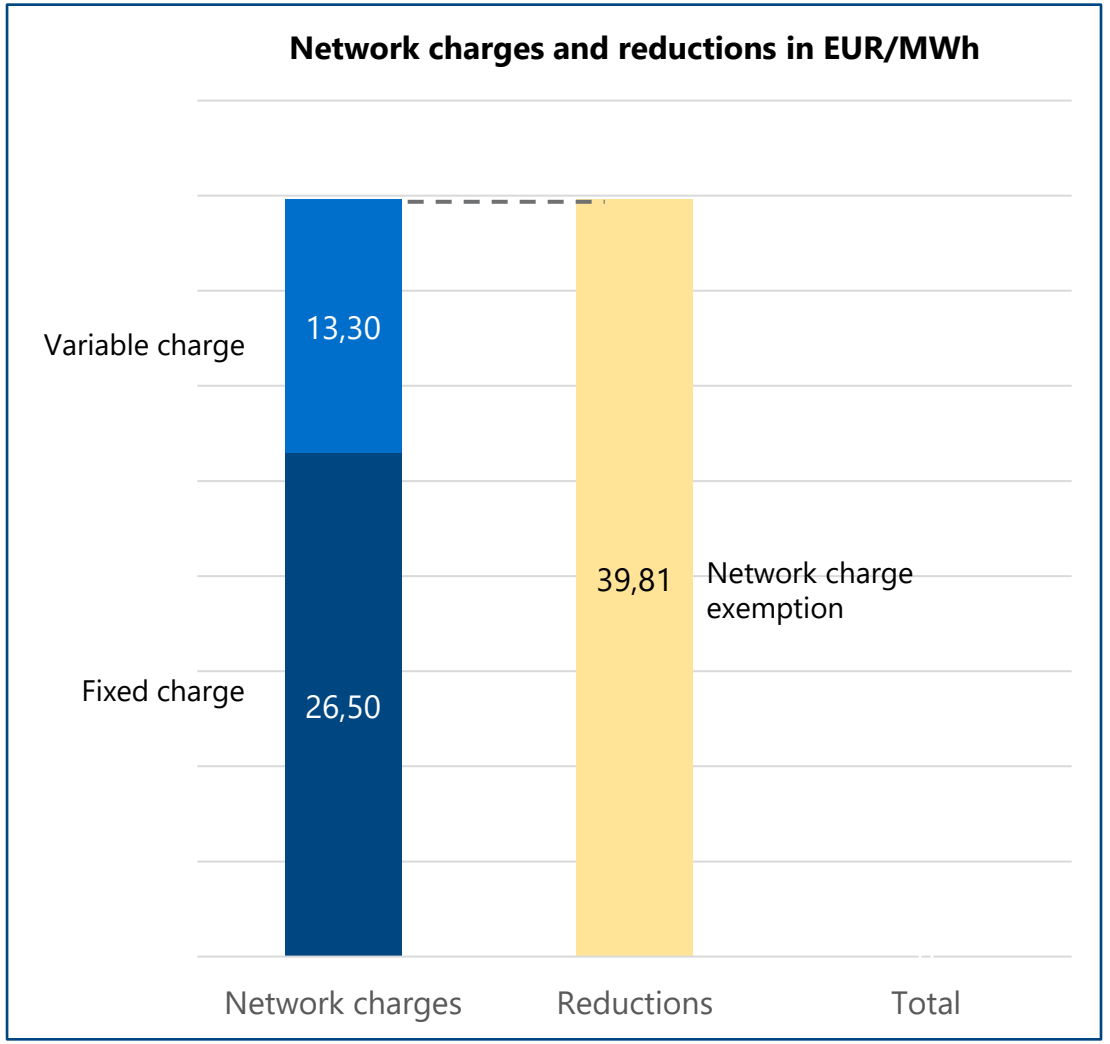
Network charges

- Fixed charge: **127.74 EUR/kW**
  - Peak Load: 250 MW → **26.5 EUR/MWh**
- Variable charge: **13.30 EUR/MWh**

Network charge reduction

- Exempt of the network charges → **39.81 EUR/MWh**

→ Exemption of all network charges for electrolysers
→ Resulting network charges: **0.00 EUR/MWh**



Germany: Taxes, levies and exemptions for an electrolyser in **2025**

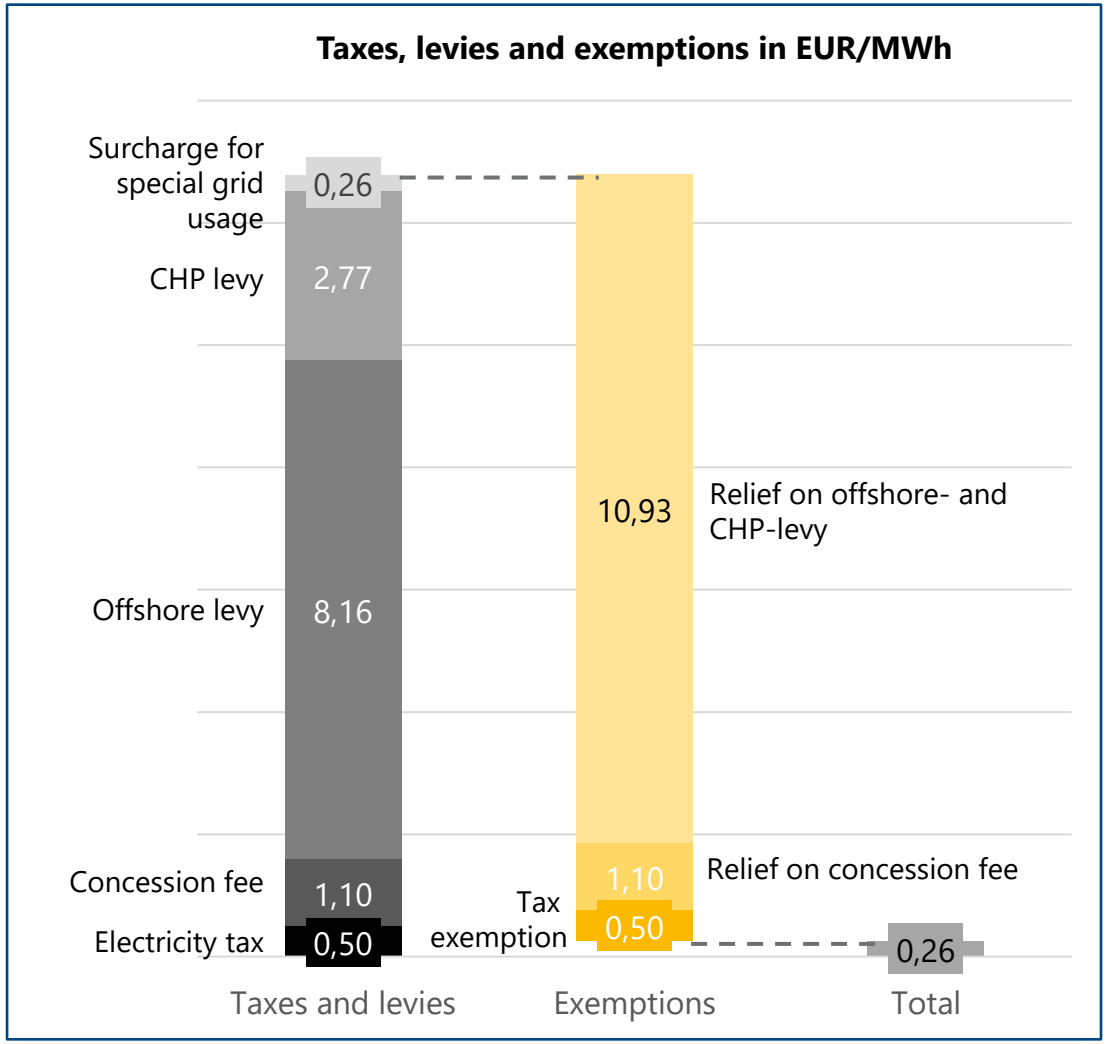
Taxes, Levies and fees:

- Electricity tax: **0.50 EUR/MWh**
- Offshore-levy: **8.16 EUR/MWh**
- KWK-levy: **2.77 EUR/MWh**
- Surcharge for special grid usage:
  - **15.58 EUR/MWh** for the first 1000 MWh
  - For every MWh exceeding this: **0.25 EUR/MWh**
  - For 1 TWh → **0.26 EUR/MWh**
- Concession fee: **1.10 EUR/MWh**

Exemptions:

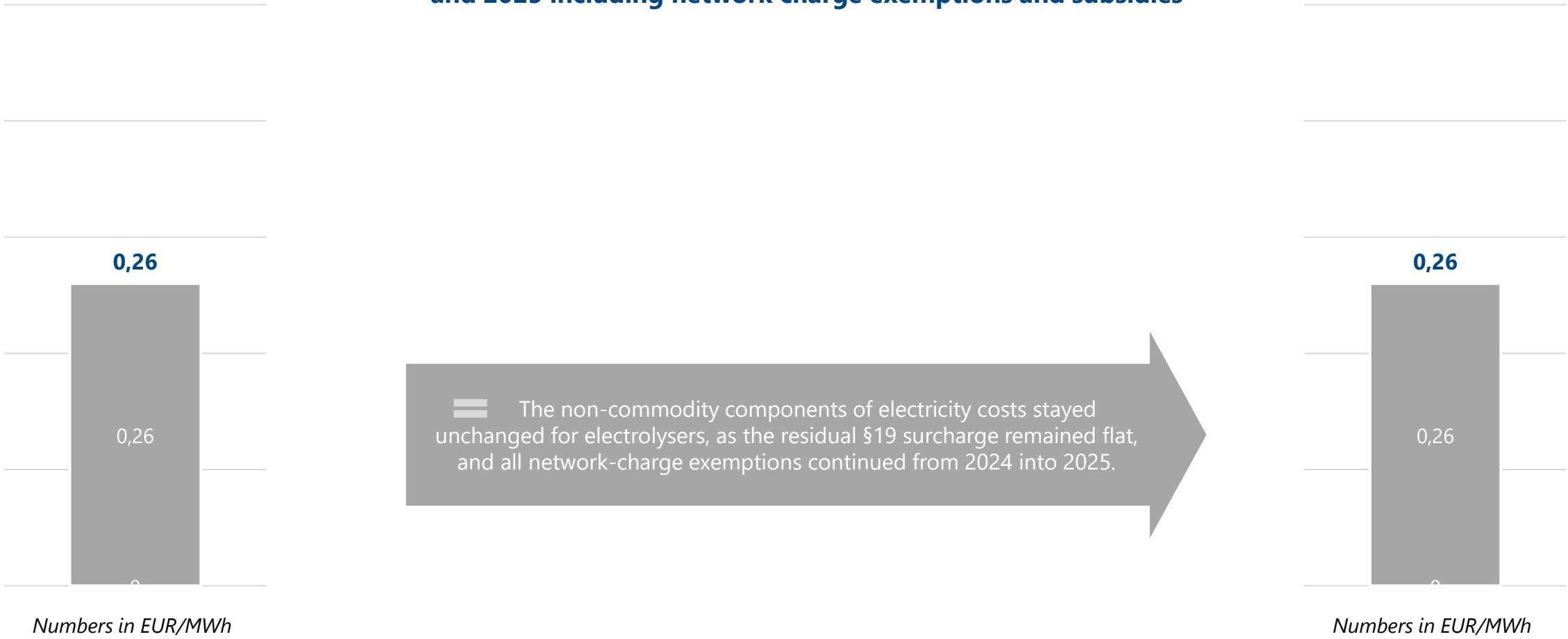
- Relief of **100%** of the concession fee → **1.10 EUR/MWh**
- Exempt of the offshore- and CHP-levy → **10.93 EUR/MWh**
- Exempt of the electricity tax → **0.50 EUR/MWh**

→ Resulting taxes, levies and fees: **0.26 EUR/MWh**



Germany: No difference for electrolysers between 2024 and 2025

Comparison of electricity costs for an electrolyser in 2024 and 2025 including network charge exemptions and subsidies



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France – Influence of the ARENH-scheme on commodity prices of the Electrolyser

The amount of energy available at the ARENH price is limited to 100 TWh. If the requested amount is higher than 100 TWh, a reduction for all parties applying is necessary.

- Requested amount of energy for 2025: **134.93 TWh** (Source)
- Necessary reduction: (134.93 TWh – 100 TWh) / 134.93 TWh = **25.89%**

Share of hours in operation during ARENH hours

- Weekdays in Apr, May, June, Sep and Oct between 1 and 7 AM (104 days):
  - Full load between 1 and 6 AM: 520 h / 520 h
  - 10% load between 6 and 7 AM: 10.4 h / 104 h
  - Total: 530.4 h / 624 h
- Weekends in Apr, May, June, Sep and Oct and in July and Aug (110 days):
  - Full load between 0:00 - 06:00 and 11:00 - 17:00: 1320 h / 1320 h
  - 10% load between 06:00 - 11:00 and 17:00 - 0:00: 132 h / 1320 h
  - Total: 530.4 h / 624 h
- → 1982.4 h / 3264 h = **60.74%**

Resulting percentage of consumption that can be obtained under ARENH scheme including the capping:

- 60.74% * (1 - 25.89%) = **45.01%**

Resulting commodity price for electrolysers

- Commodity Price: 45.01% * ARENH Price + 54.99% * market price
  → 45.01% * 42 EUR/MWh + 54.99% * 55.37 EUR/MWh = **49.35 EUR/MWh**



France: Network charges for an electrolyser in **2025**

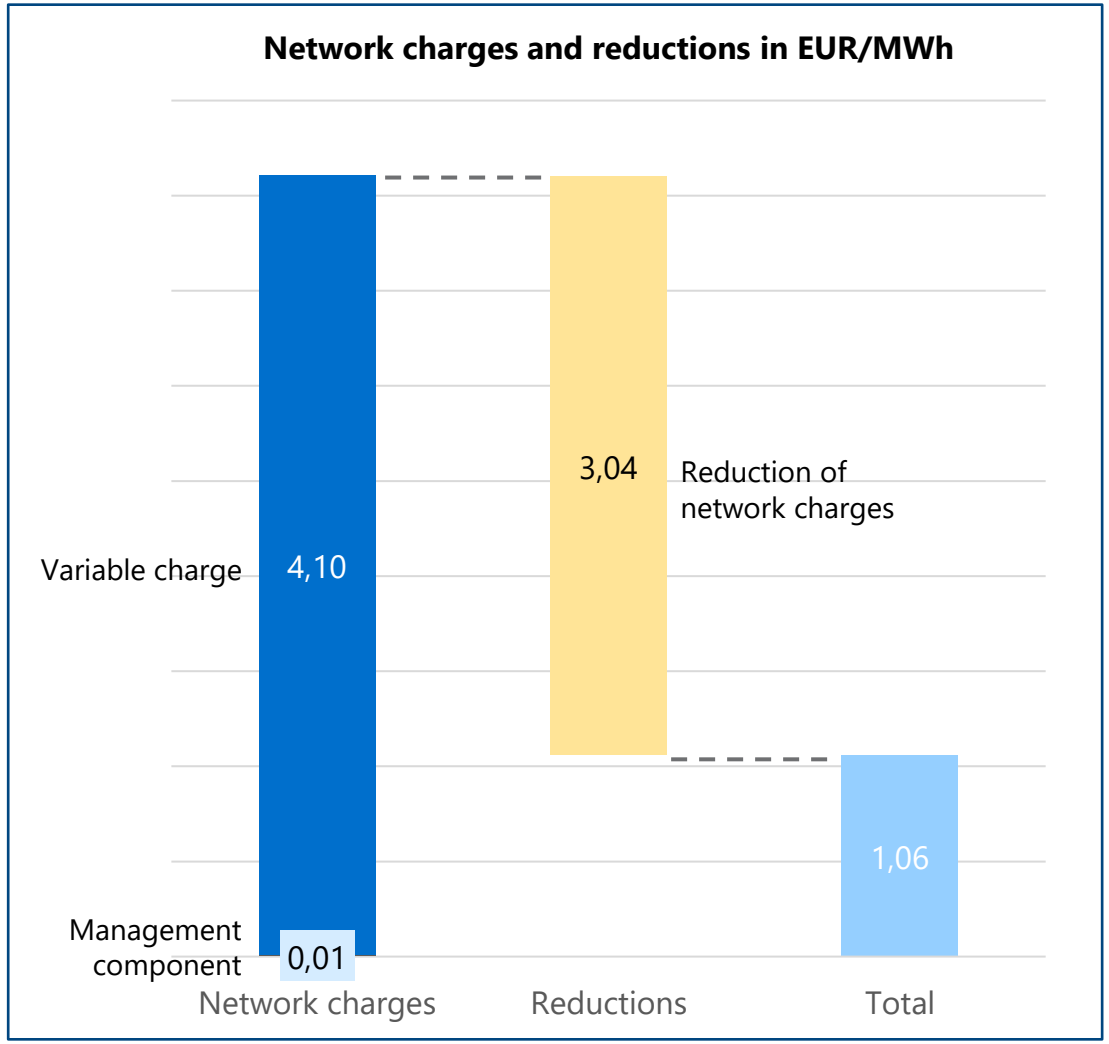
Network charges

- Management Component: **11,545.32 EUR/year**
  - Consumption: 1 TWh → **0.01 EUR/MWh**
- Metering charge: **3,800.04 EUR/year**
  - Consumption: 1 TWh → **0.0038 EUR/MWh**
- Variable charge: **4.10 EUR/MWh**

Network charge reduction

- Anticyclical profile: offpeak utilization > 44% → 74% reduction
  - Charges: 4.11 EUR/MWh → **3.04 EUR/MWh**

→ Relief of **3.04 EUR/MWh**
→ Resulting in network charges of **1.06 EUR/MWh**

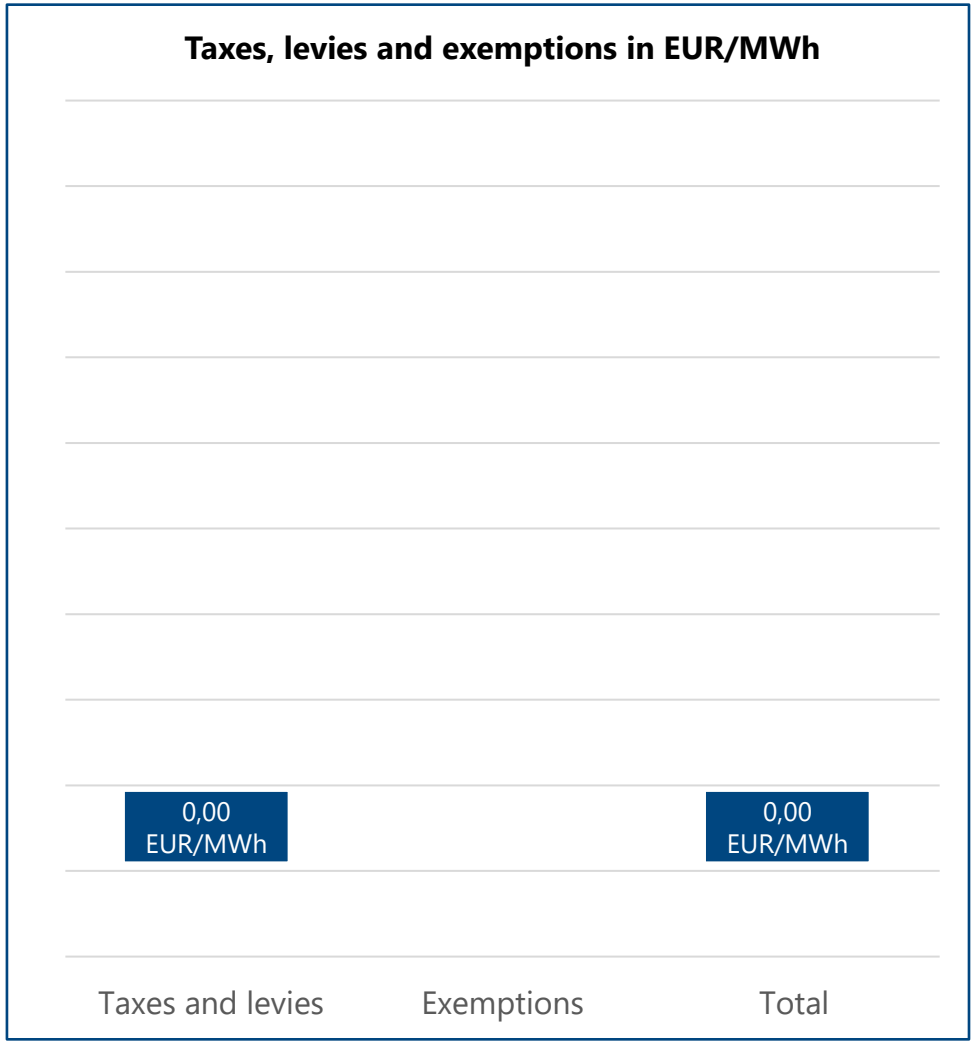


France: Taxes, levies and exemptions for an electrolyser in **2025**

Taxes, Levies and fees:

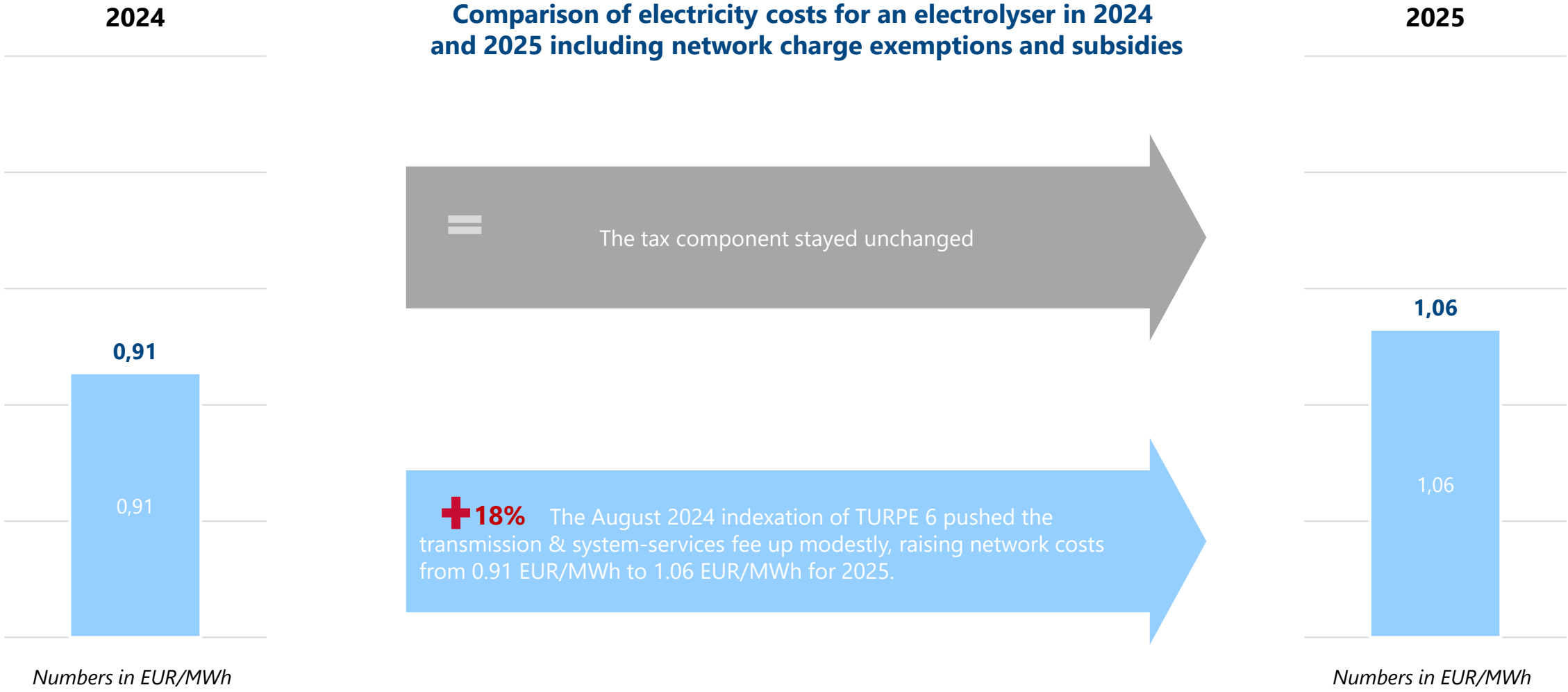
- Energy tax: **0.00 EUR/MWh**
- CTA: **10.11%** of the fixed part of the network charges
  - Management and Metering cost → **0.0015 EUR/MWh**

→ Taxes in the amount **0.00 EUR/MWh** apply



France: The non-commodity elements rose only marginally in 2025 – slightly higher TURPE network charges outweighed an unchanged tax/levy burden

Comparison of electricity costs for an electrolyser in 2024 and 2025 including network charge exemptions and subsidies



Taxes, levies and fees Network charges

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Belgium: Network charges for an electrolyser in **2025**

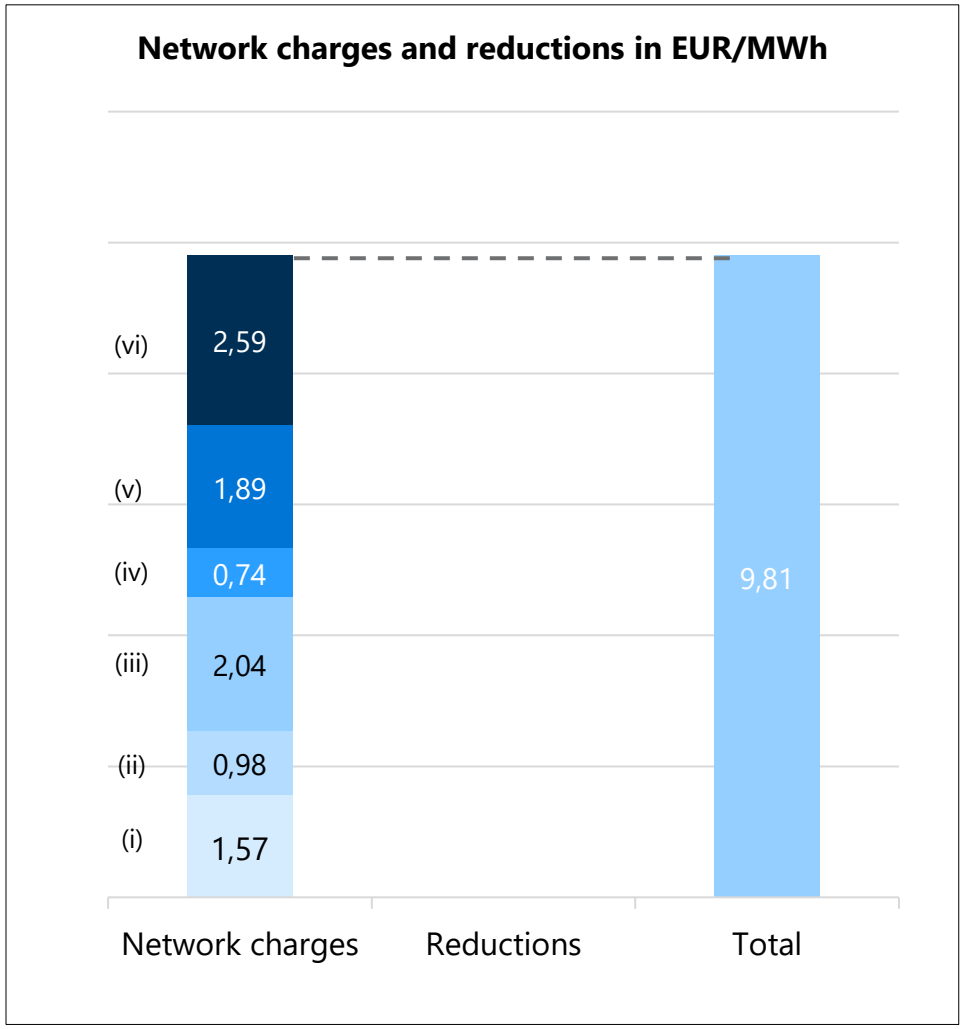
Fixed charges

- Tariff for the power put at disposal (i) → **1.57 EUR/MWh**
- Tariff for the monthly peak for the offtake (ii) → **0.98 EUR/MWh**
- Tariff for the yearly peak for the offtake (iii) → **2.04 EUR/MWh**

Variable charges

- Tariff for market integration (iv) → **0.74 EUR/MWh**
- Tariff for the power reserves and black-start (v) → **1.89 EUR/MWh**
- Tariff for the operation of the electric system (vi) → **2.59 EUR/MWh**

→ Network charges amount to **9.81 EUR/MWh**



Belgium: Taxes, levies and exemptions for an electrolyser in **2025**

Taxes, Levies and other costs:

- Special Excise Duty: **0.00 EUR/MWh**
- Levy for the tax's pylons and trenches: **0.47 EUR/MWh**

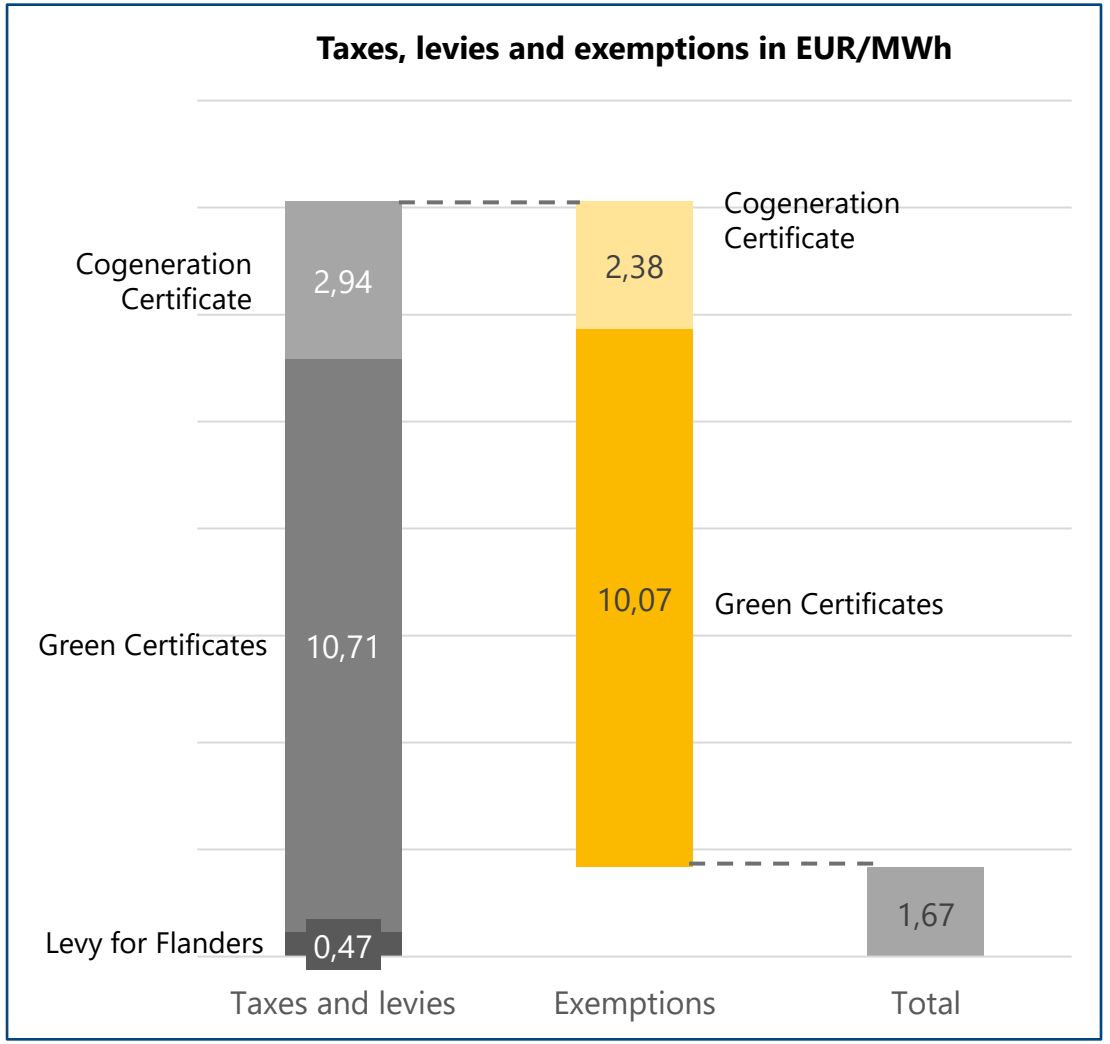
Certification scheme

- Green Certificates: 97.40 EUR/MWh * 11%
  → **10.71 EUR/MWh**
- Cogeneration: 20.98 EUR/MWh * 14%
  → **2.94 EUR/MWh**

Exemptions

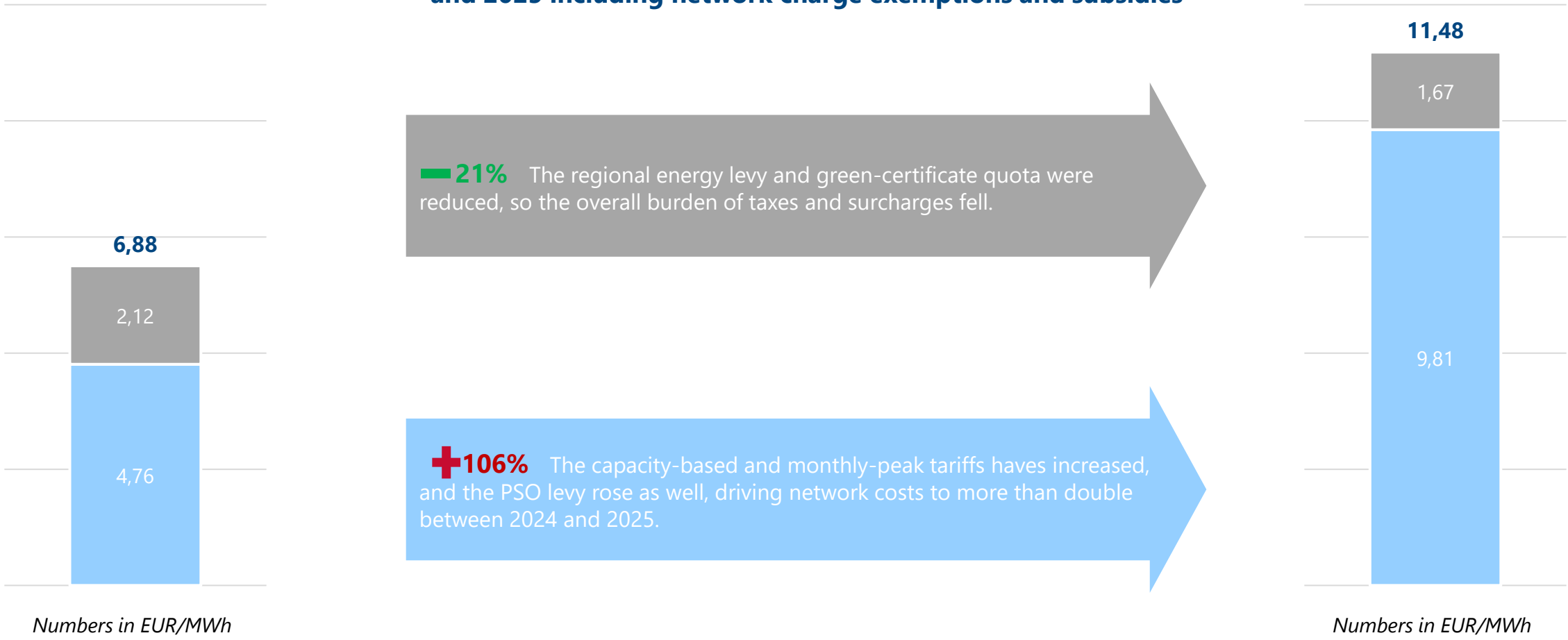
- Green Certificates: reduction of 94% → **10.07 EUR/MWh**
- Cogeneration: reduction of 81% → **2.38 EUR/MWh**

→ Resulting taxes and levies: **1.67 EUR/MWh**



Belgium: Non-commodity electricity costs for electrolysers jumped, as a steep rise in network charges more than offset lower taxes and levies

Comparison of electricity costs for an electrolyser in 2024 and 2025 including network charge exemptions and subsidies



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Denmark: Network charges for an electrolyser in **2025**

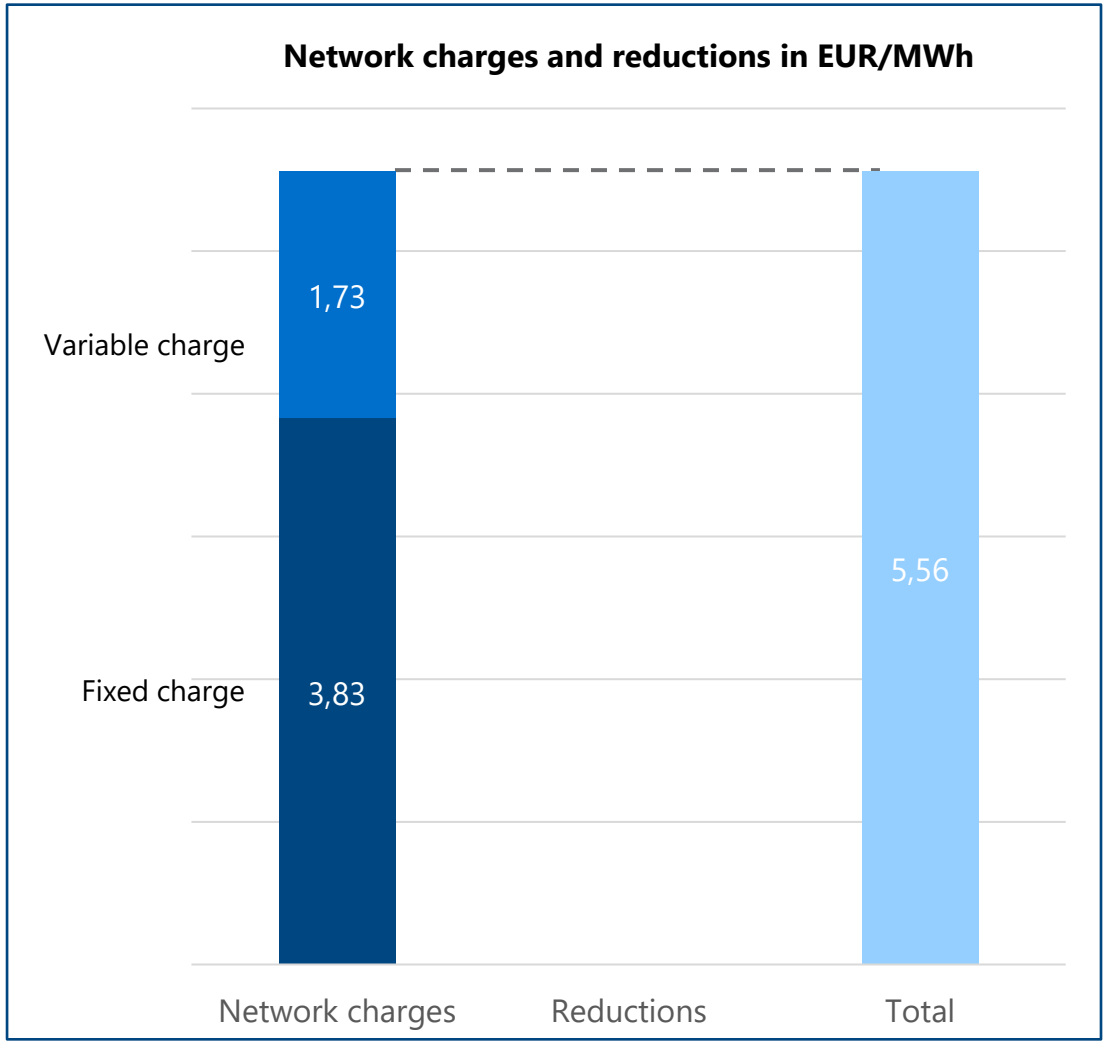
Network charges

- Transmission tariff:
  - First 100 GWh: **7.50 EUR/MWh**
  - Exceeding consumption: **3.50 EUR/MWh**

  → Resulting network charges: **3.83 EUR/MWh**
- System tariff:
  - First 100 GWh: **9.90 EUR/MWh**
  - Exceeding consumption: **0.99 EUR/MWh**

  → Resulting network charges: **1.73 EUR/MWh**

→ Exemption of all network charges for electrolysers: **0 EUR/MWh**
→ Resulting network charges: **5.56 EUR/MWh**



Denmark: Taxes, levies and exemptions for an electrolyser in **2025**

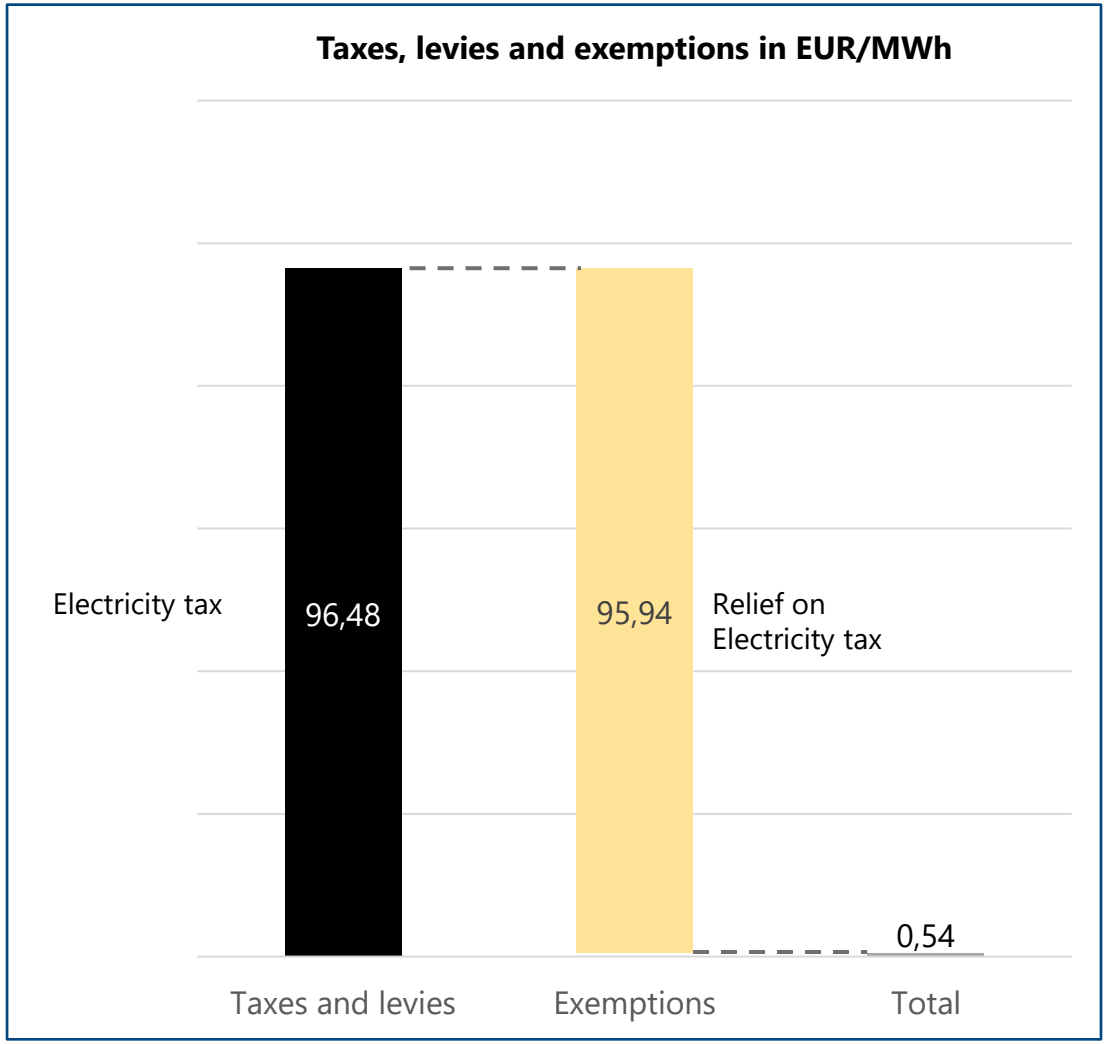
Taxes, levies and fees:

- Electricity tax: **96.48 EUR/MWh**

Exemptions:

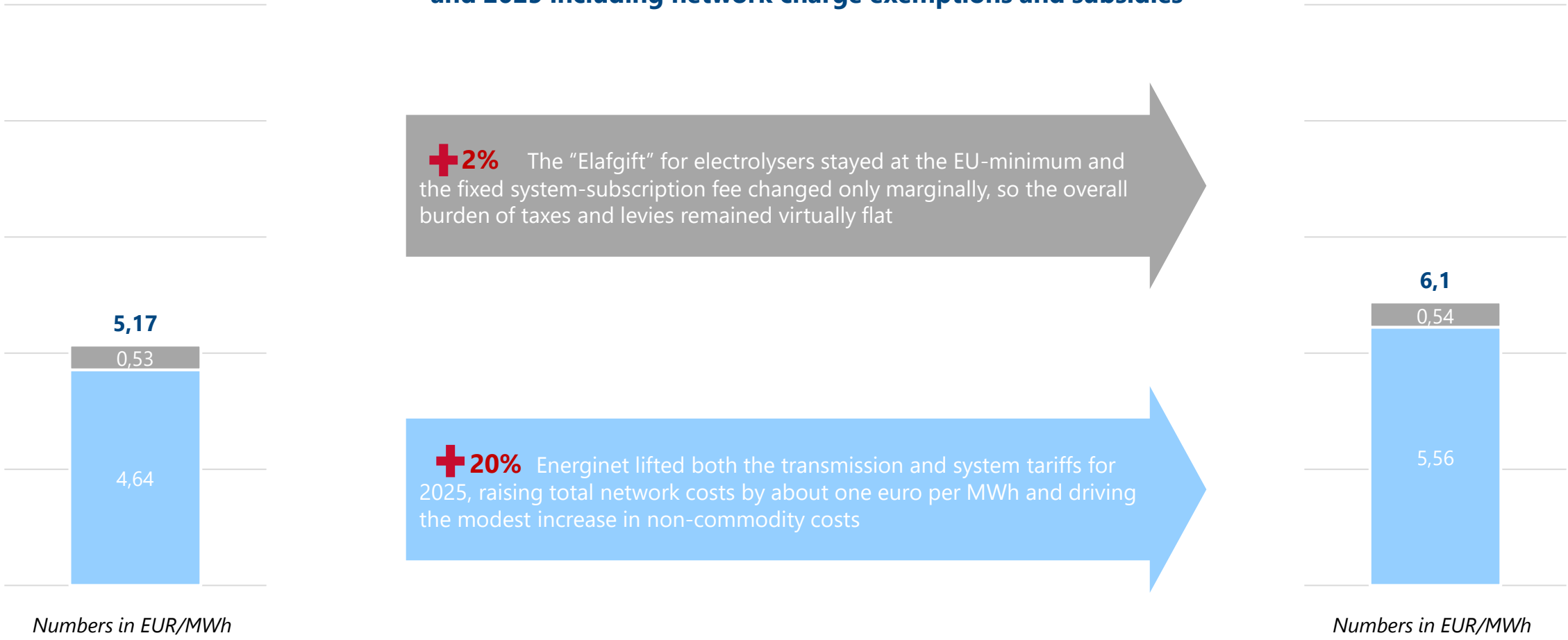
- Relief of **everything but 0.54 EUR/MWh**

→ Resulting taxes, levies and fees: **0.54 EUR/MWh**



Denmark: The non-commodity components edged up in 2025, as higher network tariffs outweighed an almost unchanged "Elafgift" and other surcharges

Comparison of electricity costs for an electrolyser in 2024 and 2025 including network charge exemptions and subsidies



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United Kingdom: Network charges for an electrolyser in **2025**

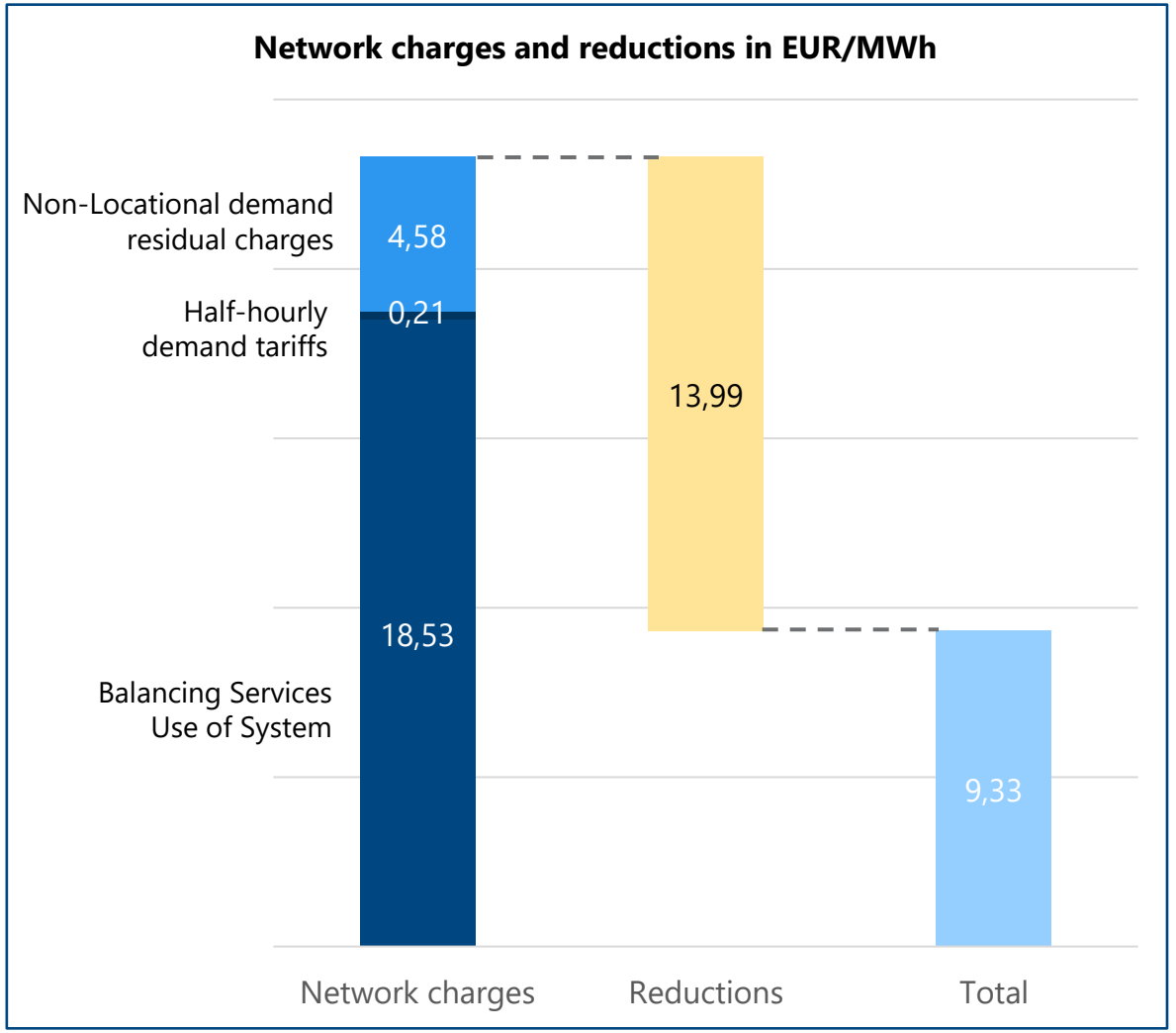
Network charges

- Half-hourly demand tariffs: 10.03 EUR/kW → **0.21 EUR/MWh**
- Balancing Services Use of System: **18.53 EUR/MWh**
- Non-Locational demand residual charges: **4.58 EUR/MWh**

Network charge reduction

- EII Network Charging Cost Compensation (NCC) - **60%** compensation on network charging costs

→ Resulting network charges: **9.33 EUR/MWh**



United Kingdom: Taxes, levies and exemptions for an electrolyser in **2025**

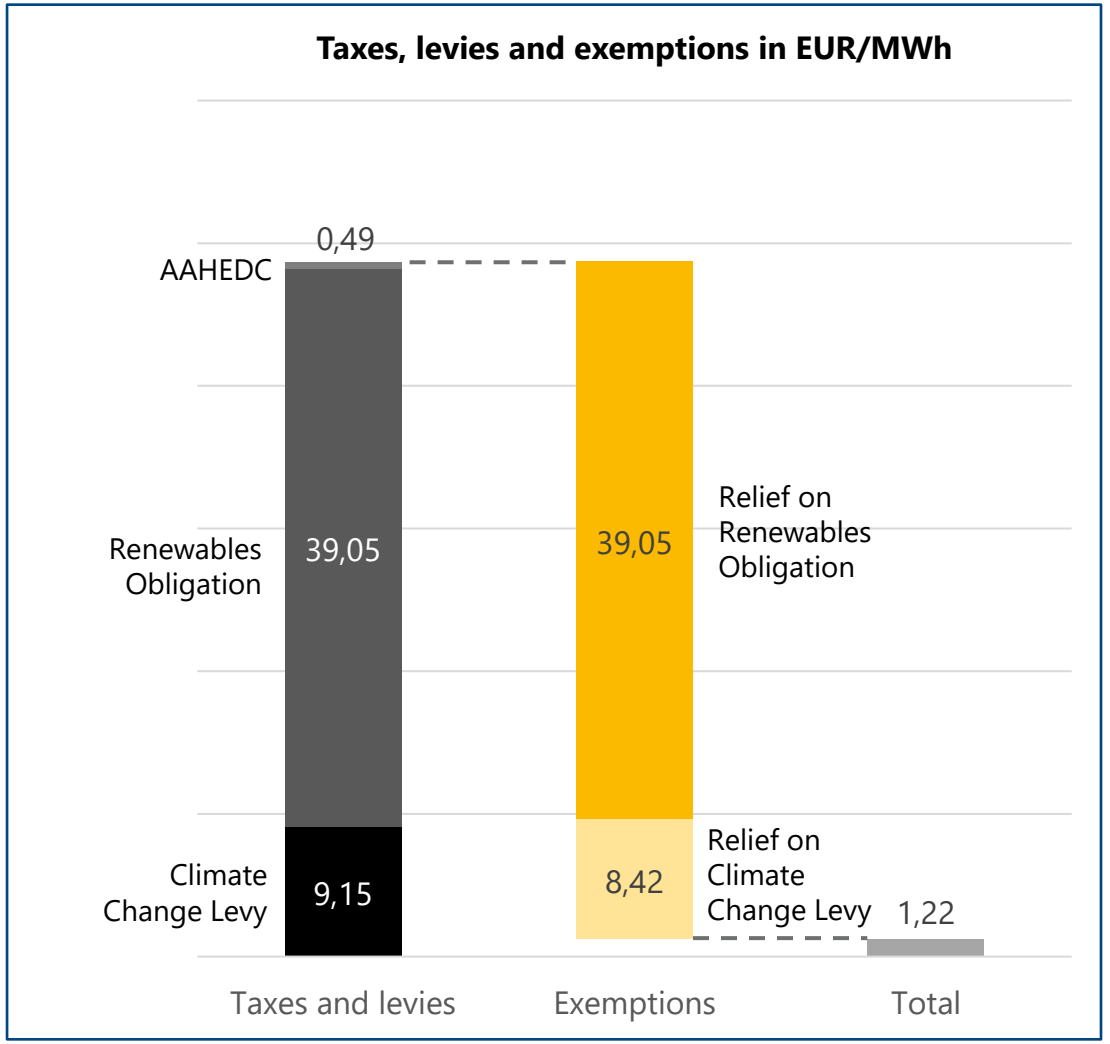
Taxes, levies and fees:

- Climate Change Levy: **9.15 EUR/MWh**
- Renewables Obligation: **39.05 EUR/MWh**
- Assistance for High Distribution Costs (AAHEDC): **0.49 EUR/MWh**

Exemptions:

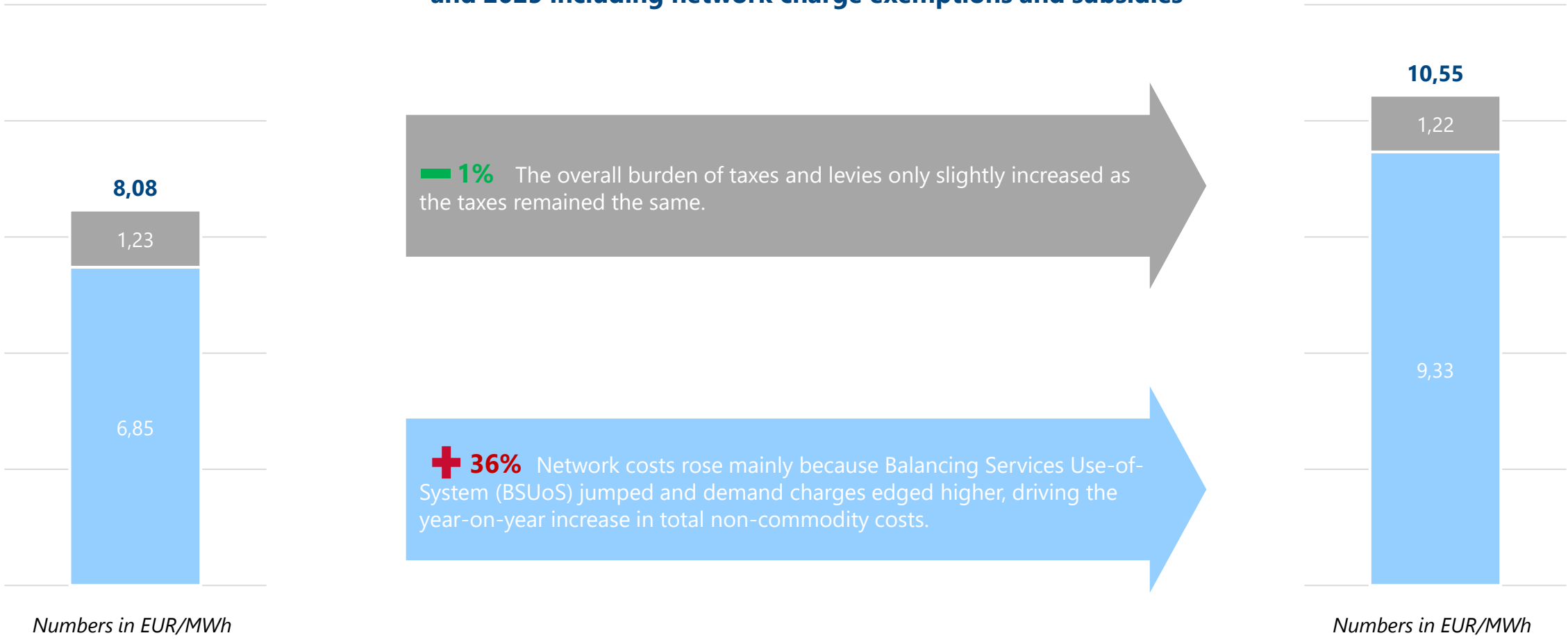
- Relief of 92% on Climate Change Levy: **8.42 EUR/MWh**
- Relief of 100% on Renewable Obligation: **39.05 EUR/MWh**

→ Resulting taxes, levies and fees: **1.22 EUR/MWh**



United Kingdom: Non-commodity electricity costs increased in 2025 as steeper TSO network tariffs outweighed virtually unchanged policy levies

Comparison of electricity costs for an electrolyser in 2024 and 2025 including network charge exemptions and subsidies



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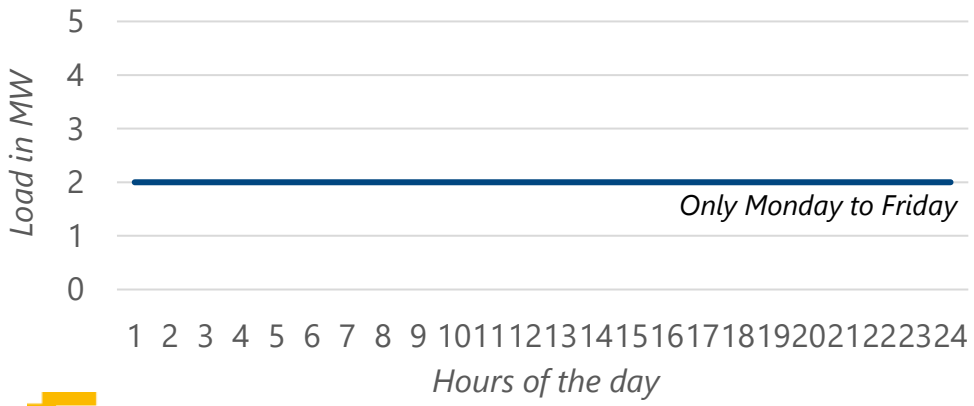
Assumptions for the non-flexible medium industry consumer profile (Profile C)

General assumptions

- Baseload production with **average load of 2 MW** in 24h on weekdays (Monday to Friday)
- Yearly consumption: **12,000 MWh** (12 GWh), **6000 Full load hours**
- Contracted Capacity / (monthly) peak load: **4.5 MW**
  Contracted capacity only reached occasionally, usual load is 2 MW
- Connection to the highest DSO grid level in each country
- Level of electro-intensity: Maximum level assumed for the relevant countries (Germany, France, UK)
- We assume this user to be in the food industry sector**, this sector is not applicable for the indirect cost compensation

Profile of the non-flexible medium industry consumer



Country specific assumptions*



- Sector of List 2 (food production) + significant use of energy from RES, i. e. qualification for a reduction of the CHP and offshore levy (Annex II)



- Metering device is owned by RTE
- Energy-intensive company with no exposition to international competition and no risk of carbon leakage (relevant for energy tax) (Annex III)



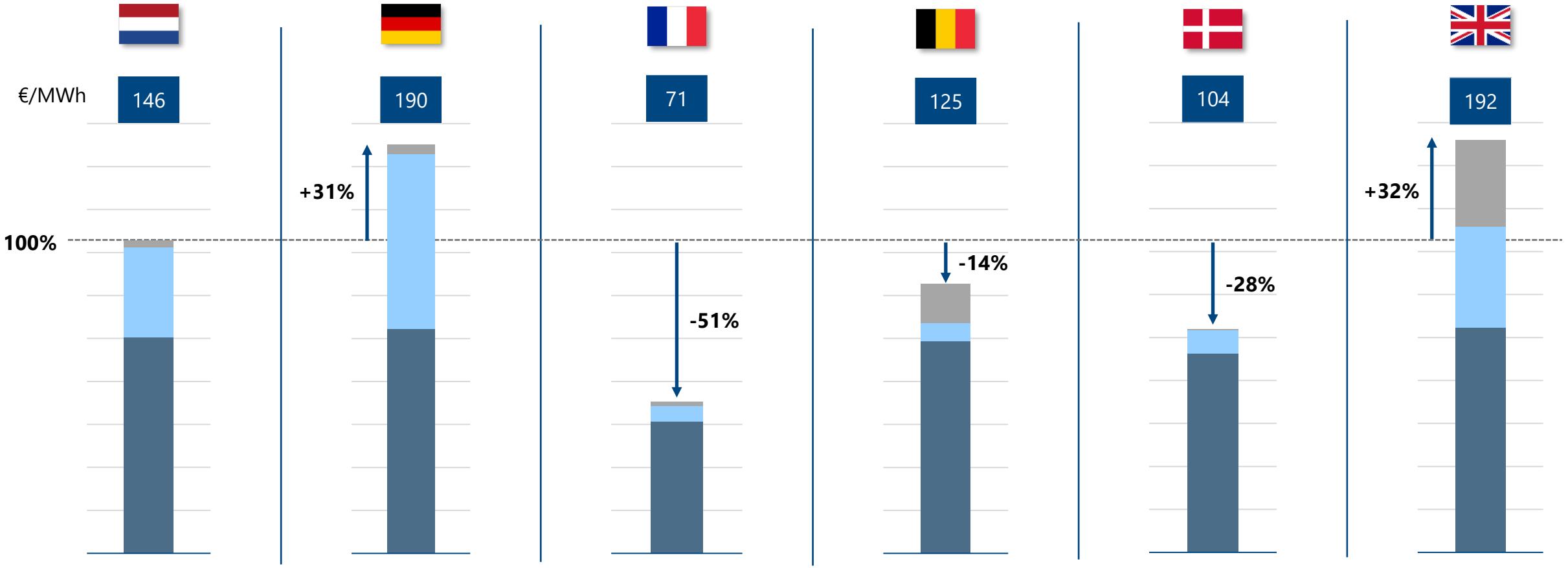
- No specific assumptions

E-Bridge competence in energy

* These assumptions are valid for all countries but only relevant in the country they are assigned to

** The food industry sector is large in the Netherlands and also exists in all other assessed countries

Non-flexible medium industry: **Effective electricity costs** in **2025**



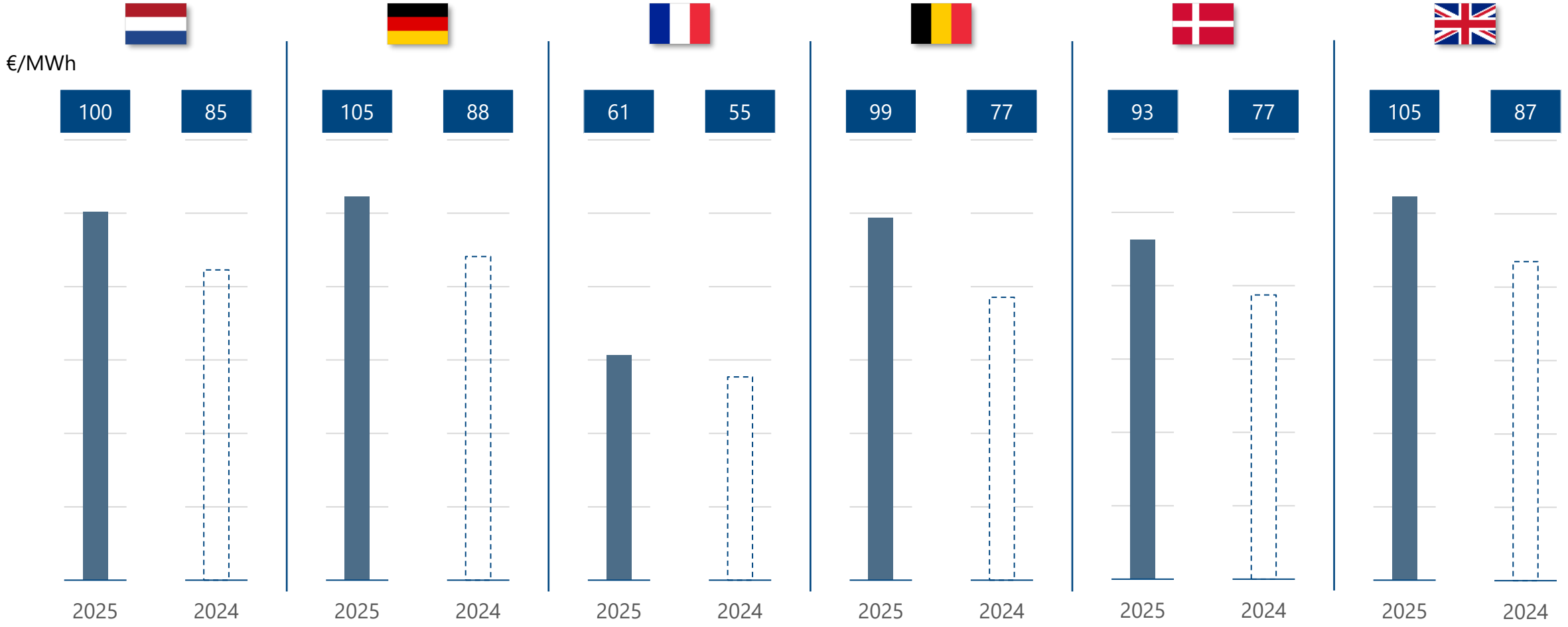
Non-flexible medium industry:
12 GWh/a, 6000 FLH
2 MW average load
4.5 MW contracted capacity

Taxes, levies, subsidies and exemptions
Network charges
Electrical energy costs

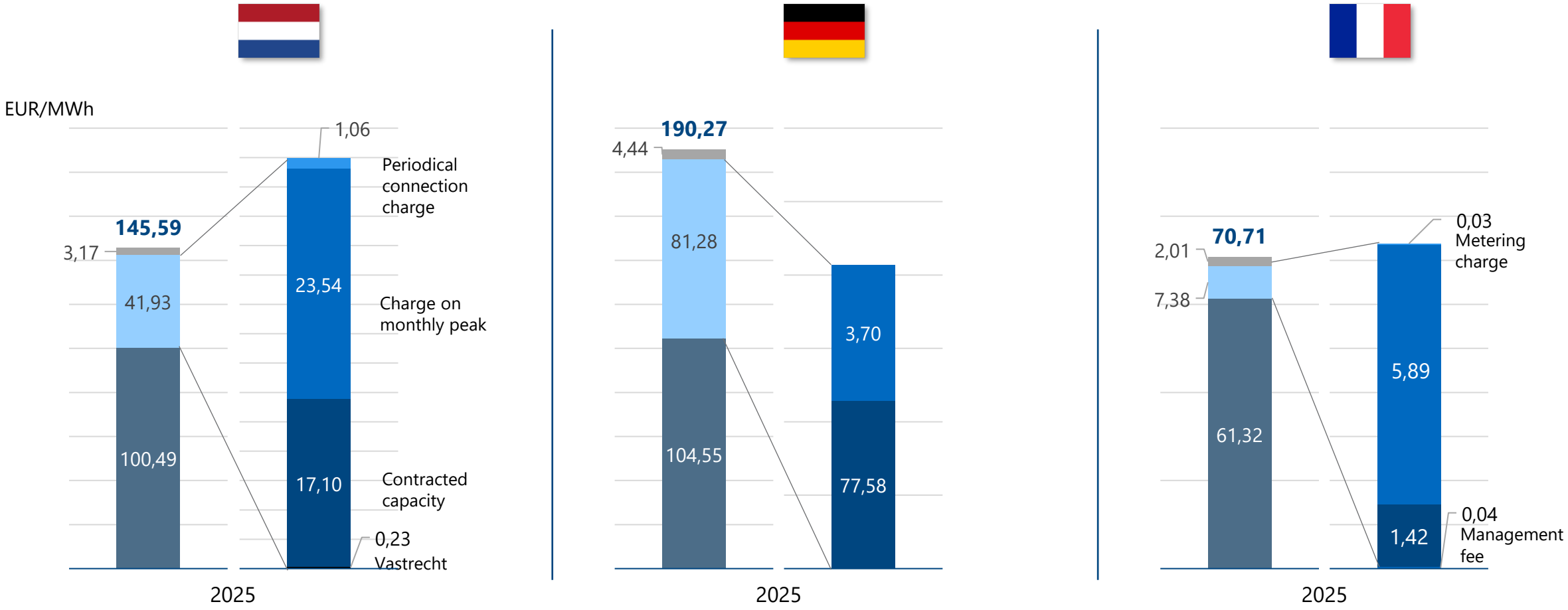
Percentage level: Difference compared to the Netherlands.

E-Bridge
competence in energy

Non-flexible medium industry: **Commodity prices 2025** versus 2024



Non-flexible medium industry: **Network charges** divided by component in **2025**



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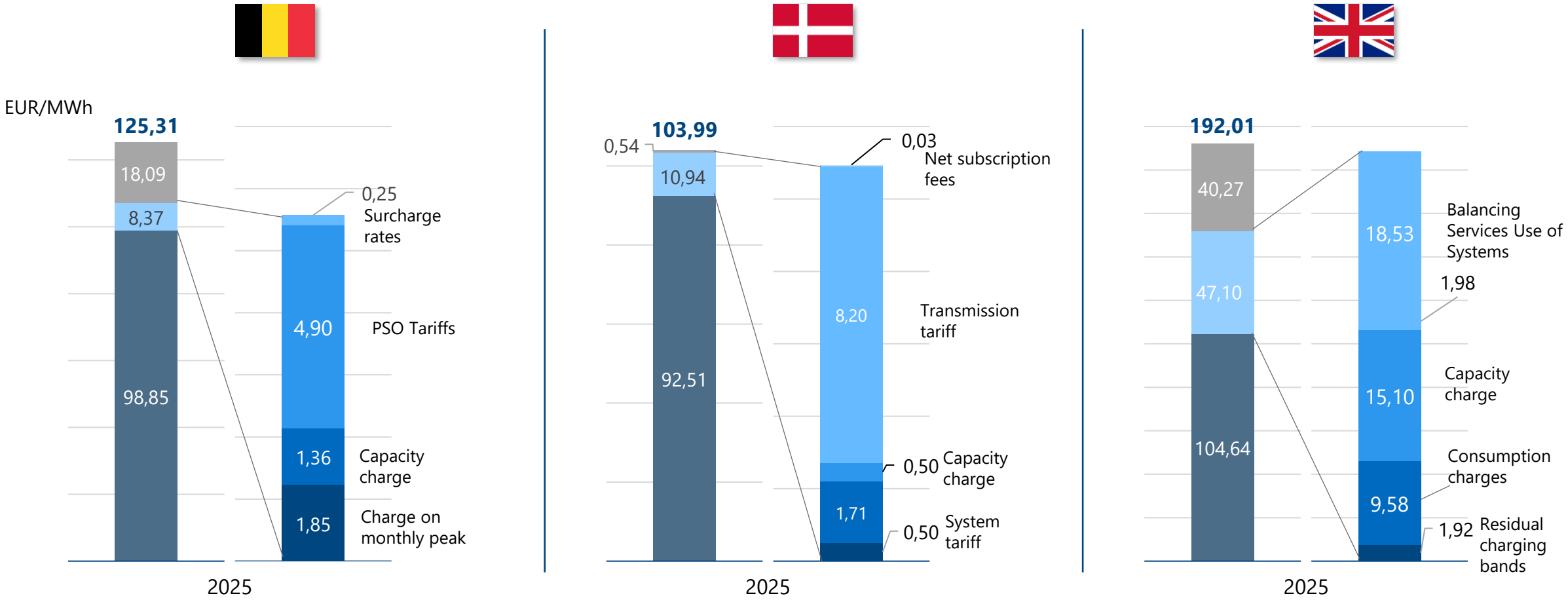
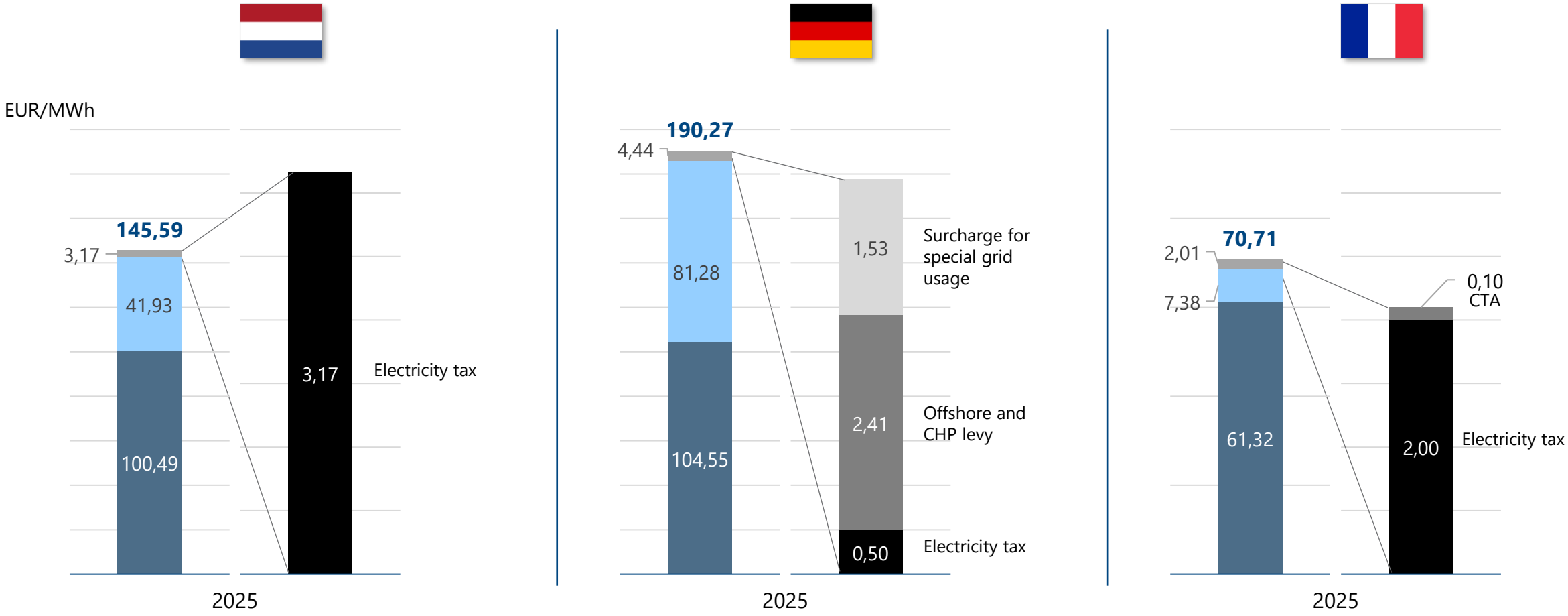
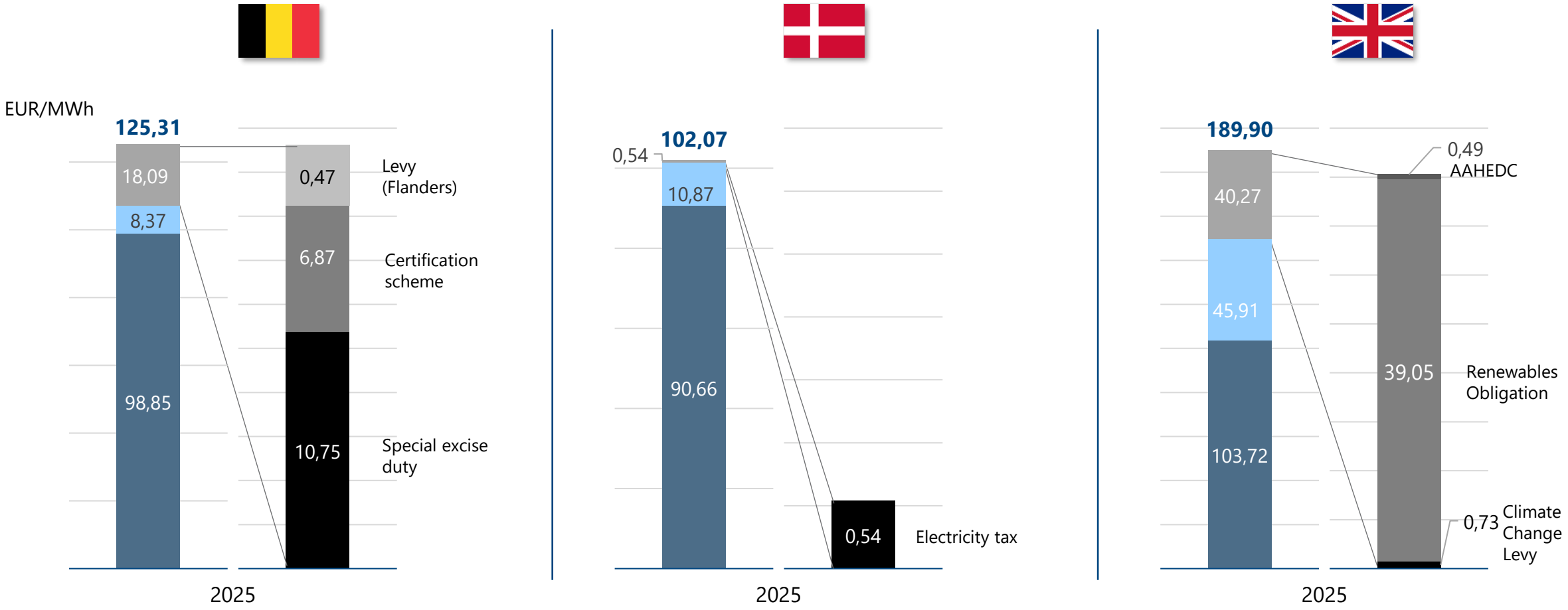


Non-flexible medium industry: **Taxes, levies, fees** divided by component in **2025**



Non-flexible medium industry: **Taxes, levies, fees** divided by component in **2025**



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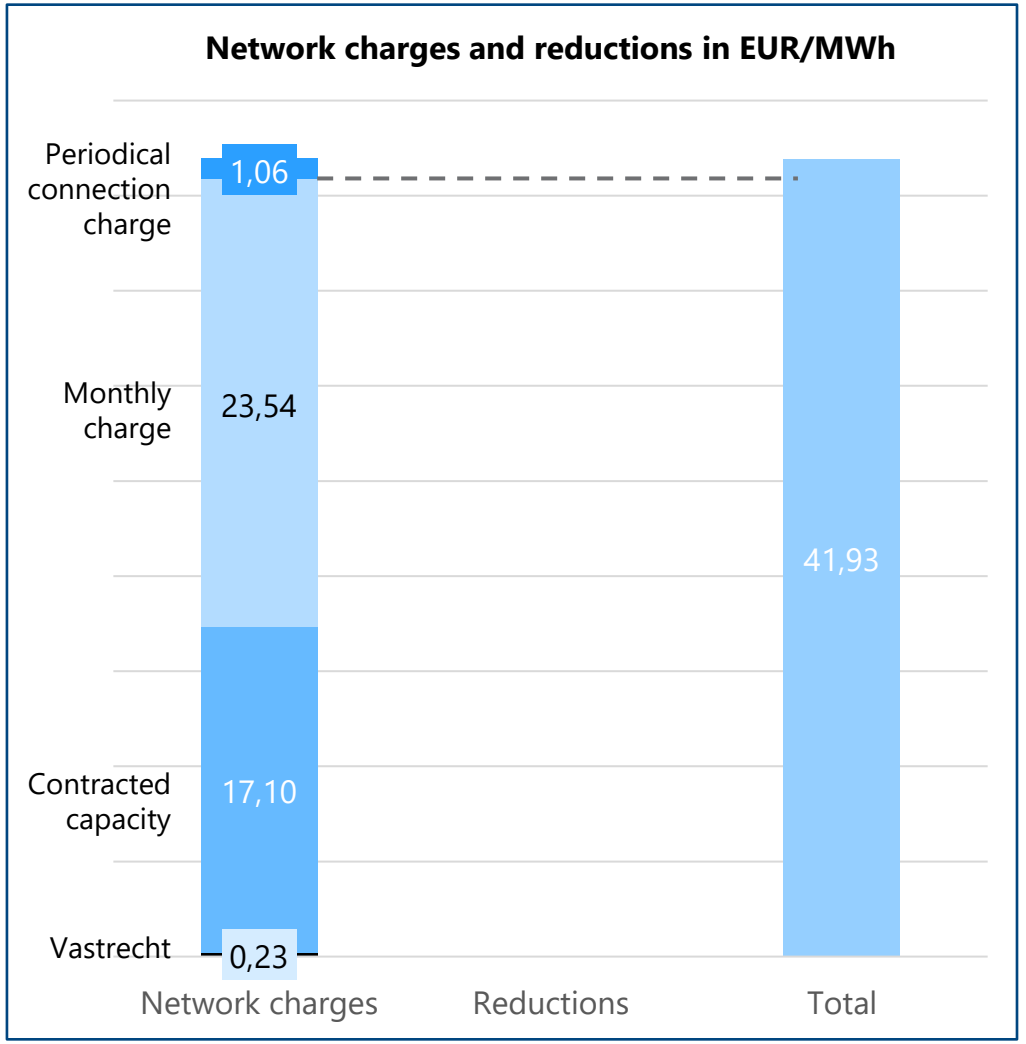
Netherlands: Network charges for a non-flexible medium industry (12 GWh/a) in **2025**

Network charges

- Vastrecht: 2,760 EUR/a → **0.23 EUR/MWh**
- Contracted capacity: 45.60 EUR/kW
  - Contracted Capacity/Peak load: 4.5 MW → **17.10 EUR/MWh**
- Charge on monthly peak: 5.23 EUR/kW/month
  - Average monthly peak load: 4.5 MW → **23.54 EUR/MWh**
- Periodical connection charge: 1,056 EUR/month → **1.06 EUR/MWh**

→ Network charges amount to **41.93 EUR/MWh**



Netherlands: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in **2025**

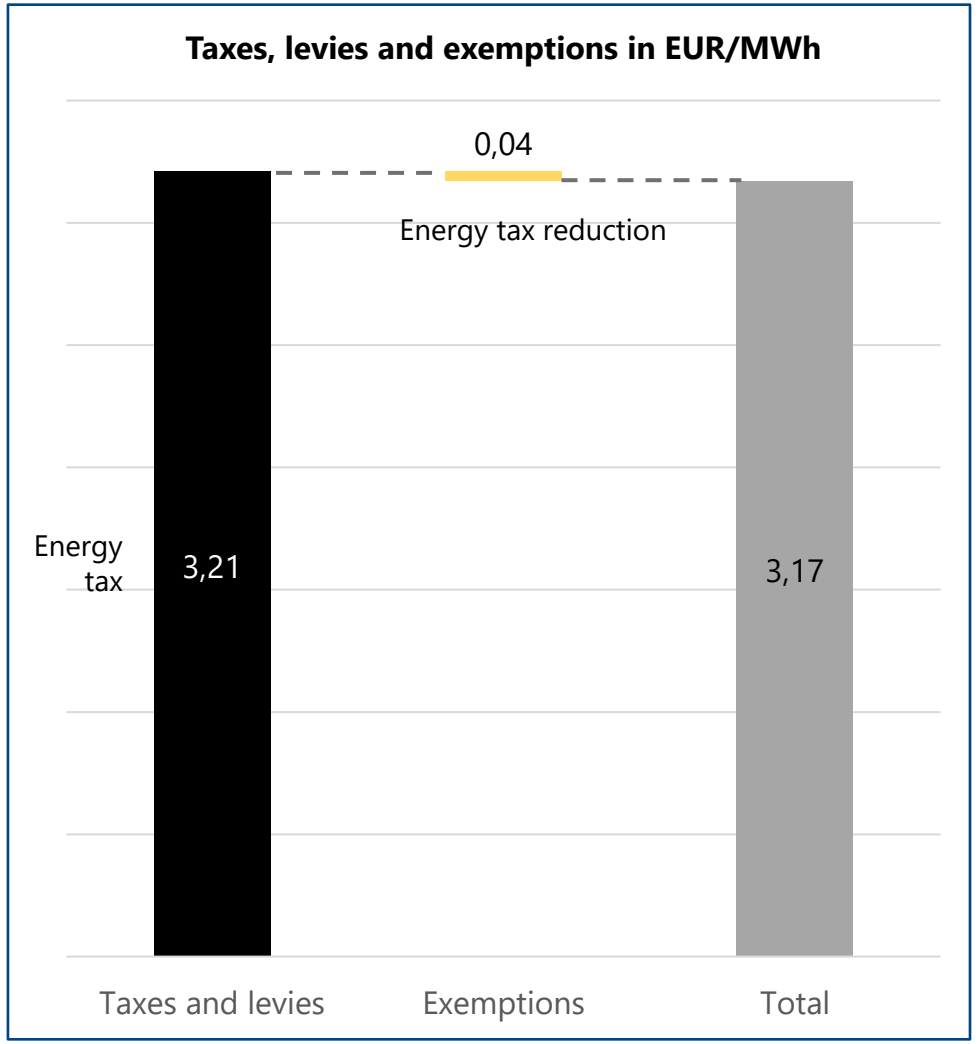
Taxes, levies and fees:

- Energy tax: **3.21 EUR/MWh**

Exemptions:

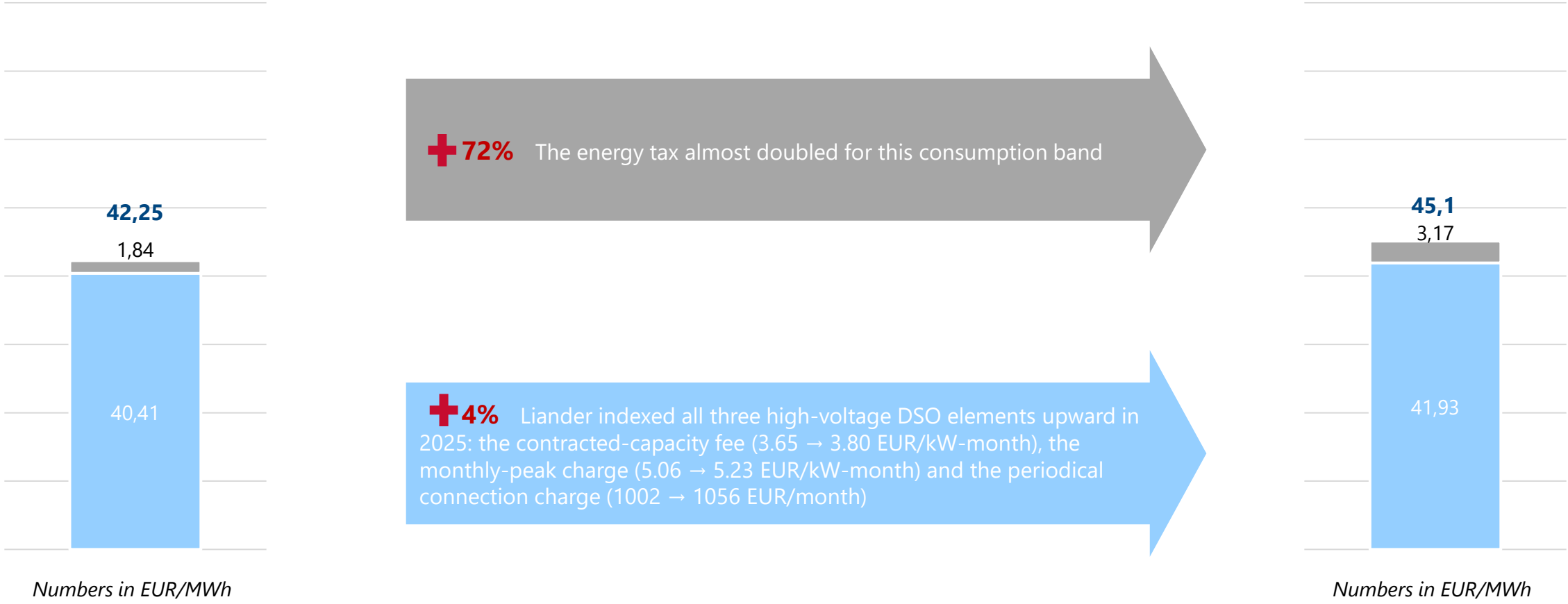
- Energy tax reduction: **524.95 EUR → 0.04 EUR/MWh**

→ Only taxes apply in the amount **3.17 EUR/MWh**



Netherlands: The non-commodity electricity cost rose in 2025, driven by a higher energy-tax rate and across-the-board increases in Liander's DSO tariffs

Comparison of electricity costs for a non-flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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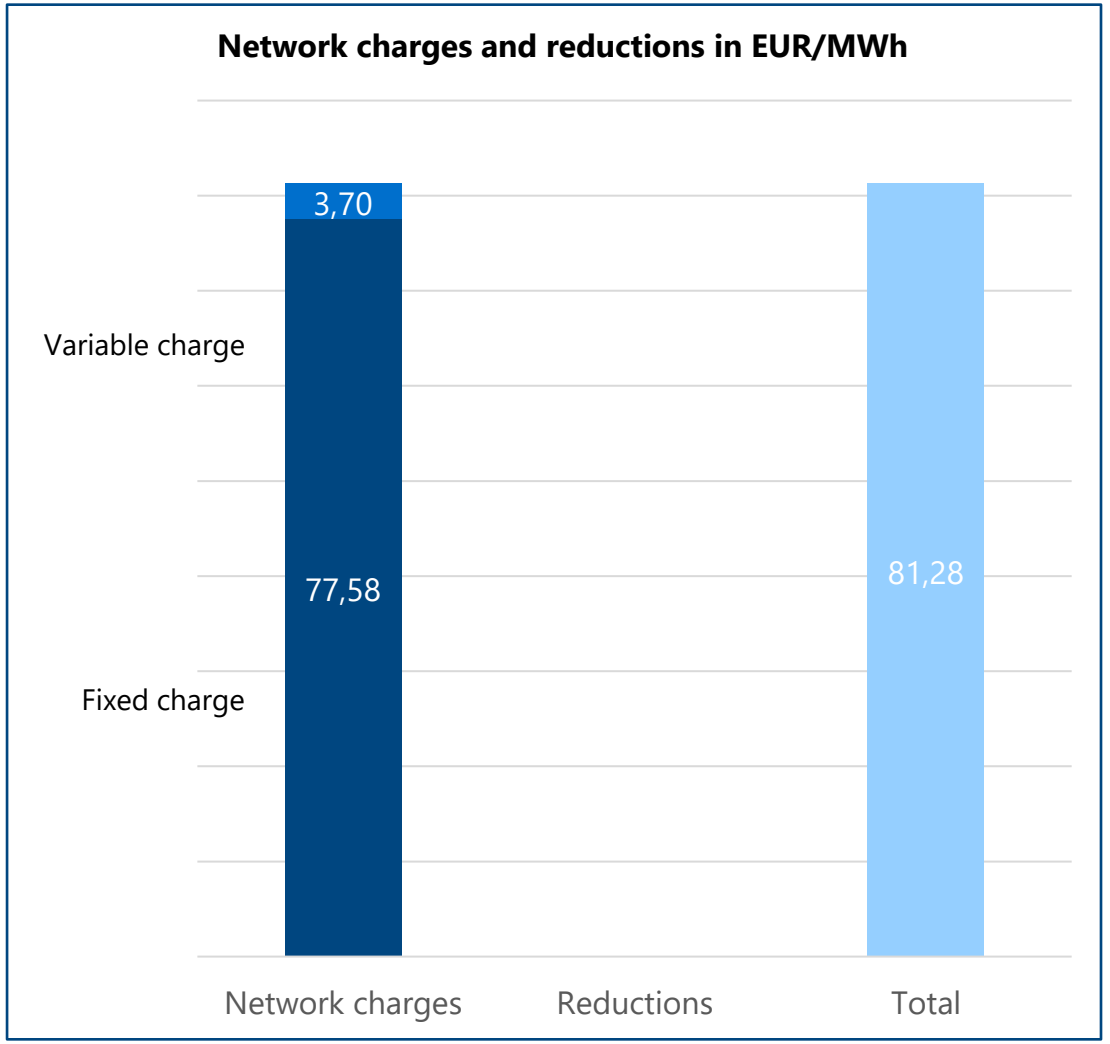
Germany: Network charges for a non-flexible medium industry (12 GWh/a) in **2025**

Network charges

- Fixed charge: **127.74 EUR/kW**
  - Peak Load: 4.5 MW → **77.58 EUR/MWh**
- Variable charge: **3.70 EUR/MWh**

→ Resulting network charges: **81.28 EUR/MWh**



Germany: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in **2025**

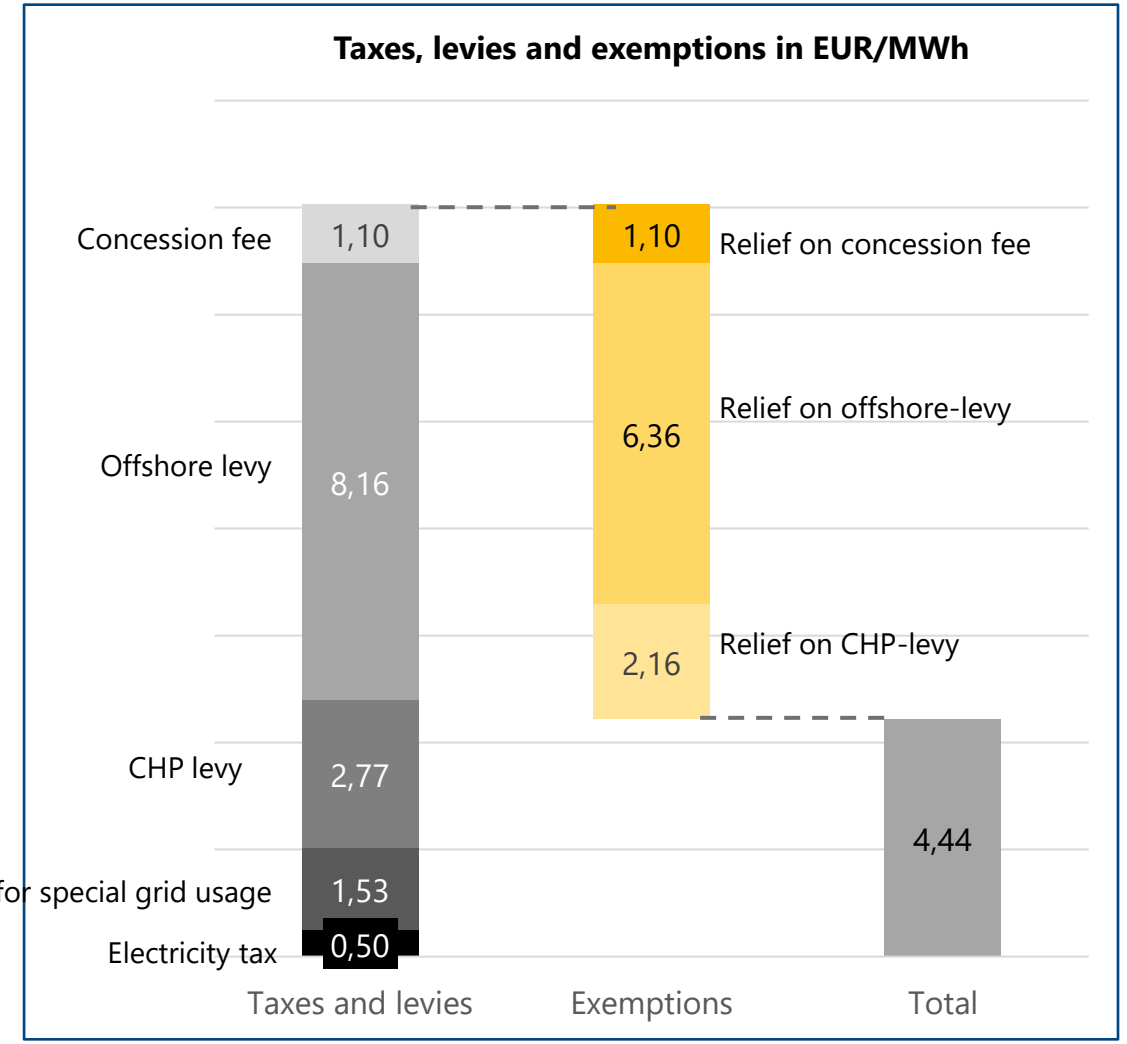
Taxes, levies and fees:

- Electricity tax: **0.50 EUR/MWh**
- Offshore-levy: **8.16 EUR/MWh**
- KWK-levy: **2.77 EUR/MWh**
- Surcharge for special grid usage:
  - **15.58 EUR/MWh** for the first 1000 MWh
  - For every MWh exceeding this: **0.25 EUR/MWh**
  - For 12 GWh → **1.53 EUR/MWh**
- Concession fee: **1.10 EUR/MWh**

Exemptions:

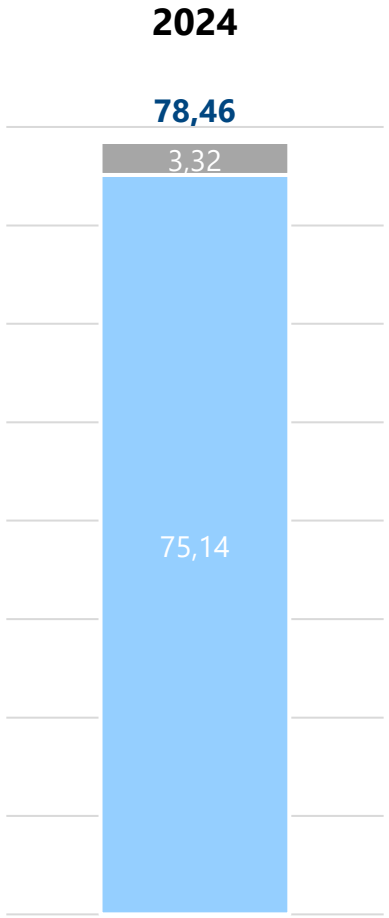
- Relief of **100%** of the concession fee → **1.10 EUR/MWh**
- Relief of **85%** of the offshore and CHP levy for energy consumption over 1000 MWh (not the first 1000 MWh)
  → **8.52 EUR/MWh**

→ Resulting taxes, levies and fees: **4.44 EUR/MWh**



Germany: The non-commodity share of electricity costs rose in 2025 – higher DSO tariffs offset the cut in the fixed capacity charges

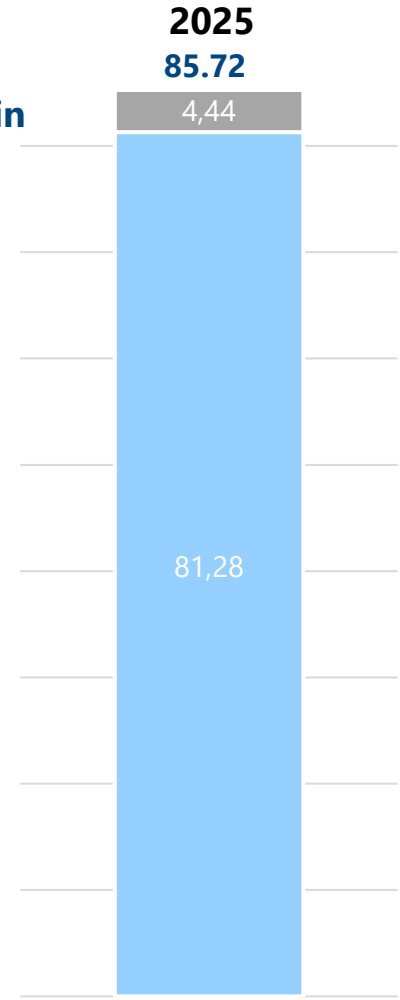
Comparison of electricity costs for a non-flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



Numbers in EUR/MWh

+34% The burden of surcharges (special grid utilisation, offshore liability levy, CHP levy) increased, lifting the taxes-and-levies component.

+8% Although the variable energy network charges dropped from 4.20 EUR/MWh to 3.70 EUR/MWh, the significant increase in the fixed charge led to the total network cost climb eventually.



Numbers in EUR/MWh

Taxes, levies and fees Network charges

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France – Influence of the ARENH-scheme on commodity prices of the non-flexible medium industry

The amount of energy available at the ARENH price is limited to 100 TWh. If the requested amount is higher than 100 TWh, a reduction for all parties applying is necessary.

- Requested amount of energy for 2025: **134.93 TWh** (Source)
- Necessary reduction: (134.93 TWh – 100 TWh) / 134.93 TWh = **25.89%**

The amount of ARENH available to a consumer depends on its consumption profile, and more specifically on its consumption during the so-called "ARENH" hours (see Source for overview of ARENH hours).

The consumption profile of the baseload DSO user qualifies for procuring **51.47%** of its consumption at the ARENH price.

Resulting percentage of consumption that can be obtained under ARENH scheme including the capping:

- 51.47% * (1 – 25.89%) = **38.14%**

Resulting commodity price for non-flexible medium industry:

- Commodity price: 38.14% * ARENH price + 61.86% * market price
  → 38.14% * 42 EUR/MWh + 61.86% * 73.23 EUR/MWh = **61.32 EUR/MWh**



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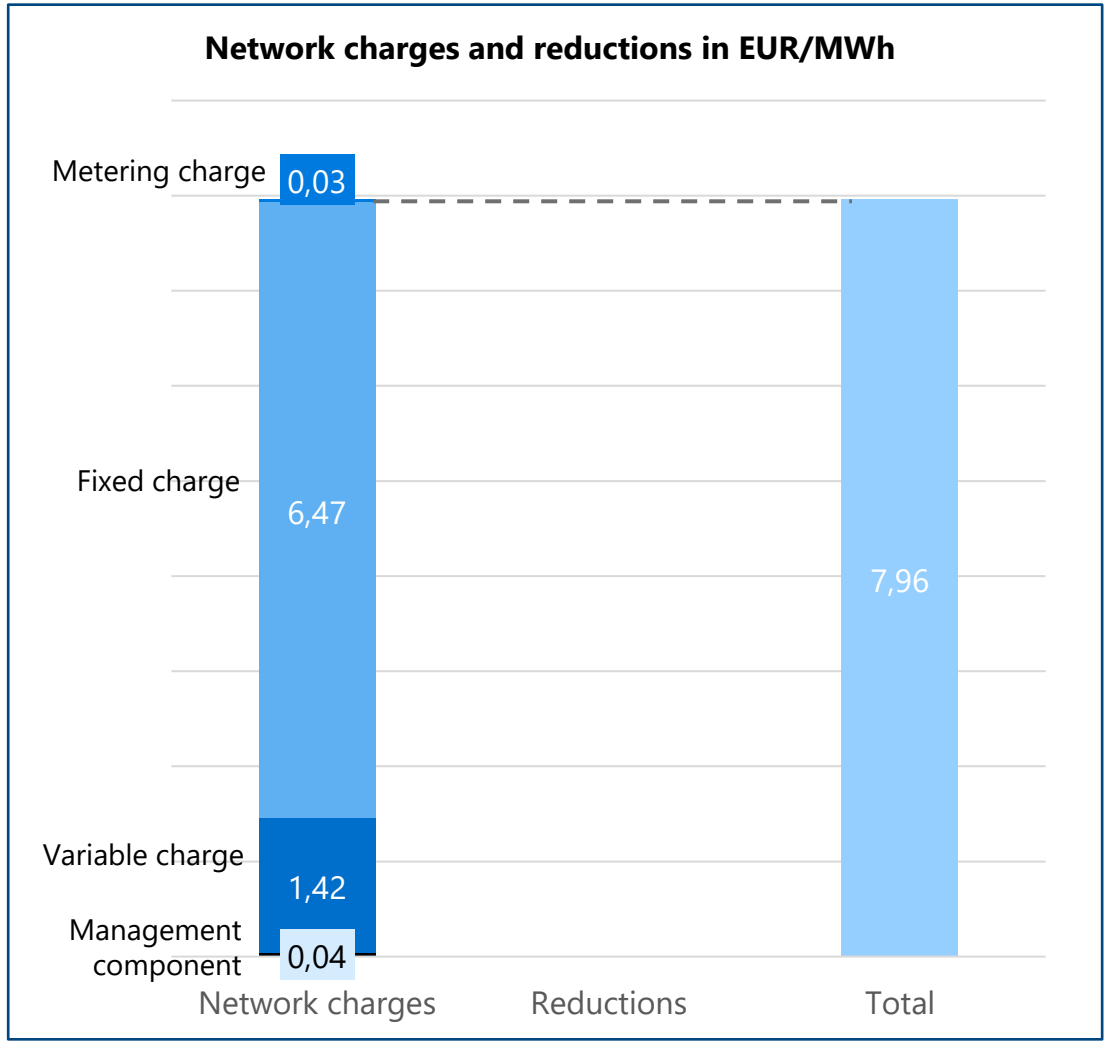
France: Network charges for a non-flexible medium industry (12 GWh/a) in **2025**

Network charges

- Management Component: **11,545.32 EUR/year**
  - Consumption: 12 GWh → **0.04 EUR/MWh**
- Metering charge: **3,800.04 EUR/year**
  - Consumption: 12 GWh → **0.03 EUR/MWh**
- Variable charge: **1.42 EUR/MWh**
- Fixed charge: **6.47 EUR/MWh**

→ Resulting network charges: **7.96 EUR/MWh** (any reductions)

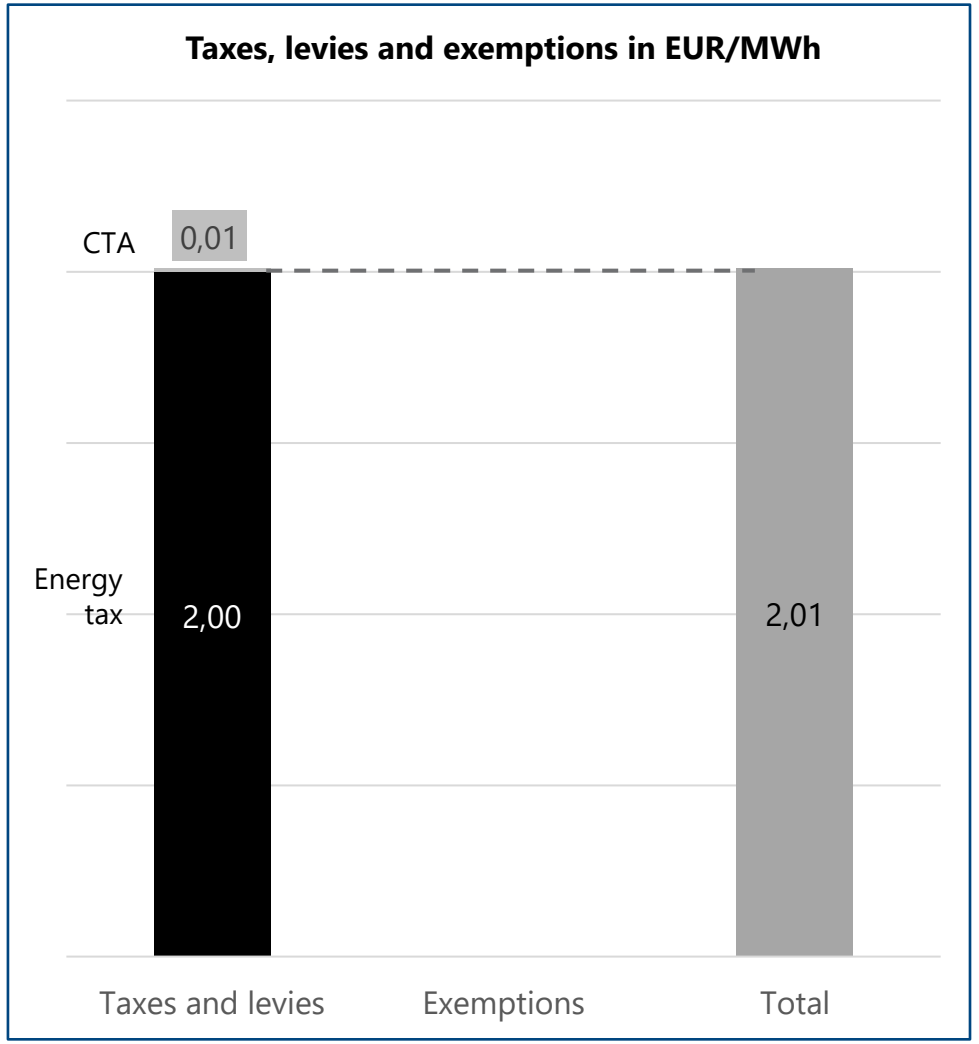


France: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in **2025**

Taxes, levies and fees:

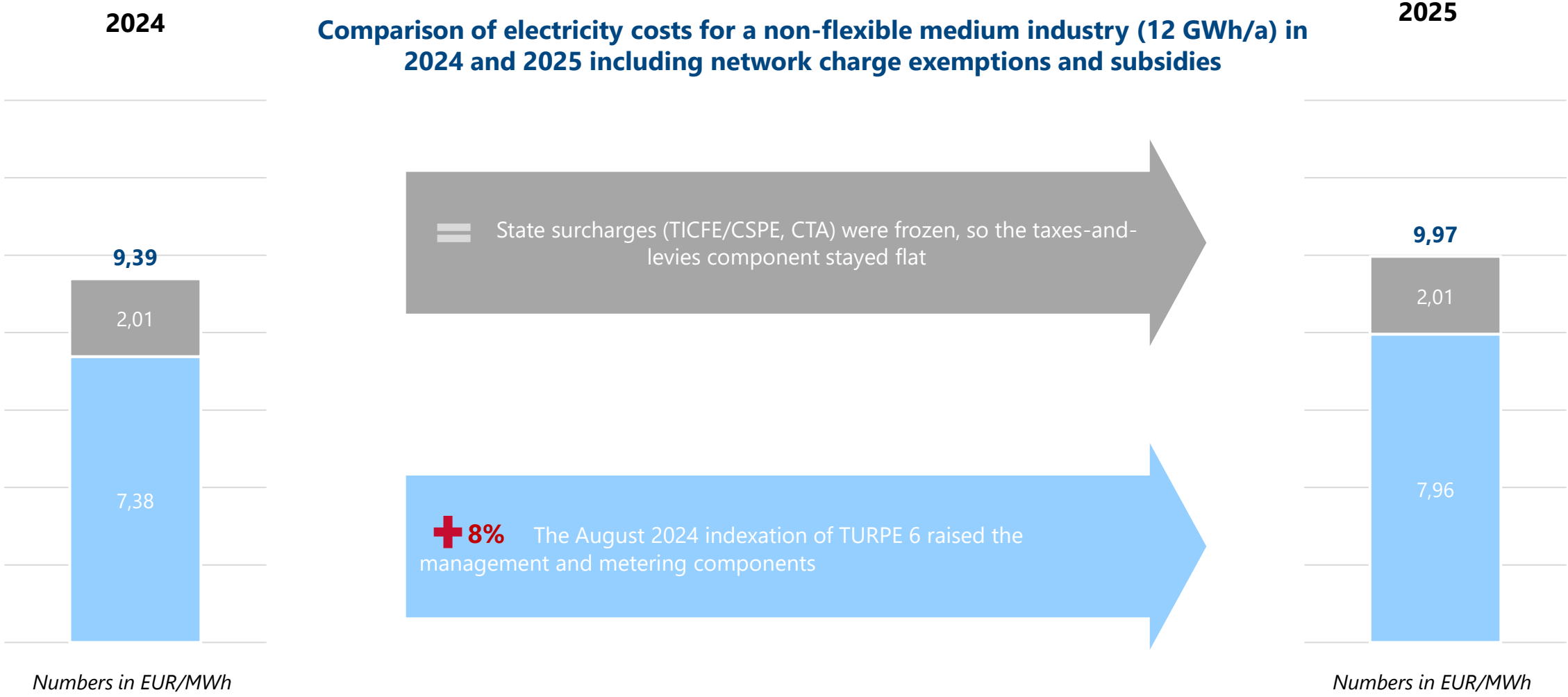
- Energy tax:
  - Sector with risk of carbon leakage & electro-intensity > 13.5%
    → **2.00 EUR/MWh**
- CTA: **10.11%** of the fixed part of the network charges
  - Management and Metering cost → **0.01 EUR/MWh**

→ France does not apply any exemptions for non-flexible medium industry customers; i.e. full taxes of **2.01 EUR/MWh** apply



France: Non-commodity electricity costs increased from 2024 to 2025: while the taxes remained the same, the network charges rose slightly

Comparison of electricity costs for a non-flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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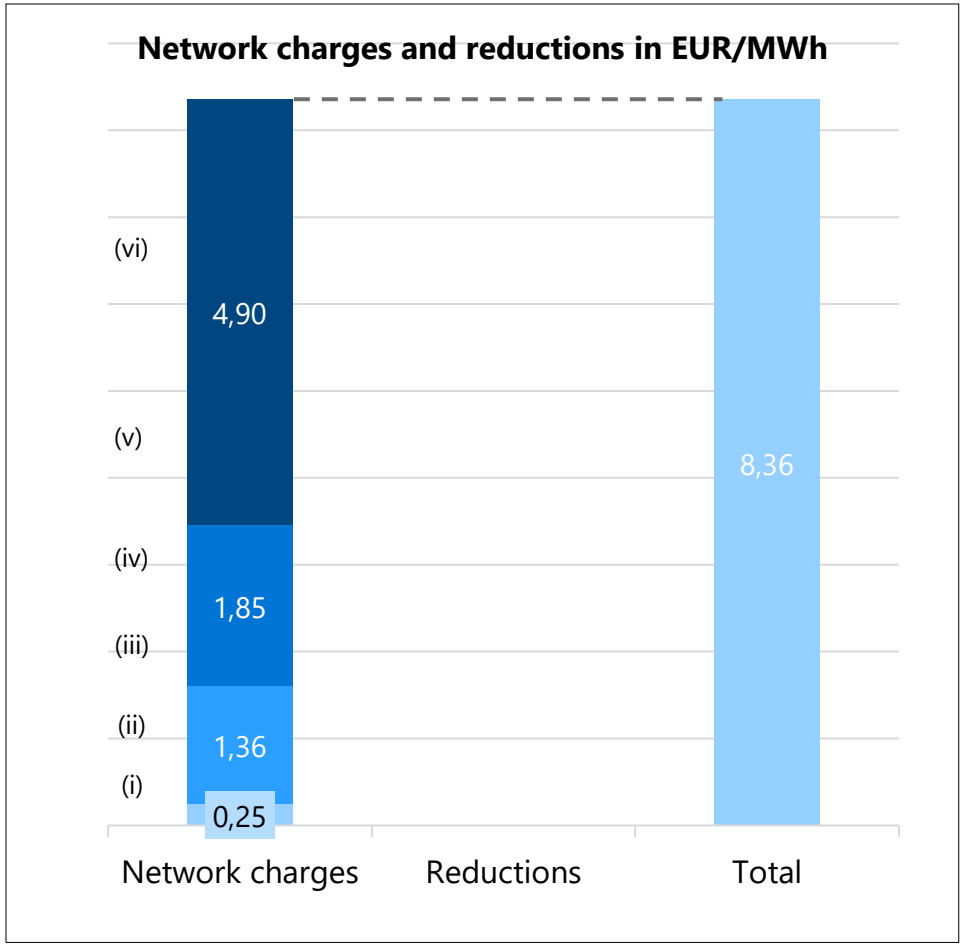
Belgium: Network charges for a non-flexible medium industry (12 GWh/a) in **2025**

Network charges

- Charge on monthly peak: **1.85 EUR/MWh**
- Capacity charge: **1.36 EUR/MWh**
- Tariffs for public service obligations: **4.90 EUR/MWh**
- Surcharge rates: **0.25 EUR/MWh**

→ Network charges amount to **8.36 EUR/MWh** (any reductions)



Belgium: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in **2025**

Taxes, levies and other costs:

- Special Excise Duty: **10.75 EUR/MWh**
- Levy for the tax's pylons and trenches: **0.47 EUR/MWh**

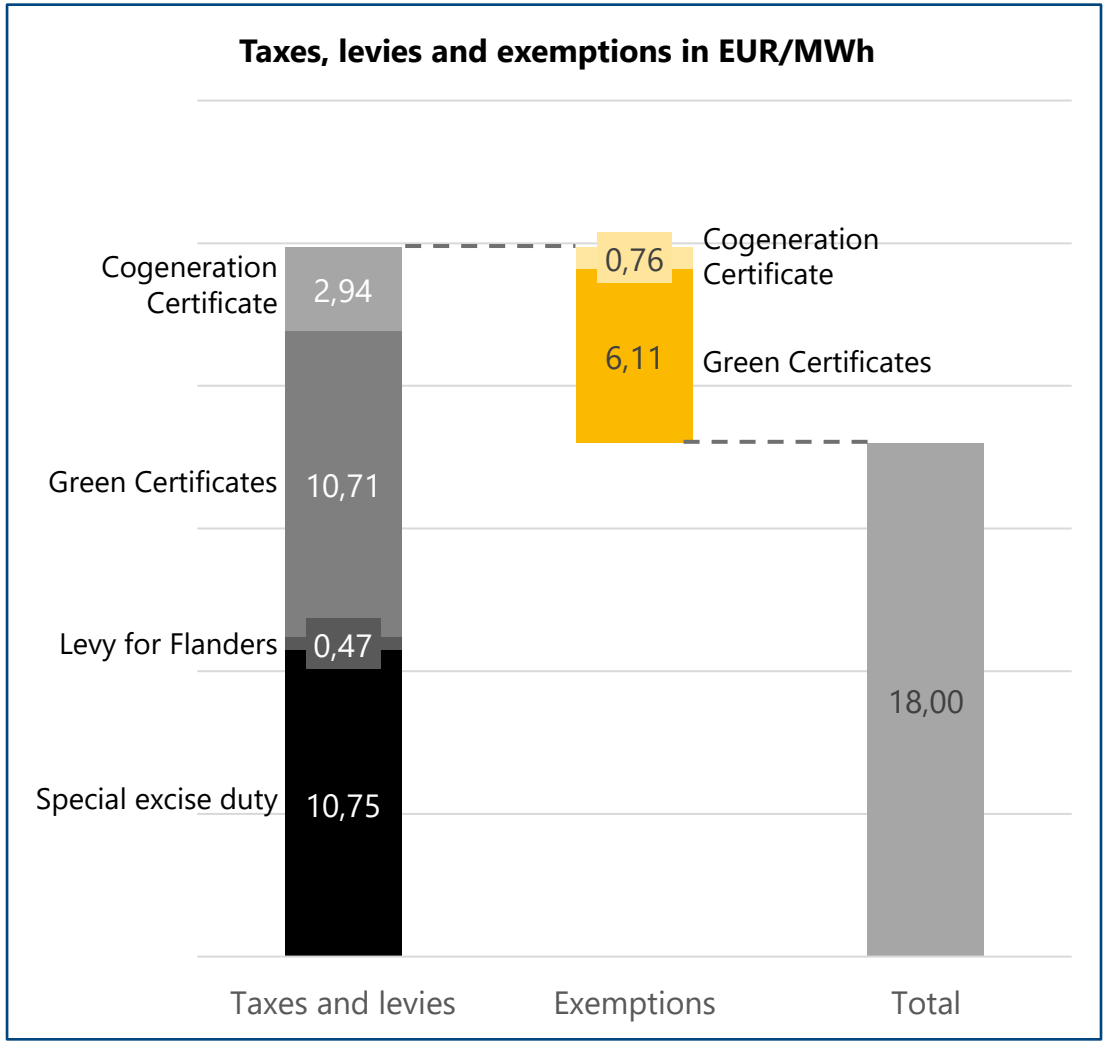
Certification scheme

- Green Certificates: 97.40 EUR/MWh * 11%
  → **10.71 EUR/MWh**
- Cogeneration: 20.98 EUR/MWh * 14.0%
  → **2.94 EUR/MWh**

Exemptions

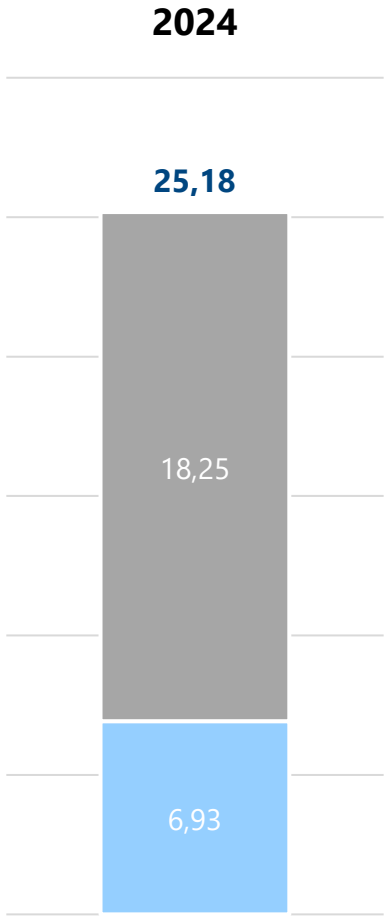
- Green Certificates: reduction of 93% → **6.11 EUR/MWh**
- Cogeneration: reduction of 81% → **0.76 EUR/MWh**

→ Resulting taxes and levies: **18 EUR/MWh**



Belgium: Non-commodity electricity costs increased in 2025 as higher Fluvius network charges outweighed the slight easing of levies and surcharges

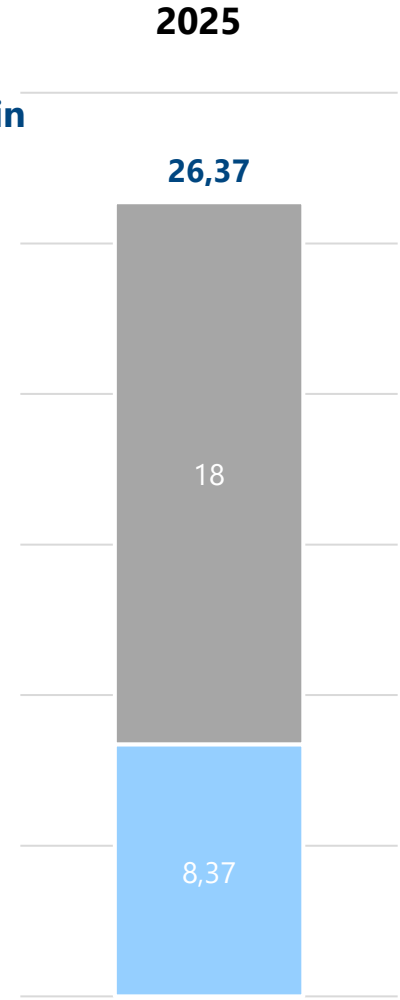
Comparison of electricity costs for a non-flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



Numbers in EUR/MWh

−1% Regional PSO and federal surcharge rates fell marginally, nudging the levy component down from 18.25 to 18 EUR/MWh

+21% Fluvius lifted the capacity-related elements in 2025: the charges on available power rose to 43.61 EUR/kVA, and the monthly-peak fee to 4.93 EUR/kW/month. Even though the annual data-management charge dropped to 56.56 EUR, total network costs climbed from 6.93 to 8.37 EUR/MWh



Numbers in EUR/MWh

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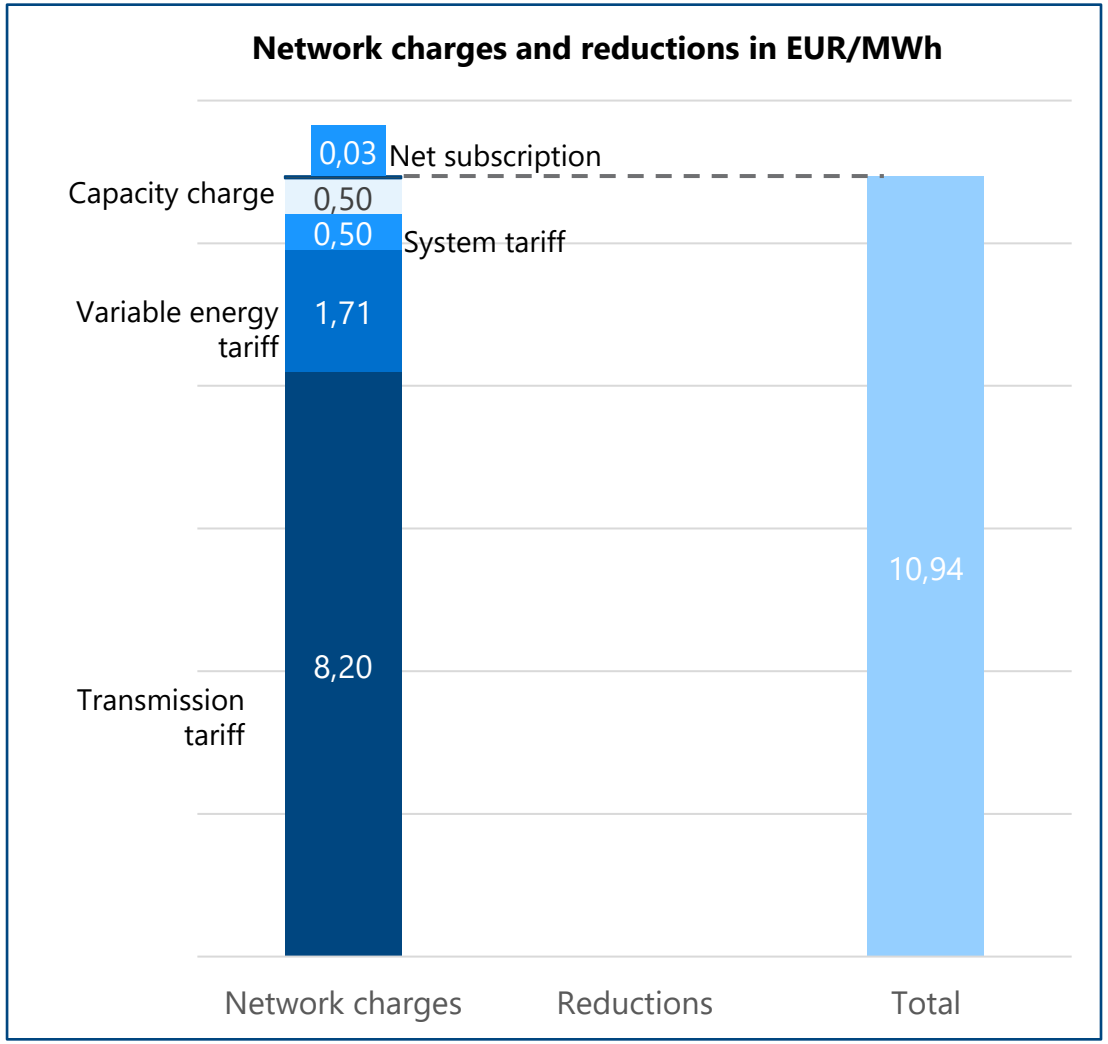
Denmark: Network charges for a non-flexible medium industry (12 GWh/a) in **2025**

Network charges

- Transmission tariff: **8.20 EUR/MWh**
- System tariff: **0.50 EUR/MWh**
- Variable energy tariff: **1.71 EUR/MWh**
- Capacity charge (“Effektbetaling”): **0.50 EUR/MWh**
- Net subscription: **0.03 EUR/MWh**

→ Resulting network charges: **10.94 EUR/MWh**



Denmark: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in 2025

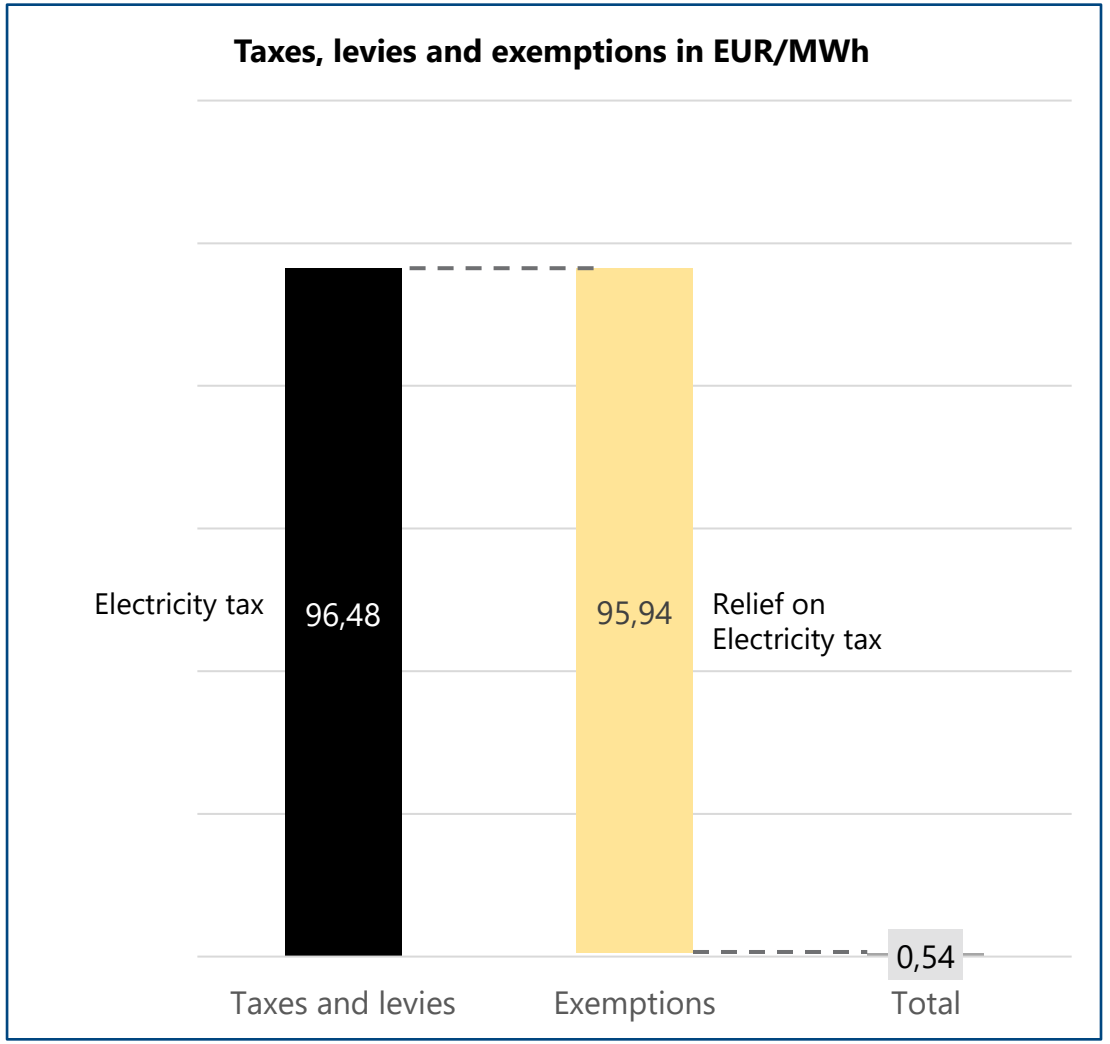
Taxes, levies and fees:

- Electricity tax: **96.48 EUR/MWh**

Exemptions:

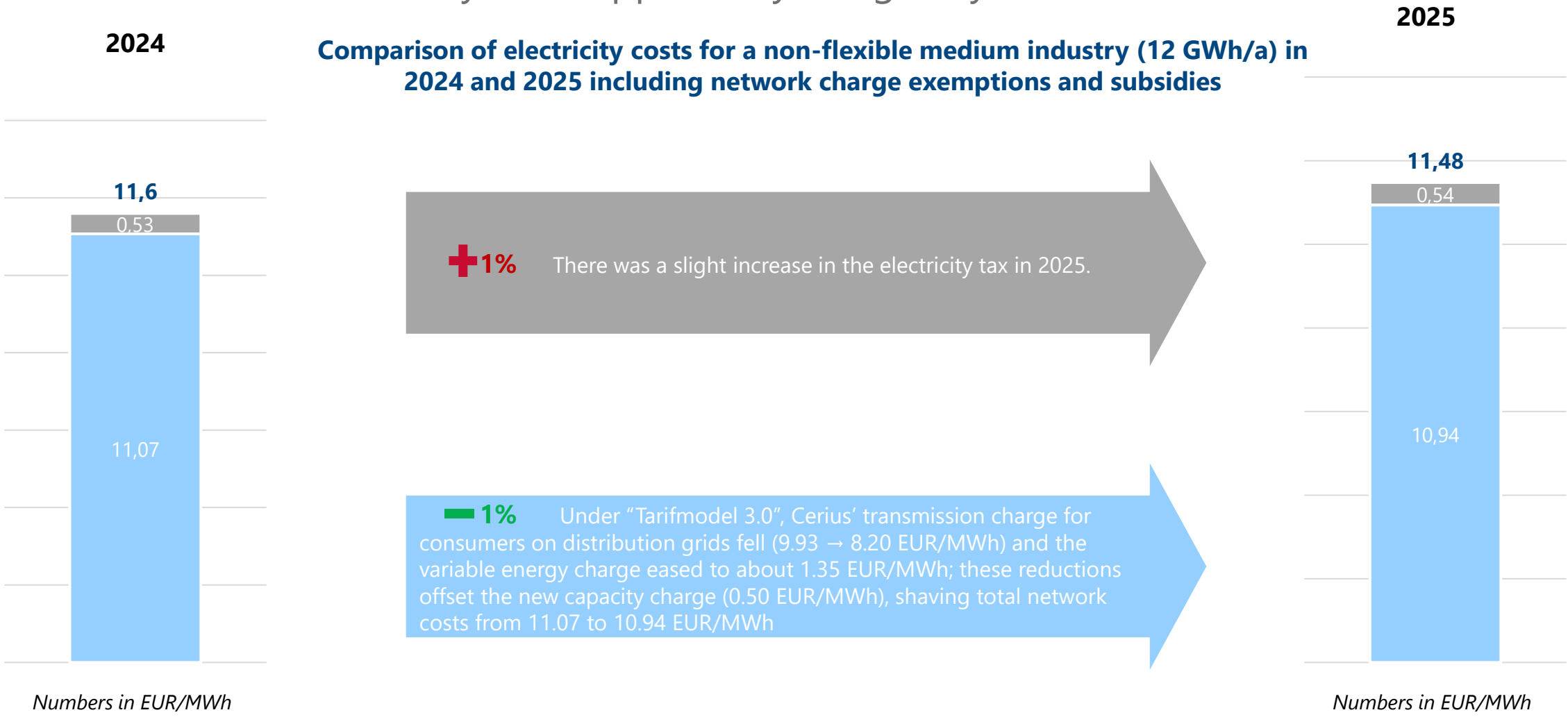
- Relief of **everything but 0.54 EUR/MWh**

→ Resulting taxes, levies and fees: **0.54 EUR/MWh**



Denmark: Non-commodity cost dipped only marginally in 2025

Comparison of electricity costs for a non-flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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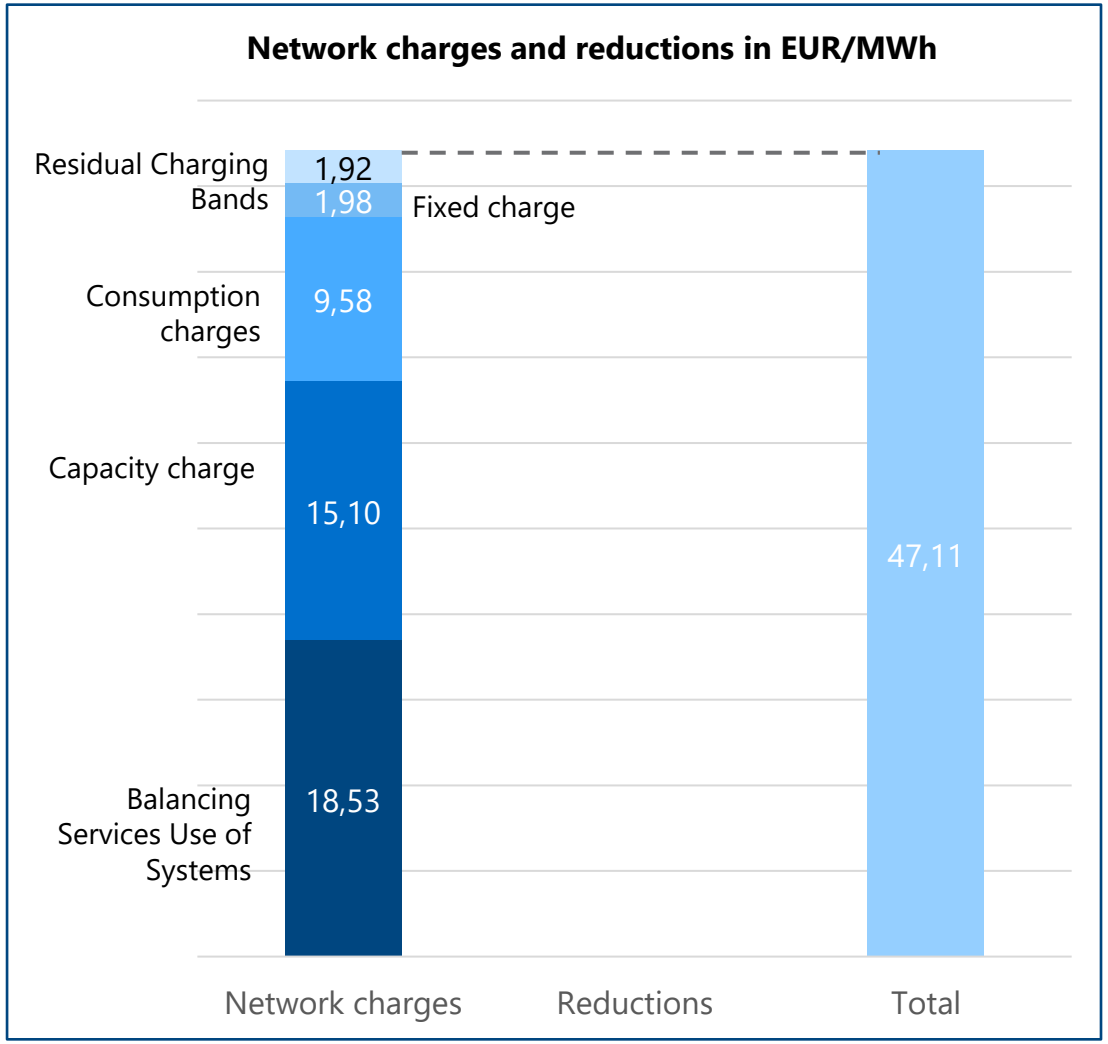
United Kingdom: Network charges for a non-flexible medium industry (12 GWh/a) in 2025

Network charges

- Capacity charge: **15.10 EUR/MWh**
- Fixed charge: **1.98 EUR/MWh**
- Consumption charges: **9.58 EUR/MWh**
- Residual Charging Bands: **1.92 EUR/MWh**
- Balancing Services Use of Systems: **18.53 EUR/MWh**

→ Resulting network charges: **47.11 EUR/MWh** (any reductions)



United Kingdom: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in 2025

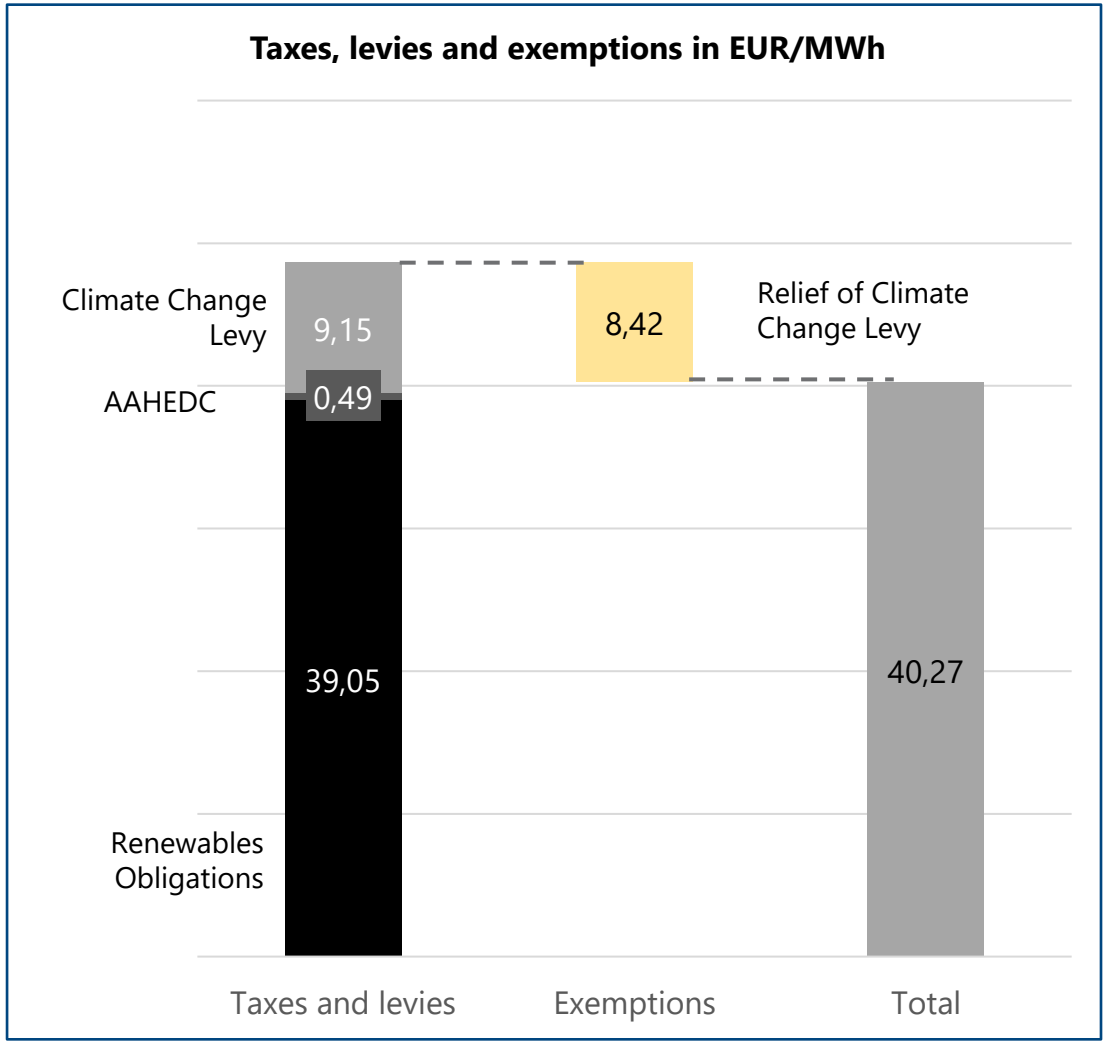
Taxes, levies and fees:

- Climate Change Levy: **9.15 EUR/MWh**
- Renewables Obligations (RO): **39.05 EUR/MWh**
- AAHEDC (Assistance for High Distribution Costs): **0.49 EUR/MWh**

Exemptions:

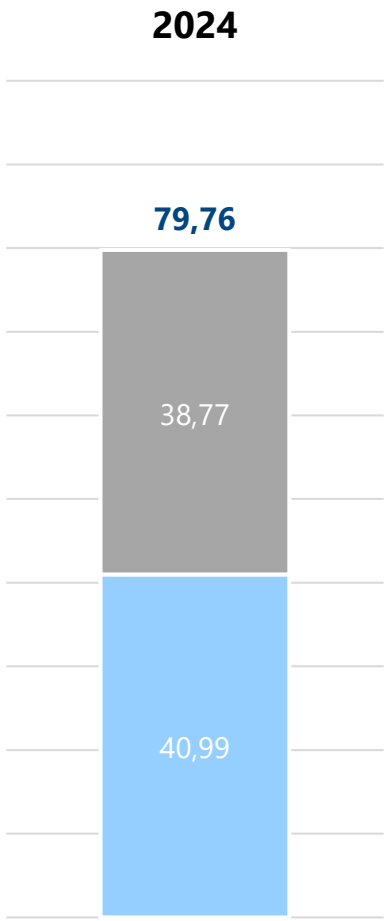
- Relief of Climate Change Levy → **8.42 EUR/MWh**

→ Resulting taxes, levies and fees: **40.27 EUR/MWh**



United Kingdom: Higher BSUoS and consumption charges lift 2025 non-commodity costs

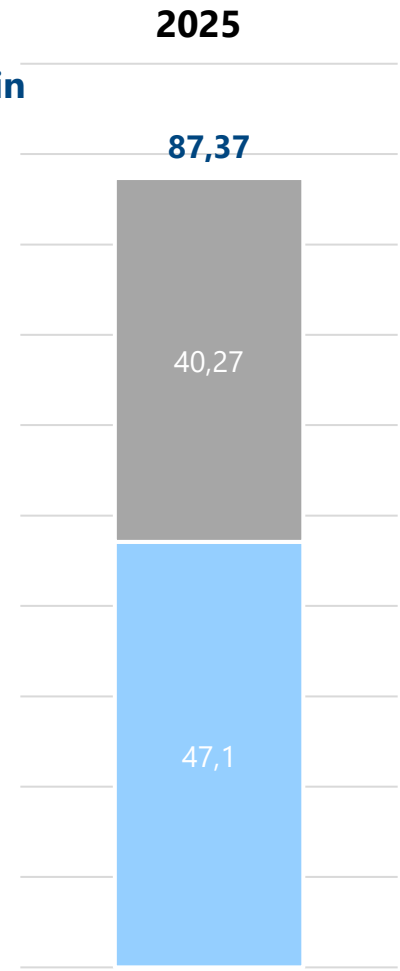
Comparison of electricity costs for a non-flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



Numbers in EUR/MWh

+15% The increase in Renewables Obligation (RO) charges leads to an overall increase in the overall tax component even though the energy tax remained the same as 2024.

+4% A steeper consumption charge and higher capacity charges push the network component from ≈ 41 EUR/MWh to 47.1 EUR/MWh. Reductions in the fixed charge and the residual charge only partly offset the rise.



Numbers in EUR/MWh

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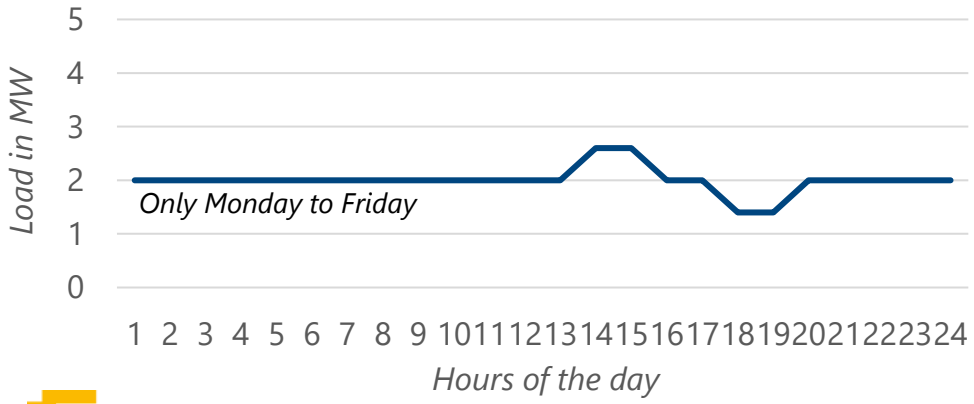
Assumptions for the flexible medium industry consumer profile (Profile D)

General assumptions

- Baseload with **average load of 2 MW** on weekdays (Monday to Friday) with 30% flexibility (can shift 30% of load in 2 hours)
- Yearly consumption: **12,000 MWh** (12 GWh), **4615 Full load hours**
- Contracted Capacity / (monthly) peak load: 4.5 MW
  Contracted capacity only reached occasionally, usual load is 2 MW
- Connection to the highest DSO grid level in each country
- Level of electro-intensity: Maximum level assumed for the relevant countries (Germany, France, UK)
- We assume this user to be in the food industry sector**, this sector is not applicable for the indirect cost compensation

Exemplary profile of the flexible medium industry consumer



Country specific assumptions*



- Sector of List 2 (food production) + significant use of energy from RES, i. e. qualification for a reduction of the CHP and offshore levy (Annex II)



- Metering device is owned by RTE
- Energy-intensive company with no exposition to international competition and no risk of carbon leakage (relevant for energy tax) (Annex III)



- No specific assumptions

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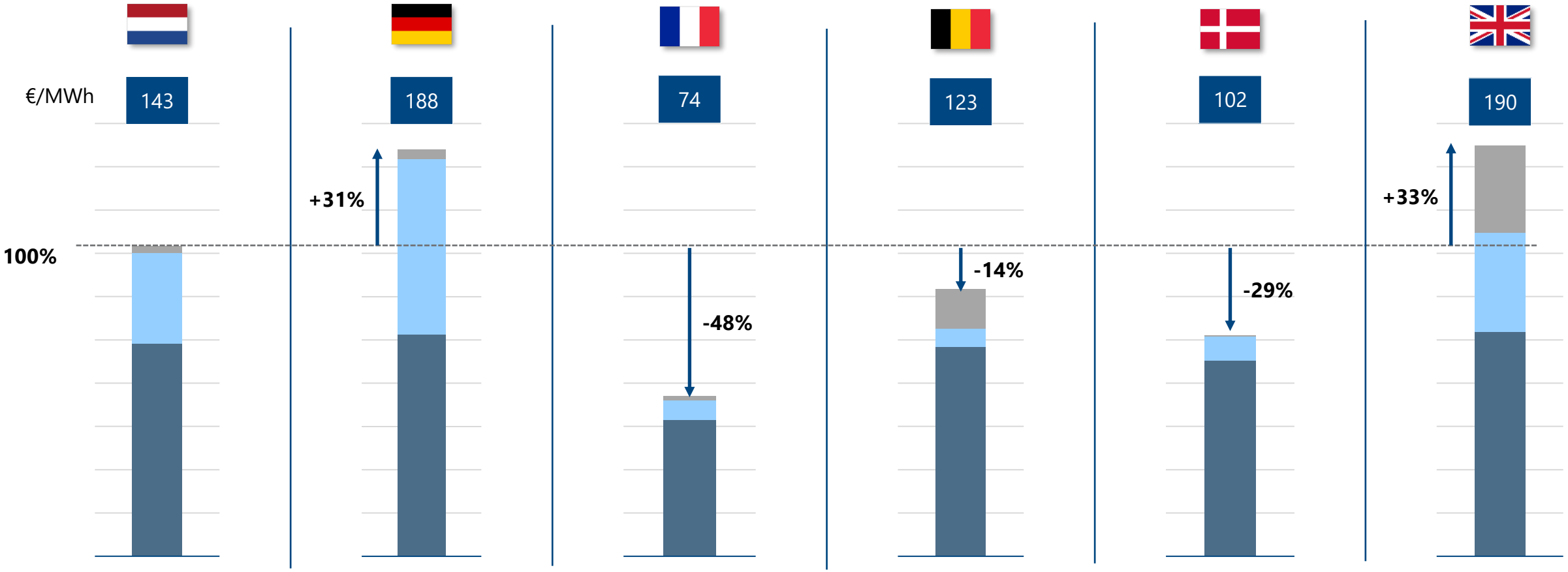
* These assumptions are valid for all countries but only relevant in the country they are assigned to

** The food industry sector is large in the Netherlands and also exists in all other assessed countries

Flexible medium industry: **Effective electricity costs** in **2025**

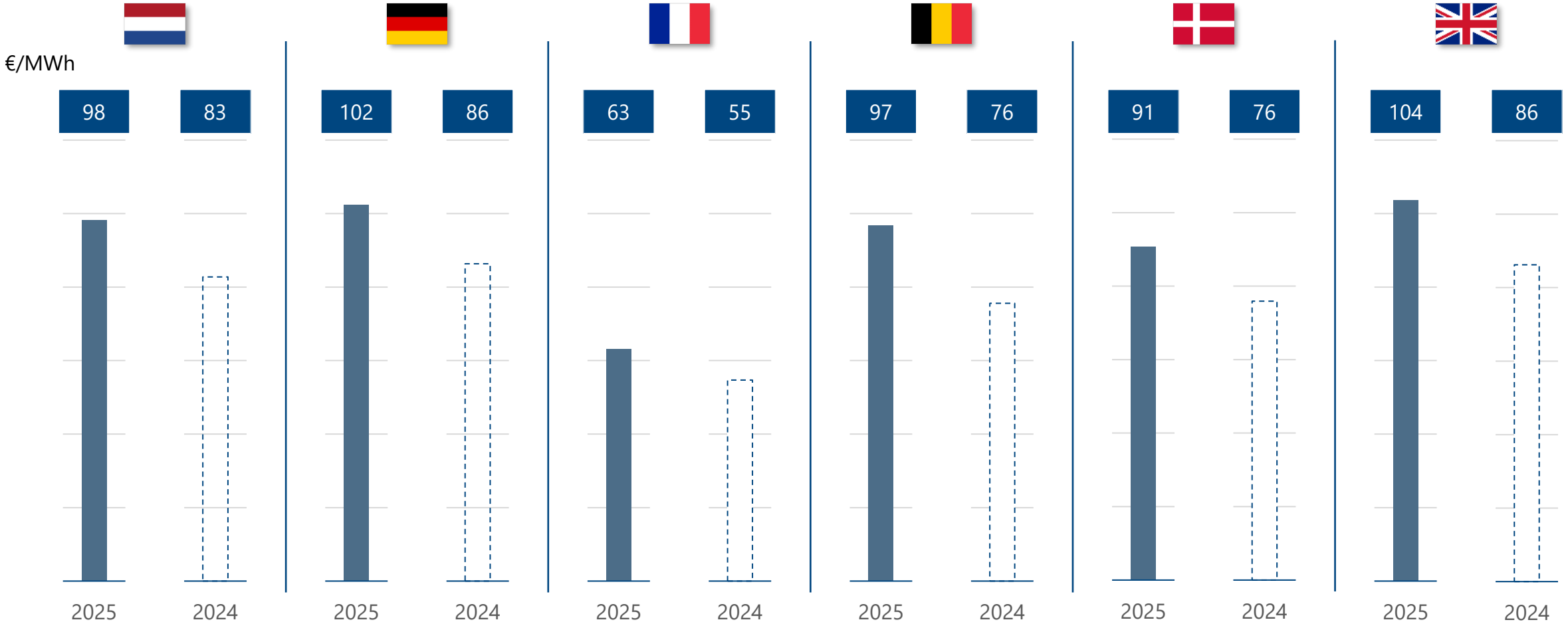


Flexible medium industry:
12 GWh/a, 4615 FLH
usual load 1.4 - 2.6 MW
4.5 MW contracted capacity

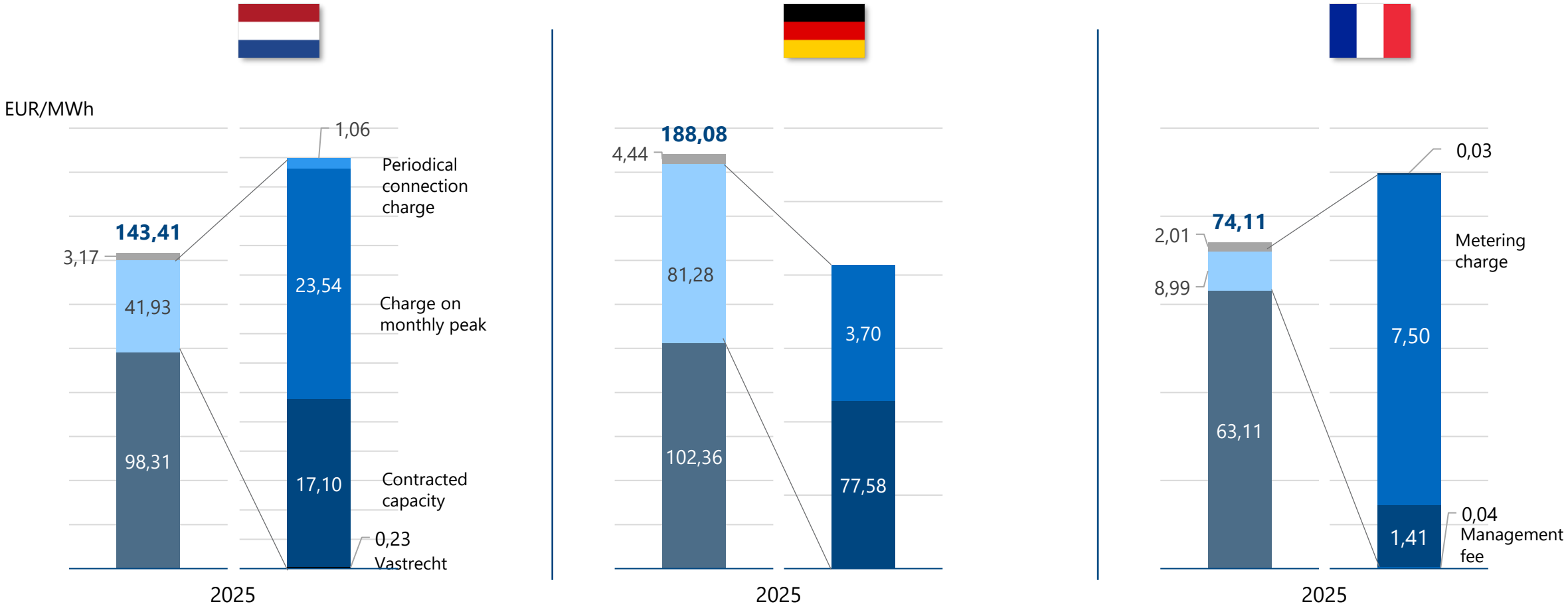
Taxes, levies, subsidies and exemptions
Network charges
Electrical energy costs

Percentage level: Difference compared to the Netherlands.

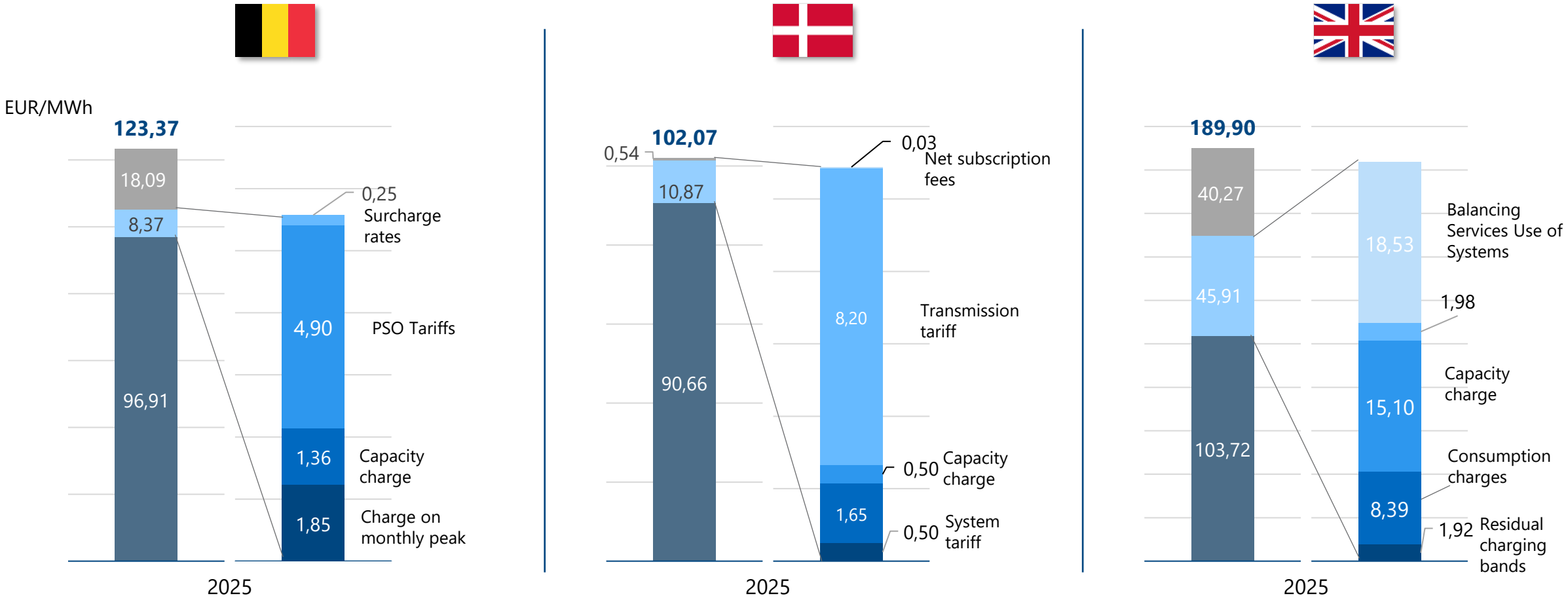
Flexible medium industry: **Commodity prices 2025** versus 2024



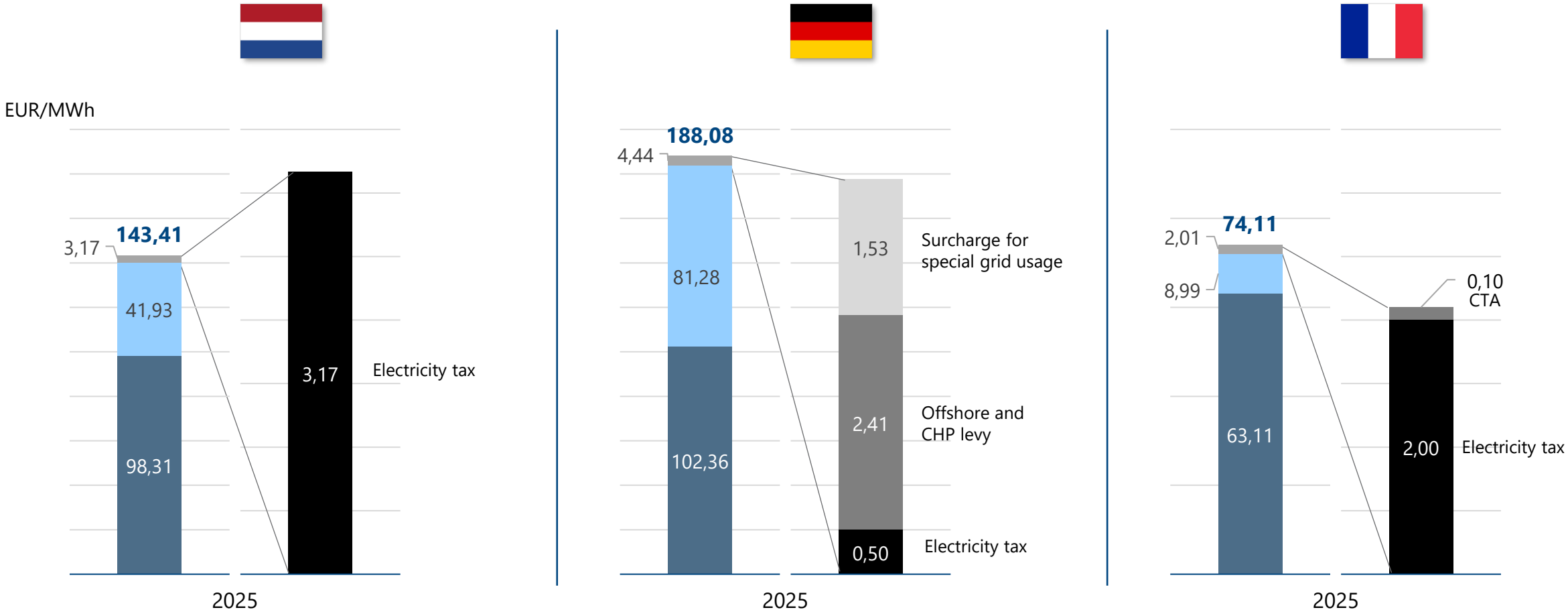
Flexible medium industry: **Network charges** divided by component in **2025**



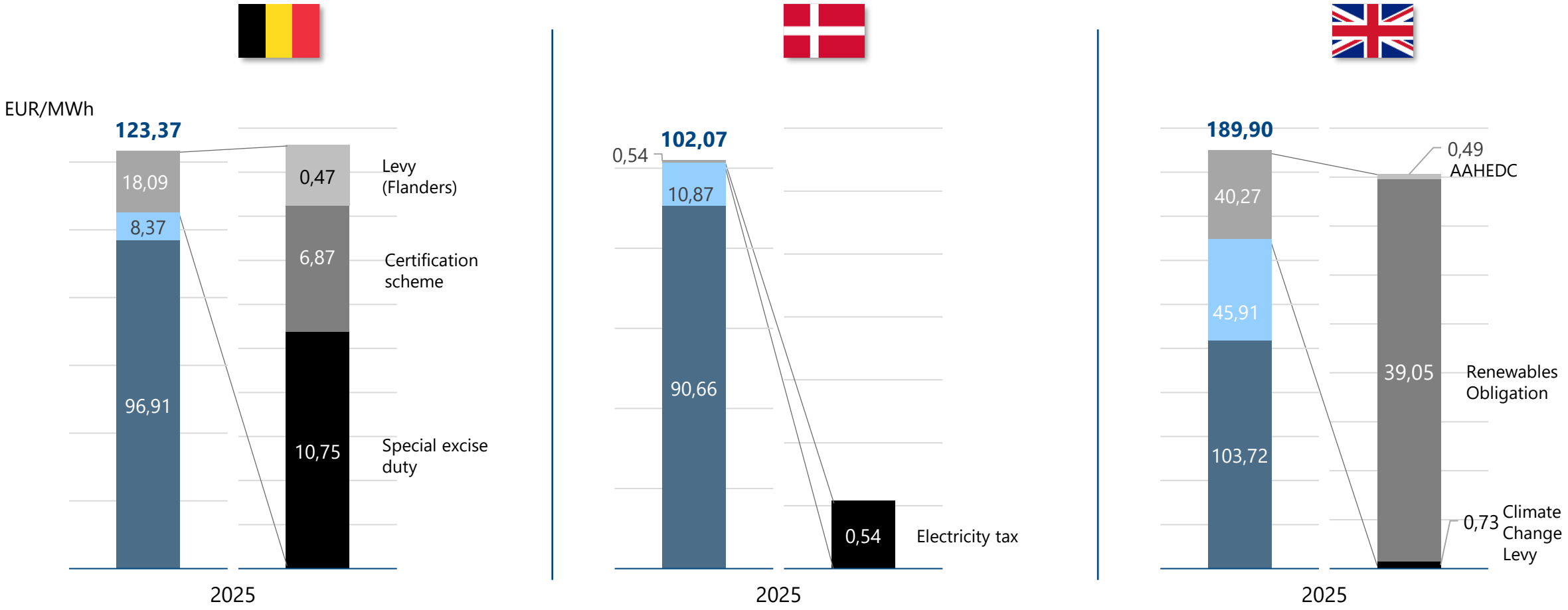
Flexible medium industry: **Network charges** divided by component in **2025**



Flexible medium industry: **Taxes, levies, fees** divided by component in **2025**



Flexible medium industry: **Taxes, levies, fees** divided by component in **2025**



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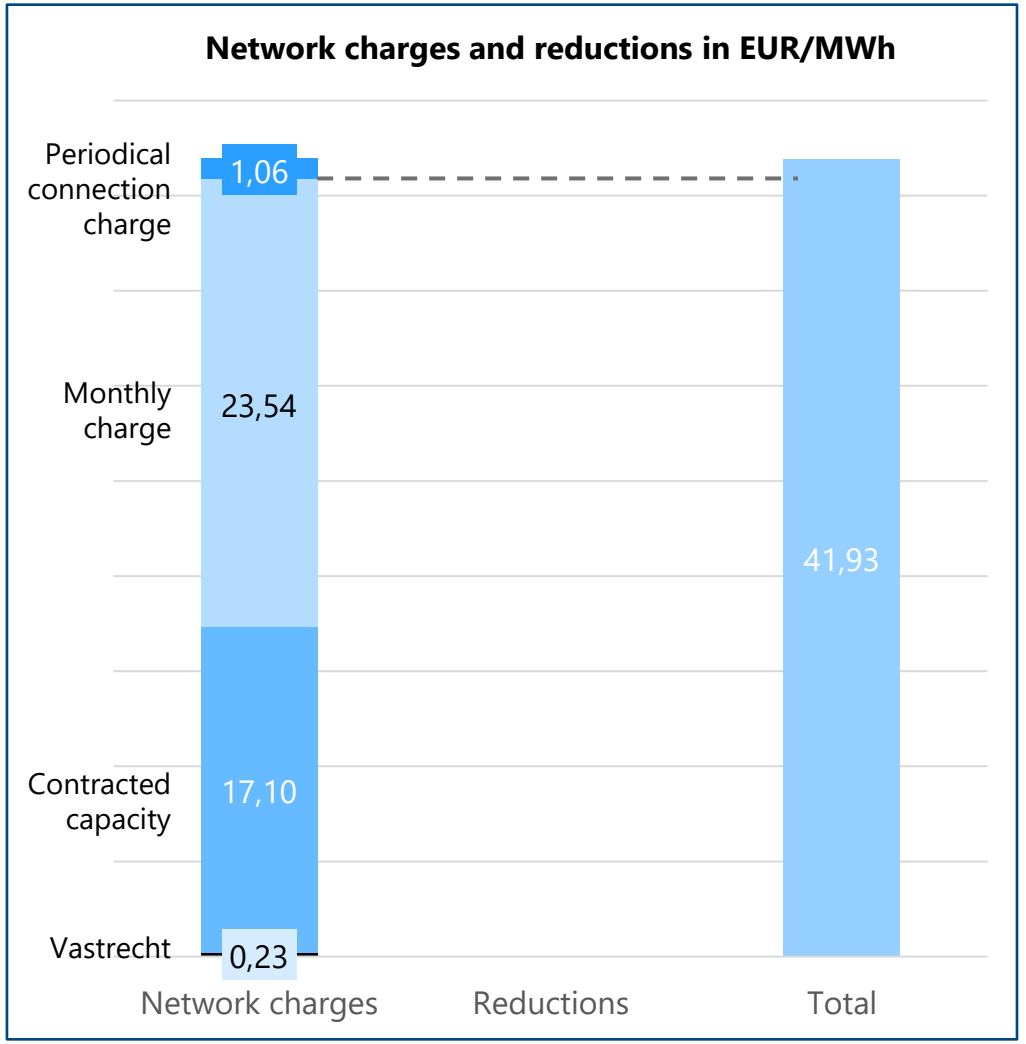
Netherlands: Network charges for a flexible medium industry (12 GWh/a) in 2025

Network charges

- Vastrecht: 2,760 EUR/a → **0.23 EUR/MWh**
- Contracted capacity: 45.60 EUR/kW
  - Contracted Capacity/Peak load: 4.5 MW → **17.10 EUR/MWh**
- Charge on monthly peak: 5.23 EUR/kW/month
  - Average monthly peak load: 4.5 MW → **23.54 EUR/MWh**
- Periodical connection charge: 1,056 EUR/month → **1.06 EUR/MWh**

→ Network charges amount to **41.93 EUR/MWh**



Netherlands: Taxes, levies and exemptions for a flexible medium industry (12 GWh/a) in **2025**

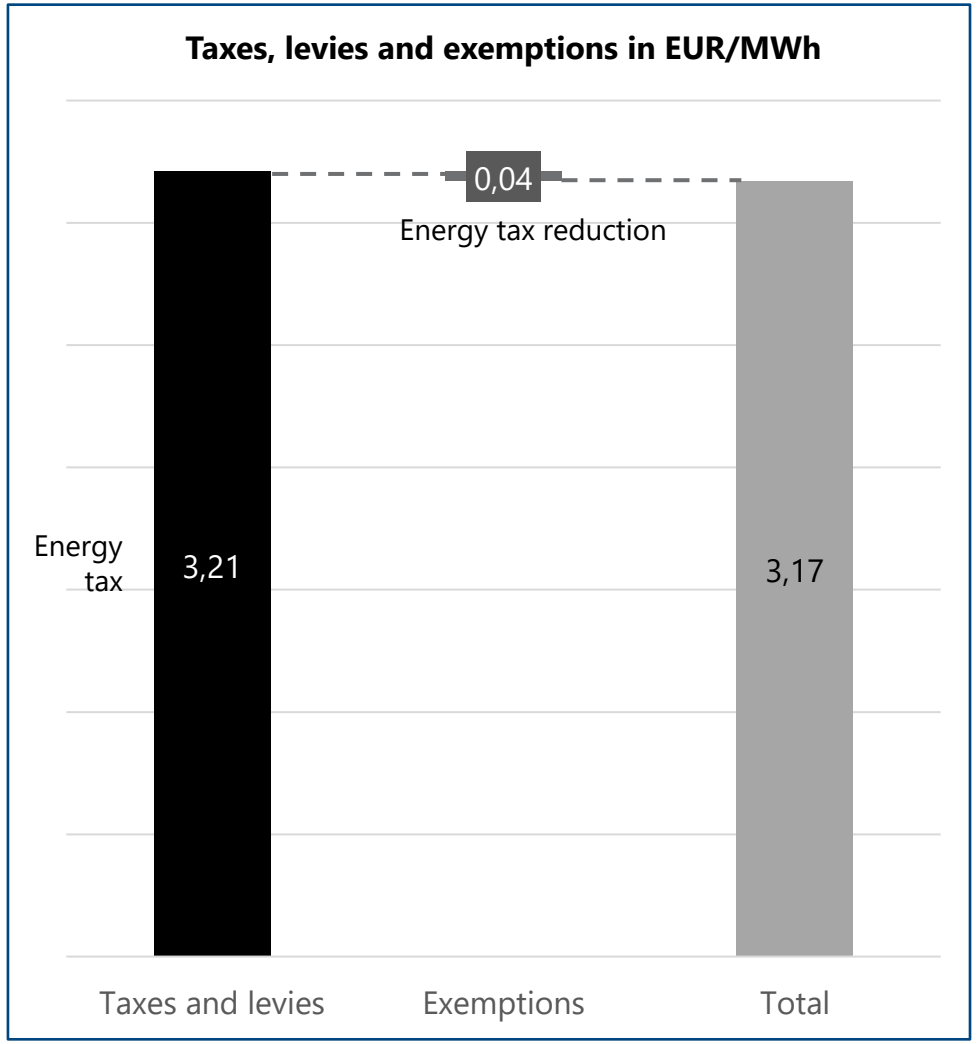
Taxes, levies and fees:

- Energy tax: **3.21 EUR/MWh**

Exemptions:

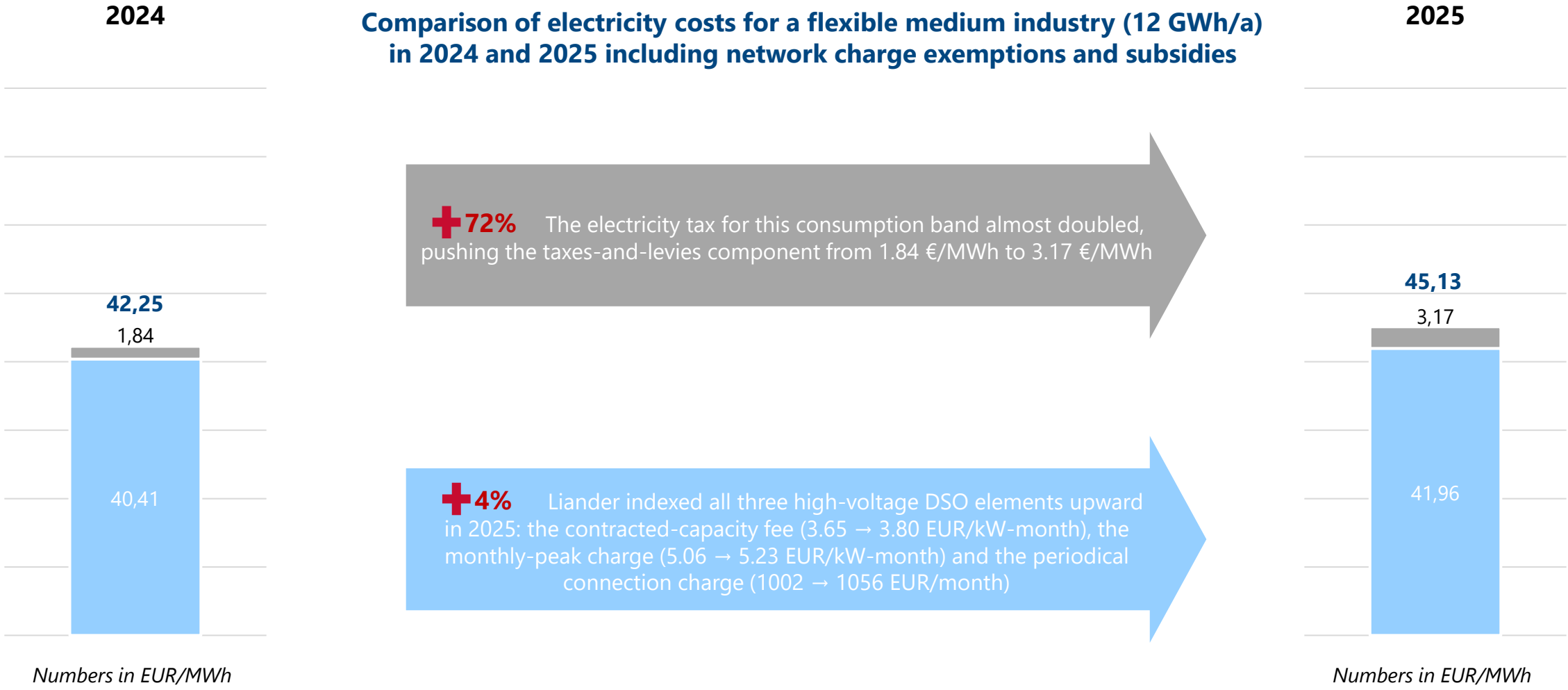
- Energy tax reduction: **524.95 EUR → 0.04 EUR/MWh**

→ Only taxes apply in the amount **3.17 EUR/MWh**



Netherlands: The non-commodity electricity cost rose in 2025, driven by a higher energy-tax rate and across-the-board increases in Liander's DSO charges

Comparison of electricity costs for a flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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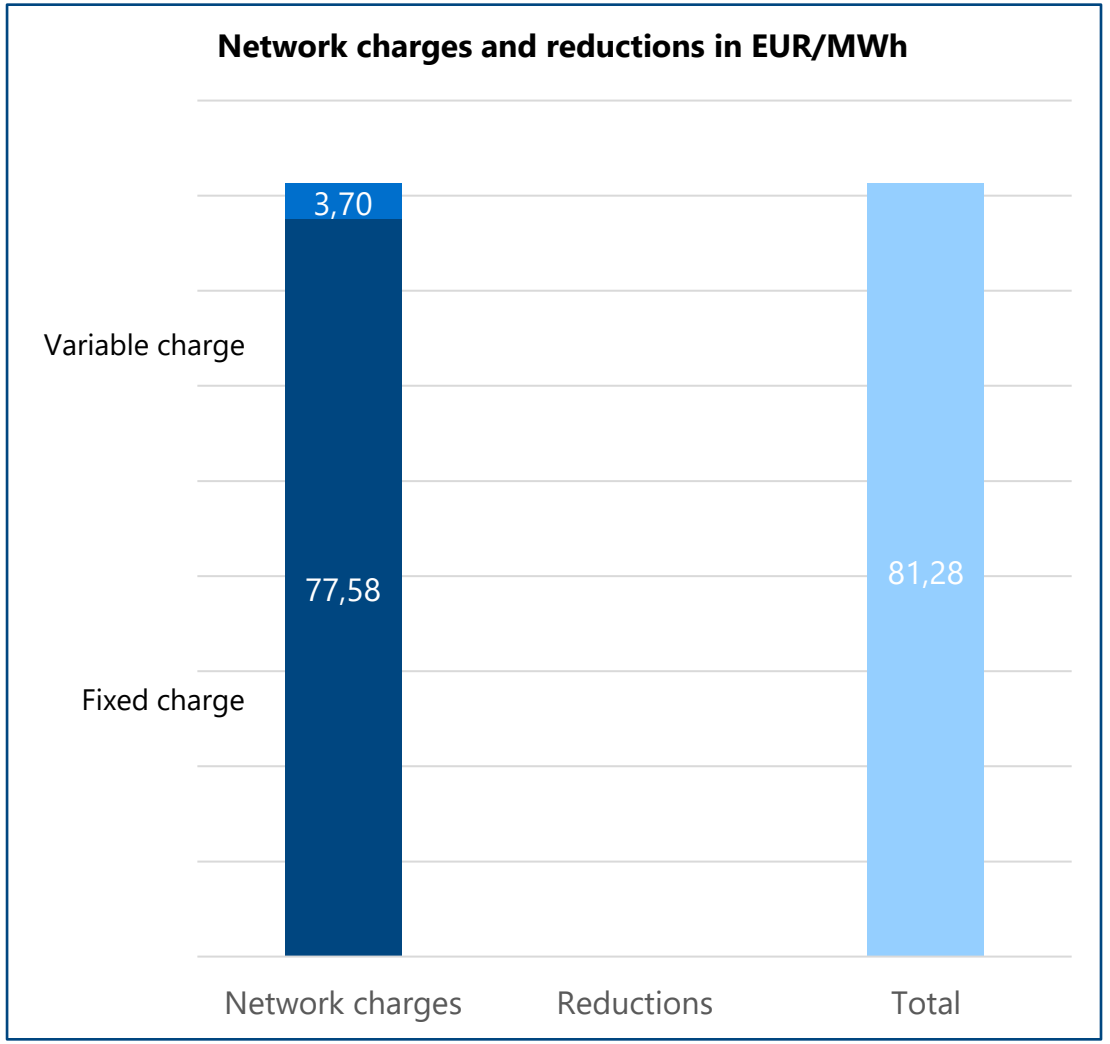
Germany: Network charges for a flexible medium industry (12 GWh/a) in 2025

Network charges

- Fixed charge: **127.74 EUR/kW**
  - Peak Load: 4.5 MW → **77.58 EUR/MWh**
- Variable charge: **3.70 EUR/MWh**

→ Resulting network charges: **81.28 EUR/MWh**



Germany: Taxes, levies and exemptions for a flexible medium industry (12 GWh/a) in 2025

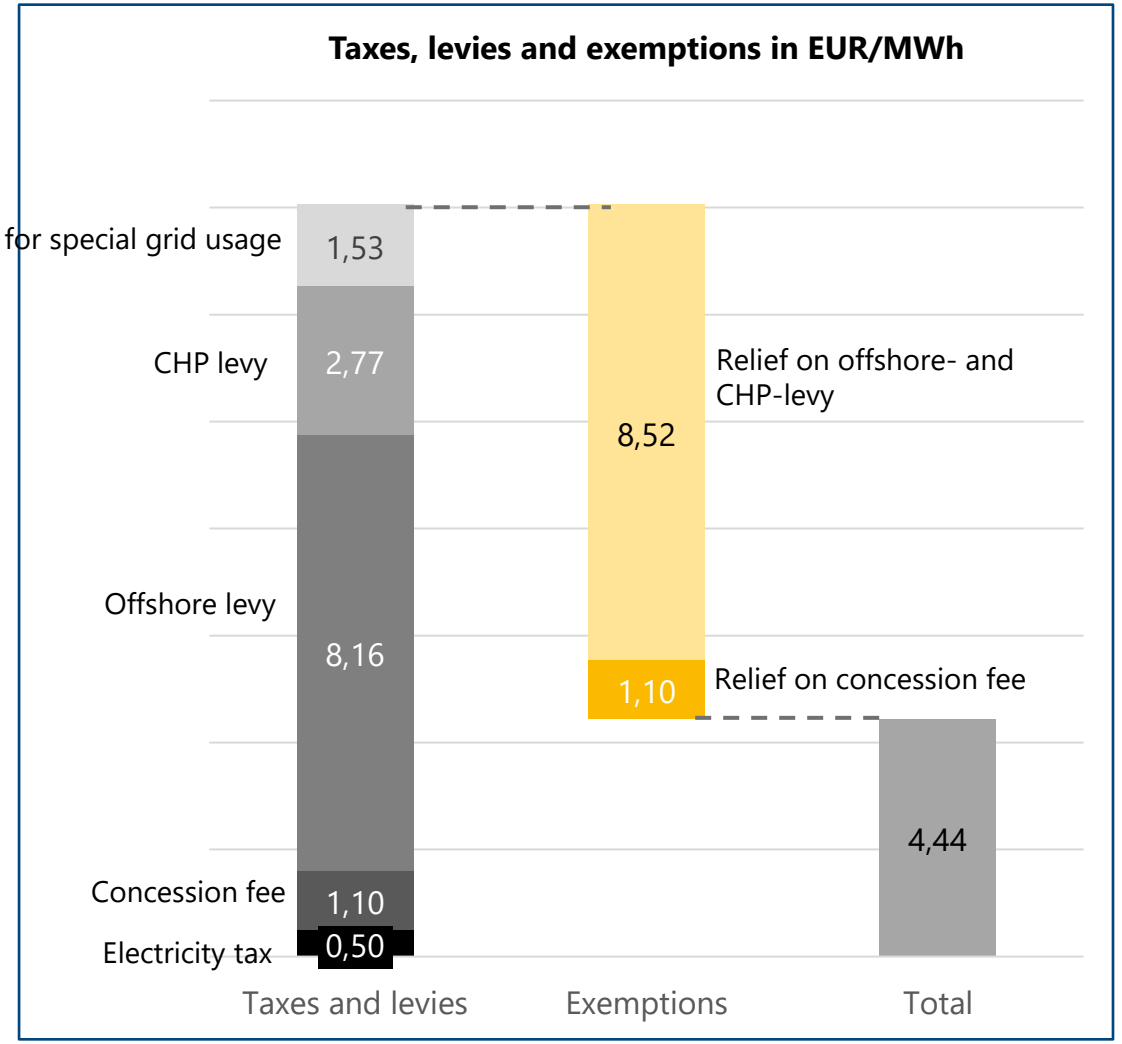
Taxes, levies and fees:

- Electricity tax: **0.50 EUR/MWh**
- Offshore-levy: **8.16 EUR/MWh**
- KWK-levy: **2.77 EUR/MWh**
- Surcharge for special grid usage:
  - **15.58 EUR/MWh** for the first 1000 MWh
  - For every MWh exceeding this: **0.25 EUR/MWh**
  - For 12 GWh → **1.53 EUR/MWh**
- Concession fee: **1.10 EUR/MWh**

Exemptions:

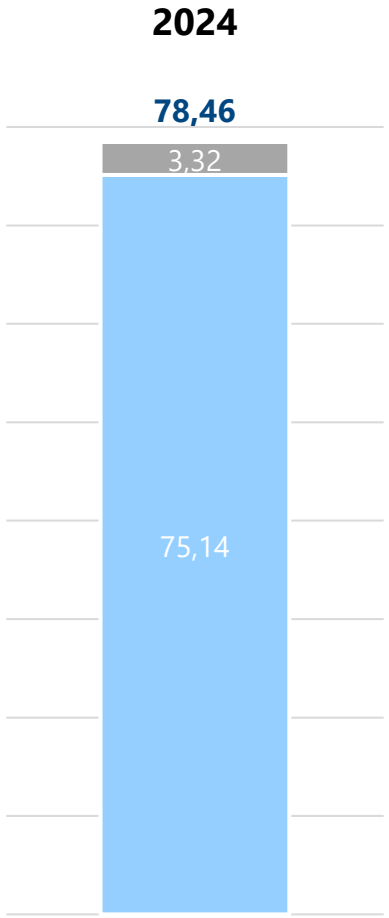
- Relief of **100%** of the concession fee → **1.10 EUR/MWh**
- Relief of **85%** of the offshore and CHP levy for energy consumption over 1000 MWh (not the first 1000 MWh)
  → **8.52 EUR/MWh**

→ Resulting taxes, levies and fees: **4.44 EUR/MWh**



Germany: The non-commodity share of electricity costs rose in 2025 – higher DSO charges offset the cut in the fixed capacity charges

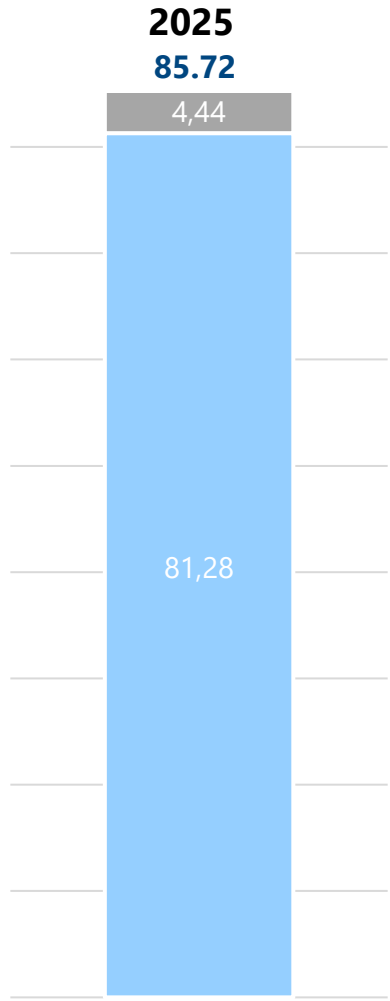
Comparison of electricity costs for a flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



Numbers in EUR/MWh

+34% The burden of surcharges (electricity tax, §19 network-relief levy, offshore liability levy, CHP levy) increased, lifting the taxes-and-levies component.

+8% Although the variable energy charge dropped from 4.20 EUR/MWh to 3.70 EUR/MWh, the significant increase in the fixed charge led to the total network cost climb eventually.



Numbers in EUR/MWh

Taxes, levies and fees Network charges

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France – Influence of the ARENH-scheme on commodity prices of the flexible medium industry

The amount of energy available at the ARENH price is limited to 100 TWh. If the requested amount is higher than 100 TWh, a reduction for all parties applying is necessary.

- Requested amount of energy for 2025: **134.93 TWh** (Source)
- Necessary reduction: (134.93 TWh – 100 TWh) / 134.93 TWh = **25.89%**

The amount of ARENH available to a consumer depends on its consumption profile, and more specifically on its consumption during the so-called "ARENH" hours (see Source for overview of ARENH hours).

The consumption profile of the flexible DSO user qualifies for procuring **39.59%** of its consumption at the ARENH price.

Resulting percentage of consumption that can be obtained under ARENH scheme including the capping:

- 39.59% * (1 – 25.89%) = **29.34%**

Resulting commodity price for the flexible DSO user

- Commodity price: 29.34% * ARENH price + 70.66% * market price
  → 29.34% * 42 EUR/MWh + 70.66% * 71.87 EUR/MWh = **63.11 EUR/MWh**



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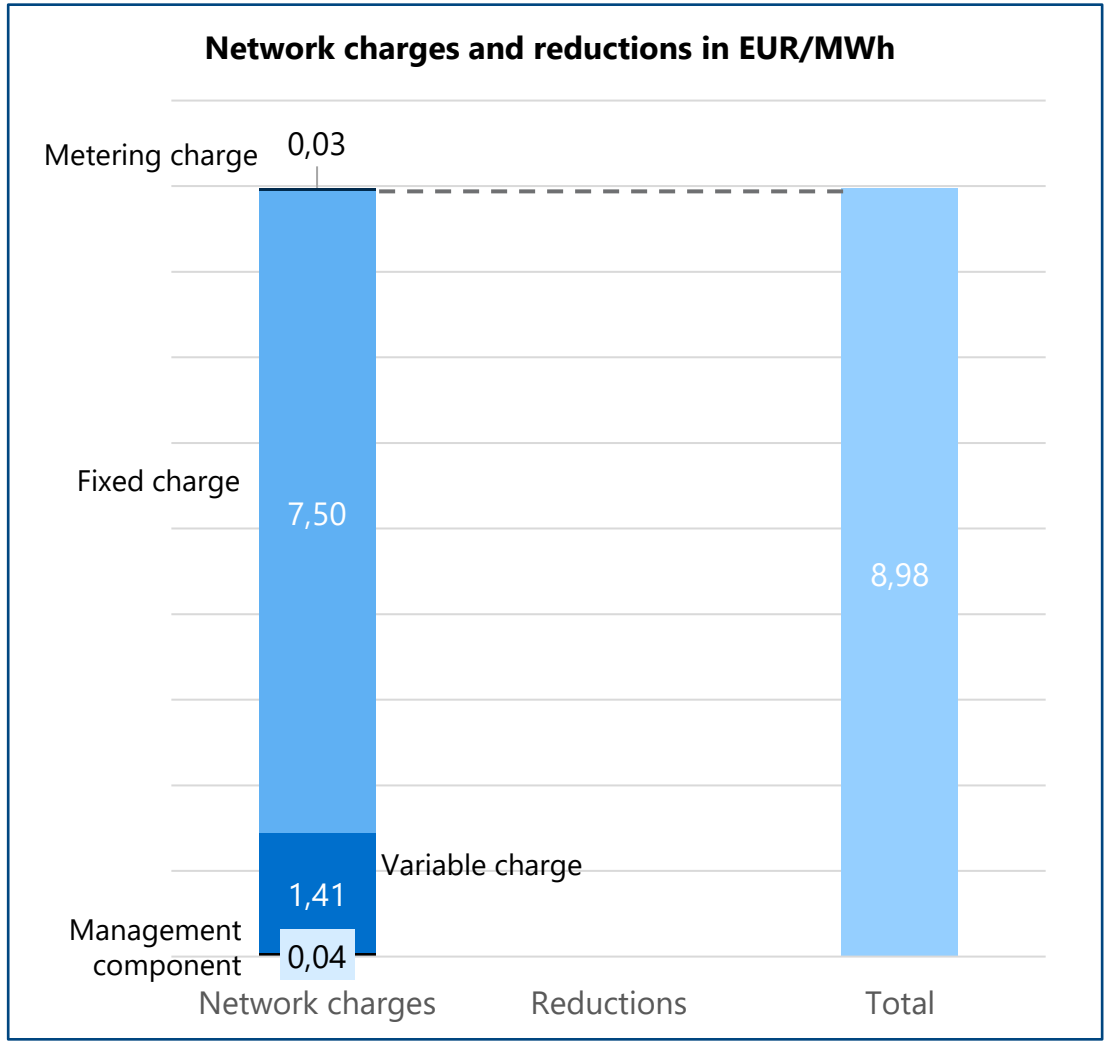
France: Network charges for a flexible medium industry (12 GWh/a) in 2025

Network charges

- Management Component: **11,545.32 EUR/year**
  - Consumption: 12 GWh → **0.04 EUR/MWh**
- Metering charge: **3,800.04 EUR/year**
  - Consumption: 12 GWh → **0.03 EUR/MWh**
- Variable charge: **1.41 EUR/MWh**
- Fixed charge: **7.50 EUR/MWh**

→ Resulting network charges: **8.98 EUR/MWh**

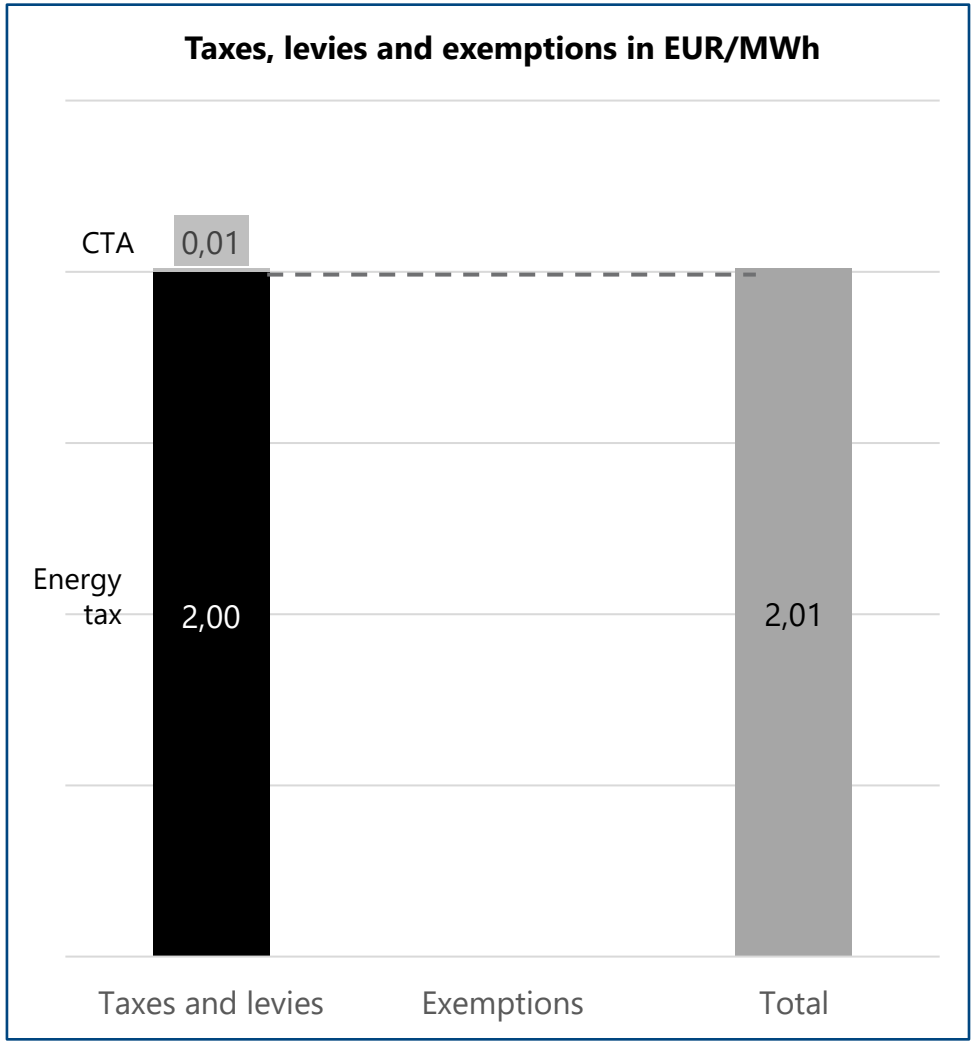


France: Taxes, levies and exemptions for a flexible medium industry (12 GWh/a) in **2025**

Taxes, levies and fees:

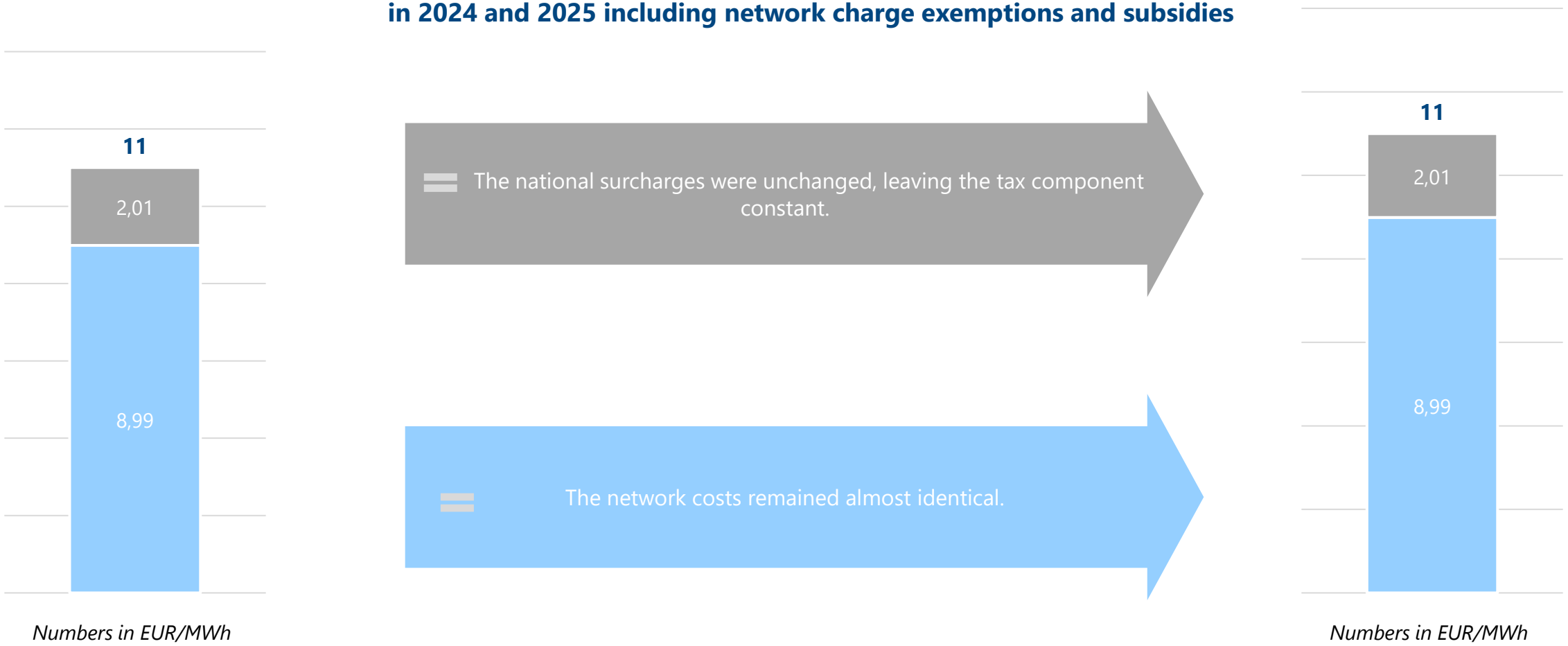
- Energy tax:
  - Sector with risk of carbon leakage & electro-intensity > 13.5%
    → **2.00 EUR/MWh**
- CTA: **10.11%** of the fixed part of the network charges
  - Management and Metering cost → **0.01 EUR/MWh**

→ Only taxes apply in the amount **2.01 EUR/MWh**



France: The non-commodity cost stayed flat as unchanged taxes and an offsetting TURPE adjustment left the 2025 total virtually identical to 2024

Comparison of electricity costs for a flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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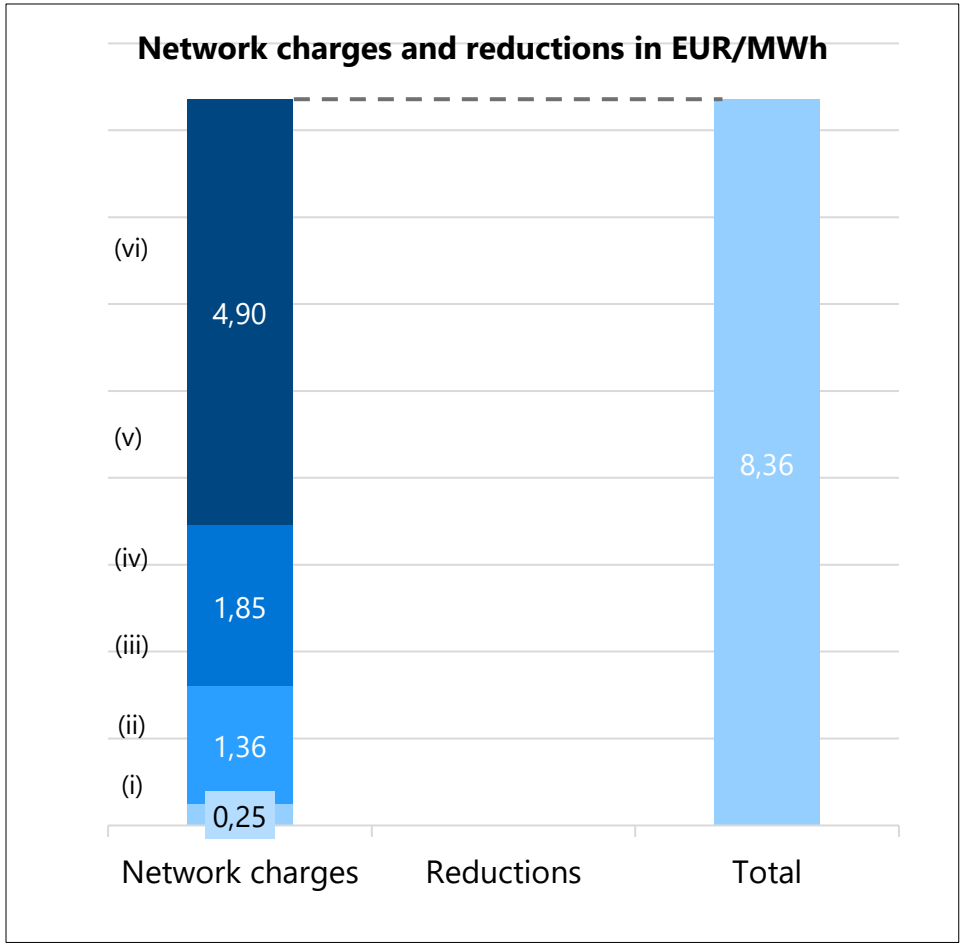
Belgium: Network charges for a flexible medium industry (12 GWh/a) in 2025

Network charges

- Charge on monthly peak: **1.85 EUR/MWh**
- Capacity charge: **1.36 EUR/MWh**
- Tariffs for public service obligations: **4.90 EUR/MWh**
- Surcharge rates: **0.25 EUR/MWh**

→ Network charges amount to **8.36 EUR/MWh**



Belgium: Taxes, levies and exemptions for a flexible medium industry (12 GWh/a) in **2025**

Taxes, levies and other costs:

- Special Excise Duty: **10.75 EUR/MWh**
- Levy for the tax's pylons and trenches: **0.47 EUR/MWh**

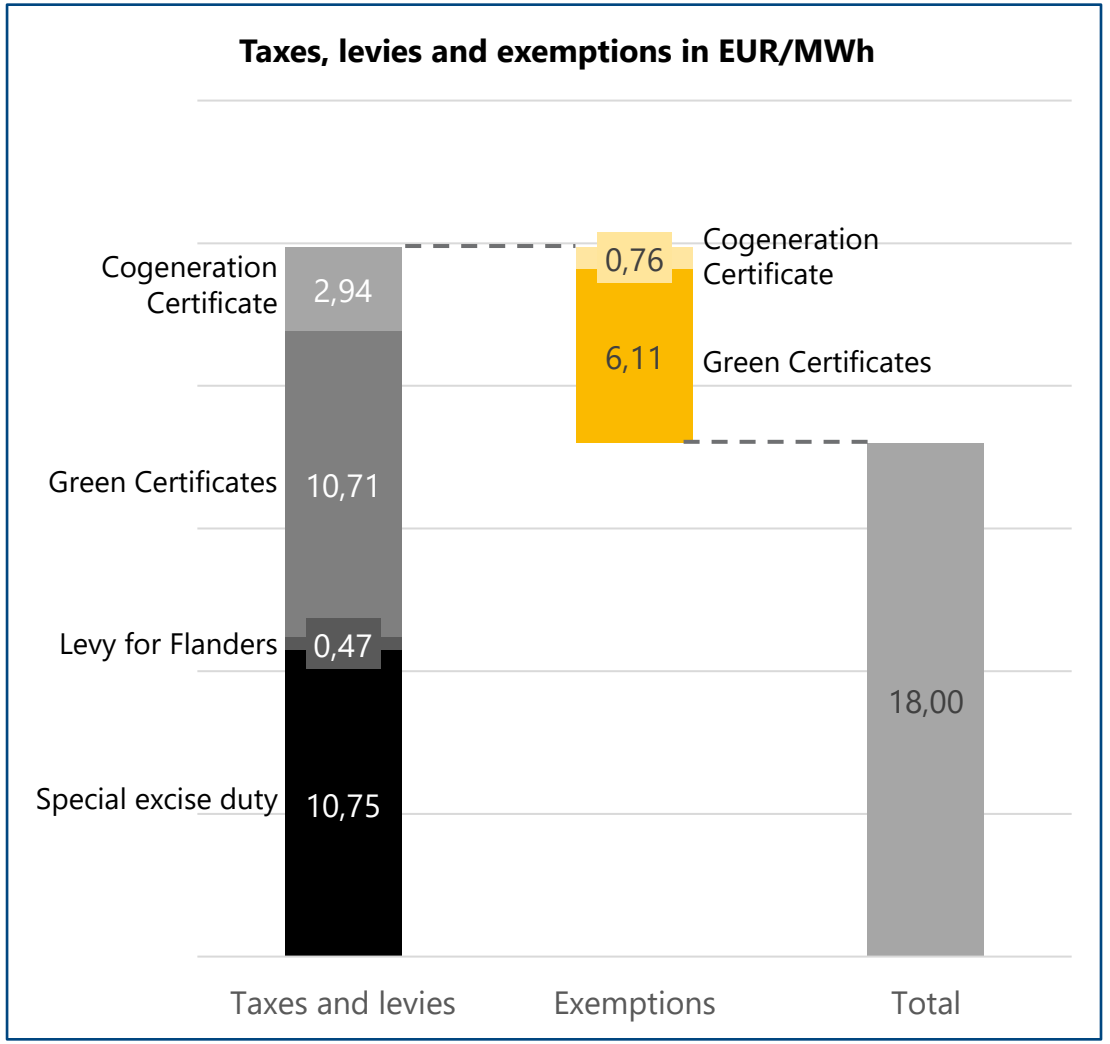
Certification scheme

- Green Certificates: 97.40 EUR/MWh * 11%
  → **10.71 EUR/MWh**
- Cogeneration: 20.98 EUR/MWh * 14.0%
  → **2.94 EUR/MWh**

Exemptions

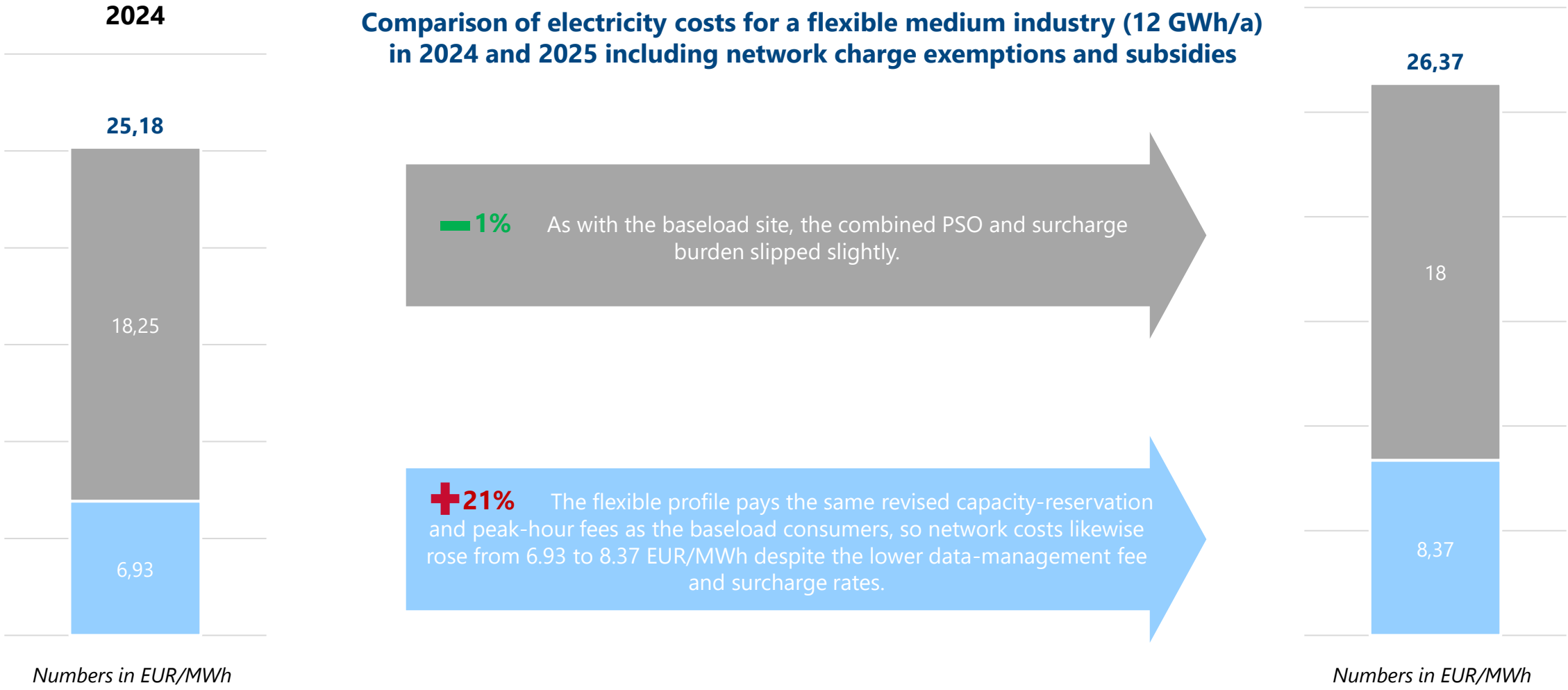
- Green Certificates: reduction of 93% → **6.11 EUR/MWh**
- Cogeneration: reduction of 81% → **0.76 EUR/MWh**

→ Resulting taxes and levies: **18 EUR/MWh**



Belgium: The non-commodity total increased as higher capacity and peak tariffs outweighed modest levy relief

Comparison of electricity costs for a flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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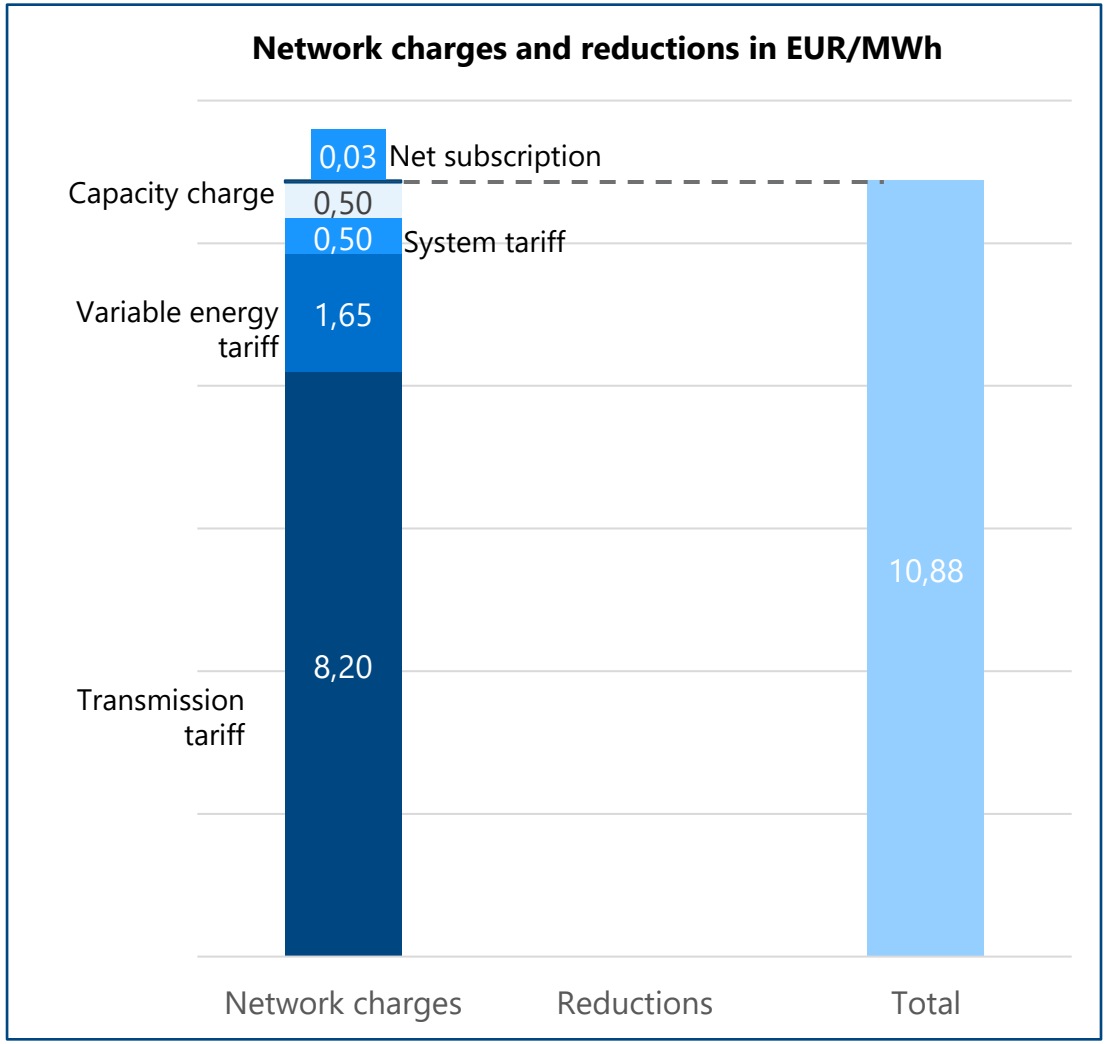
Denmark: Network charges for a flexible medium industry (12 GWh/a) in 2025

Network charges

- Transmission tariff: **8.20 EUR/MWh**
- System tariff: **0.50 EUR/MWh**
- Variable energy tariff: 1**.65 EUR/MWh**
- Capacity charge (“Effektbetaling”): **0.50 EUR/MWh**
- Net subscription: **0.03 EUR/MWh**

→ Resulting network charges: **10.88 EUR/MWh**



Denmark: Taxes, levies and exemptions for a flexible medium industry (12 GWh/a) in **2025**

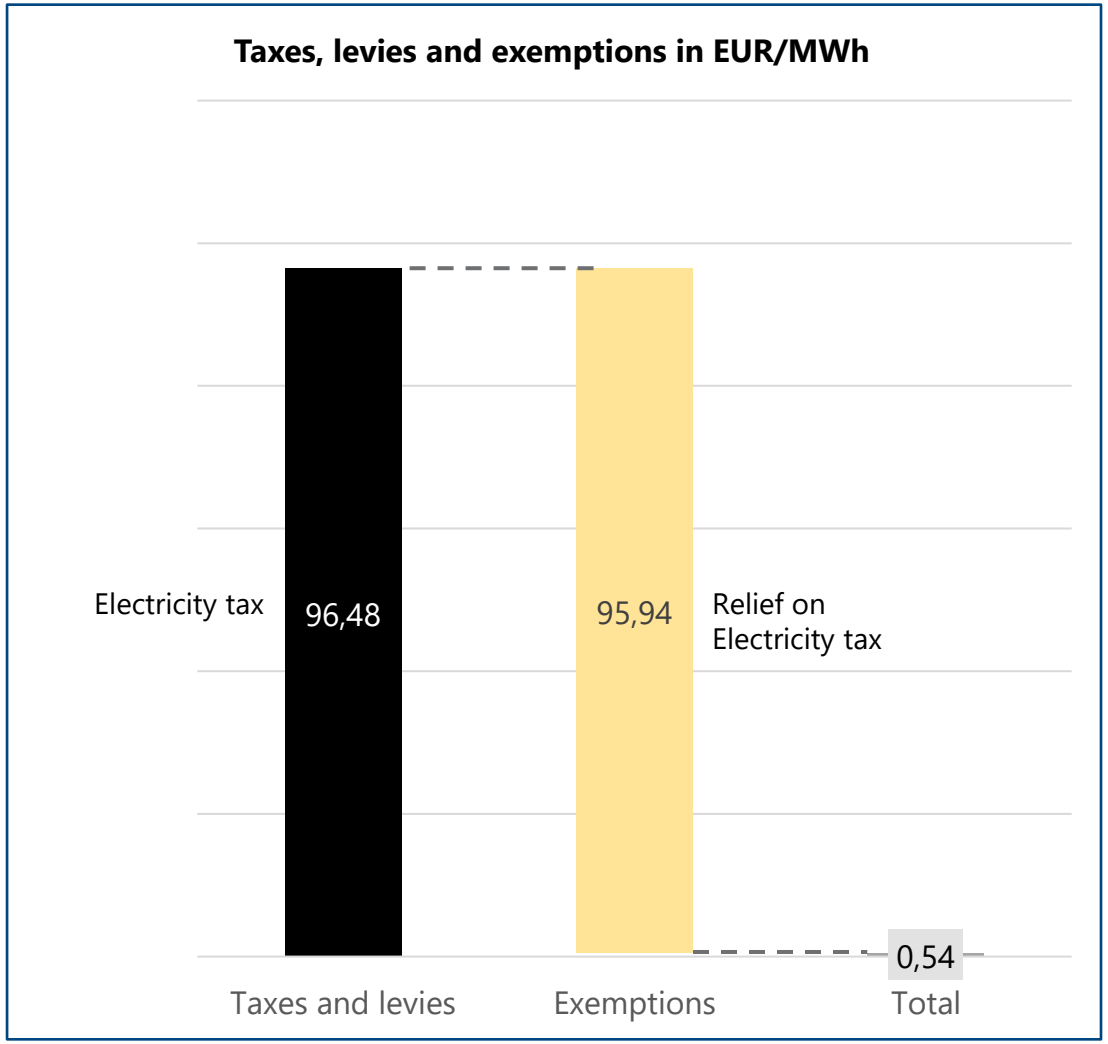
Taxes, levies and fees:

- Electricity tax: **96.48 EUR/MWh**

Exemptions:

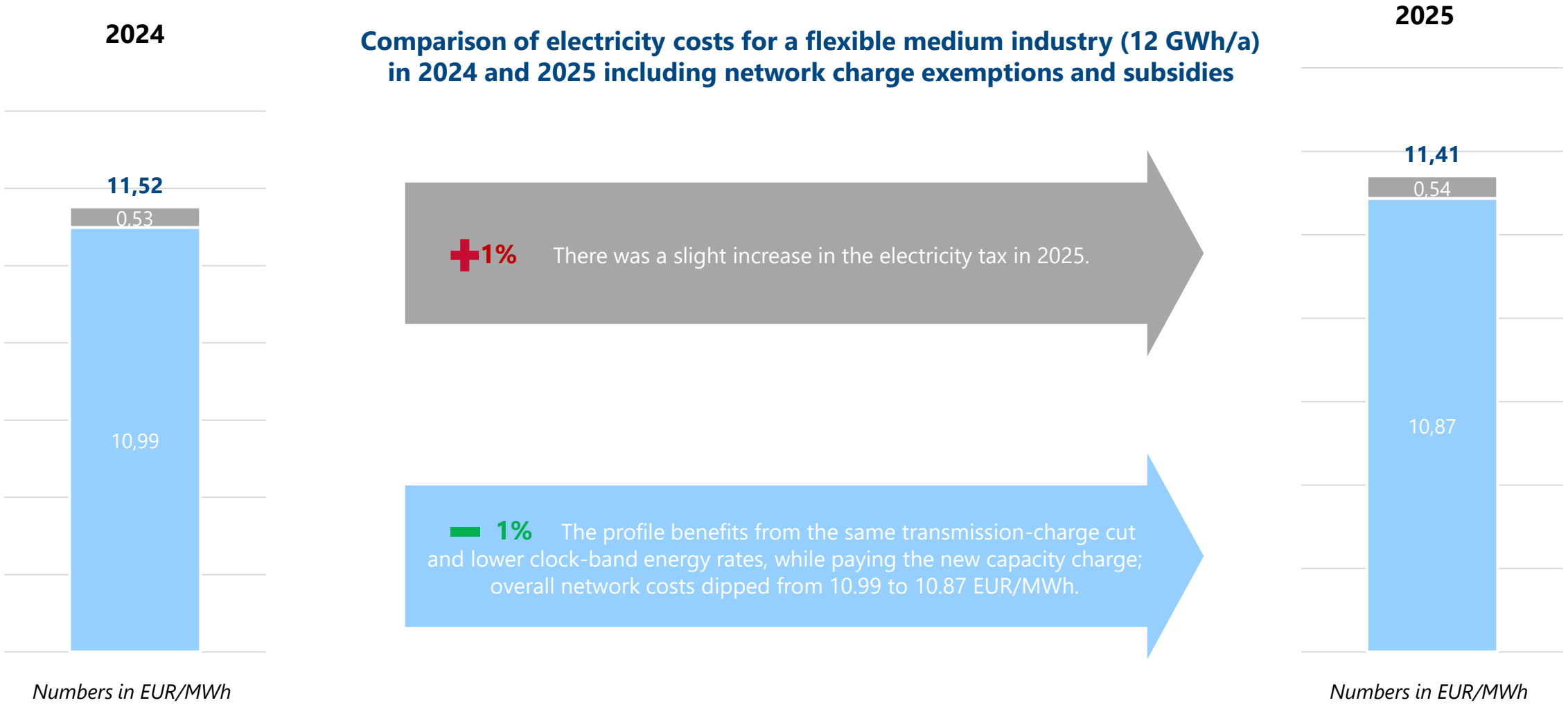
- Relief of **everything but 0.54 EUR/MWh**

→ Resulting taxes, levies and fees: **0.54 EUR/MWh**



Denmark: Lower time-band energy charges outweighed the new capacity fee, keeping the 2025 non-commodity cost just a few cents below 2024

Comparison of electricity costs for a flexible medium industry (12 GWh/a) in 2024 and 2025 including network charge exemptions and subsidies



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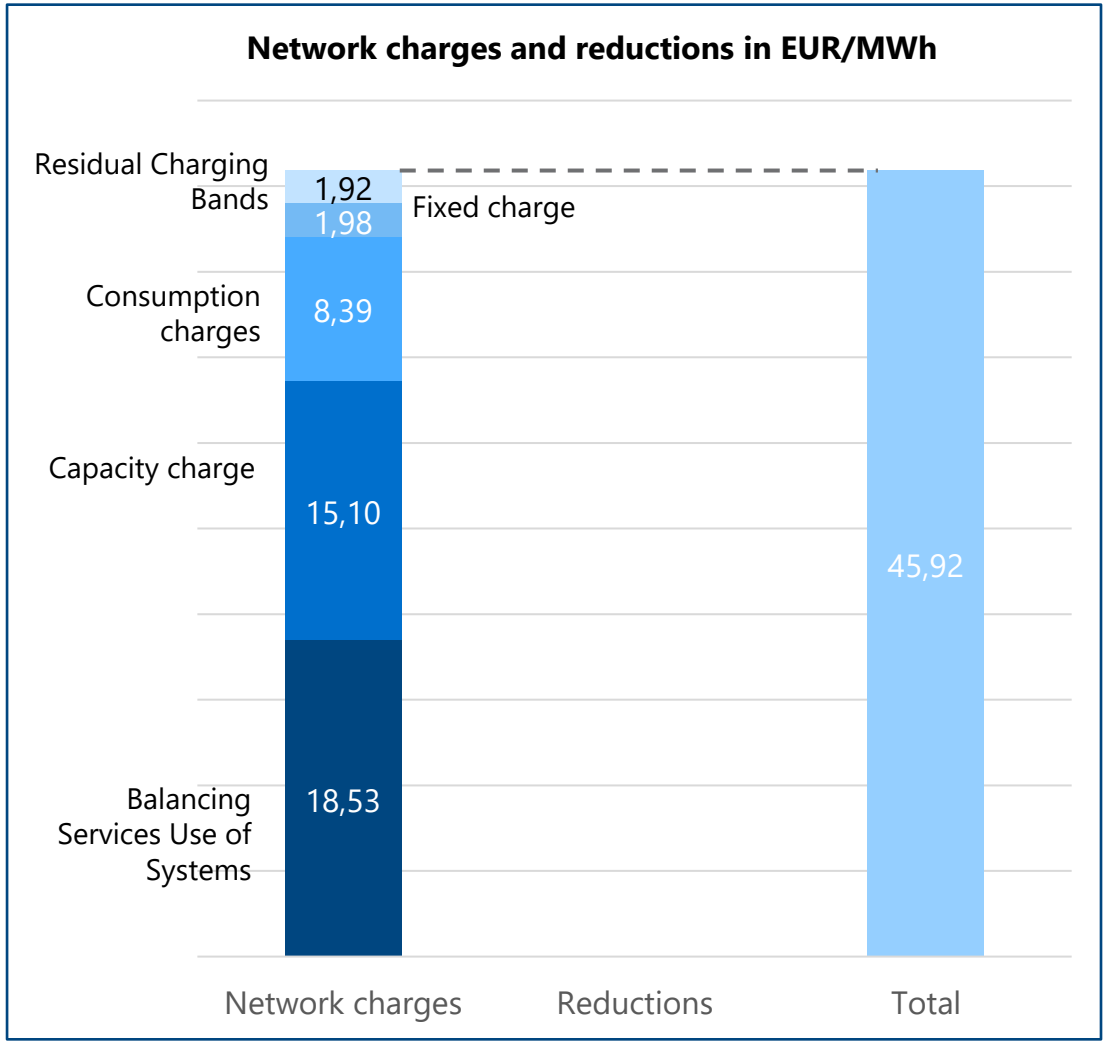
United Kingdom: Network charges for a flexible medium industry (12 GWh/a) in **2025**

Network charges

- Capacity charge: **15.10 EUR/MWh**
- Fixed charge: **1.98 EUR/MWh**
- Consumption charges: **8.39 EUR/MWh**
- Residual Charging Bands: **1.92 EUR/MWh**
- Balancing Services Use of Systems: **18.53 EUR/MWh**

→ Resulting network charges: **45.92 EUR/MWh**



United Kingdom: Taxes, levies and exemptions for a flexible medium industry (12 GWh/a) in 2025

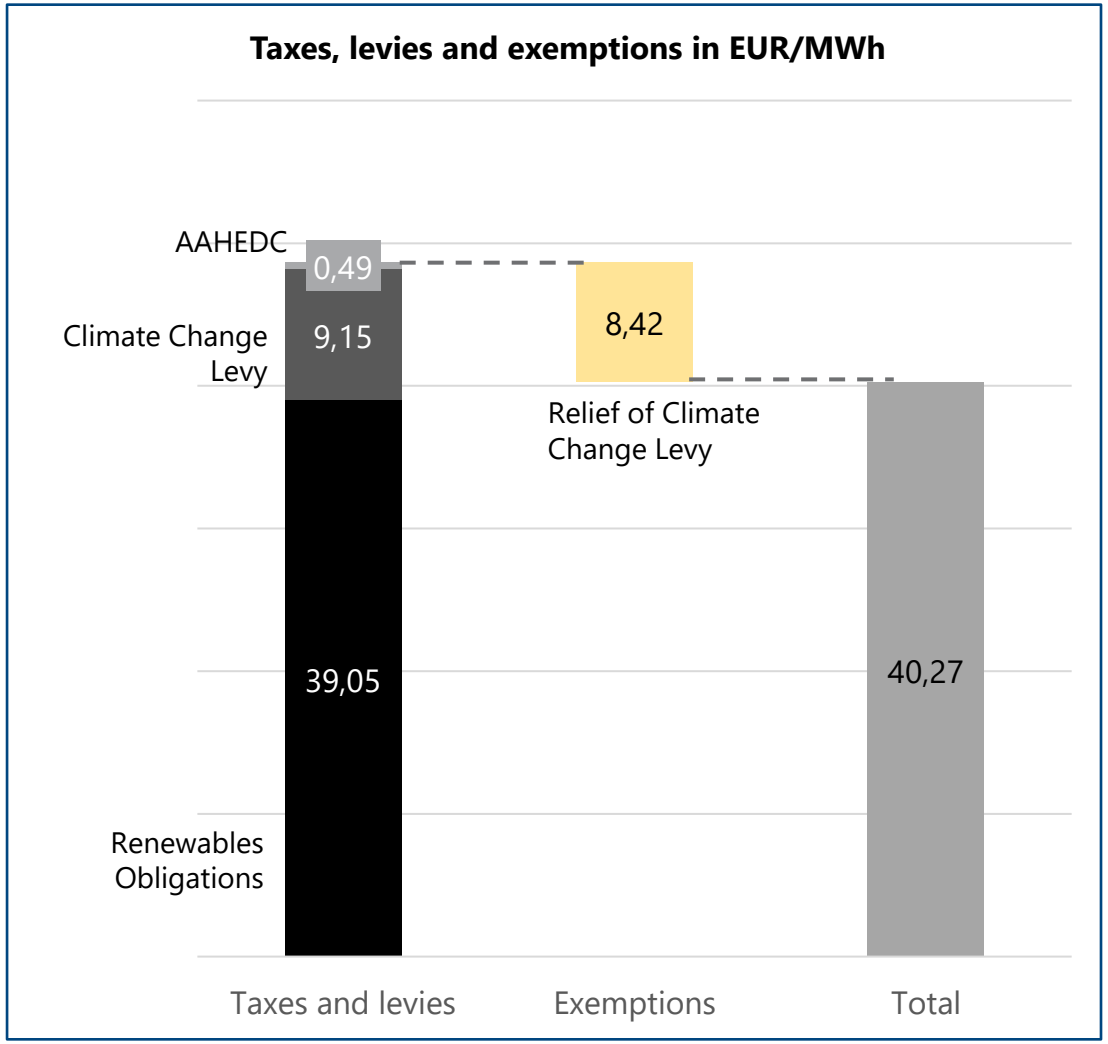
Taxes, levies and fees:

- Climate Change Levy: **9.15 EUR/MWh**
- Renewables Obligations (RO): **39.05 EUR/MWh**
- AAHEDC (Assistance for High Distribution Costs): **0.49 EUR/MWh**

Exemptions:

- Relief of Climate Change Levy → **8.42 EUR/MWh**

→ Resulting taxes, levies and fees: **40.27 EUR/MWh**



United Kingdom: Higher BSUoS and consumption charges lift 2025 non-commodity costs

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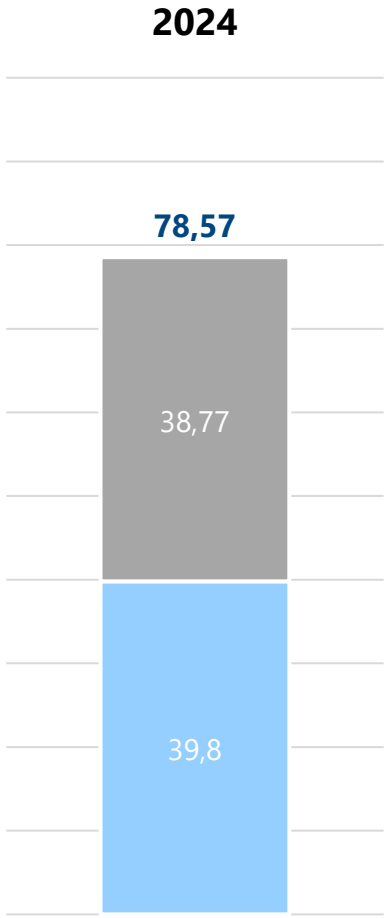
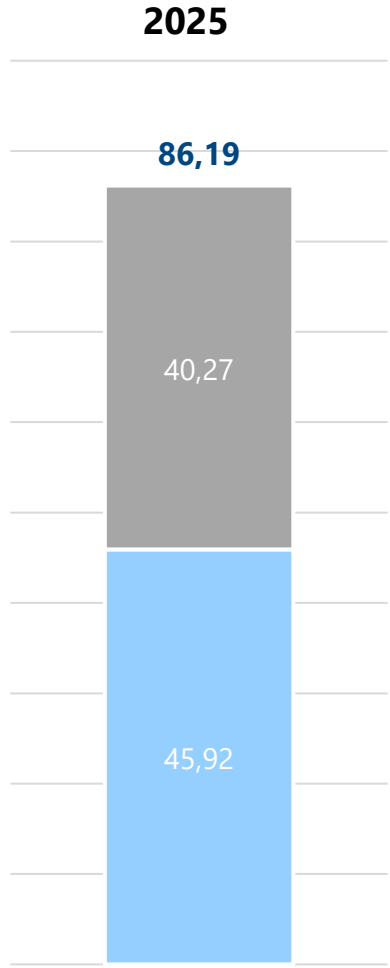


Numbers in EUR/MWh

+5% The increase in Renewables Obligation (RO) charges leads to an overall increase in the overall tax component even though the energy tax remained the same as 2024.

+15% A steeper consumption charge and higher capacity charges push the network component from ≈ 40 EUR/MWh to 46 EUR/MWh. Reductions in the fixed charge and the residual charge only partly offset the rise.



Numbers in EUR/MWh

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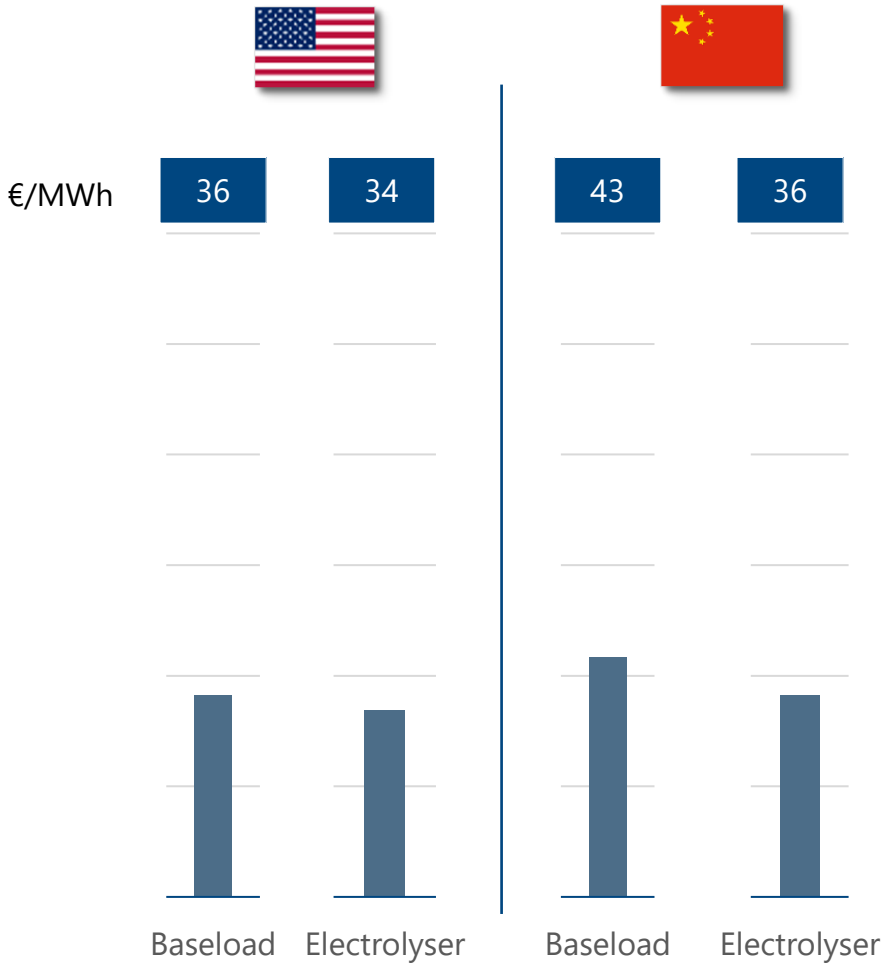
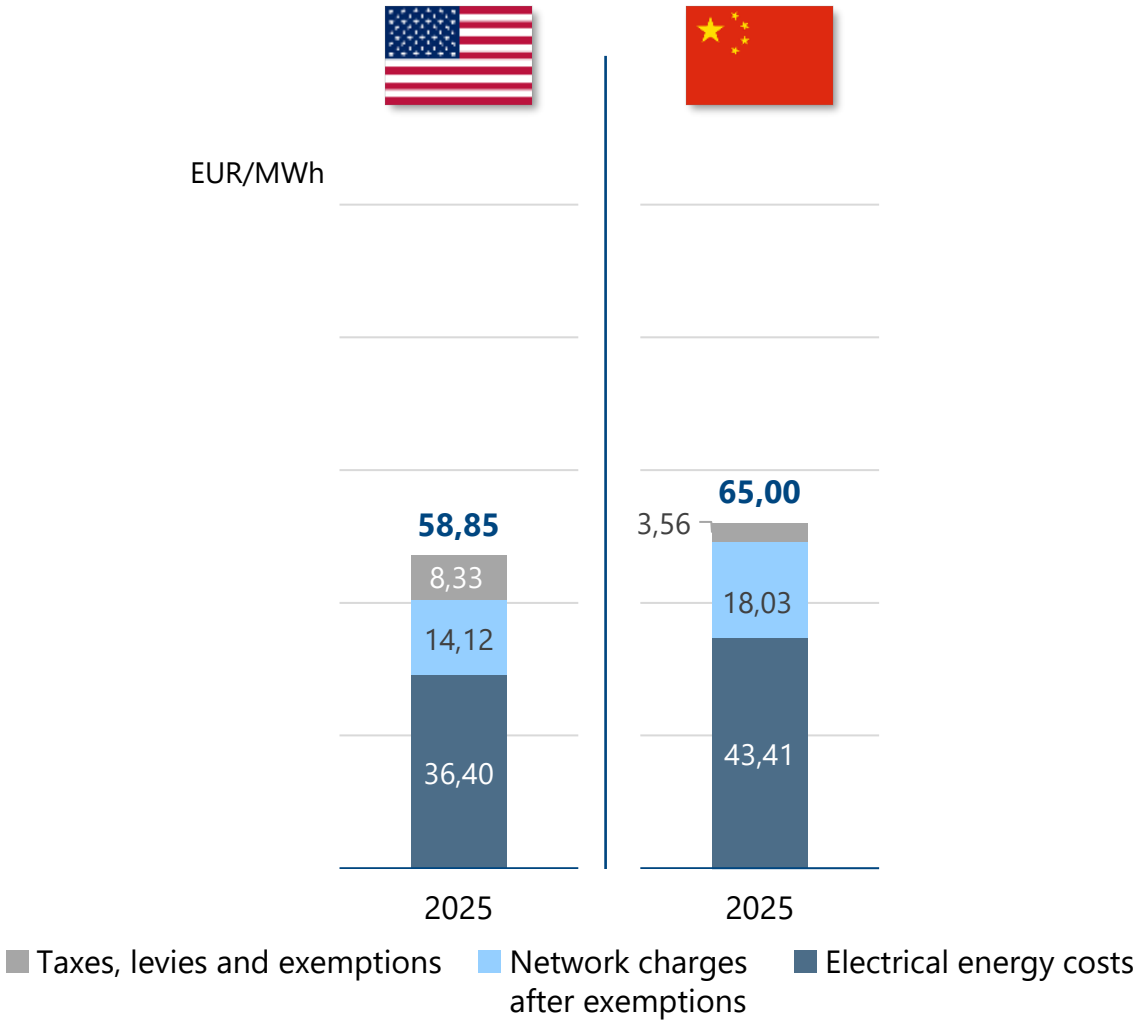
Commodity cost in US and China

- Wholesale electricity in PJM's PPL zone is driven by a convergence of structural advantages on the US side:
  - **Abundant low-cost shale gas**: Marcellus-Utica production sits inside the PJM zone, pushing Henry Hub spot gas below 3.5 EUR/MMBtu through most of 2025 [Source] .Because **gas-fired units set the marginal price in roughly 70 % of hours**, that cheap fuel pulls the day-ahead/real-time prices for the PPL zone down to the **mid-30 EUR/MWh** range—far beneath European hubs.
  - **Pennsylvania never completed its bid to join the Regional Greenhouse Gas Initiative (RGGI);** court challenges and repeal votes have kept the rule "on hold" despite multiple attempts to revive it [Source]. With **no state-level CO_2 fee**, PJM generators pay at most a token RGGI cost in a few neighbouring states.
  - A **separate RPM capacity market** lets plants recover fixed costs outside the energy offer along with the congestion rents being rebated via **ARR/FTR credits** further lowers the overall prices for large industrial consumers.
- Guangdong now operates one of China's most transparent wholesale-power markets, and its clearing prices underscore a structural cost advantage over Europe. Public data from the Guangzhou Power Exchange Centre show that day-ahead electricity averaged ≈ 43 €/MWh during January-November 2024 [Source] .
  - Guangdong's wholesale power **merit-order is dominated by low-marginal-cost coal and nuclear units** (coal still provided ≈ 60 % of China's generation in 2023 [Source]), and **spot prices are kept inside a "± 20 % band"** around the regulated coal benchmark – Every province keeps a coal-fired benchmark price and most bilateral market trades must stay within ± 20 % of that value [Source] .
  - Therefore, if a large industry consumer in Guangdong signs the 2025 annual contract (≈ 50 €/MWh [Source]) or optimises around the day-ahead mean (≈ 43 €/MWh), it still faces comparably less commodity costs than its European counterparts.
  - While Guangdong publishes the clearing prices for its day-ahead market and for the centralized annual/monthly auctions, the large industry consumers frequently **negotiate bespoke bilateral contracts** with generators or with the grid company. These deals are filed for volume approval, but the **actual price terms are treated as commercially confidential and never appear in public notices.**



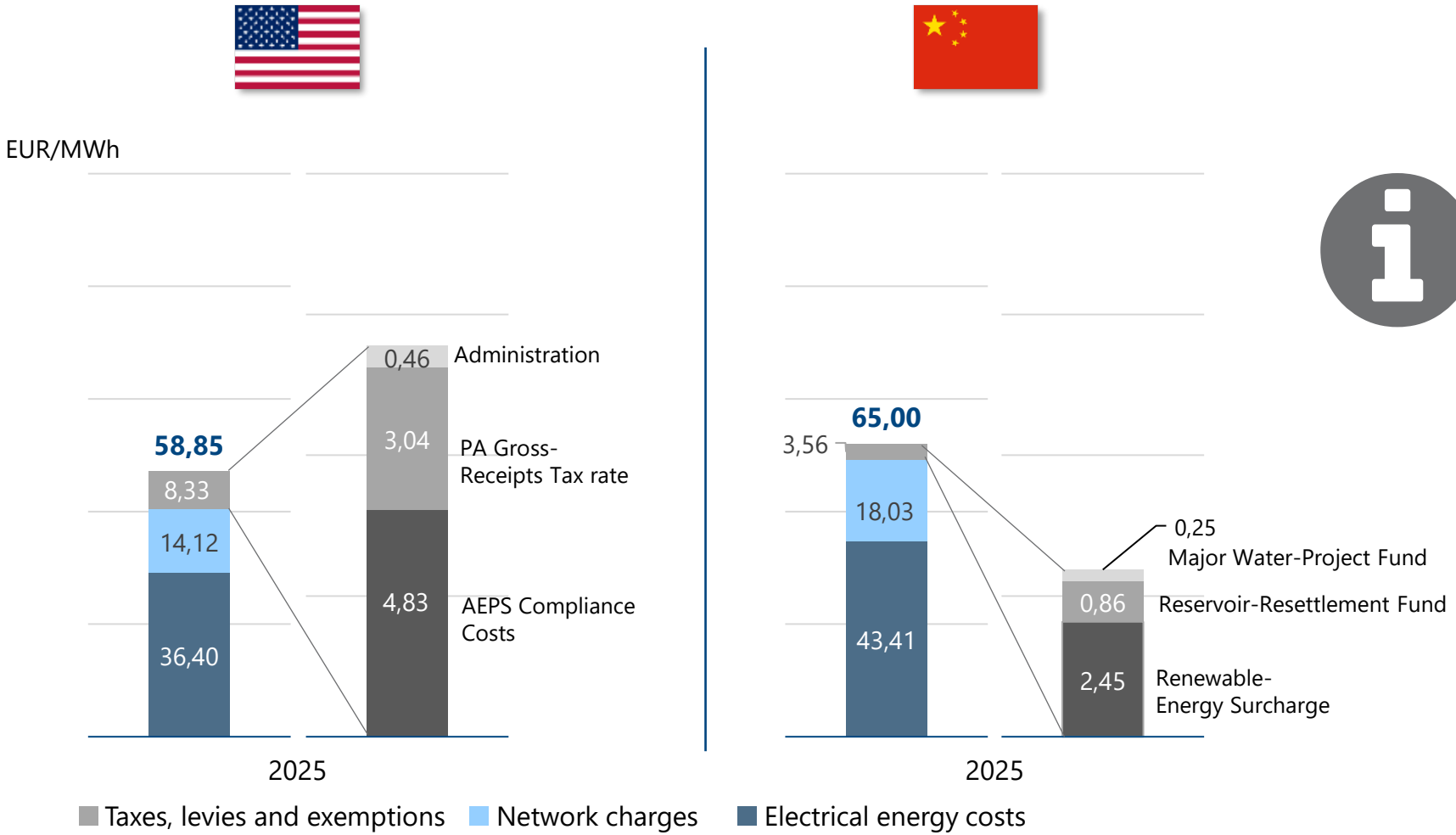
Baseload large industry: **Network charges** divided by component in **2025**



The baseload large industry consumers in the USA pay the full transmission-level network charges with no significant exemptions.

Similarly, for China, aside from the automatic 10% high load factor discount on the capacity charge, there are no other exemptions on network charges.

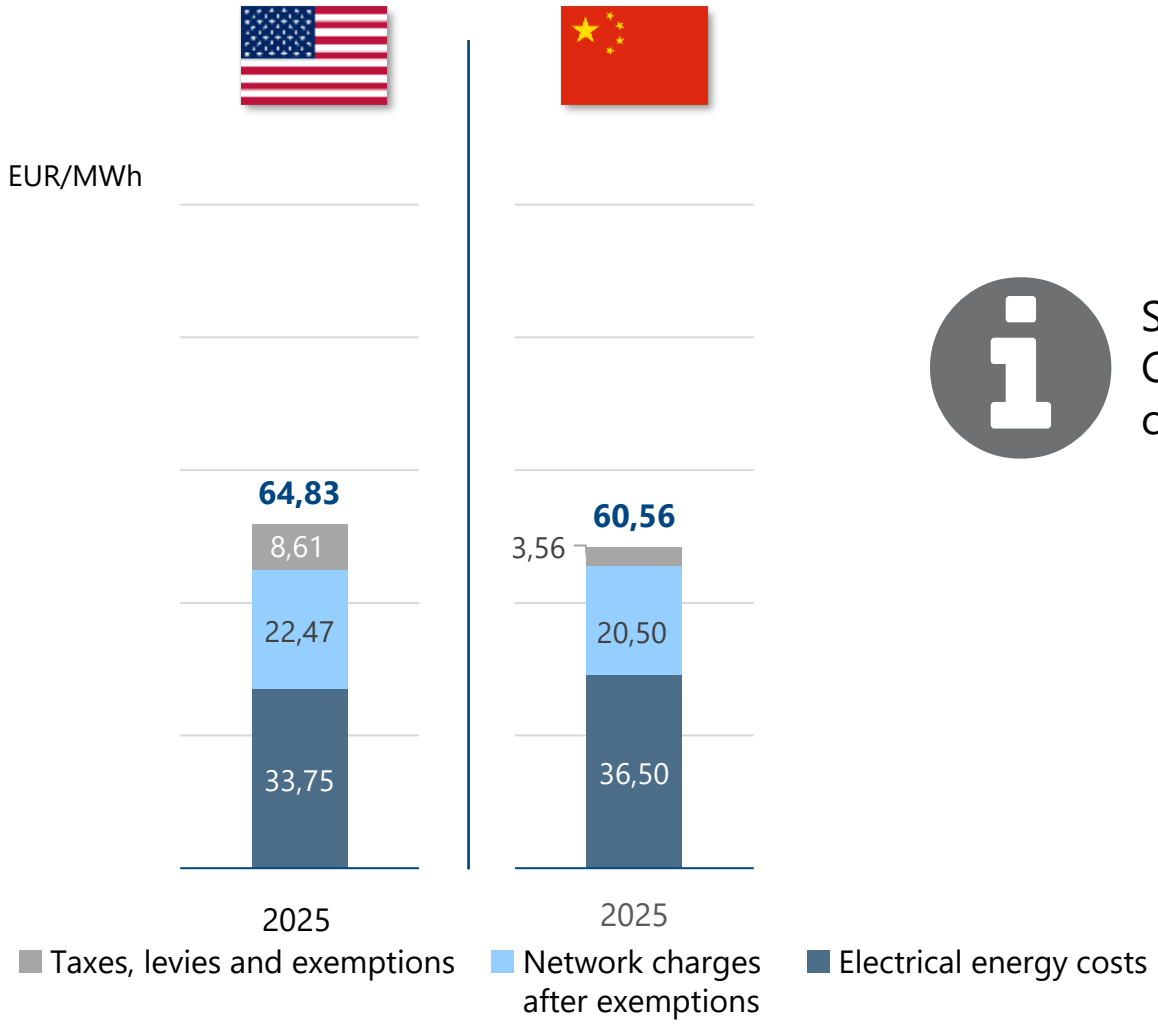
Baseload large industry: **Taxes, levies and fees** divided by component in **2025**



The baseload large industry consumers in the US pay all statutory taxes and levies at full rates with no exemptions

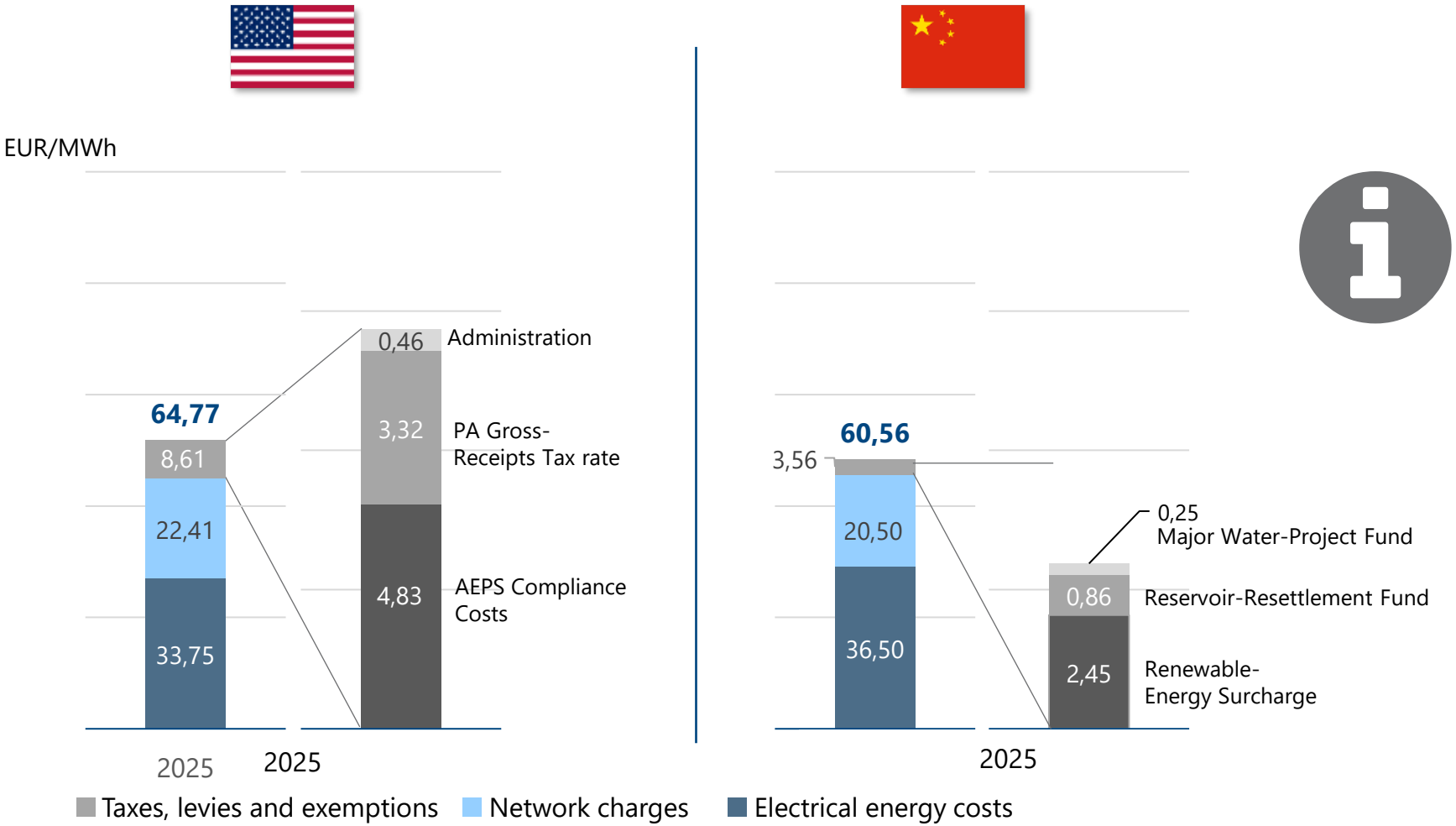
China likewise offers no preferential reductions on the three national surcharges (but may be negotiated behind closed doors)

Electrolyser: **Network charges** divided by component in **2025**



Similarly, for the Electrolyser, neither US nor China do grant major exemptions for network charges.

Electrolyser: Taxes, levies, fees divided by component in **2025**



Just like large baseload industrial users, Electrolysers in both the US and China must pay all applicable taxes and levies at their full statutory rates, with no special exemptions. In China they may be negotiated behind closed doors.

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3.1 Overview and explanation of electricity cost components

3.2 Baseload Large Industry Consumer (TSO)

3.3 Electrolyser (TSO)

3.4 Non-flexible Medium Industry Consumer (DSO)

3.5 Flexible Medium Industry Consumer (DSO)

3.6 Electricity Costs in USA and China

a USA

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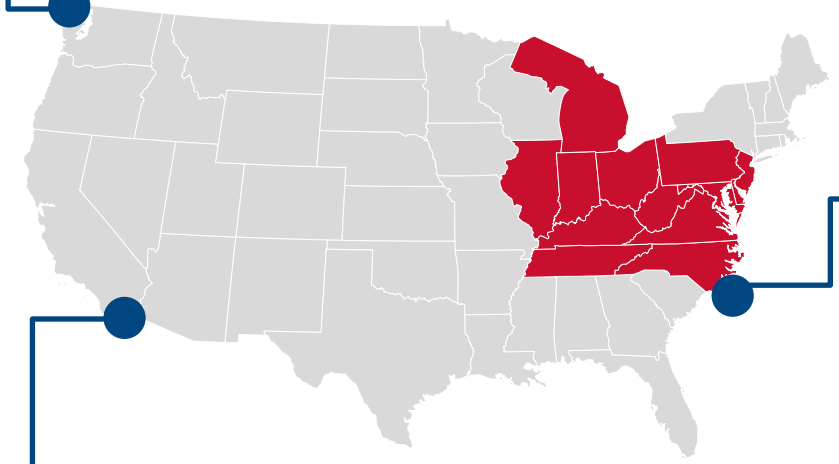
Country introduction – United States of America

- **Why the PJM Zone?**

PJM is the **largest wholesale-power market**, serving about **65 million people** across **13 states and Washington DC**.

Real-time Locational Marginal Pricing (LMP) and forward capacity auctions.

The footprint covers the **"steel & chemicals belt"** from Chicago to the Mid-Atlantic, so PJM prices are a good proxy for US-average industrial cost pressure.



- **PJM as the Regional Transmission Operator (RTO)**

PJM itself dispatches and coordinates the extra-high-voltage backbone – primarily **500 kV and 345 kV lines**, with taps down to **230 kV/138 kV** for direct-connect factories.

- **DSO PPL Electric Utilities, Pennsylvania**

We spotlight PPL because its territory spans one of America's most diversified manufacturing hubs.

Our analysis focuses on **69 kV primary service (LP-5 tariff) –** the highest standard distribution voltage PPL offers and the level at which virtually all large Pennsylvania plants interconnect.

USA: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation
Taxes	Pennsylvania Gross-Receipts Tax (GRT) Source	5.9 % × (Energy + Capacity + Ancillary) = 3.04 EUR/MWh	State tax on the supply portion of the bill
Levies	Administration Source	0.46 EUR/MWh	
Levies	AEPS Compliance Costs Source 1, Source 2	AEPS=k∑(Required % of retail load)×(Market price of 1 REC) =4.83 EUR/MWh	The Alternative Energy Portfolio Standards Act makes every LSE or self-supplying customer meet the REC quotas. If self-schedule is done in PJM then the RECs are bought or retired; if bundled supply is taken, then the LSE folds the REC price into the energy charge.

USA: Explanation table for TSO network charges

Category	Cost component/ exemption	Calculation method	Explanation
Network Charges	Network-Integration Transmission Service (NITS) Source	(100391.92 EUR/MW-yr × 125 MW) ÷ 1000000 MWh = 12.55 EUR/MWh	Zonal tariff for use of the 500 kV grid
Network Charges	Transmission Enhancement Cost Recovery (TEC) Source 1, Source 2	2025 average = 2.64 EUR/MWh	Defined in OATT Schedule 12
Network Charges	Schedule 1A – Scheduling/Control (SSCD) Source 1, Source 2	2025 average = 0.08 EUR/MWh	
Relief	ARR/FTR refund Source (Page 18)	2024 Price = 1.15 EUR/MWh	Automatic monthly refunds of congestion revenues

USA: Explanation table for DSO network charges

Category	Cost component/ exemption	Calculation method	Explanation
Network Charges	Network-Integration Transmission Service (NITS) Source	(100391,92 EUR/MW-yr × 4,5 MW) ÷ 12000 MWh = 37.65 EUR/MWh	The share of the annual revenue requirement for every high-voltage asset in the PPL zone – towers, lines, transformers, control rooms. Grants firm network rights to withdraw power up to the PLC at any PJM node.
Network Charges	Transmission Enhancement Cost Recovery (TEC) Source 1, Source 2	2025 average for PPL = 2.64 EUR/MWh	Defined in OATT Schedule 12. Collected pool-wide on a EUR/MWh basis
Network Charges	Schedule 1A – Scheduling/Control (SSCD) Source 1, Source 2	2025 average for PPL = 0.08 EUR/MWh	Reimburses PPL for running its 24×7 control center, SCADA, EMS. Allocated to all load on a EUR/MWh basis.
Network Charges	Distribution (LP-5) Customer charge Source	Flat 918.45 EUR/month	PPL's fixed cost of owning the 69 kV sub-station bay, meter, billing – identical every month, no matter how many kWh is taken.
Network Charges	Distribution (LP-5) ACR Phase 4 Source	976.66 EUR/kW.mo	Funds PPL's Act 129 energy-efficiency programmes (rebates & low-income). It is a demand-based rider billed per kW of Contract Demand (PLC).

USA: Network charges for a baseload large industry (1 TWh/a) in **2025**

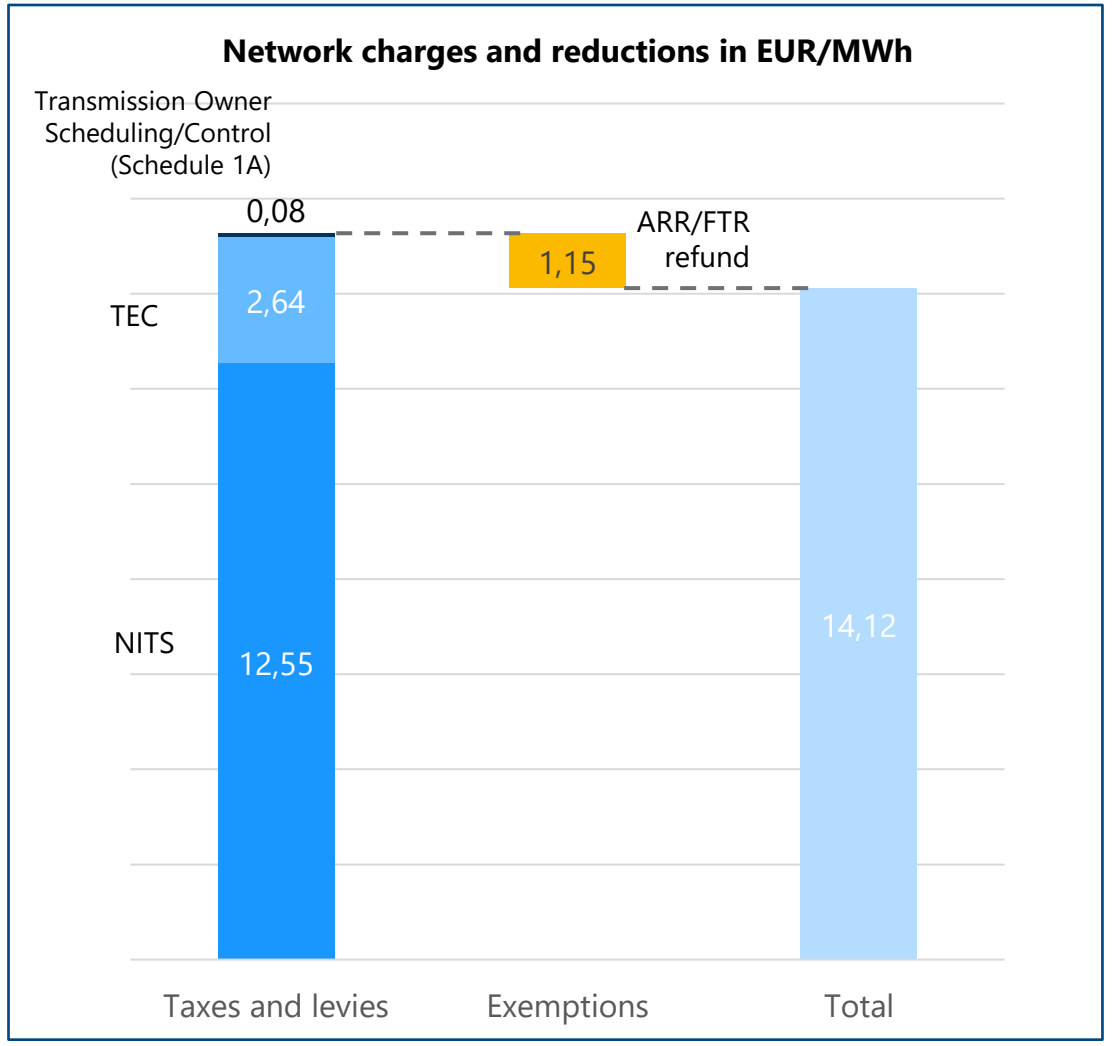
Network charges

- Network Integration Transmission Service (NITS): **100,391.92 EUR/MW.year**
  - Consumption: 1 TWh → **12.55 EUR/MWh**
- Transmission Enhancement Cost Recovery (TEC): **2.64 EUR/MWh**
- Transmission Owner Scheduling/Control (Schedule 1A): **0.08 EUR/MWh**

Network charge reduction

- ARR/FTR refund → **1.15 EUR/MWh**

→ Resulting network charges: **14.12 EUR/MWh**

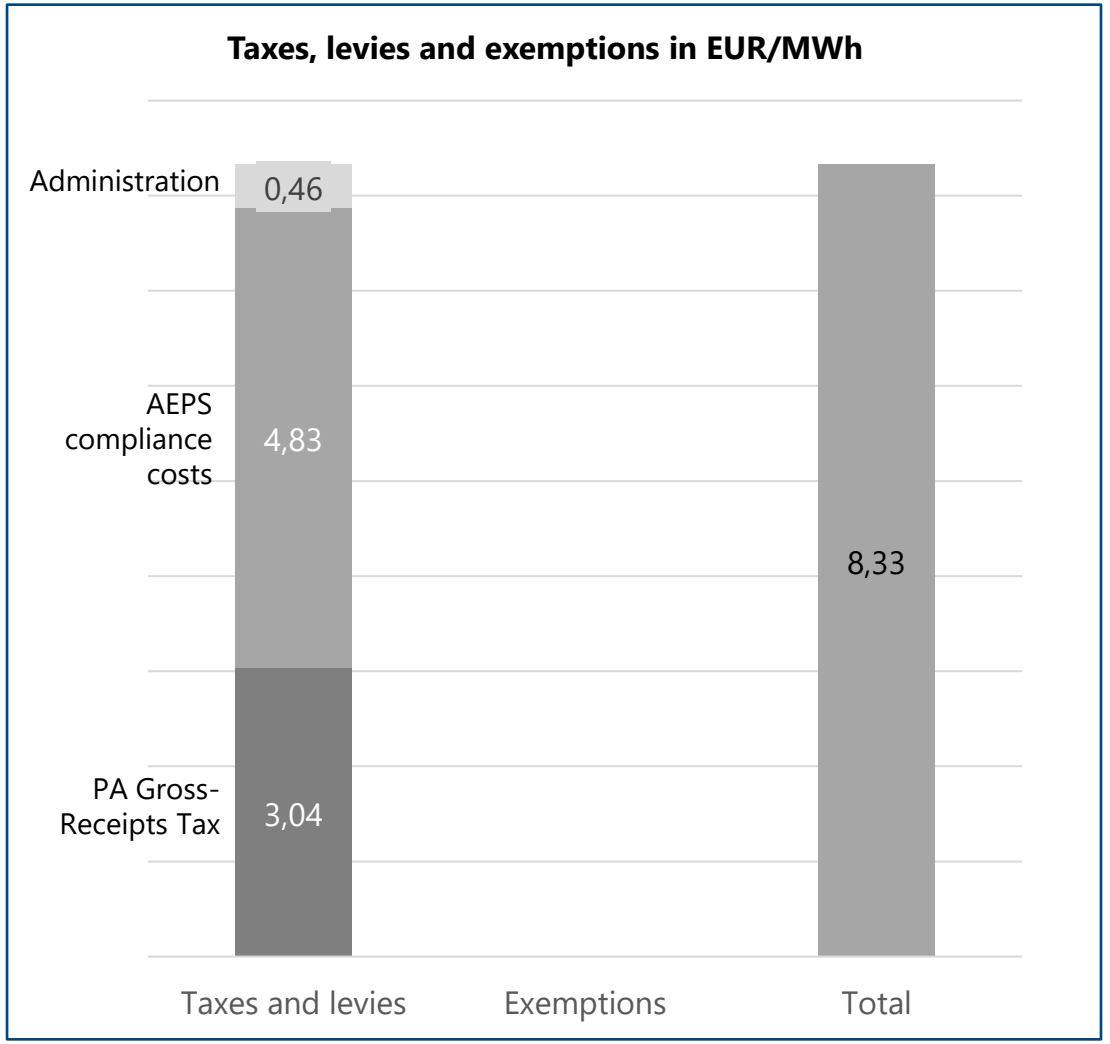


USA: Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in **2025**

Taxes, levies and fees:

- PA Gross-Receipts Tax rate - 5.9 % × (Energy + Capacity + Ancillary) → **3.04 EUR/MWh**
- Administration: **0.46 EUR/MWh**
- AEPS compliance costs: **4.83 EUR/MWh**

→ Resulting taxes, levies and fees: **8.33 EUR/MWh**



USA: Network charges for an electrolyser in **2025**

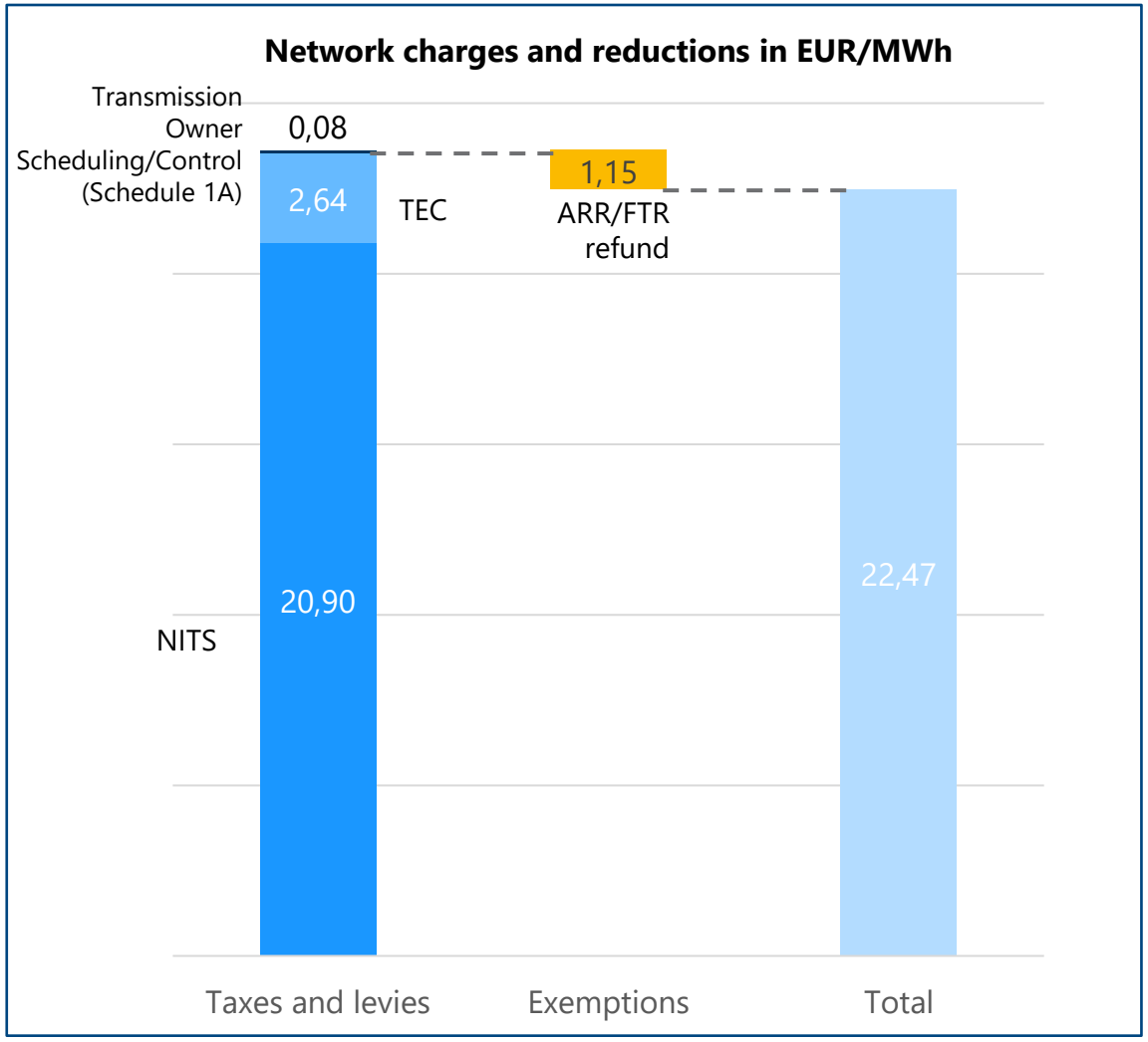
Network charges

- Network Integration Transmission Service (NITS): **100,391.92 EUR/MW.year**
  - Consumption: 1,2 TWh → **20.90 EUR/MWh**
- Transmission Enhancement Cost Recovery (TEC): **2.64 EUR/MWh**
- Transmission Owner Scheduling/Control (Schedule 1A): **0.08 EUR/MWh**

Network charge reduction

- ARR/FTR refund → **1.15 EUR/MWh**

→ Resulting network charges: **22.47 EUR/MWh**

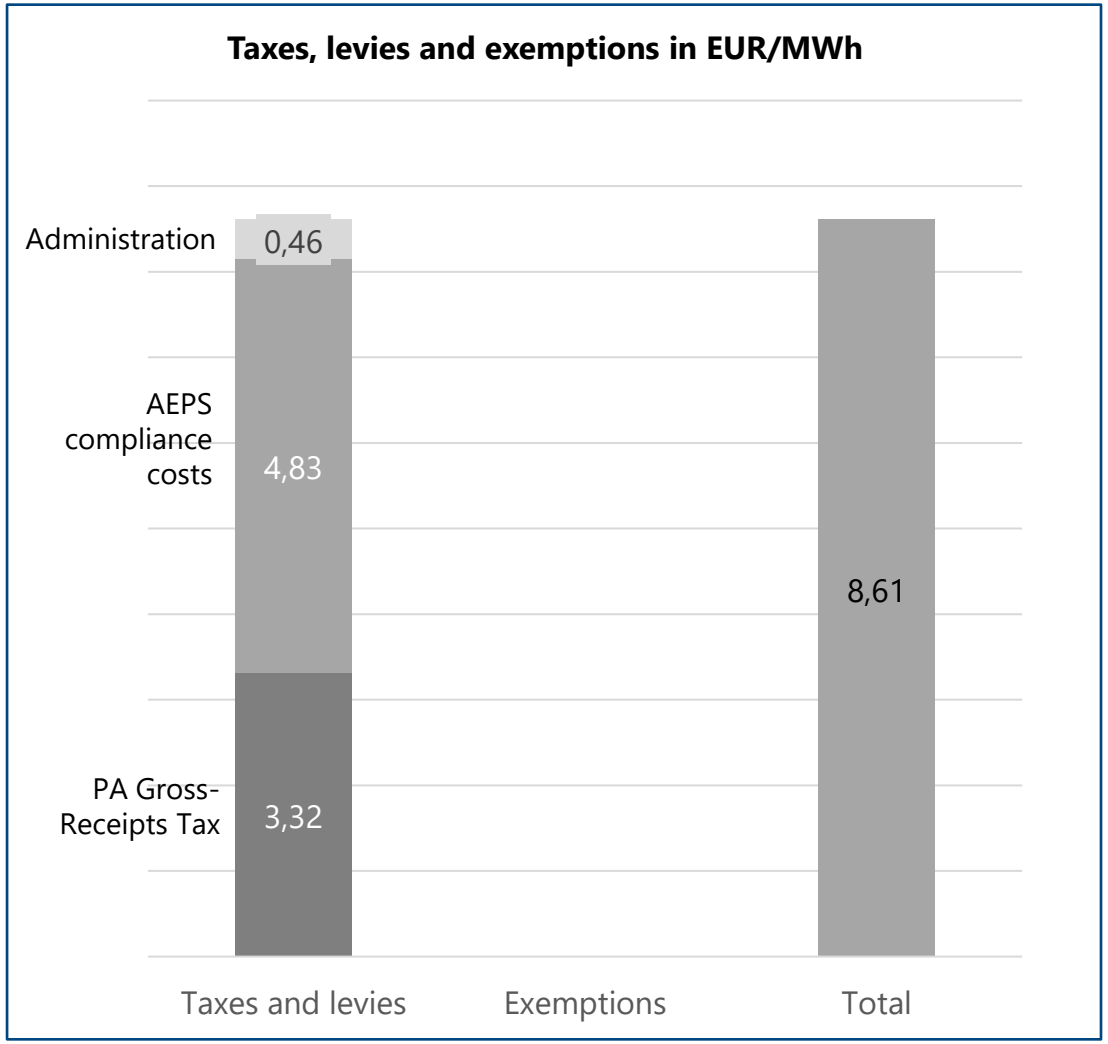


USA: Taxes, levies and exemptions for an electrolyser in **2025**

Taxes, levies and fees:

- PA Gross-Receipts Tax rate - 5.9 % × (Energy + Capacity + Ancillary) → **3.32 EUR/MWh**
- Administration: **0.46 EUR/MWh**
- AEPS compliance costs: **4.83 EUR/MWh**

→ Resulting taxes, levies and fees: **8.61 EUR/MWh**



USA: Network charges for a non-flexible medium industry (12 GWh/a) in **2025**

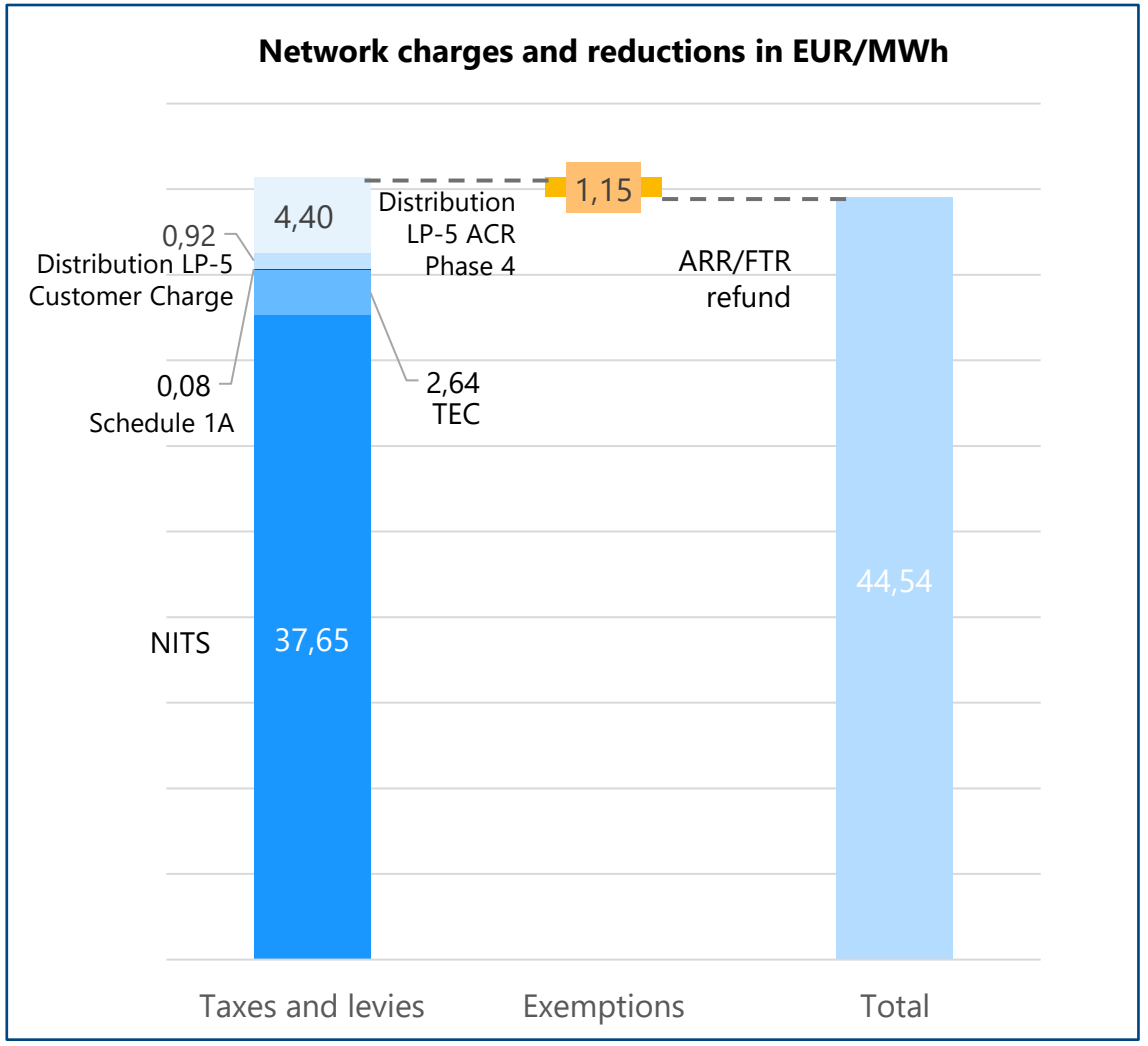
Network charges

- Network Integration Transmission Service (NITS): **100,391.92 EUR/MW.year**
  - Consumption: 12 GWh → **37.65 EUR/MWh**
- Transmission Enhancement Cost Recovery (TEC): **2.64 EUR/MWh**
- Transmission Owner Scheduling/Control (Schedule 1A): **0.08 EUR/MWh**
- Distribution (LP-5) Customer charge: **918.75 EUR/month**
  - Consumption: 12 GWh → **0.92 EUR/MWh**
- Distribution (LP-5) ACR Phase 4: **976.99 EUR/kW.month**
  - Consumption: 12 GWh → **4.40 EUR/MWh**

Network charge reduction

- ARR/FTR refund → **1.15 EUR/MWh**

→ Resulting network charges: **44.54 EUR/MWh**

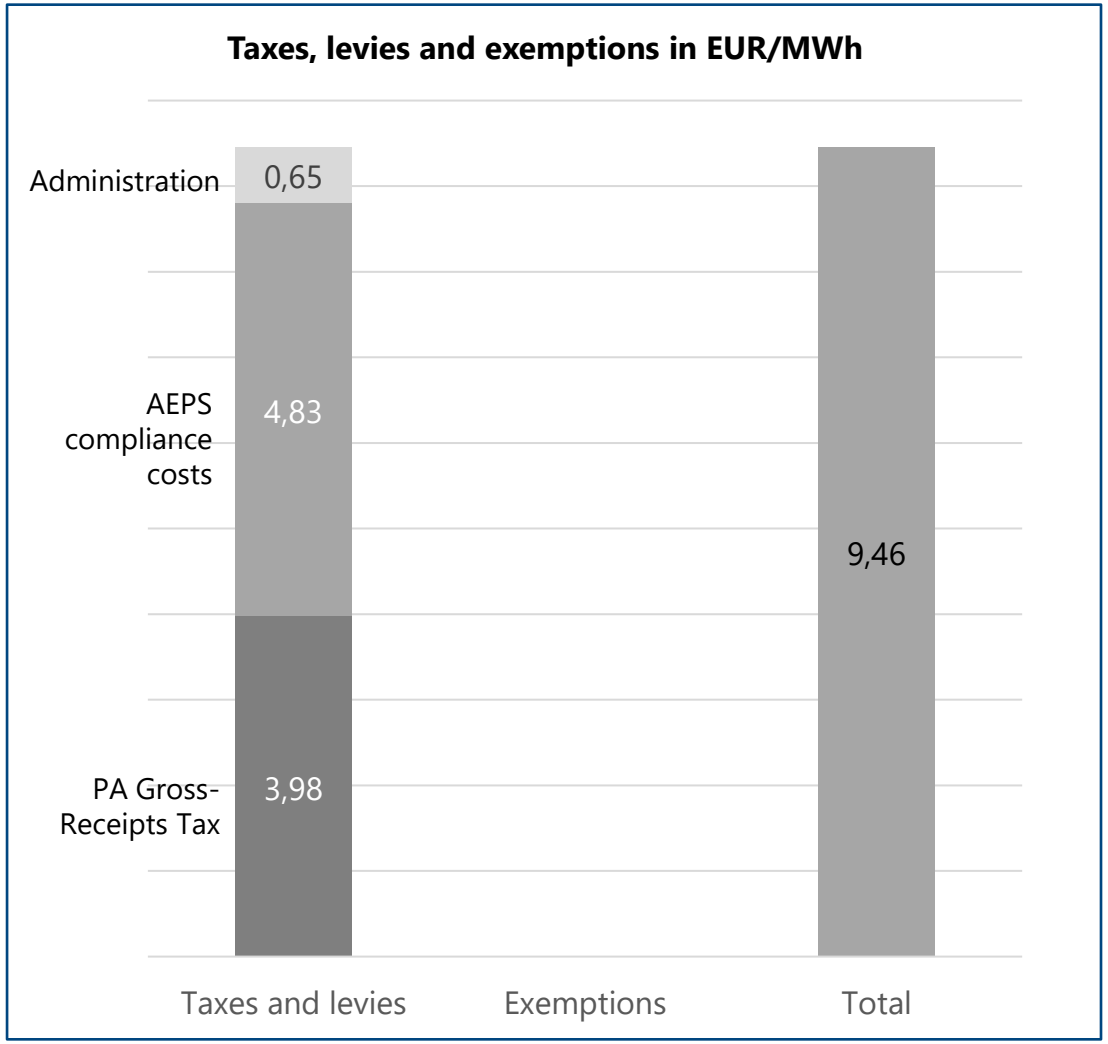


USA: Taxes, levies and exemptions for a non-flexible medium industry (12 GWh/a) in **2025**

Taxes, levies and fees:

- PA Gross-Receipts Tax rate - 5.9 % × (Energy + Capacity + Ancillary) → **3.98 EUR/MWh**
- Administration: **0.65 EUR/MWh**
- AEPS compliance costs: **4.83 EUR/MWh**

→ Resulting taxes, levies and fees: **9.46 EUR/MWh**



USA: Network charges for a flexible medium industry (12 GWh/a) in **2025**

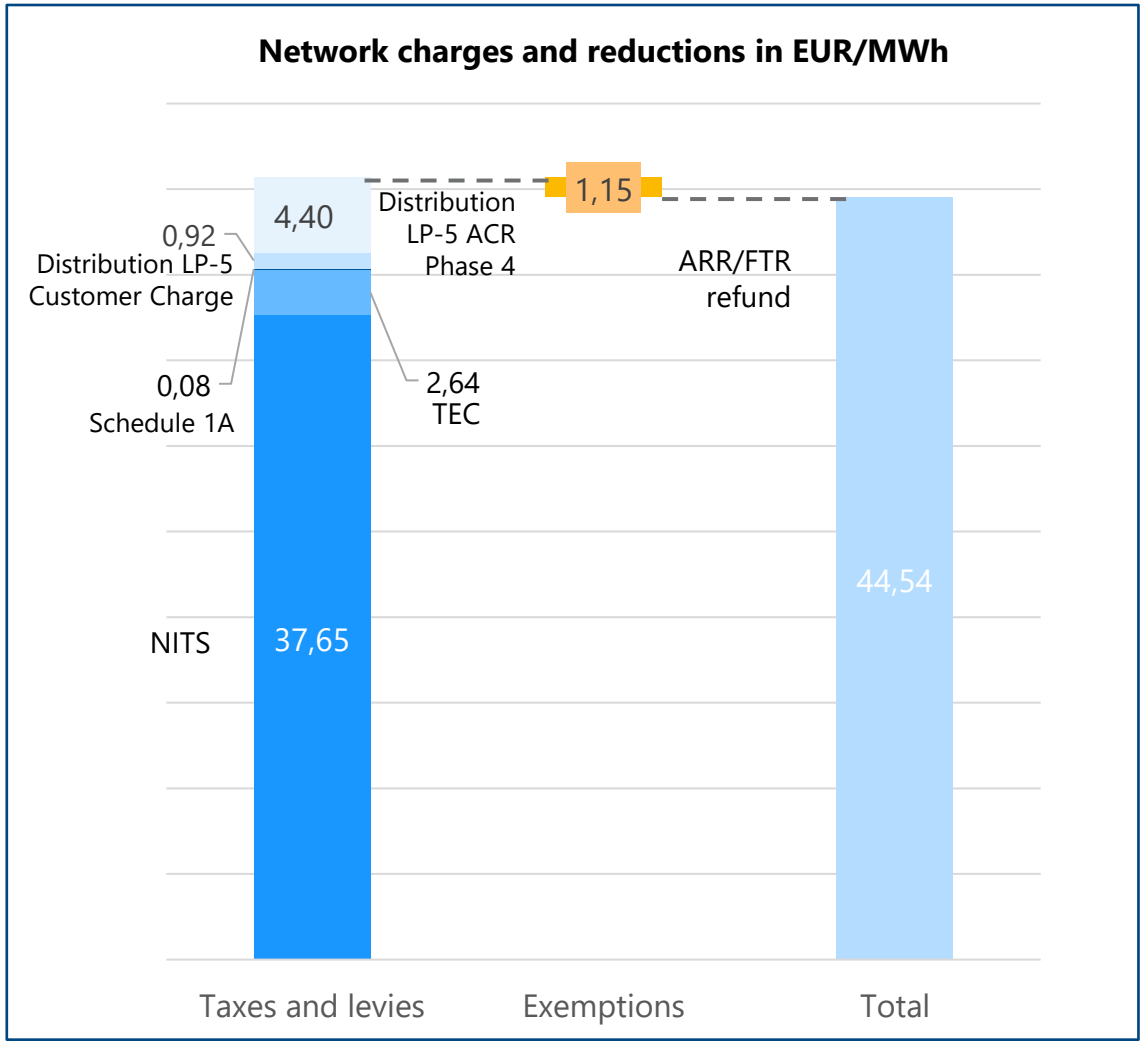
Network charges

- Network Integration Transmission Service (NITS): **100,391.92 EUR/MW.year**
  - Consumption: 12 GWh → **37.65 EUR/MWh**
- Transmission Enhancement Cost Recovery (TEC): **2.64 EUR/MWh**
- Transmission Owner Scheduling/Control (Schedule 1A): **0.08 EUR/MWh**
- Distribution (LP-5) Customer charge: **918.75 EUR/month**
  - Consumption: 12 GWh → **0.92 EUR/MWh**
- Distribution (LP-5) ACR Phase 4: **976.99 EUR/kW.month**
  - Consumption: 12 GWh → **4.40 EUR/MWh**

Network charge reduction

- ARR/FTR refund → **1.15 EUR/MWh**

→ Resulting network charges: **44.54 EUR/MWh**

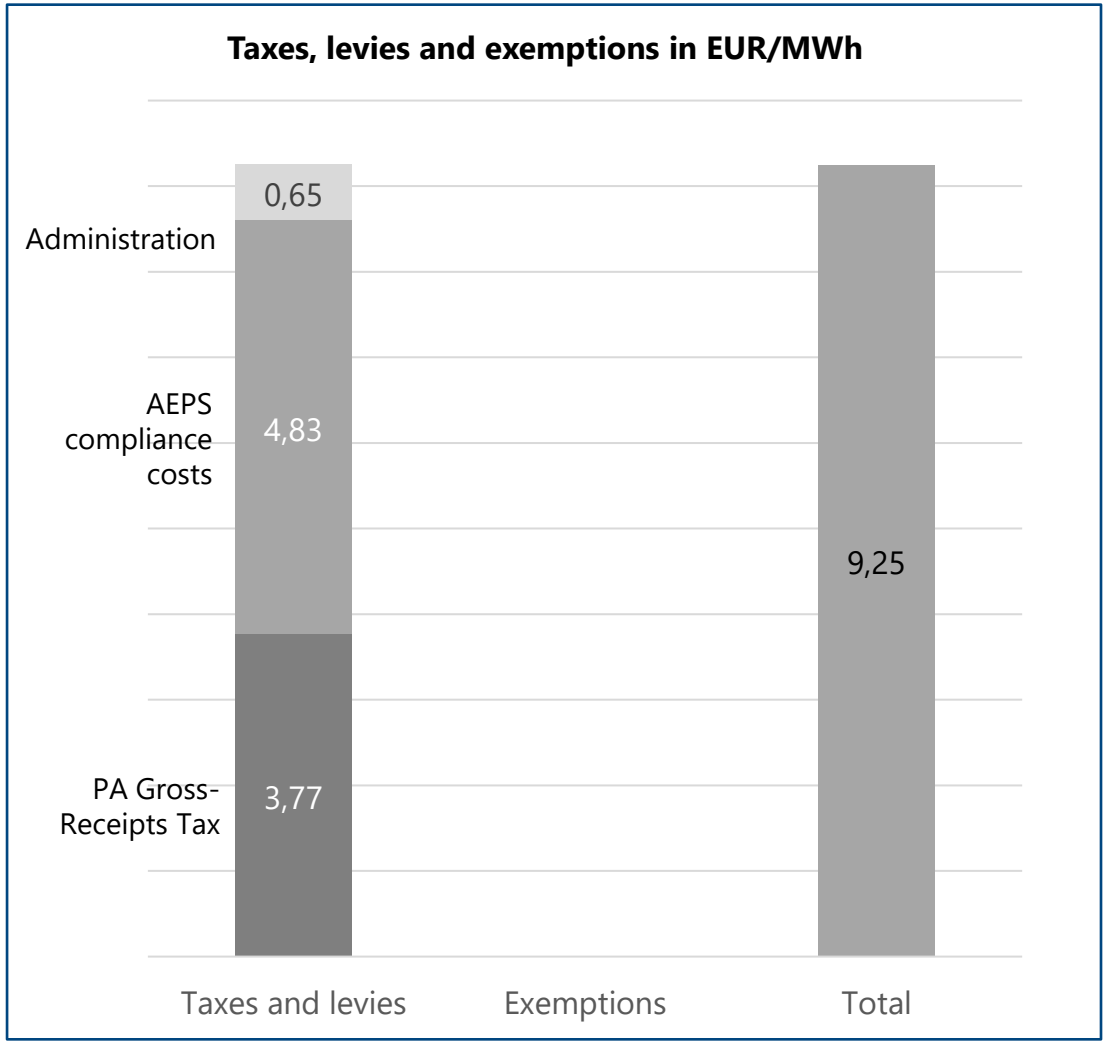


USA: Taxes, levies and exemptions for a flexible medium industry in **2025**

Taxes, levies and fees:

- PA Gross-Receipts Tax rate - 5.9 % × (Energy + Capacity + Ancillary) → **3.77 EUR/MWh**
- Administration: **0.65 EUR/MWh**
- AEPS compliance costs: **4.83 EUR/MWh**

→ Resulting taxes, levies and fees: **9.25 EUR/MWh**



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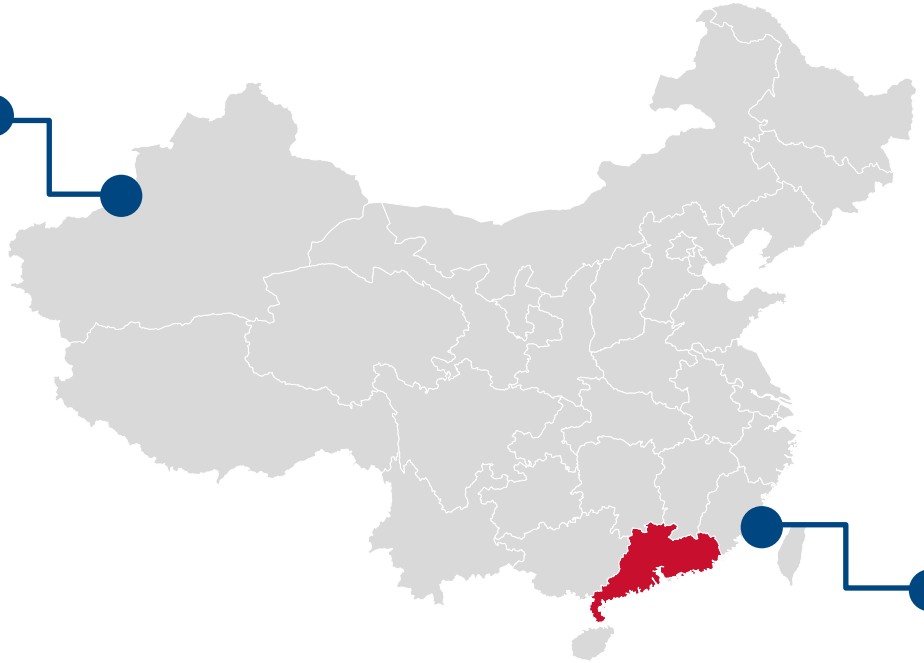
Country introduction – China



- **Why Guangdong / Pearl-River-Delta?**
- Guangdong's Pearl-River-Delta is China's **single largest industrial load-pocket**.
- Approximately **850 TWh** consumed in 2023 – about 9 % of the national total.
- Hosts **flagship sites** for Baowu (steel), Sinopec (petrochemicals), Foxconn (electronics) and GAC (automotive).
- Many heavy plants already at **220 kV** or higher.
- One of only two provinces running a **commercial day-ahead spot market**, with public trade bulletins.



- **TSO China Southern Power Grid (CSG) → Guangdong Power Grid Co.**

Operates **500 kV** HVAC and ±800 kV HVDC backbones.

Industrial users normally connect at **220 kV**, with 110 kV feeders for mid-sized loads.

Publishes monthly catalogues and loss-factor tables



China: Explanation table for taxes, levies and fees

Category	Cost component/ exemption	Calculation method	Explanation
Levies	Major Water-Project Fund Source	0.25 EUR/MWh	Central fund for South-to-North & other hydro works; collected nationwide since 2016.
Levies	Reservoir-Resettlement Fund Source	0.86 EUR/MWh	Compensates communities displaced by big dams.
Levies	Renewable-Energy Surcharge Source	2.45 EUR/MWh	Pays FIT deficit for legacy wind/solar; unchanged since 2016.



China: Explanation table for TSO network charges

Category	Cost component/ exemption	Calculation method	Explanation
Network Charges	T&D energy charge (variable) Source	9.43 EUR/MWh for PRD 220V and above	Regulated "third-cycle" delivery fee for each kWh wheeled through the high-voltage grid; does **not** vary by time of day.
Network Charges	System-operation pool (variable) Source	2.95 EUR/MWh	Pooled recovery of ancillary-service, pumped-storage and coal/gas capacity payments.
Network Charges	Line-loss pass-through (variable) Source	Loss factor (≈ 2.9 %) × energy price	Compensates CSG for technical losses; scales automatically with whatever energy price applies.
Network Charges	Fixed capacity (demand) charge Source	5.04 EUR/MWh	-10 % rebate if utilisation ≥ 260 kWh/kVA-mo Either this or the Transformer kVA billing. The user must elect one method for the entire tariff year and may not apply both methods simultaneously. Changing the method is allowed only at the next annual settlement.*
Relief	High-load-factor (HLF) discount Source 1, Source 2	0.50 EUR/MWh If monthly energy / kVA ≥ 260 kWh → demand charge × 0.9	Built-in reward for ≥ 3120h yr utilisation. Either this or the Transformer capacity
Relief	Time-of-use (TOU) valley price Source	Savings per MWh = Flat price × (1 – 0.38) × Valley-share × Loss-factor	Line-losses are billed as a fixed loss-factor (≈ 2.9 %) times the energy price, so when valley-hour power costs only 38 % of the flat rate, the loss charge on those MWh drops.

**Instead of the HLF rebate, the consumer may elect the lower column priced in ¥/kVA·mo which is cheaper only if the transformer's name-plate kVA is reasonably close to the plant's true peak. The alternative transformer-kVA billing can drop the charge to about 0.6 – 1.9 €/MWh cheaper. That proprietary kVA figure isn't publicly available, so omitting the option keeps the estimate conservative and transparent. For our analyses, we applied Guangdong's HLF rebate because its trigger relies only on metered utilisation, which is known.*

China (Guangdong): Network charges for a baseload large industry (1 TWh/a) in 2025

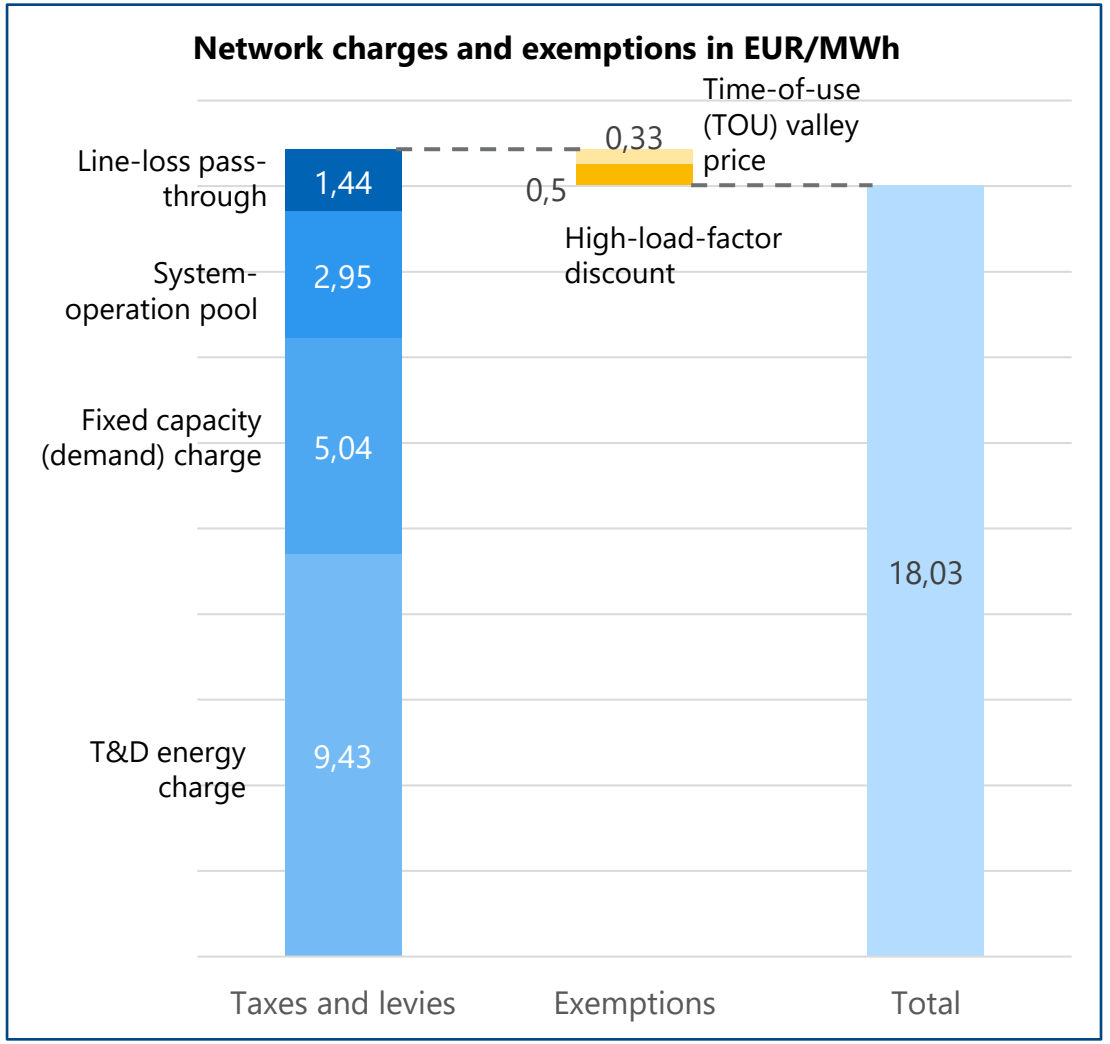
Network charges:

- T&D energy charge: **9.43 EUR/MWh**
- System-operation pool: **2.95 EUR/MWh**
- Line-loss pass-through: **1.44 EUR/MWh**
- Fixed capacity (demand) charge: **5.04 EUR/MWh**

Exemptions

- High-load-factor discount → **0.50 EUR/MWh**
- Time-of-use (TOU) valley price → **0.33 EUR/MWh**

→ Resulting taxes and levies: **18.03 EUR/MWh**

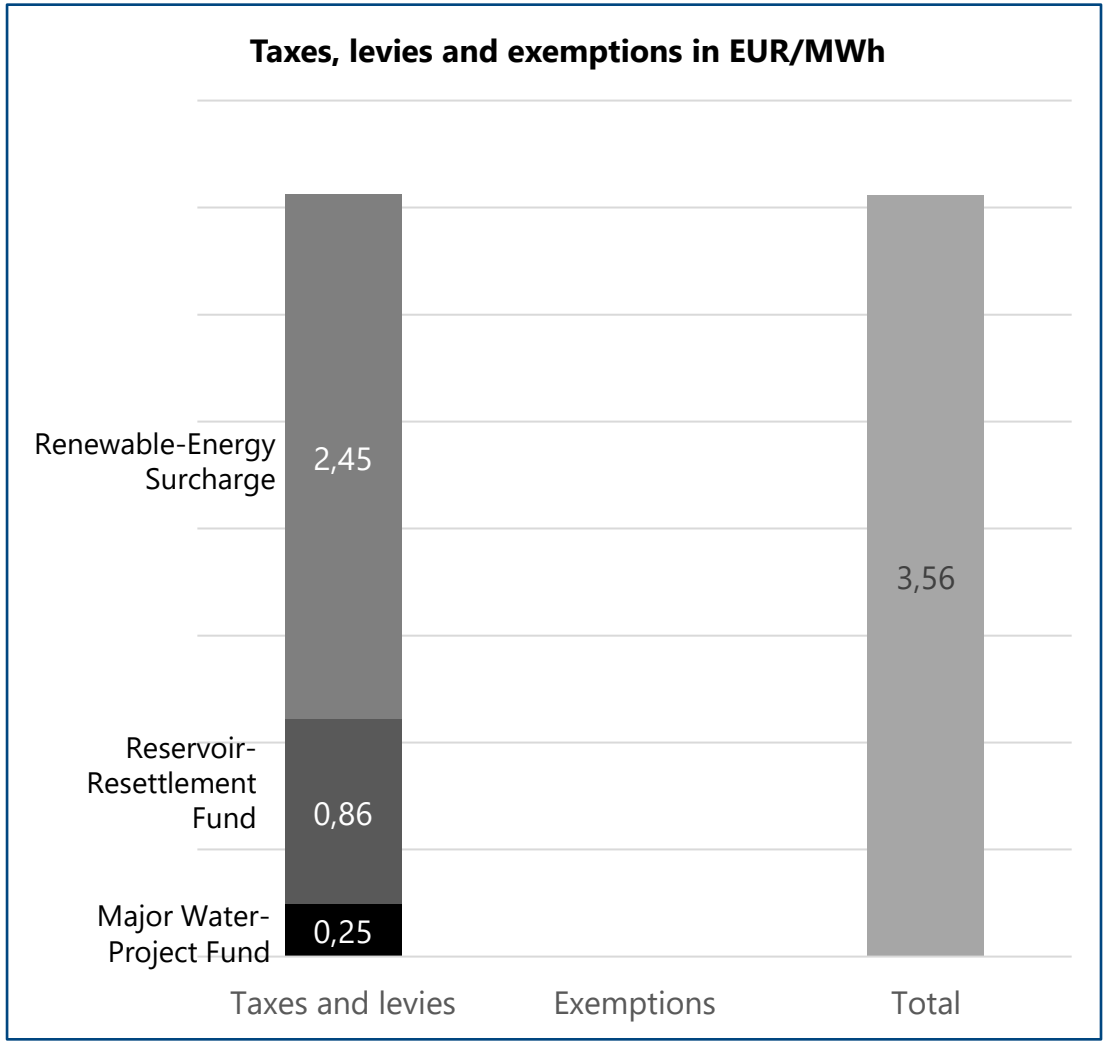


China (Guangdong): Taxes, levies and exemptions for a baseload large industry (1 TWh/a) in 2025

Taxes, levies and fees:

- Major Water-Project Fund: **0.25 EUR/MWh**
- Reservoir-Resettlement Fund: **0.86 EUR/MWh**
- Renewable-Energy Surcharge: **2.45 EUR/MWh**

→ Resulting taxes and levies: **3.56 EUR/MWh**



China (Guangdong): Network charges for an electrolyser in 2025

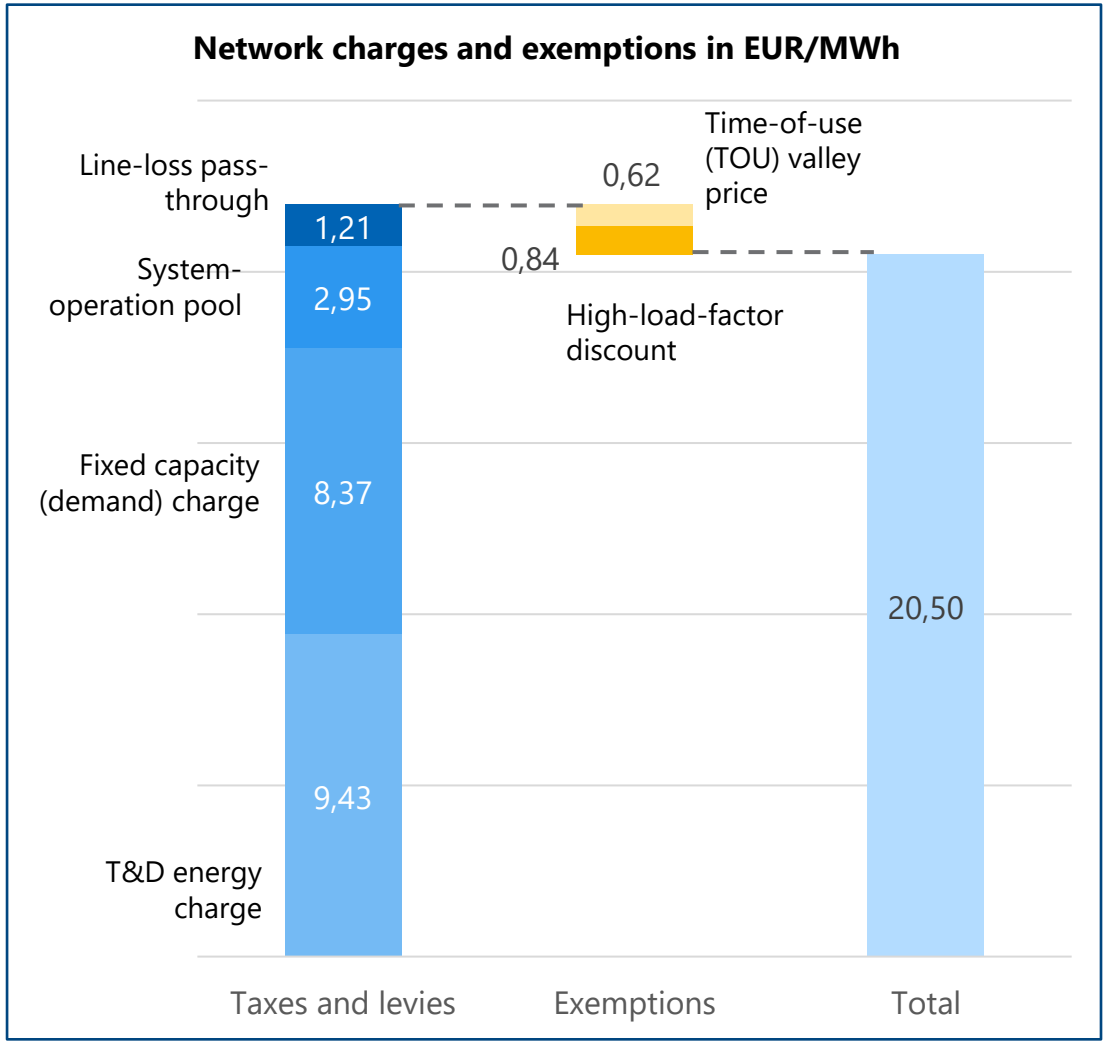
Network charges:

- T&D energy charge: **9.43 EUR/MWh**
- System-operation pool: **2.95 EUR/MWh**
- Line-loss pass-through: **1.21 EUR/MWh**
- Fixed capacity (demand) charge: **8.37 EUR/MWh**

Exemptions

- High-load-factor discount → **0.84 EUR/MWh**
- Time-of-use (TOU) valley price → **0.62 EUR/MWh**

→ Resulting taxes and levies: **20.50 EUR/MWh**



China (Guangdong): Taxes, levies and exemptions for an electrolyser in 2025

Taxes, levies and fees:

- Major Water-Project Fund: **0.25 EUR/MWh**
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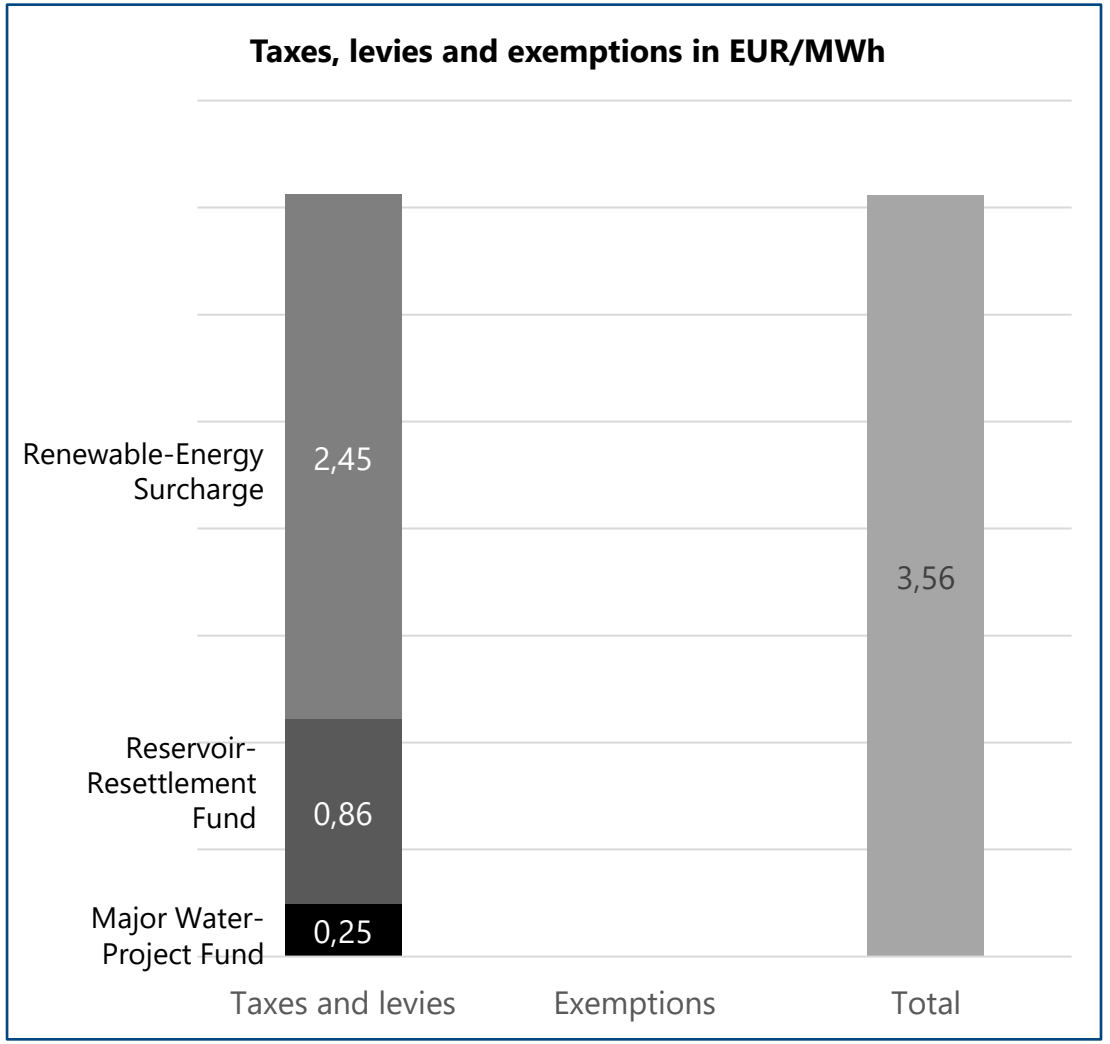
- Renewable-Energy Surcharge: **2.45 EUR/MWh**

→ Resulting taxes and levies: **3.56 EUR/MWh**



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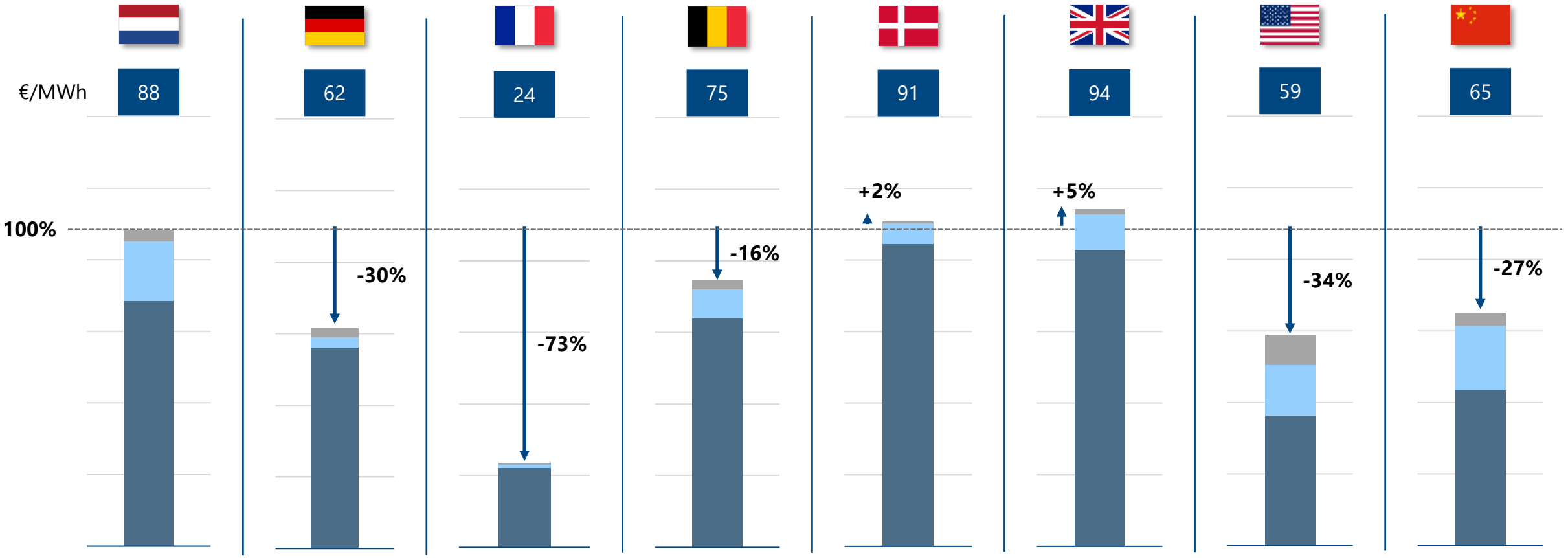
Baseload large industry (Profile A): **Effective electricity costs** with indirect cost compensation in **2025**

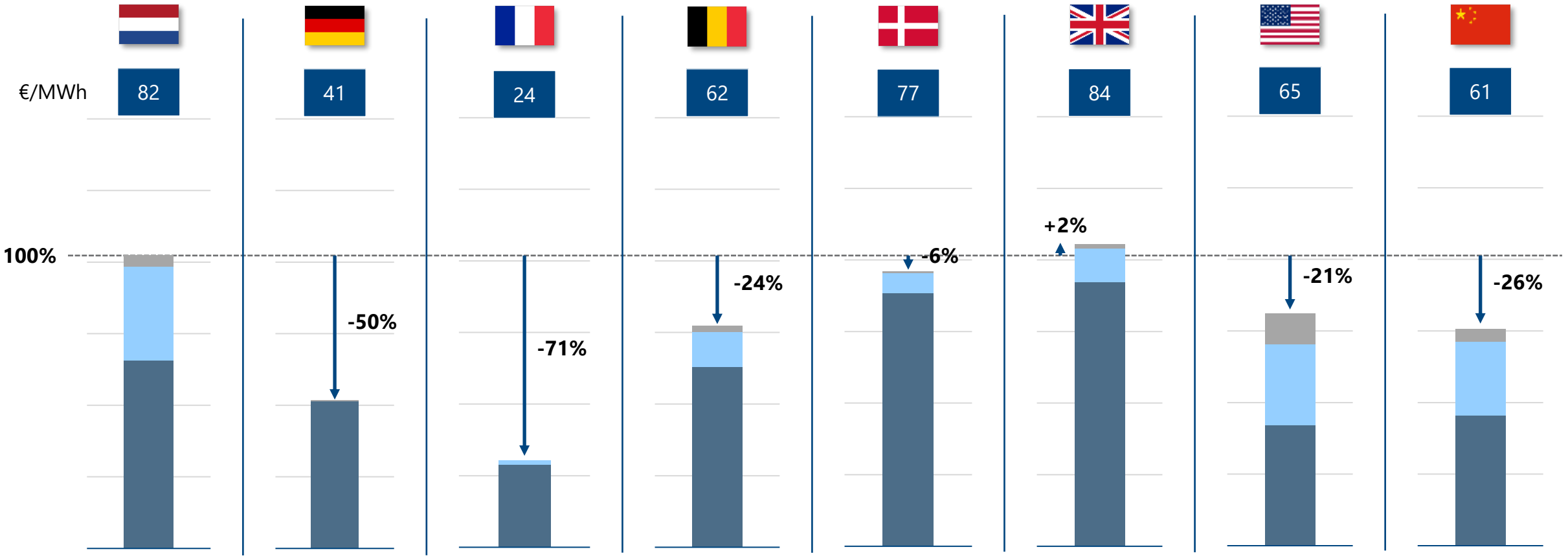


Percentage level: Difference compared to the Netherlands.

Baseload large industry:
1 TWh/a, 8000 FLH
125 MW capacity

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs (with ICC incorporated)

Electrolyser (Profile B): **Effective electricity costs** with indirect cost compensation in **2025**



Percentage level: Difference compared to the Netherlands.

Electrolyser:
1.2 TWh/a, 4800 FLH
250 MW capacity

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs (with ICC incorporated)

The Netherlands together with the UK have the highest effective electricity costs for the two consumer types on TSO level driven by high network charges and commodity costs

Baseload Large Industry

The UK has the highest effective electricity costs, followed by Denmark and the Netherlands. Germany and Belgium have a slight cost advantage, while the advantage of France, USA and China is significantly higher.

Commodity Cost:

- The commodity costs are the highest in Denmark – as Denmark has no ICC – followed by the UK. The Netherlands and Belgium have comparable prices, while Germany, France, the US and China have significantly lower commodity costs, with the France having the overall lowest of the countries because of the ARENH and the ICC.

Network charges:

- The Netherlands, USA and China all have high network charges compared to the other countries. Belgium, Denmark and UK are in the medium range, while Germany and France have low network charges due to high discounts for large baseload consumers.

Taxes, Levies, Fees:

- Taxes, levies and fees make for a minor portion of the effective electricity costs of baseload large industry in all of the assessed countries.

Electrolyser

The UK has the highest effective electricity costs followed by the Netherlands. Germany, Belgium and Denmark have a slight cost advantage, while the advantage of France, USA and China is significantly higher.

Commodity Cost:

- Similar picture as for the baseload consumer: The commodity costs are the highest in Denmark and the UK. The Netherlands and Belgium have slightly lower commodity costs, while Germany, France, the US and China have significantly lower commodity costs, with the France having the overall lowest of the countries because of the ARENH and the ICC.

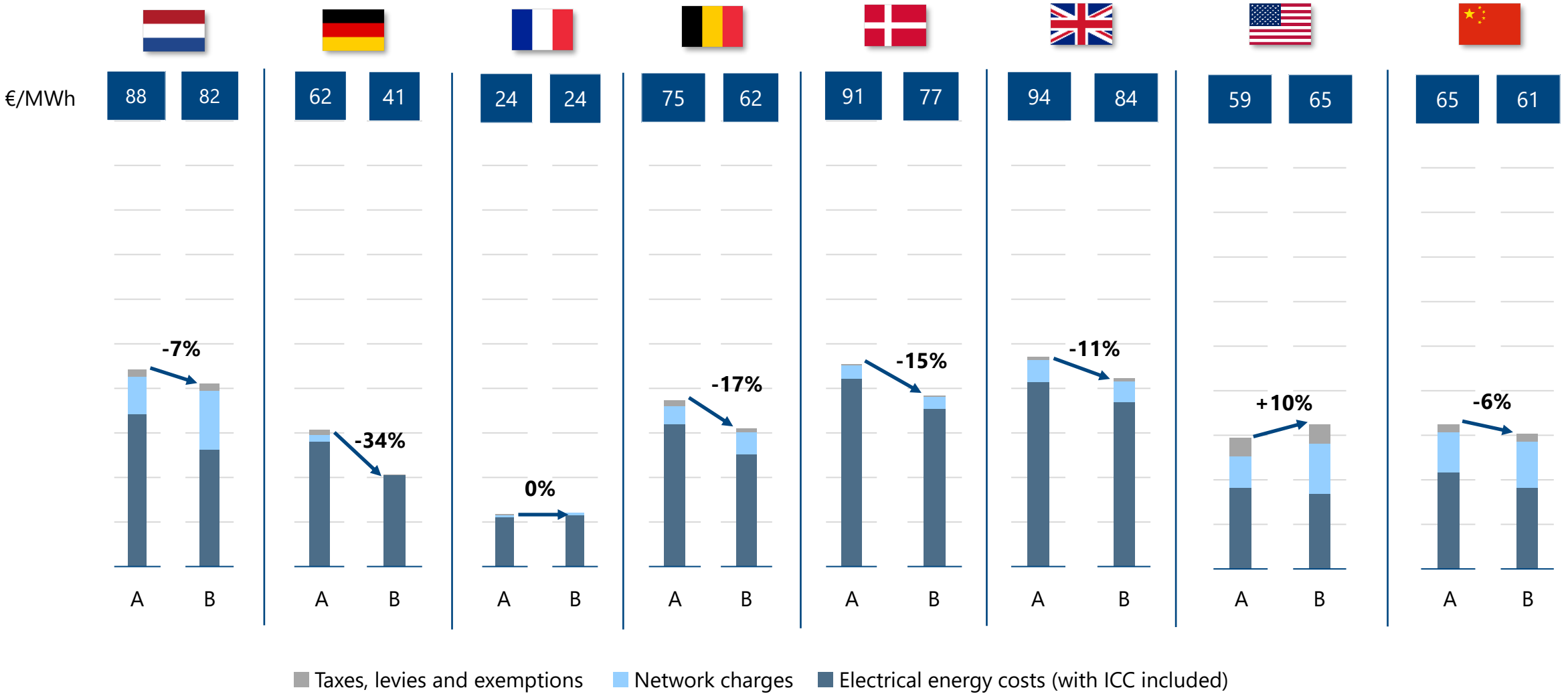
Network charges:

- The Netherlands, USA and China all have high network charges compared to the other countries. Belgium, Denmark and UK are in the medium range, while France has low network charges due to high discounts. Germany has a full discount of network charges for electrolysers.

Taxes, Levies, Fees:

- Taxes, levies and fees make for a minor portion of the effective electricity costs of baseload large industry in all of the assessed countries. Electrolysers in Germany benefit from a relief of taxes and all but one levy, while Electrolysers in France are fully exempt from taxes and levies.

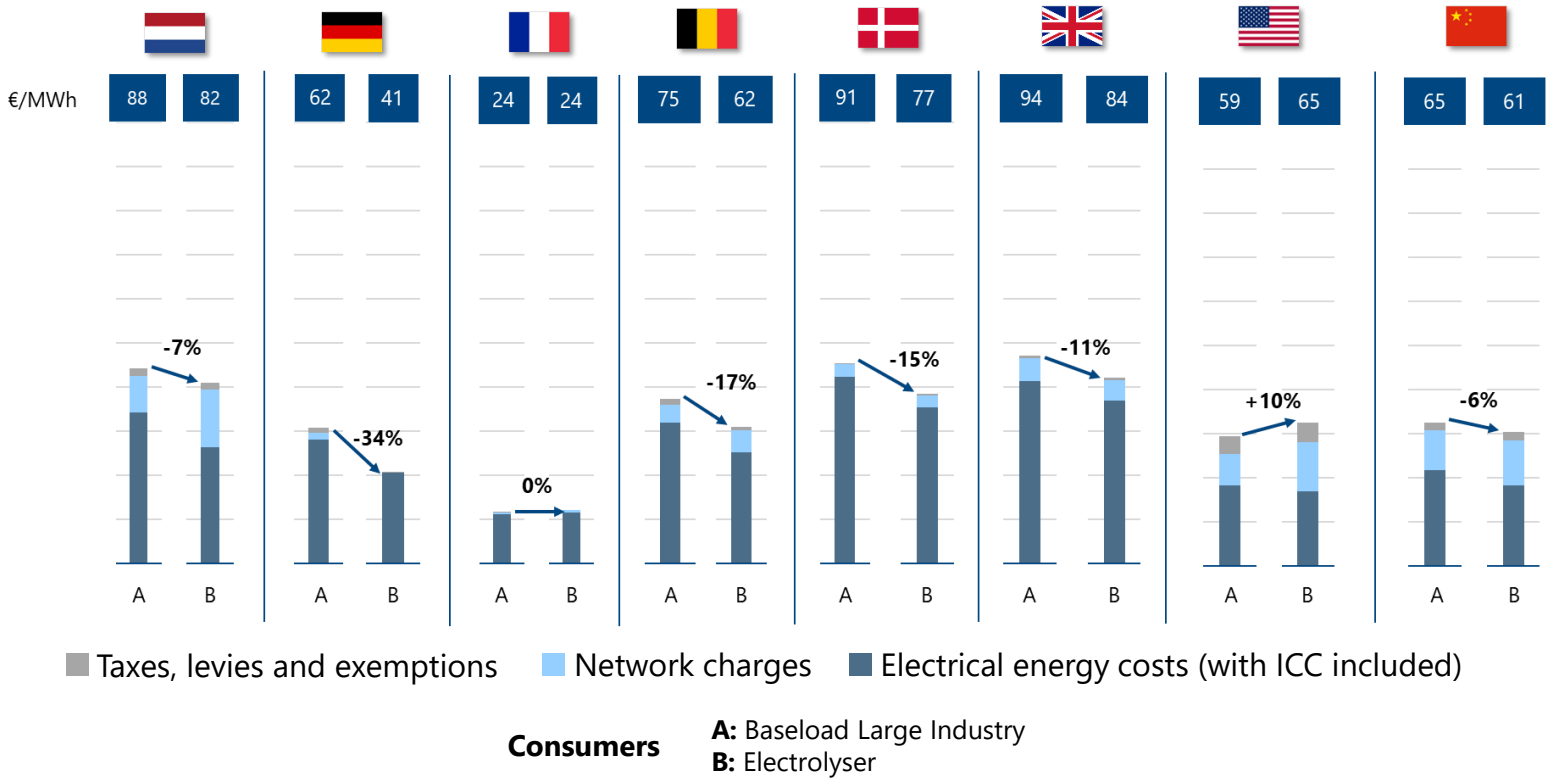
Comparison of effective electricity costs with indirect cost compensation in **2025** between **baseload large industry** and **electrolysers** (Profiles A & B)



Consumers

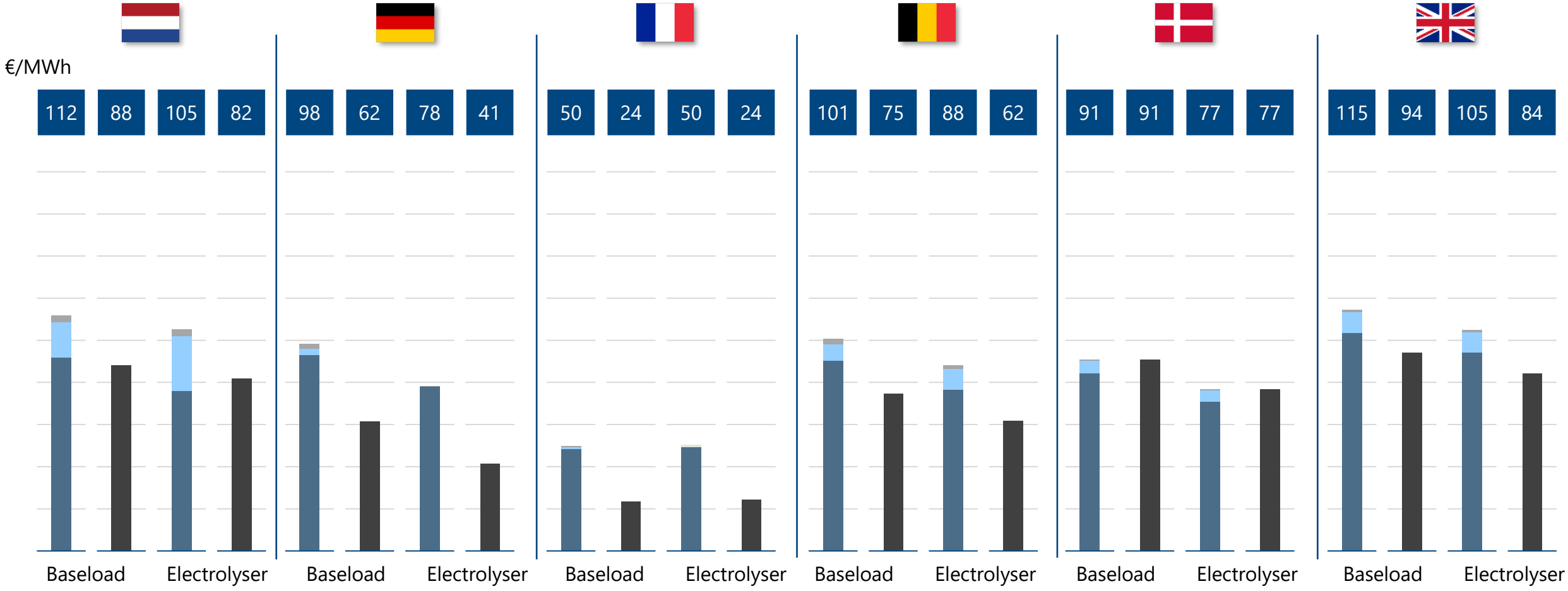
A: Baseload Large Industry
B: Electrolyser

The electricity costs for **electrolysers** are lower than for **large baseload consumers** in all European countries in **2025** (with CO_2 price compensation)



- **Electrolyser with cost advantage** against baseload large industry driven by commodity price reduction/optimization (except for France due to the ARENH scheme).
- **Electrolysers in the US pay 10% more compared to baseload consumers** due to higher network charges.
- **Largest advantage in Germany with 34%,** Belgium and Denmark also with high advantage.
- Electrolysers in **Germany benefit from further network charge, tax and levy reductions and exemptions**.
- Electrolysers in **France and Belgium benefit from further tax exemptions**.
- **Dutch electrolysers with comparably low advantage (7%)** due to higher network charges compared to baseload consumers.

Comparison of effective electricity costs with and without indirect cost compensation in **2025** between **baseload** and **electrolysers** (Profiles A & B)

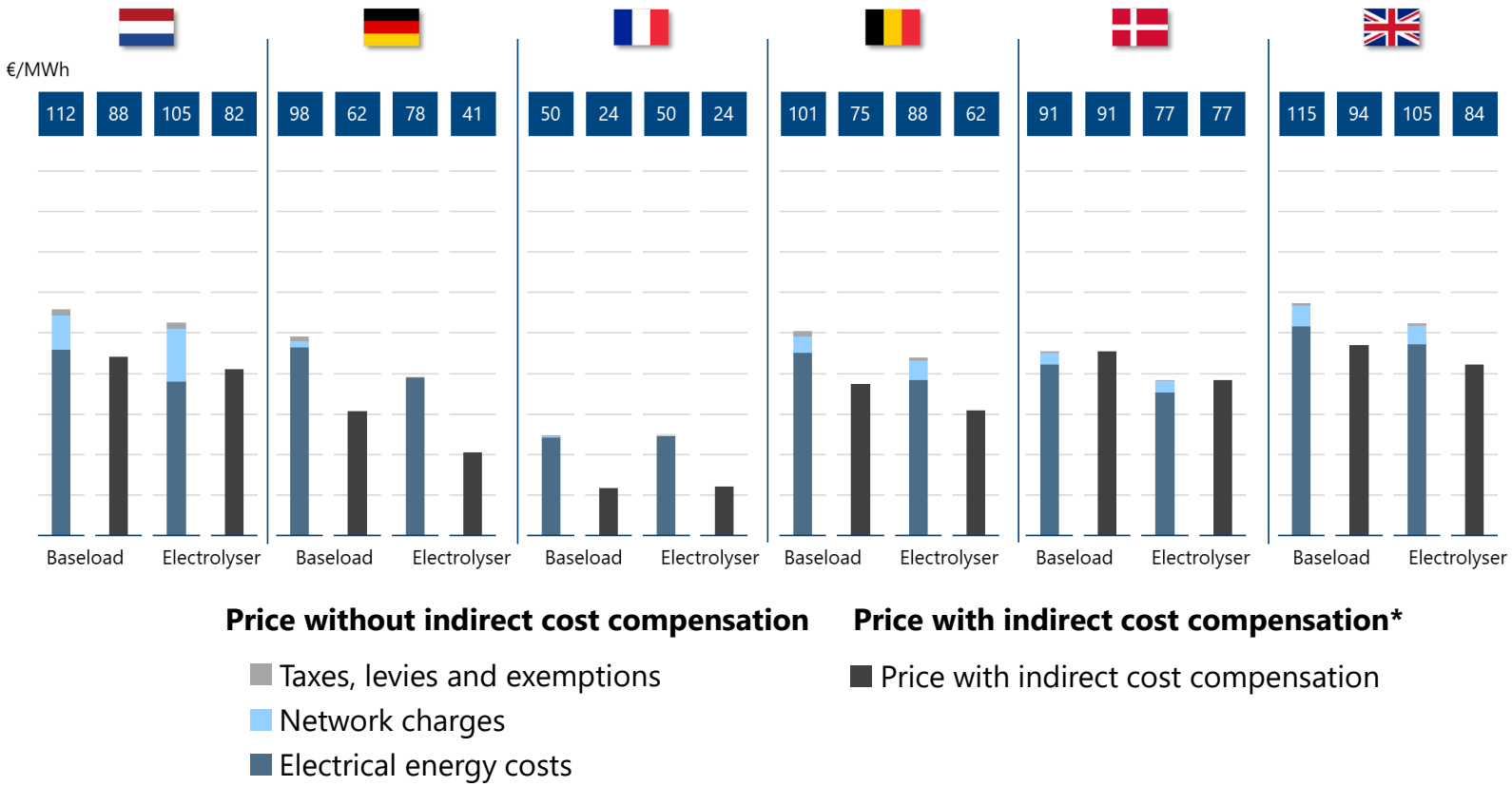


Price without indirect cost compensation
- Taxes, levies and exemptions
- Network charges
- Electrical energy costs

Price with indirect cost compensation*
- Price with indirect cost compensation

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

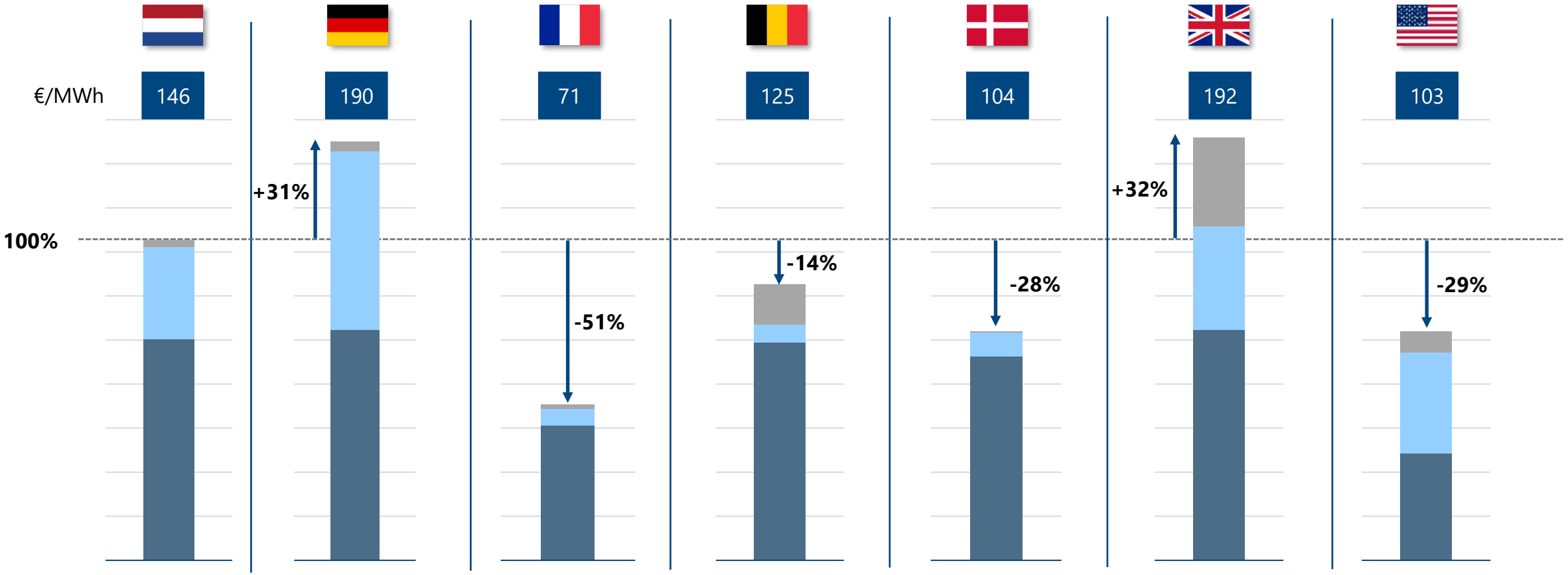
The electricity costs for **electrolysers** are lower than for **baseload large industry** in every European country **2025**



- **Dutch industry** baseload large industry and electrolysers have **significant cost disadvantage** compared to most of the other countries except UK and Denmark (for ICC applicable scetors) **– even with the reintroduced indirect cost compensation**
- While commodity cost components are at similar levels (except France, driven by ARENH scheme), the **largest cost differences** for the Netherlands emerge from **high network charges, discontinued network charge reductions** and **discontinued indirect cost compensation**.
- **Electrolysers** can achieve a **substantial cost reduction** in **Germany and Belgium** due to electrolyser-specific policy such as tax and network charge exemptions.
- Due to the **higher network charges Dutch electrolysers** gain **almost no cost advantage** over baseload large industry. This means in general that **being flexible has almost no** advantage in the Netherlands; **i.e. incentives are low to become flexible.**

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

Non-flexible medium industry (Profile C): **Effective electricity costs** in **2025**

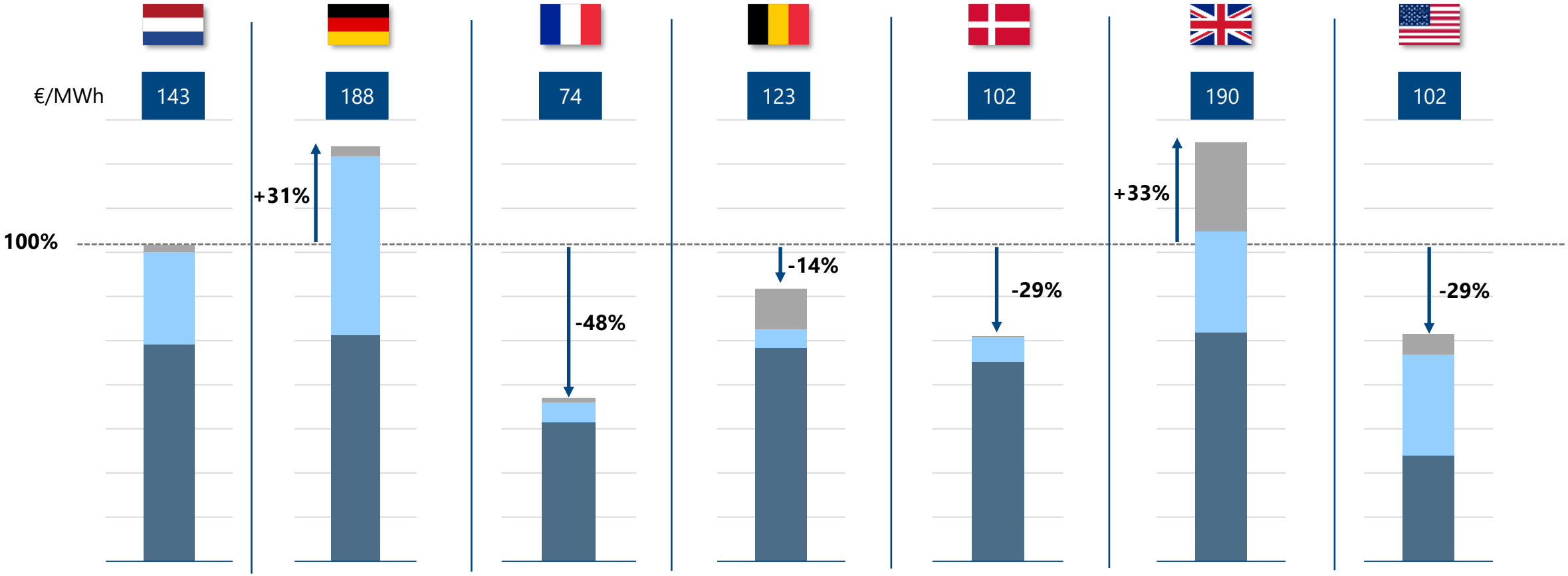


Non-flexible medium industry:
12 GWh/a, 6000 FLH
2 MW average load
4.5 MW contracted capacity

Taxes, levies, subsidies and exemptions
Network charges
Electrical energy costs

Percentage level: Difference compared to the Netherlands.

Flexible medium industry (Profile D): **Effective electricity costs** in **2025**



Flexible medium industry:
12 GWh/a, 4615 FLH
usual load 1.4 - 2.6 MW
4.5 MW contracted capacity

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

Percentage level: Difference compared to the Netherlands.

Germany and the UK have the highest effective electricity costs for the two consumer types on DSO level – consumers in the Netherlands pay 25% less

Non-flexible Medium Industry & Flexible Medium Industry

As the results for the two assessed consumers on DSO level are similar, the following analysis is valid for both.

For both medium sized industry consumers Germany and the UK have the highest effective electricity costs, driven by high network charges and high taxes, levies and fees. Consumers in the Netherlands pay around 25% less, mainly due to lower taxes and levies. Belgium and Denmark have comparable commodity cost as the three mentioned countries but like France as well low network charges, taxes and levies. France benefits additionally from low commodity costs due to the ARENH scheme, which leaves France with the lowest effective electricity costs. The commodity costs are the lowest in the US, but the network charges are on the same level as in the Netherlands and the UK leading to overall electricity costs on the same level as Denmark.

Commodity Cost:

- The commodity costs are similar in the Netherlands, Germany, Belgium, Denmark and UK, while France and the US have significantly lower commodity costs, with the US having the overall lowest of the countries.

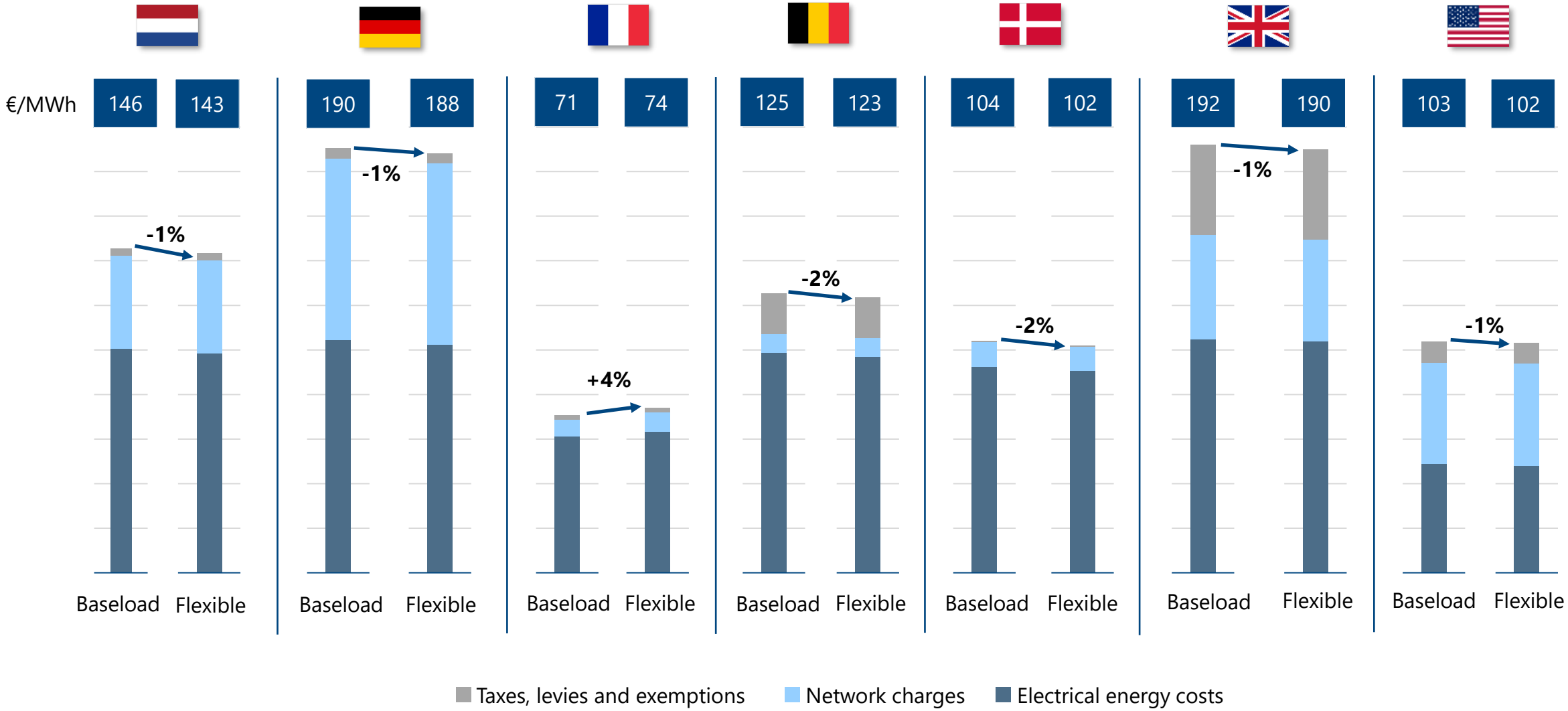
Network charges:

- Germany has by far the highest network charges followed by the Netherlands, the UK and the USA. France, Belgium and Denmark all have comparably low network charges.

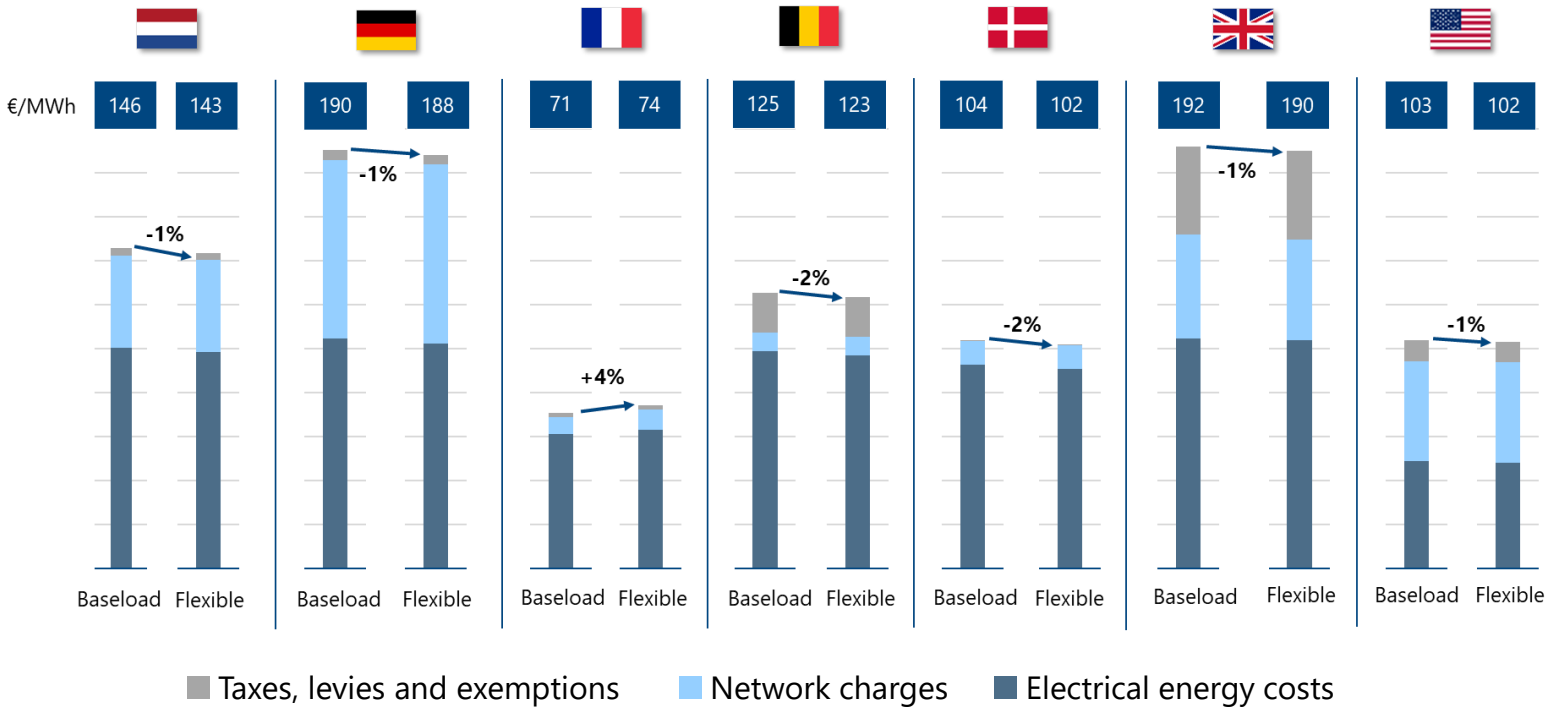
Taxes, Levies, Fees:

- Taxes, levies and fees make for a minor portion of the effective electricity costs in all countries but the UK.

Comparison of effective electricity costs in **2025** between **baseload** and **flexible medium industry consumers** (Profiles C & D)

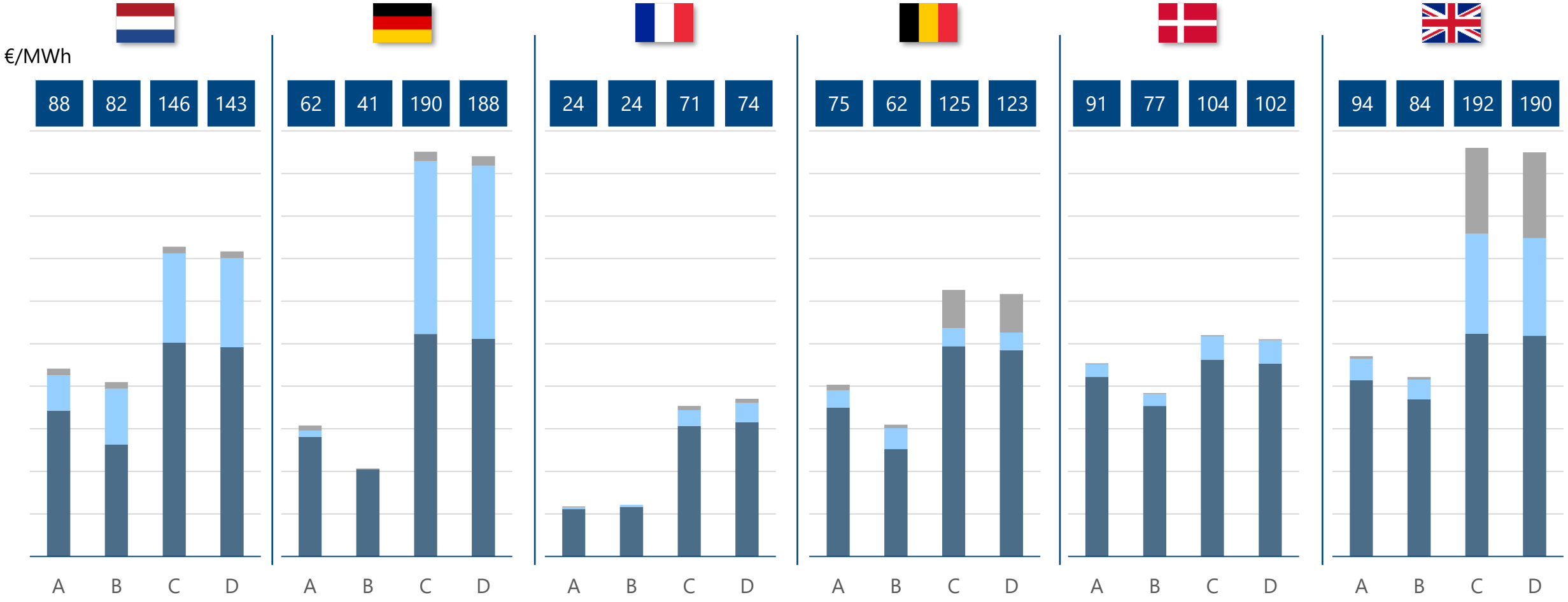


The electricity costs for **flexible medium industry** is **slightly lower** than for **non-flexible medium industry** in most of the countries with the exception of France



- Taxes, levies and network charges are **more or less on the same level for both consumers** in all of the countries, as for both consumers the same contracted capacity and peak load is assumed.
- The advantage of the flexible consumer is solely because of **lower commodity costs.**
- As the ARENH scheme rewards baseload behaviour this is not the case for France.

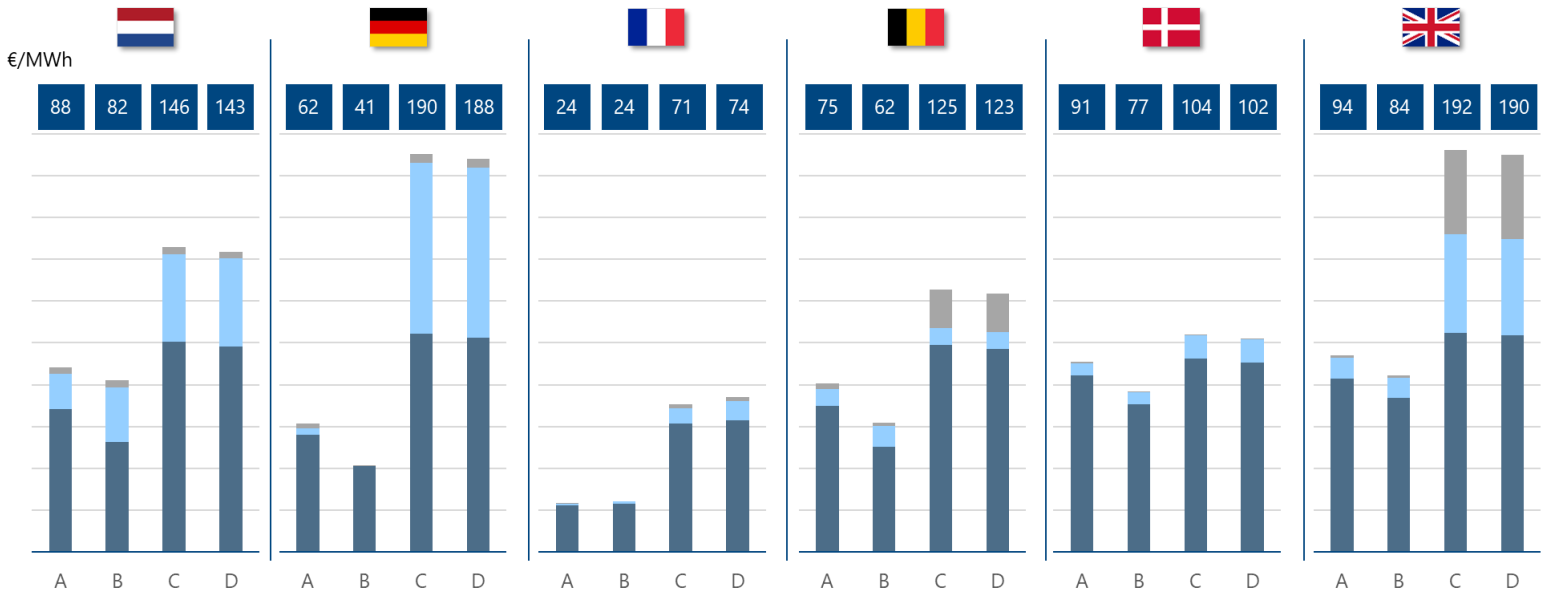
Comparison of effective electricity costs of all four consumers with indirect cost compensation in **2025**



Components of electricity cost
- Taxes, levies and exemptions
- Network charges
- Electrical energy costs (incl. ICC)

Consumers
A: Large Baseload Industry
B: Electrolyser
C: Medium Non-flexible Industry
D: Medium Flexible Industry

The comparison of all four consumers in the European countries shows significantly higher effective costs for smaller industry on DSO level



- Because the consumer on DSO level does not consume electricity on weekends where commodity costs are usually lower, the overall commodity costs are higher compared to the two consumers on TSO level.
- The ICC lowers commodity costs for large consumers additionally in the Netherlands, Germany, France, Belgium and the UK.
- The network charges are higher on DSO level than on TSO level.
- Because of lower consumption, full load hours and the assumed less critical sector the smaller consumers do not qualify for the same network charge, tax and levy reliefs which drives up network cost especially in Germany, Belgium and the UK.
- In the Netherlands, Germany, France and Denmark the taxes, levies and fees are comparable for all users.

Main drivers and conclusions of current electricity cost in 2025



- Germany has three different **levies and high network charges**. All these cost elements are largely reduced by **substantial reliefs** for large industrial consumers or **exemptions** for electrolysers.
- For smaller consumers with less full load hours the reliefs on network charges do not apply, leading them to have the highest effective electricity costs of all compared countries.
- A termination of these network charge reliefs for large consumers would result in Germany having the **highest electricity costs** for also for these consumers.
- The current network charge structure does not reward flexible behaviour.



- The high electricity costs in the Netherlands are driven by the **high network charges** and the **absence of reliefs/ exemptions for the network charges**
- The reintroduction of the **indirect cost compensation** lowers the effective electricity costs of the applicable large consumer **to the UKs level**.



- France has no levies and **low network charges** for baseload large industry and electrolysers. Electrolysers benefit additionally from **exemptions from energy tax**.
- Companies (especially baseload large industry) also currently benefit from **low commodity costs due to the ARENH scheme**.

Main drivers and conclusions of current electricity cost in 2025



- Electricity costs in Belgium are driven up by the **certification scheme** which is unique to Belgium, even though large consumers benefit from reductions there. A termination of these reductions would result in a significant cost increase.
- The **network charges are similar to France,** but in Belgium **no reduction** exists which drives up their network charges for large consumers comparison to France and also Germany.
- The medium size industry consumers on DSO level pay a comparable network charge to the industry on TSO level giving them a significant advantage over competitors in Germany, the Netherlands and the UK.



- Companies in Denmark can benefit from a huge discount on electricity tax, this together with the absence of levies leads to low cost compared to the other countries.
- The network charges in Denmark are similar to Belgium and France, although also in Denmark **no reduction** exists. For the medium sized industry, the network charges give an advantage over competitors in Germany, the Netherlands and the UK.



- Commodity costs in the UK are higher than in the other European countries. Companies from applicable sectors (same as for the other European countries) can benefit from an indirect cost compensation scheme, but the thresholds are high.
- Network charges are the second highest among the European countries under comparison, while taxes and levies are the highest. The combined costs of these components are almost equal to the commodity costs, as is the case in Germany. However, electro-intensive consumers benefit from significant reductions in these costs.

Main drivers and conclusions of current electricity cost in 2025



- In the USA, as there is **no federal levy** on electricity and **state taxes are low** (5.9 % GRT); thus, commodity and network charges, not levies, dominate baseload costs.
- In the PJM zone, a bigger instantaneous peak almost always dominates the economics, therefore if an electrolyser ever hits the PJM “coincident-peak” (CP) hours at full load, its per-MWh bill climbs instead of falls.



- **Levies and renewables surcharges are lower in China** than in the investigated European countries, and **transmission charges are cushioned by demand-based rebates**; cancelling these province-specific reliefs would lift industrial power costs sharply.
- Although, provinces publish headline tariffs, the prices large users actually negotiate – and the extra incentives local governments grant to “strategic” electrolyser projects – are **rarely disclosed**, making China’s industrial electricity costs hard to benchmark.

Agenda

1 Background and objective of the study

2 Management Summary

3 Quantification of electricity cost components for 2025

4 Outlook and country comparison for 2030

4.1 Policy trends and assumptions until 2030

4.2 Country comparison 2030

4.3 Comparison of 2025 and 2030

5 Annex

Chapter 4 contains an outlook on the future development of the effective electricity cost of the assessed consumers

- In **Chapter 4.1** an analysis of the current trends and published studies on the development of the network charges, taxes, levies and fees is conducted to derive assumptions for the 2030 network charges, taxes, levies and fees.
- In **Chapter 4.2** the assumed future development is applied on the current values for all user profiles. With these values a comparison of the assumed electricity cost in each country is conducted.
- In **Chapter 4.3** the 2030 values are compared to the 2025 values from chapter 3 to analyse the expected trend in each country for the upcoming years.

4.1

Policy trends and assumptions until 2030

4.2

Country comparison 2030

4.3

Comparison of 2025 and 2030

Agenda

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4.2 Country comparison 2030

4.3 Comparison of 2025 and 2030

5 Annex

Methodology to derive development of effective electricity prices for 2030*

Commodity costs

- Commodity cost are derived from power wholesale markets for the relevant consumer profiles
- Future price quotes as published and determined by the relevant power future exchanges (EEX) for the period 01.01. - 31.12.2030 (June 2025) have been used adjusted with the respective profile factor for the selected consumer profiles.

Network charges

- The expected future network charges are derived based on either:
  - The change of costs (investment and operation) until 2030 including the expected increase in electricity demand compared to today
  - Published studies on the grid tariff developments by the grid operators
  - Published network charges for the upcoming years (e.g. in Belgium). If the increase in this published charges is higher than the estimated costs increase, these published charges are used.
- For simplicity, it is assumed that the development of DSO network charges is equal to that of TSO network charges unless a forecast study states otherwise. As DSOs typically operate at multiple grid levels, deriving the development from future investment numbers would be complex and exceed the scope of this study.

Taxes, levies, fees and exemptions

- The expected future taxes, levies, fees and exemptions are derived based on the trend over the past years or announced policy decisions.



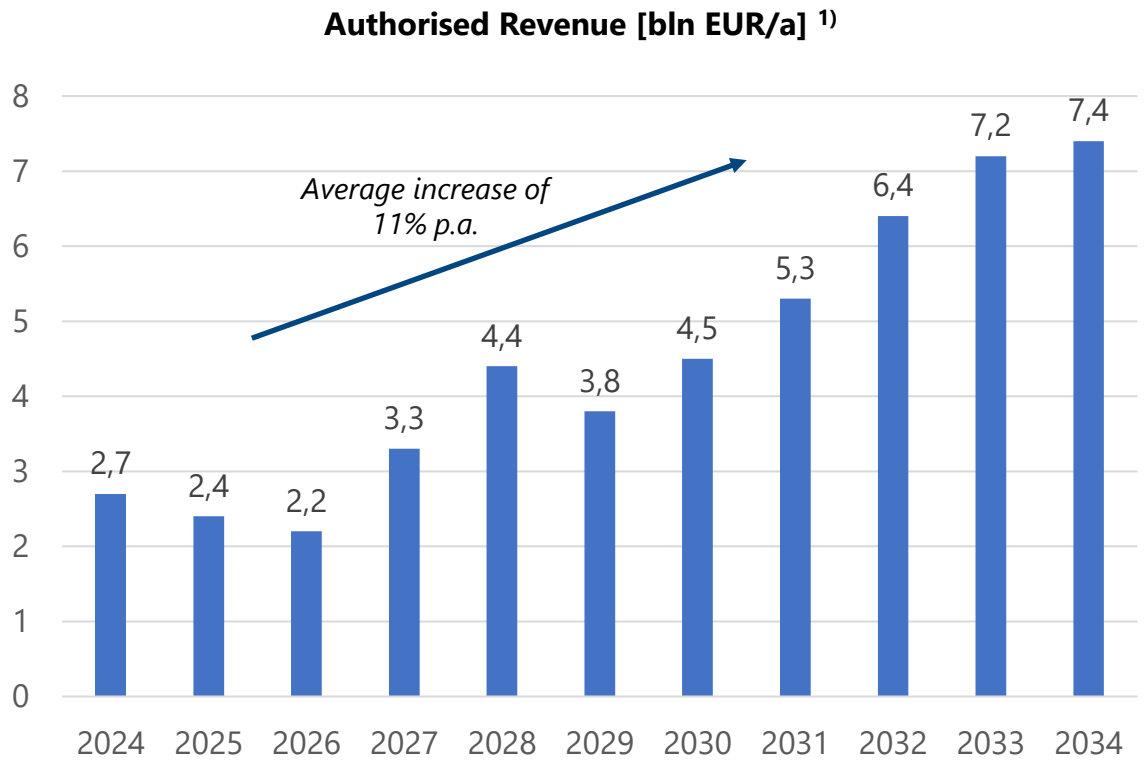
**Due to the high level of uncertainty, we cannot provide precise predictions, but rather supply a high-level assessment to derive an indication of a possible future development*

Netherlands: Outlook 2030 – expected changes of network charges

Network charges

- In the 10-year tariff forecast, TenneT forecasts the grid costs to rise by an average of 11% per year.
- The tariffs will increase to a lesser degree.
- For EHS (220-380 kV) grid tariffs a yearly increase of 4.7% per year is forecasted, **resulting in a 26% increase** from 2025 to 2030.

- DSO: A study commissioned by Netbeheer Nederland assumes a compound annual growth rate (CAGR) of 4.8% for consumers in the Dutch high-voltage grid until 2040. This would result in an approximate **26% increase in grid tariffs** between 2025 and 2030.



1) TenneT ten-year tariff forecast

Netherlands: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Taxes, levies, subsidies and exemptions in 2030

Electricity tax:

- The energy tax is determined every year with a sharp increase in the last three years (currently at 3.21 EUR/MWh). Before 2023 the tax was stable at around 0.55 EUR/MWh.
  → Expected to increase further but not above **7 EUR/MWh (+ 56% from 2025).**

Levies & Fees:

- As the Netherlands abolished levies in the past years, it is not expected that they will introduce new levies.

Exemptions:

- The energy tax reduction is determined newly every year; as the government sees a certain use of energy as basic need an abolishment of this relief is not expected.
  → With decreasing commodity cost, the tax reduction is expected to decrease as well to estimated **500 EUR/a (- 5% from 2025).**

Indirect cost compensation

- The Dutch indirect cost compensation scheme was only planned and approved by the EU for the period from 2021 to 2025 (source). It was prolonged to 2027 in July 2025.
- Currently there would be no indirect cost compensation in place in 2030 (with the last payments made in 2028).
- As the further extension of the compensation is currently discussed, an estimation of the compensation rate will be included in this study.

- Certificate Prices for 2030: **84 EUR/tCO_2** (Source, 16. July 2025)
- Fallback efficiency benchmark: **0.726** (yearly reduction by 1.09% starting from 0.8 in 2021)
- For the aid intensity it is assumed, that it will remain at 75%.
- As the CO_2 emission factor is already low compared to the other countries it is estimated to decrease only slightly to 0.43-0.44 tCO_2/MWh

→ Resulting in compensation of approx. **20 EUR/MWh (- 9%)**

Germany: Outlook 2030 – expected changes of network charges

Network charges

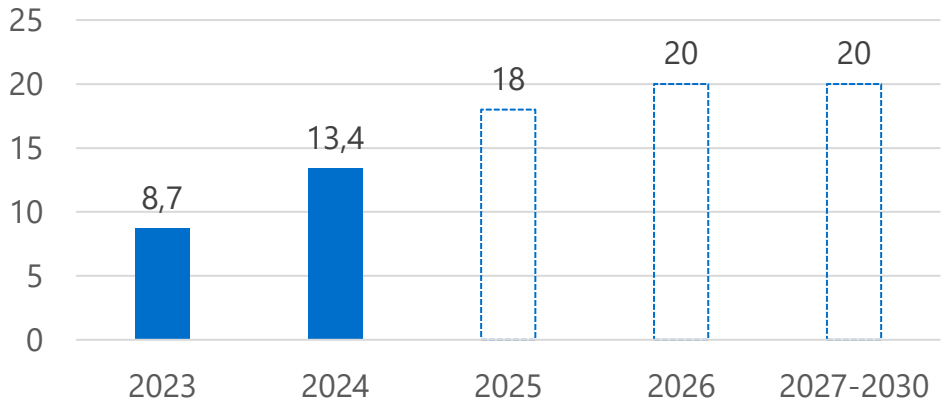
Network charges:

- According to NEP 2023 the investments in the transmission grid amount to approx. 272 bln EUR until 2037 (Onshore: 156 bln. EUR, Offshore 116 bln. EUR). Assuming an increase of investment cost at the rate of 2023 to 2024 this amounts to yearly investment cost of approx. 20 bln. EUR from 2026 onwards, which equals an increase of 50% compared to 2024.
- While costs of system services and losses are expected to remain rather stable, congestion management costs increase in the coming years until 2027 (20% increase) and are expected to remain stable afterwards.
- Congestion costs account for over 50% of the network charges (Source). With investments increasing by 50% and congestion management cost by 20%, the overall cost increase is estimated at 35% until 2030.
- This 35% increase is distributed over 15% more demand (462 TWh to 530 TWh), leading to an **estimated increase per MWh of 17% from 2025 to 2030.**

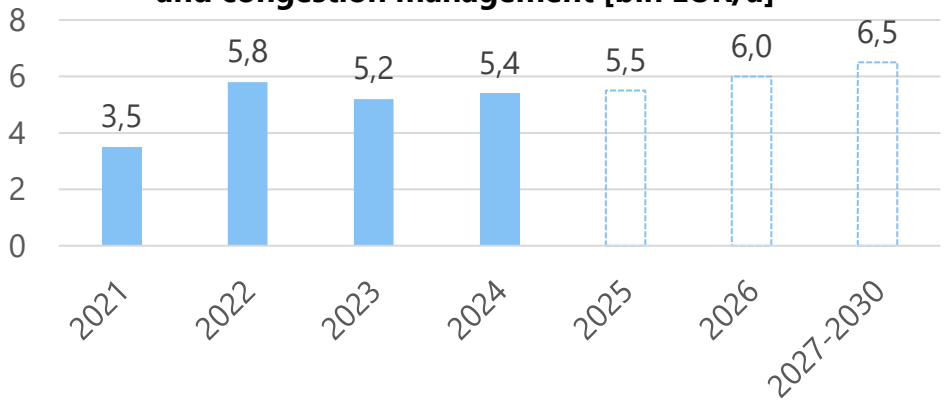
Exemptions:

- The regulator plans to end individual network charges for large baseload consumers in 2026. However, it is assumed that a transitional phase will be introduced until at least 2030, in which exemptions in a comparable height are granted.

Total annual investment costs [bln EUR/a] 1)



Costs for system services, losses and congestion management [bln EUR/a] 2)



1) 2023/2024: Monitoringbericht, Forecast: NEP 2023;
2) 2021-23: Monitoringbericht BNetzA (and previous versions), Forecast: TSO Redispatch Prognosis

* Disclaimer: Network charge projections based on rough estimation

Germany: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Taxes, levies, subsidies and exemptions in 2030

Electricity tax:
- The current reduction to **0.50 EUR/MWh** for companies only applies for 2024 and 2025 under current regulation.
- New government has announced its plan to keep electricity tax at this level.

CHP levy:
- The CHP levy remained stable around **3 EUR/MWh** in the last years and is expected to stay stable around this value in the future **(+10% from 2025).**

Offshore levy:
- The offshore levy increased in the last years and is expected to increase further to around **12 EUR/MWh (+47% % from 2025)** (further increase due to rising investment costs).

Surcharge for special grid usage:
- A surcharge for special grid usage applies to the first GWh of consumption.
- The surcharge increased sharply in the last years and is expected to follow the trend and increase further to around **25 EUR/MWh (+ 60% % from 2025)**.
- As the surcharge is 0.5 EUR/MWh for consumption above 1 GWh, increase of the surcharge for the consumption below is not relevant for the assessed data center profile with a consumption of 4 TWh. The resulting amount of the surcharge in EUR/MWh is still approx. 0.5 EUR/MWh.

Concession fee:
- No changes are expected for the concession fee, the value of **1.10 EUR/MWh (+ 0% % from 2025)** is fixed.

Exemptions:
- No changes are expected regarding the relief on the CHP and offshore levy and the concession fee.

Germany: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Indirect cost compensation

- Certificate Prices for 2030: **84 EUR/tCO_2** (Source, 16. July 2025)
- Fallback efficiency benchmark: **0.726** (yearly reduction by 1.09% starting from 0.8 in 2021)
- For the aid intensity it is assumed, that it will remain at 75%.
- CO_2 emission factor estimated to decrease with the revision in 2025
  - For Germany, the factor equals the weighted average of CO_2 emissions of fossil energy production.
  - The assumed value for 2030 is calculated by calculating the weighted average of CO_2 emissions from fossil energy generation (see s. 14) using the CO_2 emission values mentioned in this source. For gas and bio, it is assumed that the emission factor corresponds to the factor for CCGTs.

  → Assumption for CO_2 emission factor: **0.63 tCO2/MWh**

→ Resulting in compensation of:
84 EUR/tCO_2 * 0.63 tCO_2/MWh * 0.75 * 0.726 = **28.81 EUR/MWh (- 22%)**

France: Outlook 2030 – expected changes of network charges

Network charges

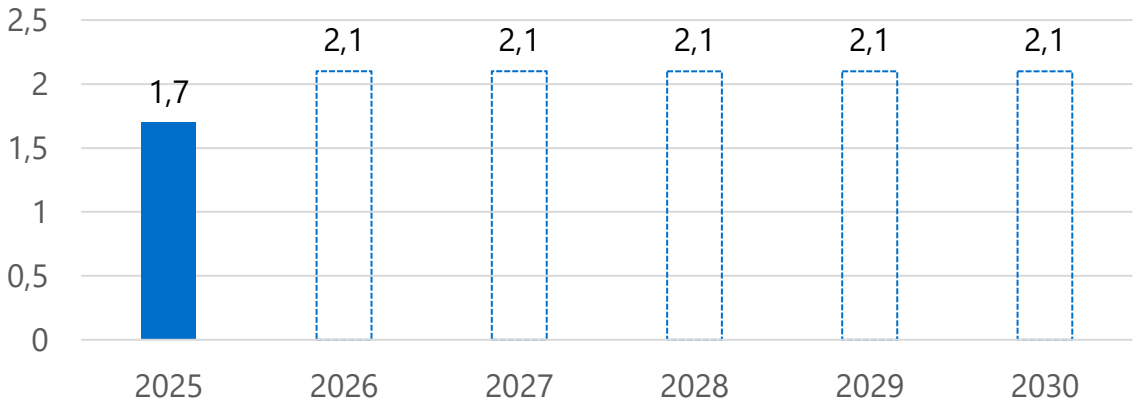
Network charges:

- The added investment and congestion management cost increase by 25% from 2 to 2,5 bln. EUR. These additional cost get distributed onto 15% more demand (425 to 487 TWh). Leading to a **network charge increase of approx. 10% until 2030.**

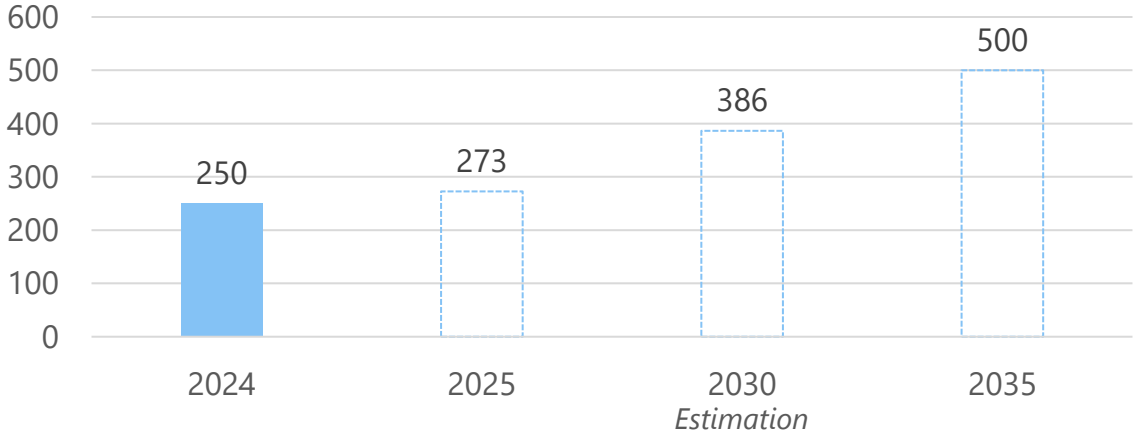
Exemptions:

- No changes of the regulation of network charge reductions are expected.

Total estimated investments costs [bln EUR/a] 1)



Costs for congestion management [mio EUR/a] 2)



1) Source: RTE (p. 47); 2) SDDR

* Disclaimer: Network charge projections based on rough estimation

France: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Taxes, levies, subsidies and exemptions in 2030

Electricity tax:

- No further changes on the energy tax regulation are expected as of now.

ARENH:

- The ARENH scheme will expire at the end of 2025 and be replaced by a new scheme, the VNU (Versement du Nucléaire Universel).
- Within the VNU exceeding revenues above the regulated total cost of nuclear energy generation will be taxed.
- The exact threshold over which exceeding revenues from nuclear energy generation will be taxed is currently not known. Initial estimates predict it will be **around 70-80 EUR/MWh** (Source 1, Source 2).
- As those levels are in the range of currently assumed commodity cost for the selected user profiles, we assume that the VNU scheme will have a neglectable impact on the commodity costs in France in 2030.

Indirect cost compensation

Indirect cost compensation:

- Certificate Prices for 2030: **84 EUR/tCO_2** (Source, 16. July 2025)
- Fallback efficiency benchmark: 0.726 (yearly reduction by 1.09% starting from 0.8 in 2021)
- CO_2 emission factor estimated to decrease with the revision in 2025
  - For France the factor equals the weighted average of CO_2 emissions of the price setting (marginal) power plants
  - Estimation of future marginal power plants and their share not possible
  - Price was set by energy imports in 28% of the time in 2021*, no significant changes are assumed until 2024/25 when the new factor is calculated
  - Due to the decrease of the factor in Germany from 0.72 to 0.63 an equivalent decrease in France is assumed: 0.28 * 0.09 = 0.03
  - → Assumption: (0.51 - 0.03) tCO_2/MWh = **0.48 tCO_2/MWh**

→84 EUR/tCO_2 * 0.48 tCO_2/MWh * 0.75 * 0.726 = **21.95 EUR/MWh (- 16%)**

* Source: Approval France

Belgium: Outlook 2030 – expected changes of network charges

Network charges

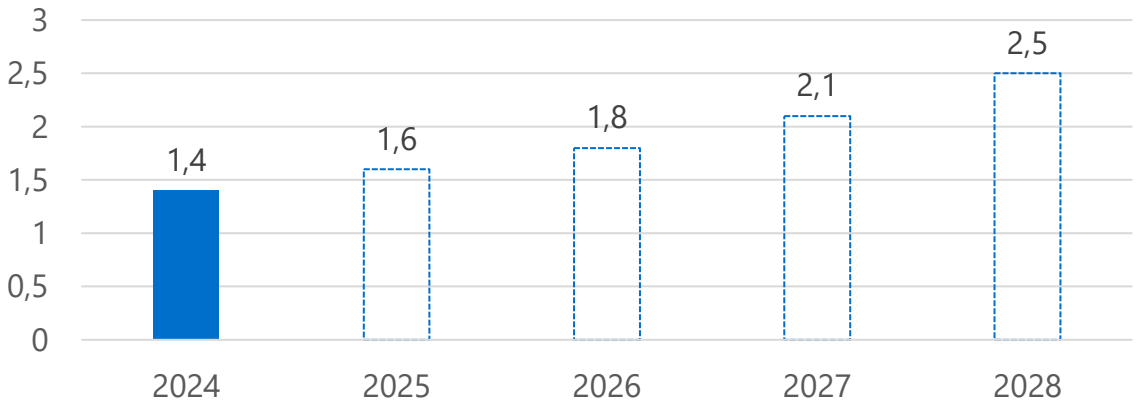
Network charges:

- After having stable to slightly decreasing tariffs from 2020 to 2024, the tariffs increase sharply from 2024 to 2025 and then further to 2027 (see ELIA). This is in order to finance the ambitious investment program.
- The 2027 network charges amount to **8.70 EUR/MWh for the baseload large industry (+9%) and 11.10 EUR/MWh for the electrolyser (+13%)**.
- **No further increase after 2027 is assumed**, as the increase happening between 2024 and 2027 of more than 100% exceeds the expected increase of cost of approx. 80%.
- For the DSO network charges a 10% increase is assumed, similar to the Baseload large industry consumer.

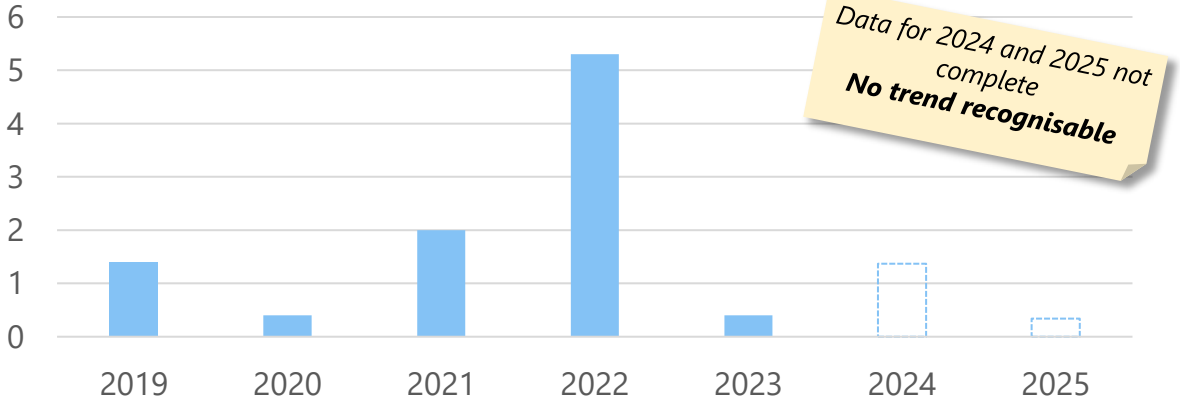
Exemptions:

- No changes of the regulation of network charge reductions are expected.

Total investments cost [bln EUR/a] 1)



Costs for system services, losses and congestion management [bln EUR/a] 2)



1) Source: ELIA (p. 18); 2) ELIA Opendata

* Disclaimer: Network charge projections based on ELIA

Belgium: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Taxes, levies, subsidies and exemptions in 2030

Electricity tax:

- The special excise duty was introduced on 01/01/2022 to replace federal contribution and surcharges stated under transmission costs, no new changes are expected.

Levies & Fees :

- Besides the updates done during regulatory period in line with the underlying regulations and tariff methodology, no major changes are expected.

Levy Flanders: expected to remain stable around to **0,5 EUR/MWh**

Certificate scheme in 2030

Quotas:

- Starting from 18% in 2024, the quota for Green Certificates will decrease yearly until it reaches 9% in 2030.
- The CHCPs quota is set to increase from 11,2% in 2024 to 14% in 2025 and then remains stable until 2030.

Certificate Prices:

As certificate prices in Elia´s auction don't follow any trend in the past years, but stay remain quite stable, it is assumed that these prices will also remain stable in the future at around the current prices:

- Green Certificate: **97 EUR/MWh**; Cogeneration: **21 EUR/MWh**

Belgium: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Indirect cost compensation

- Certificate Prices for 2030: **84 EUR/tCO_2** (Source, 16. July 2025)
- Fallback efficiency benchmark: 0.726 (yearly reduction by 1.09% starting from 0.8 in 2021)
- CO_2 emission factor estimated to decrease with the revision in 2025
  - For Belgium the factor equals the weighted average of CO_2 emissions of the price setting (marginal) power plants
  - Estimation of future marginal power plants and their share not possible
  - Price was set by energy imports in 80% of the time in 2019*, no significant changes are assumed until 2024/25 when the new factor is calculated
  - Due to the decrease of the factor in Germany from 0.72 to 0.63 an equivalent decrease in Belgium is assumed: 0.8 * 0.09 = 0.07

  → Assumption: (0.51 - 0.07) tCO_2/MWh = 0.44 tCO_2/MWh

→ 84 EUR/tCO_2 * 0.44 tCO_2/MWh * 0.75 * 0.726 = **20.12 EUR/MWh (- 23%)**

* Source: Approval Belgium

Denmark: Outlook 2030 – expected changes of network charges

Network charges

Network charges:

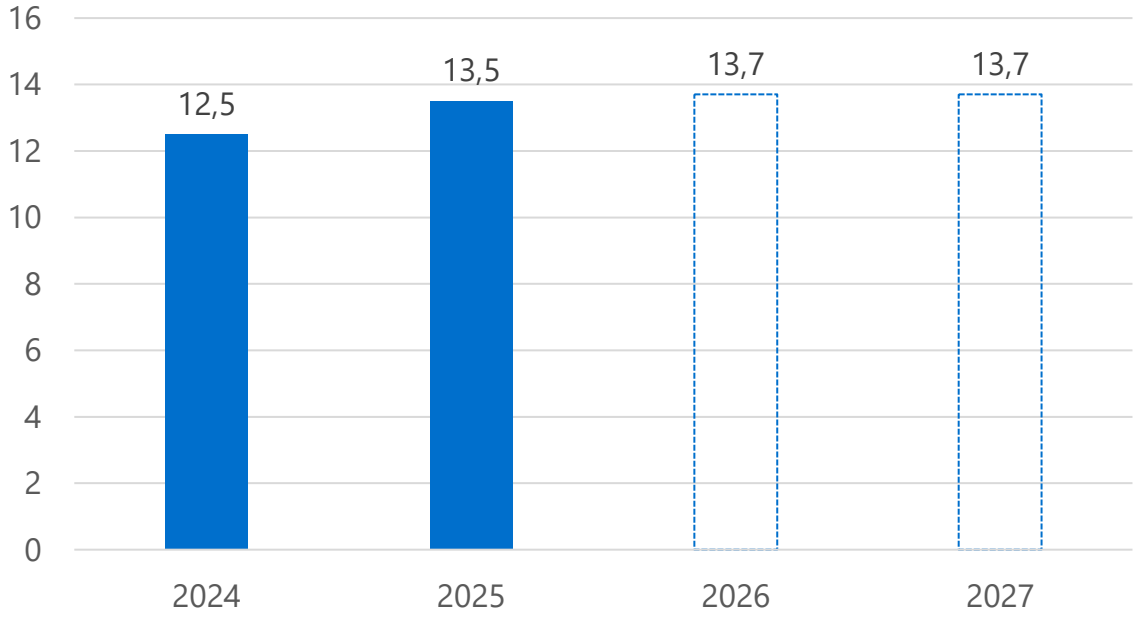
- Energinet plans to change the grid tariff structure from fully consumption-based tariffs to a mixture of consumption- and capacity-based tariffs (Source). As detailed information about the new tariff structure is not currently available, its impact cannot be considered in this study.

- In its Grid Tariff Forecast for 2025-2027, Energinet.dk forecasts that grid tariffs will only increase by 1.5% between 2025 and 2027. With this trend, grid tariffs would **increase by 4%** between 2025 and 2030. As no other data is available, this increase has been assumed for the purposes of this study.

Exemptions:

- No changes of the regulation of network charge reductions are expected.

Tariff projection for nominal electricity consumption tariffs 2024-2027 [øre/kWh] 1)



1) Source: Energinet

Denmark: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Taxes, levies, subsidies and exemptions in 2030

Electricity tax:

- The consumers assessed in this study are all eligible for the reduced tax rate of 0.54 EUR/MWh (0.4 øre per kWh), which is fixed in the regulation. Therefore, no changes are expected.

United Kingdom: Outlook 2030 – expected changes of network charges

Network charges

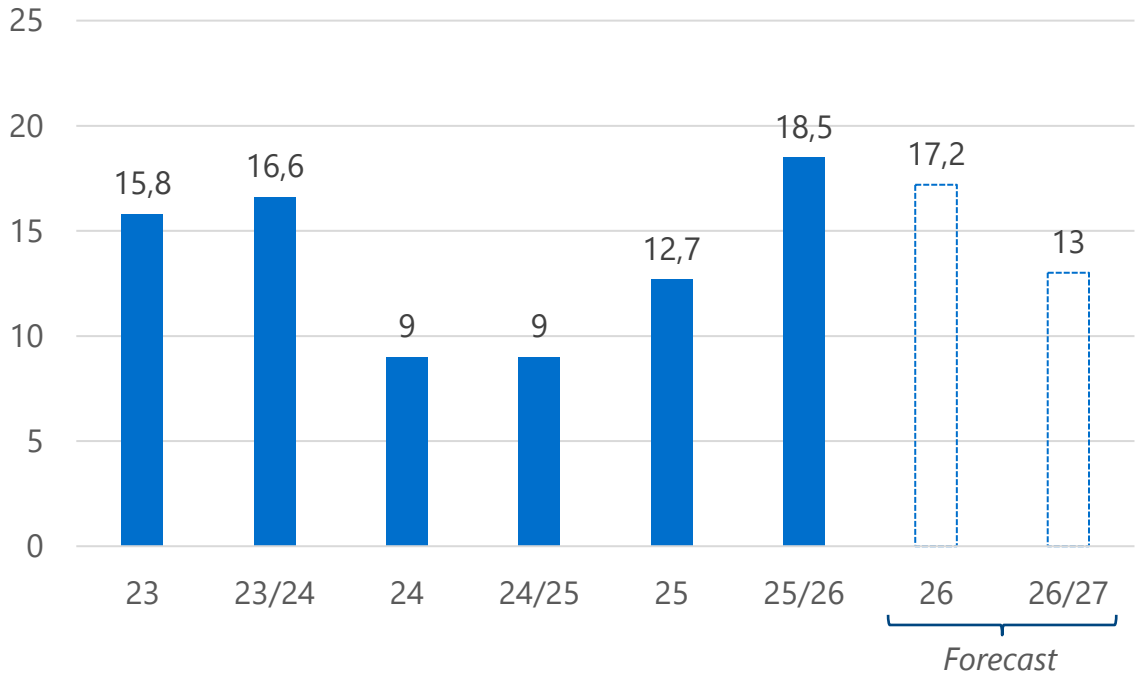
Network charges:

- In its TNUoS Tariffs Five Year View for 2025/26 – 2029/30 NESO forecasts the Half hourly demand tariffs and the non-locational demand residual charges relevant for the large consumers assessed in this study to **increase by 14%** from 2025 to 2030.
- For the DSO network charge components also an increase of 14% is assumed.
- The Balancing Services Use of System (BSUoS) charges fluctuated in the last and already forecasted future years. As no forecast for the period after 26/27 exists and no trend is recognizable, the average value of the charges in the diagram on the right is assumed for 2030. **This amounts to approx. 14 EUR/MWh (-24%)**

Exemptions:

- No changes of the regulation of network charge reductions are expected.

Balancing Services Use of System (BSUoS) charges [EUR/MWh] 1)



1) Source: NESO

United Kingdom: Outlook 2030 – expected changes of taxes, levies, subsidies and exemptions

Taxes, levies, subsidies and exemptions in 2030

Climate change levy:

- The climate change levy as well as its reduction rate have been the same for the past 5 years (Source). Therefore, it is assumed that it will be the same in 2030 as well.

Renewables obligation:

- Since its introduction the Buy-out-price of the RO has increased steadily. On average around 3.8 EUR/MWh in the last five years (Source). Assuming this trend continues the buy-out-price will increase from 79 EUR/MWh today to **98 EUR/MWh** in 2030. The obligation has been stable between 0.468 and 0.493 in the last years. Following the trend of slight increases in the last two years it is assumed to around **0.5** in 2030. The exemption for energy-intensive industry is expected to remain in place.

Assistance for High Distribution Costs (AAHEDC):

- The AAHEDC has been increasing slightly in the last 5 years from 0.48 EUR/MWh to 0.5 EUR/MWh in 2024 before decreasing to 0.49 EUR/MWh in 2025 (Source). It is assumed to remain at this level around **0.5 EUR/MWh** in 2030.

Indirect cost compensation

Indirect cost compensation:

- The indirect cost compensation scheme in the UK is assumed to still be in place 2030, although no official information on the planned duration of the program can be found.
- Also no indication on the futures of the ETS allowances for 2030 could be found.
- It is therefore assumed, that the increase of ETS costs will match the decrease of the CO_2-factor and that the compensation will therefore **remain at today's level of around 20.5 EUR/MWh.**

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Summary projection of development of taxes, levies, network charges* and indirect cost compensation until 2030 for all countries** – baseload large industry (Profile A)








Component	2025	2030	2025	2030	2025	2030	2025	2030	2025	2030	2025	2030
Taxes, levies and fees	3.21	7.00	2.41	3.00	0.50	0.50	2.70	2.60	0.54	0.54	1.22	1.20
Network charges	16.60	20.90	2.93	3.40	0.78	0.90	7.99	8.70	5.78	6.00	10.12	8.70
Commodity prices	91.82	70.00	93.07	71.10	48.39	72.20	90.16	69.80	84.47	72.40	103.34	80.60
Resulting	**112.70**	**97.90**	**98.41**	**77.50**	**49.68**	**73.60**	**100.85**	**81.10**	**90.79**	**79.00**	**114.68**	**90.50**
Indirect Cost compensation	-23.32	-20.00	-36.87	-28.80	-26.16	-22.00	-26.16	-20.10	-0.00	-0.00	-20.52	-20.50
Resulting	**88.30**	**77.90**	**61.54**	**48.70**	**23.52**	**51.60**	**74.68**	**61.00**	**90.79**	**79.00**	**94.16**	**70.00**

E-Bridge competence in energy

* Disclaimer: Network charge projections based on rough estimation

** All values are in EUR/MWh

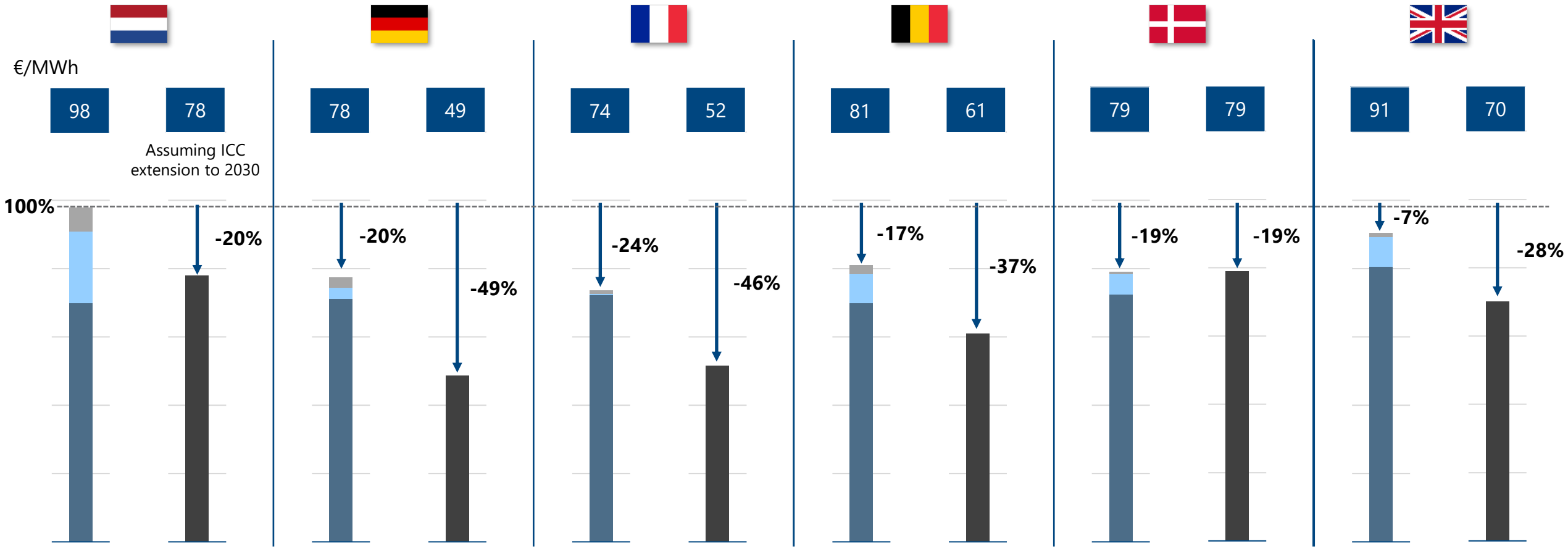
Summary projection of development of taxes, levies, network charges* and indirect cost compensation until 2030 for all countries** – Electrolyser (Profile B)

												
Component	**2025**	**2030**	**2025**	**2030**	**2025**	**2030**	**2025**	**2030**	**2025**	**2030**	**2025**	**2030**
Taxes, levies and fees	3.21	7.00	0.26	0.30	0.00	0.00	1.67	1.60	0.54	0.54	1.22	1.20
Network charges	26.22	33.00	0.00	0.00	1.07	1.20	9.81	11.10	5.56	5.80	9.33	7.80
Commodity prices	75.87	57.90	77.95	59.50	49.35	59.90	76.61	58.30	70.73	60.60	94.34	73.60
Resulting	**108.41**	**97.90**	**78.21**	**59.80**	**50.42**	**61.10**	**88.09**	**71.00**	**76.83**	**66.90**	**104.89**	**82.60**
Indirect Cost compensation	-23.32	-20.00	-36.87	-28.80	-26.16	-22.00	-26.16	-20.10	-0.00	-0.00	-20.52	-20.50
Resulting	**81.97**	**77.90**	**41.33**	**30.40**	**24.26**	**39.10**	**61.93**	**50.90**	**76.83**	**66.90**	**84.38**	**62.10**

* Disclaimer: Network charge projections based on rough estimation

** All values are in EUR/MWh

Baseload large industry (Profile A): **Effective electricity costs** with and w/o indirect cost compensation in **2030**



Baseload large industry:
1 TWh/a, 8000 FLH
125 MW capacity

Price without indirect cost compensation

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

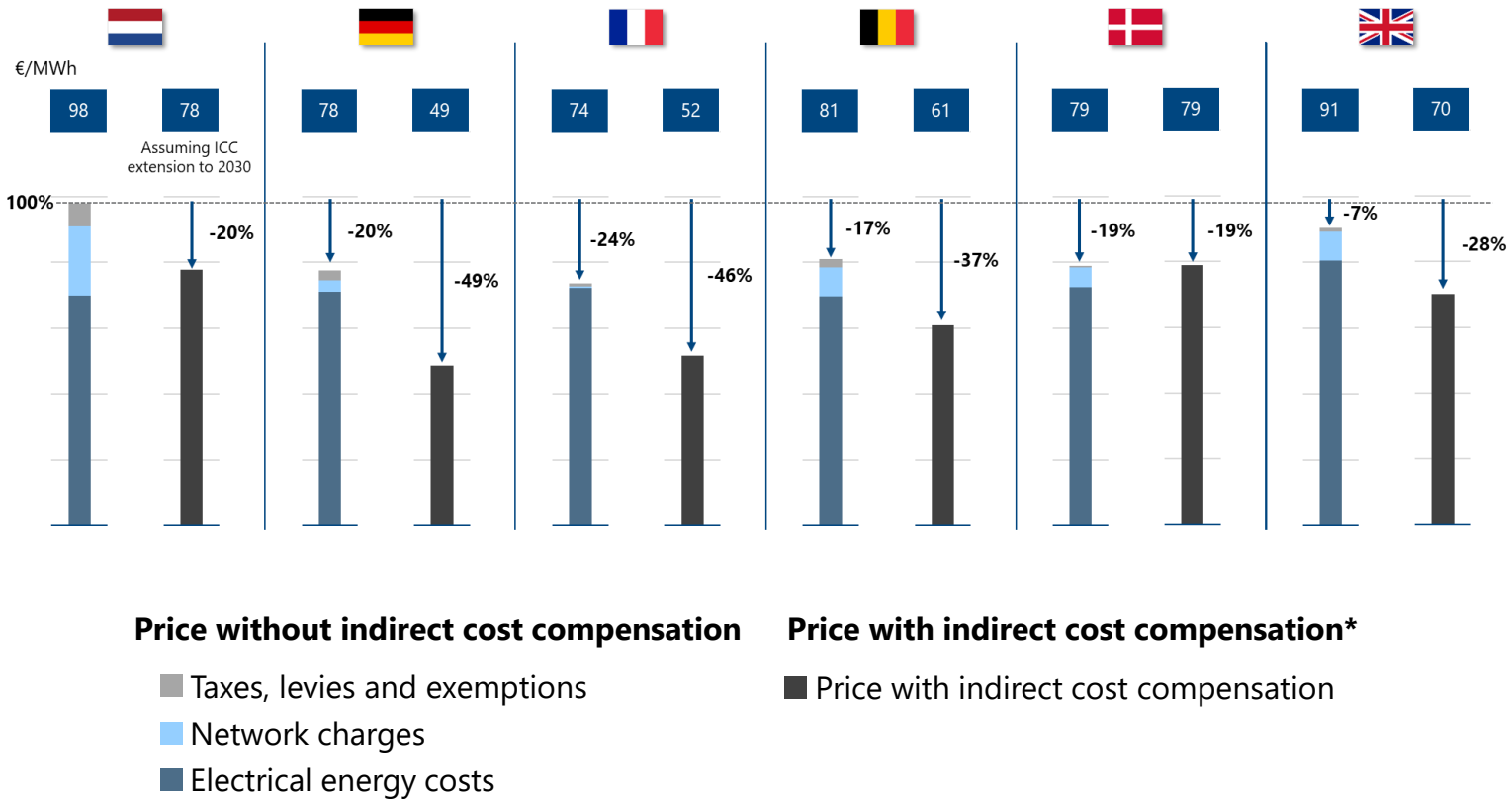
Price with indirect cost compensation*

- Price with indirect cost compensation

Percentage level: Difference compared to the Netherlands.

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

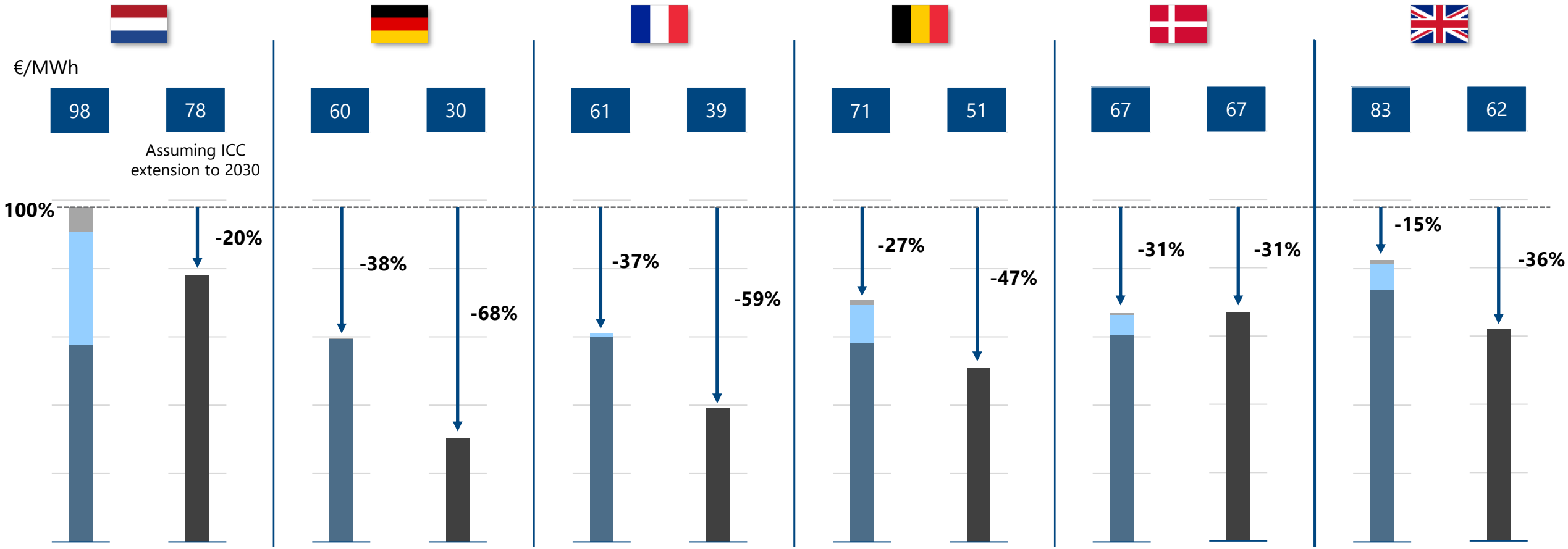
Baseload large industry: High disadvantage for Dutch baseload large industry due to the absence of reliefs/exemptions and the indirect cost compensation in 2030



- In 2030 **German, French, Belgian and Danish baseload industry** is still expected to have a **significant cost advantage compared to the Netherlands in 2030**.
- Electricity cost in **Germany, France, Belgium and Denmark** are expected to be **20%, 24%, 17% and 19% below the cost in the Netherlands** respectively for industries, that are not eligible for the indirect cost compensation (ICC).
- Because of a higher decrease of commodity costs in the UK and the high increase of network charges in the Netherlands, the **UK is also expected to have lower electricity costs in 2030**.
- With the ICC, electricity cost in **France and Germany** are expected to be appox **25 – 30 EUR/MWh below and in Belgium to be 17 EUR/MWh below the cost in the Netherlands.**
- The **other countries benefit** from **lower network charges and reliefs, while Dutch baseload large industry face** the **highest network charges in 2030**, as there are no reliefs in the Netherlands.

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

Electroylser (Profile B): **Effective electricity costs** with and w/o indirect cost compensation in **2030**



Electrolyser:
1,2 TWh/a, 4800 FLH
250 MW capacity

Price without indirect cost compensation

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

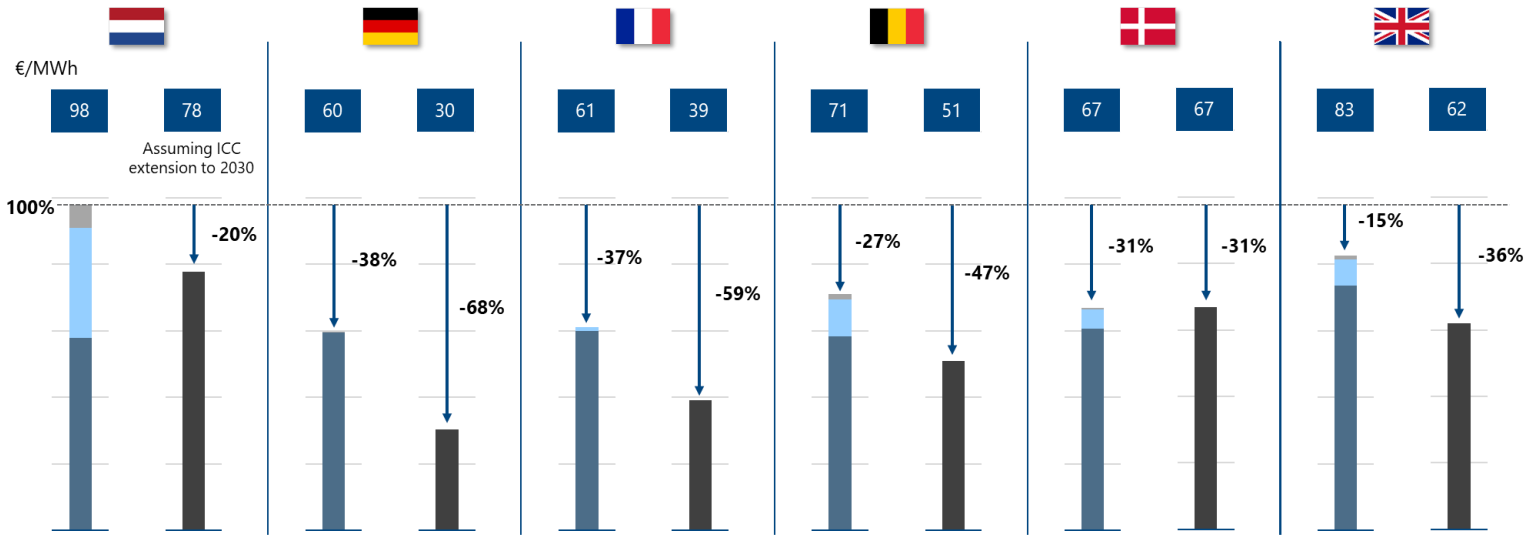
Price with indirect cost compensation*

- Price with indirect cost compensation

Percentage level: Difference compared to the Netherlands.

* *Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

Electrolyser: Dutch electrolysers have an even higher disadvantage than baseload large industry due to the very high expected network charges in 2030



Price without indirect cost compensation

- Taxes, levies and exemptions
- Network charges
- Electrical energy costs

Price with indirect cost compensation*

- Price with indirect cost compensation

** Applicable sectors: production of various metals, hydrogen, chemicals, wood and paper*

- For **electrolysers** the **electricity cost advantage** of the other countries over the Netherlands is **larger than for baseload large industry**.
- Even without the indirect cost compensation (ICC) Belgian, French, German and Danish electrolysers have **30% - 40% lower electricity costs** than Dutch electrolysers, which is driven in Belgium and France by **partial reliefs on taxes** and in Germany by **complete reliefs on taxes, levies and network charges**.
- When including the ICC**, German electrolysers** are expected to be **paying almost 50 EUR/MWh less than** their **Dutch peers. French and Belgian electrolysers** are expected to **pay around 40 and 30 EUR/MWh less** than Dutch users respectively.
- Electrolysers in the UK still pay 15% less without and 20% less with ICC compared to Dutch electrolysers.
- The disadvantage of the Netherlands is **mainly driven by the high network charges** for **electrolysers** in the **Netherlands, which** are expected to amount **to nearly half of the total cost.**

NOTE: This analysis does not include proposals for tariff structure changes in the Netherlands that could benefit flexible users (e.g., non-firm ATOs, ATR85), as their potential impact could not yet be sufficiently assessed

Summary projection of development of taxes, levies, network charges* and indirect cost compensation until 2030 for all countries** – Non-flexible medium industry (Profile C)

Component												
	2025	2030	2025	2030	2025	2030	2025	2030	2025	2030	2025	2030
Taxes, levies and fees	3.17	7.00	4.44	6.10	2.01	2.00	18.09	17.00	0.54	0.54	40.27	49.60
Network charges	41.93	51.80	81.28	95.10	7.96	8.80	8.37	9.20	10.94	11.40	47.10	44.60
Commodity prices	100.49	76.70	104.55	79.80	61.32	79.30	98.85	76.60	92.51	79.30	104.64	81.60
Resulting	**144.72**	**135.50**	**190.27**	**181.00**	**71.28**	**90.10**	**125.31**	**102.80**	**103.98**	**91.20**	**192.01**	**175.80**

* Disclaimer: Network charge projections based on rough estimation

** All values are in EUR/MWh

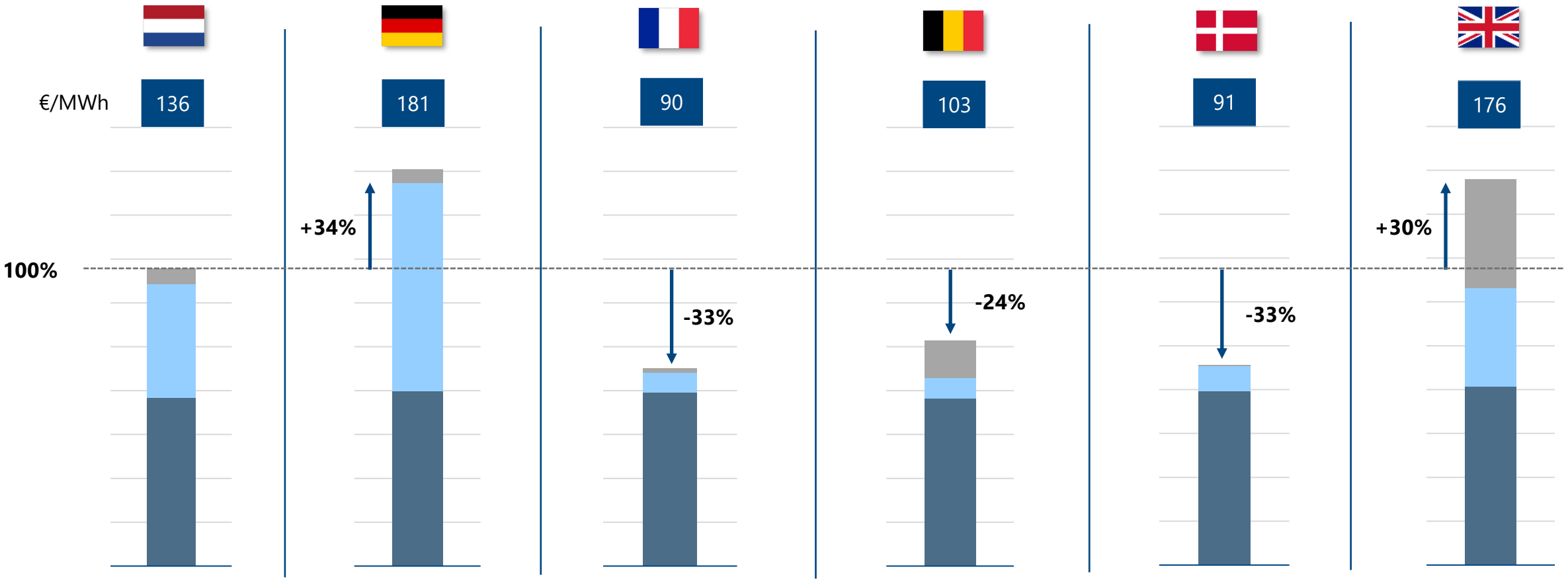
Summary projection of development of taxes, levies, network charges* and indirect cost compensation until 2030 for all countries** – Flexible medium industry (Profile D)

Component	 2025	2030	 2025	2030	 2025	2030	 2025	2030	 2025	2030	 2025	2030
Taxes, levies and fees	3.17	7.00	4.44	6.10	2.01	2.00	18.09	17.00	0.54	0.54	40.27	49.60
Network charges	41.93	51.80	81.28	95.10	8.99	9.90	8.37	9.20	10.87	11.30	45.91	43.40
Commodity prices	98.31	75.00	102.36	78.20	63.11	77.80	96.91	75.00	90.66	77.70	103.72	80.90
Resulting	**142.54**	**133.80**	**188.08**	**179.40**	**74.10**	**89.70**	**123.37**	**101.20**	**102.07**	**89.50**	**189.90**	**173.90**

* Disclaimer: Network charge projections based on rough estimation

** All values are in EUR/MWh

Non-flexible medium industry (Profile C): **Effective electricity costs** in **2030**

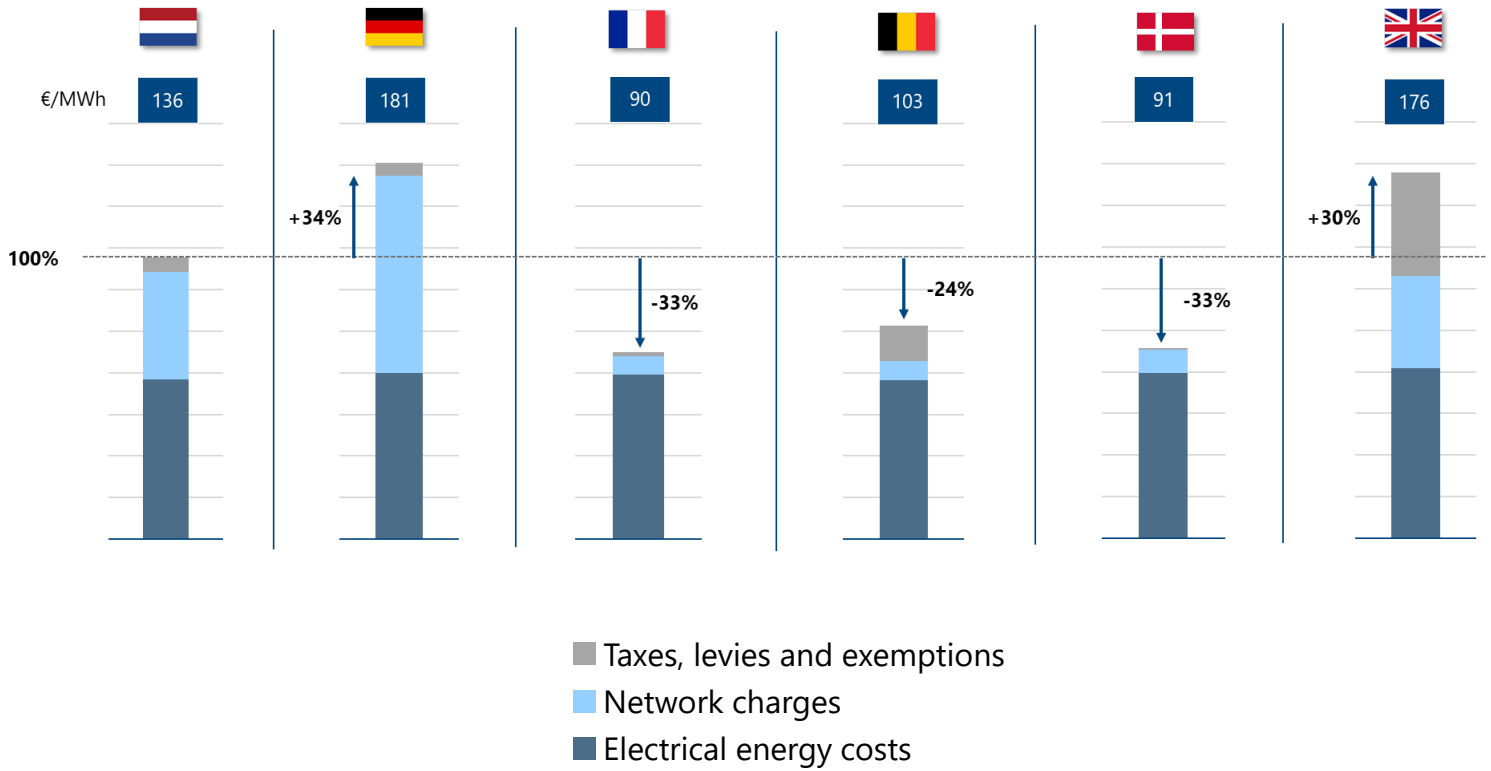


Non-flexible medium industry:
12 GWh/a, 6000 FLH
2 MW average load
4.5 MW contracted capacity

Taxes, levies, subsidies and exemptions
Network charges
Electrical energy costs

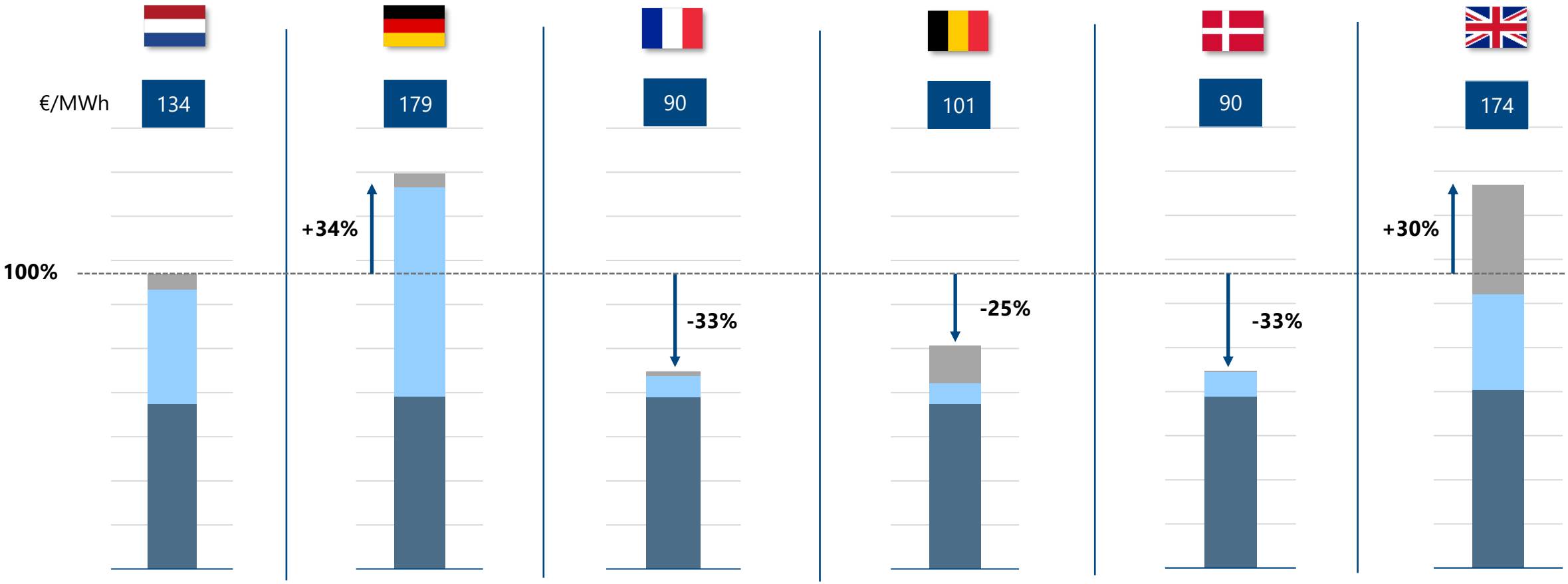
Percentage level: % reduction or increase compared to the Netherlands.

Non-flexible medium industry: Electricity cost of Dutch medium industry in the midfield compared to other European countries



- In 2030 the Netherlands is still expected to have a cost advantage over **Germany and the UK. This advantage amounts to around 30%.**
- **On the other hand, the electricity costs in France, Belgium and Denmark** are expected to be **between 24% and 33% below the cost in the Netherlands.**

Flexible medium industry (Profile D): **Effective electricity costs** in **2030**

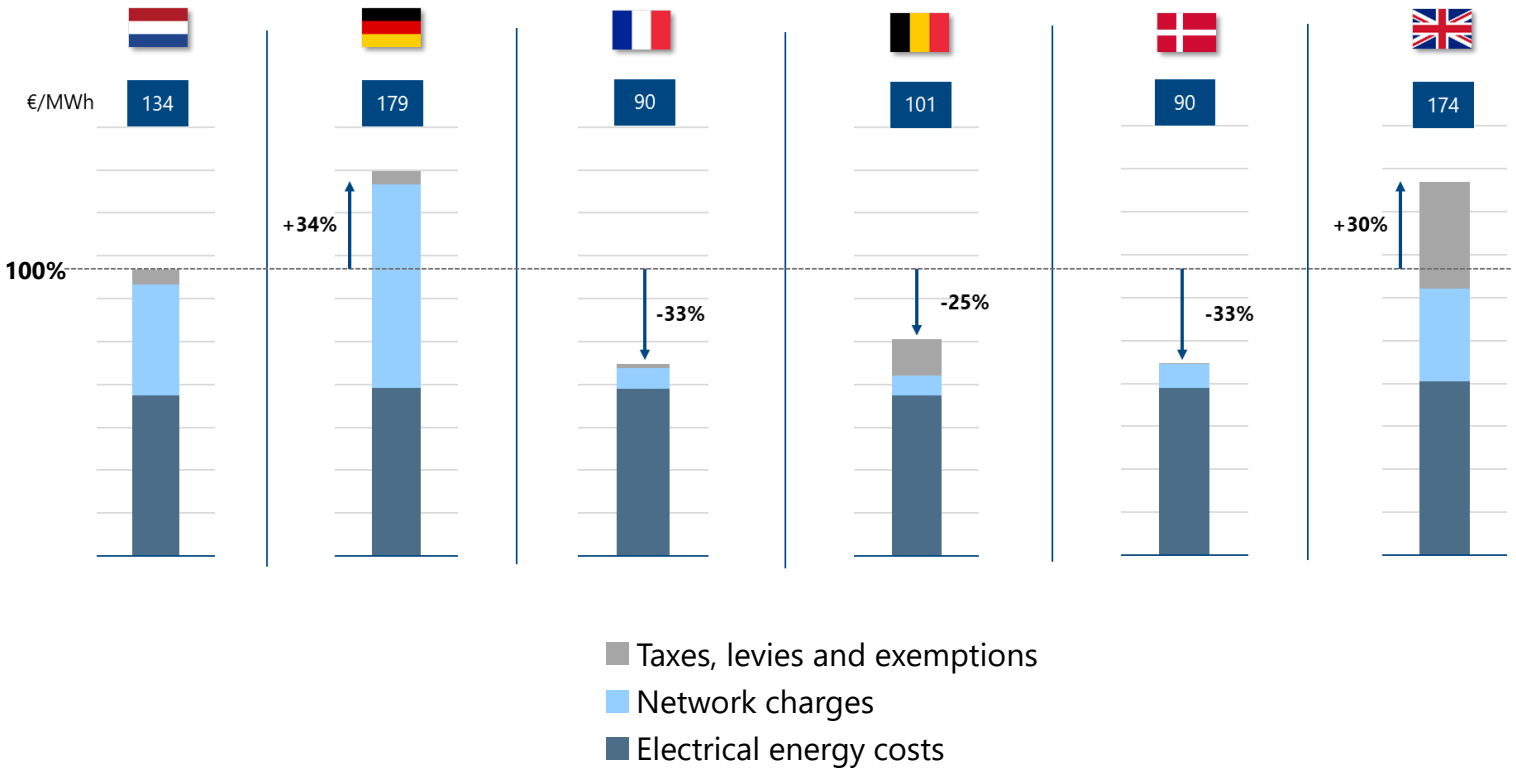


Flexible medium industry:
12 GWh/a, 4615 FLH
usual load 1.4 - 2.6 MW
4.5 MW contracted capacity

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

Percentage level: % reduction or increase compared to the Netherlands.

Flexible medium industry: Electricity cost of Dutch medium industry in the midfield compared to other European countries



- In 2030 the Netherlands is still expected to have a cost advantage over **Germany and the UK. This advantage amounts to around 30%.**
- **On the other hand, the electricity costs in France, Belgium and Denmark** are expected to be **between 25% and 33% below the cost in the Netherlands.**

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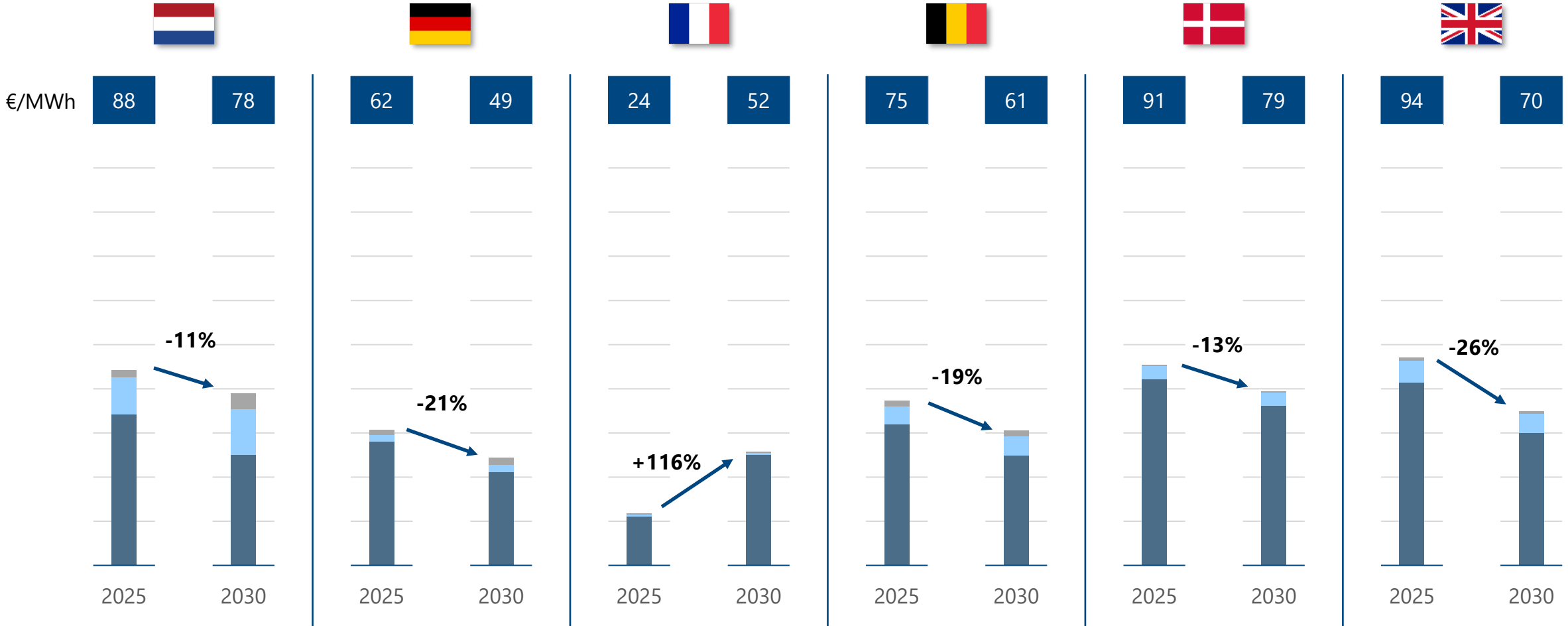
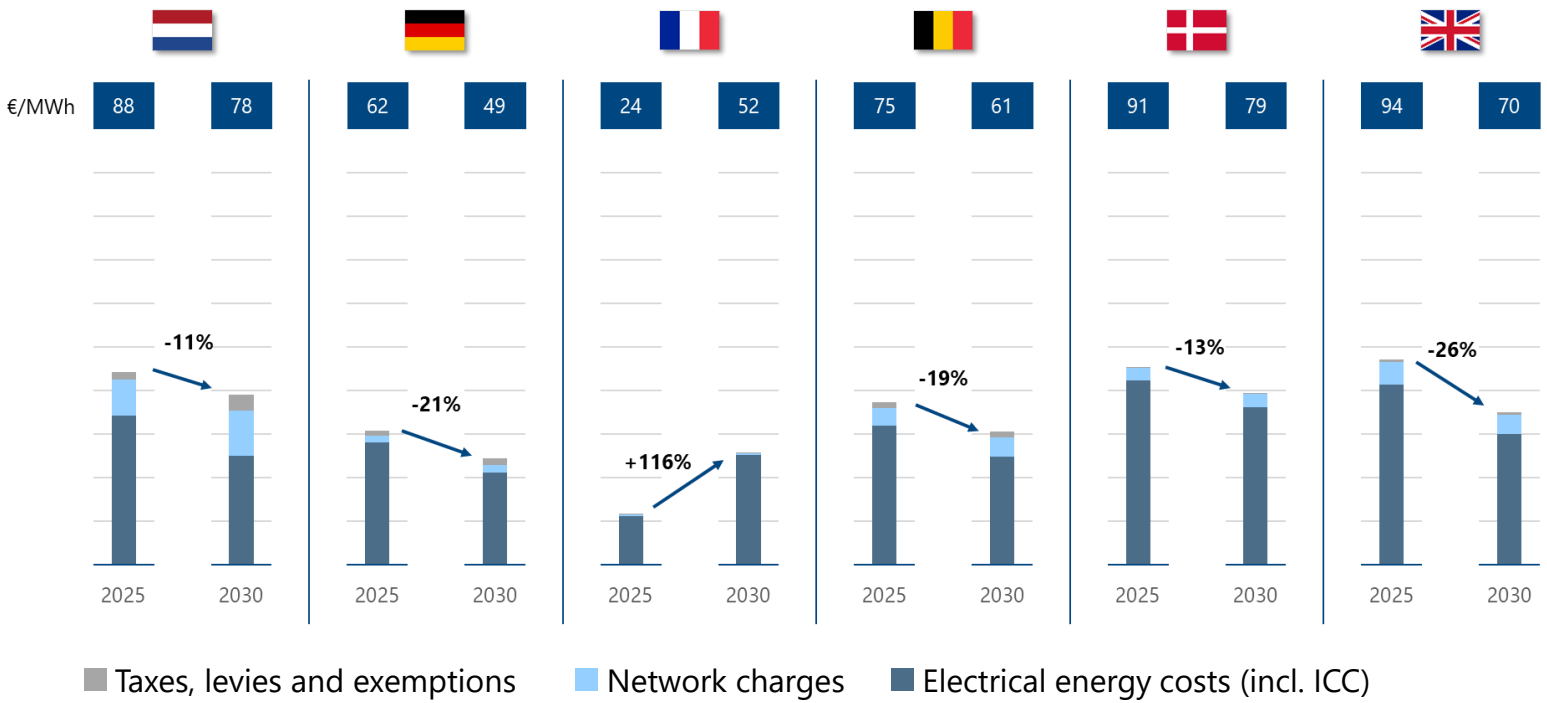
Comparison of effective electricity costs with indirect cost compensation in **2025** between **baseload large industry** (Profile A)



Baseload large industry:
1 TWh/a, 8000 FLH
125 MW capacity

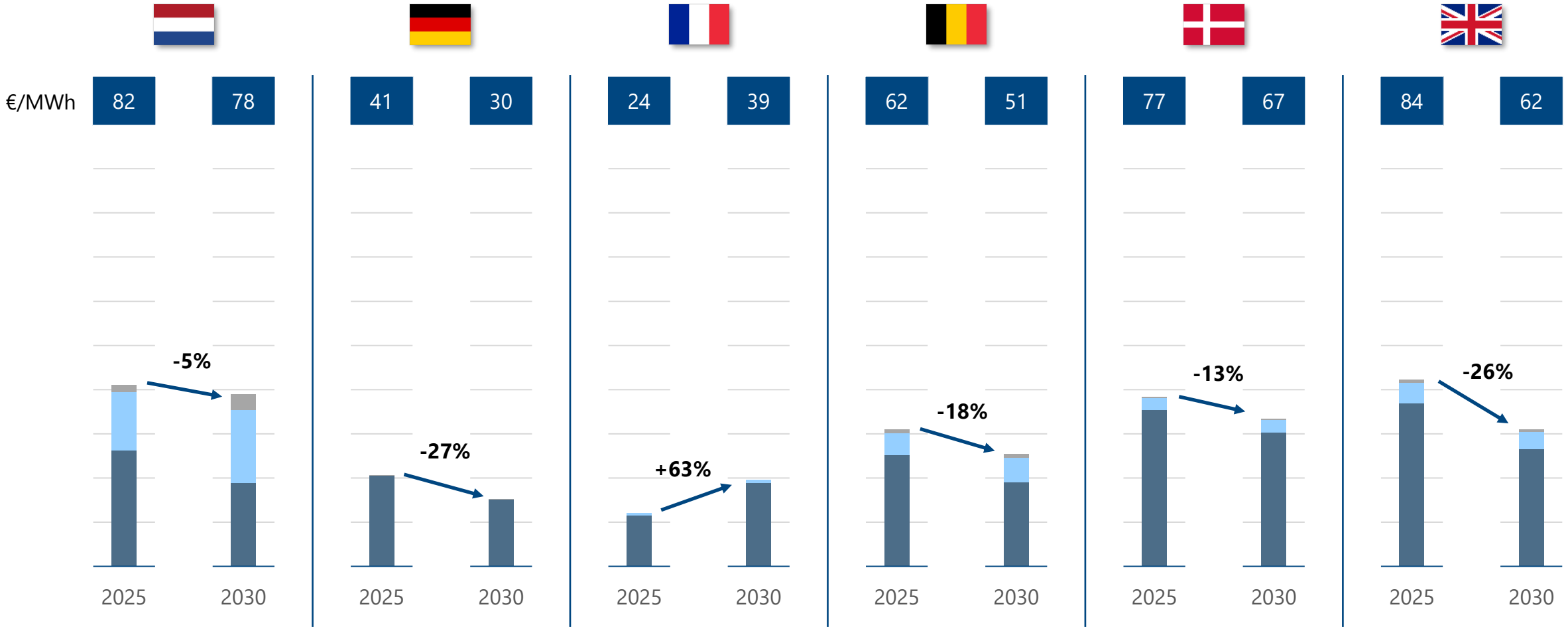
- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs (incl. ICC)

Baseload large industry: Until 2030 the effective electricity costs are expected to decrease in all of the countries but France



- The expected decrease of commodity costs leads to lower electricity costs in the Netherlands, Germany, Belgium, Denmark and the UK.
- In France the electricity costs are expected to increase due to significantly higher commodity costs as consequence of the end of the ARENH scheme.
- The **lower commodity costs in the Netherlands** are **partially offset by higher network charges,** this leads to a lower cost decrease compared to the other countries.
- As a consequence, the Netherlands are expected to have the second highest electricity costs for large baseload consumers in 2030 behind Denmark (which has no ICC).
- Despite the increase compared to today France is expected to have the second lowest electricity costs for baseload costumers also in 2030, while Germany has the lowest due to its exemptions.

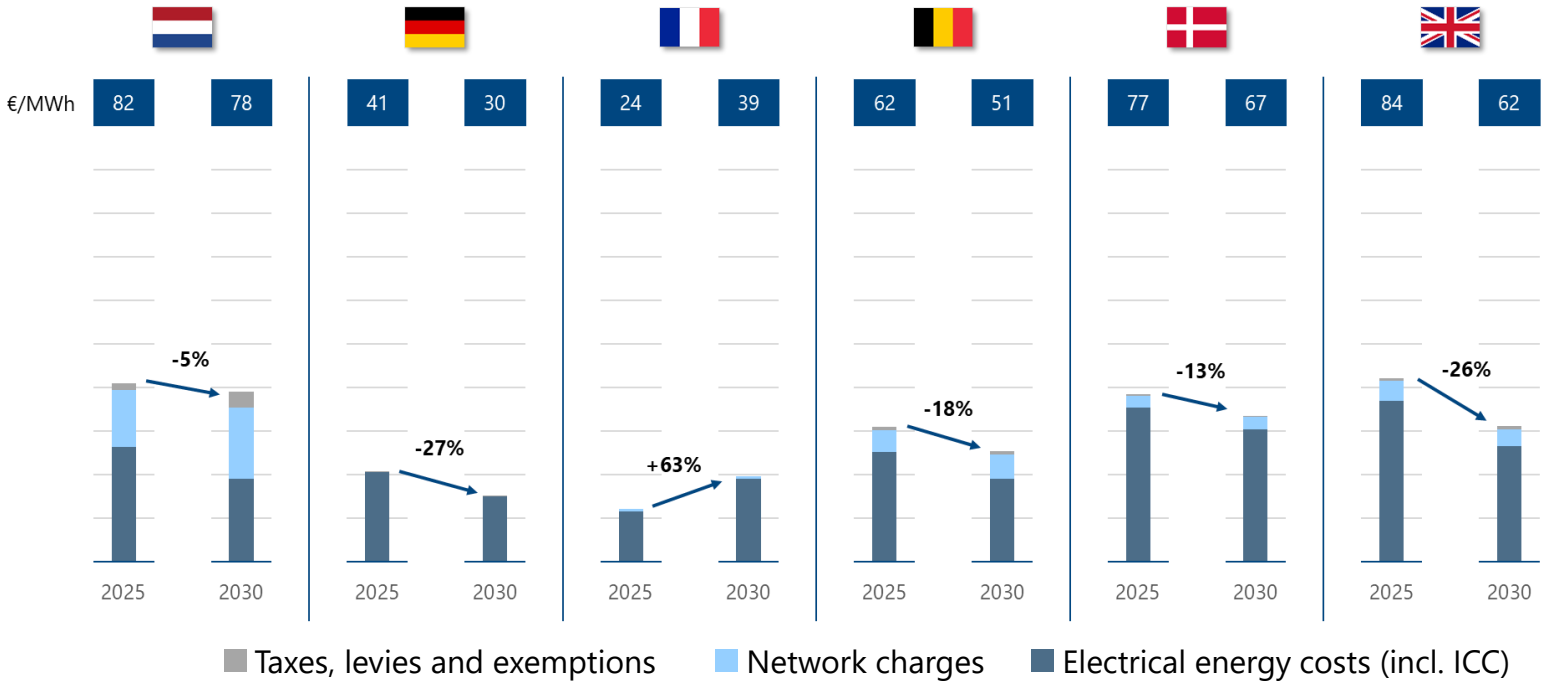
Comparison of effective electricity costs with indirect cost compensation in **2025** between **electrolysers** (Profile B)



Electrolyser:
1.2 TWh/a, 4800 FLH
250 MW capacity

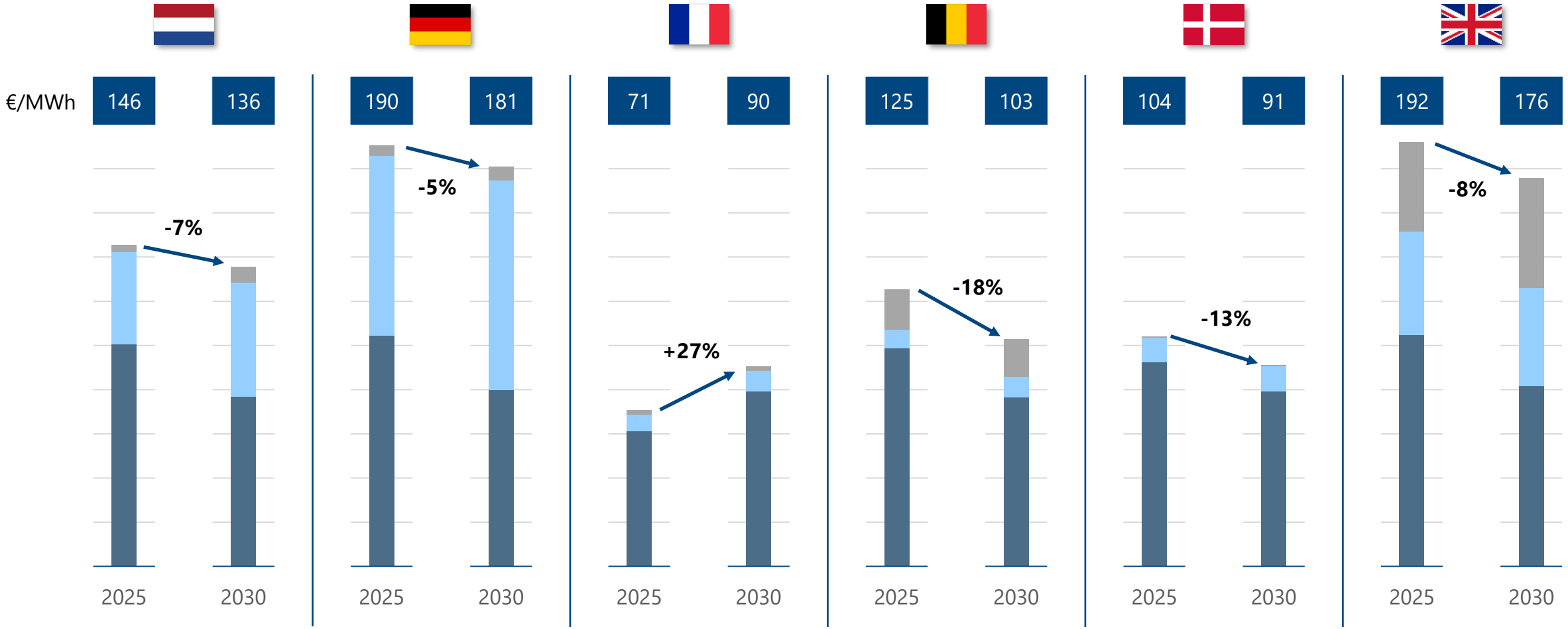
- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs (incl. ICC)

Electrolyser: Until 2030 the effective electricity costs are expected to decrease in all of the countries but France



- Also, for the electrolyser, the electricity costs are expected to decrease due to lower commodity costs in all of the countries except for France.
- The **lower commodity costs in the Netherlands** are **partially offset** by **higher network charges,** this leads to a lower cost decrease compared to the other countries.
- In contrast the costs in the UK and Germany decrease by over 25% and Belgium by almost 20%, as network charges and taxes, levies and fees remain on the same level as 2025.
- As a consequence, the Netherlands are expected to have the highest electricity costs for electrolysers in 2030.
- The increase in France is significantly lower for electrolysers compared to the baseload consumers.
- Germany is expected to have the lowest electricity costs for electrolysers in 2030 followed by France and Belgium.

Comparison of effective electricity costs without indirect cost compensation in **2025** between **non-flexible medium industry consumers** (Profile C)

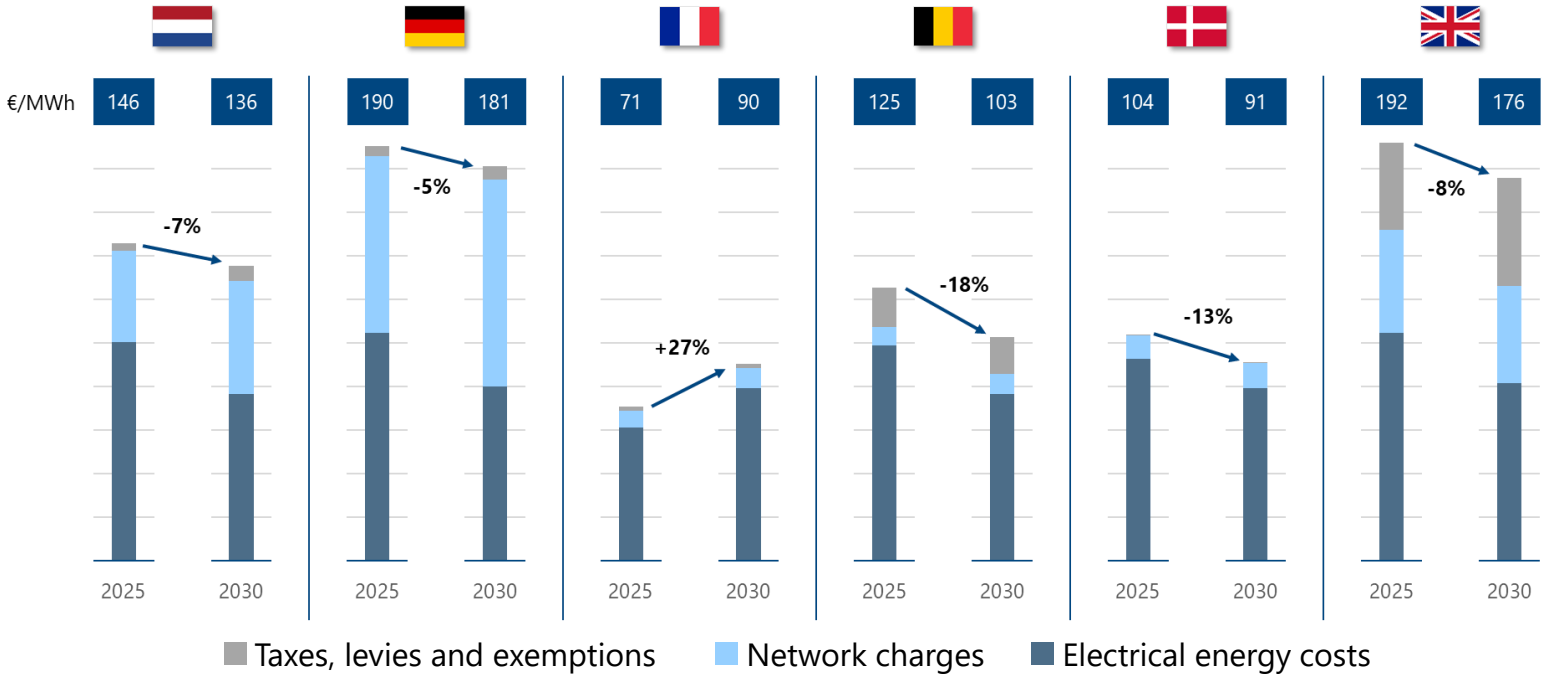


Non-flexible medium industry:
12 GWh/a, 6000 FLH
2 MW average load
4.5 MW contracted capacity

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

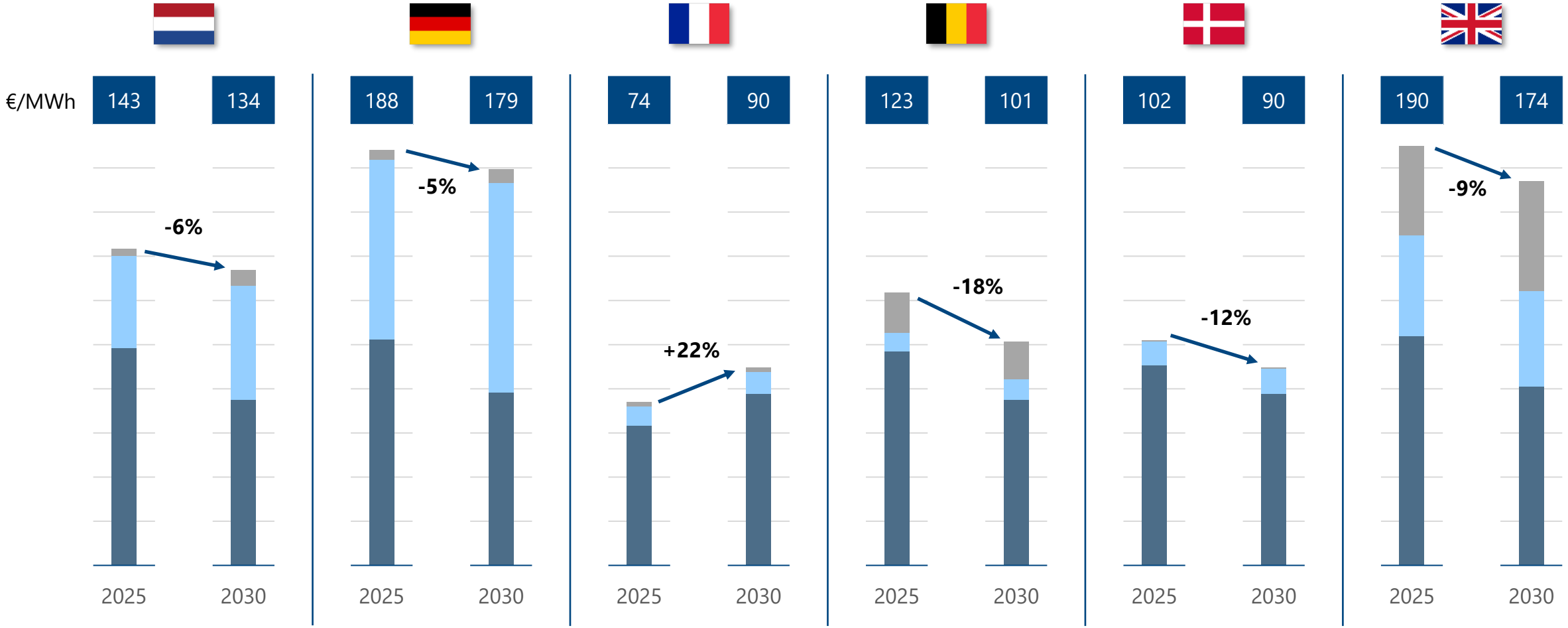
E-Bridge
competence in energy

Non-flexible medium industry: Until 2030 the effective electricity costs are expected to decrease in all of the countries but France



- The electricity costs for non-flexible medium industry are expected to decrease due to lower commodity costs in all of the countries except for France.
- The **lower commodity costs in the Netherlands, Germany and the UK** are **partially offset higher network charges and taxes levies and fees,** this leads to a lower cost decrease compared to Belgium and Denmark.
- Because of the lower decrease compared to the UK, Germany is expected to have the highest electricity costs for non-flexible medium industry in 2030.
- France and Denmark are expected to have the lowest electricity cost for the non-flexible medium industry.
- Belgium is expected to have the highest decrease with 2030 costs being 18% lower than the costs in 2025.

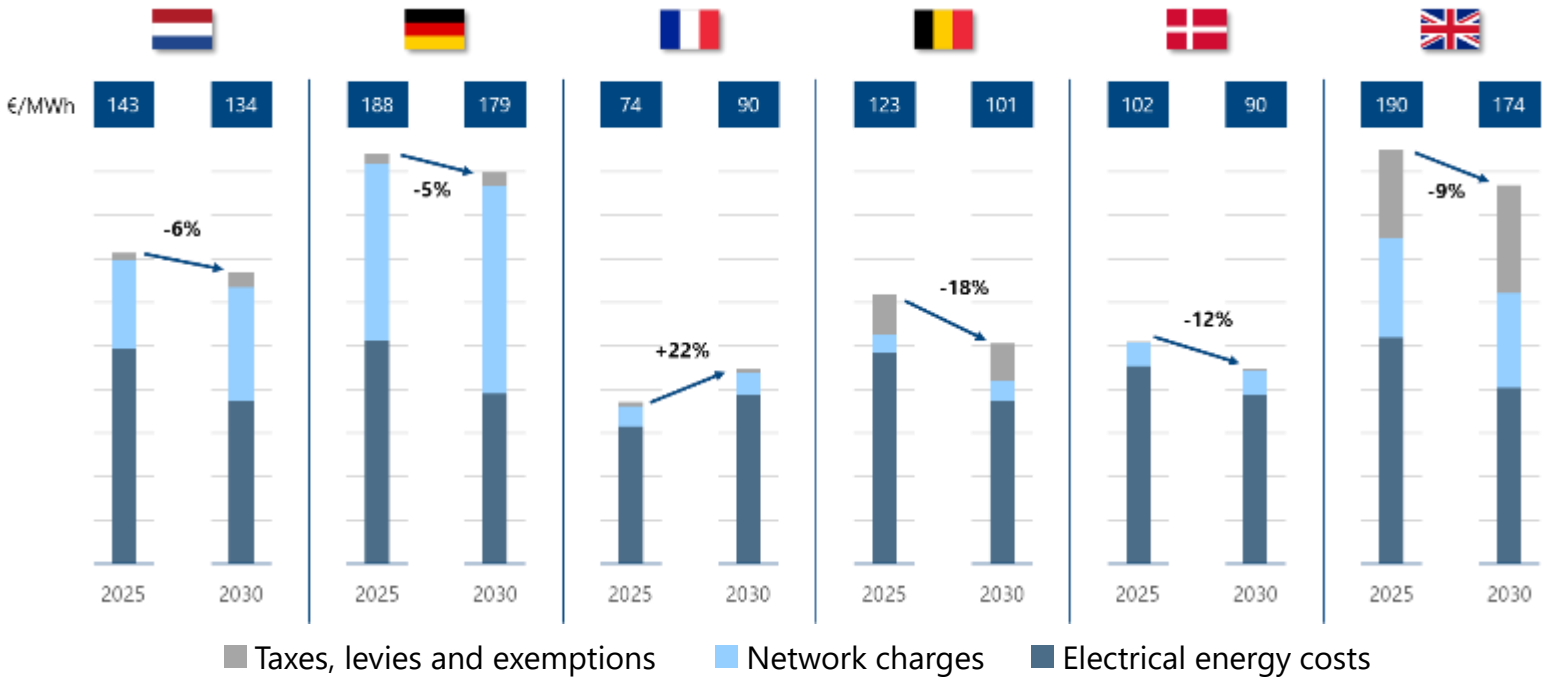
Comparison of effective electricity costs without indirect cost compensation in **2025** between **flexible medium industry consumers** (Profile D)



Flexible medium industry:
12 GWh/a, 4615 FLH
usual load 1.4 - 2.6 MW
4.5 MW contracted capacity

- Taxes, levies, subsidies and exemptions
- Network charges
- Electrical energy costs

Flexible medium industry: Until 2030 the effective electricity costs are expected to decrease in all of the countries but France



- The electricity costs for flexible medium industry are expected to decrease due to lower commodity costs in all of the countries except for France.
- The **lower commodity costs in the Netherlands, Germany and the UK** are **partially offset higher network charges and taxes levies and fees,** this leads to a lower cost decrease compared to Belgium and Denmark.
- Because of the lower decrease compared to the UK, Germany is expected to also have the highest electricity costs for flexible medium industry in 2030.
- France and Denmark are expected to have the lowest electricity cost for the flexible medium industry.
- Belgium is expected to have the highest decrease with 2030 costs being 18% lower than the costs in 2025.

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Abbreviations

ARENH	Accès Régulé à l'Electricité Nucléaire Historique, scheme in France that makes parts of the nuclear production available at a fixed price set by the government
CHP	Combined heat and power
CHPC	CHP-certificates (only existent in the Flanders region of Belgium)
CRE	French Energy Regulatory Commision
CREG	Belgian Federal Commission for Electricity and Gas Regulation
DSO	Distribution system operator
FLH	Full load hours
GC	Green certificates (existent in all three regions of Belgium)
RO	Renewables Obligation
RES	Renewable energy sources (Wind, PV, etc.)
RTE	France's Transmission System Operator
TSO	Transmission system operator

Annex I: Applicable industry sectors for indirect cost compensation according to EU regulation

Industry sector applicable
Manufacture of leather clothing
Production and initial processing of aluminium
Production of other inorganic raw materials and chemicals
Production and first processing of lead, zinc and tin
Production of wood and cellulose
Production of paper, cardboard and paperboard
Production of raw iron, steel and ferroalloys
Mineral oil processing
Production and initial processing of copper
Production and initial processing of other non-ferrous metals
Polyethylene in primary moulds
All product categories in the iron foundry sector
Mats and nonwovens made of glass fibre
Hydrogen and inorganic oxygen compounds of non-metals

Source: EU

Annex II: Electricity cost-intensive or trade-intensive sectors in Germany - List 1: Economic sectors with a significant risk of relocation

List 1: Economic sectors with a significant risk of relocation
Hard coal mining sector
Natural gas extraction
Iron ore mining
Other non-ferrous metal mining
Quarrying of natural stone and natural stone, limestone and gypsum, chalk and slate
Mining of chemical and fertilizer minerals
Salt extraction
Quarrying of stone and earth n.e.c.
Fish processing
Potato processing
Production of fruit and vegetable juices
Other fruit and vegetable processing
Production of oils and fats (excluding margarine and similar dietary fats)
Production of starch and starch products
Sugar production
Production of homogenized and dietetic foods
Production of vermouth and other flavored wines
Malt production
Textile preparation and spinning
Weaving mill
Finishing of textiles and clothing

List 1: Economic sectors with a significant risk of relocation
Production of knitted and crocheted fabric
Carpet manufacturing
Manufacture of rope goods
Manufacture of nonwovens and articles thereof (excluding apparel)
Manufacture of technical textiles
Manufacture of leather clothing
Manufacture of hosiery products
Production of leather and leather fiber fabric; finishing and dyeing of hides
Sawmills, planing and wood impregnation plants
Production of veneer, plywood, wood fiber and chipboard panels
Production of parquet panels
Manufacture of wood products n.e.c., cork, straw and plaiting materials (except furniture)
Production of wood and cellulose
Production of paper, cardboard and paperboard
Production of household, hygiene and toilet articles made of cellulose, paper and cardboard
Manufacture of wallpapers
Mineral oil processing
Production of industrial gases
Production of dyes and pigments
Production of other inorganic raw materials and chemicals

List 1: Economic sectors with a significant risk of relocation
Production of other organic raw materials and chemicals
Production of fertilizers and nitrogen compounds
Production of plastics in primary molds
Production of synthetic rubber in primary forms
Manufacture of other chemical products n.e.c.
Production of man-made fibers
Production of pharmaceutical raw materials
Production and retreading of tires
Manufacture of other rubber goods
Production of plastic sheets, films, tubes and profiles
Production of plastic packaging materials
Manufacture of other plastic goods
Manufacture of flat glass
Refinement and processing of flat glass
Manufacture of hollow glass
Manufacture of glass fibers and articles thereof
Manufacture, finishing and processing of other glass, including technical glassware
Manufacture of refractory ceramic materials and goods
Production of ceramic wall and floor tiles and slabs
Manufacture of ceramic sanitary ware
Production of ceramic insulators and insulating parts
Manufacture of ceramic products for other technical purposes

Source: Annex II EnFG

Annex II: Electricity cost-intensive or trade-intensive sectors in Germany - List 1: Economic sectors with a significant risk of relocation

List 1: Economic sectors with a significant risk of relocation
Manufacture of other ceramic products
Production of cement
Production of coated abrasives and abrasives
Manufacture of other non-metallic mineral products n.e.c.
Production of pig iron, steel and ferroalloys
Production of steel pipes, pipe fittings, pipe closures and pipe connections made of steel
Production of bright steel
Production of cold-rolled strip with a width of less than 600 mm
Production of cold-drawn wire
Production and initial processing of aluminium
Production and first processing of lead, zinc and tin
Production and initial processing of copper
Production and initial processing of other non-ferrous metals
Processing of nuclear fuels
Iron foundries
Production of forged, pressed, drawn and stamped parts, rolled rings and powder metallurgical products
Surface finishing and heat treatment
Manufacture of cutlery and flatware made from base metals
Production of wire goods, chains and springs
Production of screws and rivets

List 1: Economic sectors with a significant risk of relocation
Manufacture of electronic components
Manufacture of batteries and accumulators
Production of fibre optic cables
Manufacture of other electronic and electrical wires and cables
Manufacture of other electrical equipment and appliances n.e.c.
Production of bearings, gears, gear wheels and drive elements
Manufacture of motorbikes
Manufacture of other transport equipment n.e.c.

Source: Annex II EnFG

Annex II: Electricity cost-intensive or trade-intensive sectors in Germany - List 2: Economic sectors with a risk of relocation

List 2: Economic sectors with a risk of relocation
Butchering (excluding butchering of poultry)
Butchering of poultry
Production of margarine and similar products food fats
Milk processing (without production of ice cream)
Grinding and peeling mills
Production of long-life baked goods
Production of dough products
Manufacture of confectionery (excluding long-life bakery products)
Production of convenience food
Manufacture of other food products n.e.c.
Production of animal feed for livestock
Production of feed for other animals
Production of soft drinks; extraction of natural mineral waters
Production of stationery and office supplies made of paper, cardboard and paperboard
Manufacture of other articles of paper and paperboard
Manufacture of pyrotechnic products
Production of adhesives
Production of bricks and other building ceramics
Production of chalk and burnt plaster

List 2: Economic sectors with a risk of relocation
Production of fibre cement products
Steel foundries
Light metal foundries
Manufacture of barrels, drums, cans, buckets, etc. Metal containers
Production of packaging and closures made of iron, steel and non-ferrous metal
Manufacture of other parts and accessories for motor vehicles

Source: Annex II EnFG

Annex III: List of electro-intensive sectors qualified for tax reduction in France

Consumption by businesses with an industrial activity (Article L312-71)	Minimal level of electro-intensity	Taxes in EUR/MWh
Mining and quarrying	0.5%	7.5
Manufacturing industry	3.375%	5
Production and distribution of electricity, gas, steam or air conditioning	6.75%	2
Production and distribution of water, sewerage, waste management and pollution control.		

Source: L312-71

Annex III: List of electro-intensive sectors qualified for tax reduction in France

Consumption by industrial installations in certain sectors of activity exposed to international competition (Article L312-72)
Extraction of iron ore, minerals for the chemical industry and natural fertilisers, as well as support activities for these activities;
Metallurgy of iron, aluminium, copper, lead, zinc or tin, as well as the manufacture of tubes, pipes and tube or pipe fittings of these metals, lead bars, rods, profiles and wire and zinc plates, sheets and strip;
Manufacture of basic organic and inorganic chemicals, other than industrial gases, dyes and pigments and denatured ethyl alcohol, except uranium enrichment and the production of ethyl alcohol from fermented materials;
Manufacture of nitrogen products and fertilisers and production of compost by treatment and disposal of organic waste;
Manufacture of the following basic plastics: low-density, linear low-density and high-density polyethylene, polypropylene, polyvinyl chloride and polycarbonate;
spinning of cotton, manufacture of man-made fibres and manufacture of leather garments, including fire-resistant and protective garments of this material;
Manufacture of paper, paperboard and mechanical pulp.

Minimal level of electro-intensity	Taxes in EUR/MWh
0.5%	5.5
3.375%	2.5
6.75%	1

Source: L312-72

Annex III: List of electro-intensive sectors qualified for tax reduction in France

- Consumption by industrial installations in certain sectors of activity exposed to international competition and a significant risk of carbon leakage
- Sectors listed in Annex of to Commission Decision 2014/746/EU
- If level of electro-intensity above 13.5% tax rate is reduced to 0.5 EUR/MWh

Source: L312-73

Annex IV: Electricity cost-intensive sectors in the UK eligible for Energy intensive Industry Certificate

Eligible sectors for Energy Intensive Industry certificate
Mining of hard coal
Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate
Operation of gravel and sand pits; mining of clays and kaolin
Other mining and quarrying not elsewhere classified
Processing and preserving of poultry meat
Manufacture of grain mill products
Manufacture of prepared feeds for farm animals
Manufacture of malt
Preparation and spinning of textile fibres
Weaving of textiles
Manufacture of knitted and crocheted fabrics
Manufacture of carpets and rugs
Manufacture of non-wovens and articles made from non-wovens, except apparel
Manufacture of other technical and industrial textiles
Manufacture of other textiles not elsewhere classified
Manufacture of other wearing apparel and accessories
Manufacture of knitted and crocheted hosiery
Manufacture of other knitted and crocheted apparel
Tanning and dressing of leather; dressing and dyeing of fur
Sawmilling and planing of wood
Manufacture of veneer sheets and wood-based panels

Eligible sectors for Energy Intensive Industry certificate
Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
Manufacture of paper and paperboard
Manufacture of corrugated paper and paperboard and of containers of paper and paperboard
Manufacture of household and sanitary goods and of toilet requisites
Manufacture of wallpaper
Manufacture of refined petroleum products
Manufacture of industrial gases
Manufacture of other inorganic basic chemicals
Manufacture of other organic basic chemicals
Manufacture of fertilisers and nitrogen compounds
Manufacture of plastics in primary forms
Manufacture of synthetic rubber in primary forms
Manufacture of man-made fibres
Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
Manufacture of other rubber products
Manufacture of plastic plates, sheets, tubes and profiles
Manufacture of plastic packing goods
Manufacture of other plastic products
Manufacture of flat glass
Manufacture of hollow glass

Eligible sectors for Energy Intensive Industry certificate
Manufacture of glass fibres
Manufacture and processing of other glass, including technical glassware
Manufacture of refractory products
Manufacture of ceramic tiles and flags
Manufacture of bricks, tiles and construction products, in baked clay
Manufacture of other technical ceramic products
Manufacture of other ceramic products
Manufacture of cement
Manufacture of lime and plaster
Manufacture of plaster products for construction purposes
Manufacture of fibre cement
Manufacture of other non-metallic mineral products not elsewhere classified
Manufacture of basic iron and steel and of ferro-alloys
Manufacture of tubes, pipes, hollow profiles and related fittings of steel
Cold drawing of bars
Cold rolling of narrow strip
Cold drawing of wire
Aluminium production
Lead, zinc and tin production
Copper production
Other non-ferrous metal production
Casting of iron

Source: UK Governement (Annex I)

Annex IV: Electricity cost-intensive sectors in the UK eligible for Energy intensive Industry Certificate

Eligible sectors for Energy Intensive Industry certificate
Casting of steel
Casting of light metals
Casting of other non-ferrous metals
Manufacture of light metal packaging
Manufacture of electronic components
Manufacture of batteries and accumulators
Manufacture of other electronic and electric wires and cables
Manufacture of machinery for metallurgy

Source: UK Governement (Annex I)

Annex V: Definition of gross value added

Definition from European Commission:

The gross value added of the undertaking must be calculated as turnover, plus capitalized production, plus other operating income, plus or minus changes in stocks, minus purchases of goods and services (which shall not include personnel costs), minus other taxes on products that are linked to turnover but not deductible, minus duties and taxes linked to production. Alternatively, it can be calculated from gross operating surplus by adding personnel costs. Income and expenditure classified as financial or extraordinary in company accounts is excluded from value added. Value added at factor costs is calculated at gross level, as value adjustments (such as depreciation) are not subtracted

Source: L312-73

Annex VI: **CO_2 emission factor** for the indirect cost compensation can be calculated in **two different ways** according to **EU regulation**

There are two different emission factors that can be used:

- The **CO_2 emission factor** calculated by the EU in the Appendix of the ETS Guidelines
  → chosen by Germany **(0.72 tCO_2/MWh)** and the Netherlands **(0.45 tCO_2/MWh)**
- The **market-based CO_2 emission factor** calculated by each member states for themself
  → chosen by France and Belgium, these two countries calculated an **own market-based factor of 0.51 tCO_2/MWh**

There is **no limitation** for which year the emission factors are valid

- In France and Belgium, the factor is valid from 2021-2025 and will then be revised/updated for the 2026-2030 period
- The ETS Guidelines will be updated in 2025 as well → an update of the emission factor for Germany is possible

Calculation Methods are described in the ETS Guidelines

- The "CO_2 emission factor" (in tCO_2/MWh) is the **weighted average of the CO_2 intensity of electricity from fossil fuels in different geographical areas.** The weighting takes into account the production mix of fossil fuels in the respective geographical area. The CO_2 factor is the result of dividing the emissions of CO_2 equivalents (based on energy industry data) by the gross electricity generation from fossil fuels in TWh.
- The "market-based CO_2 emission factor", in tCO_2/MWh is determined **on the basis of a study on the CO_2 content of the actual margin setting technology on the electricity market**. It has to be based on a model of the electricity system simulating price formation and observed data on the marginal cost adjustment technology during the entire year t-1 (including the hours when imports were marginal cost adjusted). The study must be approved by the national regulatory authority and the EU Commission.
- According to the studies of Belgium and France, the market-based CO_2 emission factor in both countries is equal to the weighted average of the CO_2 content of the technologies identified as determining the electricity price for each hour in over the reference year.

Sources: ETS Guidelines, Approval France, Approval Belgium (Flanders)

Next steps

- E-Bridge will send incorporate workshop feedback and send a revised complete draft report by 23/7/25 eod.
- Feedback and comments by KGG on the revised draft report by 28/07/2025 eod?
- Finalization of report by E-Bridge will be sent to KGG by 31/07/2025



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