

The irregular market for e-cigarettes in Europe

Market structures, quantifications & supply chains

THE IRREGULAR MARKET FOR E-CIGARETTES IN EUROPE

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Summary

E-cigarettes are becoming increasingly popular, and their share of the market for nicotine products is growing. A relevant part of this market involves irregular trading. For policy-makers and society, this poses new challenges that can only be overcome in a targeted manner through a joint European approach. The lack of recent data on the irregular market for e-cigarettes constitutes a major challenge for political decision-makers.

Contribution and methodology of the study

This study performs the first comprehensive quantification of the irregular e-cigarette market in Europe and sheds light on its structures and supply chains. Its core contribution entails the systematic segmentation of the market into a legal (“white”), a grey (private personal consumption of non-compliant products) and a black sector (commercial illegal trade). This is based on a **quantitative model** that compares the estimated total demand for vaping products in each EU country with the official trade statistics (import/export data). The difference that cannot be explained statistically is reported as an irregular market and then further divided into grey and black market components based on country-specific factors. This methodological approach permits a solid, data-based assessment of the status quo and an assessment of future challenges.

Status quo:

- **3.1%** of Europeans aged 15 and over (11.9 million) **prefer e-cigarettes over traditional tobacco products** – and this trend is rising.
- E-cigarettes are **not regulated and taxed uniformly** within the EU.
- **90%** of the e-cigarettes imported into the EU **come from China**.
- **Irregular trade** in e-cigarettes in Europe has risen to a significant **48%**, equal to a volume of **€6.6 billion**.

New challenges:

- The irregular e-cigarette market is expected to exhibit **significant annual growth of 8.6 per cent**. This translates into a **market value of €10.83 billion** in 2030.
- **A large irregular market causes significant losses in tax revenue**. In Germany alone, the government loses millions in tobacco tax and value added tax each year due to the irregular market for vapes.
- **A large irregular market harbours incalculable health risks for consumers**. Irregular e-cigarettes may contain untested ingredients whose composition and effects are not controlled. This risk can manifest itself in acute poisoning, culminating in long-term adverse health effects.
- **A large irregular market jeopardises the protection of minors**. The illegal market ignores age controls, making it particularly easy for young people to gain access to vapes.¹ Legal protective mechanisms become ineffective, with the risk of early nicotine consumption increasing considerably.
- **A large irregular market impairs legal trade**. Legal traders who pay taxes and comply with regulations are at a significant price disadvantage compared to cheaply imported, illegal goods. These imports undermine the regulated market, thereby threatening the livelihoods of numerous small retailers. A significant proportion of illegal vapes originates from China, where there is enormous production capacity, ensuring continuous supplies to the European black market.

A sustainable improvement in the market situation requires a joint European regulatory approach and effective control mechanisms. These include a coordinated approach and

¹ SWR (2024).

the harmonisation of approval procedures, uniform product standards, harmonised taxation, more effective import controls and greater market transparency in order to create positive incentives and establish safe underlying conditions for consumers.

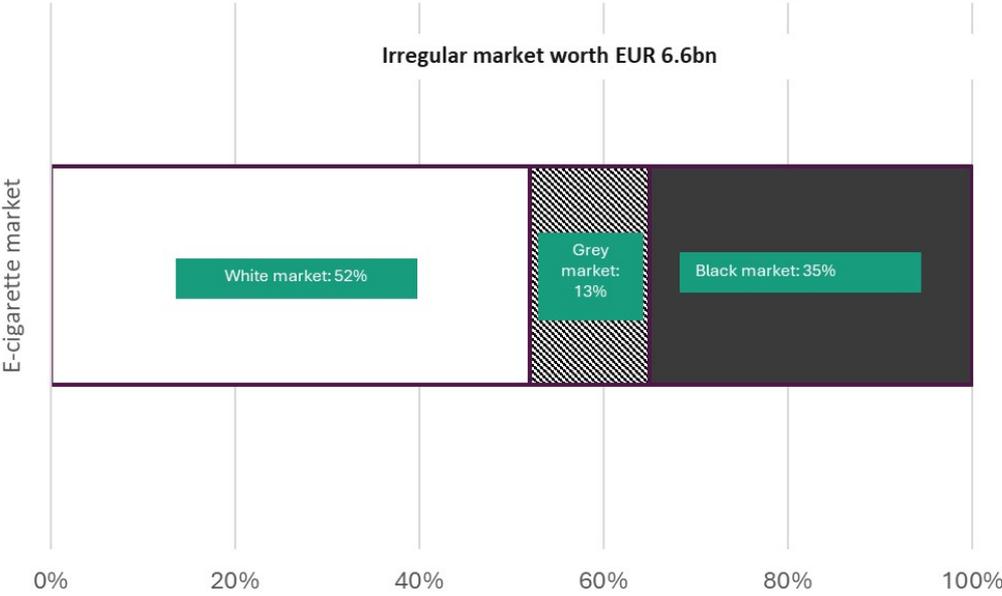


Figure 1: Breakdown of the e-cigarette market by white, grey and black market.
Source: own illustration.

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1 Background to the study

E-cigarettes and the liquids vaporised in them constitute a significant and dynamically growing part of the European market for nicotine products.

In view of the still young market segment and the disparate regulatory approaches within the EU, a relevant proportion of these products is not distributed via official channels. This applies to certain bricks-and-mortar retailers who fail to comply with the relevant legal requirements and, at times, offer products that are not fit for sale. Moreover, illegal products are frequently offered via specialised sales platforms that do not charge tobacco tax or adhere to the minimum age restrictions prescribed by youth protection laws.

Against this backdrop, the Risk and Location Analysis department at Fraunhofer IIS was commissioned, in conjunction with MRU GmbH, to examine the international supply chains for vaping products. On this basis, the scope of unofficial business and its implications for transport service providers that are often unknowingly involved in it, as well as possible starting points for targeted regulatory measures, were to be highlighted.

One important aim of the analysis was therefore to provide a solid assessment of the current state of the grey and illegal market for vaping products based on practical and scientific findings and to estimate the correlating quantities.

This study examines the European market for vaping products with a particular focus on market structures, the regulatory framework, the extent of the grey and black markets and the underlying logistics. Against the backdrop of dynamic developments, such as rising sales volumes, growing product diversity and cross-border trade, the question arises as to how the market is structured, what regulatory and logistical factors apply and what proportion of the total volume is accounted for by the irregular market. The analysis includes an overview of market trends, consumer behaviour and tax regulations (Chapter 2), followed by an examination of supply routes, customs classifications and China's role as the main source country (Chapter 3). Chapter 4 is dedicated to the modelling and economic evaluation of the grey market, while Chapter 5 identifies possible solutions and research requirements.

2 The European market for vaping products at a glance

2.1 Dynamic developments in the vaping market

In recent years, sales figures for e-cigarettes and other vaping products have risen significantly in Europe. Nicotine-containing liquids in a variety of flavours have become especially attractive to younger consumers. The market is very dynamic due to changing consumer trends. Although the health risks associated with nicotine-containing vaping products are frequently debated in public discourse, they fall outside the scope of this study. Rather, the study concentrates on providing a market analysis of vaping products in the European Union (EU).

The market for vaping products is characterised by a considerable lack of transparency on the supply and manufacturer side. In Germany alone, a regularly updated list issued by the Federal Office of Consumer Protection and Food Safety records more than 470,000 different types of e-cigarettes and accessories, including an immense number of disposable products.² A large part of these goods are manufactured in China: It is estimated that Chinese manufacturers account for up to 90 per cent of global production output.³ In view of this, it is particularly remarkable to note that the sale of aromatised e-cigarettes, with the exception of tobacco flavours, is prohibited on the Chinese market itself. This discrepancy between production figures and consumption rules underscores the complex regulatory framework and market structure that characterise international trade in vaping products.⁴

2.2 Different types of vapes and liquids: A “bouquet” of different systems, flavours and products

The market for vaping products encompasses a wide range of systems, flavours and product concepts. The range extends from inexpensive disposable e-cigarettes and uncomplicated pod systems to modular devices with refillable tank vaporisers and individually adjustable output. This broad range appeals to different consumer groups and reflects the great diversity of the industry. The diversity of the vaping market is not only reflected in the different systems and flavours, but also in the thousands of manufacturers worldwide whose products contribute to the constantly growing range of products on offer.

² Federal Office of Consumer Protection and Food Safety (2025): List of declared e-cigarettes (August 2025). The list contains over 70,000 disposable e-cigarette products.

³ 2FIRSTS (2022)

⁴ Lyu et al. (2024)



Figure 2: Schematic representation of different types of e-cigarettes.

Source: see Chapter 8 (Copyrights – Illustrations),

E-cigarettes are all based on the same principle: They consist of a vaporiser with a heating element and a small tank for the liquid to be vaporised.

They also have a suitable rechargeable battery as a power source and a mouthpiece. Advanced models have a microprocessor built into the mouthpiece that allows the temperature to be controlled precisely.

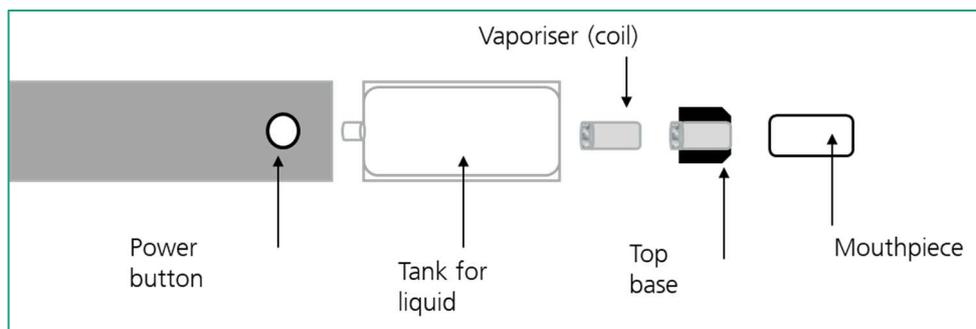


Figure 3: Schematic structure of an e-cigarette.

Source: own illustration based on Flotter-Dampfer (2025).

The composition of the liquids varies depending on the individual product and manufacturer and can include either nicotine-containing or nicotine-free ingredients.

In either case, the liquids are heated by an electric heating element and inhaled as an aerosol (vapour). Refill packs are available for the cartridges of many e-cigarettes, allowing the device to be used several times and thus ensuring a longer service life. This contrasts with vaporisers, often called “vapes” for short, which are usually disposable. The liquid contained in vapes is also vaporised via a battery-operated heating element, but neither the battery nor the liquid tank can be replaced. This product feature means that disposable vapes have a comparatively poor environmental footprint⁵, as they have to be disposed of completely after a single use and leave behind both electronic and chemical waste.

The variety of vaping products is reflected not only in the technical design of the devices, but also in the wide range of flavours and product variants. The example of some well-known manufacturers⁶ clearly shows how differentiated the market has become: They

⁵ Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (2025).

⁶ The most important brands on the German market according to Statista Market Insights (2025) are VUSE, Elfbar, Juul, Njoy, blu, Pulze.

offer a wide range of different device types, including disposable vapes, rechargeable systems and models with pre-filled or refillable cartridges. In addition, many vape manufacturers state that their range includes several hundred different flavours, ranging from classic tobacco and menthol flavours to fruity, sweet or exotic creations. This product diversity plays a key role in ensuring that different consumer preferences can be catered for.

The applicable regulation stipulates that e-cigarettes may only be placed on the market⁷ if they comply with the European **Tobacco Products Directive**. The main regulations governing the marketing of e-cigarettes in the EU are:

- Nicotine-containing liquids must not exceed a maximum nicotine concentration of 20 mg/ml.
- Disposable e-cigarettes or disposable cartridges containing nicotine may have a maximum volume of 2 ml.
- Tanks and clearomisers (vaporisers) may have a maximum capacity of 2 ml.
- Refill containers (liquids) may have a maximum volume of 10 ml.
- Only ingredients of a high purity may be used.
- Apart from nicotine, only ingredients that pose no risk to human health in heated or unheated form may be used.
- E-cigarettes must bear the CE label.
- Manufacturers and importers must register all products that they wish to place on the EU market via the standardised electronic format on the **EU Common Entry Gate (EU-CEG)** platform.

It is also important to note that this EU directive only sets minimum standards. Member states are free to enact stricter national regulations. Market observers estimate that a large proportion of vapes and e-cigarettes (in the EU) are now illegal or are being sold illegally. Numerous products are offered – both online and in physical stores – that do not comply with the EU directive or national regulations and are therefore not marketable. Some of the illegal products are offered via “specialised” sales platforms that do not charge the tobacco tax that is normally payable, nor do they comply with the specifications regarding volumes and ingredients or adhere to the minimum age requirements prescribed by youth protection laws.

2.3 Taxation of vaping products in the EU

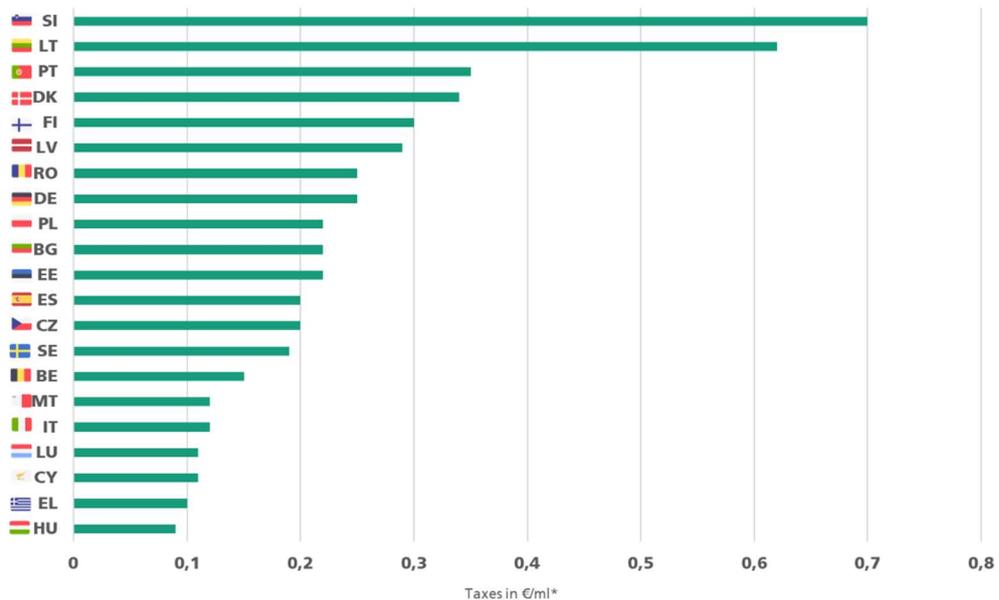
The imposition of specific taxes on nicotine liquids and other vaping products has grown in importance in several European countries in recent years. They are intended not only to generate tax revenue but also to exert a steering effect on health policy and curb consumption, particularly among young people. Against this backdrop, an analysis of the tax aspects of the vaping market is highly relevant for a comprehensive market analysis. However, there has been a lack of reliable and consistent data on the actual volume of tax revenue from this segment within the European Union to date, partly due to the fact that, in some cases, taxation has only been in place for a few years. Despite the enormous quantities of products sold, the market remains extremely opaque due to the large number of operators, product diversity and confusing supply chains, which makes it even more difficult to record and evaluate the tax effects accurately.

The excise duty on liquids varies considerably within Europe, both in terms of its amount and the underlying calculation system. Figure 4 provides an overview of tax levels across

⁷ The marketing of e-cigarettes in the EU is mainly governed by the Tobacco Products Directive (TPD) 2014/40/EU.

the individual EU member states and thus illustrates the existing discrepancies. In most countries, the tax is levied on a quantity basis, usually per millilitre (ml) of e-liquid. However, there are also exceptions: In countries such as Italy, France or the Netherlands, nicotine liquids are currently not subject to any special excise duty, but only to normal value-added tax. This heterogeneous tax treatment reflects different regulatory approaches, making it difficult to analyse the tax burden at the European level.

These differences in tax treatment have a direct impact on pricing in the legal market and may also generate potential incentives to circumvent the regulations via the grey or illegal market. The excise duty rate on e-liquids varies considerably within the European Union, as Figure 4 shows. While several member states, including France, Croatia, Italy and the Netherlands, currently do not levy a specific excise duty on nicotine-containing liquids, some other countries impose significantly higher duties on e-liquids. At the lower end of the range are Hungary (€0.09/ml) and Greece (€0.10/ml), while the highest rates are levied in Lithuania (€0.63/ml) and Slovenia (€0.70/ml).⁸ These major differences illustrate the heterogeneous tax landscape and the resulting price differentials between national markets, which in turn can potentially create regulatory incentives to circumvent and distort competition.



* Data not available for: AT, SK, NL, HR, FR, IE

Figure 4: Tax on nicotine liquids in the EU member states, as of 31 December 2024.

Source: Own illustration. Data basis: European Commission – Excise Duties Overview (2025).

Due to the absence of any reliable or clearly defined statistical records on tax revenues in individual EU member states, it is currently not possible to draw any firm conclusions about the overall volume of tax revenue across the EU. However, the combination of the sales figures for vaping products in conjunction with the national tax rates clearly shows the potential for an increase in tax revenues. The considerable disparity in the tax models within Europe and the shortcomings in records of the tax revenues generated by vaping products underline the lack of harmonisation of excise duties at the EU level. This fragmentation can encourage cross-border trade and the emergence of irregular markets.

⁸ European Commission – Excise Duties Overview (2025).

2.4 Europe-wide differences in vaping behaviour

The European Union has a total population of around 449.3 million.⁹ Around 24.6 per cent of the population over the age of 15 are smokers, equivalent to some 94.3 million people. The proportion of vapers (*e-cigarettes*) stands at 3.1 per cent, i.e. around 11.9 million people.¹⁰ In general, it is clear that vaping is a growing market, although it is still much smaller than traditional smoking.

The prevalence of vaping in the EU member states varies considerably and reflects the different levels of acceptance of these products among the population. While in countries with high smoking rates, such as Bulgaria, Greece or Hungary, vaping is being introduced more slowly in some cases, there is an increasing tendency in Western and Northern European countries to substitute or supplement tobacco products with e-cigarettes.

Although there is little direct scientific evidence to date on the extent to which vaping is being underreported, it can be assumed that vaping consumption is subject to substantial underestimation. Evidence can be derived in particular from the extensive body of research on the underreporting of traditional tobacco consumption. Numerous studies have shown that self-reported smoking habits frequently fail to reflect actual behaviour.¹¹ Moreover, adolescents are regarded as particularly prone to underreporting, as they frequently conceal their use of tobacco and nicotine products out of concern about parental repercussions or social stigma. This can be seen, for example, in the US “National Youth Tobacco Survey (2021)”,¹² in which school students were significantly more likely to report vape use when asked at school compared to when they were asked at home.¹³

⁹ Destatis (2025) and Eurostat (2025).

¹⁰ European Commission (2023).

¹¹ Morean et al. (2018).

¹² Gentzke et al. (2023).

¹³ Morean et al. (2018).

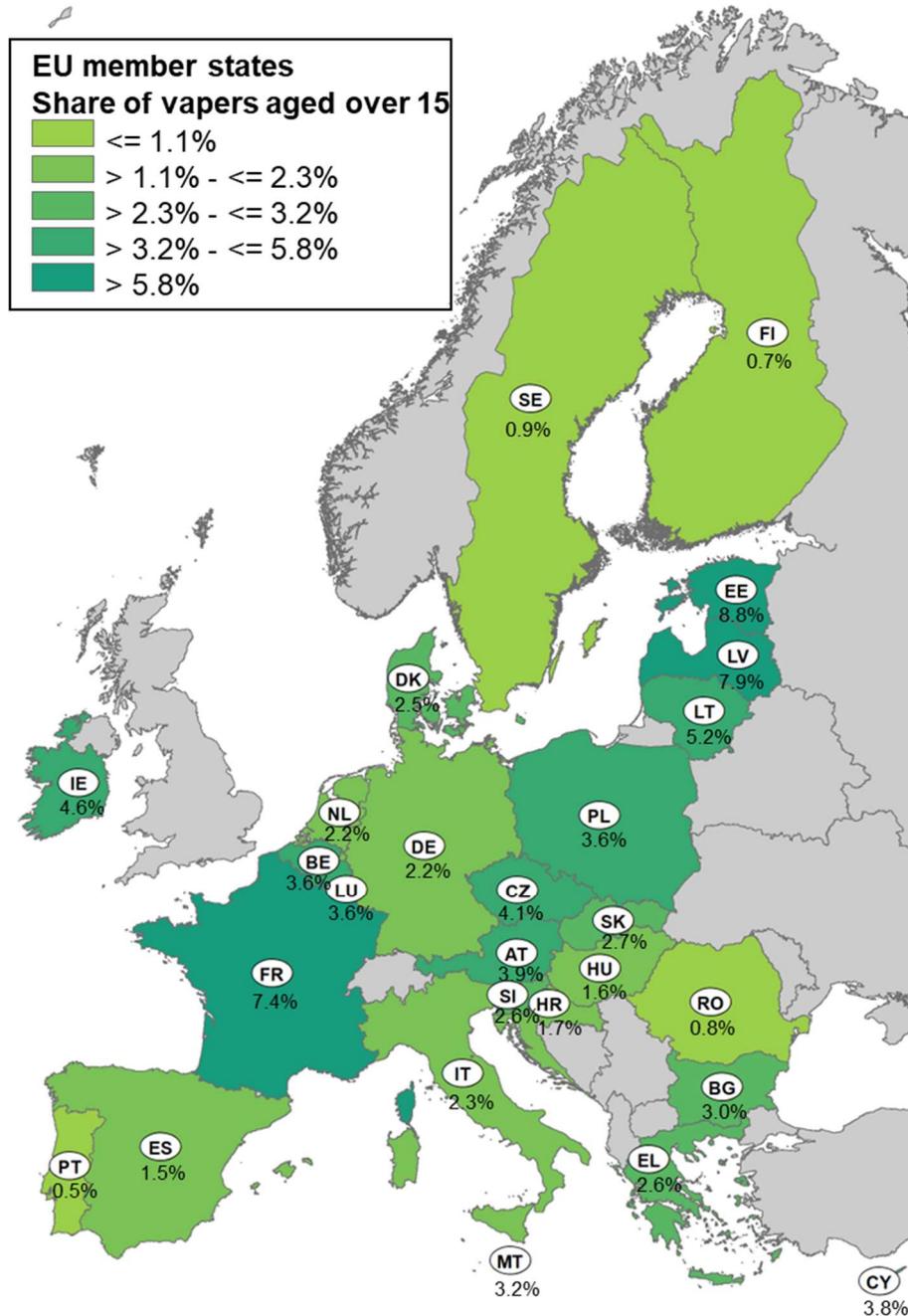


Figure 5: Percentage of vapers per EU country in the total population over 15 years of age.
Source: Own presentation. Data basis: European Commission (2023).

As Figure 5 shows, the proportion of vapers in the total population ranges from just 0.5% in Portugal to 8.8% in Estonia. In addition to Estonia, particularly high prevalence rates are also found in Latvia (7.9% and France (7.4%), while countries such as Sweden (0.9%), Finland (0.7%) and Romania (0.8%) have significantly lower rates. Germany and the Netherlands are in the lower midfield with 2.2% in both cases, while Ireland (4.6%) and the Czech Republic (4.1%) have above-average shares.¹⁴ These differences can be attributed to a variety of factors, including cultural attitudes towards smoking, national regulations and the availability of products.

¹⁴ European Commission data basis (2023).

The results underline the need to take country-specific characteristics into account in market analyses. After the description of the market structure, product diversity and the differences in consumption and taxation behaviour across Europe, the next step focuses on the logistical side of the vaping market. Chapter 3 analyses the international supply routes, the customs classification of the products and the import processes with a particular focus on China as the main country of origin.

3 Delivery routes and import procedures

3.1 Customs classification

HS (Harmonised Commodity Description and Coding System) codes are used to systematically classify and statistically record vaping products in international trade. These play a central role in customs and tax classifications. The following table lists the relevant HS codes for nicotine products and e-cigarettes. The examples illustrate typical product types within the specific category:

HS code	Description of goods	Examples
240412	Products containing nicotine, intended for inhalation without combustion (excl. containing tobacco or reconstituted tobacco)	- E-cigarette liquids (20 mg nicotine/ml).
854340	Electronic cigarettes and similar personal electric vapourising devices	- Electronic cigarette (50g, 120mm x 20mm). - Refillable e-cigarette (2ml liquid capacity). - Disposable e-cigarette (already contains the liquid).

Table 1: HS codes for nicotine products (liquids) and e-cigarettes.

Source: Own illustration based on Customs Portal Europe (2025).

3.2 China the EU's main source of imports

The European e-cigarette industry consists of a large number of players, including major international manufacturers, specialised start-ups, online retailers and physical shops.¹⁵ In Germany, the industry association Verband des eZigarettenhandels e.V. (VdeH) was established in 2011 and is regarded as the leading organisation representing the interests of the e-cigarette industry in Germany. It unites players along the entire value chain, from retailers to producers, and is committed to ensuring the serious, legal and sustainable development of the market. The VdeH Code obliges its members to distribute products responsibly and in full compliance with the law, with particular emphasis on safeguarding minors, ensuring product safety and combating the black market. The association clearly distances itself from illegal, untaxed or harmful products such as "big vapes", nitrous oxide or psychoactive substances.¹⁶

One central aspect of the discussion about market structures and regulation concerns the origin of the products. Around 90 per cent of all e-cigarettes imported into the EU come from China.¹⁷ The aromatised fruit-flavoured e-cigarettes produced may only be exported, as such products were banned domestically due to their particular appeal to young people.

¹⁵ VdeH members' page (no year stated).

¹⁶ VdeH (2025).

¹⁷ Eurostat data basis (2025).

China’s dominant global role is also reflected in the European Union’s trade statistics. Data from 2024 shows that the Netherlands, Germany and Belgium in particular are the main importers of nicotine liquids (HS 240412) and electronic cigarettes (HS 854340) from third countries, with a dominant share of just over 91% originating in China¹⁸. In 2024, the Netherlands imported around 11,763 tonnes of nicotine liquids and 2,622 tonnes of e-cigarettes from outside the EU, while Germany imported 5,260 tonnes of liquids and 3,334 tonnes of e-cigarettes. Imports of nicotine liquids and e-cigarettes in particular are experiencing rapid growth in the EU (see Figure 6). In 2022, all EU countries collectively imported around 30,888 tonnes, while over 45,000 tonnes of nicotine liquids and e-cigarettes were imported into the EU from third countries in 2024.¹⁹

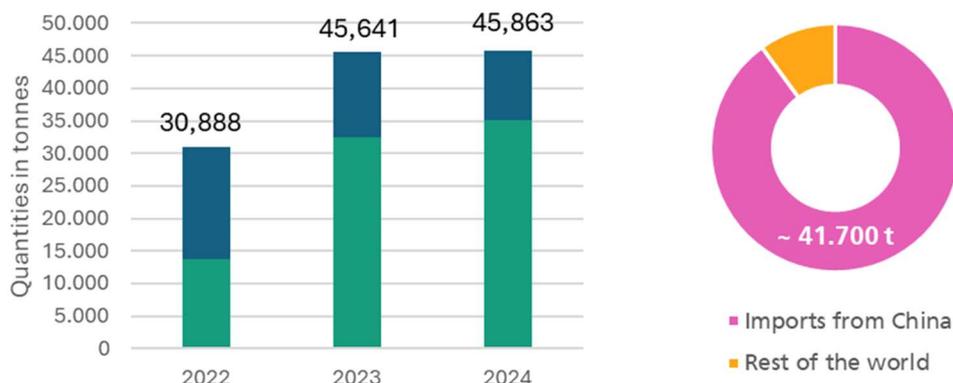


Figure 6: EU imports of nicotine liquids (green) and e-cigarettes (blue) (tonnes).

Source: Own illustration. Data basis: Eurostat (2025).

The structural imbalance between imports and exports within the EU, particularly in the Netherlands and Belgium, is striking. These countries import only small amounts from other EU countries but export large quantities, indicating that they act as logistical hubs for Chinese products in the European market. At the same time, there is evidence that some of these goods are being circulated through opaque distribution channels, suggesting grey-market activity or gaps in tax reporting.

An example of the lack of transparency in the flow of goods can be seen with the Netherlands: Although the country exported around 10,250 tonnes of nicotine liquids (HS 240412) to other EU countries in 2024, these countries together reported imports of around 17,000 tonnes.²⁰ This points to the possible existence of grey market structures, non-transparent distribution channels or discrepancies in the foreign trade statistics for vaping products.

The problem of unregulated imports is further exacerbated by developments on the black market. In May 2025, for example, more than 45,000 illegal vapes and 1,100 litres of e-liquids were confiscated during a truck inspection by German customs in Cologne. Among other things, tax codes and permits were missing.²¹

¹⁸ This corresponds to approx. 31,800 tonnes.

¹⁹ Eurostat data basis (2025).

²⁰ Eurostat data basis (2025).

²¹ German Federal Customs (2025).



Example of illegal vapes:

One problem is posed by “super vapes”. These are disposable products with up to 15,000 puffs. Although EU law does not stipulate a limit on the number of puffs, a maximum filling quantity of 2 ml and a nicotine content of no more than 20 mg/ml apply. In practice, this usually corresponds to around 600 puffs.

It is not possible to determine the exact number of manufacturers operating worldwide. The highly dynamic Chinese market is characterised on the one hand by strict regulatory supervision by the State Tobacco Monopoly Administration (STMA)²² and on the other by the continued presence of illegal businesses. It is estimated that more than 170,000 companies were involved in the production of e-cigarettes and accessories in China during periods of extreme industry growth.²³ Since 2022/23, the number has fallen to an estimated 640 licensed companies nationwide. Around 450 licensed companies are registered in Shenzhen alone²⁴. Chinese production has increasingly focused on export markets over the years due to the STMA’s comprehensive regulatory framework, including mandatory licensing, the prescribed technical standards (GB standard²⁵), the ban on online sales and advertising in the domestic market and consumption taxes.²⁶

Shenzhen is currently regarded as the main centre for licensed e-cigarette production. The companies registered there account for up to 72 per cent of Chinese e-cigarette production.²⁷ In addition, 70 per cent of the vaping device manufacturers are based in Shenzhen.²⁸ However, the discrepancy between officially registered and illegally operating companies is immense. In March 2022, there were more than 11,000 e-cigarette companies in Shenzhen alone.²⁹ To avoid attracting the attention of the authorities, companies use tactics such as “port shopping”³⁰ and frequent brand changes. At the same time, there is evidence that manufacturers are producing compliant products for the domestic market while also producing illegal products for export. Manufacturers have often reached a remarkable scale.³¹

²² VAPEAST (2023).

²³ iiMedia (2021).

²⁴ 2FIRSTS (2024).

²⁵ GB standards (GuoBiao standards) in China are national standards that regulate the safety, quality and performance of various products. They are set by the Standardisation Administration of China (SAC) and serve as the basis for standardisation, safety and quality in various industries. GB standards are either mandatory (GB) or recommended (GB/T).

²⁶ Since 1 November 2022, e-cigarettes have been subject to excise duty in China. This is levied at a rate of 36 per cent for production and imports and an additional 11 per cent for wholesale. (Tobacco Reporter (2024)).

²⁷ 2FIRSTS (2025).

²⁸ ALD (2024).

²⁹ 2FIRSTS (2022) (2).

³⁰ The term “port shopping” originates from cruise tourism. Manufacturers and retailers offer their vaping products to travellers in duty-free shopping at selected shops in ports and airports.

³¹ One example is ALD Group Limited, with its “Fresor” technology platform, 5 factories, over 4,000 employees (more than 500 R&D employees alone) and a monthly production of over 50 million units.

The JWEI Group, which was founded in 2008, also claims to have two factories with fully automated production lines in China (production capacity of 10 million units per month) and 4 R&D centres (in China, the United States, France and South Korea).

3.3 Delivery routes

Given that a large proportion of the vapes and liquids consumed in Europe are produced in China, logistics are of crucial importance. All forms of transport are used to carry goods to Europe: Ship, train, plane and (rarely due to the distances involved) road haulage. While experienced buyers – both commercial and private ones – (can) place their orders directly with manufacturers in China, e.g. via online sales platforms, individual purchases are usually handled via physical shops.

With respect to transportation, there are clear differences between online trade with private and small customers and typical commercial trade with wholesalers and importers. In simple terms, the vaping products ordered online are sent via a postal company or one of the well-known, internationally active express parcel services.

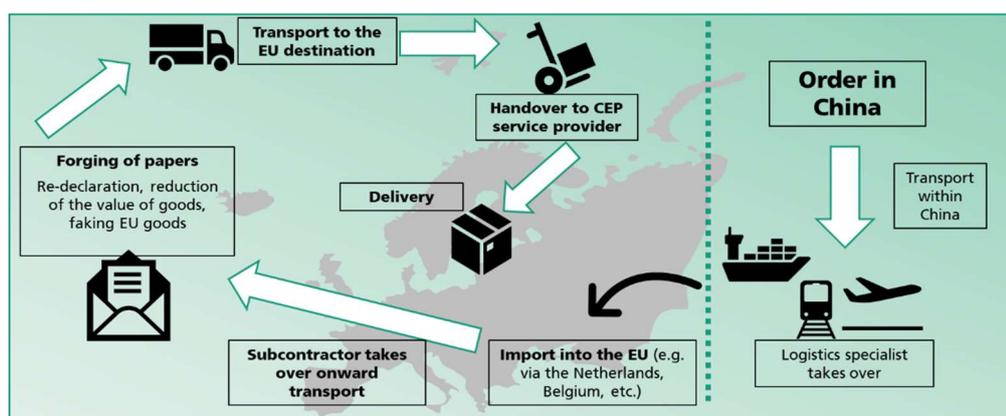


Figure 7: Diagram showing delivery process for an online direct order in China.

Source: own illustration, based on *Vapers.Guru* (2025).

In typical commercial trade, the buyer orders directly from a manufacturer (assuming that the manufacturer offers this option), from an exporter or from a wholesaler. These suppliers usually have established contracts with transport companies, i.e. shipping companies, airlines or express parcel services. Alternatively, the suppliers work with freight forwarders who handle the entire intermodal process.

One characteristic of commercial trade is that intermediaries (wholesalers or importers, as well as manufacturers' foreign locations) may be involved in the sales process. This means that it is not fully clear where the ordered goods are dispatched from. This is relevant for customs processing.

In this context, it is important to note that the place of dispatch may also be in a country (including within the EU) other than the one in which the authorised supplier's registered office is located. One reason for this may be that orders can be processed more quickly and at less expense.

3.3.1 Air freight

The major CEP service providers, such as DHL, FedEx and UPS, operate regular air freight routes with their own aircraft between China and Europe. Cargo is also loaded onto passenger flights.

DHL Express operates a total of more than 30 international air freight routes with its own freighters from its southern Chinese gateway in Shenzhen. The Shenzhen – Leipzig route, where the company's European hub is located, has had six direct return flights per week

since 2019. Boeing 777 freighter aircraft are used, resulting in a weekly freight capacity of more than 500 tonnes.

FedEx uses its own hubs in Cologne, Paris and especially Liège as destinations for direct flights from China. It has a total of six gateways in China: Beijing, Shanghai, Guangzhou, Shenzhen, Qingdao and Xiamen, from where more than 300 flights a week are operated. The airports in China that are relevant for the European routes are Shanghai and Guangzhou, where the FedEx Asia Pacific Hub is located.

Boeing 777F freighters fly five times a week from both airports to destinations in Europe. They each have a capacity of 81 tonnes, translating into a weekly transport capacity of 810 tonnes.

Shenzhen Airport is the international air freight hub for UPS; the European hub is located in Cologne. The integrator also uses Shanghai and Hong Kong airports as hubs. Direct flights are operated between the hub in Cologne and the Chinese hub in Shenzhen. It also operates a total of 200 weekly flights to and from key Chinese business centres such as Chengdu, Qingdao and Zhengzhou; some of these flights also reach destinations in Europe. Almost only large-capacity freighters are used, carrying between 70 and 110 tonnes of freight, depending on the model.

Additional air freight capacities are arising from the expansion efforts of Chinese CEP services. Thus, Cainiao, the logistics subsidiary of e-commerce giant Alibaba, opened a European hub in Liège, Belgium, in 2021. It is worth noting in this regard that this site is supplied by road from the Dongguan production centre in southern China.³²

The company has been operating a direct flight between Xi'an in central China and Liège since September 2024. It is operated twice a week using a Boeing 767-300F freighter.

SF Express, the market leader in the Chinese CEP market, has amassed considerably larger capacities. The newly built Ezhou mega airport in central China was officially opened in the summer of 2022.

SF Holding and the Hubei provincial government invested the equivalent of more than 7.8 billion euros in what is described as "Asia's first professional cargo airport".³³ Once completed, Ezhou will be the fourth largest airport in the world, handling more than 2.6 million tonnes of freight and 1.5 million passengers. Flights from Ezhou Airport go to Liège in Europe and, since the summer of 2023, also to Frankfurt.

The Ezhou – Frankfurt route is operated twice a week with a Boeing B747-400 freighter. Since summer 2024, the Ezhou – Budapest route has also been operating twice a week. Oslo has also been served twice a week with a B767-300 wide-body freighter since the beginning of 2025.

Overall, China's express services have built up considerable air freight capacities. At the beginning of 2025, the companies had 150 of their own cargo-only aircraft in operation³⁴:

- SF Express 89 freighters,
- JD.com 7 freighters,

³² Alizila (2022).

³³ KEP-Verlagsgesellschaft mbH. (2022). CEP News (issue 29/2022).

³⁴ 36Kr (2025).

- China Post 42 freighters and
- YTO Express 13 freighters.

3.3.2 Sea freight

The chart below illustrates the sea freight corridor from China to Europe (including stopovers at other ports) and, in particular, the onward distribution from Hamburg to Northern Europe. According to the Port of Hamburg, 20 per cent of containers arriving from China are forwarded to other ports.

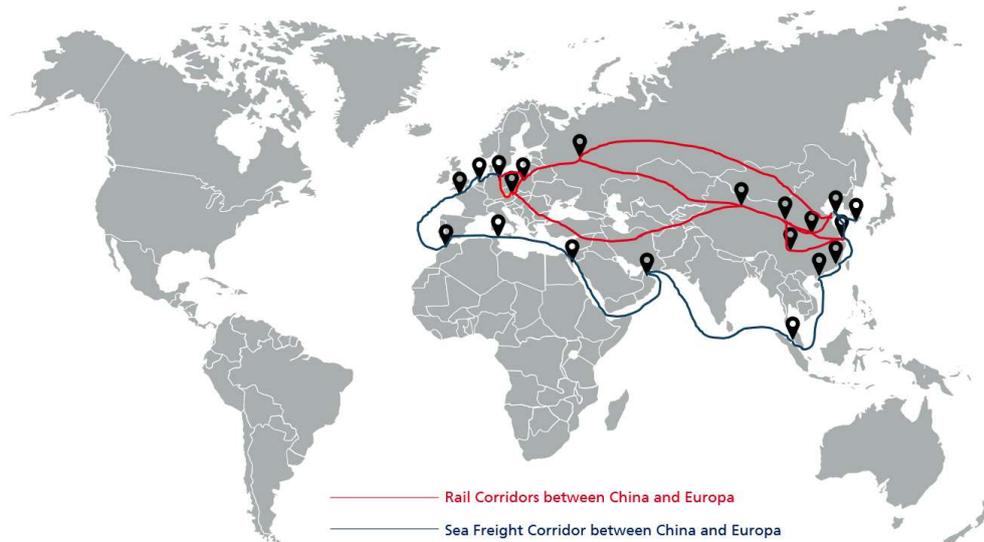


Figure 8: Rail and sea freight between China and Europe.

Source: Own illustration.

Sea freight remains the predominant mode of transport, largely due to its cost advantages, and is particularly significant given that maritime routes constitute the principal means of moving imports from China to Europe. Up to 90 per cent of the total trade between China and Europe is transported by sea.

Another reason is presumably the fact that sea freight shipments are usually palletised at the delivery plants or warehouses, and the pallets are packed in sea containers. As the containers are generally not checked by customs after being loaded, the actual quantities and qualities may well deviate from the documentation.

According to official figures, the main European ports for imports from China to the EU are Antwerp in Belgium, Hamburg and Rotterdam. A total of around 9.9 million TEUs³⁵ were handled via Rotterdam in 2022 (Antwerp approx. 13.5 million TEUs³⁶, Hamburg approx. 6.3 million TEUs³⁷ annually).

³⁵ Clingendael Institute (2023).

³⁶ Journal of Commerce (2023).

³⁷ Container News (2022).

3.3.3 Rail transport

Container block trains from China reach many terminals in Europe by rail. These are located in Poland (Malaszewicze, Warsaw, Lodz and Poznan), in the Czech Republic (Prague), in Hungary (Budapest) and in Germany (Hamburg, Duisburg and Nuremberg).³⁸

In addition to the sea route, Figure 8 also shows the rail freight delivery route from China to Europe (including stopovers at other rail terminals) as well as onward distribution from Hamburg. The route, which traverses Russian territory, has hardly been used since Russia's attack on Ukraine.

The number of freight trains arriving in Europe from China each week fluctuates and is influenced by various factors, including demand, geopolitical developments and infrastructure capacity.

In 2023, a total of around 17,000 freight trains³⁹ travelled from China to Europe. The number in 2024 is estimated to be around 19,390. In terms of individual weeks, this breaks down as follows:

- 17,000 trains per year (2023) / 52 weeks = approx. 327 trains per week = approx. 26,160 containers per week.
- 19,392 trains per year (2024) / 52 weeks = approx. 373 trains per week = 29,840 containers per week.

The main dispatch stations in 2024 were Xi'an (3,849 train journeys), Chengdu (2,285), Chongqing (2,059) and Zhengzhou (2,052)⁴⁰.

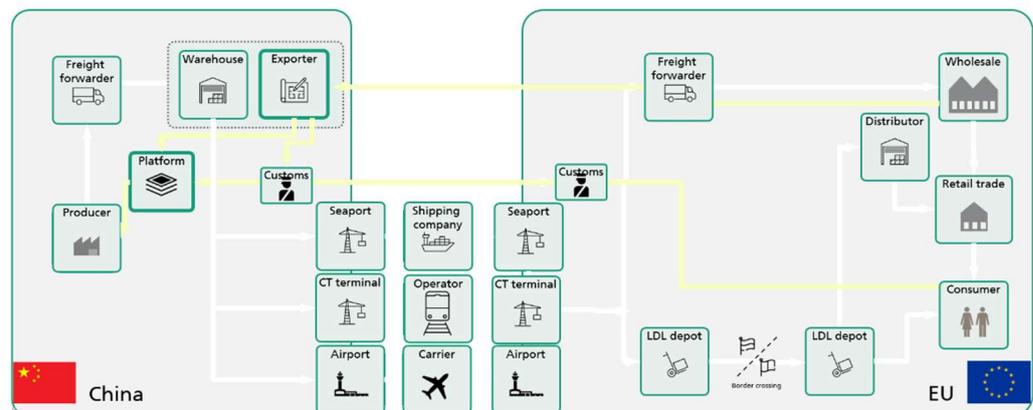


Figure 9: Supply routes and players along the supply chain for vaping products.

Source: own illustration.

From a logistical point of view, the above details describe linehauling, i.e. the transportation of goods over long distances between the points of departure and arrival. The "first" and "last mile" should also be included to provide a full representation of the entire supply chain. The "first mile" designates the transport routes from the place of origin (e.g. the manufacturer) to the first transshipment centre. The "last mile", on the other hand, refers to the route from the last receiving station to the end customer (e.g. front door). The diagram below illustrates the entire transport chain. On the first mile in

³⁸ GCD Glomb Container Dienst (no year stated)

³⁹ China State Railway Group (2024).

⁴⁰ New Silk Road Discovery (2025).

China, the shipments – as described above – are collected from the manufacturer and transported to the relevant transshipment point. Similarly, consignments are transported over the “last mile” from the last receiving station to the ultimate customer. What is relevant here is that customs clearance is mandatory in both the exporting and the importing country.

In addition to the volumes and packaging units shown, the supply chain for vaping products between China and Europe is extremely complex and multi-layered. Regardless of whether the order is placed directly by end customers via online platforms or whether wholesalers or retailers purchase larger quantities via intermediaries or trading platforms in China, numerous players are involved in the process. These include producers, Chinese wholesalers and retailers, local and foreign logistics service providers, platform providers, customs offices and, where applicable, specialised importers or fulfilment service providers. The large number of interfaces and players involved makes the supply chain for vaping products a highly networked and sensitive logistical process.

The supply chain for vaping products is not only international, but also highly complex and multi-layered, involving numerous players, different transport routes and specific national regulations. This structure renders end-to-end traceability along the entire chain difficult. It creates potential gaps in supervision, particularly in the case of cross-border deliveries, which may encourage the entry of unauthorised or non-compliant products into European markets.

3.4 Import procedure

Regardless of whether transportation is by air, rail or sea, the (customs) process is always the same. When an order is received online, the seller issues a commercial invoice for the ordered goods, a certificate of origin if necessary, the export customs declaration and the consignment note. This is generally only required for statistical purposes. In commercial trade, identical documents (commercial invoice, a certificate of origin, the export customs declaration and the consignment note) are issued for the ordered goods. In commercial business, the export customs declaration can also be submitted by an authorised forwarding agent.

The packaging for vapes (e-cigarettes) must be labelled with the name of the manufacturer or supplier⁴¹. This is a legal requirement, especially in the European Union, to ensure traceability and compliance with safety standards.

In addition to the manufacturer's information, the packaging of vapes and e-liquids must contain further information, including:

- Product name and description.
- List of all ingredients in descending order of weight.
- Nicotine content and nicotine per dose (if applicable).
- Health warnings (e.g. "This product contains nicotine, which is a highly addictive substance.")
- Batch ID.
- Warning that the product must be kept out of the reach of children and adolescents.
- A leaflet with instructions on use and storage as well as details of any contraindications.

Customs processing of the imports begins in the first EU country in which the goods arrive. There are basically three different registration procedures:

1. Declaration for free circulation: This means that the goods are declared by the recipient, an authorised forwarding agent or the importer. Customs will determine the amount of duties payable (taxes, customs duties and any other duties) on the basis of the documents submitted.
2. Customs transit procedure 1 (T1): In this case, the goods are transferred physically and for customs purposes to the customs warehouse of the importer, forwarder or consignee. The goods remain subject to customs supervision and cannot be released for free circulation.
3. Customs transit procedure 2 (T1): With this procedure, the goods are not placed in a customs warehouse of an importer or freight forwarder physically or for customs purposes but transported directly to the recipient. Before the goods can be released to the recipient, however, they must be presented to customs.

The customs declaration is submitted electronically in accordance with the commercial documents, either at the border customs office (airport or seaport of arrival) or at the bonded warehouse.

⁴¹ Under the CLP Regulation (Regulation (EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures), the labels must state the supplier's name, address and telephone number among other things.

However, the physical handling of imports differs from this purely customs-related procedure. The scanning of goods for identification purposes has become an established procedure at airports. Physical checks (counting, analysing), on the other hand, are only performed irregularly. Even at seaports, more intensive physical checks (counting, analysing) are the exception rather than the rule.

Although it is possible to scan entire containers nowadays, only a few European ports have such facilities and, even if they do, not every terminal is equipped with its own scanner. In addition, the entire process of scanning a container is time-consuming, as it entails not only actually X-raying the consignments but also other steps such as data processing, transporting the container to the scanning zone and the actual customs release. In practice, the goal of completing all these steps within three hours cannot always be fully achieved.

In view of the enormous quantities of containers that regularly reach the ports, it is obvious that it is impossible to physically check the quantity and content declarations, let alone carry out comprehensive inspections. As a result, the physical checks performed by customs are necessarily confined to spot checks.



Day-to-day procedures of the customs authorities

A recent report from Belgium provides an impression of the huge quantities which the customs authorities face. Thus, Belgium's Central Economic Council (Conseil central de l'économie) has warned the country's government "of an uncontrollable influx of parcels from China".

According to the Council, up to 4 million parcels currently pass through Belgian customs every day. "This is a dramatic surge, and these packages are mainly coming from China," a spokesman told the news agency "AFP" (10 July).⁴²

Belgium is one of the main gateways for goods from China to the EU. They enter the EU via the port of Antwerp and the air freight hub in Liège.⁴³

For the sake of completeness, it should be noted that the quantities mentioned above refer to the total number of shipments arriving from China, not just vaping products.

An example of a calculation of the quantities of vapes contained in standard packets, in this case disposable e-cigarettes, is as follows: The packaging unit of a single vape is 10 x 2 x 2 centimetres. A standard box measuring 60 x 30 x 14 centimetres can usually hold up to 400 vapes, including packaging material. In this calculation, for example, 36 of these standard cartons are stacked on a Euro pallet measuring 120 x 80 x 235 centimetres, corresponding to a total quantity of 14,400 vapes per pallet. A complete 20-foot container can hold a total of 12 such pallets, although in the vaping sector, containers are typically not loaded exclusively with vapes but are grouped together with various other consignments. Table 2 illustrates typical packaging units and the actor levels used to transport the vaping products from China to the EU shown in Figure 10, which amounted to approximately 41,700 tonnes in 2024.

Germany, Belgium, the Netherlands and Luxembourg act as logistical gateways for imports of e-cigarettes and nicotine liquids from China due to their central location and their seaport and airport infrastructure. These countries account for over 50% of imports (23,300 tonnes out of a total of 41,700 tonnes). This underlines their importance as the main hubs for the European market.

⁴² Conseil central de l'économie (2025).

⁴³ KEP-Verlagsgesellschaft mbH. (2025). CEP News (15 July 2025), quoting the Conseil central de l'économie.

			
Pack 10 x 2 x 2 cm	Box 60 x 30 x 14 cm	Pallet 120 x 80 x 235 cm (assuming 32 cartons)	Container 20 feet
Product level (1 e-cigarette/vape)	Retail level (approx. 400 vapes)	Wholesale level (approx. 14,400 vapes)	Forwarder level
Weight incl. packaging: approx. 45g	Weight incl. box and filling material: approx. 19 kg	Weight incl. pallet: approx. 630 kg	

Table 2: Comparison of packaging units and levels

Source: own illustration.

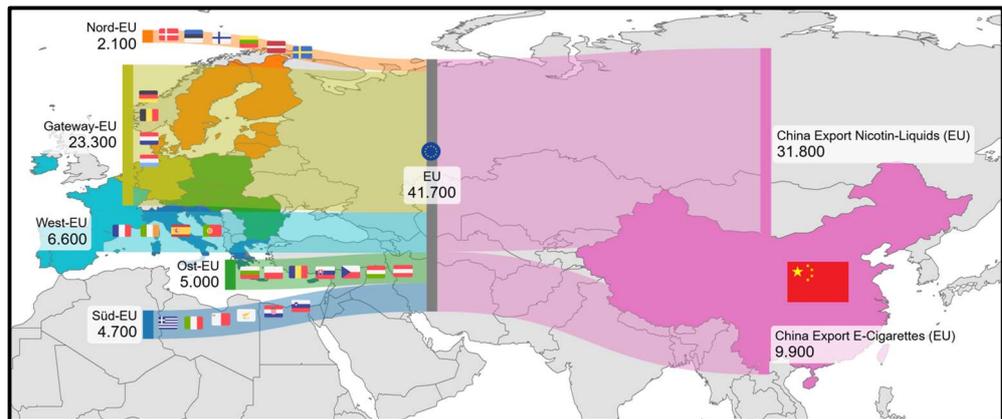


Figure 10: Total registered trade flows (nicotine liquids and e-cigarettes in tonnes) from China to the EU in 2024.

Source: own illustration, based on Eurostat data (2025).

The following figure (Figure 11) shows the proportion of imported liquids and e-cigarettes in intra-EU trade compared to the proportion from China. While Portugal and Finland source almost all of their imports from intra-EU trade, the gateway countries Belgium, Netherlands, Luxembourg and Germany, as well as Ireland, Malta, Latvia and Croatia, have a much larger quantity of direct imports from China.

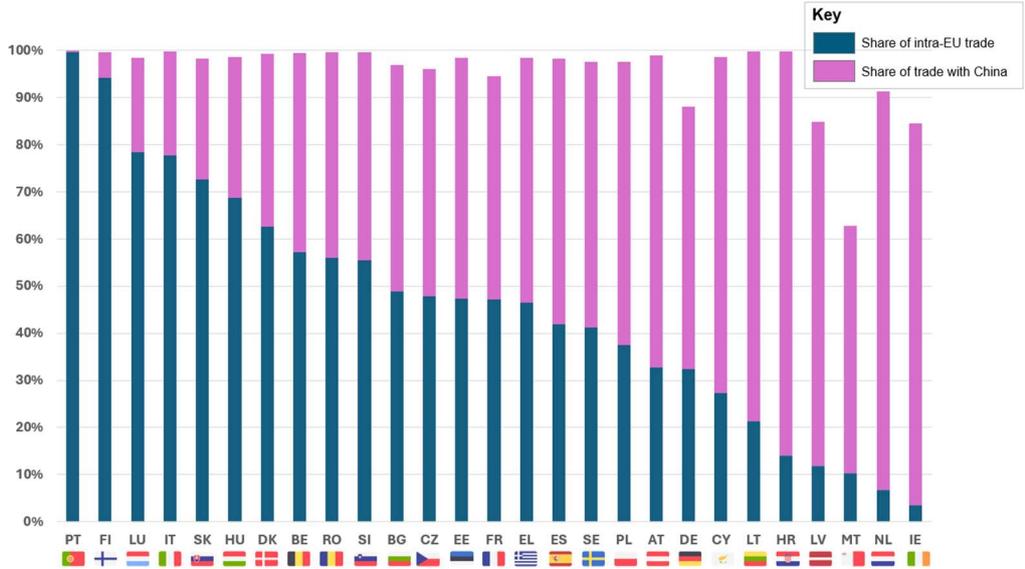


Figure 11: Proportion of imported e-cigarettes and liquids from intra-EU trade compared to direct purchases from China.

Source: own illustration, based on Eurostat data (2025).

This supply chain structure, which varies greatly from country to country, offers gateways and loopholes for irregular trade in vaping products, as transport within the EU is usually controlled to a much lesser extent than imports from third countries.

4 Market segmentation and quantification of the irregular market

4.1 Distinction between grey and black market

It is more difficult to draw a clear distinction between the grey and black market for vaping products than for cigarettes or branded products, for example, as the market is still relatively young. Nevertheless, they also have certain things in common: While the grey market frequently offers original products through unauthorised channels motivated by lower prices and better availability, the black market particularly includes unauthorised, counterfeit, untaxed and therefore illegal e-cigarette products, which can pose health and safety risks for consumers.

Unlike the black market, grey market activities are generally covered to a certain extent by the applicable law and are considered unofficial, but not necessarily illegal. The brand owners of the products traded on the grey market are usually compensated as normal, but customs duties, taxes or approval rules in the recipient country are often circumvented. One typical example is the private import of taxable goods up to a certain limit, such as cigarettes (max. 200 units from non-EU countries), spirits (max. 10 litres over 22% by volume from EU countries) or tobacco substitutes (no more than 10 retail packs).⁴⁴

The main motivation for grey market trade often lies in price differences between different markets but can also be due to the limited availability of certain products via official channels or the avoidance of specific market conditions such as national licensing restrictions. The global nature of e-commerce greatly facilitates the growth of the grey market, as online platforms allow unauthorised sellers to reach consumers across different regions.

The black market for e-cigarettes, on the other hand, entails the illegal sale of vaping products. This includes stolen, counterfeit or prohibited goods as well as incorrectly taxed products. The motivation for black market trade arises from the sale of illegal goods with the intention of maximising profits, evading tax and gaining potentially higher profit margins due to the lack of compliance costs.

In reality, the picture is quite different depending on the national legal situation and local tax regulations: For example, while online orders of tobacco substitutes from abroad are permitted in some countries (up to certain limits and subject to compliance with customs regulations in some cases), they are generally prohibited in other countries and not (yet) regulated at all in others.⁴⁵ This means that the definition of the grey and black market

⁴⁴ Directorate General of Customs (no year stated) .

⁴⁵ Three current regulations are listed here as examples:

Germany – Vaping products that meet the general quality and safety requirements may be imported from abroad via online orders, provided they contain a German tax mark. If this is not the case, the goods are not marketable in Germany, posing an offence against the Tobacco Tax Act - General Customs Directorate (2025).

can also vary from country to country. Table 3 shows some of the typical criteria for the classification of individual cases, without claiming to be definitive or exhaustive.

Criterion	Grey market	Black market
Actors	Private individuals	Commercial operators
Motivation	Inexpensive purchase for own use	Realisation of profits
Legality	No (direct) violation of the law	Clear violations of the law with the intention of making a profit
Product origin	Original products paid for with the manufacturer	Unregistered products and products with illegal specifications, including counterfeits in some cases
Tax effect	Within the legal requirements	Deliberate tax fraud

Table 3: Typical criteria for distinguishing grey and black markets.

Source: own illustration.

As it is usually difficult to distinguish between the grey and black markets, even in individual cases, a pragmatic definition of the two segments has been used for this study, focusing in particular on the scope and intention of the activities from the end customer’s perspective:

Black market for nicotine liquids and e-cigarettes

The black market entails commercial trade in illegal, counterfeit or untaxed products with the intention of making a profit.

Grey market for nicotine liquids and e-cigarettes

The grey market comprises the private purchase for personal consumption of untaxed products or products that are not permitted in the user’s own country.

4.2 Model for market quantification and segmentation

On the basis of this definition, an econometric model was developed to estimate the market for vaping products in Europe, which includes both the legal (“white”), grey and illegal (“black”) market. Indicators of trade in the grey and black market, such as general purchasing power and the relative rate of national taxation, were also taken into account in addition to demographic data, import/export volumes and price elasticities.

France – The purchase of tobacco products via the Internet (online shops, classified ads or social networks) is strictly prohibited, regardless of the location of the site - Direction générale des douanes et droits indirects (2025). Vaping products are currently excluded from this rule and may be ordered online, provided that the corresponding taxation and labelling requirements are met - Ministère de l'Economie des Finances et de la Souveraineté Industrielle et Numérique (2025).

Poland – The online sale of tobacco products, e-cigarettes and liquids containing nicotine was banned in full on 5 July 2025. Online trade in e-cigarettes and refill containers has been brought into line with online trade in tobacco products - Ministerstwo Zdrowia (2025).

Generally speaking, the model was developed as far as possible on the basis of publicly available data, supplemented by research in various specific aspects in certain national markets.

The same procedure was applied in all EU countries and essentially concentrated on the following steps, which are summarised in Figure 12.

1. Determination of expected total demand for vaping products per country

Extrapolation of the number of active vaping consumers per EU member state⁴⁶ taking into account structural components⁴⁷, as well as different consumption profiles (daily vs. occasional), forms of consumption (open systems, pre-filled pod systems, disposables) and packaging factors.⁴⁸

2. Comparison with statistical quantity structure

Evaluation of the HS codes per country shown in Table 1⁴⁹, taking into account imports (intra- and extra-EU) plus – if possible – national production volumes minus exports (intra- and extra-EU) as “official” volumes per country = “white market”; remaining part of the expected total demand defined as “irregular”, i.e. “grey or black market”.

3. Segmentation of the irregular market

Country-specific breakdown of the volumes on the grey and black market that cannot be explained by the statistics, assuming that the grey market largely comprises online orders and factoring in regulatory measures, price differences and the availability of products in stores.

⁴⁶ This was based on the results of the European Commission (2024), which were supplemented by individual data provided by local associations.

⁴⁷ Among other things, the country-specific age cohorts, the ratio of vapers to smokers and information from national institutions on the number of vapers were included to largely eliminate any gaps and structural underreporting in the European Commission’s data (2024).

⁴⁸ In order to render the quantity of liquid and the number of disposables comparable with quantity of imports and exports, a specific packaging factor for product packaging and retail or transport packaging for open systems, pre-filled pod systems and disposables was determined and included in the calculations.

⁴⁹ Eurostat (2025).

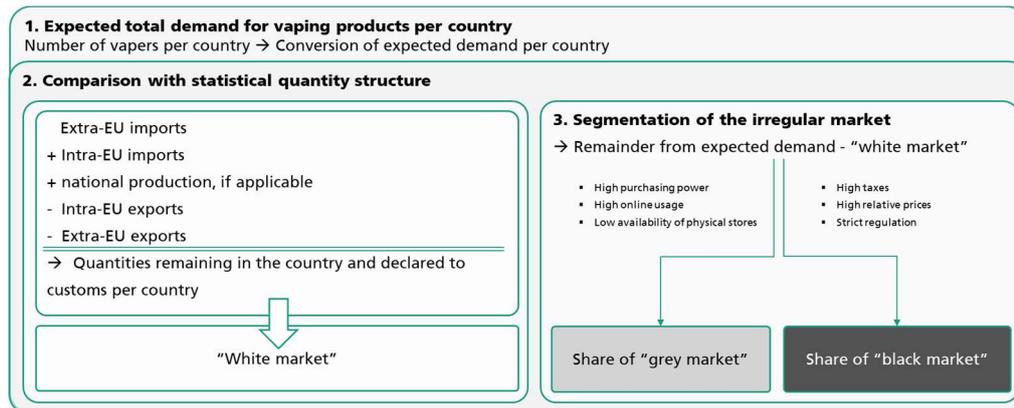


Figure 12: Overview of the quantification of the white, grey and black markets.

Source: own illustration.

Despite the inclusion of the most specific and granular data possible in the model, individual assumptions and, in particular, the basic data used in this model are also subject to certain uncertainties, e.g.

- A tendency to underestimate the base population of regular and occasional vaping users per country due to small sample sizes of the available sources and a tendency to underreport respondents.
- The conversion of millilitres of liquids or the number of disposables in expected total demand to the tonnages used in foreign trade statistics is based on assumptions concerning product and retail packaging, which can only include rough average values due to the variety of products, despite the breakdown by product group.
- Products are not clearly categorised in the HS foreign trade classification system: Whether, for example, disposables were always classified as “electronic cigarettes and similar personal electronic vaporising devices” as provided for in the nomenclature and not erroneously as “products containing nicotine for inhalation without combustion (without tobacco/reconstituted tobacco)” can only be determined on a case-by-case basis and not at the macroeconomic level. In practice, this does happen (either intentionally or unintentionally).
- The definition used to delineate the grey market with a focus on private purchases for personal consumption represents a simplification of the complex market situation in the vaping sector. In reality, for example, private purchases from obviously illegal operators are just as common as legal commercial direct imports of non-EU goods into countries that do not impose any tax on liquids.

Despite the distinction between liquids and disposables as well as the grey and black markets, the following results should therefore not be construed as definitive values but as model-based estimates and interpreted accordingly with caution.

4.3 Results – The irregular market accounts for almost half of the total European market for vaping products

The results of the market segmentation model used show⁵⁰ that

⁵⁰ Due to the logic of the model, which is based on physical quantities of goods, it should be borne in mind that the statements and percentages included here always refer to the product level and not the monetary level.

- Europe-wide, around 48 per cent of the vaping products consumed can be allocated to the irregular market segment.
- The grey market for vaping products used by private individuals to cover their personal needs is estimated to account for around 13 per cent of the total market.
- The remaining 35 per cent and thus a good third of the expected total physical demand for vaping products in Europe is statistically untraceable and can therefore be attributed to the commercial black market.
- The liquids market segment (including pre-filled pod systems) accounts for around 2/3 of the total European market for vaping products, with a higher percentage of the grey market likely in many countries.
- The disposables segment constitutes around 1/3 of the total European market for vaping products, although the black market can be assumed to account for a larger proportion in many countries.
- There are major differences in terms of market structures and segments in the EU countries.
- The share accounted for by the irregular market is disproportionately larger in scenarios with higher taxes and non-harmonised regulations, because online channels, gateway countries and incomplete commodity codes offer incentives and opportunities to circumvent the white market.

Tables 4 and 5 show the results of the market segmentation, broken down into liquids and disposables, as well as the respective share of the grey and black market in the EU member states in 2024.

country	market segment liquids			market segment disposables		
	liquids demand in t	"remaining" quantities liquids in t	share of "irregular" market liquids	disposable demand in t	"remaining" quantities disposables in t	share of "irregular" market disposables
AT	422	-196	47%	259	-153	59%
BE	804	-97	12%	597	-265	44%
BG	319	-191	60%	116	-79	68%
CY	98	-75	76%	87	-14	16%
CZ	1.216	-773	64%	354	-259	73%
DE	2.850	-1.068	37%	1.060	-337	32%
DK	139	-86	62%	62	-21	35%
EE	105	-45	43%	87	-34	39%
EL	946	-564	60%	255	-99	39%
ES	1.472	-635	43%	580	-160	28%
FI	64	-46	72%	11	-5	41%
FR	4.434	-2.288	52%	2.542	-1.753	69%
HR	199	-119	60%	255	-109	43%
HU	499	-361	72%	206	-87	42%
IE	827	-295	36%	314	-213	68%
IT	3.142	-1.570	50%	1.260	-358	28%
LT	202	-122	60%	101	-34	34%
LU	39	-16	41%	22	-15	67%
LV	314	-163	52%	93	-28	31%
MT	44	-14	33%	9	-6	68%
NL	1.440	-372	26%	1.109	-431	39%
PL	3.739	-2.024	54%	1.830	-1.229	67%
PT	415	-144	35%	185	-36	19%
RO	770	-264	34%	415	-250	60%
SE	328	-77	23%	96	-64	67%
SI	93	-42	45%	68	-34	51%
SK	350	-257	73%	132	-45	34%
EU27	25.268	-11.905	47%	12.103	-6.118	51%

Table 4: Market segmentation by liquids and disposables in the EU countries.

Source: own illustration.

		liquids & disposables	
country	share of "irregular" market overall	Share of "grey market"	Share of "black market"
AT	51%	14%	86%
BE	26%	11%	89%
BG	62%	25%	75%
CY	48%	16%	84%
CZ	66%	45%	55%
DE	36%	20%	80%
DK	53%	38%	62%
EE	41%	21%	79%
EL	55%	14%	86%
ES	39%	29%	71%
FI	67%	35%	65%
FR	58%	34%	66%
HR	50%	23%	77%
HU	63%	54%	46%
IE	45%	21%	79%
IT	44%	14%	86%
LT	52%	63%	37%
LU	51%	16%	84%
LV	47%	13%	87%
MT	39%	12%	88%
NL	32%	37%	63%
PL	58%	13%	87%
PT	30%	24%	76%
RO	43%	20%	80%
SE	33%	69%	31%
SI	47%	30%	70%
SK	63%	59%	41%
EU27	48%	28%	72%

Table 5: Overall results for shares of the irregular market with respective share of the grey and black market in the EU countries

Source: own illustration.

To aid understanding, the core results of the German market have been selected as examples and explained in greater detail below:

Columns	Interpretation	Market segmentation and quantification of the irregular market
Liquids market segment	The total demand for liquids (including pre-filled pod systems) is estimated to be 2,850 tonnes (excluding packaging) in 2024. Of this, 1,782 tonnes (excluding packaging) are reflected in the statistical data and thus allocated to the “white” market. The remaining 1,068 tonnes (38 per cent of total demand) are not statistically traceable and are allocated to the grey or black market.	
Disposables market segment	The total demand for disposables is estimated to be 1,060 tonnes (excluding packaging) in 2024. Of this, 723 tonnes (excluding packaging) are reflected in the statistical data and thus allocated to the “white” market. The remaining 337 tonnes (32 per cent of total) are not statistically traceable and are allocated to the grey or black market.	
Share of “irregular” market	In total (i.e. both product segments), 36 per cent of the German market is not statistically traceable and therefore attributable to the irregular market.	
Segmentation of “irregular” market into grey and black market	On the basis of consumer behaviour and market structures in Germany, it can be assumed that around 20 per cent of the “irregular” quantities are in the grey market. The remaining 80 per cent of the “irregular” market is accounted for by the black market.	

Table 6: Explanation of the results using Germany as an example.

Source: own illustration.

The results for the other countries can be interpreted in a similar way. Figure 13 shows the share of the irregular market in the overall market in the individual EU countries at a regional level.

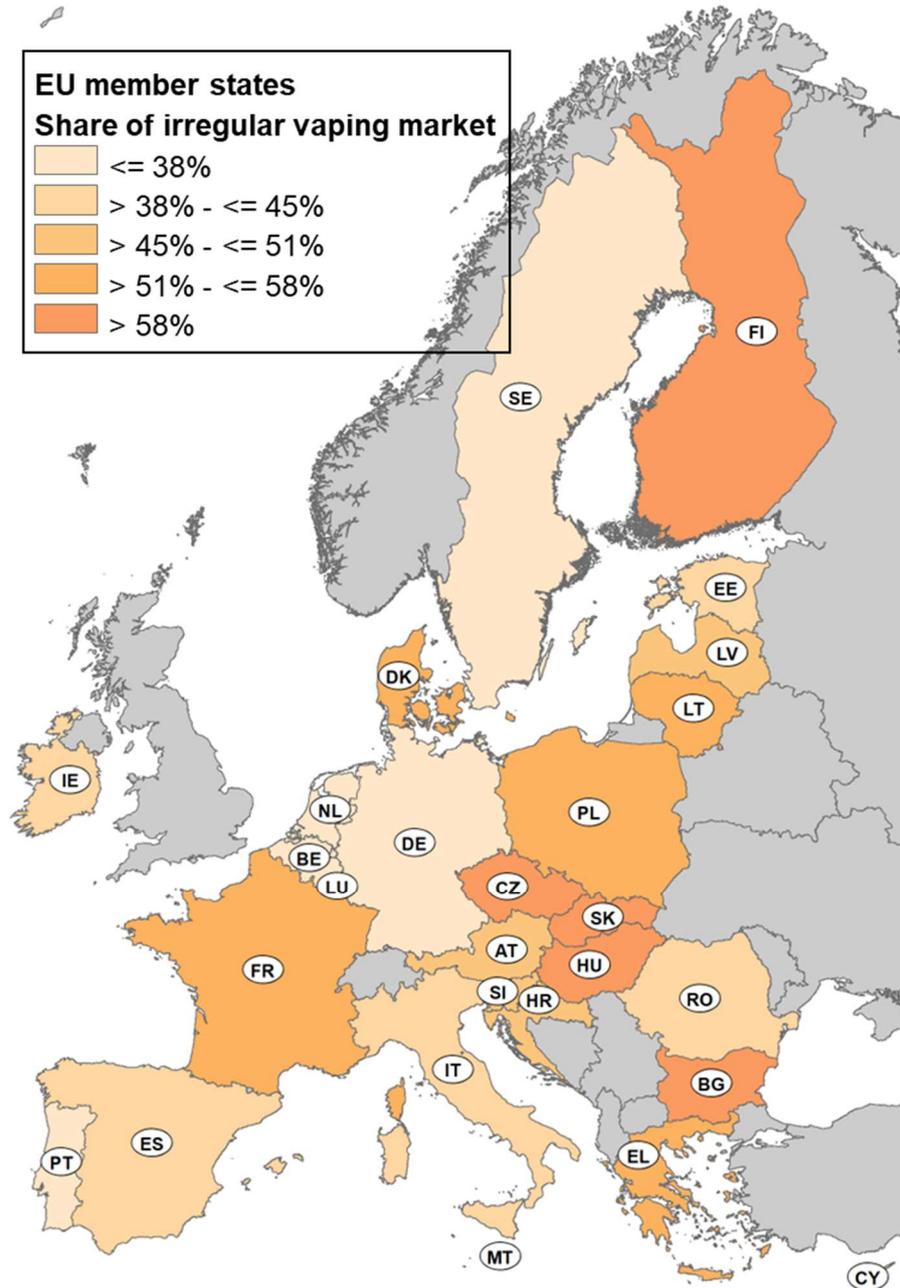


Figure 13: Share of the irregular market in the total market in EU countries

Source: own illustration.

This shows a very clear disparity in terms of irregular market shares, which is only explained here by reference to the largest markets as examples:

- In the six largest markets in absolute terms based on expected total demand – France, Poland, Italy, Germany, Netherlands and Spain – the “irregular” market accounts for between 58 per cent (France and Poland) and 32 per cent (Netherlands) of the total market. While the very high share in France can be interpreted as constituting a special effect caused by the hitherto largely absent market

regulation and taxation⁵¹, the significantly lower shares in the Netherlands and Germany can be attributed to a better foreign trade reporting and statistics system, among other things.

- There are also major differences in the share of the grey market in the six largest markets: At around 13 per cent, Poland is at the lower end of the range, reflecting the population's low affinity to e-commerce, the lack of cheaper alternatives in neighbouring countries and the comparatively high density of physical stores per vaper. The "irregular" market here is very commercially organised and therefore more akin to the black market. By contrast, the Netherlands has a significantly above-average grey market share of 37 per cent, which is mainly due to the high affinity to e-commerce and the low density of physical stores. The local market is therefore more aligned to the online channel and purchasing by consumers via the grey market.

A comparison with the illegal market for cigarettes and tobacco heaters, in which the share of counterfeit and illegal goods is estimated to stand at around 10 per cent in Europe⁵² makes it clear that the grey and black market for e-liquids and disposables is generally more pronounced.

4.4 From tonnes to euros – calculation of market value

In order to estimate the financial dimensions of the shares accounted for by the grey and black market in addition to the market segmentation based on physical quantities, the results shown in Table 4 were converted to millilitres (liquids) or quantities (disposables) and assigned with average prices⁵³ for the category in question in the individual countries.⁵⁴

Consequently, the "irregular" market for vaping products in the EU member states can be assumed to have a total value of around €6.6 billion.⁵⁵ Around €1.8 billion of this is attributable to the grey market and the remaining €4.8 billion to the commercial black market.

Estimates of the resulting loss of tax revenue vary from country to country. For example, the amount which the government has lost in tax revenue due to illegal trade can be assumed to equal €119 million in Germany.⁵⁶

⁵¹ Vaping liquids are still not taxed in France, although this has been the subject of intense debate since 2024. Apart from the usual labelling requirements and a ban on disposables in force since February 2025, this is a comparatively unregulated market by European standards.

⁵² KPMG (2025)

⁵³ For this purpose, price data from at least five online shops per country for unflavoured liquids and disposables were collected and evaluated to obtain rough averages.

⁵⁴ At this stage, a pragmatic approach was deliberately chosen. Accordingly, complex methodological tools are not used to convert the market segmentation, which is already subject to uncertainties and assumptions (see explanations on page 26), into a financial result as this is only seemingly more accurate. The euro amounts calculated should therefore be interpreted as a rough estimate.

⁵⁵ Although this is only a rough figure, it constitutes a conservative estimate. The average prices per country used for extrapolation purposes are based on standard online retail products. The retail price is usually higher due to the additional trading and distribution stages. Accordingly, the figure derived should be interpreted as the lower limit of the actual market values.

⁵⁶ According to Destatis (2025), tax revenue from tobacco product substitutes in Germany totalled €265 million in 2024. Taking into account the estimated share of the black market of around 29% of total demand for vaping products in Germany, the lost tax revenue amounts to €119 million.

Given the expected annual market growth of between 5.8 per cent and 12.9 per cent by 2030⁵⁷ and the still very disparate regulatory approaches within the EU, it can be assumed that the unofficial and illegal markets and supply channels will continue to benefit from growing end-customer demand in the coming years. As these players can act faster, more flexibly and at lower costs than their competitors on the “white” market, disproportionately strong growth can be expected in the future in the grey and black market for vaping products.

Assuming an annual growth rate of 8.6 per cent⁵⁸, the irregular market will reach a significant scale of €10.83 billion by 2030. The potentially dynamic growth in the share accounted for by the irregular market over the next few years is shown in Table 7.

	2024	2025	2026	2027	2028	2029	2030
Scale in € bil- lion	6.6	7.2	7.8	8.5	9.2	10.0	10.8

Table 7: Projected size of the irregular market for e-cigarettes in the EU by 2030.

Source: own illustration.

Since this development is neither in the interests of the tax authorities nor of consumer protection in the EU member states, the following chapter will outline possible solutions and research requirements in order to record, control and regulate the market for vaping products more effectively.

⁵⁷ Mordor Intelligence (2025) with a CAGR forecast of 5.77 per cent in Europe until 2030.

Persistence Market Research (2025) with a CAGR forecast of 7.2 per cent in Europe until 2032.

Data Insights Market (2025) with a CAGR forecast of 12.9 per cent in Europe until 2032.

⁵⁸ This is based on a pragmatic assumption of the average value of the above-mentioned sources.

5 Solutions and research requirements

The irregular market for vaping products in Europe currently poses a challenge for legal market players as well as for regulatory authorities. National unilateral action and solely prohibition-based approaches have so far proven to be ineffective and tend to serve the expansion of the grey and black market via intra-European free trade.

A viable solution therefore requires a coordinated, integrated approach at the EU level, which includes both a harmonised regulatory environment and the close involvement of international partners – especially China. In addition, effective control mechanisms and transparent corporate structures are necessary to prevent circumvention strategies.

These fields of action are explained in greater detail below.

Regulation

At first glance, one option in this regard is a blanket ban on vaping products in general or individual product categories such as disposables.⁵⁹ A closer analysis of the existing consumer base, however, suggests that this measure is not expedient and may even be counterproductive. With currently almost 12 million regular or occasional vapers in the EU member states, the abolition of the “white” market by means of a complete ban would either lead to a return to classic cigarettes or, as is the case with narcotics, a shift in demand towards the black market, making effective control even more difficult.

Even in a market that remains legal but is more strictly regulated, a viable solution is only possible if compliance with EU regulations is already ensured at the production level in the manufacturing countries. As by far the most important exporter of vaping products to Europe, China has a special role to play here. The Chinese should also have an interest in safeguarding their own vaping industry in the long term by complying with international and, in particular, European standards. This calls on both sides for an approach that is aligned with existing embargo and sanction mechanisms and ensures the traceability and conformity of vaping products exported to Europe.

Last but not least, the current lack of regulatory harmonisation among EU member states is also encouraging the emergence and growth of the grey market. Greater coordination and standardisation of the regulatory framework within the EU is important to eliminate national differences, close the resultant loopholes and counter irregular trade effectively. Uniform authorisation procedures, product standards and taxation models would prevent retailers from deliberately moving to countries with less stringent regulations and serving the grey market there. Coordinated legislation also promotes fair competition and facilitates the enforcement of pan-European measures. The currently ongoing evaluation of the European Union’s Tobacco Products Directive already takes into account new nicotine products such as liquids and e-cigarettes and, in its new form (TPD 3), can be seen as a potential step in this direction.

⁵⁹ Currently, France, Belgium and Ireland have already imposed a complete ban on non-refillable disposable vapes.

Import controls

An all-encompassing solution for import controls on e-cigarettes and liquids does not appear to be feasible. Shifting responsibility solely to the customs authorities is not expedient in view of the limited personnel resources, which do not permit increased physical inspection frequencies. Rather, all parties involved along the supply chain must work in partnership and act across borders to prevent the increased influx of uncontrolled imports from becoming the norm.

A key difficulty in accurately collecting data on the grey market for vaping products arises from the lack of precision in the internationally applied HS codes. In their current form, these customs tariff numbers do not allow a clear distinction to be made between the various vaping products. Moreover, there has been no EU-wide harmonisation of goods and product classifications for vaping products to date, resulting in national differences in statistical records. These classification differences mean that it is difficult to quantify the actual scale of the market shares. This poses a major obstacle in the analysis and regulation of the grey market.

In addition, manufacturers often take advantage of the scope for circumventing regulatory measures through multiple company registrations and complex corporate structures. Effective regulation must therefore also address and prevent such circumvention mechanisms.

One possibility for this is a “blacklist” or compliance database for importers and distributors, which is maintained alongside the existing register. Such a database could include manufacturers, exporters, etc. who have been found during customs inspections to distribute illegal products. As soon as new customs declarations from a flagged manufacturer, exporter or trader registered are submitted, targeted checks could be carried out. This could significantly heighten the efficiency of the controls.

In addition, the efficiency of such a “blacklist” or compliance database could be improved through partnerships with other customs authorities in Europe.

There is a need for research into the specific structure of digital systems for tracking the supply chain. For example, a graph or solid-based data structure could enhance the accessibility and reliability of a compliance database and identify manufacturers’ circumvention strategies at an early stage.

Market transparency

The actual size of the market for vaping products and the high share accounted for by the grey and black market have so far been largely underestimated. This lack of awareness is a major reason for the fact that official interest and regulatory control have so far been weak.

One major problem in the analysis of the grey vaping market is the lack of data on actual usage. So far, there are only very few and often not very reliable samples indicating who uses which products and how often. The lack of differentiation between product classes – for example disposable vapes, refill systems or liquids – is particularly problematic. In the absence of this differentiation, no reliable statements can be made about how usage will change if certain products, such as disposable vapes, are banned.

In contrast to the classic cigarette market with only a few large companies, there are thousands of operators in the vaping sector, many of whom are small and difficult to track. This makes a clear assessment of the market structure considerably more difficult. Industry associations or independent market observers can make an important contribution in this regard by creating transparency about what manufacturers play a leading

role, what products are particularly in demand and what developments are currently shaping market trends.

Solutions and research requirements

6 Summary

E-cigarettes are increasingly gaining a foothold in the European tobacco and nicotine market. However, the irregular market is also expanding in the individual EU member states.

Irregular trade in e-cigarettes and liquids can currently be assumed to account for around 48 per cent of the total market. It has a volume of €6.6 billion and could grow to around €11 billion by 2030, according to estimates. This is causing high losses of tax revenue, while at the same time posing health risks due to uncontrolled ingredients and jeopardising the protection of minors due to a lack of age verification. Legal retailers face unfair competition, while the existing supply chains offer additional loopholes due to the high number of shipments and the numerous players involved.

Around 3.1 per cent of Europeans say they use vaping products, ranging from 0.5 per cent in Portugal to 8.8 per cent in Estonia. The range goes from inexpensive disposable devices and liquid components to high-quality systems with tested ingredients, 90 per cent of which come from China. National regulation and taxation differences create considerable price and market differentials, which fuel the incentives for irregular trade.

The results show that blanket bans or national unilateral action have little chance of success. Bans in individual countries may push existing consumers in the EU economic area, which is characterised by the largely free movement of goods, into the black market or back to traditional tobacco products. Instead, what is required are practical solutions that combine consumer protection with realistic market conditions. This includes transparent supply chains, stronger partnerships with countries of origin such as China and independent market monitoring to better understand usage trends and the actual size of the irregular market.

A coordinated approach at the EU level is proposed as a solution. Harmonised authorisation procedures, uniform product standards and coordinated taxation regimes can close loopholes and ensure fair competition. In addition, the use of digital traceability systems, improved statistical tracking and unified European sanction mechanisms are recommended. Only a coordinated approach can stabilise the market in the long term, ensure consumer protection and secure tax revenue.

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E-cigarettes are gaining importance across Europe—and with them, the irregular trade. A lack of data has so far made it difficult to assess its actual extent and dynamics. This study provides the first comprehensive quantification of the irregular e-cigarette market in Europe and analyzes its structures and supply chains.

A data-based model enables the differentiation between legal, gray, and black market segments. The results thus create a scientifically grounded basis for regulatory and political strategies.

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