

E-COMMERCE AND ITS IMPACT ON TRANS-EURASIAN RAILWAY CARGO TRANSPORTATION



— Table of contents

—	Background information.....	2
—	E-commerce as a sign of a new reality.....	3
—	Structure of cross-border e-commerce.....	5
—	Potential for increased freight traffic on the railway through e-commerce	8
—	Conclusion	13

BACKGROUND INFORMATION

- E-commerce has radically changed business processes due to the ability to buy and sell goods online. This is followed by a change in the logistics of delivering goods. It is important to separate the B2B and B2C segments, as well as to focus specifically on cross-border cargo flows.
- E-commerce tends towards faster ways of delivering goods, which at the same time are ready to offer a fairly competitive price, i.e. to land routes, that is, road transport and rail. Transport routes aimed at Asia, especially China, will benefit greatly from the e-commerce boom.
- The lack of statistics and the emerging regulation of the sphere prevent an accurate analysis of the impact of e-commerce on Trans-Eurasian cargo transportation.
- About 39% of parcels have the PRC as the country of origin. About 44% of parcels have a price of less than 25 euros, and 86% of parcels weigh up to 2 kg. This specificity makes it difficult to classify goods, thus taking into account also their addressees represented by individuals.
- China actively promotes the development of cross-border e-commerce through the creation of logistics hubs, simplification of customs regulations, and tax breaks.
- In 2019, the total trade turnover between the EU and the PRC via e-commerce can be estimated at EUR 889.9 million, or about USD 1 billion according to postal services. At the same time, more than 2/3 of the goods are not classified, which makes it impossible to estimate the weight and cost of goods outside the statistics of individual companies, such as Amazon or Alibaba.
- In Europe, Chinese imports are traditional, while in the PRC, European luxury goods, baby food, and pet products are in increasing demand.
- A potential and ambitious benchmark for Trans-Eurasian transit, including rail, can be the share of trade turnover from USD 0.46 billion to USD 0.75 billion.

E-COMMERCE AS A SIGN OF A NEW REALITY

E-commerce has radically changed business processes due to the ability to buy and sell goods online. Digitalization has led to the fact that the consumer now does not have to go to the store to make a purchase that is available from a phone, tablet or laptop. This fact radically changes not only consumer habits, but also the structure of the industry.

Huge shopping centers that are no longer the main sales channel are becoming a thing of the past. According to UNCTAD, in 2020, online purchases accounted for 17% (+4 p.p. by 2019) of all sales worldwide. According to a number of estimates, this share may grow significantly in the coming decades, thus exceeding 50% by 2036. Today, the global e-commerce market is estimated at USD 10.36 trillion with the prospect of annual growth of 14.7% annually.

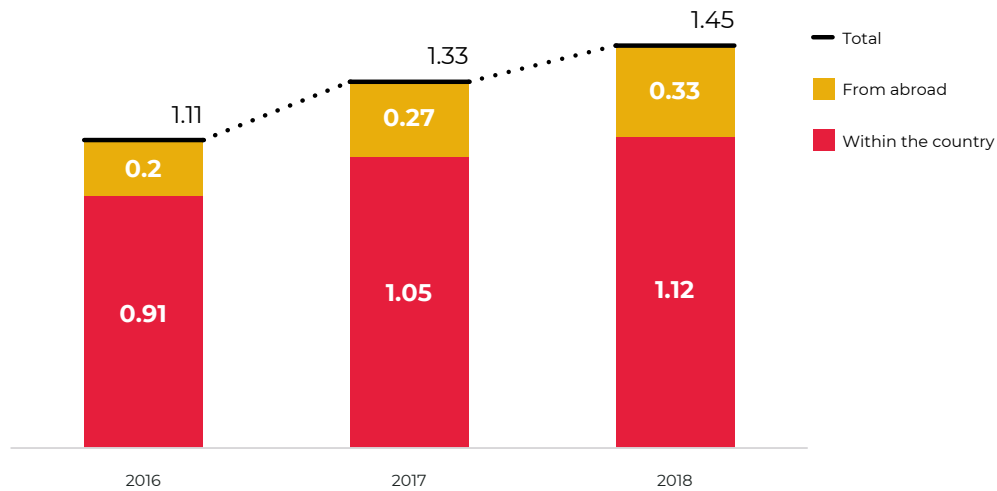
The main market players have different business models. Amazon develops a direct sales model, has its own ecosystem of services, and manages logistics, while Alibaba does not have stocks and warehouses, thus having only a digital platform. The largest global players in the market are Alibaba Group, Amazon, Apple, Dell Technologies, Flipkart, Gome Electrical Appliance Holdings, JD.com, Macy's, Otto Group, Sunning Commerce Group, and Walmart. Brands, such as Ozon and Wildberries, have a significant share in the CIS market. There are also notable attempts to enter the market of traditional retailers (for example, X5) and large ecosystem retailers (Sberbank Statistics). In general, the opportunities for direct work with companies in the field depend significantly on the business model.

Importantly, e-commerce is not limited to the B2C segment. It also includes mobile commerce, e-money transfers, supply chain management, online marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. B2B accounts for more than half of the e-commerce market.

In the context of Trans-Eurasian cargo transportation, the following factors are most important. First, e-commerce has regional differences. The Asia-Pacific region accounts for 62.6% of the market, which is due to the region's population and developed digital infrastructure. As a result, it is the **transport routes aimed at Asia, especially the PRC, that will benefit most from the e-commerce boom**. However, it is important to take into account the nature of purchases, since only a quarter of them are cross-border according to UNCTAD.

STRUCTURE OF ONLINE PURCHASES

USD billion



Source: [UNCTAD, 2020](#).

China is a crucial part of the global e-commerce market due to the manufacturing nature of the economy and the size of the market. However, European countries are also among the leaders in e-commerce penetration due to their quality characteristics. According to the UNCTAD B2C E-commerce [Index](#), European countries are the leaders in the number of online buyers. On average, 70-80% of European Internet users make purchases online. Thus, when considering the cross-border online shopping sector, it is trade between the PRC and the EU that is one of the most promising areas for using the trend.

Secondly, the logistics of deliveries is changing. **E-commerce tends towards faster ways of delivering goods, which at the same time are ready to offer a fairly competitive price, i.e. to land routes, that is, road transport and rail.** The explosive growth of e-commerce required a radical development of retail distribution channels, which led to the need for warehouse facilities close to the consumer to minimize the time and cost of delivery. And if motor transport can deliver goods more precisely, then the railway due to the speed and reliability of deliveries has advantages over longer distances, including in the communication between the PRC and the EU.

Third, due to the developing statistical tools, the cargo flow of cross-border online trade is quite difficult to track. For example, in the B2C segment, the recipients are individuals, and there is also a duty-free entry threshold. **The main goods for postal deliveries to individuals are electronics, household appliances, decorative items, clothing and accessories, cosmetics, food products, etc.**

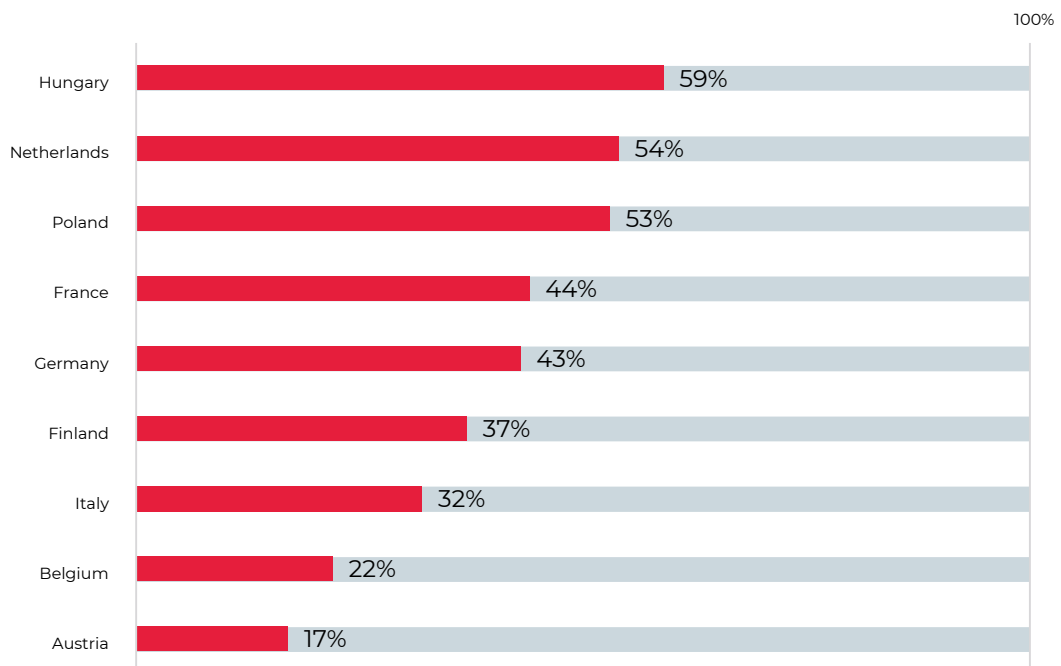
STRUCTURE OF CROSS-BORDER E-COMMERCE

The rapid development of e-commerce has a different impact on the transport industry. In the context of this study, we assess the potential for the transition of e-commerce in the B2C segment, i.e. consumer goods for individuals delivered by mail to rail cargo transportation in the China-Europe-China direction. This segment can be tracked due to the available mail statistics. However, even this will not be a complete reflection of the situation, since the tools for regulating and statistically tracking cross-border e-commerce are still being developed.

China's high share of the global e-commerce market is related to both supply and demand. In terms of demand, the Chinese e-commerce market is unique. Thanks to a population of 1.3 billion people, a growing middle class that makes up more than 50% of the population (3.1% in 2000), and Internet penetration (about 50-60% of the population), the PRC is the most important driver of global demand, including through e-commerce channels. In general, the Chinese e-commerce market is three times larger than in Europe.

In terms of supply, the new “workshop of the world” is one of the world's top e-commerce channel exporters. According to the survey conducted by the International Postal Corporation¹ in 41 countries, **39% of parcels come from the PRC. About 44% of parcels have a price of less than 25 euros, and 86% of parcels weigh up to 2 kg.** At the same time, only 14% of shipments are subject to customs duties. And about a third of shipments are delivered within more than 15 days.

SHARE OF THE PRC IN INCOMING PARCELS BY INDIVIDUAL EU STATES



Source: International Postal Corporation.

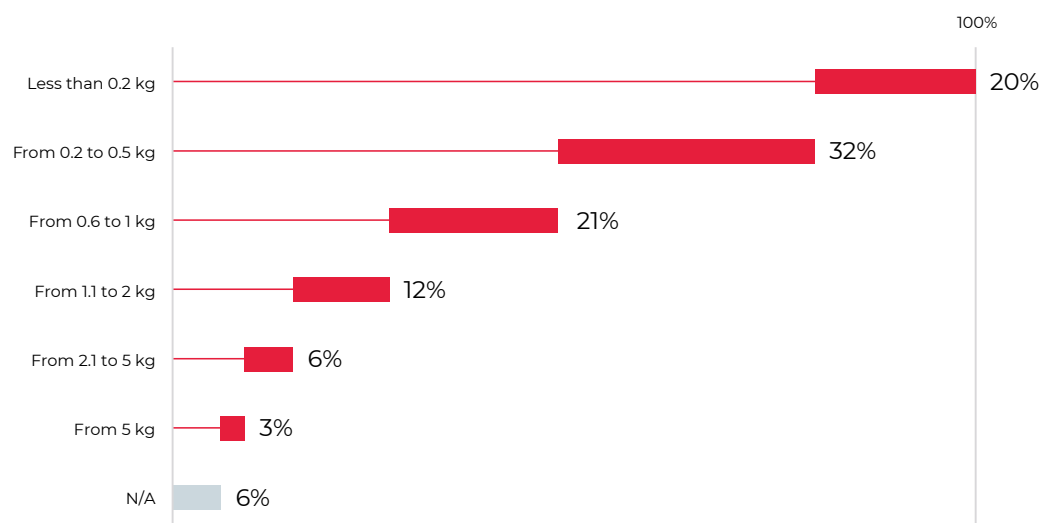
¹ International Post Corporation is an association that unites the national postal services of 25 countries.

The largest American online retailers (Amazon, eBay), as well as Chinese ones face [antitrust investigations](#) due to their increased power and market position. In general, both Amazon's and Alibaba's share is about 20-25% for each of the companies. While Alibaba has a traditionally strong presence in Eastern Europe (74% in Russia), Amazon has a large share in Western countries (59% in Austria, 69% in Luxembourg). The close-to-monopoly position of key players is a factor to be taken into account by transport and logistics companies.

In the Western countries, e-commerce developed without incentives from the state due to the developed demand and digital infrastructure, while in China, there is a [special policy](#) to stimulate e-commerce. Its elements are regulatory easing and simplification of procedures. **In 2017, the Chinese customs authorities introduced a special cross-border code 1210, which denotes a special customs surveillance zone allocated for e-commerce.** Thus, codes 9610 and 1210 currently allow to send packages directly. In addition, by May 2020, [46 pilot zones for cross-border e-commerce were launched](#), which guarantee tax exemptions and speed of customs procedures, as well as serve as logistics hubs for companies.

Despite such impressive data, there are a number of limitations to how transport and logistics companies benefit from the boom in cross-border e-commerce. First, the parcels sent usually weigh from 0.2 to 0.5 kg (32% of the parcels). In general, about 73% of parcels weigh up to 1 kg. On the one hand, container transportation is the most suitable for combined cargo. On the other hand, many loads of different formats require more processing time.

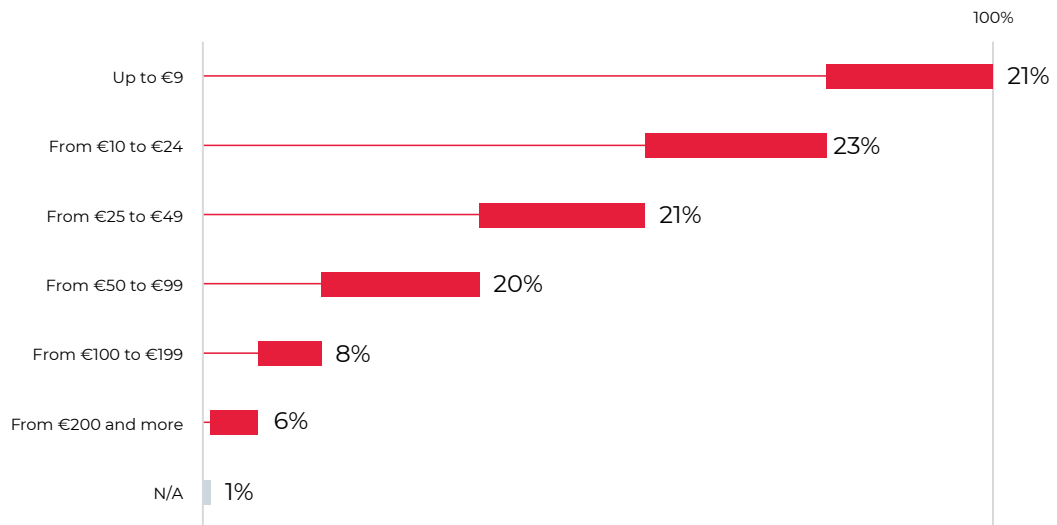
AVERAGE WEIGHT OF PARCELS SENT



Source: [International Postal Corporation](#).

Another challenge is to estimate the cost of the cargo. Due to their small size and generally cost, duty-free entry threshold, and evolving regulation, postal items are difficult to classify and assess. In addition, the rules and the amount of customs duties and taxes vary from country to country. According to the International Postal Corporation, about 23% of the parcels sent in the world have a value of between 10 and 24 euros. In addition, for 85% of parcels, the specified cost is up to 100 euros.

AVERAGE VALUE OF PARCELS SENT



Source: [International Postal Corporation](#).

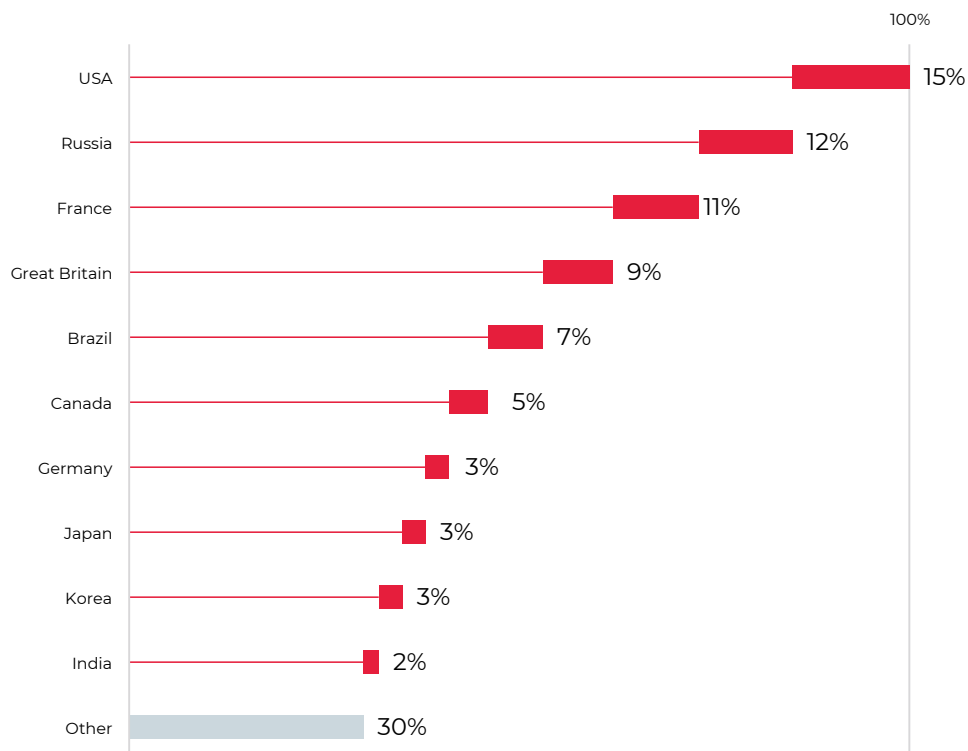
Despite these limitations, the growing role of e-commerce, including the B2C segment, requires closer study by transport and logistics companies.

POTENTIAL FOR INCREASED FREIGHT TRAFFIC ON THE RAILWAY THROUGH E-COMMERCE

To try to assess the potential of using e-commerce to attract cargo to the railway, it is necessary to consider the commodity nomenclature and the volume of cargo traffic between the PRC and the EU.

According to KPMG data based on Chinese trade statistics, in 2019, France (11%), the United Kingdom (9%), and Germany (3%) were among the top ten main export destinations of PRC through the e-commerce channel. Thus, only these three countries accounted for 23% of PRC's exports, which is more than the same indicator for the United States and Russia. The European Union is the most important destination for Chinese exports through e-commerce channels.

PRC'S MAIN EXPORT DESTINATIONS VIA E-COMMERCE CHANNELS IN 2019



Source: [KPMG](#).

According to [the Ministry of Commerce of the People's Republic of China](#), in 2019, the volume of transactions in the e-commerce sector reached 34.81 trillion yuan (USD 6.75 trillion). Of these, B2C accounted for 10.63 trillion yuan (USD 1.64 trillion). In 2020, e-commerce volumes continued to grow also due to the growth of Chinese exports. This was [facilitated by the pandemic](#), which, firstly, forced people to switch to electronic shopping formats and, secondly, increased the flow of medical goods from PRC (masks, gloves, etc.).

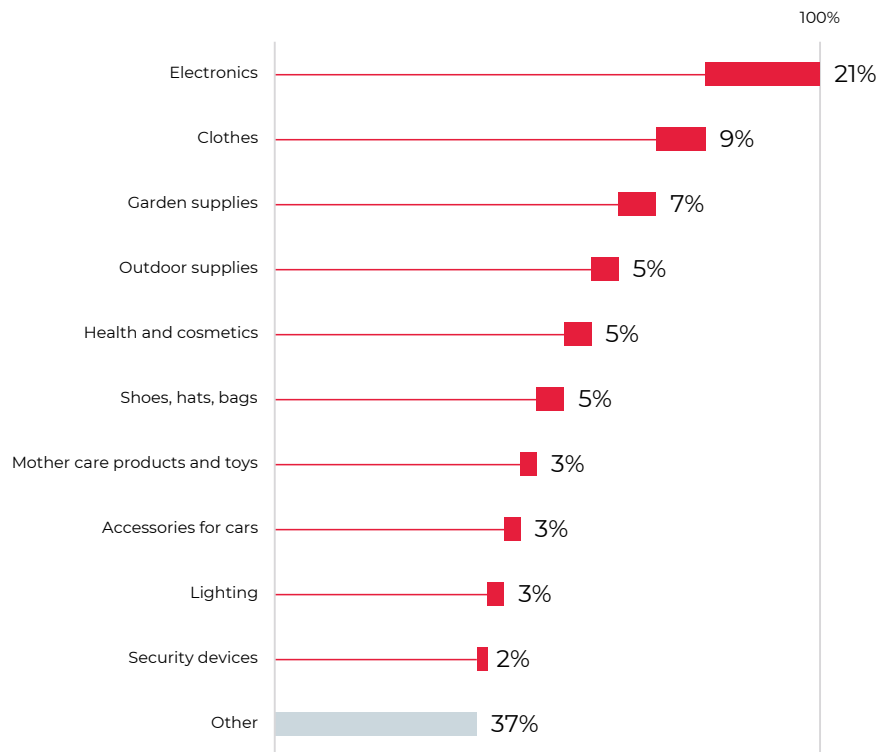
The total volume of retail imports and exports through e-commerce channels in 2019 was 196.21 billion yuan (USD 30.23 billion). Of these, imports were 91.81 billion yuan (USD 14.14 billion), and exports were 104.4 billion yuan (USD 16.08 billion). The share of 28 EU countries in PRC's trade turnover in 2019 was 15.4%. Thus, with certain assumptions, **the flow of goods through e-commerce channels between the EU and the PRC can be on the order of USD 4.6 billion**. If we take as an assumption, probably, a large share of the EU in the context of e-commerce, for example, a quarter, then the estimate of the flow of goods will be about USD 7.5 billion.

If we take as a hypothesis the target reference point of Trans-Eurasian transit for pulling 10% of trade volumes between the PRC and the EU, **then the reference point for which railways can claim can be the range from USD 0.46 billion to USD 0.75 billion**.

Since e-commerce in the B2C segment is focused on the consumer, most studies in the analysis of product groups do not use foreign trade (FEACN), but niche classifications, that is, according to the target audience, but not the properties of the product.

According to the Ministry of Commerce of the PRC, in 2017, 21% of China's exports were so-called 3C goods (computers, communications, consumer electronics), that is, a wide range of electronics. They are followed by clothing (9%) and garden goods (7%). When comparing the foreign trade commodity nomenclature of the PRC as a whole with goods that go through e-commerce, one can see some promising positions for Trans-Eurasian transit.

PRC'S MAIN EXPORT GOODS VIA E-COMMERCE CHANNEL IN 2017



Source: [KPMG](#).

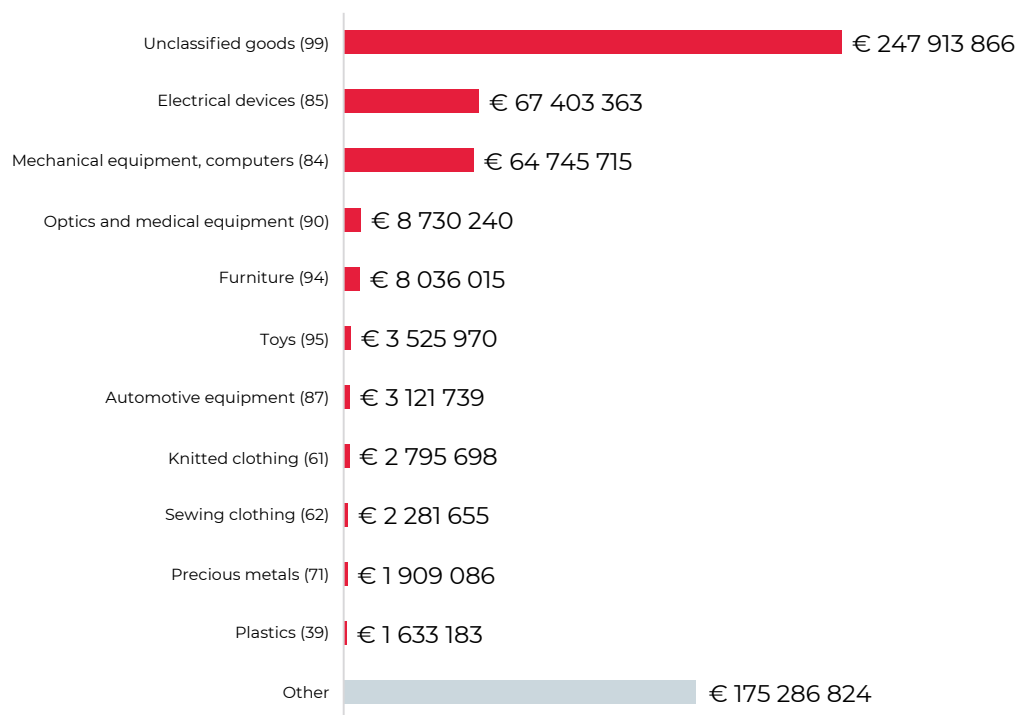
According to [Eurostat](#), by mail in 2019, the EU exported goods totaling EUR 466.7 million (USD 556.5 million) to China. At the same time, goods worth EUR 384.2 million are listed as “unclassified”, which makes them difficult to analyze and is generally typical for e-commerce. In quantitative terms, the recorded exports amounted to only 163 tons, with mainly electronics being recorded. EU imports from the PRC by postal parcels in 2019 amounted to EUR 423.2 million (USD 504.6 million) or 2,677 tons. **Thus, in 2019, the total EU-PRC trade turnover in the context of postal items amounted to EUR 889.9 million, that is, about USD 1 billion.**

Postal items account for 21% of cross-border e-commerce between the PRC and the EU. This gap may be explained by the predominant use of the B2C mail channel by the segment. While the statistics of the B2B segment will be reflected in the usual foreign trade statistics. This hypothesis is confirmed by the statistics [of the Ministry of Commerce of the PRC](#), according to which the share of the B2C segment is 19% of the total volume of e-commerce transactions.

Although mail data mainly covers the B2C segment of cross-border trade, it can be used to analyze the commodity structure of cross-border e-commerce, despite the significant share of unclassified goods, which is a reflection of the specific regulation of this area.

EU imports from the PRC are represented by traditional Chinese exports, such as mechanical equipment, various electronics, and light industry products. As a rule, these are final consumer goods. The main groups are electrical devices (85), which account for about EUR 67 million of imports, and mechanical equipment and computers (84), with EUR 65 million of imports.

EU IMPORTS FROM THE PRC BY POSTAL PARCELS IN 2019



Source: compiled by the authors based on [Eurostat](#).

As for European exports to the PRC, the most representative analysis can be made only from open sources due to the lack of statistics. The disadvantage of this approach is the complexity of product categorization, since open sources focus not on product characteristics, but on consumer segments.

It is possible to distinguish the following goods that Chinese imports in the context of cross-border e-commerce:

- Clothing, shoes, and accessories in the [luxury](#) segment.
- Cosmetics, primarily perfumes.
- Mother care products and baby food.
- Products [for pets](#), including feed.
- Jewelry, wristwatches.
- Household goods, including wallpaper, ceramic products, and wood products.
- Selected high-end food products, such as wines and meat products.
- Complex electronics (photo equipment, specialized products).

In contrast to exports, PRC's imports in this case are more specific, thus tending to specialized product niches and products of higher consumption segments, including luxury.

To sum up, it can be noted that statistical gaps do not allow to give an accurate assessment of the potential for cross-border e-commerce goods to “go on the rails”. If we take as a hypothesis the target reference point of Trans-Eurasian transit for pulling 10% of trade volumes between the PRC and the EU, then the reference point for which railways can claim can be the range from USD 0.46 billion to USD 0.75 billion.

In addition to this, a potential segment of attention can be mail items of the order of USD 1 billion. In this segment, which correlates with B2C cross-border e-commerce segment, the share of rail transport can be even greater than 10% due to the advantage of speed, cost, and reliability of rail transport.

CONCLUSION

The e-commerce boom has become a sign of today. The key driver of change is consumers and their shifting to online shopping. This leads to changes in the logistics of cargo delivery and new records of demand for warehouse space as close as possible to the consumer.

At the same time, the impact on the transport sector seems to be limited, especially on Trans-Eurasian transit railway cargo transportation. The main factors here are the focus on the PRC as a driver of global demand and the “workshop of the world”, as well as the attraction of electronic cross-border trade to faster delivery methods, one of which is railways.

The analysis made it possible to outline the main product groups of the B2C e-commerce segment in both the European and Chinese markets. However, the lack of statistics, most of which are based either on limited data from the PRC or on data from the largest market monopolies, such as Alibaba and Amazon, does not allow to accurately assess the potential for pulling cargo traffic.

If we take as a hypothesis the target reference point of Trans-Eurasian transit for pulling 10% of trade volumes between the PRC and the EU, then the reference point for which railways can claim can be the range from USD 0.46 billion to USD 0.75 billion.

At the same time, if we rely on data from postal services (Eurostat), which correlates with B2C e-commerce segment, the total trade turnover of the EU and the PRC in this segment can be estimated at USD 1 billion. In this segment, the share of the railway and its ability to “pull” the cargo flow may be even greater.

The above assessment of the potential for exploiting the e-commerce boom of Trans-Eurasian transit freight rail transport is evaluative and forward-looking in nature. But even this estimate shows a relatively small contribution of e-commerce to the potential growth of the goods flow of the Eurasian transit railway route.