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Multi-modal & Intermodal Transport Chains**



**COVID-19 Impact on Danube
Ports**

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2 Abbreviations

Abbreviation	Explanation
IWT	Inland Waterway Transport
PDM	Pro Danube Management GmbH

3 Introduction

Elaborated in the frame of the DIONYSUS project, the core objective of **D.T3.3.6 Covid-19 Impact on Danube Ports** is to provide a detailed analysis of the economic and operational impact of the health crisis on the ports of the Danube Region.

The design of this study was guided by several research questions such as: How did various ports took on the crisis? How did the pandemic affect the traffic of cargo and passenger transportation? Were there any restrictions/procedures imposed to ships and crews? What measures were taken to ensure a minimal level of operation and to protect both on-shore and shipboard personnel involved in port calls and cargo handling? The pathway chosen to answer the formulated research questions was to collect first-hand and as detailed as possible data via a questionnaire. A proven data collection instrument, a questionnaire offers several advantages such as the possibility to collect both quantitative and qualitative data, use the internet as a channel of distribution, thus easily reaching out to a wide pool of potential respondents and, last but not least, keep the time-costs for the participants relatively low. The questionnaire designed within this study was distributed twice – once in 2021 to collect data covering the years 2019 and 2020 as well as for a second time in 2022 to collect data for the year 2021. The timeframe under investigation therefore supports a **comparative analysis** of pre-pandemic periods with periods during the health crisis. 15 ports participated in the survey. A dedicated chapter – **Methodology**– provides a detailed description and argumentation for the selected pathway to answer the formulated research questions.

The following chapter - **COVID-19 impact on Danube ports** – provides detailed descriptive statistical analysis on the impact of the pandemic on every participating port, setting the scene to reflect on their crucial role in times of an unprecedented crisis. The data presented in this study fully relies on the answers provided by the respondents and is not exhaustive. It nevertheless sheds light on the capacity of Danube ports to adapt to times of uncertainty.

The final chapter of this deliverable - **Conclusions** – summarizes the most important findings and draws general **accurate conclusions** on the impact of the pandemic on the ports of the Danube Region.

4 Methodology

This chapter provides a comprehensive overview on the research methodology employed to collect first-hand information and data on the impact of the COVID-19 pandemic on Danube ports. In a first step, the types of data usually collected via sociological research methods will be thoroughly presented. Afterwards, the instrument used to collect these data will be discussed. The aim of this theoretical approach is to explain why a certain pathway was selected to collect the necessary data which will measure the impact of the pandemic on port operations. Given that ports from the vast majority of the Danube Region countries have participated in the survey – the premises of conducting a **comparative analysis** are provided. This will allow us to draw **valid general conclusions** and **generate new knowledge** for the benefit of the Danube ports community. Equally important to mention is the chosen timeframe: the year **2019**, the immediate period before the health crisis started - is directly compared to the years **2020** and **2021** – that is with periods in the midst of the pandemic.

4.1 Types of collected data

Generally speaking, when conducting research activities, different types of data are collected. They are either quantitative or qualitative data. Depending on the aim of the study, the subject of investigation, the very essence of any inquiry is to decide whether qualitative or quantitative data best suits to answer the research question. Or whether a mix of both data is useful. The differences between quantitative and qualitative data can be summarized as follows:

- **Quantitative data** is data that is able to be presented in numerical form and is more objective in nature. It can be analysed and the conclusions drawn are more likely to be reliable, not leaving too much room for interpretation. Equally important, quantitative data are usually collected to see trends over time, being usually used on a larger scale. On the other hand
- **Qualitative data** is considered a more contextual type of data that is often presented in written, verbal, or visual formats and therefore, unlike quantitative data, are open to interpretation. Qualitative data are usually used for studies that are smaller in scale, putting the individual in the limelight.¹

One major difference between the two types of data refer to the time needed to collect and analyse them. Unlike quantitative data, qualitative data are more time consuming to collect and analyse, whereas replicability with similar findings is not possible.

Given that the aim of the present study is to present on a large scale the impact of COVID-19 on ports and port operations, the decision was taken to mainly focus on the collection of quantitative data. This type of data is more structured with the researcher being detached from the research subjects – in this case ports – to allow for an objective viewpoint. Nevertheless, even if to a comparatively small degree, qualitative data was collected as well. This approach was necessary to give the respondents the opportunity to provide their viewpoint on the impact of the pandemic on their ports more thoroughly as there were no uniform COVID-19 restrictions across the region.

¹ Witt (2001).

One of the most common methods to produce quantitative data are questionnaires if the questions have been pre-coded and have a limited number of responses to be chosen from. The structure of the questionnaire – which will be presented in the following subchapter - is therefore a crucial element. For the collection of qualitative data “open questions” were formulated, thus elements of a “mix data” approach was the chosen pathway to help gain a more complete picture than a standalone quantitative study, as it integrates the benefits of both types of data.

4.2 Questionnaire as a proven research method

The aim of this subchapter is to discuss why from the multitude of research methods, questionnaires were considered as the most efficient one to collect data from Danube ports in order to assess whether COVID-19 had a major impact on ports and port operations. Likewise important, the structure of the distributed questionnaire will be presented in detail.

Questionnaires are a proven research method, often used both in academics and related professional fields to assess people’s attitudes, behaviours, and motivations. Questionnaires are defined as a list of questions that are distributed through a variety of channels to people taking part in research. In our case, the internet was chosen as the channel of distribution, with **EUSurvey** as the instrument to collect first-hand information. EUSurvey is the European Commission's official multilingual online survey management tool that can also be used free of charge by all European citizens. It facilitates the creation and publication of globally accessible forms, such as user satisfaction surveys, public consultations or registration forms.²

Questionnaires have different formats based upon the types of questions being asked. Closed questions are those with a fixed number of responses such as yes/no or like a scale which provides responses with a statement (like do you agree, disagree etc.). Others can be multiple choice questions which are usually pre-coded so that they can be turned into quantitative data to give an overview on the provided responses. The other type of questions are open questions whereas they are usually used to generate qualitative types of data, allowing the respondent to provide their own opinion, producing a type of data that is more open to interpretation.

Questionnaires have certain advantages compared with other types of research methods. Given that EUSurvey was used for the collection of data for this deliverable, the questionnaire was easily distributed with minimal costs. They are less intrusive compared to for instance interviews as they don’t take much of the respondent’s time. The completion of the survey “COVID-19 Impact on Danube Ports” takes approximately 20-30 minutes. Equally important – since it was carried out online, the questionnaire resulted in a high degree of representativity with nearly all countries participating in the DIONYSUS project being covered.

The questionnaire was distributed twice during the lifetime of DIONYSUS. For the first time in 2021, with the scope to collect data covering the years 2019 and 2020, whereas for a second time in 2022 collecting data for the year 2021. The following ports have participated in the survey:

- Ennschafen (Austria)
- Port of Vienna (Austria)
- Port of Bratislava (Slovakia)
- Port of Komarno (Slovakia)
- Centroport (Hungary)
- Port of Novi Sad (Serbia)

² <https://ec.europa.eu/eusurvey/home/about>

- Port of Belgrade (Serbia)
- Port of Pancevo (Serbia)
- Port of Smederevo (Serbia)
- Port of Lom (Bulgaria)
- Port Bulmarket (Bulgaria)
- Port of Constanta (Romania)
- Port of Reni (Ukraine, no participation at the second survey in 2022)
- Izmail Port (Ukraine, no participation at the second survey in 2022)
- UST Dunaisk Port (Ukraine, no participation at the second survey in 2022).

As can be seen, in the first round, 15 ports have participated in the survey, whereas in the second round, all ports apart from the Ukrainian ports, took part in the survey. Due to the ongoing conflict between Russia and Ukraine, the latter was unable to participate in the survey distributed in 2022.

The structure of the survey is available in the **Annex**.

5 COVID-19 impact on Danube ports

The aim of this chapter is to provide, based on the information collected via the survey, whether and to what extent the pandemic had an impact on Danube ports. In order to give a valid answer to the formulated research question, detailed descriptive statistical data will be presented and thoroughly discussed.

5.1 Austria

Two Austrian ports participated in the survey: Ennshafen Port and the Port of Vienna.

5.1.1 Ennshafen

The Ennshafen port is an inland port situated in Austria's strongest industrial region. Serving the largest continuous industrial area on the Upper Danube, the port is a trimodal transshipment center and a modern service center for the forwarding industry. Services such as transshipment, heavy cargo transshipment, warehousing, packaging, and bunkering are provided by operators based at Ennshafen. Located in the heart of Europe, the port is ideally linked to the most important inland ports and seaports of the continent. As a multi-modal logistic hub, within the port area the Container Terminal Enns serves as a major hinterland terminal for big seaports. The annual container turnover is approximately 400000 TEU (or 2 mio t), mostly using rail and road infrastructure.

The Ennshafen port enjoys a convenient geographic location at the nexus between two of Europe's main transportation corridors: the Rhine-Main-Danube canal system, which links the North Sea to the Black Sea, and the north-south connection from the Baltic Sea to the Adriatic. With direct access to motorways and main roads, the Ennshafen port offers ideal road links. Waterways, rail and road connections empower the port as a transport hub for goods and commodities in international logistics operations and for local businesses. Within the Tran-European Transport Network (TEN-T) of waterways, the Ennshafen is defined as one of two Austria core nodes in the Rhine-Danube Corridor.

The following statistics provided a detailed overview on the impact of the COVID-19 pandemic on port operations. How – and if so – to which degree was the port affected by this unprecedented health crisis? The participation of Ennshafen in the survey provides an interesting insight into this issue as can be seen in the statistics below:

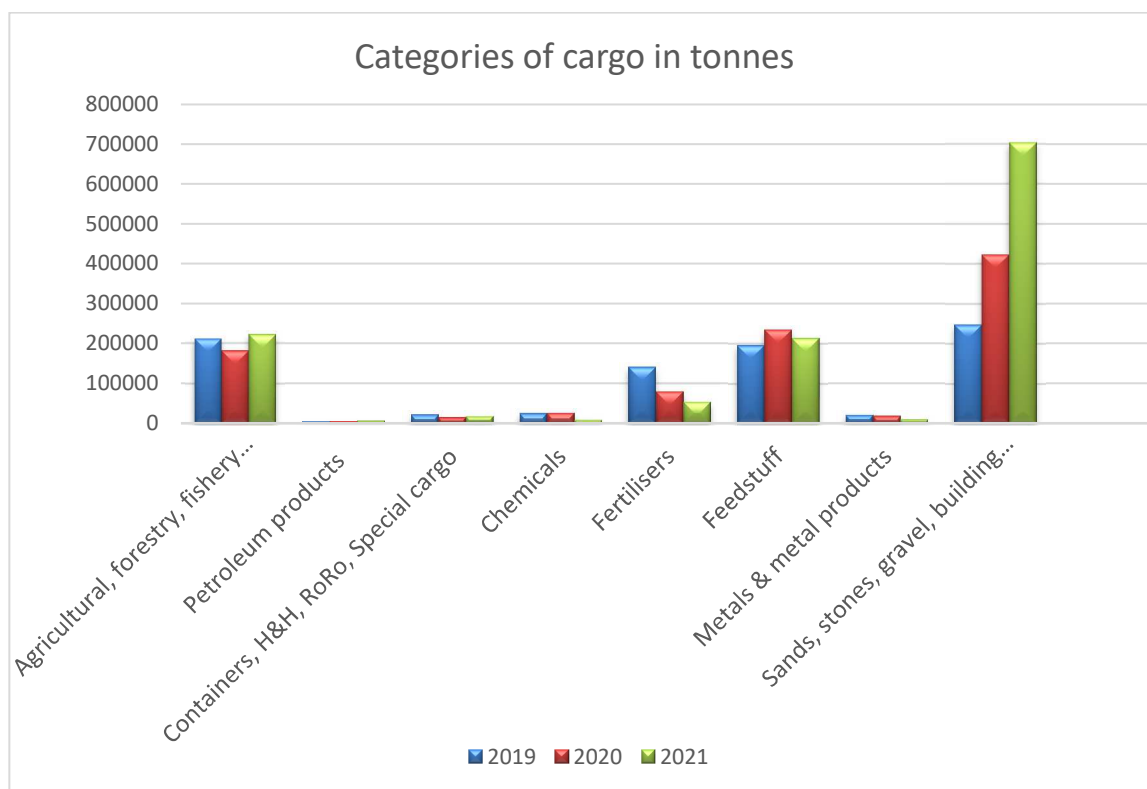


Figure 1 Ennshafen - categories of cargo³

³ Volumes generated from waterside transshipment

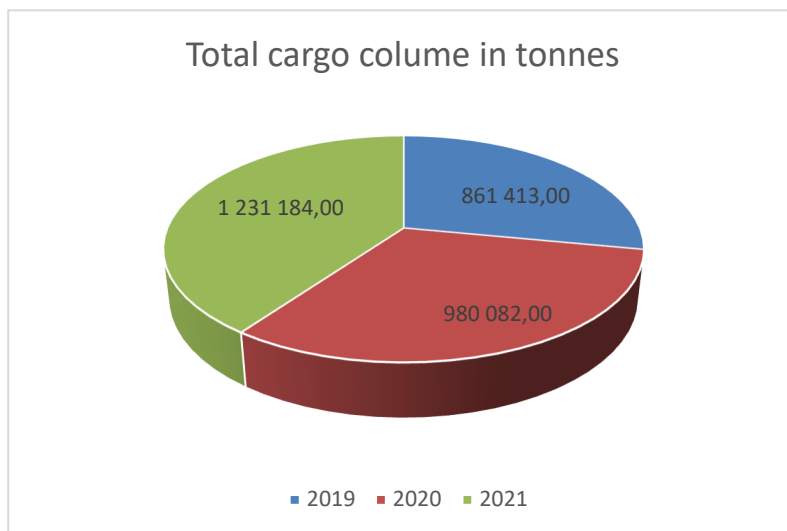


Figure 2 Ennshafen - total cargo volume

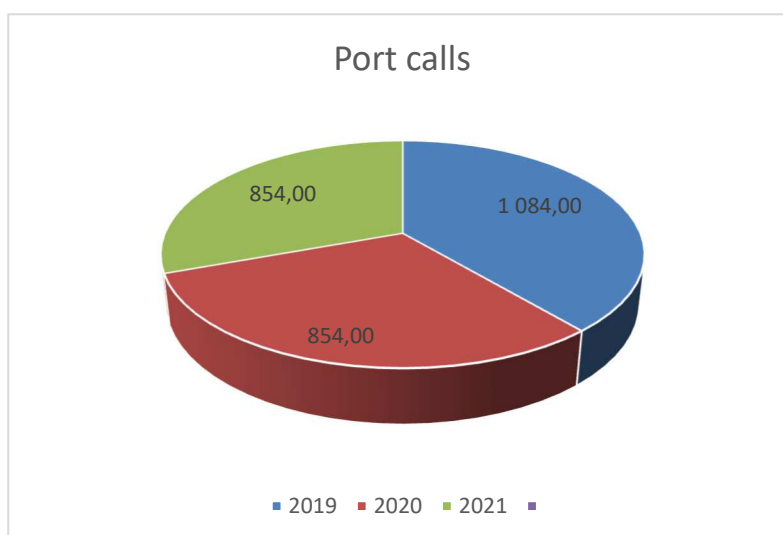


Figure 3 Ennshafen - port calls

As can be seen in the data provided by Ennshafen, the port was **not affected by the pandemic**. This is highlighted by the concrete answer provided to question nr. 11: “Were there any COVID-related restrictions/procedures imposed on your operational activities and on the ones of your terminal operators?”. The answer said no, further highlighting in question nr. 12: “How did the restrictions affect the activities of the ship/vessels, crews and passengers in the case they have stopped in your port?” – that there were no significant issues affecting their usual daily activities. Equally important to highlight is the fact that the connectivity to the hinterland was not affected at all. Ennshafen Port furthermore registered increased volumes in terms of building materials due to increased construction works in the region.

5.1.2 Port of Vienna

With a total area of 3000000 m², the port of Vienna is the largest public port on the Danube and consists of the cargo terminals of Freudenuau and Albern and the Lobau oil terminal. The three harbours on the Danube in Vienna are notable for their modern handling facilities, excellent infrastructure and dependable, well-trained workers, ensuring the reliable and rapid handling of all goods, be they building materials, containers, general cargo or bulk goods. The Port of Vienna is a multifunctional service company offering decades of experience and the latest technologies. Around 2,000 kilometers from the Black Sea and 1,500 from the North Sea, the harbour in Vienna serves as an optimal direct connection to three modes of transport: ship, rail and truck (keyword tri-modality). In addition, with its proximity to the Vienna international airport as high-performance interface for international trade and transport.

The port of Vienna is a very attractive transport nodal point through its connection to the 3 TEN-T corridors: the Rhine Danube, the Baltic-Adriatic and the Balkans-Eastern-Med. Corridors.

The data and information provided in the charts below allow us to draw conclusions about the impact of the pandemic on the largest Austrian port.

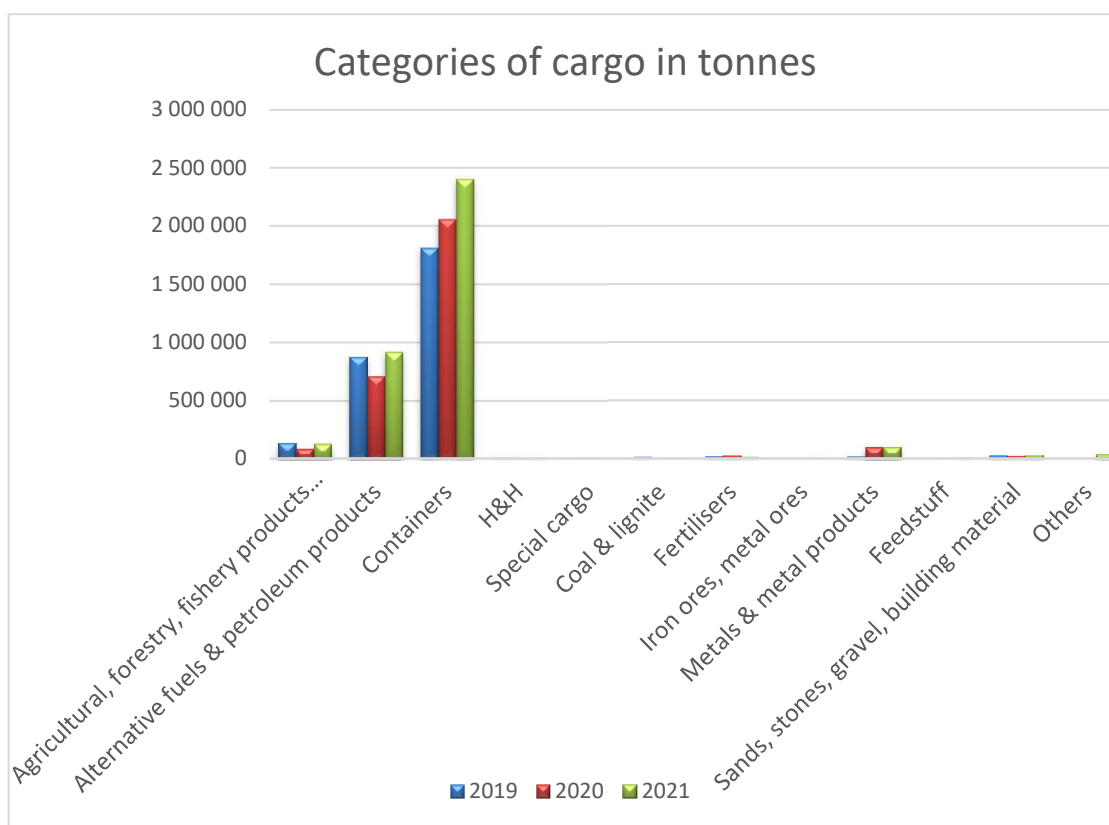


Figure 4 Port of Vienna - categories of cargo

After a detailed overview on the categories of cargo handled in 2019, 2020, and 2021, the chart below reflects upon the total volume of cargo in t:

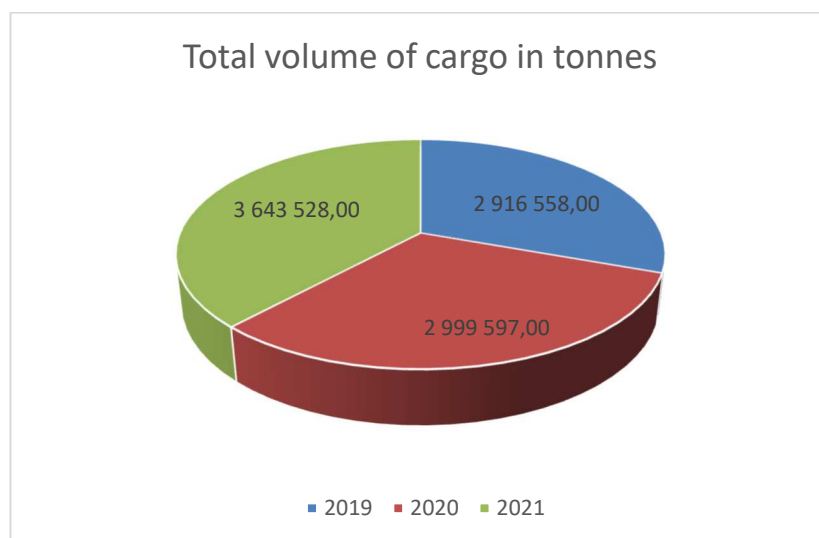


Figure 5 Port of Vienna - total volume of cargo

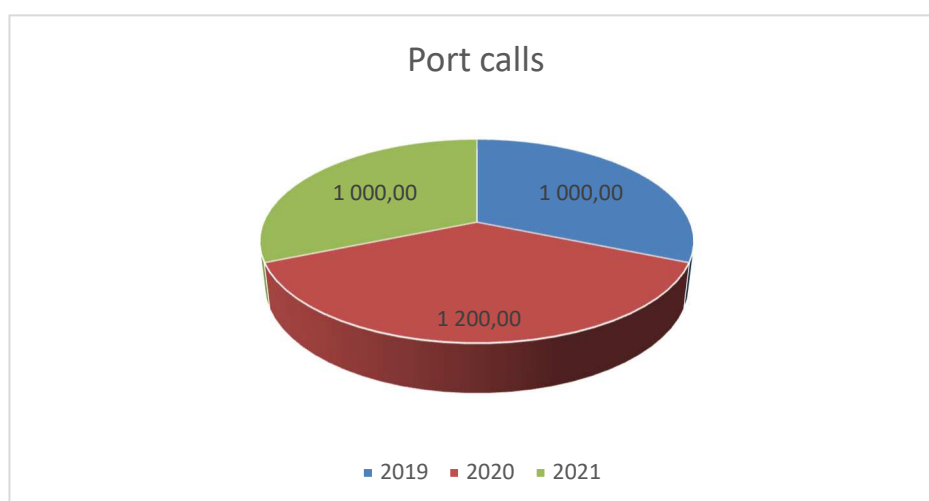


Figure 6 Port of Vienna - port calls

The Port of Vienna furthermore provided some interesting insights into the times in the midst of the pandemic. Asked whether there were any kind of special COVID-19 related restrictions or special procedures imposed on the operational activities and on the ones of the terminal operators (question nr. 14) the answer was affirmative: “Passenger shipping could not be continued, the port was used as a winter and summer port for the white shipping industry, up the 30 ships were placed in the port of Freudenau”. Indeed, passenger transport was highly affected by the health crisis, coming to a complete standstill.

Another interesting insight into how the port dealt with the pandemic was provided by the answer to question 15, namely: “How did the restrictions affect the activities of the ships/vessels, crews and passengers in the case they have stopped in your port?” The provided answer was the following: “White shipping used the time to maintain the ships, repairs were carried out and the ships got modernized. In addition, a long-standing strong partnership was thereby expanded, and the Port of Vienna was able to position itself in this segment.” Likewise important was the detailed answer provided to question nr. 16: “What measures were taken to ensure the minimum level of operations

and to protect both onshore and onboard personnel involved in port calls and cargo handling?” The answer: “Home office for the administrative staff, shift work in the operational area, teams were formed, geographical separation of the teams was imposed, and if possible, separation of the work areas by means of glass barriers.” The answer highlights the fact that important measures were taken to secure both economic viability as well as to protect the health of the involved personnel. All these measures secured that the port continued to fulfil its activities with no negative effects on the connectivity to the hinterland. This was possible even though the port also faced port staff shortages. The port nevertheless continued to be fully operational during the entire crisis.

The Port of Vienna furthermore provided interesting insights into their increase of volume by 20% in 2021. Generally speaking, the demand returned in 2021 to pre-pandemic times and can be characterised as “normal”. Important to highlight is the fact that in 2021 the construction industry experienced a “boom” with activities in this sector increasing significantly in 2021 as compared to the beginnings of the pandemic. On the other hand, the car terminal was affected due to supply and demand bottlenecks caused by COVID-19. The usual protection measures imposed by the pandemic – social distancing, hygienic measures etc. - continued to have an impact in 2021 as well. This nevertheless had, as was in 2020 the case, no significant impact on the functioning of the port.

5.2 Slovakia

Two Slovak ports participated in the survey – the Port of Bratislava and the Port of Komárno.

5.2.1 Port of Bratislava

With a total area of 1580079 m², the Port of Bratislava is the most important strategic port in Slovakia on the international Danube waterway. The port includes four port basins on both banks of the Danube and is situated between rkm 1.867,29 to 1.862,00. It fulfils the functions of a universal cargo and passenger port.

The port’s potential is enhanced by its excellent geographical location at the crossroads of the Rhine – Danube and Baltic Sea – Adriatic Sea corridors of TEN-T transport networks and easy access to other European capitals and important ports in Vienna and Budapest. The port has railway connection and direct connection to the motorway.

The statistical data below provides a detailed overview on the impact of the pandemic on the Port of Bratislava:

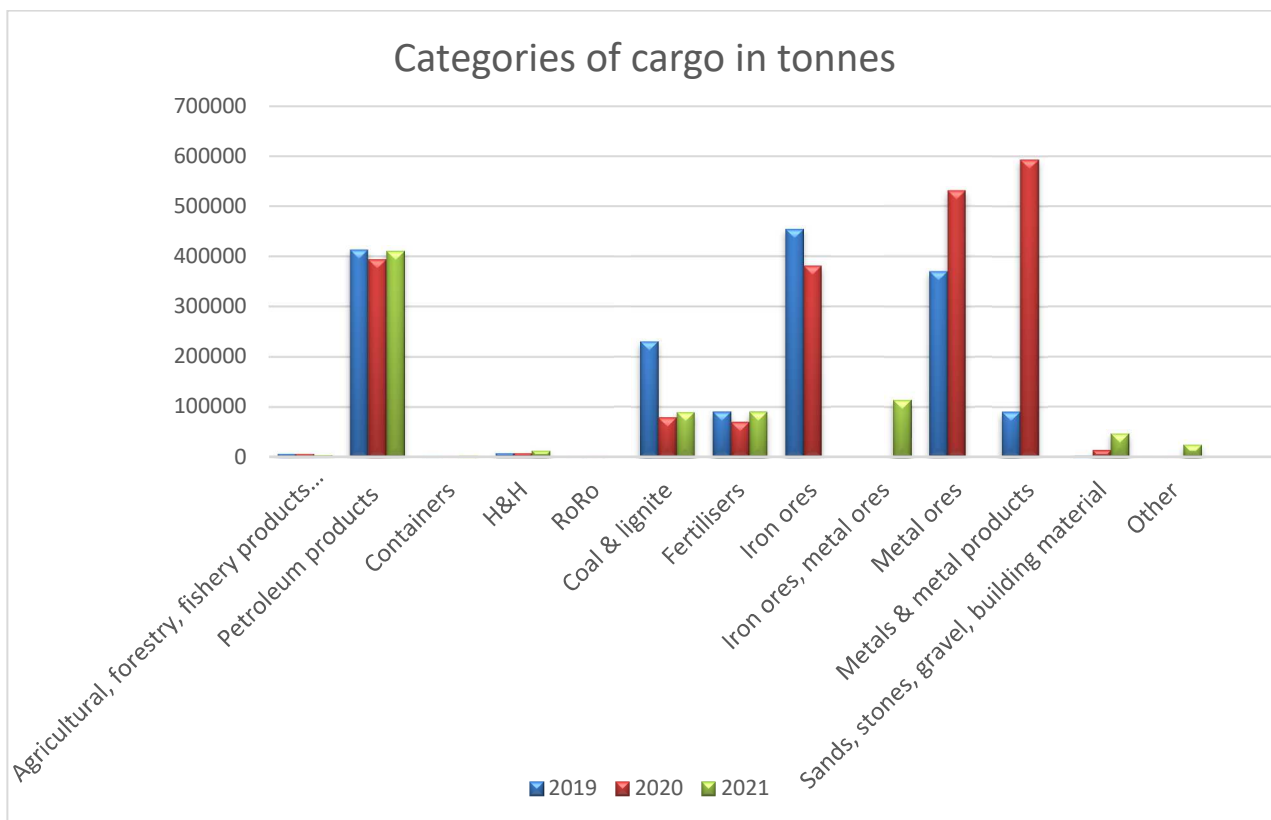


Figure 7 Port of Bratislava - category of cargo

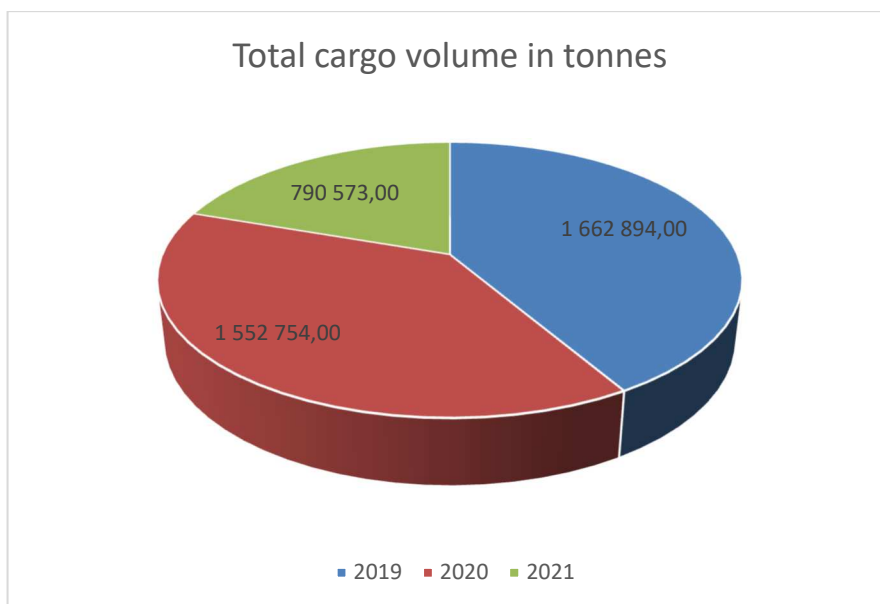


Figure 8 Port of Bratislava - total cargo volume

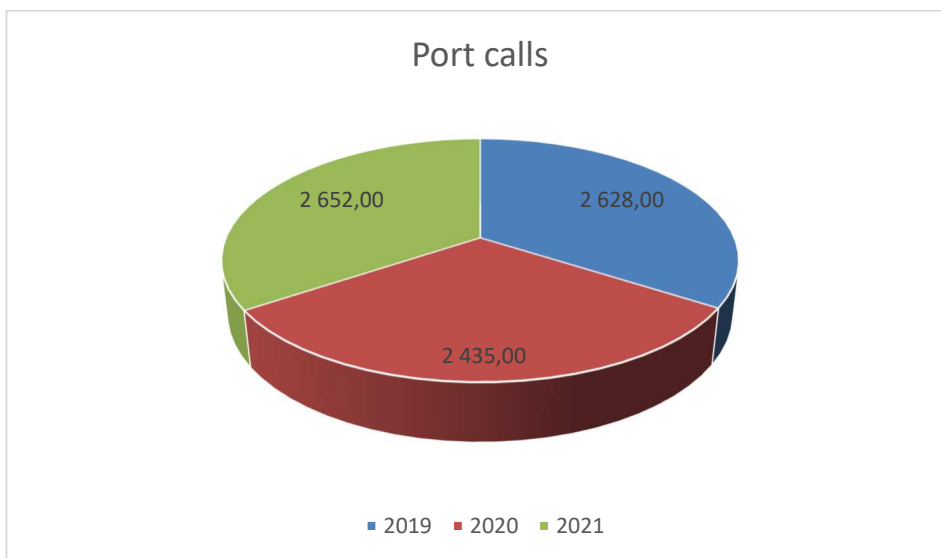


Figure 9 Port of Bratislava - port calls

The Port of Bratislava continued to be fully operational in spite of the ongoing health crisis. Several measures (regular testing etc.) were imposed as a reaction to the spread of the virus – nevertheless the cargo port was **not affected by the pandemic**. On the contrary – during the pandemic, an increase in solid and liquid cargo was registered, as pointed in the survey:

- 2020 - solid cargo: 1 159 532 t, liquid cargo: 393 222 t
- 2021 - solid cargo: 1 362 476 t, liquid cargo: 410 110 t

Equally important to highlight is the major increase recorded in iron pelets (33%). On the other hand, the negative trend in passenger transport is more than obvious:

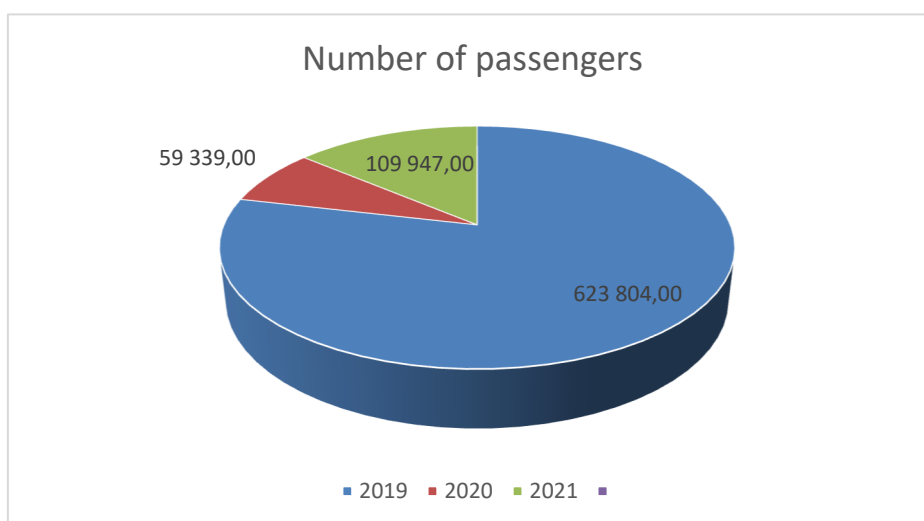


Figure 10 Port of Bratislava - number of passengers

5.2.2 Port of Komárno

The port is a public port with two basins used for the transshipment of goods by rail, road and water transport directly or with intermediate storage. Conceptually, technologically, and structurally, the port of Komárno is built for the transfer of bulk and loose substrates and is situated between rkm

1770,00 to 1762,00. The Port of Komárno is part of the Rhine-Danube TEN-T Core Network Corridor. It has direct connection to railway and road.

Following the established pathway in the previous subchapters, the following charts aim to provide an insight into the impact of the pandemic on the port.

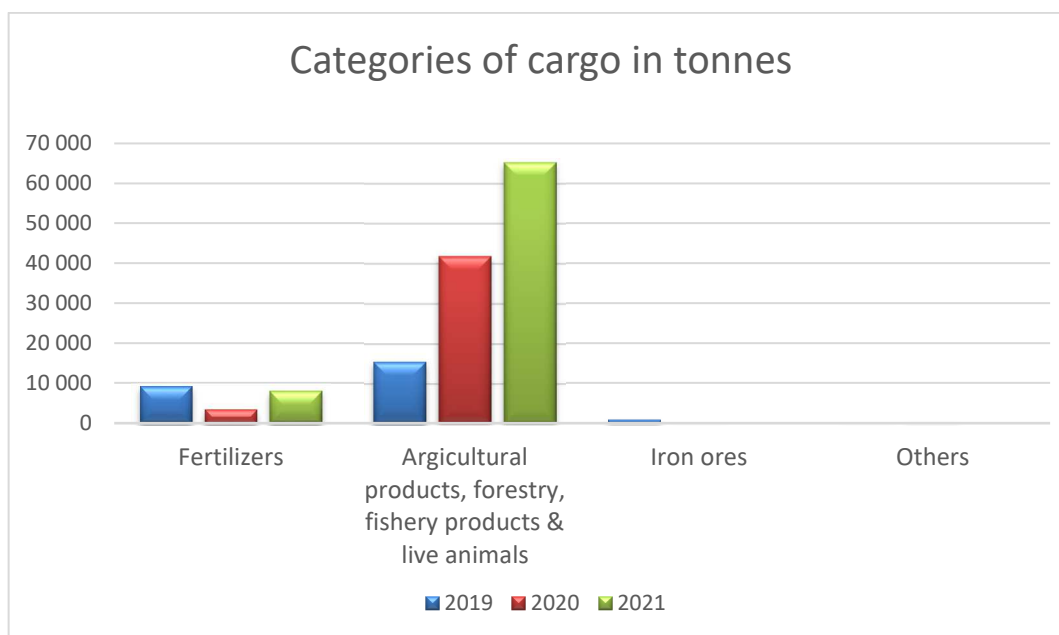


Figure 11 Port of Komarno - category of cargo

With regard to the categories of cargo handled by the Port of Komarno, no negative effect of the pandemic is tangible. On the contrary – the category defined as agricultural products registered since 2019 a continuous increase. According to the information provided by the survey, an increase was registered as follows:

- 2020: solid cargo 45 539 (t),
- 2021: solid cargo 73 141 (t),
- wheat transshipment increased by 32%,
- fertilizers transshipment increased by 127%.

This increase is mainly visible in the chart below:

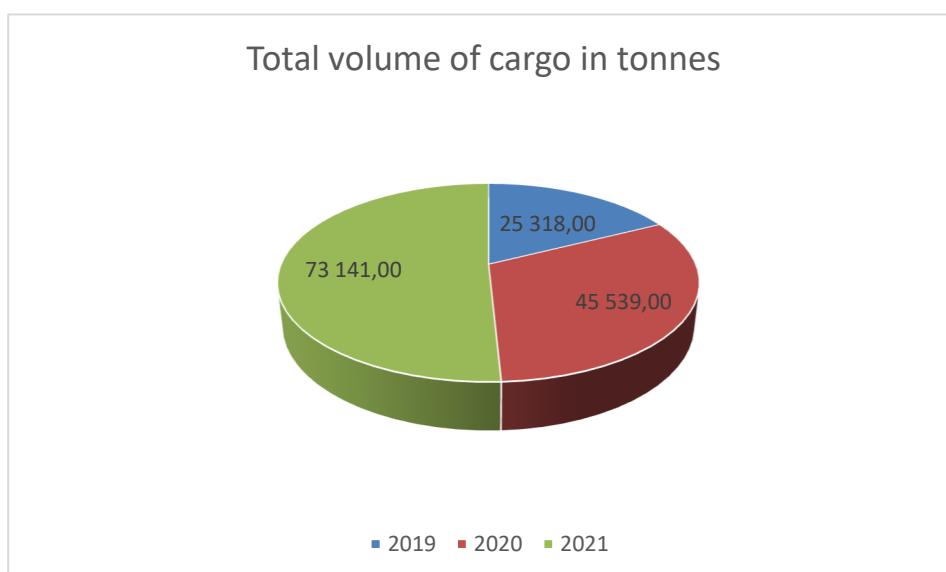


Figure 12 Port of Komarno - total volume of cargo

On the other hand, if the number of passengers is compared, there is a concrete negative development as highlighted by the following chart:

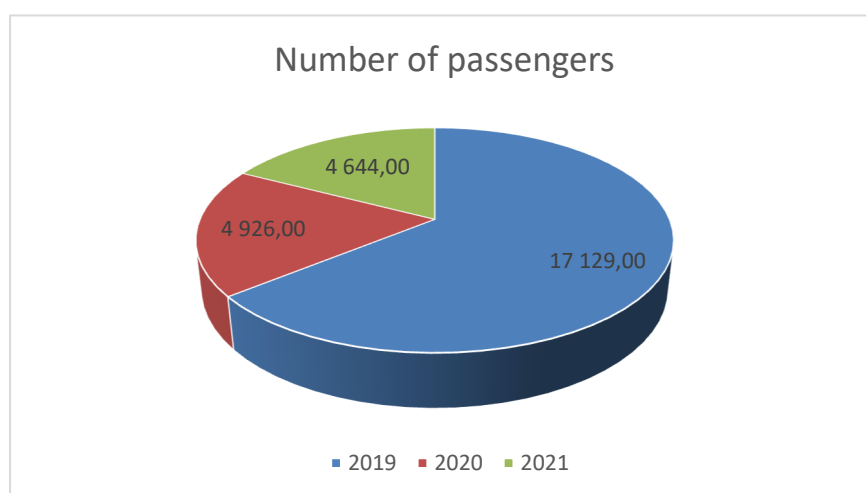


Figure 13 Port of Komarno - number of passengers

With regard to the registered impact of the COVID-19 restrictions, they were similar as already highlighted in the analysis of the Port of Bratislava.

Noteworthy to notice is also another important statistical data that provides an insight into the impact of the pandemic on ports:

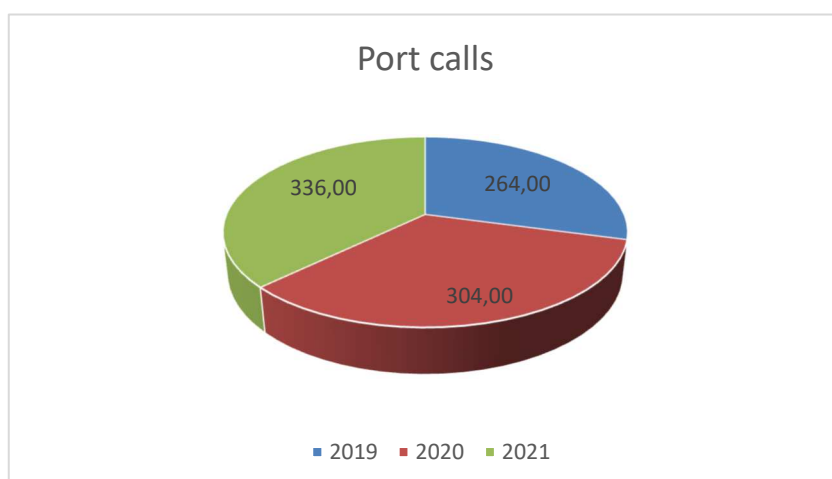


Figure 14 Port of Komarno - port calls

5.3 Hungary

One Hungarian port participated in the survey: Centroport.

5.3.1 Centroport

The Hungarian port is located on the right bank of the Danube, in the bay between 1580-1579 rkm, on the Szalki Island. Centroport is one terminal in the Port of Dunaújváros that is dedicated to agro-logic river/rail/road, transhipments, covered /1600 sqm/ flat grain storage at Dunaújváros.

The grain hopper is able to store 6.300 mto bulk cargo at the same time, with mobile separation walls dividing it into four sections. The matrix technology is computer controlled. It can be used in road, rail, and waterway transport alike.

There are several elements in the loading technology which are unique in Hungary – and perhaps in Europe. A special feature is that the ship does not need to be shifted, since a bridge structure is moving on the wharf parallel to the ship and load the holds continuously. Loading rate 200 mto phrs, for shipping is 3.000 mto pwwd shinc, which is 1.000 mto per shifts. Moreover, at the end it prints a verified scales ticket about the weight of goods. The efficiency of solutions is well shown by the fact, that present delivery is possible by road even if it is raining.

The technical capacity offered by Centroport is 300.000 mto yearly, handling about 10% of the total Hungarian grain export, in better times.

Centroport can be reached by train on Railway No. 42, connecting Pusztaszabolcs and Dunaújváros. This is a single-track railway line along the right bank of the Danube, electrified only as far as Dunaújváros, with a total length of 79 km. The line between Pusztaszabolcs and Dunaújváros has been in operation since 1951 and was extended to Paks in 1976. The situation of the line is exceptional, mainly because of the Danube Railway and the Paks nuclear power plant. Dunaújváros station is in a prominent position among the stations of the major rural cities in terms of the volume of freight traffic. Although there are no major upgrades planned for the line, current track conditions are stable.

Regarding the road infrastructure, the port is 3-4 km away from the M6 highway and 70 km from Budapest on the right riverbank. East-West connection is provided by M8 motorway and Danube Bridge that is 12 km away. The M6 motorway runs south along the right bank of the Danube, connecting Budapest with Pécs, the capital of Baranya. The section between Budapest and

Dunaújváros was opened in 2006 and the section between Dunaújváros and Bóly in 2010. Its current total length is 193 km. The main road 6 is a Hungarian first-class main road connecting Budapest with the southernmost region of Hungary, South Transdanubia (Dél-Dunántúl), with a total length of 262 km. The M8 motorway is currently a planned 2x2-lane (+ parking lane) motorway, with some sections under design and pre-construction, and a smaller part of the motorway will include the existing 2x2-lane sections of the existing Highway 8.

The following charts aim to provide an overview on the impact of the pandemic on the port.

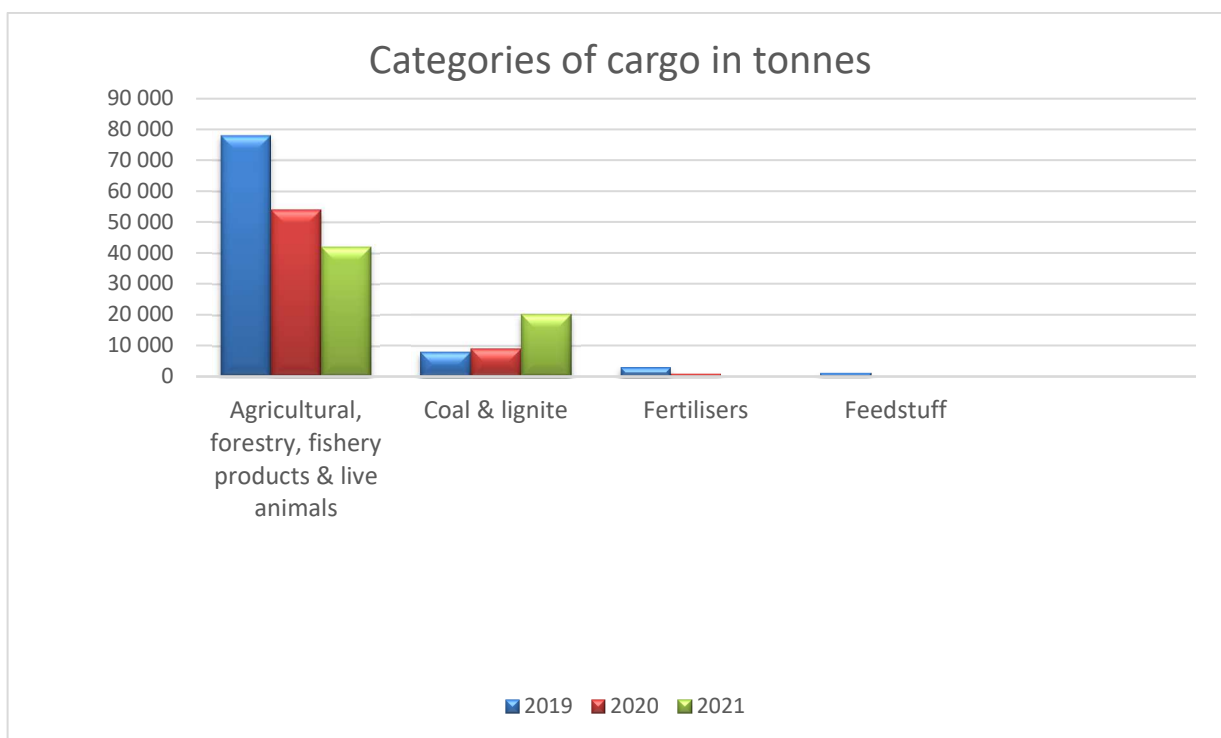


Figure 15 Centroport - categories of cargo

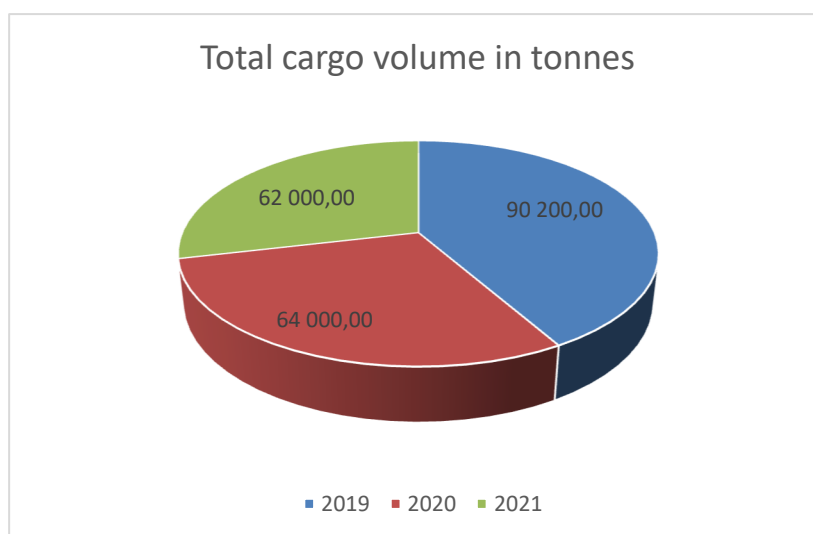


Figure 16 Centroport - total cargo volume

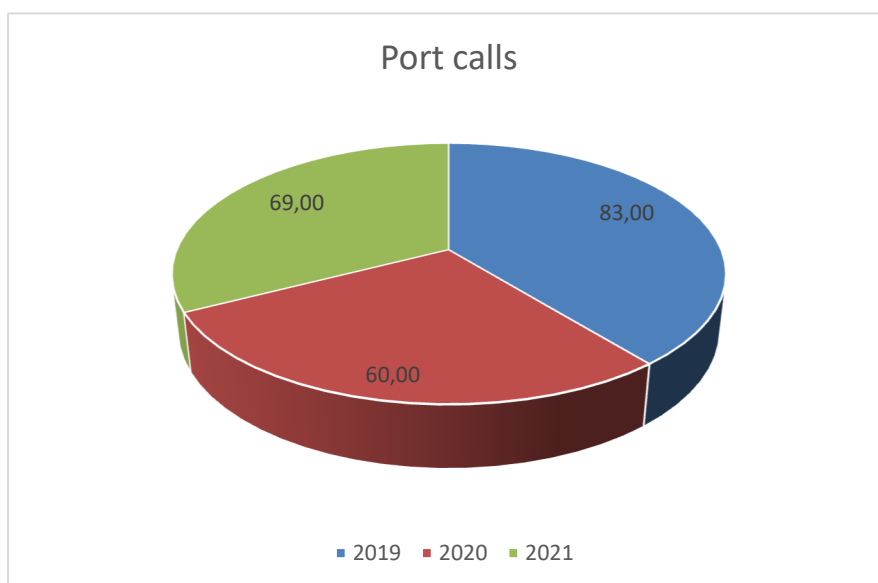


Figure 17 Centroport - port calls

According to the data provided by Centroport, the port registered some negative developments that could be linked to the pandemic such as the grain turnover that fell by 27%, whereas the total Hungarian Danube turnover fell by 15% compared to the previous year (2021 vs 2020). The port also had to deal – similar to its international counterparts – with the ongoing COVID-19 restrictions.

5.4 Serbia

Three Serbian ports participated in the survey: the Port of Novi Sad, the Port of Belgrade, the Port of Pancevo and the Port of Smederevo.

5.4.1 Port of Novi Sad

The Port of Novi Sad is positioned in the central part of Vojvodina, the northern province of the Republic of Serbia. It is located at 1,254 rkm of the left bank of the river Danube, at the entrance to the Danube-Tisa-Danube canal.

The port area covers approximately 24 ha on both sides of the canal, and two port operators are providing port services in the Port of Novi Sad (DP World Novi Sad jsc and NIS jsc). The port disposes of a water area of 6 ha, with a depth of 4 - 10 m.

The port is situated at the intersection of Rhine Danube Corridor with rail/road Corridor X. Access to railway is just 0.3 km away from Rail Corridor X and access road is 3 km away from Road Corridor X.

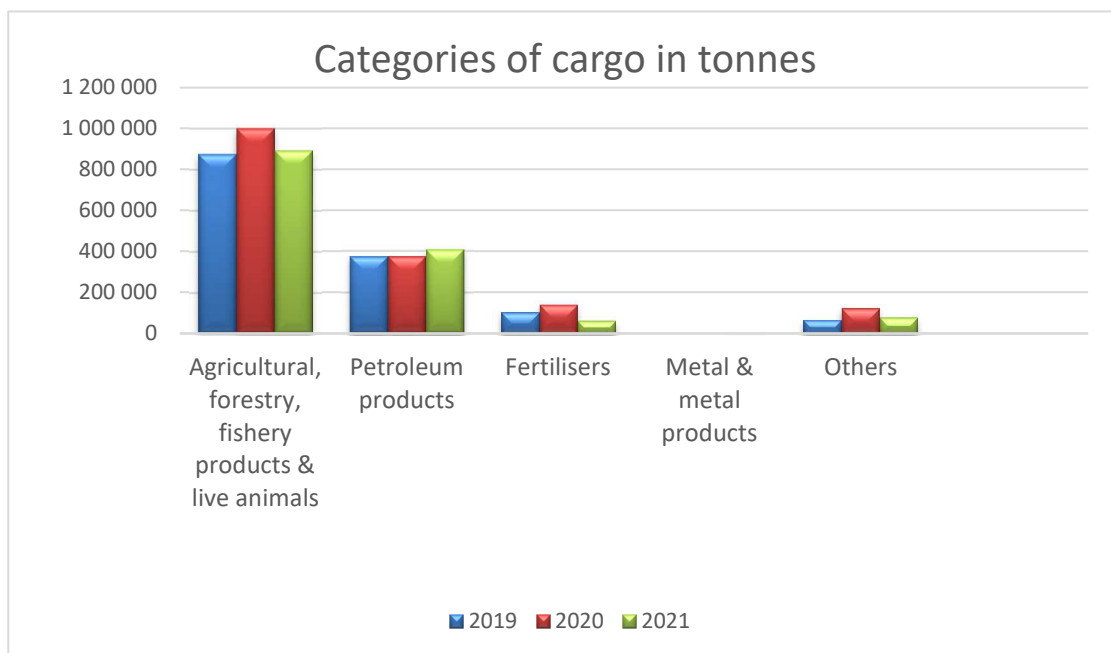


Figure 18 Port of Novi Sad - categories of cargo

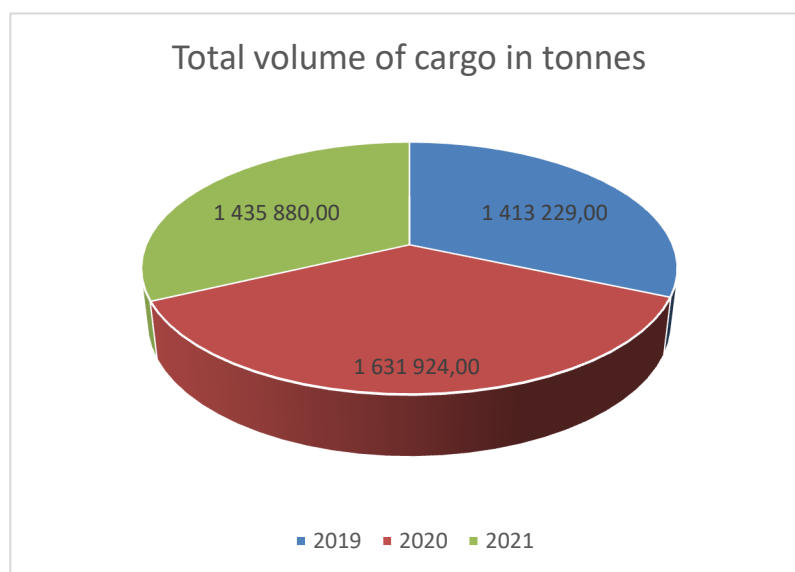


Figure 19 Port of Novi Sad - total volume of cargo

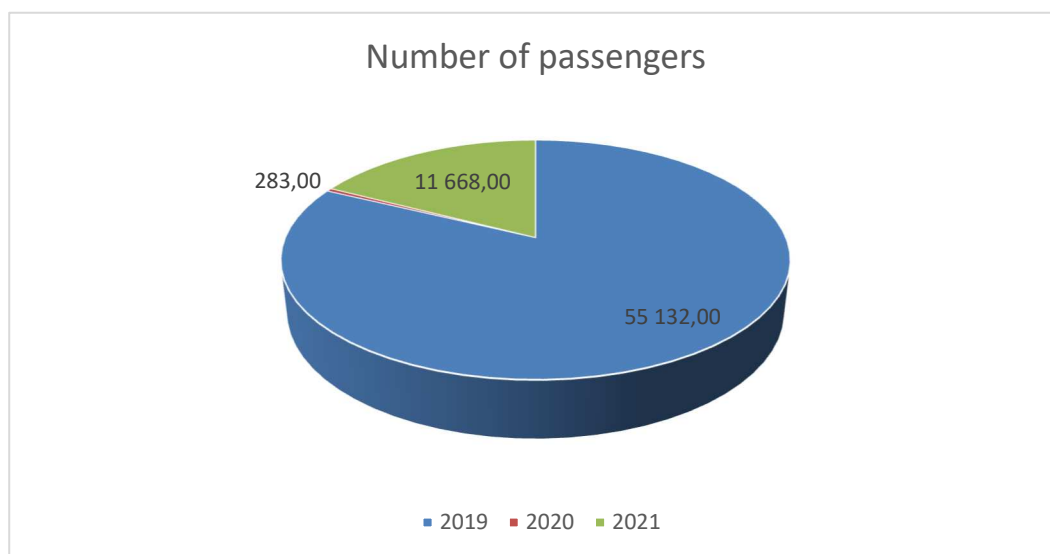


Figure 20 Port of Novi Sad - number of passengers

As can be concluded based on the data provided by the Port of Novi Sad and visualised in the chart above, the COVID-19 pandemic had a tremendous impact on passenger transportation. This segment, even though some improvement was recorded, did not fully recover in the year 2021.

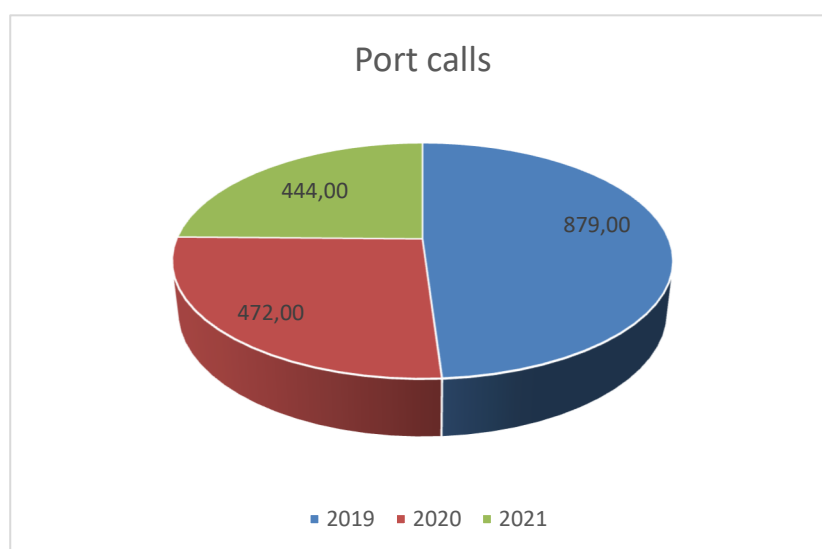


Figure 21 Port of Novi Sad - port calls

Similarly to the other Danube ports, Serbian ports also faced some restrictions imposed by the health crisis. Answering the question “Where there any COVID-related restrictions/special procedures imposed on your operational activities and on the ones of your terminal operators?”, the port stated that “Port operators, shipping companies, agents and other users of the port had to follow recommendations and procedures given by the government officials.”

To the question “How did the restrictions affect the activities of the ships/vessels, crews and passengers in the case that they have stopped in your port?” the port provided the following answer: “Cargo vessels continued operations following the COVID related rules and amended border procedures (crew members stayed onboard the vessel during the loading/unloading operations, crew changes were allowed under certain conditions and time for transiting of vessels was limited). However, passenger traffic was affected the most and stopped completely in 2020.” As can be seen, passenger transport was immensely affected by the health crisis in Serbia as well.

5.4.2 Port of Belgrade

Port of Belgrade is positioned on the 1168 km of the right bank of the river Danube, it is a basin type port with a water area of 11 ha and a depth of 4 m at low navigation level. Port operator is Port of Belgrade jsc. The port is situated at the Rhine Danube Corridor with direct access to road and railway Corridor X.

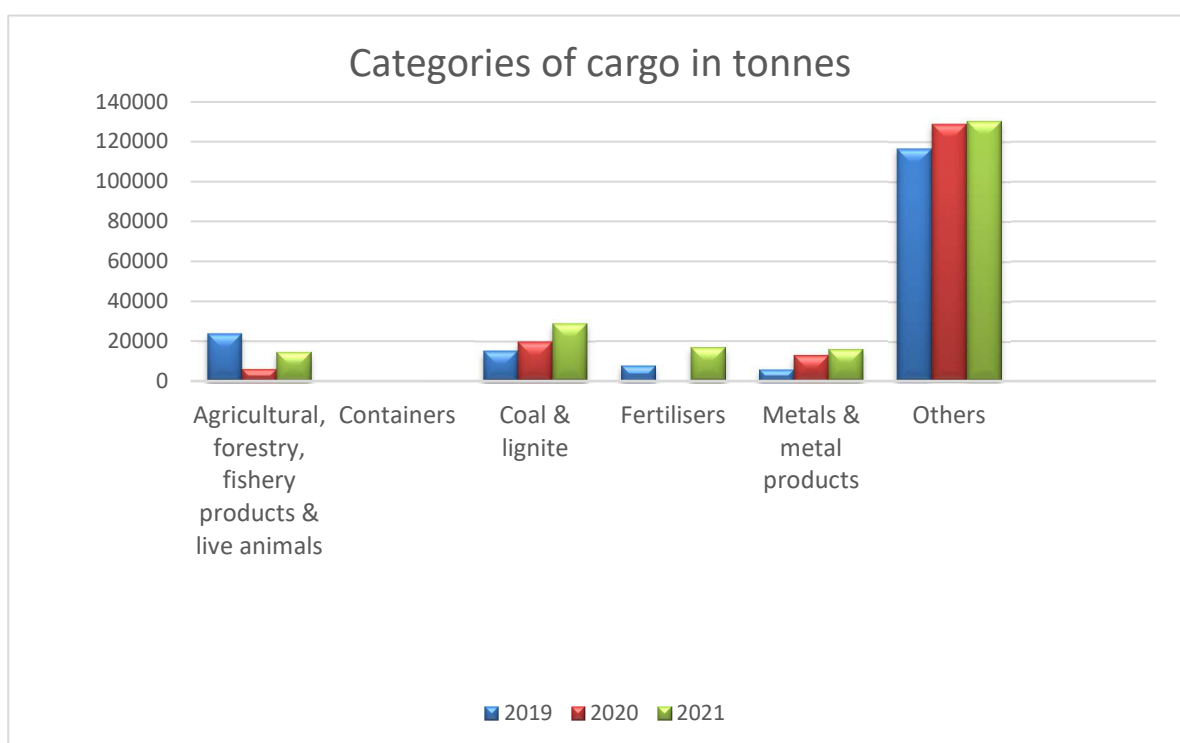


Figure 22 Port of Belgrade - categories of cargo

As can be concluded by the data provided and summarized in this chart, the impact of the pandemic on the cargo handled by the port was insignificant.

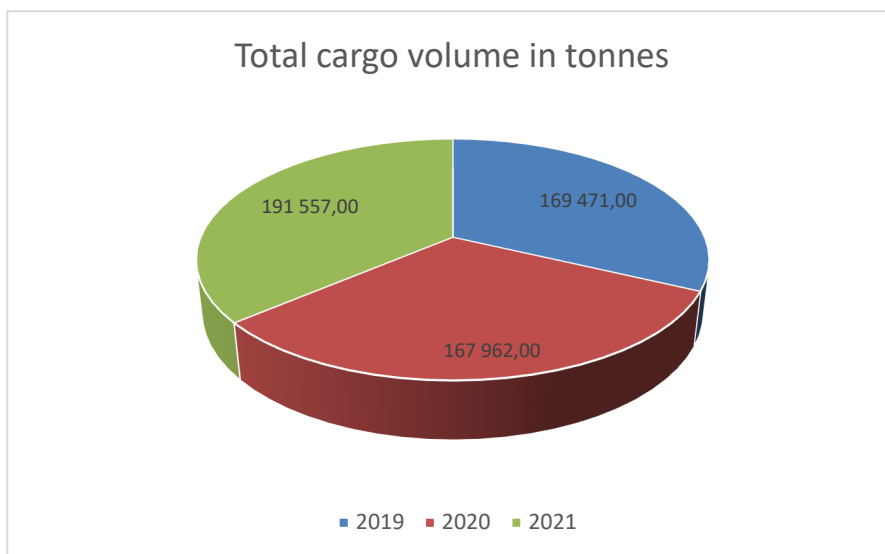


Figure 23 Port of Belgrade - total cargo volume

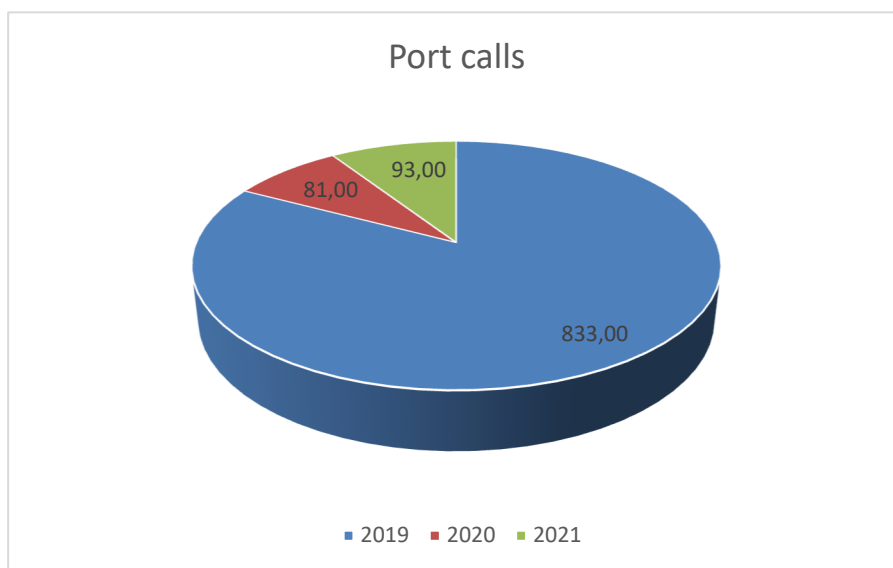


Figure 24 Port of Belgrade - port calls

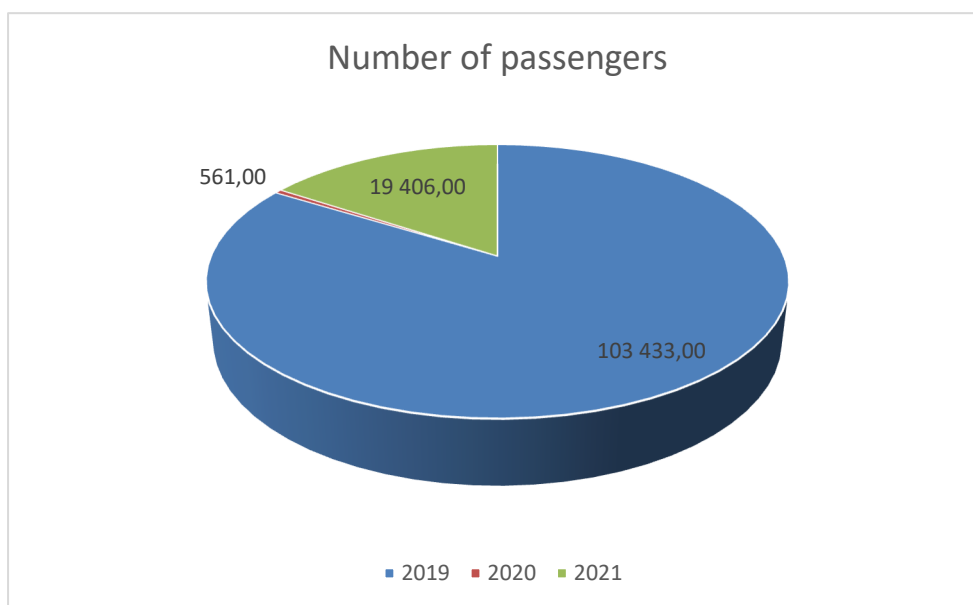


Figure 25 Port of Belgrade - number of passengers

As can be seen in the chart above, the number of passengers decreased drastically during the pandemic. The numbers speak for themselves: passenger transport was extremely affected by the health crisis. A similar development was already highlighted in the case of the Port of Novi Sad.

5.4.3 Port of Pancevo

Port of Pancevo covers currently the largest port area in the Republic of Serbia (127 ha). Port is located on the left bank of the Danube, at km 1,153, it has two basins and one terminal on the left bank of the Danube main flow. Four port operators are carrying out the port activities: Luka Dunav Pancevo jsc, NIS jsc, Granexport and Specijalna Luka Pancevo.

The port is situated on the Rhine Danube Corridor with direct access to the road and railway Corridor X. The port is located only 14 km away from Belgrade.

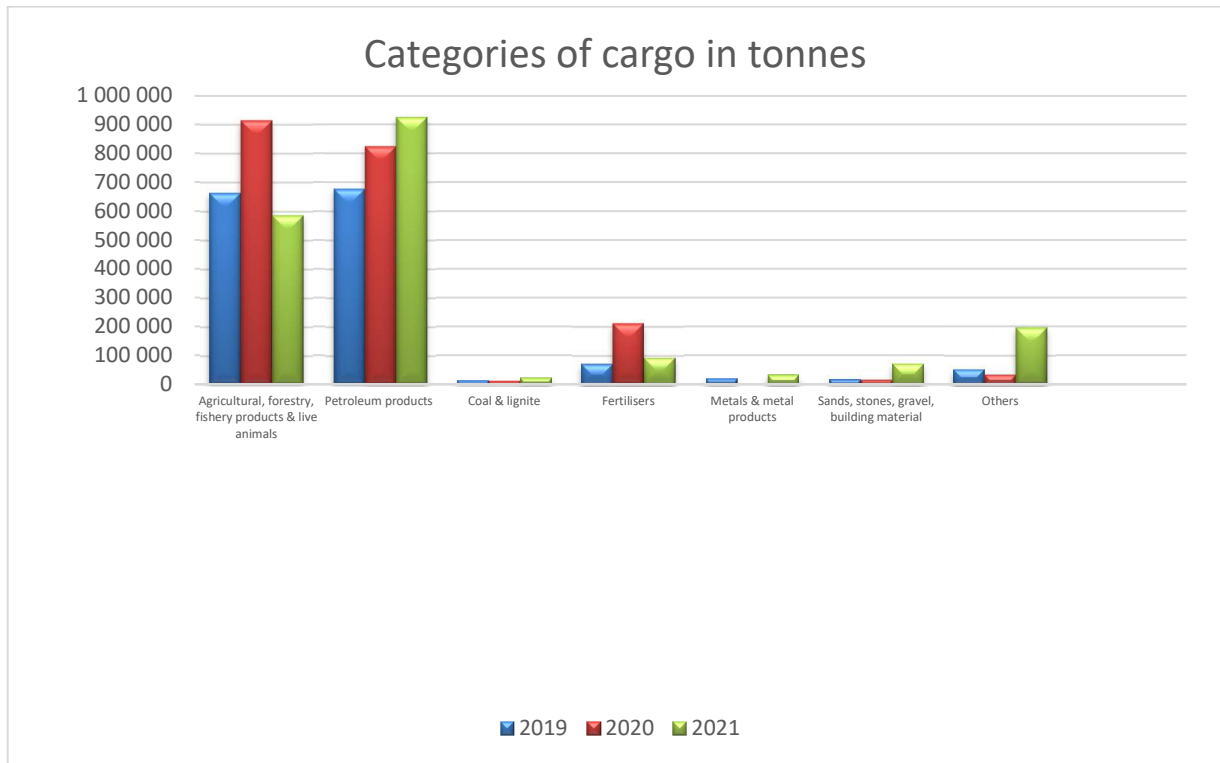


Figure 26 Port of Pancevo - categories of cargo

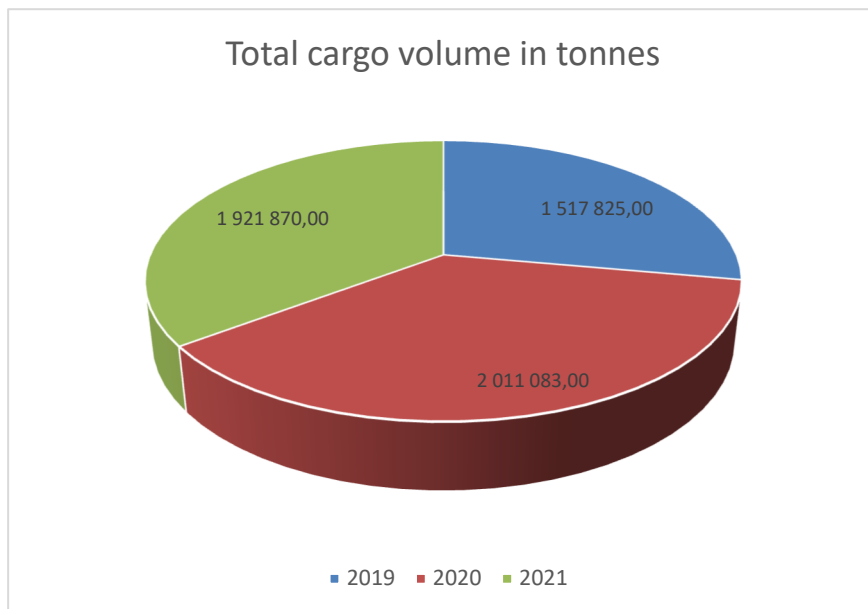


Figure 27 Port of Pancevo - total cargo volume

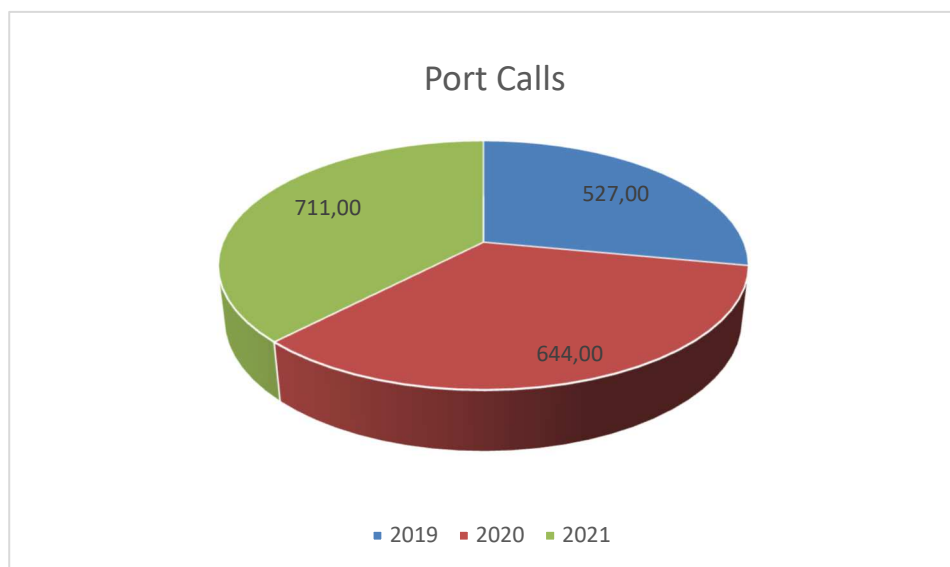


Figure 28 Port of Pancevo - port calls

The same COVID-19 restrictions applied as in the case of the Port of Belgrade and Novi Sad.

5.4.4 Port of Smederevo

The port of Smederevo is positioned on the right bank of the river Danube, on the stretch from rkm 1111 to rkm 1116. Four port operators at five locations are carrying out port activities: HBIS Group Serbia Iron & Steel, Tomi Trade, Mitan Oil and NIS jsc.

The port is situated on the European TEN-T corridor Rhine-Danube, linked to the Pan European Transport Corridor X.

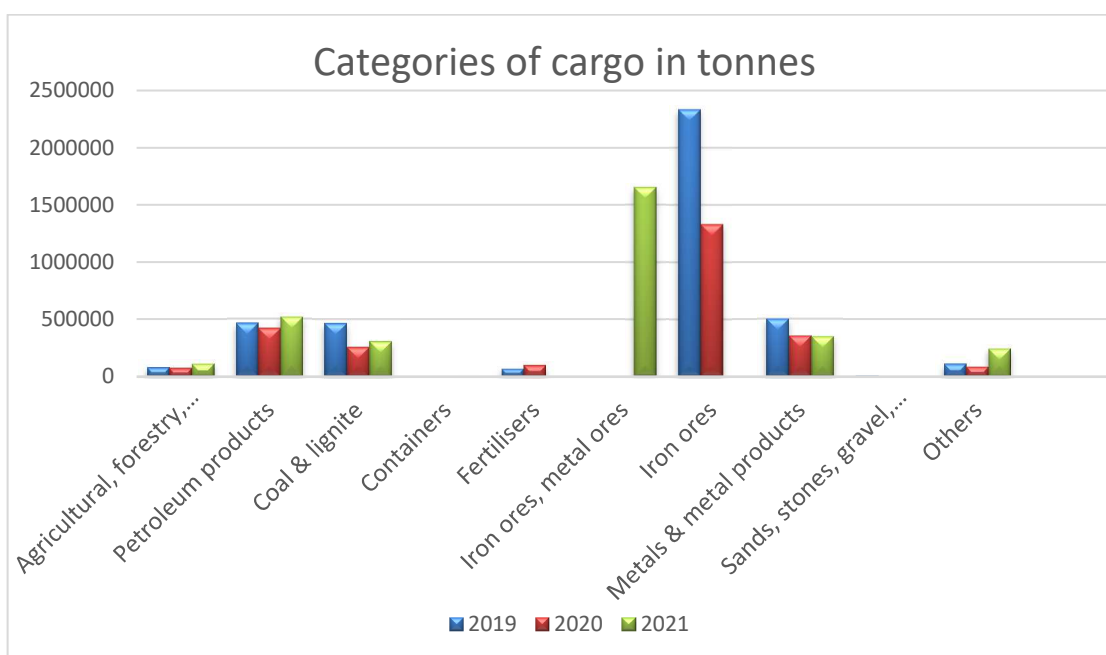


Figure 29 Port of Smederevo - categories of cargo

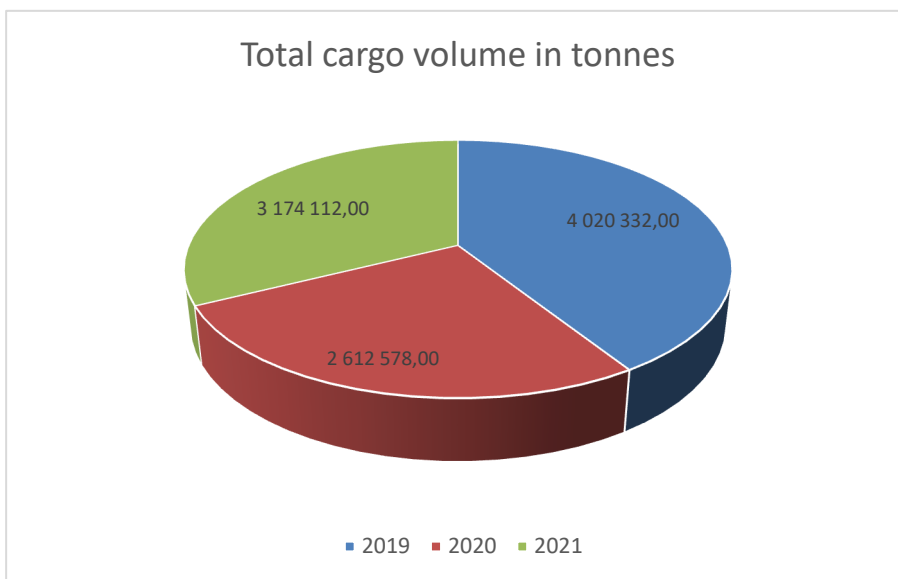


Figure 30 Port of Smederevo - total cargo volume

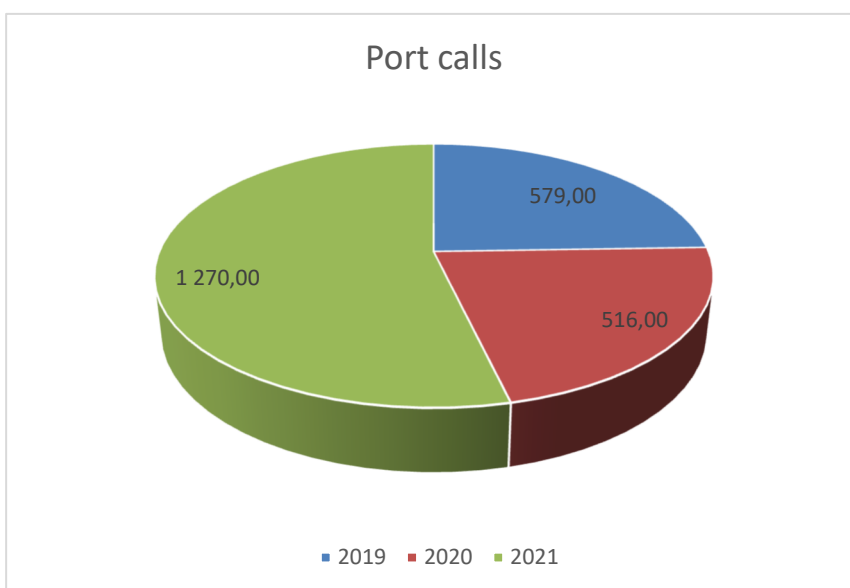


Figure 31 Port of Smederevo - port calls

During the pandemic, the same COVID-19 restrictions were applied as in the case of the Ports of Belgrade and Pancevo.

5.5 Bulgaria

Two Bulgarian ports – the Port of Lom and the Bulmarket Port participated in the survey.

5.5.1 Port of Lom

Port of Lom is a port of national importance and is the second largest Bulgarian river port on the Danube. It is a trimodal port – “road-railway-river”. It handles dry bulk cargo (coal, cereals, ore, concentrates, synthetic fertilizers etc.), as well as general cargo (rolled metal sheets, cargo in FIBC bags, palletized cargo etc.). The Port of Lom has the capacity to handle approximately 3 mil. tons of cargo a year. It has 13 berths, and it can service 10 vessels simultaneously. The total quay length is 1422 m and the maximum length (LOA) of a vessel, which can be docked at the port, is 135 m. The total storage area (both covered and open) is 132 000 m². The port works 12 hours/day, 7 days/week.

Regarding the access to TEN-T corridors, Lom is located near the Craiova-Calafat section, which belongs to the railway part of corridor Orient/East-Med, as well as the section Maglavit-Craiova, which is part of the road network on the Rhine-Danube corridor.

The port itself is on the right bank of the Danube River on km.742-743 and is in the central part of the town of Lom. It is strategically located to key European transport arteries, and it provides the shortest direct land connection with the Mediterranean port of Thessaloniki (460 km.).

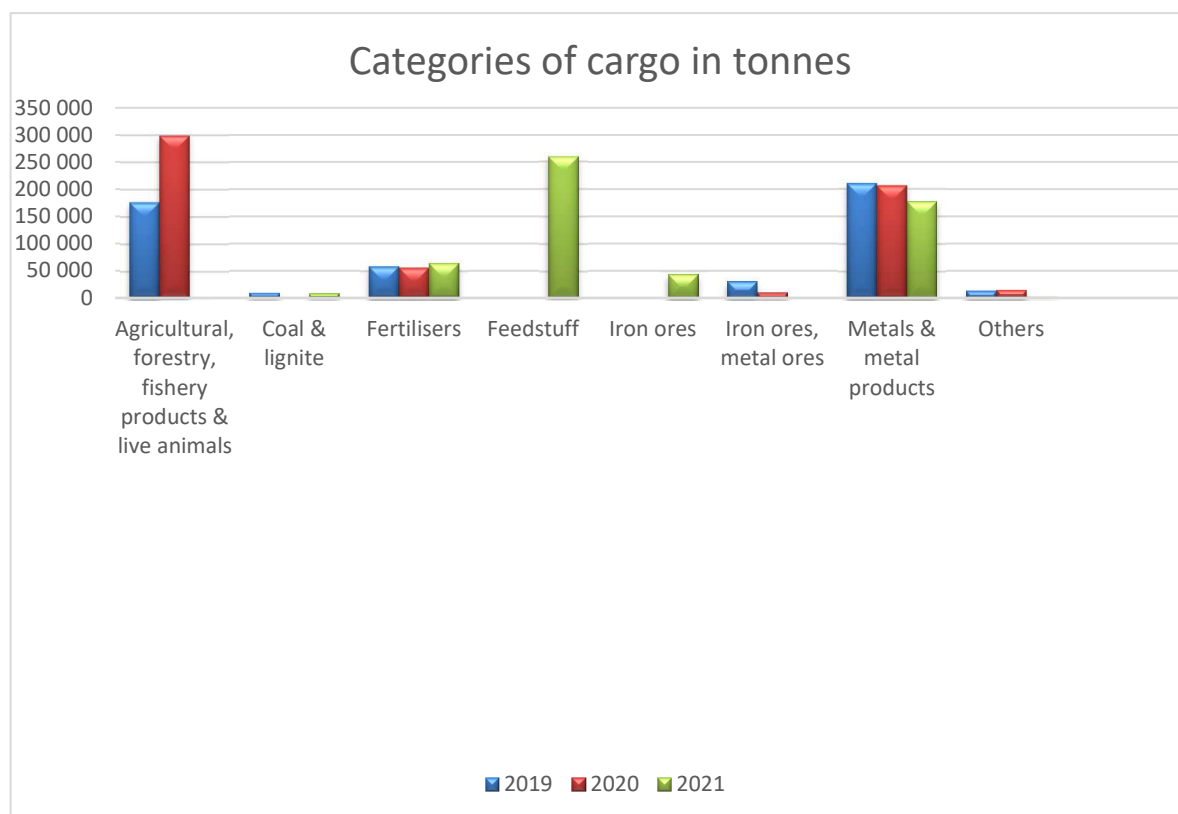


Figure 32 Port of Lom - categories of cargo

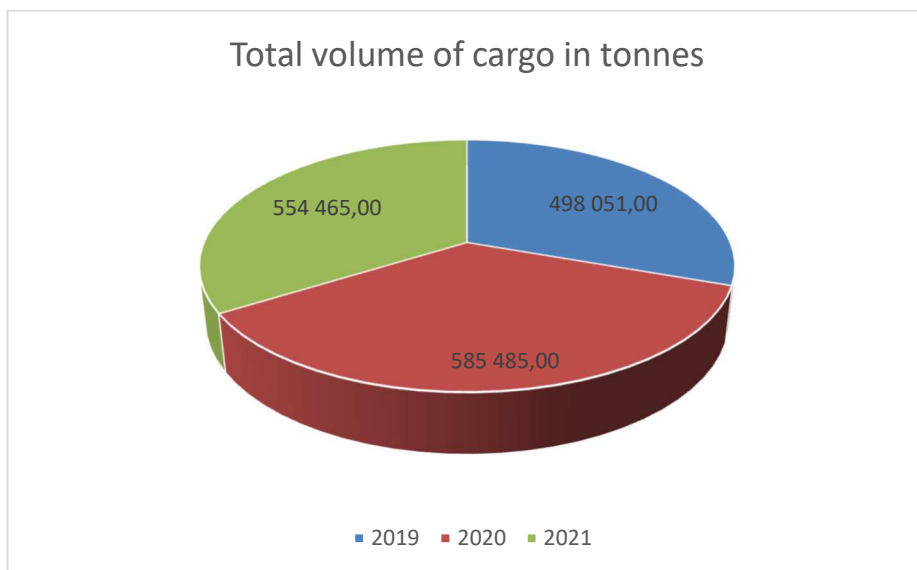


Figure 33 Port of Lom - total volume of cargo

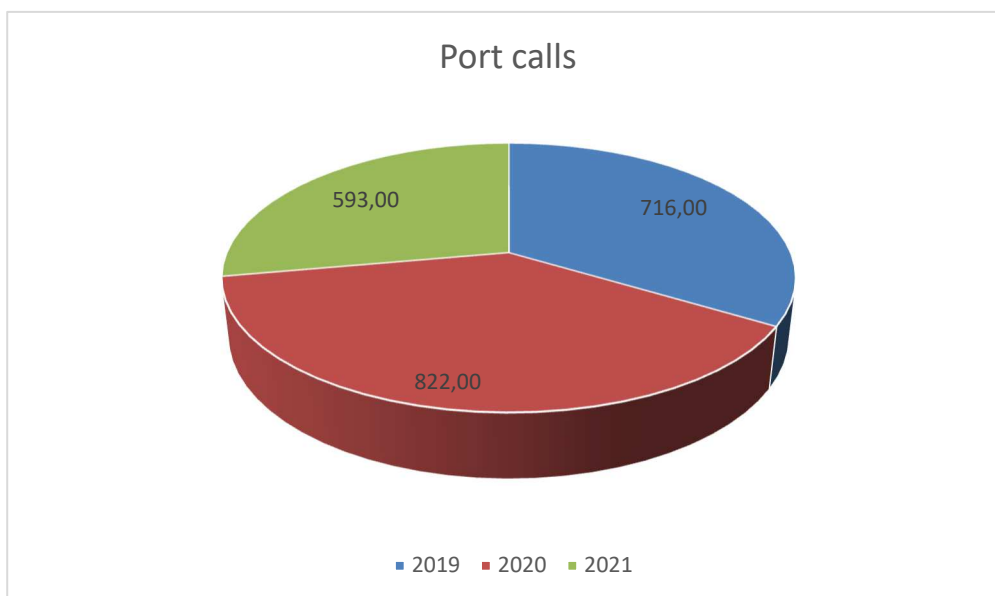


Figure 34 Port of Lom - port calls

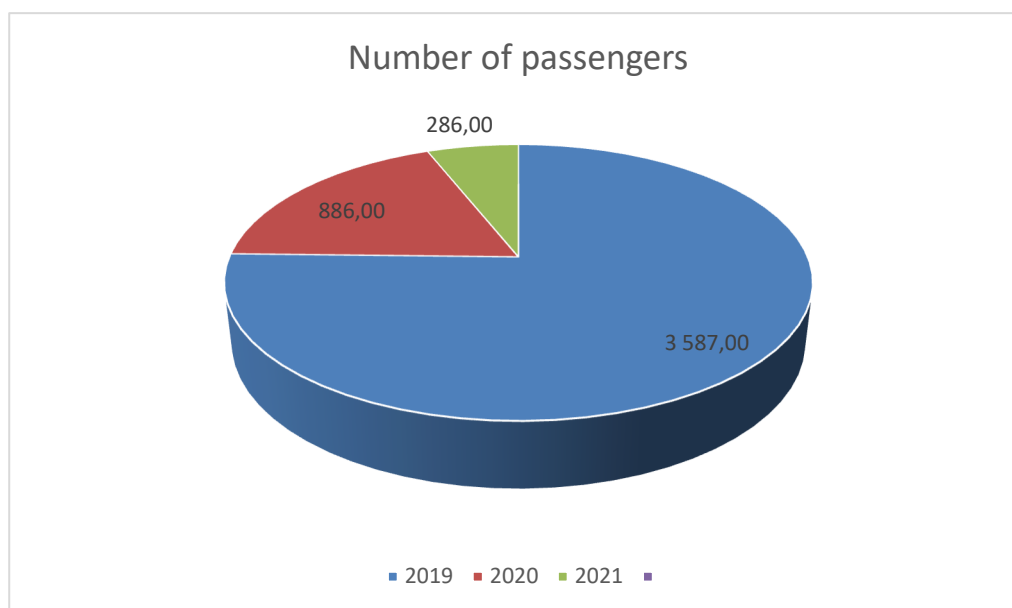


Figure 35 Port of Lom - number of passengers

As already highlighted in the case of other ports as well that provided data on the transported number of passengers – with tourism being highly affected by the pandemic. The number of transported persons decreased drastically. A full recovery – as compared to the year 2019 – was not recorded in the timeframe under investigation. Nevertheless, with regard to the transported cargo, **no significant impact** of the pandemic was registered with the port continuing its activities – under the usual COVID-19 restrictions – as under normal circumstances.

5.5.2 Port Bulmarket

PORT BULMARKET JSC is the largest private port for public transport on the Danube River in Bulgaria. The port is connected through the industrial branch with the railway lines in Ruse and is the owner of this branch - 6 km from Ruse North railway station to BULMARKET railway station and 11 km tracks in the industrial area

The port is located on the crossroad of two European transport corridors – 7 and 9.

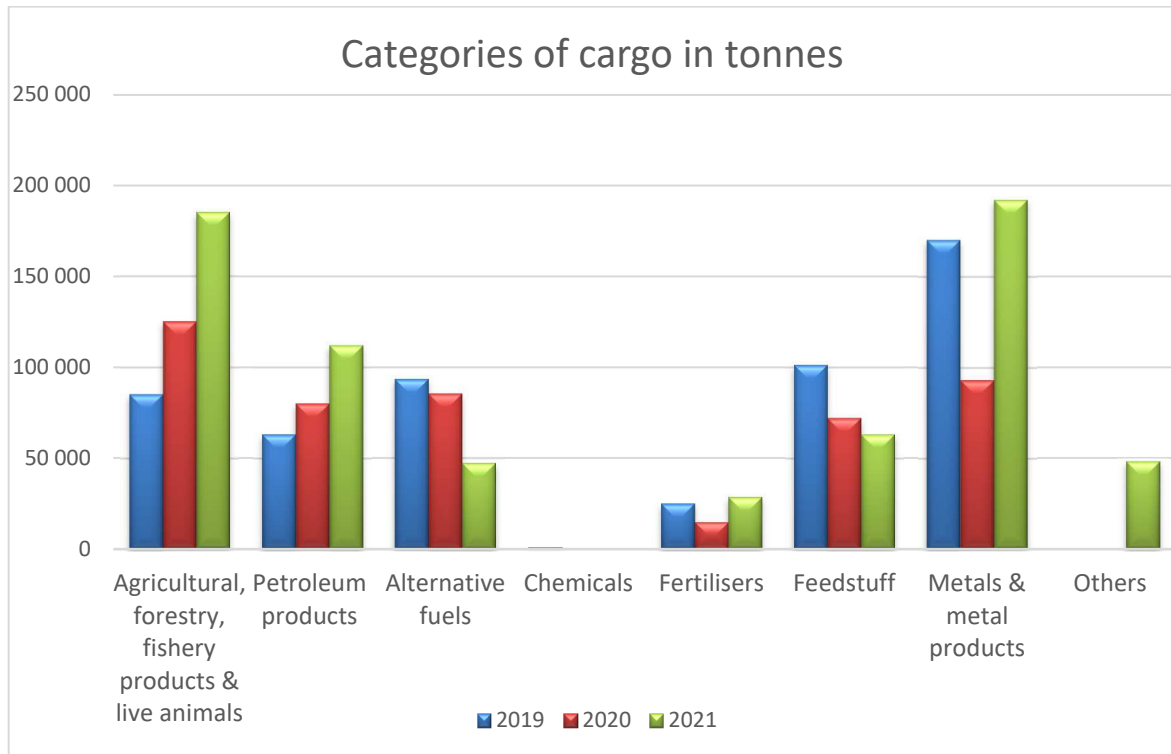


Figure 36 Port Bulmarket - categories of cargo

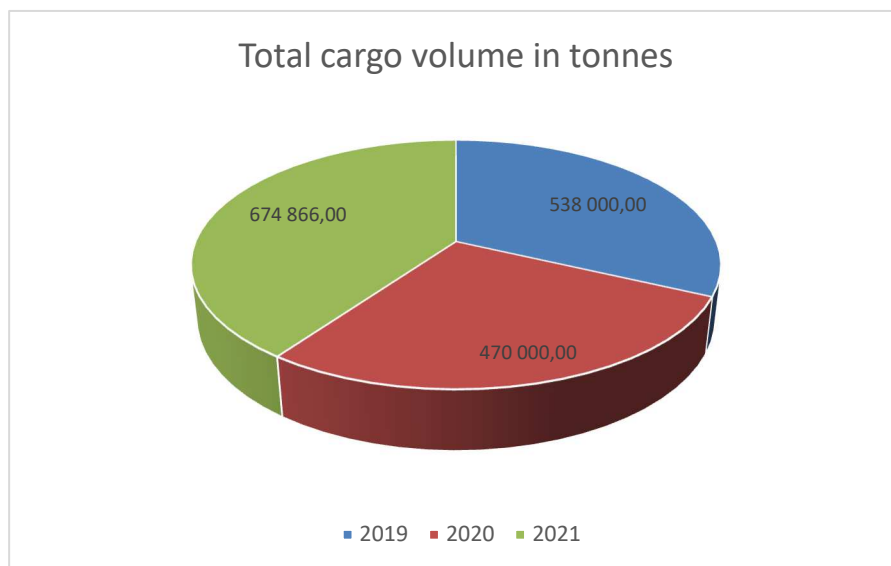


Figure 37 Port Bulmarket - total cargo volume

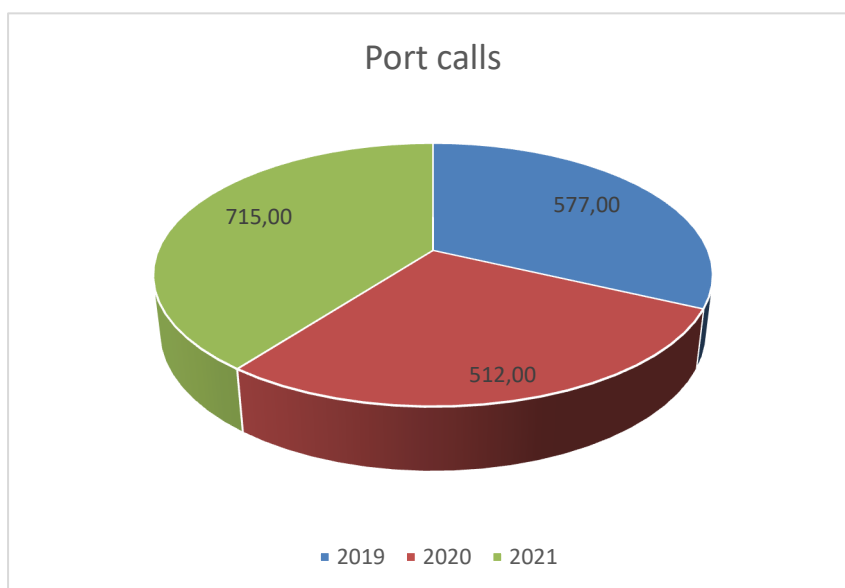


Figure 38 Port Bulmarket - ports calls

Some increases were registered as highlighted in the frame of the questionnaire. This refers to an increase in the production of alternative fuels /biodiesel. Increase was also registered in importing metal products and agriculture products.

5.6 Romania

Romania is represented in the frame of this study by the inland and seaport of Constanta.

5.6.1 Port of Constanta

The Port of Constanța is located at the crossroads of the trade routes linking the markets of the landlocked countries from Central and Eastern Europe with the Transcaucasus, Central Asia and the Far East. It is the main Romanian port on the Black Sea, playing a highly important role as the transit node for the landlocked countries in Central and South-East Europe.

Port of Constanța is a hub for container traffic in the Black Sea as well as for cereals in Central and South-East Europe, providing good connections with all modes of transport: railway, road and inland waterway.

The connection of the port with the Danube is made through the Danube-Black Sea Canal, which represents one of the main key points of Constanta Port. Due to low costs and important cargo volumes that can be carried, the Danube is one of the most advantageous modes of transport, an efficient alternative to the European rail and road congested transport.

The port has excellent connections with the Central and Eastern European countries through Corridor IV (rail and road), Corridor VII - Danube (inland waterway), to which it is linked by the Danube-Black Sea Canal, and Corridor IX (road), which passes through Romania’s capital, Bucharest.

The hinterland of Constanța Port supports the port regarding the produced, consumed and forwarded goods to/from the port. It includes a vast region of Central and Eastern Europe. During the last decade, the Port of Constanta efficiently served the flows of goods that arrive or depart from/to Central and Eastern Europe, including Austria, Czech Republic, Slovakia, Hungary, Serbia, Bulgaria, Moldova and Ukraine.

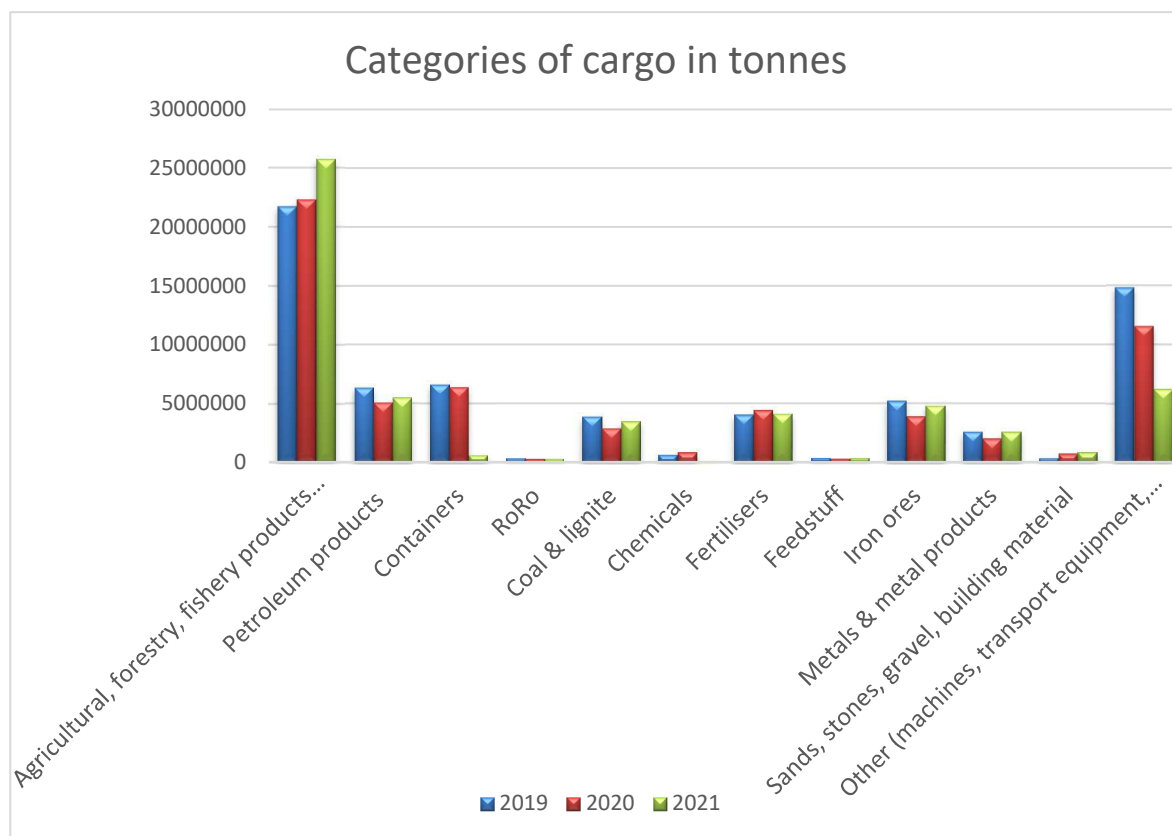


Figure 39 Port of Constanta - categories of cargo

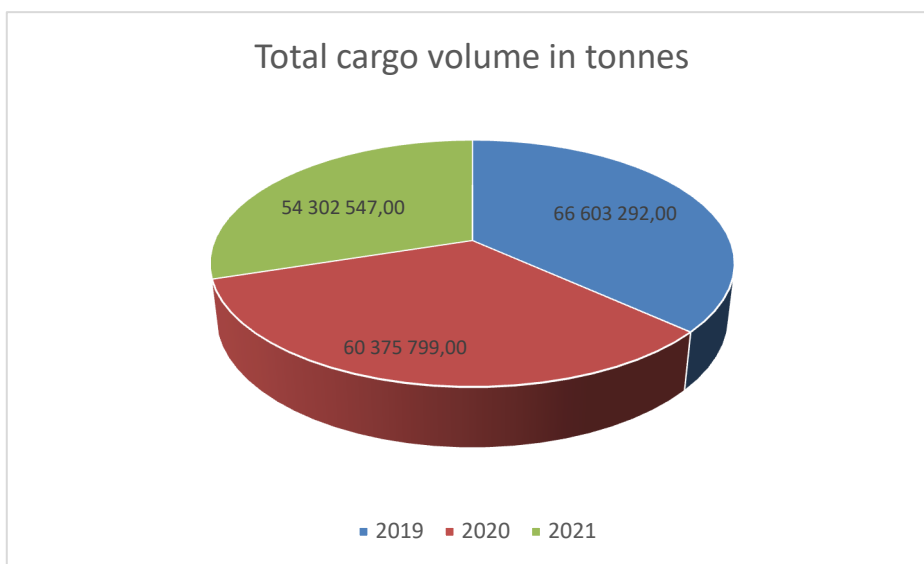


Figure 40 Port of Constanta - total cargo volume

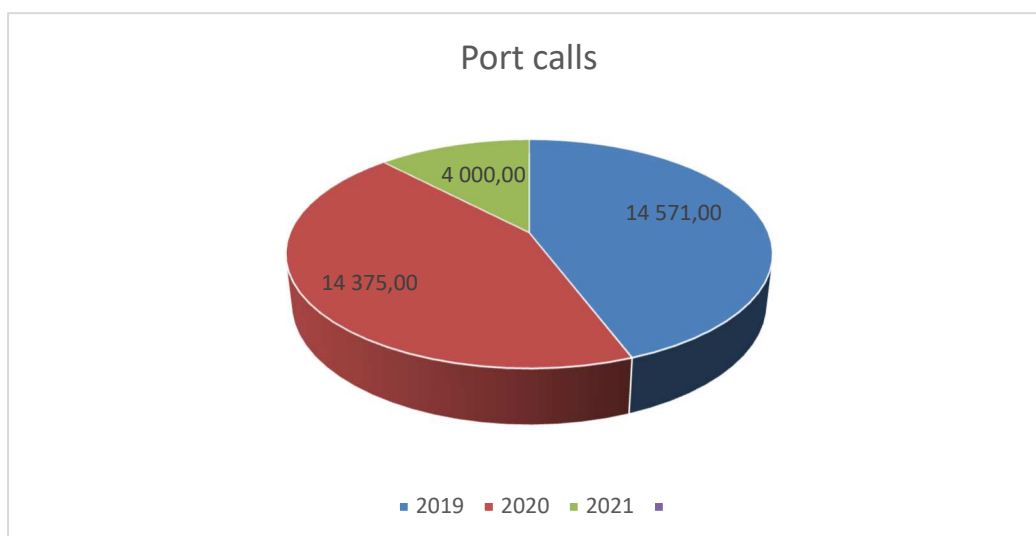


Figure 41 Port of Constanta - port calls

According to the response provided by the Port of Constanta, the pandemic had no effect on the usual port operations, with the port continuing to function as under normal circumstances by respecting all the usual restrictions that were caused by COVID-19. The port therefore continued to play a major role in the European supply chain during the entire time of the pandemic.

5.7 Ukraine

Three Ukrainian ports – the Port of Reni, the Port of Izmail and the UST-Dunaisk Port participated in the study.

5.7.1 Port of Reni

The Reni Port is located in the southwestern part of Ukraine. The design capacity of the port is 14.5 million tons per year. The length of the berth line is 3927 m. The water depth at the quay walls reaches 12 m. Covered warehouses with an area of 30,000 m². Open storage space - 195,000 m². The port consists of 3 cargo platforms, an oil loading platform and a ferry complex.

Navigation is possible all the year round. The unique geographical position determined the status of the Reni port as a river and sea at the same time.

The port is located at the junction of the Ukrainian, Romanian and Moldavian borders and at the intersection of 4 transport corridors: Cretan No. 7 and No. 9, Eurasian and Black Sea. The port of Reni accepts any ships, the draft of which allows to pass the Sulinsky Canal and GSC Bystroe, connecting the Danube with the Black Sea. Access to the Black Sea is provided through a deep-water fairway "Danube River – the Black Sea" along the Bystroe mouth and the Sulina canal.

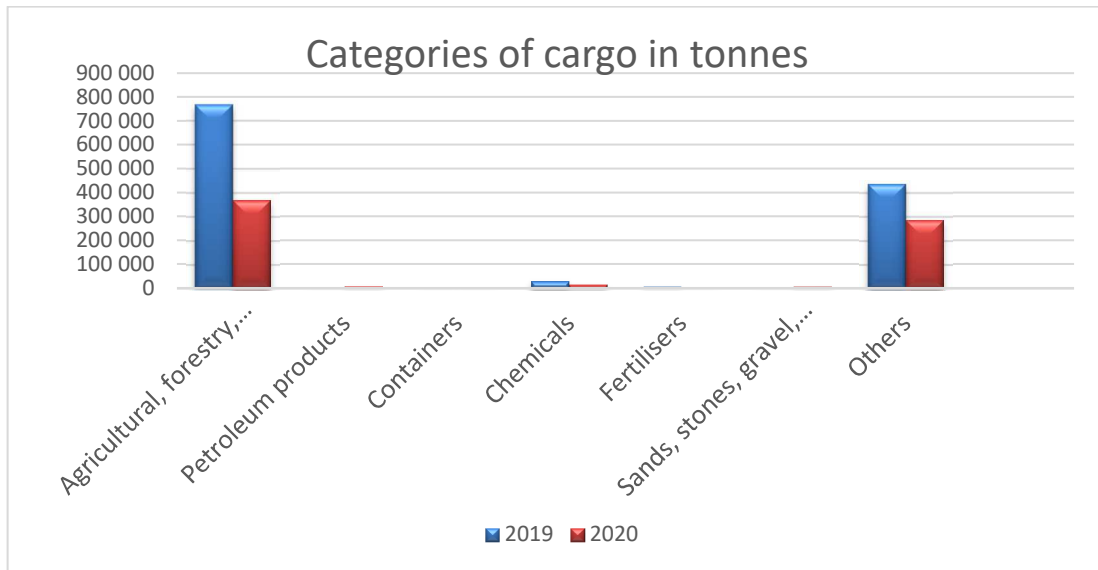


Figure 42 Port of Reni - categories of cargo

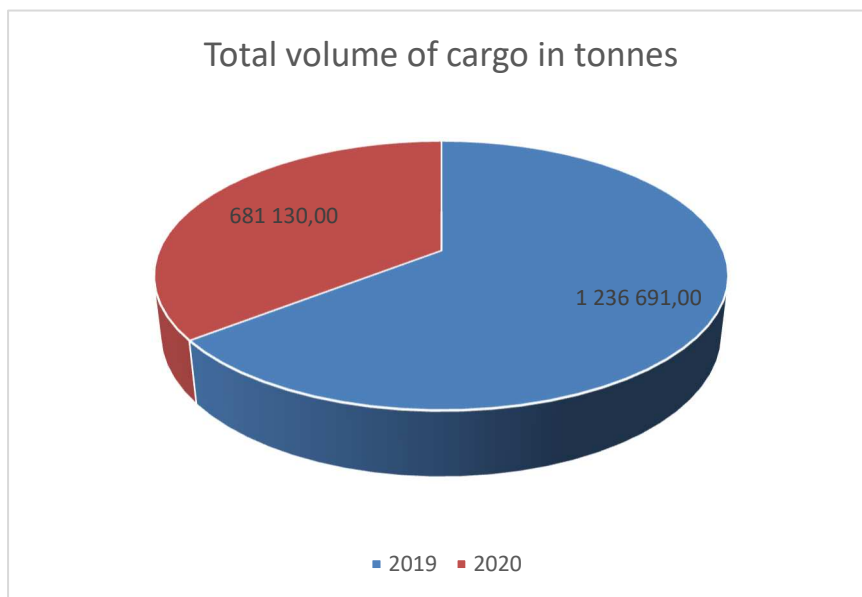


Figure 43 Port of Reni - total volume of cargo

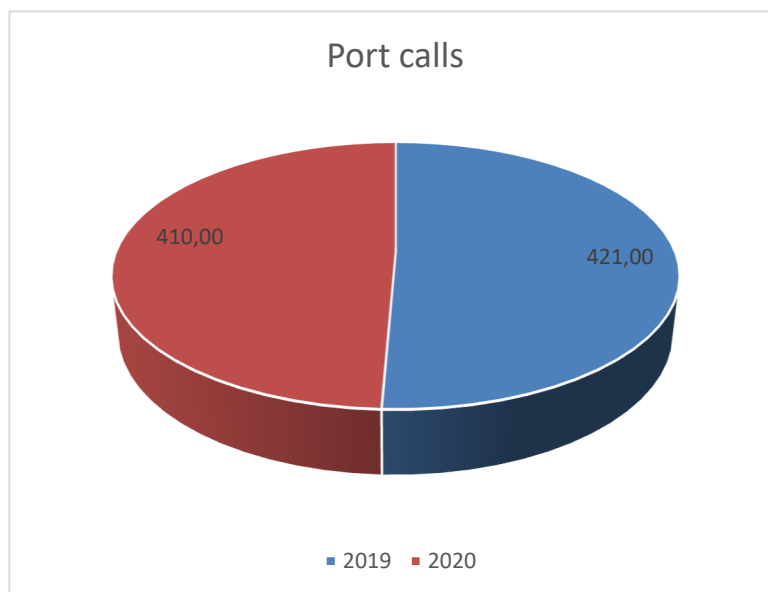


Figure 44 Port of Reni - port calls

Ukrainian ports were affected in a similar way by the pandemic as their international counterparts. According to the information provided in the survey, Ukraine developed a plan to counteract the effects of the health crisis. This was the “Plan of anti-epidemic preparedness and primary anti-epidemic measures carried out by the Reni Sanitary and Quarantine Laboratory Department of the Reni Sea Commercial Port in case of detection of an infected person (suspect) on board, infectious diseases of international importance and regulated by the "Features of Sanitary Legislation in Ukraine", approved by the resolution of the Cabinet of Ministers of Ukraine on August 22, 2011, № 893.”

5.7.2 Port of Izmail

Izmail Sea Port is one of the most modern and highly mechanized port on the Danube River. The most important development period for Izmail Port was between 1968 and 1992, when handling complexes for general cargoes, bulk cargoes and containers were built. The railway station of Izmail-Port Novy, connected with inland port railways, started operation in 1972.

The port of Izmail is the European gateway of the country, an important transport link, which connect the countries of Central and Northern Europe with the countries of the Black and Mediterranean seas. The port of Izmail is a major transport hub, which has closely intertwined the operation of sea, river, rail and road transport. Today, the Port is developing as a multifunctional commercial port for handling iron-ore materials, coal, coke, ferrous and non-ferrous metals, paper, pulp, fertilizer, g boxes, packets, etc.

The statistics summarized below provide an image on the impact of the pandemic on the port. As can be seen, the port continued to be fully operational whereas the impact of the pandemic was **insignificant**.

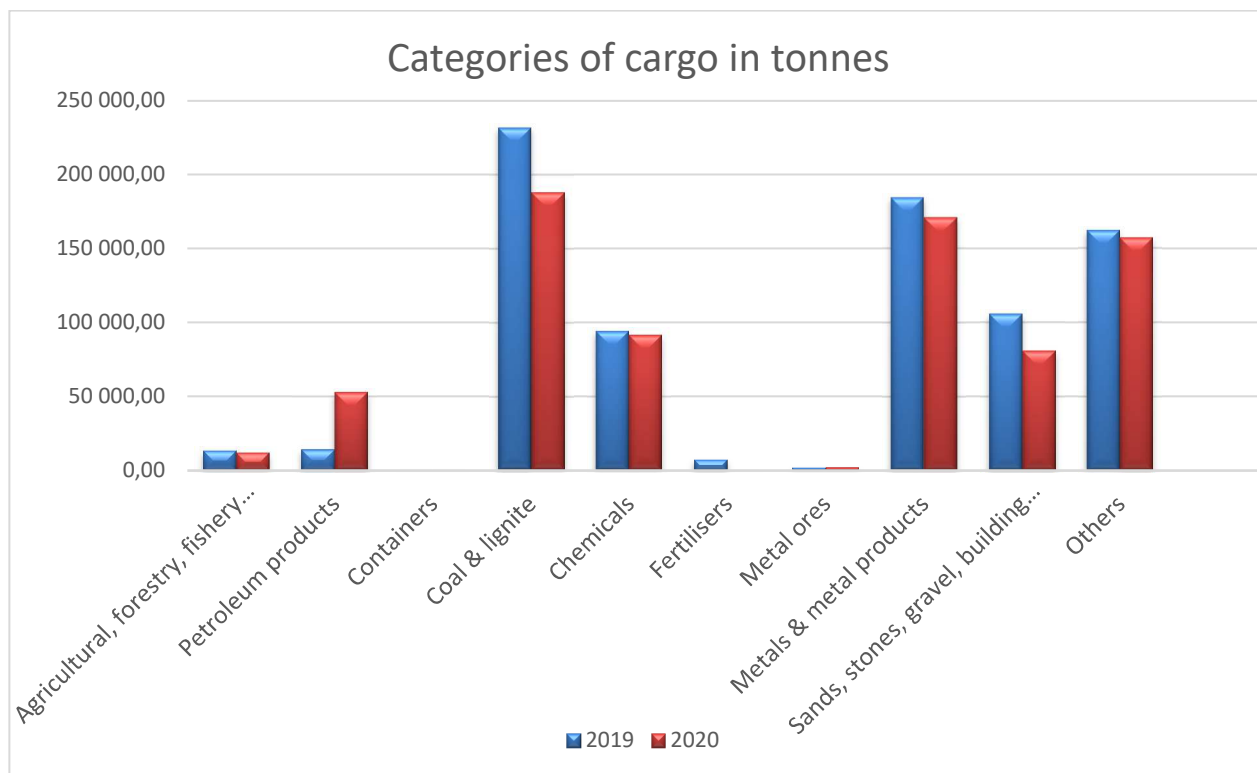


Figure 45 Port of Izmail - categories of cargo

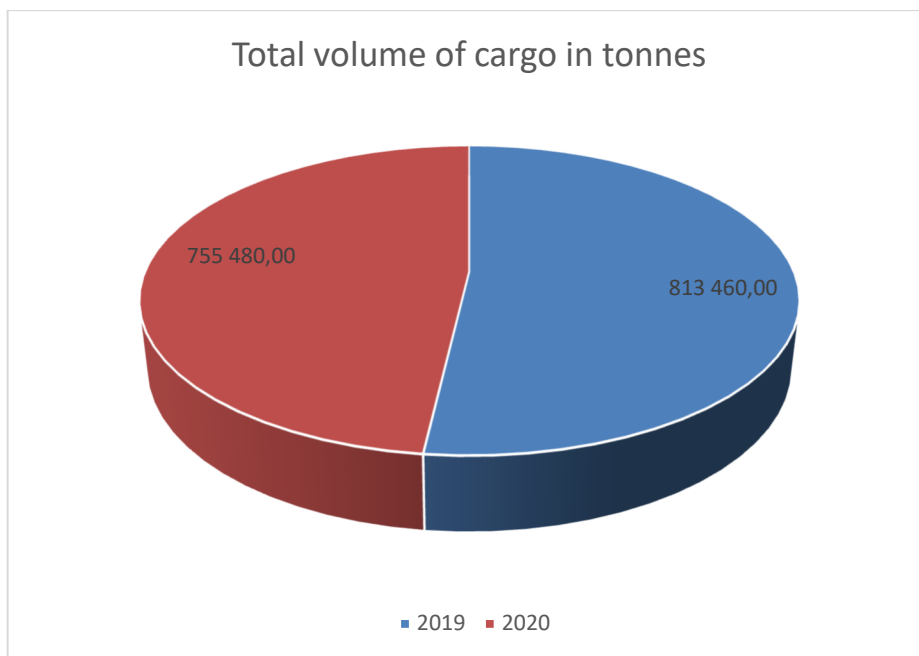


Figure 46 Port of Izmail - total volume of cargo

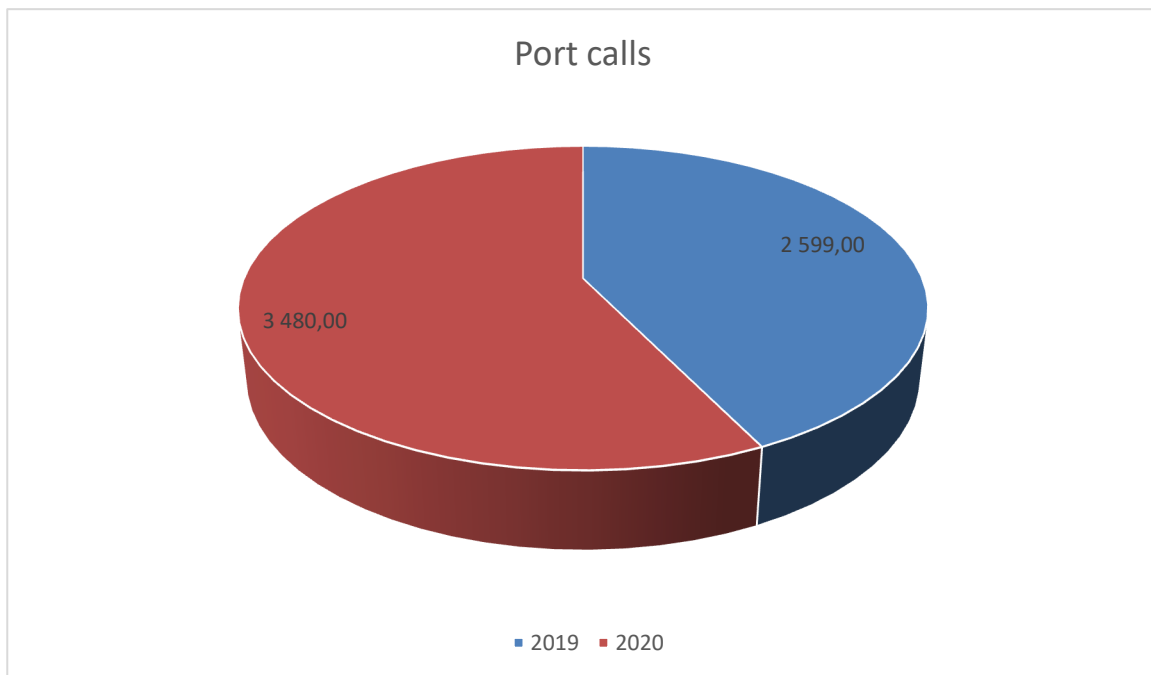


Figure 47 Port of Izmail - port calls

According to the data collected via the survey, the Port of Izmail was **not affected** by the health crisis.

5.7.3 UST Dunaïsk Port

Ust-Dunaïsk Port is situated in the southern part of Zhebriyanskiy Bay of the Black Sea, adjacent to the Ochakov mouth of the Danube River.

The port was founded in the late 70's of the XX century. It provided admittance and harborage for the handling of lighters, as well as accumulating them for further use in river- and sea-going cargo carriages.

However, this lighter carrier system has virtually stopped. Nowadays, the port specializes in transshipment of cargoes from sea-going to river-going vessels in view of transportation via the Danube and vice-versa.

The port also comprises the port point Kiliya and a berth in Vilkovovo for handling only river-going vessels.

The port connects the countries of the Danube basin with the countries of the Black Sea-Azov basin, the Mediterranean, the Red Sea and Southeast Asia. It is an integrated part of Transport Corridor No. 7. The sea approach channel to the port of Ust-Dunaïsk has a length of 7 km and is one of the two connection channels. Another connecting channel, 1.5 km long, runs from the port harbor to the Prorva arm. It has no direct road and rail access to any transport corridors.

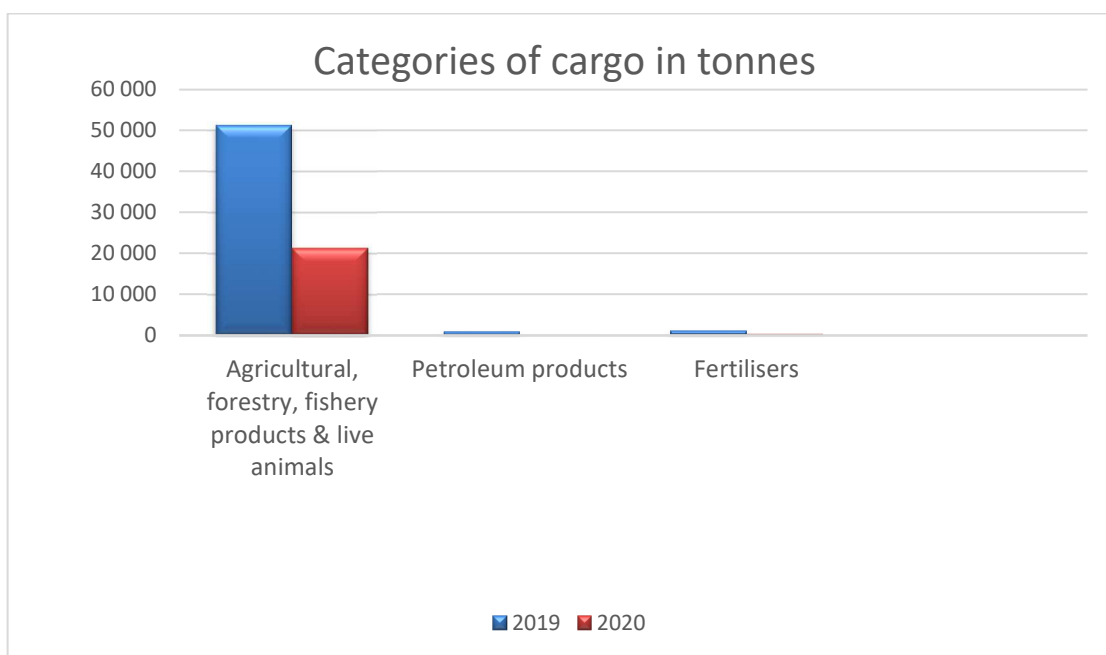


Figure 48 UST Dunaïsk Port - categories of cargo

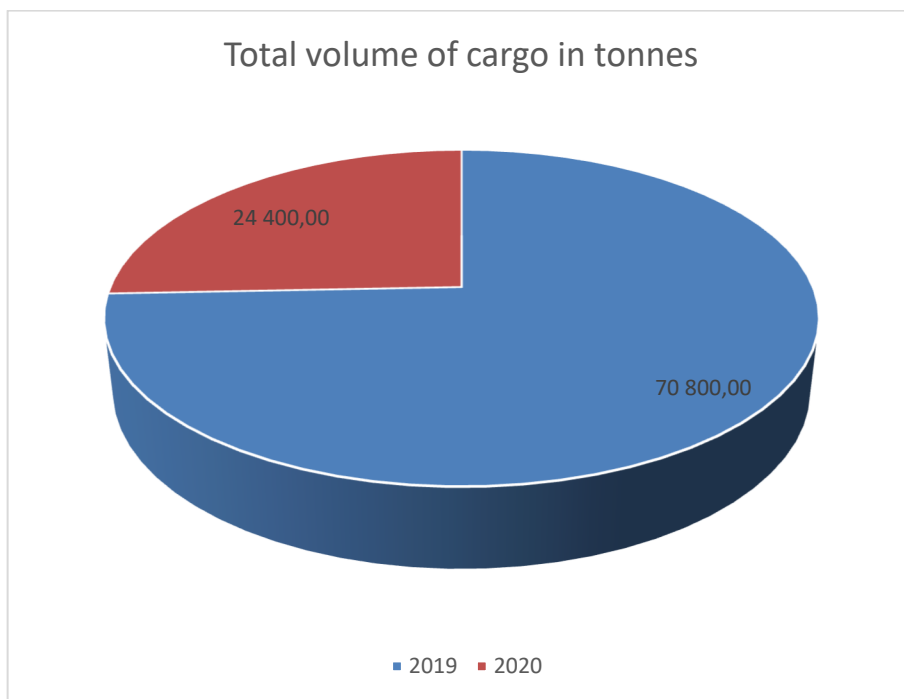


Figure 49 UST Dunaisk Port - total volume of cargo

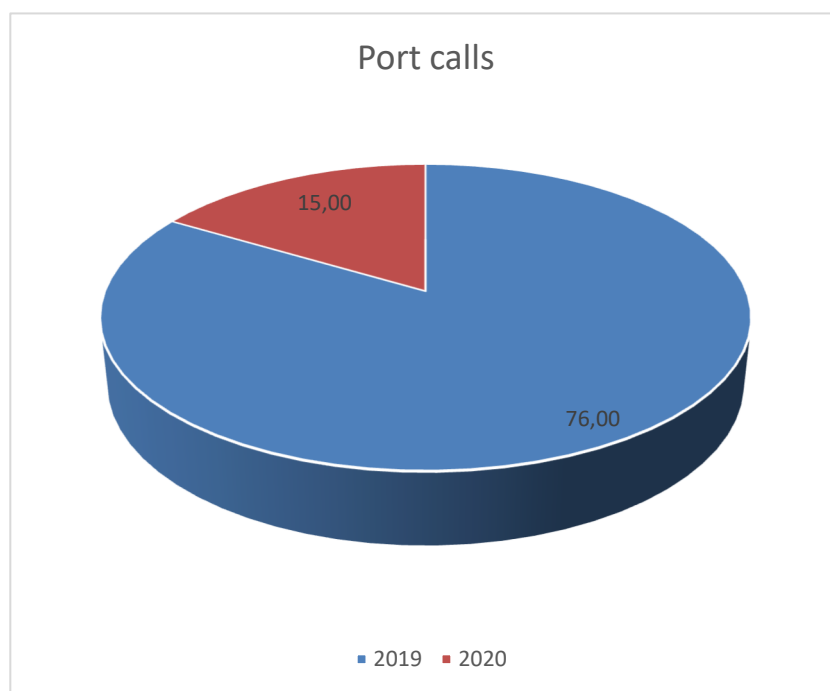


Figure 50 UST Dunaisk Port - port calls

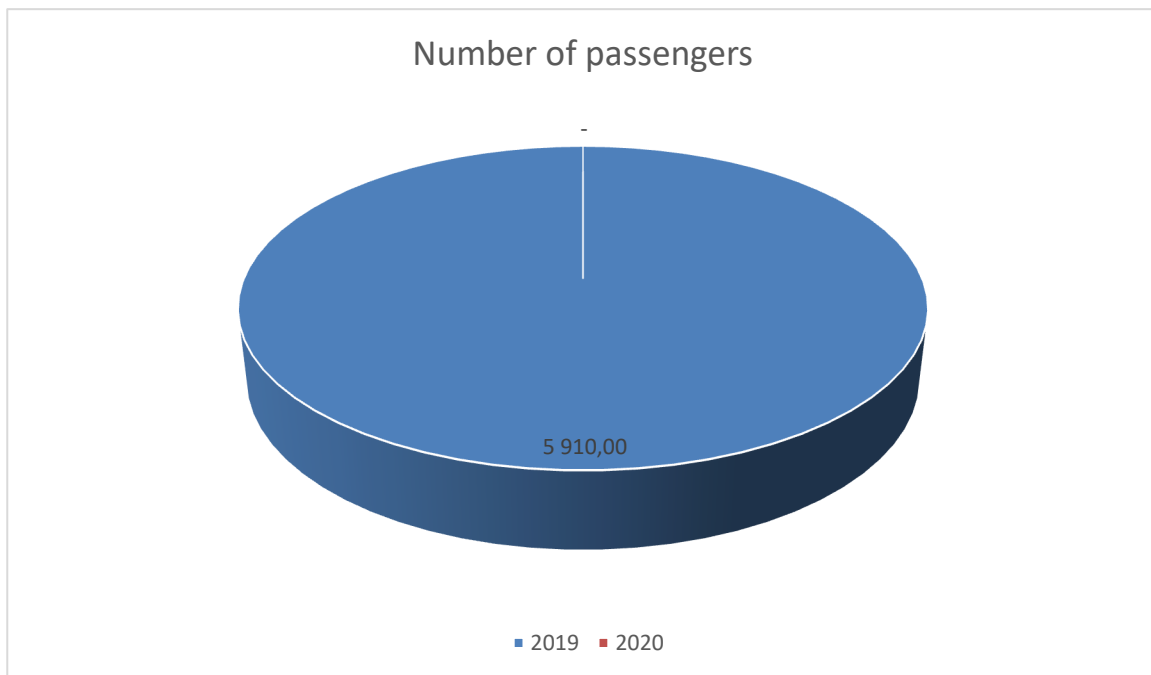


Figure 51 UST Dunaisk Port - number of passengers

The impact of on passenger transport was drastic – no passenger transport was registered in 2020.

6 Conclusions

The aim of the present study was to provide new knowledge on the impact of the COVID-19 crisis on Danube ports. The primary data used to measure the impact of the COVID-19 health crisis on Danube ports was collected via a questionnaire. As thoroughly described in the chapter “Methodology” both quantitative and qualitative data were used. Quantitative data was regarded as the most appropriate type of data to create statistics based on which both the operational and economic impact of the crisis could effectively be quantified. On the other hand, the structure of the questionnaire was created in a way to allow the collection of qualitative data as well. The respondents therefore had the opportunity to provide detailed descriptions on the measures imposed as a reaction to the outbreak of the pandemic and share with us their viewpoint on the management of the crisis as imposed by their national authorities. This approach – the collection of mixed data – allowed a thorough understanding of the impact of a never-before-seen crisis on Danube ports. The questionnaire was designed in a way to keep the time costs for the respondents as low as possible. Participating in the survey would not take more than 20-30 minutes. Internet – via the well-known instrument EUSurvey – was used to reach out to the ports. The timeframe under investigation referred to a pre-pandemic year – 2019 – as compared to two years of COVID-19 pandemic – 2020 and 2021. The questionnaire was distributed twice: once in 2020 and once in 2021. The following ports participated in the survey:

- Ennshafen (AT)
- Port of Vienna (AT)
- Port of Bratislava (SK)
- Port of Komarno (SK)
- Centroport (HU)
- Port of Novi Sad (SRB)
- Port of Belgrade (SRB)
- Port of Smederevo (SRB)
- Port of Lom (BG)
- Bulmarket Port (BG)
- Port of Constanta (RO)
- Port of Reni (UA)
- Port of Izmail (UA)
- UST-Dunaisk Port (UA)

Given that 7 different countries of the Danube Region took part in this study, a high degree of representativity was reached. The findings of this study suggest that the outbreak of COVID-19 put a strain on the freight transport sector. International trade fell by 19% in the second quarter of 2020 compared to the year before, displaying the crisis experienced by the freight sector. Goods flows were not only impaired by border closures but also by the supply chain disruptions caused by lockdowns. However, in the second quarter of 2021, the level of EU exports and imports slightly exceeded the level of the second quarter of 2019.

In the Danube Region, both cargo and passenger transportation were affected, with the latter coming to a complete standstill. Despite some drops in transported volumes, **the year 2020 was not as dramatic as expected for cargo transportation**. Transported volumes of petrochemical and agricultural products, as well as minerals and ores, decreased in Q1 - Q3 2020, with up to 30%. The agricultural sector was the only one to give signs of recovery in the fourth quarter of 2020. 2021's

first quarter was characterised by adequate nautical conditions and a strong market, while the second quarter was affected by a drop in volumes and the deterioration of freight rates.

COVID-19 had **no significant impact on the port performance of Danube Region cargo ports** and also not on their investments in general. The pandemic facilitated an accelerated adoption and integration of basic digital technologies in the daily business of port administrations and terminal operators which enabled uninterrupted communication, hence ensuring that the port community stays connected.

7 Literature

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DIONYSUS (2021) Danube Ports Handbook.

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8 Annex



Survey on Port Statistics and COVID-19 Impact

Developed within the DIONYSUS (<http://www.interreg-danube.eu/approved-projects/dionysus>) project with the support of the Danube Ports Network (DPN) (<http://www.danubeports.eu>), the aim of the second edition of the "**Survey on Port Statistics and COVID-19 Impact**" is to collect information on port traffic in the midst of the pandemic covering the year 2021. While Danube shipping is closely correlated with developments in the global and regional economy, the average number of port calls, as well as the amount of the handled products and traffic in passenger transport, could generate useful insights into the actual impact of the COVID-19 crisis on the Danube IWT. The survey furthermore touches upon topics linked to any kind of procedural restrictions that might have impaired a smooth transport flow.

The survey has been elaborated by the teams of Pro Danube Management (AT) in cooperation with Public Ports (SK), Ennshafen Port (AT), the Hungarian Federation of Danube Ports (HU), Constanta Maritime Ports Administration (RO), and the Port Governance Agency (RS).

The collected data will feed into two separate deliverables – i) **D.T3.3.6 COVID 19 impact on Danube Ports** and ii) **D.T3.3.4 Report Knowledge Transfer Events, Tools and Publications** (among which statistics on Danube ports freight, passengers and vessels traffic).

The survey consists of **20 questions** and takes approximately **30 minutes** to complete. All answers will be treated on a confidential basis.

This survey consists mostly of multiple or single-choice questions, to facilitate a quick and easy answering. Few open questions have been included to allow each port to present on a case-by-case basis its particularities.

The survey is open until **29 April 2022**.

DIONYSUS (<http://www.interreg-danube.eu/approved-projects/dionysus>) - *Integrating Danube Region into Smart & Sustainable Multi-modal & Intermodal Transport Chains*
Project co-funded by European Union Funds (ERDF, IPA, ENI)

Please note that you can save your answers at any moment while filling in this survey. After choosing the "Save draft" option on the right hand side, please take note of the automatic link displayed. With this link you will be able to continue with your work at any moment while the survey is still active.

1. Please insert the name of your port.

Text of 1 to 125 characters will be accepted

2. Please define the location of your port (including rkm if available).

Text of 1 to 125 characters will be accepted

3. Please define the type of your port.

at least 1 choice(s)

- inland port
- seaport
- inland & seaport
- fishing port
- dry port

4. Please define the main categories of cargo handled by your port in 2020 and please define the amount (in metric tons):

Categories of cargo - 2020

	Metric tons
1. Agricultural, forestry, fishery products & live animals:	
2. Alternative fuels (bio-diesel, bio-alcohol, hydrogen, LNG, etc.) & Petroleum Products: <i>where possible, please provide information in the below categorization in order to support the DIONYSUS team to draw a more detailed analysis:</i>	
2.1 of which - alternative fuels, if available:	
2.2 of which - petroleum products, if available:	
3. Containers, High&Heavy, Special cargo, RoRo: <i>where possible, please provide information in the below categorization in order to support the DIONYSUS team to draw a more detailed analysis:</i>	
3.1 of which containers, if available:	
3.2 of which - H&H products, if available:	
3.3 of which - Special, if available:	
3.4 of which - RoRo, if available:	
4. Coal & lignite:	
5. Chemicals:	

6. Fertilisers:	
7. Feedstuff:	
8. Iron ores, Metal ores: <i>where possible, please provide information in the below categorization in order to support the DIONYSUS team to draw a more detailed analysis:</i>	
8.1 of which - iron ores, if available:	
8.2 of which - metal ores, if available:	
9. Metals & Metal products:	
10. Sands, stones, gravel, building material:	
11. Others:	

5. Please define the main categories of cargo handled by your port in 2021 and please define the amounts (in metric tons):

Categories of cargo - 2021

	Metric tons
1. Agricultural, forestry, fishery products & live animals:	
2. Alternative fuels (bio-diesel, bio-alcohol, hydrogen, LNG, etc.) & Petroleum Products: <i>where possible, please provide information in the below categorization in order to support the DIONYSUS team to draw a more detailed analysis:</i>	
2.1 of which - alternative fuels, if available:	
2.2 of which - petroleum products, if available:	
3. Containers, High&Heavy, Special cargo, RoRo: <i>where possible, please provide information in the below categorization in order to support the DIONYSUS team to draw a more detailed analysis:</i>	
3.1 of which containers, if available:	
3.2 of which - H&H products, if available:	
3.3 of which - Special, if available:	
3.4 of which - RoRo, if available:	
4. Coal & lignite:	
5. Chemicals:	
6. Fertilisers:	
7. Feedstuff:	
8. Iron ores, Metal ores: <i>where possible, please provide information in the below categorization in order to support the DIONYSUS team to draw a more detailed analysis:</i>	
8.1 of which - iron ores, if available:	
8.2 of which - metal ores, if available:	
9. Metals & Metal products:	
10. Sands, stones, gravel, building material:	
11. Others:	

6. Please define the **total cargo load & passenger traffic managed in 2020** (if possible, not only derived from the waterside, but also from rail & road transport)

Total cargo load & passenger traffic managed in 2020

	TEU:	Metric tons of cargo (general and bulk cargo):	No. of passengers:
Water			

Rail		
Road		

7. Please define the **total cargo load & passenger traffic managed in 2021** (if possible, not only derived from the waterside, but also from rail & road transport)

Total cargo load & passenger traffic managed in 2021

	TEU:	Metric tons of cargo (general and bulk cargo):	No. of passengers:
Water			
Rail			
Road			

8. How much of the volumes generated by waterborne transport (IWT and/or maritime) are further transported to the hinterland by (in %):

Category of Transport

	%
1. Road (if available):	
2. Rail (if available):	

9. How much of the amount reported for 2021 was meant for domestic (national) use/consumption? (in %)
25 character(s) maximum

10. How much of the amount reported for 2021 was meant for international use/consumption? (in %)
10 character(s) maximum

11. Please define the average number of port calls* in 2020
10 character(s) maximum

*Port Call: A port call is defined as a unique intermediate stop of a vessel in the rotation of ports on the voyage. A vessel may have several terminal calls during a single port call.

12. Please define the average number of port calls in 2021
10 character(s) maximum

13. What are the most important factors that have affected the volumes in your port (for those commodities that have registered a significant volume change in 2021 in comparison to 2020)?
For example, from a car manufacturer perspective, the restrictions due to COVID-19 have decreased the volumes of steel coils, whereas on the other hand, the investments into public infrastructure works – roads, bridges, etc. have generated the transport of higher volumes of construction materials.

- Increase:

500 character(s) maximum

- Decrease:

500 character(s) maximum

14. Were there any COVID-related restrictions/special procedures imposed on your operational activities and on the ones of your terminal operators?

- Yes
 No

If Yes, please explain:

500 character(s) maximum

15. How did the restrictions affect the activities of the ships/vessels, crews and passengers in the case that they have stopped in your port?

500 character(s) maximum

16. What measures were taken to ensure the minimum level of operations and to protect both onshore and onboard personnel involved in port calls and cargo handling?

500 character(s) maximum

17. Did the measures imposed in ports affect the connectivity to the hinterland?

- Yes
 No

If Yes, please explain:

18. Did you experience any port staff shortages?

- Yes
 No

19. What was your role in applying the European Green Lanes? Did crew changes happen in your port?

500 character(s) maximum

20. Any other input, comments, reflections - for example, how do you estimate the capacity utilisation of your port for 2019 and 2020?

Your answer will not be evaluated for statistical purposes.

1,000 character(s) maximum