

# D 4.1.2. Analysis on potential market flows of the Port of Venice

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## Introduction

This report analyses potential market flows that might increase maritime traffic between the Port of Venice and Croatia.

The document is deliverable D 4.1.2 of activity D 4.1. "Joint market analysis to assess traffic potential market between Adriatic ports". It is thus part of work package 4 "Enhancing freight traffic flows and connections between the Adriatic ports" within project CHARGE "Capitalization and Harmonization of the Adriatic Region Gate of Europe".

The methodology applied in this study is described in the report D 4.1.1 "Common methodology for potential traffic flow analysis" authored by the University of Split-Maritime Faculty and Split Port Authority.

It comprises five parts. In the first, a general description of the port of Venice is sketched, and its market and hinterland are outlined. In the second, traffic statistics are presented. The third part examines current traffic flows between the Port of Venice and Croatia, while in the fourth part the potential market is considered. The fifth part discusses potential undesirable effects that might arise from the developing of new traffic. In the end, conclusions are drawn and three possible new maritime services are proposed.

# Characteristics of the port and of the port area

## Geographical location

The Port of Venice is a multipurpose port located at the upper end of the Adriatic Sea, in the central Mediterranean. About 3,500 ships annually call at the port, more than half being freighters and the rest being passenger ships.

In 2017 it handled freight weighing over 25,000,000 t (of which some were carried in 611,000 TEUS), and served 1,650,000 passengers.

Any kind of freight is handled at the port, bar living stock and, under certain circumstances, very dangerous goods such as ammunitions. Within the port there are several private terminals, dealing with liquid and solid bulk, break bulk cargo and containers. Some among such terminals handle freight for their own commercial or industrial operations, and some handle freight for third party companies.

Four main areas make up the port:

1. Marghera, the largest port section, extended over an area of 14.500.000 m<sup>2</sup> with 12 km of quayside, where the majority of the port's commercial and industrial terminals are located, all linked to the rail network;
2. Marittima (together with and San Basilio-Santa Marta), the passenger port section, with a 290.000 m<sup>2</sup> total area, 3.4 km long quaysides and 10 passenger terminals that can

handle up to 10 large cruise ships on top of a number of high-speed vessels, all at the same time;

3. Fusina, a Ro-Pax terminal covering a 360.000 m<sup>2</sup> area with four rail tracks, covered storage spaces and passenger facilities;
4. San Leonardo, an oil products pipeline terminal.

Maritime traffic in and out of the port of Venice flows through two inlets, that are the starting points of the port's two main maritime waterways:

- Lido inlet, leading to the Marittima port area;
- Malamocco inlet, leading to the San Leonardo, Fusina and Marghera port areas.

The two waterways are linked by the Vittorio Emanuele canal.

A third inlet, the Chioggia inlet, leads to the Port of Chioggia, which is outside the Port of Venice's limits but is under the same North Adriatic Port System Authority. The seabed along all port canals consists of sand and mud.

Figure: overview of the ports under the North Adriatic Sea Port Authority



The whole of the port is within the city limits. While the Marittima lies on the southwestern fringe of Venice’s city center, the Marghera port area lies 10 km away to the North West (just between the Marghera and Mestre residential areas, and the lagoon). The Ro-Pax terminal in Fusina is located further to the South, some 17 km from the city center, and is reachable via both bus and waterbus.

The Port of Venice is a node in two out of 9 TEN-T core network corridors, the Baltic-Adriatic and the Mediterranean corridors, while a third corridor, the Scandinavian-Mediterranean (100 km away, in Verona) is reliably and quickly reachable by motorway or by rail.

## Current markets and port hinterland

The Port of Venice serves primarily Northern Italy, but also some markets north of the Alps, notably with multimodal trains moving semi-trailers between the Ro-Pax Terminal in Fusina and Germany.

The local market covers the Venetia, Eastern Lombardy (provinces of Bergamo and Brescia), parts of the Friuli and Emilia-Romagna Regions.

The port's traffic can be divided along six lines:

- finished and semi-processed products;
- iron and steel products;
- agribulk;
- heavy lift products;
- energy products and chemicals.

Finished and semi-processed products are transported in containers or semitrailers. This is a two-way trade (import and export), catering chiefly to the multitude of manufacturing companies located within a 100 km radius from the port. Temperature-controlled products also belong to this group. There are two container terminals and one Ro-Ro/Ro-Pax terminal.

Iron and steel products consist of both bulks (like metal scraps and pig iron), and of break-bulks (like coils, beams and plates). This is a two-way business, too: though most of it are imported, some are exported as well. Three terminals at the Port of Venice handle breakbulk cargo.

Agribulk traffic consist mostly of cereals and meals, destined to human, as well as animal consumption. Some mills are also located within the port itself and have their own quays. Four of the Port of Venice terminals handle agribulk.

Heavy lift products (also known as “project cargo”, due to the complexity in arranging their transportation) are a speciality of the port. They are mostly parts of industrial plants that are to be built anywhere in the world. Sometimes they are partially assembled within the port, where two terminal specialise in such operations.

Energy products are bulk freight related to the production of energy, be it coal to burn for making electricity, or oil products and biofuels, even for mixing together as is the case at the biofuel plant located within the port. Chemicals are also widely handled. Besides San Leonardo, the port area dedicated to an oil terminal, five more terminals handle energy and chemical products.

## Port infrastructure

### San Leonardo oil terminal

- Maximum draught: 12 m.

### Fusina Ro-Pax terminal

- Maximum draught: 10 m.

### Porto Marghera (freight)

- Maximum LOA: 335 m.
- Maximum draught:
  - 11.50 m ( $\leq$  33 m beam);
  - 11.40 m ( $\leq$  36 m beam);
  - 11.30 m ( $\leq$  41 m beam);
  - 10.90 m ( $\leq$  45 m beam).

In Marghera, smaller canals (and the berths along them) allow for lower maximum draughts, in the 9-10 and 6-9 m range.

### **Marittima and San Basilio-Santa Marta (passengers)**

- Maximum LOA: 340 m.
- Maximum draught 8.70 m.
- For ships larger than GT 40,000 maximum Equipment Number EN 6,300 (EN 6,500 until 28/08/2019).

Due to the Port of Venice's canal morphology, ships' transit is arranged in convoys.

## **Intermodal nodes**

### **Railway infrastructure**

The port railway network is about 45km long and its main nodes are:

- the Parco Breda fan of sidings (8 tracks, serving the northeaster industrial area);
- the Parco Nuovo fan of sidings (8 tracks, serving the southwestern industrial area);
- Raccordo Base, branching from the station of Venezia Mestre;
- railway sidings, with tracks and sidings, within each area of the port.

At the heart of the system, linked to the national and international rail networks is the freight station of Venezia Marghera Scalo. with its exchange tracks and reception and departure sidings.

Venezia Marghera Scalo itself comprises three yards:

- an arrival and departure yard with 12 tracks managed by a central signal box (10 tracks are fully electrified and 2 are partially electrified);

- 2 reception/delivery yards with 17 non-electrified tracks.

In 2018 the Port of Venice generated 5.543 trains, moving 2.6 million tons of freight on more than 100.000 shunted wagons.

The main freight categories moved on trains were steel products (54% of total freight), energy products (17%), agribulk products (15%), chemical products (7%) and containers (6%).

### **Venice Green Terminal – VGT**

The Venice Green Terminal is a logistics platform, located within the port area, for the storage and handling of products that require temperature-controlled preservation.

It handles fruit and vegetables, Cheese and dairy products, wine/liqueurs and pharmaceuticals.

Infrastructure consists of:

- 10,000 sqm operational area;
- 5 refrigerating rooms;
- -2°/13° temperature range;
- 7,000 EPAL capacity;
- 9 bays for loading/unloading;
- 600 pallets/hour handling capacity.

### **Venice Free Zone**

The Venice Free Zone is one of two customs free zones in Italy recognised by the European Union.

With a 8,000 sqm total area, it is located in Marghera, close to the port's in and out gates, within the customs area.

It allows for simplified procedures for importing, manipulating and exporting any kind of good, without being subject to time limitations, nor to the deposit of cautions, nor to the payment of duties.

## Models of port management

The Port of Venice is managed along the lines of the “landlord” mode. This means that all of the quays and of the water surfaces (like the maritime canals), as well as some of the areas where port terminals are located, are owned by the state.

The central administration devolved their land management to the Port System Authority (which is an autonomous public body, subject to the control of the Ministry of Infrastructures and Transport), that, in turn, grants them in concession to the port terminals.

Besides granting land and water surfaces in concession, the Port System Authority is tasked with guiding, planning, co-ordinating, promoting and monitoring port operations. It is also charged with maintaining common areas and the seabed, overseeing the supply of services of general interest, managing the state property and planning the development of the port.

The Maritime Authority (the Harbor Master) is a separate public body, reporting to both the Ministry of Infrastructures and Transport and the Ministry of Defense.

Its tasks cover all aspects of civilian navigational safety at sea and, as far as ports are concerned, the safety of shipping operations, the organisation and proper performance of port services, including pilotage, tugging, mooring and ship to shore transfer services.

Pilotage, tugging and mooring are granted in concession by the Maritime Authority, as a temporary monopoly, to private companies. Cargo port terminals are all private companies, and

the passenger port terminals operator is a private company too. The Port System Authority granted it a concession over the management of the passenger terminals.

## Port concessionaires and stakeholders

At the Port of Venice there are 24 freight terminals, and 10 passenger terminals (the passenger terminals are operated by the same company). All are concessionaries of the North Adriatic Sea Port System Authority, that grants them their quays in concession and, in some cases, the land behind the quays, too.

The freight terminals can be divided in: commercial (handling freight on third parties' account), industrial (handling their own freight on their own account), and oil terminals.

Here below is a list of the terminals, along with a map of their location in port.

Figure: map of the Port of Venice's terminals



We will now focus on the seven commercial terminals that operate on third parties' account, highlighting each one's characteristics and equipment. They are grouped along their line of business: container, Ro-Ro/Ro-Pax, multipurpose and bulk.

### Terminal Intermodale Venezia (TIV)

Terminal Intermodale Venezia is a container terminal located at the end of Pier A in Marghera.

Infrastructure:

- 130,000 sqm total area;
- 17,000 sqm covered warehouses;
- 4 quays 1,300 m.

Equipment:

- 1 crane 125 t;
- 3 cranes 100 t;
- 11 reach stackers;
- 10 tractors;
- 28 semitrailers;
- 4 fork lifts.

**PSA - Vecon**

PSA - Vecon is a container terminal located along the Pier B in Marghera.

Infrastructure:

- 287,000 sqm total area;
- 3,100 sqm covered warehouses;
- 1 quay 855 m.

Equipment:

- 5 ship-to-shore cranes;
- 3 RTG transtainers;
- 11 reach stackers;
- 21 tractors;
- 22 semitrailers;
- 11 fork lifts.

**Venice Ro-Port MoS**

Venice Ro-Port Mos is a Ro-Ro/Ro-Pax terminal that opened in 2014, located in the Fusina port section.

Infrastructure:

- 360,304 sqm total area;
- 280,000 sqm yard;
- 2,500 sqm mechanical workshops and warehouses for maintenance;
- 2,000 sqm available for offices, also for private operators;
- 80,000 sqm yards for handling vehicles in transit;
- 500 sqm area for passenger services, offices for public authorities (under construction)
- 2 berths; another 2 berths are at the final construction stage and, when ready, the terminal will be able to simultaneously dock 4 ships (two 250 m long and two 210 m long).

Equipment:

- 11 tugmasters;
- 2 forklift;
- 3 reach stackers.

### **Multi Service**

Multi Service is a multipurpose terminal located in both Sali and A piers in Marghera. The terminal deals with heavy lift, steel products and other general cargo, as well as with bulk commodities.

Infrastructure:

- 264,000 sqm total area;
- 220,000 sqm storage capacity;

- 31,500 sqm covered warehouses;
- 5 quays 1,850 m.

**Equipment:**

- 1 Reggiane MHC 6000 200 tons crane; ;
- 3 Reggiane MHC 200 120 tons crane
- 2 Gottwald 100 tons crane;
- 1 Gottwald 80 tons crane;
- 4 overhead cranes 25 tons;
- 20 wheel loaders;
- 2 excavators;
- 7 tractors (tugmaster) ;
- 32 forklifts (10 with capacity up to 12 tons and 22 above 12 tons) ;
- 1 sweeper;
- 2 reach stackers;
- 2 lifts.

**Transped**

Transped is a multipurpose terminal located along the West channel in Marghera, specialised in heavy lifts.

**Infrastructure:**

- 320,000 sqm total area;
- 150,000 sqm storage capacity;
- 80,000 sqm covered warehouses;
- 3 quays 780 m.

Equipment:

- 6 Gottwald cranes (four 100 tons and one 80 tons) ;
- 30 forklifts (capacity from 3 to 48 tons) ;
- 6 tractors;
- 20 trailers.

**Terminal Intermodale Adriatico**

Terminal Intermodale Adriatico is located along the West canal in Marghera. The terminal specializes in steel products, bulk and general cargo.

Infrastructure:

- 240,000 sqm total area;
- 171,740 sqm storage capacity;
- 68,260 sqm covered warehouses;
- 1 quay 488 m.

Equipment:

- 1 wharf crane 67 tons;
- 1 wharf crane 80 tons;
- 1 wharf crane 104 tons;
- 11 wheel loaders;
- 2 excavators;
- 19 forklifts;
- 1 tank truck.

**Euroports - Terminal Rinfuse Venezia (TRV)**

Euroports - Terminal Rinfuse Venezia is located at the end of the B pier in Marghera. The terminal handles dry bulks, chiefly cereals and black bulk (coal, iron-leagues and cast iron). It supports Ro-Ro operations as well.

Infrastructure:

- 280,000 sqm total area;
- 42,000 sqm covered warehouses;
- 149,000 sqm storage capacity;
- warehouses 35,000 sqm;
- silo 7,000 sqm;
- scrap yard storage;
- 4 quays 1,730 m, 8 berths.

Equipment:

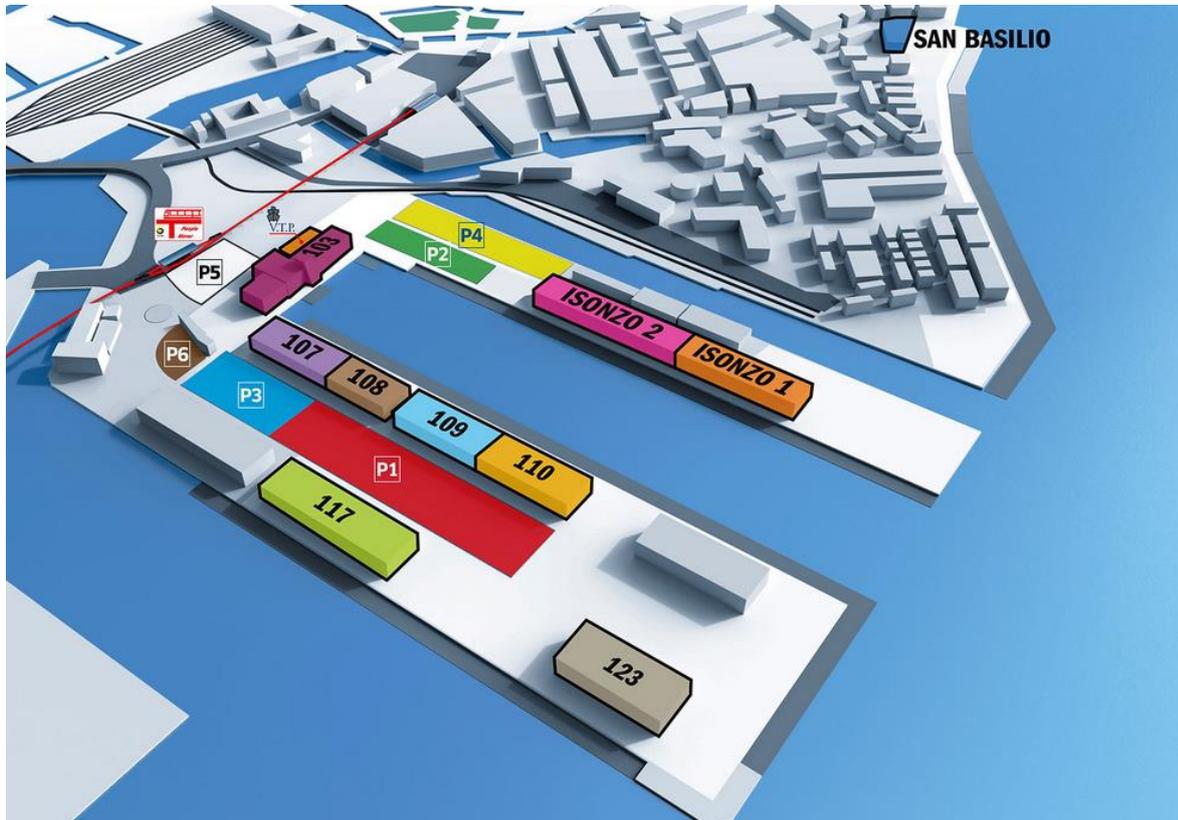
- 1 Gottwald moving crane (100 tons) ;
- 1 Fantuzzi Reggiane moving crane (100 tons);
- 4 Ceretti and Tanfani gantry cranes (30 tons);
- 2 Costa Masnaga cranes (30 tons);
- 1 crane truck (90 tons);
- 4 mobile hoppers;
- 8 forklifts (4 up to 12 tons capacity and 4 above 12 tons capacity) ;
- 1 reach stacker;
- 2 tank truck;
- 1 sweeper;
- 8 front loader shovels;
- 6 road weight scale.

### **Venezia Terminal Passeggeri (VTP)**

The Venezia Terminal Passeggeri operates in the Marittima port area, over a surface of more than 260,000 m<sup>2</sup>. It handles the Port of Venice's passenger traffic, and its premises consist of 7 quays, with a total length of 3,400 m:

- Piave: 722.50 m;
- Testata Marmi: 203.00 m;
- Tagliamento: 726.70 m;
- Isonzo: 630.00 m;
- S. Marta: 465.24 m;
- S. Basilio: 342.57 m;
- Riva Sette Martiri: 310.00 m.

Figure: map of the Port of Venice's passenger terminals (source: VTP's website)



Venezia Terminal Passeggeri operates 10 passenger terminals, as listed below.

Terminal 103:

- surface: 3.703 m<sup>2</sup> x 2 floors;
- waiting room: 280 seats;
- check-in desks: 10 serving 26 operators.

Isonzo 1:

- surface: 4,450 m<sup>2</sup> x 2 floors;
- waiting room: 450 seats in two rooms;

- check-in desks: 19 serving 38 operators + 1 serving 2 operators for reduced mobility passengers.

Isonzo 2:

- surface: 4,450 m<sup>2</sup> x 2 floors;
- waiting room: 600 seats in two rooms;
- check-in desks: 19 serving 38 operators + 1 serving 2 operators for reduced mobility passengers.

Terminal 107:

- surface: 2,740 m<sup>2</sup> x 2 floors;
- waiting rooms: 450 seats in two rooms;
- check-in desks: 19 serving 38 operators+ 1 serving 2 operators for reduced mobility passengers.

Terminal 108:

- surface: 2,740 m<sup>2</sup> x 2 floors;
- waiting rooms: 550 seats in two rooms;
- check-in desks: 22 serving 44 operators + 1 serving 2 operators for reduced mobility passengers.

Terminal 109:

- surface: 3,600 m<sup>2</sup> x 2 floors;
- waiting rooms: 400 seats in two rooms;
- check-in desks: 19 serving 38 operators+ 1 serving 2 operators for reduced mobility passengers.

Terminal 110:

- surface: 3,400 m<sup>2</sup> x 2 floors;

- waiting rooms: 400 seats in two rooms;
- check-in desks: 23 serving 52 operators + 1 serving 2 operators for reduced mobility passengers.

#### Terminal 117:

- surface: 2.705 m<sup>2</sup> x2 floors;
- waiting rooms: 450 seats in two rooms;
- check-in desks: 21 serving 42 operators + 1 serving 2 operators for reduced mobility passengers.

#### Terminal 123:

- surface: 4,894 m<sup>2</sup>;
- waiting rooms: 256 seats;
- check-in desks: 12 serving 24 operators + 1 serving 2 operators for reduced mobility passengers.

#### San Basilio:

- surface: 1,634 m<sup>2</sup>;
- waiting room: 60 seats;
- check-in desks: 8 serving 16 operators + 1 serving 2 operators for reduced mobility passengers.

## Port traffic statistics

### Freight traffic statistics

#### Vehicle traffic

In the years 2013-2017 vehicle traffic in the port of Venice increased by 31% in volume, passing from 54,452 to 67,328 units. All was international traffic, mostly directed to Greece, but in part also to Egypt and Israel.

*Table: vehicle traffic statistics of the Port of Venice, years 2013-2017*

	In	Out	2013
Total Ro-Ro units	22.966	28.486	<b>51.452</b>
Number of private vehicles	20.636	20.117	<b>40.753</b>
Number of commercial vehicles	1.022	5.006	<b>6.028</b>
Weight t	535.701	699.956	<b>1.235.657</b>
	In	Out	2014
Total Ro-Ro units	20.021	26.599	<b>46.620</b>
Number of private vehicles	15.709	15.512	<b>31.221</b>
Number of commercial vehicles	593	5.164	<b>5.757</b>
Weight t	478.460	643.886	<b>1.122.346</b>
	In	Out	2015
Total Ro-Ro units	15.657	18.754	<b>34.411</b>
Number of private vehicles	10.980	9.728	<b>20.708</b>
Number of commercial vehicles	1.004	6.364	<b>7.368</b>
Weight t	361.662	445.250	<b>806.912</b>
	In	Out	2016
Total Ro-Ro units	21.755	25.384	<b>47.139</b>
Number of private vehicles	8.779	8.391	<b>17.170</b>
Number of commercial vehicles	520	7.221	<b>7.741</b>
Weight t	481.562	570.645	<b>1.052.207</b>
	In	Out	2017
Total Ro-Ro units	32.131	35.197	<b>67.328</b>
Number of private vehicles	18.005	18.657	<b>36.662</b>

Number of commercial vehicles	10.620	14.653	<b>25.273</b>
Weight t	726.014	797.649	<b>1.523.663</b>

### Container traffic

Container traffic at the Port of Venice grew 37% in the years 2013-2017, passing from 446,428 to 611,383 TEUS. All was *de facto* international traffic, since all the shipments to national ports like Gioia Tauro were meant for transshipment onto vessels directed to international destinations.

*Table: container traffic statistics of the Port of Venice, years 2013-2017*

	In	Out	2013
Total TEU	246.669	199.759	<b>446.428</b>
Empty	144.504	5.867	<b>150.371</b>
Full	102.165	193.892	<b>296.057</b>
Weight, t	1.656.632	2.637.682	<b>4.294.314</b>
	In	Out	2014
Total TEU	249.515	206.553	<b>456.068</b>
Empty	133.433	9.589	<b>143.022</b>
Full	116.082	196.964	<b>313.046</b>
Weight, t	1.890.025	2.670.639	<b>4.560.664</b>
	In	Out	2015
Total TEU	301.014	259.287	<b>560.301</b>
Empty	192.772	10.782	<b>203.554</b>
Full	108.242	248.505	<b>356.747</b>

	In	Out	2016
Weight, t	1.850.023	3.361.742	<b>5.211.765</b>
Total TEU	318.973	286.902	<b>605.875</b>
Empty	192.434	9.723	<b>202.157</b>
Full	126.539	277.179	<b>403.718</b>
Weight, t	2.083.709	3.531.028	<b>5.614.737</b>
	In	Out	2017
Total TEU	324.651	286.732	<b>611.383</b>
Empty	193.082	11.780	<b>204.862</b>
Full	131.569	274.952	<b>406.521</b>
Weight	2.128.539	3.547.126	<b>5.675.665</b>

### Other cargo traffic

As for the rest of the cargo, in the years considered there was a series of ups and downs, with tonnes handled moving from 18,826,529 in 2013 to 16,089,323 in 2014, to 19,085,541 in 2015, to 18,553,016 in 2016, to 17,935,296 in 2017. Most of the traffic was international.

*Table: other cargo traffic statistics of the Port of Venice, t, years 2013-2017*

	In	Out	2013
<b>Liquid bulk</b>	<b>9.050.797</b>	<b>885.487</b>	<b>9.936.284</b>
Crude oil	3.574.130	80.573	<b>3.654.703</b>
Refined (petroleum) products	4.633.450	425.186	<b>5.058.636</b>
Chemical products	814.289	352.519	<b>1.166.808</b>
Other liquid bulk	28.928	27.209	<b>56.137</b>
<b>Dry bulk</b>	<b>6.406.156</b>	<b>93.409</b>	<b>6.499.565</b>
Cereals	604.103	-	<b>604.103</b>
Foodstuff/Fodder/Oil seeds	1.464.083	28.241	<b>1.492.324</b>

Coal and lignite	1.877.069	5.000	<b>1.882.069</b>
Ores/cement/lime/plasters	350.268	4.150	<b>354.418</b>
Metallurgical Products	1.749.232	18.254	<b>1.767.486</b>
Chemical products	66.714	7.838	<b>74.552</b>
Other dry bulk	294.687	29.926	<b>324.613</b>
<b>Non-CTR/Ro-Ro general cargo</b>	<b>1.793.183</b>	<b>597.497</b>	<b>2.390.680</b>
<b>Total other cargo</b>			<b>18.826.529</b>

	In	Out	2014
<b>Liquid bulk</b>	<b>6.634.352</b>	<b>248.154</b>	<b>6.882.506</b>
Crude oil	-	-	-
Refined (petroleum) products	5.073.433	169.100	<b>5.242.533</b>
Chemical products	1.340.932	68.018	<b>1.408.950</b>
Other liquid bulk	219.987	11.036	<b>231.023</b>
<b>Dry bulk</b>	<b>6.891.905</b>	<b>110.078</b>	<b>7.001.983</b>
Cereals	822.417	32.010	<b>854.427</b>
Foodstuff/Fodder/Oil seeds	1.336.550	14.473	<b>1.351.023</b>
Coal and lignite	2.501.075	-	<b>2.501.075</b>
Ores/cement/lime/plasters	281.224	6.723	<b>287.947</b>
Metallurgical Products	1.482.775	9.060	<b>1.491.835</b>
Chemical products	55.426	23.467	<b>78.893</b>
Other dry bulk	412.438	24.345	<b>436.783</b>
<b>Non-CTR/Ro-Ro general cargo</b>	<b>1.936.451</b>	<b>268.383</b>	<b>2.204.834</b>
<b>Total other cargo</b>			<b>16.089.323</b>

	In	Out	2015
<b>Liquid bulk</b>	<b>8.118.560</b>	<b>835.358</b>	<b>8.953.918</b>
Crude oil	-	15.792	<b>15.792</b>
Refined (petroleum) products	6.975.270	410.026	<b>7.385.296</b>

#### D.4.1.2. CHARGE Analysis on potential market flows of involved ports – port of Venice

Chemical products	911.242	403.540	<b>1.314.782</b>
Other liquid bulk	232.048	6.000	<b>238.048</b>
<b>Dry bulk</b>	<b>7.193.392</b>	<b>139.297</b>	<b>7.332.689</b>
Cereals	633.418	48.620	<b>682.038</b>
Foodstuff/Fodder/Oil seeds	1.249.462	21.292	<b>1.270.754</b>
Coal and lignite	2.864.849	12.000	<b>2.876.849</b>
Ores/cement/lime/plasters	242.840	-	<b>242.840</b>
Metallurgical Products	1.724.722	5.000	<b>1.729.722</b>
Chemical products	75.573	46.848	<b>122.421</b>
Other dry bulk	402.528	5.537	<b>408.065</b>
<b>Non-CTR/Ro-Ro general cargo</b>	<b>2.202.441</b>	<b>596.493</b>	<b>2.798.934</b>
<b>Total other cargo</b>			<b>19.085.541</b>

	In	Out	2016
<b>Liquid bulk</b>	<b>8.115.065</b>	<b>892.814</b>	<b>9.007.879</b>
Crude oil	-	-	-
Refined (petroleum) products	7.012.488	496.238	<b>7.508.726</b>
Chemical products	881.346	355.896	<b>1.237.242</b>
Other liquid bulk	221.231	40.680	<b>261.911</b>
<b>Dry bulk</b>	<b>7.008.393</b>	<b>109.717</b>	<b>7.118.110</b>
Cereals	626.534	47.400	<b>673.934</b>
Foodstuff/Fodder/Oil seeds	1.642.160	27.931	<b>1.670.091</b>
Coal and lignite	2.577.486	1.515	<b>2.579.001</b>
Ores/cement/lime/plasters	222.298	3.976	<b>226.274</b>
Metallurgical Products	1.591.449	26.121	<b>1.617.570</b>
Chemical products	76.168	2.774	<b>78.942</b>
Other dry bulk	272.298	-	<b>272.298</b>
<b>Non-CTR/Ro-Ro general cargo</b>	<b>2.099.822</b>	<b>327.205</b>	<b>2.427.027</b>
<b>Total other cargo</b>			<b>18.553.016</b>

	In	Out	2017
<b>Liquid bulk</b>	<b>8.065.025</b>	<b>722.486</b>	<b>8.787.511</b>
Crude oil	-	49.804	<b>49.804</b>
Refined (petroleum) products	6.863.881	365.498	<b>7.229.379</b>
Chemical products	921.913	264.184	<b>1.186.097</b>
Other liquid bulk	279.231	43.000	<b>322.231</b>
<b>Dry bulk</b>	<b>6.731.816</b>	<b>113.733</b>	<b>6.845.549</b>
Cereals	667.943	59.420	<b>727.363</b>
Foodstuff/Fodder/Oil seeds	1.562.790	5.804	<b>1.568.594</b>
Coal and lignite	2.115.675	-	<b>2.115.675</b>
Ores/cement/lime/plasters	301.743	12.319	<b>314.062</b>
Metallurgical Products	1.720.905	36.190	<b>1.757.095</b>
Chemical products	82.238	-	<b>82.238</b>
Other dry bulk	280.522	-	<b>280.522</b>
<b>Non-CTR/Ro-Ro general cargo</b>	<b>2.029.442</b>	<b>272.794</b>	<b>2.302.236</b>
<b>Total other cargo</b>			<b>17.935.296</b>

## Passenger traffic statistics

Passenger traffic at the port of Venice is mainly seasonal (from April to October), and is all international. During the years 2013-2017, passenger traffic at the Port of Venice decreased from 2,072,642 to 1,649,063 passengers, due to a decline in the cruise sector. Ferry passengers rebounded: decreasing from 138,732 in 2013 to 58,263 in 2016, they reached 104,294 in 2017. High speed vessels, on the other hand, held. There were just under 100,000 passengers during the whole period (they were 92,413 in 2013 and 99,702 in 2017).

Table: passenger traffic statistics at the Port of Venice, years 2013-2017

	In	Out	2013
Total passengers	892.182	875.975	<b>2.072.642</b>
Cruise passengers			<b>1.841.477</b>
"Home Port"	773.552	763.440	<b>1.536.992</b>
"Transits" (to be counted once)			<b>304.485</b>
Number of local and ferry passengers	118.630	112.535	<b>231.165</b>
of which:			
To Istria	46.670	45.763	<b>92.433</b>
To other destinations	71.960	66.772	<b>138.732</b>
	<b>In</b>	<b>Out</b>	<b>2014</b>
Total passengers	863.265	857.141	<b>1.945.324</b>
Cruise passengers			<b>1.750.700</b>
"Home Port"	764.437	761.345	<b>1.525.782</b>
"Transits" (to be counted once)			<b>224.918</b>
Number of local and ferry passengers	98.828	95.796	<b>194.624</b>
of which:			
To Istria	46.077	45.048	<b>91.125</b>
To other destinations	52.751	50.748	<b>103.499</b>
	<b>In</b>	<b>Out</b>	<b>2015</b>
Total passengers	772.883	764.165	<b>1.755.485</b>
Cruise passengers			<b>1.601.172</b>
"Home Port"	693.248	689.487	<b>1.382.735</b>
"Transits" (to be counted once)			<b>218.437</b>
Number of local and ferry passengers	79.635	74.678	<b>154.313</b>
of which:			
To Istria	43.262	42.302	<b>85.564</b>
To other destinations	36.373	32.376	<b>68.749</b>

	In	Out	2016
Total passengers	795.526	783.386	<b>1.777.399</b>
Cruise passengers			<b>1.625.637</b>
"Home Port"	717.497	709.652	<b>1.427.149</b>
"Transits" (to be counted once)			<b>198.488</b>
Number of local and ferry passengers	78.029	73.734	<b>151.762</b>
of which:			
To Istria	47.541	45.959	<b>93.499</b>
To other destinations	30.488	27.775	<b>58.263</b>
	In	Out	2017
Total passengers	727.281	720.630	<b>1.649.063</b>
Cruise passengers			<b>1.445.067</b>
"Home Port"	623.484	620.430	<b>1.243.914</b>
"Transits" (to be counted once)			<b>201.153</b>
Number of local and ferry passengers	103.797	100.200	<b>203.996</b>
of which:			
To Istria	50.649	49.054	<b>99.702</b>
To other destinations	53.148	51.146	<b>104.294</b>

## Vessel traffic statistics

In the period 2013-2017 about 3,500 ships called at the Port of Venice each year. Their average tonnage was close to 22,000 GT.

*Table: ships' calls statistics at the Port of Venice, years 2013-2017*

	Ships	GT	Average tonnage
<b>2013</b>	3.554	77.616.022	21.839
<b>2014</b>	3.360	71.274.508	21.213

<b>2015</b>	3.408	73.393.987	21.536
<b>2016</b>	3.505	76.589.575	21.852
<b>2017</b>	3.459	75.936.262	21.953

Unfortunately, as far as vessel traffic is concerned, more detailed statistics are not available.

## Other relevant data

Venice VTS centre is operational 24/7, and referring to it is mandatory for all vessels of 300 GT and above (or of m 45 LOA and longer) entering the VTS area in transit, anchoring in the roads, or heading to (or departing from) the ports of Venice, Chioggia and Jesolo.

The VTS area is located out of the inlets of Lido, Malamocco and Chioggia, within the limits of a line joining the following points (WGS84):

- A. 45°09.5' N – 012°19.9' E;
- B. 45°08.4' N – 012°25.7' E;
- C. 45°16.0' N – 012°35.0' E;
- D. 45°24.9' N – 012°35.0' E;
- E. 45°27.4' N – 012°30.7' .

When at 5 NM outside the VTS area's outer limit, vessels shall get in touch with the centre. Note that, inside the Venice Lagoon, traffic is managed not by Venice VTS but by the Harbour Master's Traffic Office.

Venice VTS provides:

- a) information services:
  - traffic (ships' positions, names and routes, including information about fishing vessels and anchored vessels);
  - weather (meteorological and hydrological conditions, warnings);

- general information (like sector boundaries, procedures, radio frequencies, buoy or light failures, SAR or decontamination operations, floating objects that might be a threat to navigation);
- b) traffic organisation services:
- in case of relevant traffic;
  - in presence of vessels that could affect the safe passage of other vessels (like ships restricted in their ability to manoeuvre or carrying dangerous goods).
- c) navigational assistance service:
- advice in case of heavy weather or of an engine/system failure on board.

The languages to be used within the VTS area are Italian and English, and reports to VTS concern:

- first contact (no less than 5 NM off the outer VTS area);
- entry (entering the VTS area);
- anchorage report (actual timetable of the anchor lowering and heaving up);
- pilot report (when the pilot has boarded and/or disembarked);
- berthing/unberthing report (vessels, on entering/departing from one of the Venice Lagoon's inlets – Lido, Malamocco and Chioggia);
- exit report (on leaving the VTS Area);
- accident report (In case of an accident that may affect the ship or navigation safety; of a situation that may cause potential pollution; of an accidental discharge of pollutants, containers or floating goods).

## Existing traffic flows

Between Venice and Croatia sailed 526 vessels in 2017 and 576 in 2018. This figure is relatively high because many container ships sailing the Adriatic call at both the ports of Venice and Rijeka. Traffic flows, however, must be considered under their different nature of freight and passenger traffic.

Current handled freight is fairly limited, grossing 42.001 t in 2017 and 67.497 t in 2018. They are all imports to Italy, and consist of both dry and liquid bulk, as reported in the following table.

*Table: existing freight flows between the Port of Venice and Croatia*

	2017		2018	
	OUT	IN	OUT	IN
<b>A2 LIQUID BULK</b>		<b>42.001</b>		<b>67.497</b>
Chemical products		5.004		
Refined (petroleum) products		36.997		67.497
<b>A3 SOLID BULK</b>		<b>63.456</b>		<b>45.016</b>
Other dry bulk				
Coal and lignite		63.456		14.537
Cereals				4.971
Foodstuff/Fodder/Oil seeds				
Ores/cement/lime/plasters				
Metallurgical products				25.508
Chemical products				
<b>A4 GENERAL CARGO</b>		<b>157</b>		<b>862</b>
Other general cargo				
Containerized		157		862

The container traffic, as one can see, is negligible: the tons indicated above correspond to 78 and 280 TEUs in 2017 and 2018 respectively.

As far as passengers are concerned, however, there is a steady flow of people crossing the Adriatic, as reported in the table below.

*Table: existing passenger flows between the Port of Venice and Croatia*

	2017		2018	
	OUT	IN	OUT	IN
<b>PASSENGERS</b>	49.054	50.649	49.535	50.534

These people travel on seasonal high speed vessels, with a seat capacity of about 250, sailing between Venice and the Istrian ports of Umag, Porec, Rovinij, Pula. Such traffic starts in May and ends in October.

There are two such lines: Venezia Lines (vessels San Frangisk and San Pawl) and Adriatic Lines (vessels Adriatic Jet e Prince of Venice).

Their schedules are such as to carry tourists from Croatia to Venice for day trips. Ships leave Istrian ports early in the morning and reach Venice later in the morning, only to sail back in the afternoon, returning to Istria in the late afternoon and passing the night there, waiting for their next sail on the following day.

Most, if not all, of the cruise ships calling at the Port of Venice (the Adriatic Sea’s top home port for cruises, and a leader in the Mediterranean) also call at some port in Croatia. They chiefly go to Dubrovnik, but some reach Split, Zadar, Šibenik and Pula, too.

## Potential and future market flows

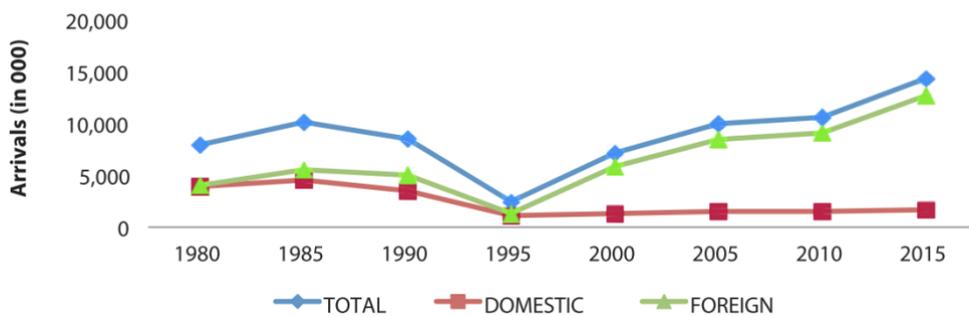
All road traffic directed to Croatia that comes from either Italy, Switzerland and France passes through Venice’s motorway bypass, and this makes the Port of Venice a promising port for offering maritime services as an alternative to road-only trips.

As far as freight is concerned, unfortunately, we lack a proper analysis of trade flows between Italy and Croatia (or passing through both Italy and Croatia if they originate from neighbouring countries, for all that matters). It is therefore difficult to determine the appeal of a ferry capable of carrying freight on vehicles that operates the whole year.

Therefore, we will rather focus on the tourist market, which is active only for some months from May to September, and is steadily growing. There is the additional advantage that, off the July-August peak, a seasonal ferry service could be a test bed for measuring the interest of road hauliers.

Tourism in Croatia is steadily expanding since many years, and especially since 2010. The following chart highlights growth between 1995 and 2015, when tourist arrivals jumped from 2.4 to 14.3 M (in 2017 they further increased to 17,4M, of which less than 2 M where Croats, according to the Croatian Ministry of Tourism).

Table: tourist arrivals in Croatia, 1980-2015 (source: Croatia’s Ministry of Tourism)



In the period 2005-2017, then, arrivals' CAGR was 4.72% a year, and it could reasonably be held that this tendency will continue in the forthcoming years. Since the majority of such tourists reach seaside destinations by car, it is conceivable that a quota among them would be interested in a maritime alternative. In the case of the Port of Venice, at the North-Western side of the Adriatic, this is particularly true for tourists travelling along a North-West to South-East direction, such as those directed to central-southern Dalmatia from Northern Italy and Switzerland, France or even the Benelux countries.

A Ro-Pax service could be put in line during the summer season (May to September) with 3 departures per week. A vessel travelling at 18 knots will cover the 220 nautical miles between Venice and Split in about 12 hours, compared to the 11 hours ferries (traveling at slower speeds) currently take to cross the Adriatic between Ancona and Split. This would be convenient: tourists departing in the evening could spend the night on board a cruise ferry, and reach Split the following morning.

Another possibility could be a fast ferry. These ships, smaller than conventional ferries, travel at more than 30 knots. Since the cost of such services is higher and they offer no cabin accommodation, it should be more appropriate to make their trips short enough to be undertaken by day instead of during the night. In this case, Zadar in central-northern Dalmatia or Lošinj in the Kvarner could be suitable destinations. Sailing at 33 knots, they can be reached from Venice in about 4.5 and 3 hours respectively, whereas a land journey with a car takes 6 and 5.5 hours, to which time for intermediate stops must be added.

The third possibility for developing new traffic between the Port of Venice and Croatia could be to increase the offer of high speed, passenger-only vessels. Existing services cater almost exclusively to tourists in Istria wishing to have a one-day trip to Venice, and the ships' schedule is accordingly arranged.

At the same time, vessels like these operate also between the port of Trieste and the smaller ports of Cesenatico and Pesaro, doing just the opposite business: taking tourists from Italy to Croatia for a day trip or for a longer holiday. This shows that there is a market for Italians willing to reach Croatia's coast leaving their cars behind and, thanks to its existing infrastructure, the port of Venice could easily cater to them.

## Potential undesirable effects and points of congestion

Increasing traffic between the Port of Venice and Croatia will not bring any big, undesirable, effect to the Port of Venice or its surroundings.

In case of setting up new Ro-Pax lines (currently non-existent), there would be no bottlenecks, since the Ro-Ro/Ro-Pax terminal in Venice Fusina (Venice Ro-Port MoS) is doubling its capacity with the addition of a second basin. The new basin is currently (February 2019) under completion.

The road network bringing to the terminal was recently upgraded by the Sea Port Authority, and the terminal can easily be reached from the motorway, with no need for mixing with local, urban traffic. Upgrades to the passenger terminal building, in order to put it in a better position to cope with the additional traffic volumes, however, would be welcome.

In case of an increase in the high-speed vessels' calls, there could be no further need for available berth (and only a slight increase in traffic), if existing lines just offered additional services starting from Venice in the morning and returning in the evening. This could be achieved, for example, by employing the very same vessels that currently leave Istria in the morning if, instead of waiting in Venice, they promptly sailed back.

Such increase in the volume of passengers moving from Italy to Croatia (and not vice versa, as it is currently the case) would also bring no additional tourist flows to Venice's city centre. However, additional parking space for would-be passengers, to be made available in the Marittima-San Basilio-Santa Marta area, would greatly help in smoothing their flow.

## Conclusion

The Port of Venice, located at the North-Western tip of the Adriatic Sea, is the closest port to the Po valley, a large, densely populated, manufacturing area in Northern Italy. Crucially, Venice's motorway bypass must be passed by all traffic flowing into Croatia that comes from Italy, Switzerland and France. It is in a position, therefore, to offer a good alternative to a road-only trip, especially for those directed to the Dalmatian coast and its hinterland.

Currently, however, the only maritime service actually in use consists on passengers-only, high speed vessels from Istria. Almost 100,000 passengers a year are transported along this route; mostly they are people holidaying in Croatia who go to Venice for a day trip. Here the first possibility for developing additional traffic can be found, by offering analogous services for tourists who want to reach Istria from Italy.

Another possibility would be to offer a Ro-Pax service, reaching Split in 12 hours (just one hour more than it takes from Ancona), and yet another possibility would be to launch a fast ferry to closer destinations, such as Zadar or Lošinj.

There is a market, indeed, for tourists going to Dalmatia, as tourist arrivals in Croatia are increasing at a 4.72%/year rate. And launching a seasonal service for both vehicles and

passengers could test the interest of road hauliers, at least in the months preceding the July-August tourism's peak.

The market for freight, on the other, should be further analysed, and existing trade flows ought to be taken in account, especially for reaching destinations behind Croatia's coastline (think of Bosnia-Herzegovina, Montenegro, Serbia and Bulgaria).

As for the possible undesirable effects of developing new traffic, no possible congestion looms on the Venetian side, but upgrades to the passenger building at the Ro-Ro/Ro-Pax terminal, and to parking spaces in the Marittima area, would avoid any hiccup in the proper flowing of the new traffic.