Maritime and multimOdal transport Services based on Ea Sea-way project

MOSES

WP4

Piloting new connections and improving services

(D.4.2.1) Report for the feasibility study for the reactivation of a (clean fuel powered) maritime transport service between Termoli and Dubrovnik/Ploče

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Introduction

This study is aimed at assessing in detail, according to the cost-benefit methodological approach, the economic feasibility of a fast maritime connection line between the port of Termoli and Croatia.

This connection is aimed at offering an additional connection service with respect to existing ones, with particular reference to the need to bridge a gap in the existing supply of connections, and witnessed by the absence of fast connection services departing from the Italian coasts in the stretch between Ancona and Bari.

The need is therefore well represented by the desire to promote the Termoli airport for the launch of a seasonal fast connection service with the most immediate ports on the eastern shore of the Adriatic in Croatia, also in function of an adequate assessment of the most probable and appropriate destinations to be activated.

The desire to expand the offer of active and attractive connections appears - in fact - perfectly in line with the broader objectives of the European Union Strategy for the Adriatic Ionian Region (EUSAIR) which has as its primary objective the promotion of economic prosperity and social sustainability in the region through growth and job creation and the improvement of its attractiveness, competitiveness and connectivity, while fully respecting the environment. In this sense, the study initiative subject of this work is promoted by the Molise Region, is in line with Pillar 2 of the Strategy ("Connecting the Region") which aims to increase and optimize the connection options in the Adriatic area- Ionica.

The analysis wanted by the Molise Region and financed by the Interreg Italy-Croatia Cross-Border Cooperation Program 2014-2020, is also contextualised in the ambit of the Axis dedicated to maritime transport, considered elements of further strengthening of the cross-border connections, where the Adriatic it is precisely to be interpreted as an element of the border between the various States - first of all Italy and Croatia - that overlook it.

The project, in which the study initiative presented here is contextualized (Maritime and multimodal Transport Services based on Ea Sea-way project - MOSES), has as its primary objective the improvement of maritime and multimodal transport services between Italy and the Croatia, with particular reference to their quality and environmental sustainability, fully supporting one of the Specific Objectives of the Program (OS 4.1 - Improve the quality, safety and environmental sustainability of marine and coastal transport services and nodes by promoting multimodality in the Program area) precisely because intended as a contribution to improving the quality, safety and environmental sustainability of maritime and coastal transport services between the two countries.

The study presented below therefore develops and analyses the variables connected to different activation options of a maritime connection service between the port of Termoli and Croatia, including the verification of the most valid destinations starting from those of Ploce and Dubrovnik and to logic of possible use of "clean" fuels, also starting from information and results of initiatives previously activated in the context of similar connection services

1. Description of the context and current situation ("As *is analysis*")

1.1. Population and territory

Molise is the smallest Italian Region after Valle d'Aosta, while it is the smallest and least populous ordinary statute region in the country, as well as being younger, having been established as an institution only in 1963, following the detachment of the province of Campobasso from the Abruzzi and Molise region.

Geographically, it borders with Abruzzo to the north-west, with Campania to the south, Lazio to the west and Puglia to the east, while to the north-east it overlooks the Adriatic Sea.

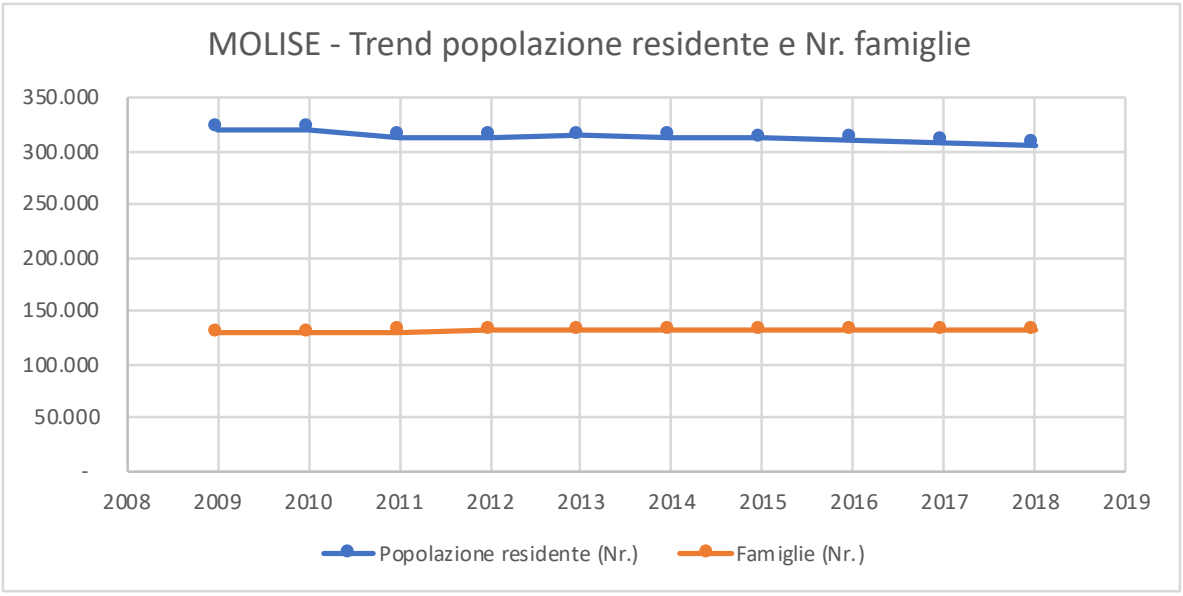
Molise insists on an area of about 4,400 km² divided almost equally between mountain areas (55%) which include the Abruzzese and Sannita Apennines and hilly areas (45%). Administratively, the Molise is divided into two provinces, that of Campobasso and that of Isernia, the latter constituted only in 1970, following the subdivision of the province of Campobasso. They are composed respectively of 84 and 52 Municipalities. Campobasso and Isernia, together with the Municipality of Termoli, are also the three most populous cities in the region.

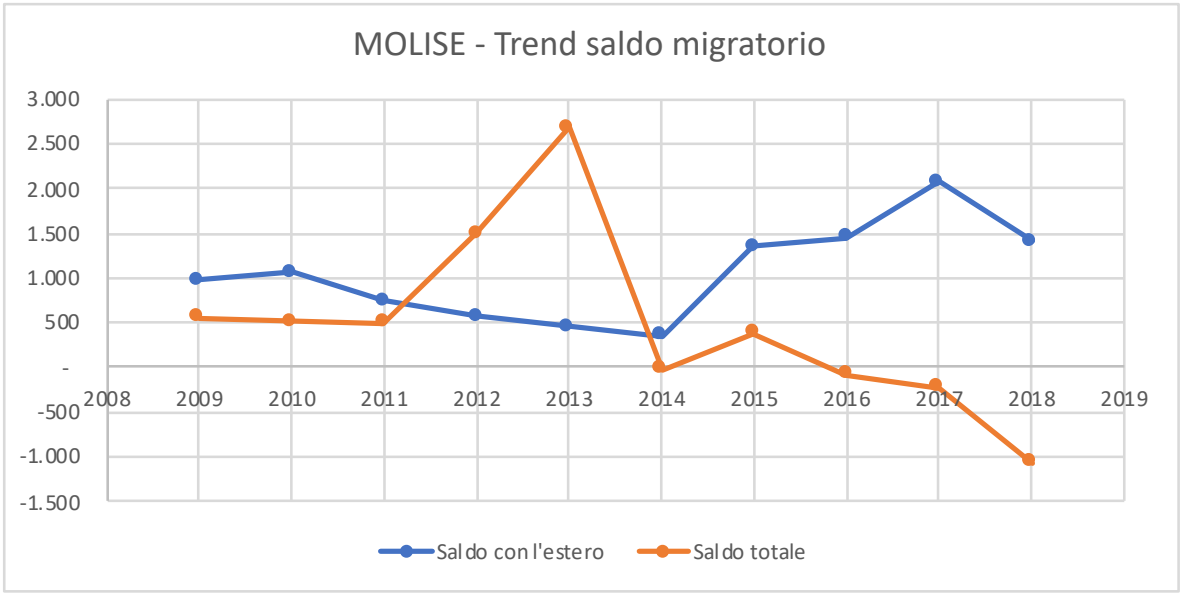
Province	Inhabitants (Nr.)	Area (kmq)	Density (Inhab./kmq)	Municipality (Nr.)
Campobasso (CB)	221.238	2.925	76	84
Isernia (IS)	84.379	1.535	55	52
Total	**305.617**	**4.461**	**66**	**136**

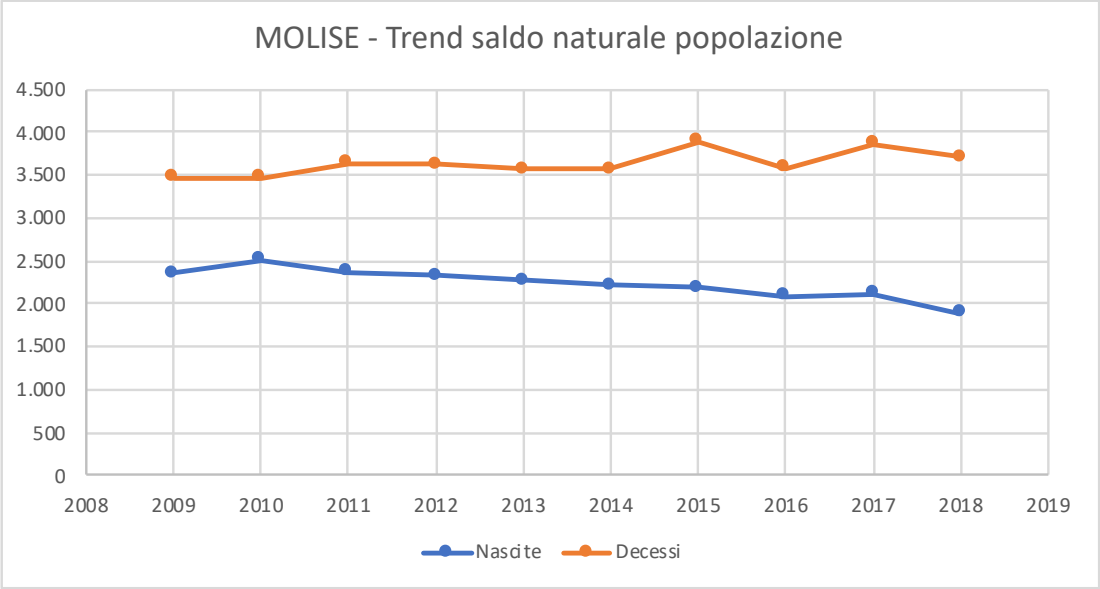
(Source ISTAT)

In 2018 the population of Molise consists of about 300 thousand inhabitants, equal to 0.5% of the national population, with a decidedly low average population density (66 inhabitants / km2) and equal to about one third of the national average (176 inhabitants / km2) . Population that during the last decade has registered a limited but constant decline, although compensated by an equally limited increase in the number of households registered in the region.

Also noteworthy, especially in the last five years, is an increase in the enrolment of foreign residents in the region in the face of an increase in the number of citizens of Molise transferred to other areas of Italy, as well as a general aging of the population resulting from a natural balance in constant growth.



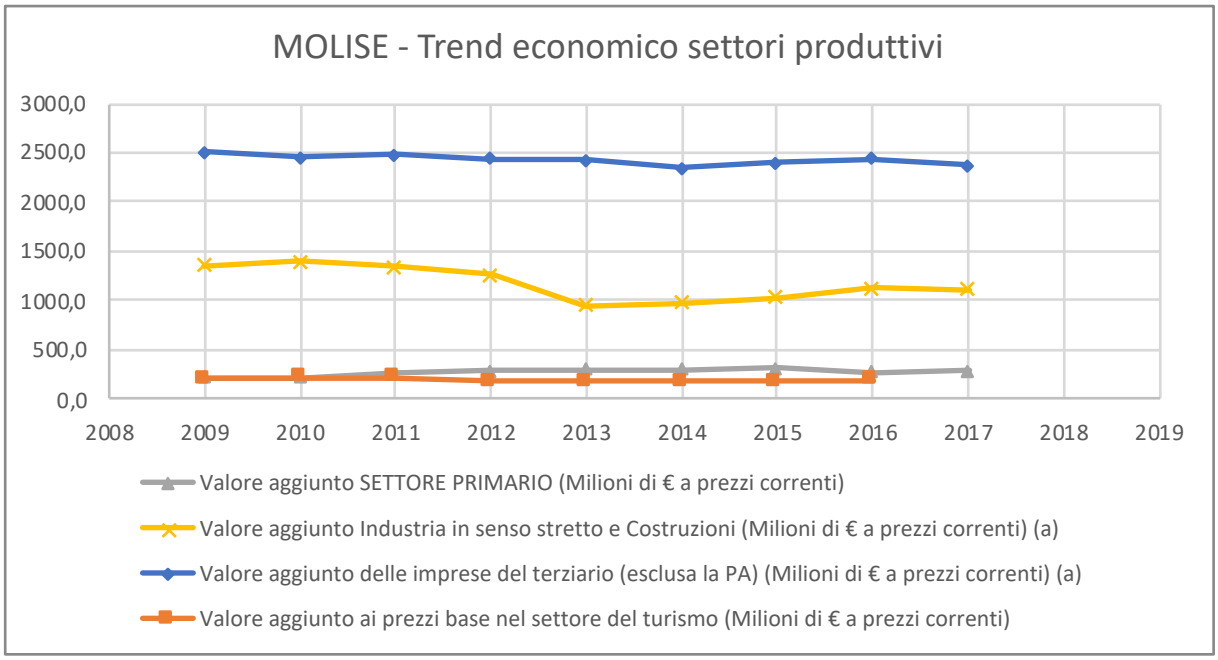




(Source ISTAT)

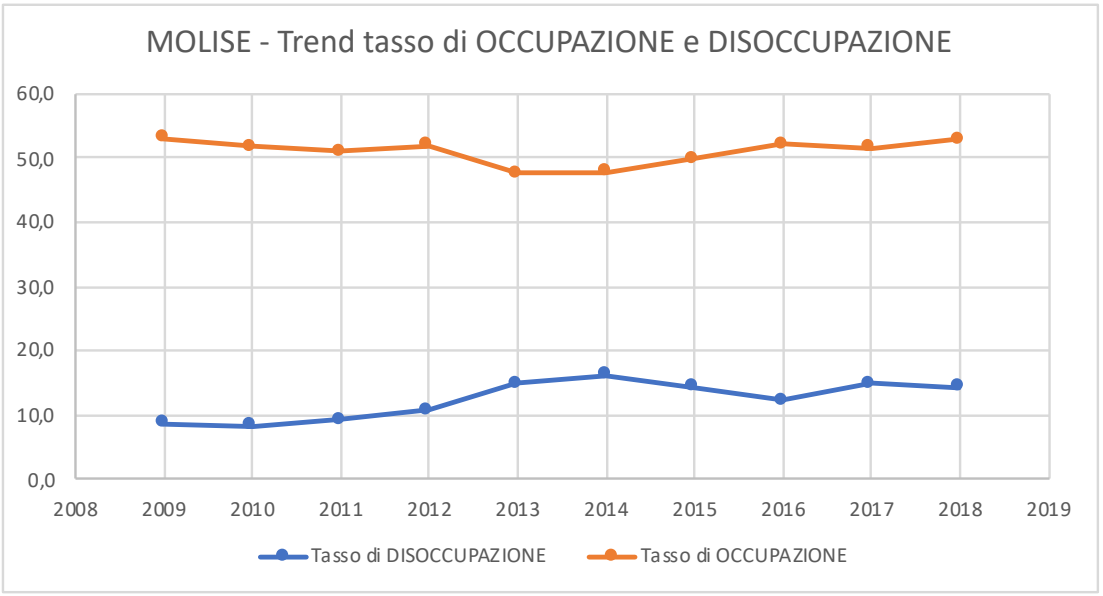
1.2. Economy

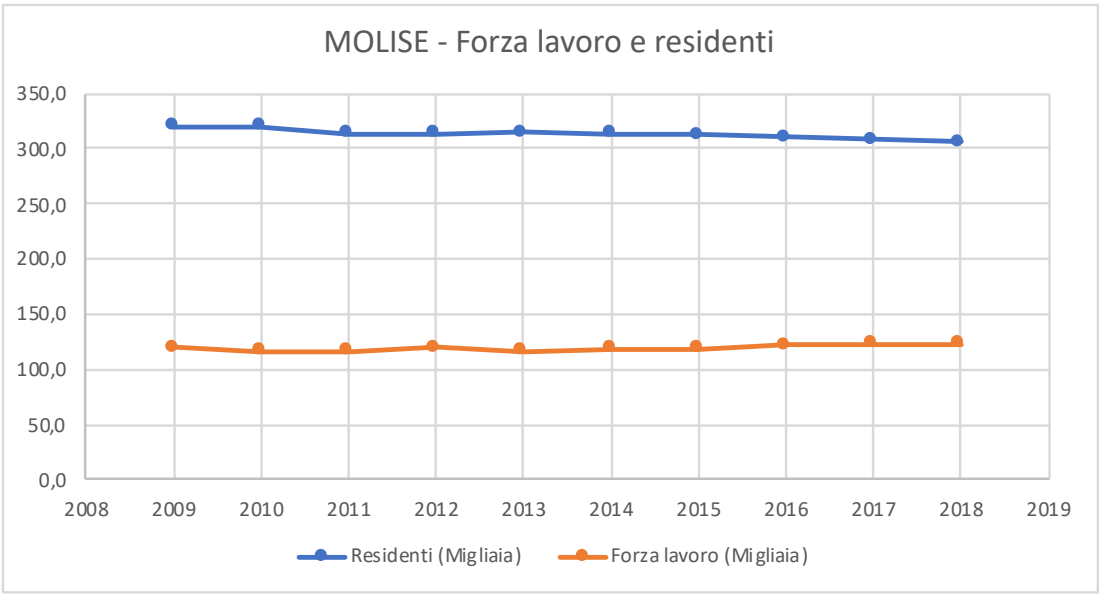
Molise - in general - can rely on an economy mainly supported by the tertiary sector and industry in the strict sense, while a primary role is represented by the primary sector.



(Source ISTAT)

The employment rate at the regional level is worth over 54%, with a slight improvement trend in recent years and corresponding to a workforce of over 123,000 units. On the other hand, the unemployment rate is constantly growing, reaching 14.4% in 2018, higher than the national average of 10.6% in the same year.

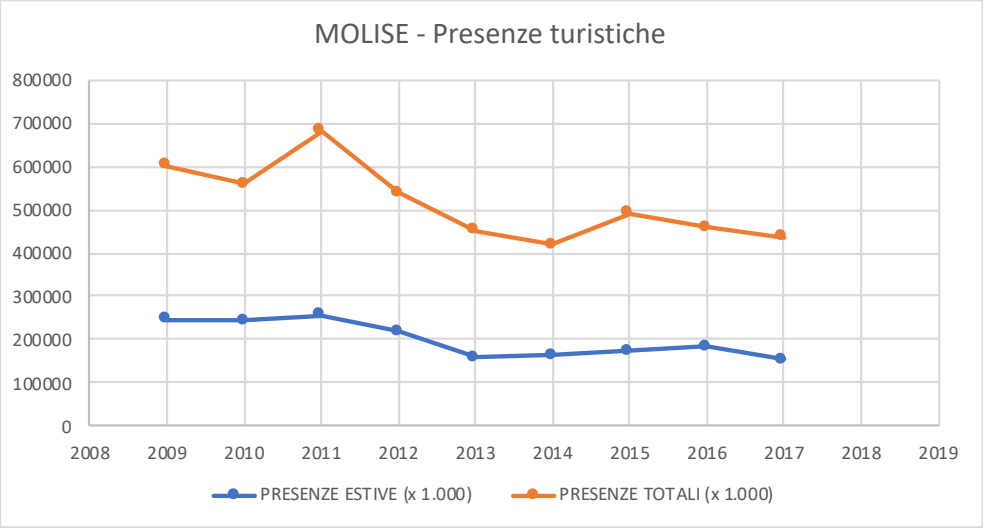




(Source ISTAT)

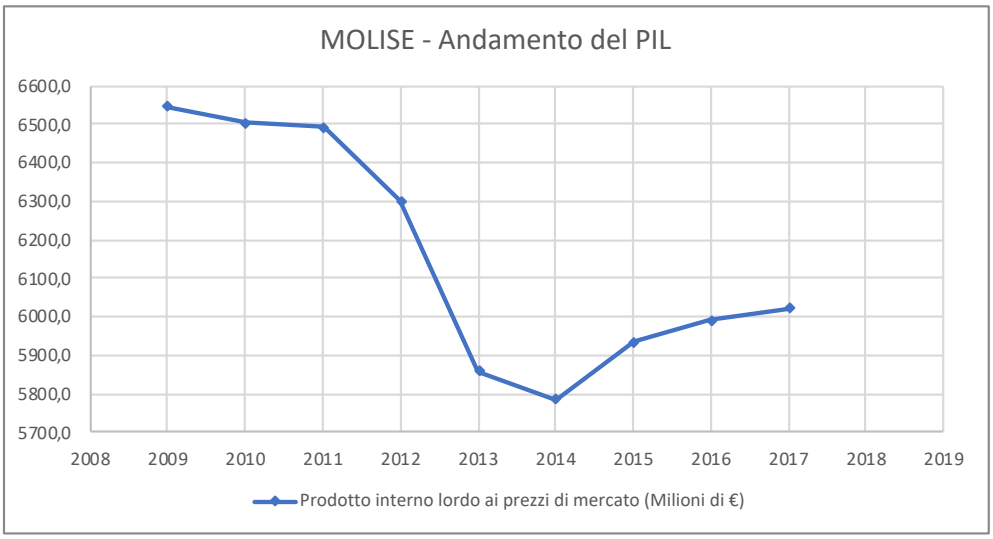
Considering the topic being studied and analysed, it is worth highlighting some further detailed aspects of the Molise economy related to the tourism sector. In particular, the reference is on the number of days of presence of tourists in hospitality establishments in the non-summer months which substantially represents 35-40% of the total presences. These values, if on the

one hand consolidate the tourism vocation of the region, on the other hand highlight a non-positive trend of the last decade.



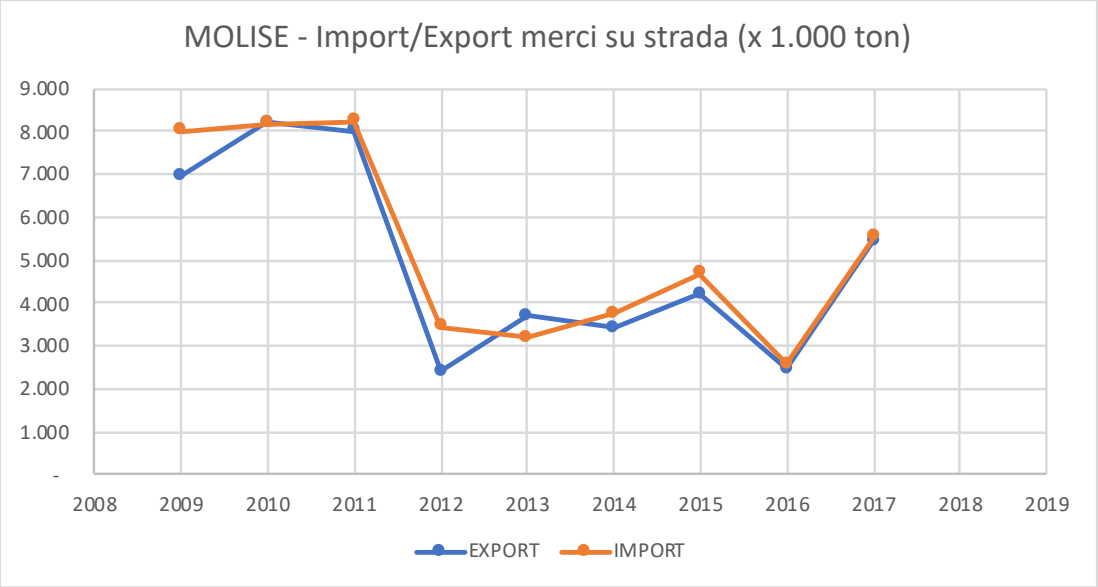
(Source ISTAT)

The Molise economy registers a GDP that is recovering in the last five years, compared to a considerable contraction recorded in previous years and dragged over the last year by a good performance in the industrial sector (+ 5.4%) and in the services sector (+ 0.7%), compared to a decline in both the construction sector (-1.0%), and the primary sector (-2.3%) and which allowed to increase the GDP for 2018 of 1, 0%.



(Source ISTAT)

However, the Molise Region has shown itself to be an economic area that is in part passing through, in fact registering a trend of import / export of goods on the road which tends to be equivalent in the last decade.

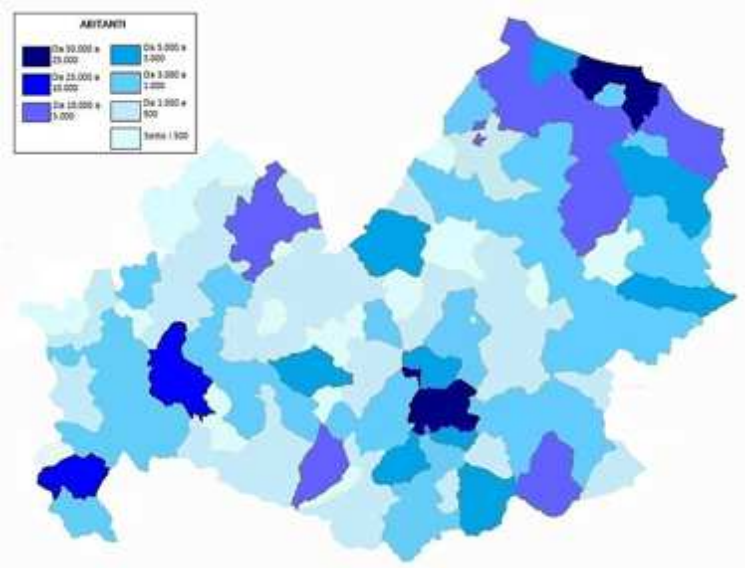


(Source ISTAT)

1.3. Infrastructures and territory

As regards the demographic size of the administrative divisions, of the 136 municipalities in Molise, as many as 64 have a population of less than 1,000 inhabitants, while only four Municipalities (including the two provincial capitals) exceed 10,000 inhabitants. This situation shows a strong fragmentation of the population in small and medium-small settlements, lacking substantial urban centres in the region if Campobasso and Isernia are excluded, which together with Termoli perform urban centrality functions for the surrounding territory.

This fragmentation is partly reflected in the infrastructural distribution: many countries are in fact subject to isolation also and above all because of the mountainous nature of the territory that has not allowed the development of motorway stretches extended towards the interior, being the 36 km of the A14 Adriatic l 'single trunk of the region that, precisely, runs along the coast.

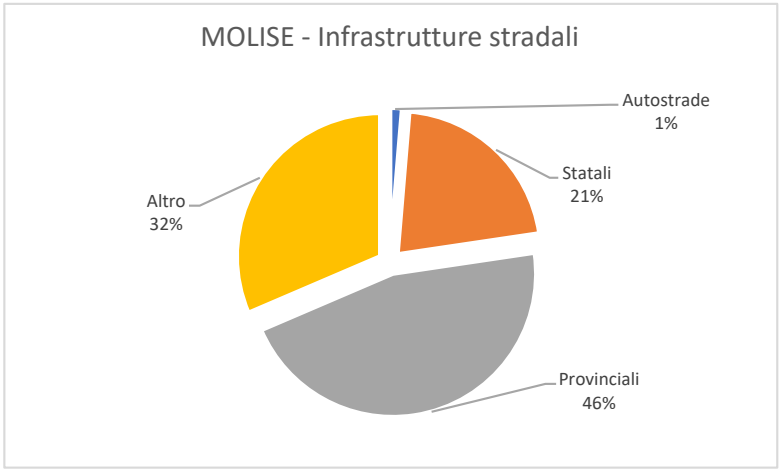


(Source ISTAT)

Alongside the A14 is the SS 16 Adriatica, while two other parallel state roads run along the Trigno and Biferno rivers, which respond to the need to move inland: on one side the SS 650 connecting Isernia with the coast, and the SS 647 "Bifernina" which links Termoli to Campobasso instead. The innermost part of the region is crossed by the SS 17, 85 and 87 which lead to the Campania region.

(Source PRP)

Overall, the Region is therefore equipped, in addition to the 36 km of Adriatic highway, with 583 km of roads of national interest, 1,254 km of provincial roads and another 859 km of roads to be classified for a total network of about 2,731 km.



(Elaborazione dati ACI)

According to RFI, the railway network consists of 265 km of lines in operation, 44 of which are classified as fundamental. A little less than 10% of the total (23 km) also has a double track, while most of it is not electrified (205 km) and therefore served by diesel locomotives. The network has 19 railway stations, 3 of which (Campobasso, Isernia and Termoli) with PRM assistance services. The existing lines, in addition to the coastal one, connect Termoli with Campobasso and then with Naples, and the regional capital with Isernia.

(Elaborazione documenti RFI)

Interregional communications tend to be difficult, in addition to the complex topography of the territory, also due to the lack of an airport (the closest are those of Pescara and Bari), while the main commercial outlet on the sea in the region is the port of Termoli which - due to the shallow waters and risk of cover-up due to the accumulation of river debris - it is not able to accommodate high tonnage vessels but carries out a continuous service of importance for the connection to the Tremiti islands (administratively under the Puglia region).

In addition to the port of Termoli, there are two other minor tourist landing places on the Molise coast in the neighbouring municipalities of Campomarino and Montenero di Bisaccia.

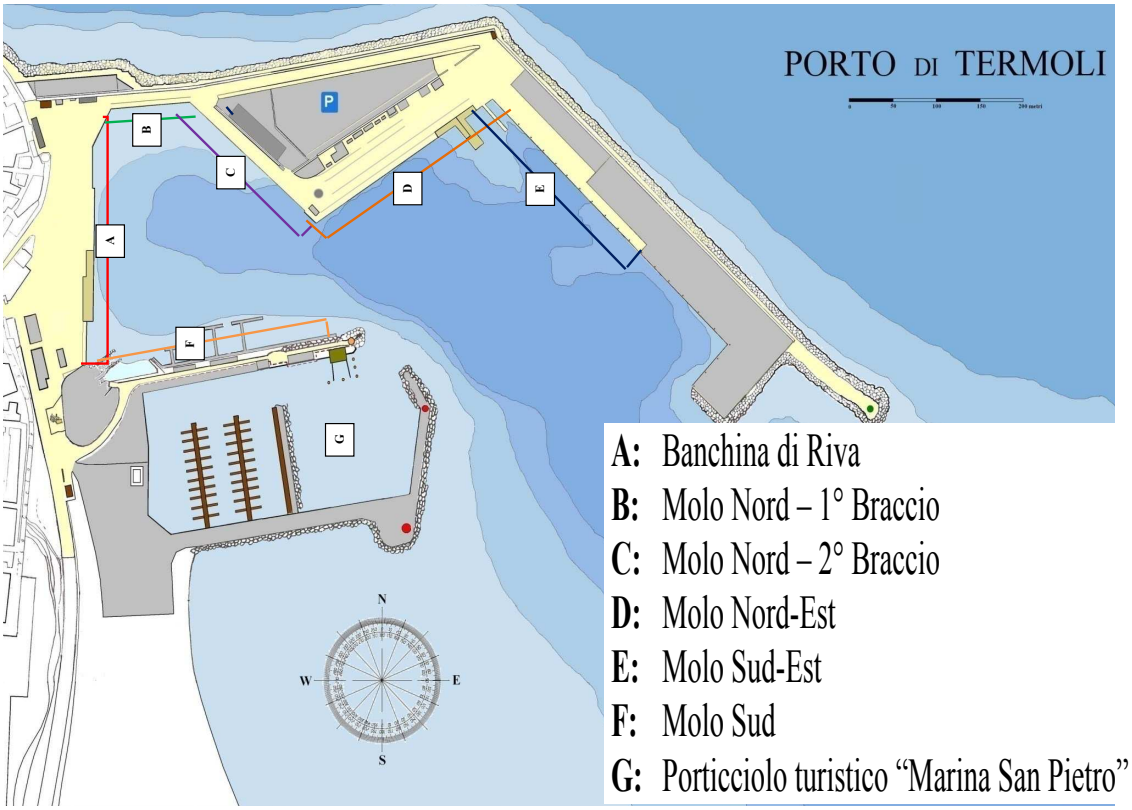
(Source FLAG)

1.4. Termoli port

1.4.1. Background

The port of Termoli is the only port facility in the Molise region, located in the territory of the municipality of the same name, and today presents itself as a multi-purpose infrastructure, in which there are more types of activitieś and in particular: commercial traffic and connections with the Tremiti islands and Croatia, fishing, recreational boating, shipbuilding.

From the infrastructural point of view, the port extends over a total length of 1,529 linear meters and is equipped with 4 berths dedicated to the fishing and freight service (in packages and not), 2 for the passenger service, 1 traffic is intended for leisure and 1 to service activities. The total surface area for logistics operations is approximately 44,700 square meters: there are, however, neither cold stores nor silos. The function of the port is limited to boats of limited size, with a draft not exceeding 5 meters. The port is not equipped with mechanical furniture, nor with railway tracks.

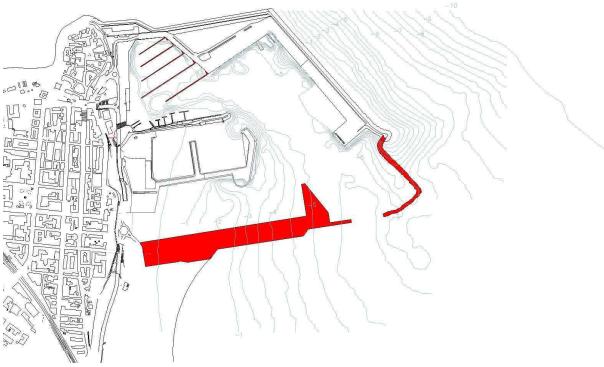


(Source, Italian Coast Guard)

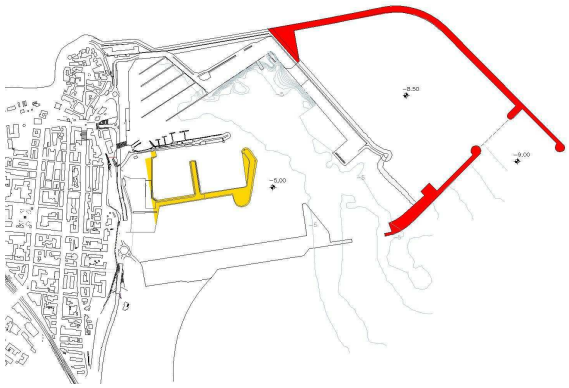
1.4.2. Proposal for the Regulatory Plan

The adoption of the PRP of the port is underway which establishes an infrastructural evolution aimed at guaranteeing the integrated development of the port-sea, fishing and tourist activities. More specifically, it envisages connecting the commercial port to a new breakwater, located at noon of the existing one in order to allow the latter to be dedicated to urban and tourism activities and to create a new basin useful for receiving traffic of goods, passengers and fishing, while the existing dock may be used entirely for recreational boating and the "city on the harbour".

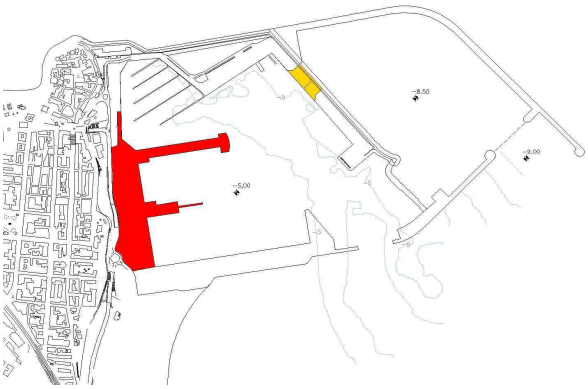
The Plan also provides for the construction of a tunnel connecting the port area to the west coast of the city, so as to eliminate the bottleneck that currently "strangles" the road system in the saddle that separates the historic center from the modern neighbourhoods that the latter be pedestrianized.



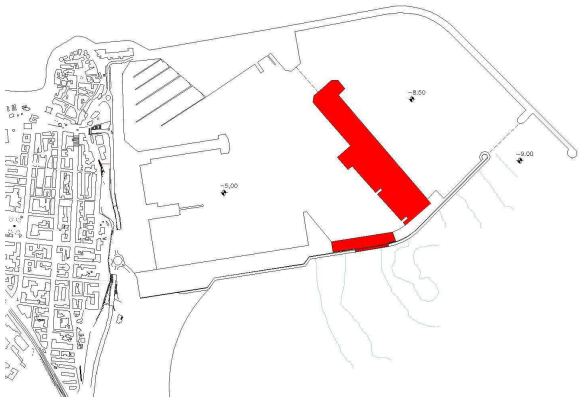
First phase PRP



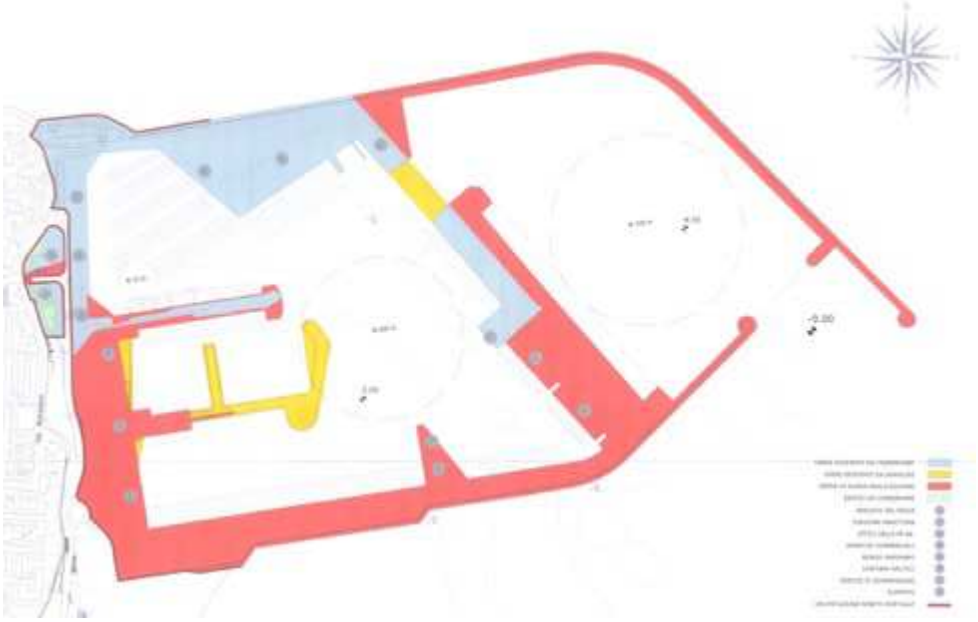
Second phase PRP



Third phase (A) PRP



Third phase (B) PRP



(Source, Piano regolatore Portuale)

Therefore, in the first phase a large part of the new sub-breakwater pier (about 350m south of the existing one) is made, thus making it possible to create the new activity of the internal harbour basin (after dredging to guarantee depths of 5.00 meters). critical for urban use, now established on the existing super-water pier (passenger transport and fishing). At the same time, it is the shift, in the historic basin of the port, of all the activities for yachting. A new "temporary" port mouth is created to reduce the problems connected to the interruption of the port and to guarantee greater protection of the basin, also in conjunction with wave phenomena from south-south sirocco.

In the second phase the extension of the overflowing and underfloor defence works is carried out, to the point of defining the new and definitive entrance and the external port basin.

The third phase is finally divided into two distinct interventions (A and B) to be performed in temporal succession, but functionally coherent: the first consists in the demolition of a portion of the current superflux in order to connect the external port basin with the internal basin, making thus it is possible to access both from the definitive entrance and therefore no longer the “temporary” one built in the first phase. Once the demolition is complete, the temporary mouth is closed and all the works for the new overhang completed.

(Source Piano Regolatore Portuale)

1.4.3. Port accessibility

The Port of Termoli is located at the crossroads of the Adriatic and transversal Termoli - Campobasso - Bojano - Isernia - Venafro - S. Vittore which represents an infrastructure considered strategic for the rapid connection between the Tyrrhenian and the Adriatic, allowing to determine a new centrality of Termoli.

Therefore, the national infrastructures that define accessibility in Termoli are organized according to a T-logic: the A14 motorway, the SS16 (with the NSA 250 Tangenziale di Termoli) and the Adriatic railway run parallel to the coast, while with the orthogonal position to them the SS 87 and to the S.S. 647 connecting with Campobasso and with S.S.17.

The port of Termoli, on the other hand, lacks a railway connection, however the Termoli station is located along the Ancona - Lecce railway line and is the terminus of the Termoli-Venafro section.

Road accessibility to the port of Termoli (Source ANAS)

Rail accessibility to the port of Termoli (Source RFI)

The programming of the new infrastructures for connection to the Termolese territory, as it is capable of generating increasing traffic towards the port infrastructure, requires particular attention in the definition of adequate accessibility solutionṡ to the maritime infrastructure that, at the same time, are able to avoid impact and interference with human activities.

In this sense, the PRP has developed analyses specifically dedicated to addressing the issues concerning the improvement of accessibility to infrastructure and port services with particular reference to:

- alternatives to access from Via Corsica (a former coastal variant to the SS 16 "Adriatica");
- suitable traffic distribution system, through the adaptation of Via dei Marinai D'Italia;
- feasibility for the construction of a tunnel connecting the Via dei Marinai D'Italia, at Piazzale del Porto, with Lungomare Cristoforo Colombo (intersection with Via Milano);

- creation of a series of underground and surface parking lots for users of port activities and services, as well as employees

(Spurce, Piano Regolatore Portuale)

1.4.4. Traffic

The port of Termoli, as mentioned, is multipurpose but, also due to the current structure, it does not manage to be particularly attractive from the point of view of goods in transit which in the last three years are in sharp decline and settle on 160 thousand tons . On the other hand, the passenger traffic that involves the port of Termoli is currently mainly due to the operational connections with the Tremiti islands, while in the last year the international connection with Croatia was suspended with a fast catamaran activated in 2001.

On the other hand, it is important to point out that Termoli, the second largest city in Molise by number of inhabitants, is also the most important fishing port on the Adriatic after San Benedetto del Tronto.

Attività portuale
(tonnellate; unità; variazioni percentuali sul periodo corrispondente)

VOCI	2016	2017	2018	Variazioni 2017	Variazioni 2018
Merci	**198.456**	**175.985**	**158.091**	**-11,3**	**-10,2**
sbarcate	12.793	9.758	8.474	-23,7	-13,2
imbarcate	185.663	166.227	149.617	-10,5	-10,0
di cui: prodotti petroliferi	178.483	156.427	138.062	-12,4	-11,7
sbarcati	3.425	2.061	–	-39,8	-100,0
imbarcati	175.058	154.366	138.062	-11,8	-10,6
Passeggeri	**209.282**	**207.579**	**190.492**	**-0,8**	**-8,2**
in arrivo	105.377	104.030	99.551	-1,3	-4,3
in partenza	103.905	103.549	90.941	-0,3	-12,2

(Source, Bank of Italy)

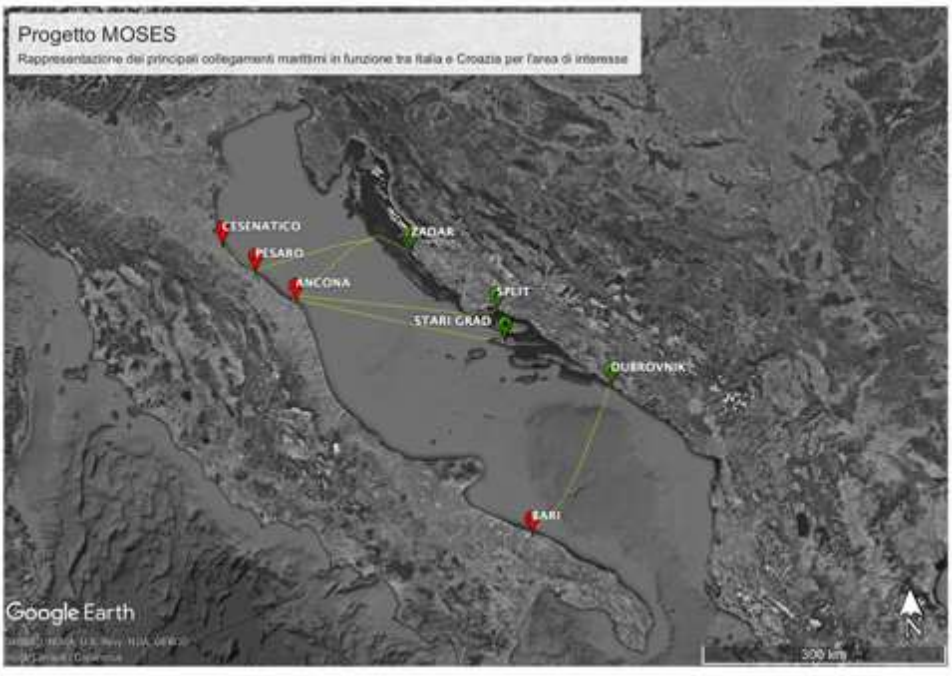
1.4.5. Positioning

The geographical position of Termoli appears undoubtedly advantageous compared to other Italian ports, if we consider the distances between the Adriatic ports.

It can be noted that the ports on the two closest banks in absolute terms are Bari and Dubrovnik (108 miles), but that the distance between Termoli and Ploce (130 miles) and between Termoli and Spalato (113 miles) are the smaller of both these important airports and all Italian ports considered, albeit with marginal differences with respect to Vasto, Ortona and Pescara. The nearest port to Ancona is Rijeka (110 miles), but Ancona is 130 miles from Split and 175 miles from Ploce, respectively 17 and 45 miles more than in Termoli. The same applies to Bari, which is 42 and 20 miles further from Termoli than Spalato and Ploce.

(Framing geographical positioning of Adriatic ports)

A first analysis of the consolidated connections between Italy and Croatia shows a gap for the area of reference included between the ports of Ancona and Bari, to underline the usefulness / opportunity of development and reactivation of connection lines for the other shore of the Adriatic.



Source, elaboration of the working group

1.4.6 Definition of the main goals

Identification of the specific project

The objective of this study is to evaluate the technical-economic feasibility of restoring fast maritime connections between the port of Termoli and Croatia, and to quantify the total direct and indirect costs and benefits that the initiative can generate .

The investment project has as its main costs the purchase of the vehicle that will operate the connections between Molise and Croatia and works of accommodation and adaptation to the Port of Termoli.

The analysis to be conducted should provide technical and strategic indications useful for a more careful evaluation by the potential operators of the sector interested in the initiative, than for the public decision makers co-promoters of the initiative.

Strategic relevance

The project to restore connections has an undoubted strategic value for the Molise Region and a territorial impact that goes beyond its borders, potentially drawing on users from neighbouring regions such as Marche, Abruzzo, Campania and Puglia.

Its transnational character makes the initiative in line with the broader objectives of the European Union Strategy for the Adriatic Ionian Region (EUSAIR), in particular as regards the improvement of connectivity in the Adriatic-Ionian area.

The main target groups are Italian citizens residing and tourists in Molise and neighbouring regions, Croatian citizens and tourists residing there and other potential beneficiaries.

The main stakeholders are the regional administration, the Port of Termoli and its operators, the Municipality of Termoli, tour operators and local, regional and national transport companies.

2. Demand analysis

2.1. Quality and detail of the available data

Nowadays, European statistics on ports are managed by Eurostat, which acquires data on Italian ports from Istat, collected again with paper documentation that no longer reflects the reality of actual movements developed.

- Data collection and analysis also has the following limitations:
- the data collected from the different available sources differ from one another and are not homogeneous
- poor distinction between types of maritime connections with regard to the type of boat
- the category of fast hydrofoil or catamaran connections does not have a specific database and is almost always assimilated in the category of "Ferries" ("Ferries")
- lack of indications about origin / destination of passenger movements in most databases and third-party analyses

Given these premises, for the purposes of this study, Eurostat data was used, supplemented with indications from other direct and indirect sources, including statistics provided by Ports and Port Authorities, as well as processing carried out by companies specialized in the maritime sector .

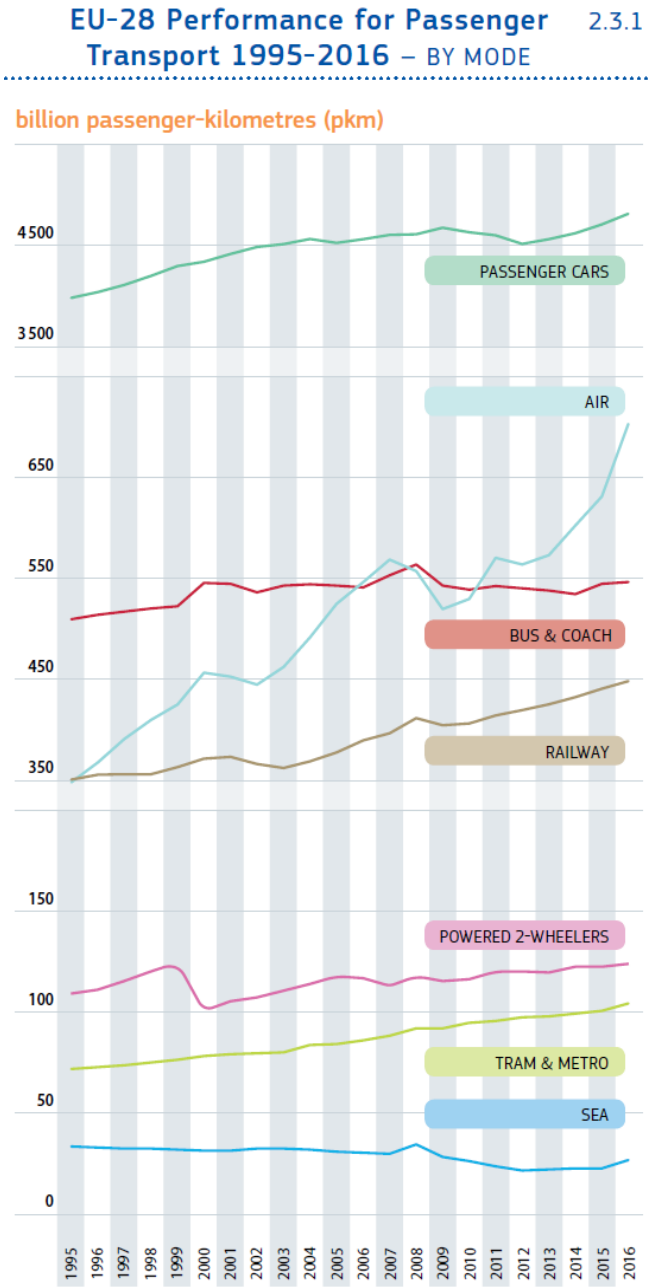
2.2. General framewok: EU data

Passenger transport by sea remains residual compared to the other modes as regards the indicator of mileage per passenger. This is justified by a series of peculiarities of maritime transport illustrated in detail below and by the fact that the speed of movement from origin to destination is by far the slowest.

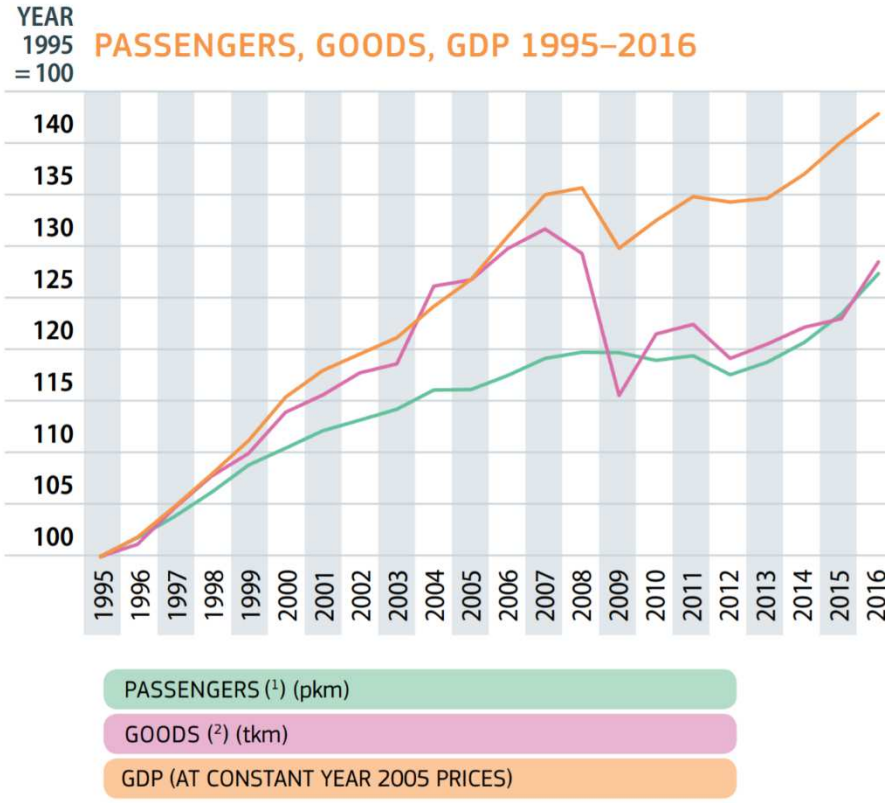
The elaboration contained in the European Commission's Statistical Yearbook 2019 shows that car journeys in the last 20 years have continued to rise, but the most marked growth, especially since 2010, is recorded by air transport, thanks to the development of the companies low cost and always new connections, followed by the train, which with the new high-speed lines, developed in most of the advanced countries of the EU is able to offer an extremely competitive transport service in many aspects (travel times, comfort , proximity, punctuality, frequency).

The maritime transport of people, limited on the one hand by seasonal factors and on the other developed only in some areas of the EU that need to serve “peripheral” territories with frequent connections by sea (very often thanks to regional and national subsidies), in a particularly stringent regulatory and regulatory framework appears to be the least dynamic sector and still has a performance below that achieved in the 1990s.

Various studies and research have shown the correlation between economic development and transport, as can be seen from the graph on the following page. It is noted that freight traffic is much more sensitive to changes in GDP than passenger traffic is, and this is justified by the fact that, especially in some regions, the motivation for passenger transport by sea is linked, for a most of the year, for non-voluntary and / or discretionary needs.



The decline in the number of passenger-kilometers transported in the EU, despite suffering a modest decline in the years 2007-2012, has started to grow again in the last few years and increased the performance compared to the pre-crisis data, contrary to what happened for the goods.



Source: Statistical Yearbook 2019: DG Move European Commission

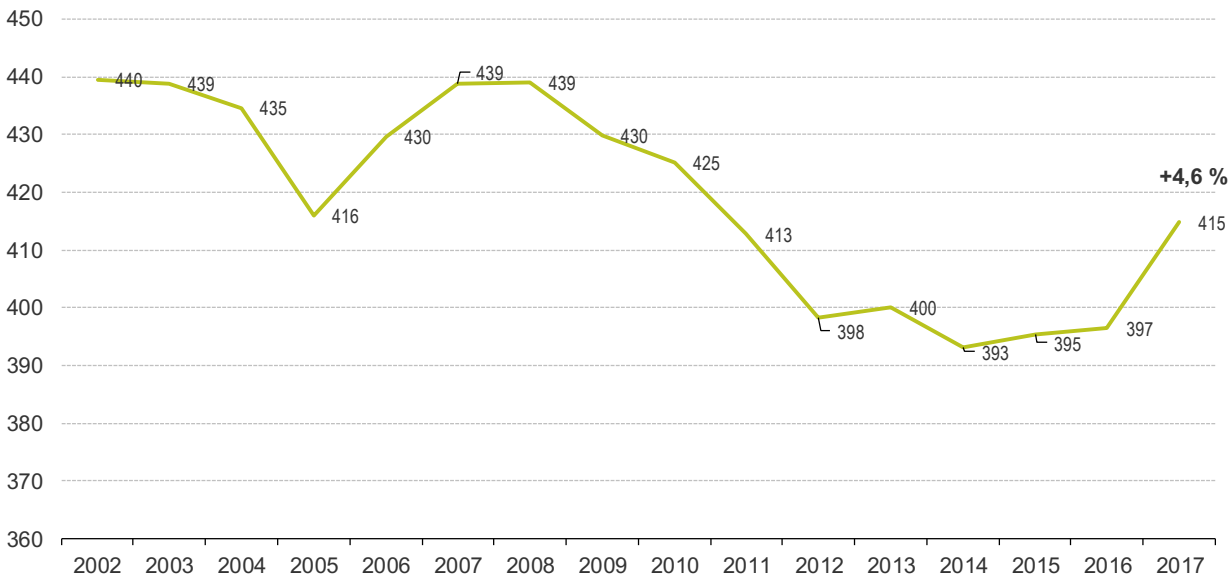
With regard to the number of boarding and disembarking passengers, starting from 2007, the year in which the economic crisis broke out, the boarding in European Union ports registered a drop of over 10% until 2014, the year in which showed a growth trend, continued until today and which coincides with the consolidation of a generalized economic recovery in the EU area. The total

In 2017, maritime transport in Europe totaled 415 million passengers and landings, 4.6% more than in 2016, but still below 2007 levels. Of these, 75 million used Italian ports (2017)

number of passengers in 2017 boarded and landed in EU ports is estimated at almost 415 million (including cruise passengers representing 3.4% of total passengers transported), with a 4.6% increase over previous year (see chart below). With almost 74 million passengers transiting through its ports, in 2017 Italy was the main country for maritime passenger transport in Europe, followed by Greece with 70 million.

These two leading countries hold an overall share of over one-third of the total number of passengers who embark and disembark in EU countries. The following table shows the overall 2014-2017 traffic by country, and includes cruise ship passengers

Passeggeri imbarcati e sbarcati in tutti i porti UE 2002-2017
(milioni)



Despite the recent trend of recovery, the data show that the total number of passengers and imbarkements in EU ports decreased by 5.5% in the decade 2008-2017. The number of vessels allocated in the main EU ports in 2017 is estimated at over 2.1 million, with an increase of 1.7% compared to the previous year.

Contrary to what happens for freight traffic, where 60% of the goods are unloaded and 40% loaded in EU ports, the difference between the number of passengers disembarking ("inward") and embarking ("outward") in EU ports is generally reduced.

This is determined by the fact that passenger maritime transport in Europe is mainly carried out by national or European ferry operators, and the same passengers are counted twice in traffic statistics (once when they board a ferry from an EU port and a second time when they disembark from the same ferry in another EU port).

Another important feature is that the majority of passenger maritime transport in Europe is carried out by travellers who move within the borders of a nation as shown in the following table, which details for 2016 and 2017 the distribution of maritime passenger transport between national and international transport within the EU and international non-EU for each reporting country (excluding cruise passengers).

Seaborne passengers embarked and disembarked in all ports, 2014-2017
(thousand passengers)

	2014	2015	2016	2017					Change 2017/2016 (%)
	Total	Total	Total	Inwards	Outwards	Cruise	Non cruise	Total	
EU-28	393 127	395 432	396 523	207 978	206 829	14 020	400 788	414 808	4.6
Belgium	821	844	1 118	634	636	950	321	1 270	13.7
Bulgaria	1	2	3	0	2	0	2	2	-28.0
Denmark	41 353	41 647	41 583	21 507	21 379	425	42 461	42 886	3.1
Germany	30 780	30 087	30 849	15 321	15 453	2 248	28 527	30 774	-0.2
Estonia	13 654	14 164	14 333	7 402	7 449	14	14 836	14 850	3.6
Ireland	2 755	2 751	2 717	1 394	1 380	5	2 769	2 774	2.1
Greece	66 533	65 680	65 248	35 021	35 002	439	69 584	70 023	7.3
Spain	23 486	24 522	26 323	13 976	13 923	3 004	24 896	27 899	6.0
France	26 638	26 133	24 514	12 641	12 453	717	24 377	25 093	2.4
Croatia	23 523	27 271	29 661	15 976	15 351	76	31 251	31 327	5.6
Italy	72 225	70 268	67 273	36 935	36 941	3 747	70 129	73 876	9.8
Cyprus	76	68	59	46	26	21	51	72	22.8
Latvia	862	661	723	487	507	0	994	994	37.5
Lithuania	280	286	303	141	156	0	297	297	-1.8
Malta	9 669	9 910	10 690	5 643	5 642	211	11 075	11 286	5.6
Netherlands (1)	1 819	1 910	1 906	963	965	0	1 928	1 928	1.2
Poland	2 224	2 421	2 602	1 292	1 293	0	2 585	2 585	-0.7
Portugal	551	583	679	369	371	63	677	740	9.0
Romania	1	1	0	0	0	0	0	0	25.0
Slovenia	27	34	28	19	19	0	38	38	33.0
Finland	18 471	18 884	19 222	9 800	9 689	7	19 481	19 489	1.4
Sweden	29 244	29 500	29 800	15 384	14 881	175	30 091	30 265	1.6
United Kingdom	28 135	27 805	26 887	13 027	13 311	1 919	24 419	26 338	-2.0
Iceland	723	737	544	459	458	0	917	917	68.4
Norway (2)	6 103	6 714	6 266	3 079	3 273	109	6 243	6 352	1.4
Montenegro	108	99	110	62	57	0	119	119	7.6
Turkey	2 150	2 233	1 250	683	694	118	1 259	1 377	10.2

(1) Data exclude cruise passengers.
(2) Data on international maritime passenger transport only.

Passeggeri imbarcati e sbarcati in tutti i porti 2012-2017
(migliaia)

	2010	2011	2012	2013	2014	2015	2016	2017			Variaz, 2017/2016 (%)	Variaz, 2017/2007 (%)
	Totale	Totale	Totale	Totale	Totale	Totale	Totale	Crociera	non crociere	Totale		
EU-28	**425.172**	**412.802**	**398.205**	**400.029**	**393.127**	**395.432**	**396.523**	**14.020**	**400.788**	**414.808**	**4,6**	**-5,5**
Belgium	829	824	850	859	821	844	1.118	950	321	**1.270**	**13,7**	**39,7**
Bulgaria	1	1	1	2	1	2	3	0	2	**2**	**-28,0**	**-75,9**
Denmark	41.993	41.527	40.965	41.266	41.353	41.647	41.583	425	42.461	**42.886**	**3,1**	**-11,4**
Germany	28.780	29.233	29.481	29.848	30.780	30.087	30.849	2.248	28.527	**30.774**	**-0,2**	**1,9**
Estonia	11.186	11.846	12.654	13.146	13.654	14.164	14.333	14	14.836	**14.850**	**3,6**	**71,4**
Ireland	3.089	2.906	2.758	2.747	2.755	2.751	2.717	5	2.769	**2.774**	**2,1**	**-14,0**
Greece	86.189	79.183	72.899	72.918	66.533	65.680	65.248	439	69.584	**70.023**	**7,3**	**-24,2**
Spain	21.518	21.868	21.629	22.871	23.486	24.522	26.323	3.004	24.896	**27.899**	**6,0**	**20,6**
France	27.218	25.552	24.815	25.634	26.638	26.133	24.514	717	24.377	**25.093**	**2,4**	**-7,2**
Croatia	25.124	26.947	26.706	27.355	23.523	27.271	29.661	76	31.251	**31.327**	**5,6**	**27,3**
Italy	87.658	81.895	76.735	73.238	72.225	70.268	67.273	3.747	70.129	**73.876**	**9,8**	**-15,1**
Cyprus	107	92	91	99	76	68	59	21	51	**72**	**22,8**	**-58,5**
Latvia	720	844	885	932	862	661	723	0	994	**994**	**37,5**	**139,2**
Lithuania	251	281	286	280	280	286	303	0	297	**297**	**-1,8**	**40,5**
Malta	8.300	8.621	8.535	9.170	9.669	9.910	10.690	211	11.075	**11.286**	**5,6**	**44,7**
Netherlands (1)	1.994	1.770	1.706	1.738	1.819	1.910	1.906	0	1.928	**1.928**	**1,2**	**3,0**
Poland	2.601	2.528	2.358	2.201	2.224	2.421	2.602	0	2.585	**2.585**	**-0,7**	**5,2**
Portugal	701	677	565	555	551	583	679	63	677	**740**	**9,0**	**0,6**
Romania	0	0	0	0	1	1	0	0	0	**0**	**25,0**	**-90,8**
Slovenia	39	36	34	28	27	34	28	0	38	**38**	**33,0**	**-26,5**
Finland	17.867	18.074	18.264	18.524	18.471	18.884	19.222	7	19.481	**19.489**	**1,4**	**18,5**
Sweden	30.185	30.094	29.471	29.146	29.244	29.500	29.800	175	30.091	**30.265**	**1,6**	**-7,3**
United Kingdom	28.824	28.002	26.516	27.472	28.135	27.805	26.887	1.919	24.419	**26.338**	**-2,0**	**-13,5**
Iceland	638	404	710	751	723	737	544	0	917	**917**	**68,4**	**:**
Norway (2)	5.876	6.130	6.003	5.841	6.103	6.714	6.266	109	6.243	**6.352**	**1,4**	**-1,5**
Montenegro	:	:	319	184	108	99	110	0	119	**119**	**7,6**	**:**
Turkey	1.577	1.842	1.828	2.058	2.150	2.233	1.250	118	1.259	**1.377**	**10,2**	**:**

(1) I dati escludono i passeggeri di crociere
(2) I dati si riferiscono esclusivamente al traffico internazionale

Unlike the statistics presented in the previous table, the following data does not reflect the sum of the boarding and disembarkation of passengers in ports, but they estimate the transport of passengers between ports.

Passenger transport by sea in the EU is largely carried out within the borders of individual Member States (61%), with peaks of 90% on total volumes in Italy, Croatia and Greece

As far as possible, these figures are purified by the double counting of the same passengers who board a port and land in another port within the same statistical aggregate.

Trasporto marittimo di passeggeri (esclusi croceristi) tra porti principali* 2016-2017

	2016					2017					Variazione totale 2017/2016 (%)
	Totale (migliaia)	Di cui (%)				Totale (migliaia)	Di cui (%)				
		Nazionali	Internazionali		non classif.		Nazionali	Internazionali		non classif.	
			Intra UE-28	Extra UE-28				Intra UE-28	Extra UE-28		
EU-28	**204.152**	**60**	**33**	**6**	**1**	**213.109**	**61**	**33**	**6**	**0**	**4,4**
Belgium	330	0	100	0	0	**316**	0	100	0	0	**-4,4**
Bulgaria	-	-	-	-	-	-	-	-	-	-	**-**
Denmark	30.353	27	61	12	0	**30.550**	28	60	12	0	**0,6**
Germany	20.636	45	49	6	0	**19.944**	44	50	6	0	**-3,4**
Estonia	11.953	17	82	1	0	**12.314**	18	82	0	0	**3,0**
Ireland	2.712	0	100	0	0	**2.769**	0	100	0	0	**2,1**
Greece	31.806	95	4	0	0	**34.527**	95	4	1	0	**8,6**
Spain	18.852	62	12	25	0	**16.012**	69	4	27	0	**-15,1**
France	22.159	16	76	3	4	**21.268**	19	77	4	0	**-4,0**
Croatia	14.713	97	3	0	0	**15.583**	97	3	0	0	**5,9**
Italy	35.175	88	9	3	0	**38.888**	88	8	3	0	**10,6**
Cyprus	-	-	-	-	-	-	-	-	-	-	**-**
Latvia	510	0	100	0	0	**953**	0	100	0	0	**86,8**
Lithuania	303	0	100	0	0	**297**	0	100	0	0	**-1,8**
Malta (¹)	5.133	100	0	0	0	**5.384**	100	0	0	0	**4,9**
Netherlands	1.934	0	95	0	4	**1.928**	0	98	0	2	**-0,3**
Poland	2.123	14	86	0	0	**2.167**	11	89	0	0	**2,1**
Portugal	314	100	0	0	0	**338**	100	0	0	0	**7,7**
Romania	-	-	-	-	-	-	-	-	-	-	**-**
Slovenia	-	-	-	-	-	-	-	-	-	-	**-**
Finland	18.609	3	95	2	0	**18.831**	3	96	1	0	**1,2**
Sweden	27.906	6	89	5	0	**29.635**	11	84	5	0	**6,2**
United Kingdom	22.808	12	88	0	0	**22.355**	13	87	0	0	**-2,0**
Iceland	:	:	:	:	:	:	:	:	:	:	**:**
Norway (²)	6.160	0	100	0	0	**6.242**	0	100	0	0	**1,3**
Montenegro	-	-	-	-	-	-	-	-	-	-	**:**
Turkey	1.100	1	83	3	13	**1.259**	0	81	3	16	**14,5**

*Fonte: Eurostat 2019 - * porti che movimentano più di 200.000 passeggeri anno*

From the reading of these data it emerges that in 2017 on a European basis the national passenger traffic constitutes 61% of the total, the intra EU 33% and the one towards non-EU countries 6%. In countries overlooking the sea and which also need to serve the islands with frequent connections all the months of the year, such as Italy, Croatia and Greece, the weight of national maritime transport on the total rises even more, and reaches respectively 88, 97 and 95%.

The main significant additional evidence emerged from the qualitative analysis carried out is summarized below:

- EU maritime passengers are mainly transported by national operators or within the EU with ferry services concentrated in three regions: the Baltic, the North Sea and the Mediterranean.
- The routes operated have remained relatively unchanged over the years; more than half are in the Mediterranean, whose fleet far exceeds the other two regions in terms of size and capacity, although the ferries are on average older.
- Since 2000 the passenger shipping industry has been progressively consolidated and operators have focused on their region, optimizing routes, fleets and exploiting the economies of scale of ships.
- The demand for this type of transport varies over time, as does the offer, with even significant fluctuations over an observation period of several years.
- In the last 20 years, the performance of the sector has been generally mediocre, influenced by the abolition of duty-free travel within the EU, by competition from fixed connections, by low-cost airlines, and by variations in the cost of fuel

The economic recession has also affected the ferry industry and operator performance usually reflects the situation of the economy of the region where the core business is located. The general contraction of the size and capacity of the fleet confirms that the development of the sector lacks dynamism: the new construction activities focus on the fleet renewal; both the used car market and the rental are in decline.

The passenger transport industry has recorded a flat trend and mediocre economic performance since the 2000s, due to the elimination of duty free, low-cost competition and fluctuations in fuel costs

2.2.1. Tariffs

The cost of maritime transport depends on a series of variables and on the operators' price policies, the main factors are:

- The route (including the level of competition in the market and with other alternative modes of transport)
- Mooring rates
- Type of accommodation on board
- Main type of market served (leisure or business)
- Seasonality

Normally a discount is applied for round trips and special discounts in low season periods.

Compared to other modes of transport, maritime passenger transport appears to be the one with a more pronounced rate increase, as shown in the table below.

Variazione di Prezzo dei servizi di trasporto in UE per tipo

YEAR 2015 =100	TRANS-PORT SERVICES	of which: Passenger transport by railway	Passenger transport by road	Passenger transport by air	Passenger transport by sea and inland waterway	Combined passenger transport	Other purchased transport services
2017	103.8	102.7	104.5	102.1	105.8	102.8	100.5
2016	100.6	100.4	101.5	97.4	103.1	101.2	100.1
2015	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2014	98.4	98.9	98.3	98.5	96.8	97.8	99.7
2013	96.4	96.8	96.5	97.7	94.1	95.3	99.1
2012	93.3	94.1	94.3	93.9	94.0	92.1	98.6
2011	89.0	90.1	90.6	89.6	91.3	87.8	96.9
2010	84.2	86.9	87.2	83.5	83.8	84.3	96.1
2005	69.5	70.1	72.1	74.4	65.1	70.5	88.3

Fonte: Statistical Yearbook 2019: DG Move European Commission

This can be attributed to the competition of low-cost airlines, from new and more efficient fixed connections and volatile oil prices.
Surely the online purchase of tickets has helped to reduce costs and increase the sales of many operators, but has above all led the maritime transport industry to replicate the approach used in the air flight market, becoming extremely flexible and susceptible to change continuous, for example based on the approaching departure date.

2.2.2. Technology and propulsion

Maritime transport contributes to 13.6% of CO2 emissions produced in the EU by various means of transport (European Environment Agency June 2018).

The International Maritime Organization (IMO) has established SOx limits for marine fuels, as per the International Convention MARPOL Annex VI: Regulation for the prevention of air pollution from ships.

SOx limits in fuels have come into force under the MARPOL Convention33 to prevent air pollution from ships: emission controls apply to all fuel, combustion equipment and on-board devices. They include both main engines and all auxiliary engines together with such elements as boilers and inert gas generators (IMO, 2016c).

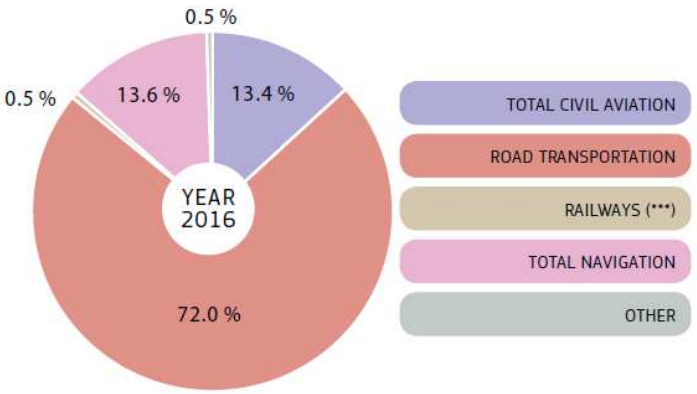
To comply with the regulations, the 5 main options for operators are the following:

- use of MDO (Maritime Diesel Oil) with 0.1% SOx
- retrofit so-called "scrubbers (combustion exhaust gas filters)
- adapt the vehicles to cleaner fuels such as LNG (liquefied natural gas) or methanol, which allow a 99% reduction in SOx and Particulate emissions (PM).
- Purchase CNG gas vehicles (compressed natural gas)
- Use electric propulsion (in battery or hybrid forms) as an alternative for short distances

CO_2 Emissions from Transport 3.2.12
EU-28 – BY MODE (SHARES %)

INCLUDING INTERNATIONAL BUNKERS

	TOTAL CIVIL AVIATION	Civil Aviation (domestic) (*)	International Bunkers – Aviation	ROAD TRANSPORTATION	RAILWAYS (***)	TOTAL NAVIGATION	Navigation (domestic) (*)	International Bunkers – Maritime Transport	OTHER TRANSPORTATION (****)	TOTAL TRANSPORT (*****)	TOTAL EMISSIONS (**)
1990	8.7	17.1	82.9	74.7	1.4	14.7	21.4	78.6	0.6	20.4	100
1995	9.8	15.0	85.0	75.1	1.0	13.7	21.1	78.9	0.5	23.2	100
2000	11.6	14.7	85.3	73.0	0.8	14.0	16.9	83.1	0.6	26.2	100
2005	11.9	13.1	86.9	71.8	0.6	15.0	14.3	85.7	0.7	27.3	100
2010	12.2	12.0	88.0	71.5	0.6	15.2	13.2	86.8	0.6	28.7	100
2011	12.6	11.7	88.3	71.1	0.6	15.2	12.0	88.0	0.5	29.5	100
2012	12.8	11.1	88.9	71.5	0.6	14.6	12.2	87.8	0.5	29.0	100
2013	12.9	10.3	89.7	72.0	0.6	13.9	11.9	88.1	0.6	29.3	100
2014	13.0	9.9	90.1	72.4	0.5	13.6	11.8	88.2	0.5	30.9	100
2015	13.1	9.8	90.2	72.4	0.5	13.5	12.2	87.8	0.5	31.1	100
2016	13.4	9.6	90.4	72.0	0.5	13.6	12.1	87.9	0.5	32.1	100



Notes: (*) Excluding International Bunkers (international traffic departing from the EU).
(**) Including International Bunkers and Indirect CO_2 but excluding LULUCF.
(***) Excluding indirect emissions from electricity consumption.
(****) Combustion emissions from all remaining transport activities including pipeline transportation, ground activities in airports and harbours, and off-road activities.
(*****) Total transport share in total emissions.

Source: European Environment Agency (EEA), June 2018

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The MDO has very high costs, higher from 35 to 50% compared to the IFO (Intermediate Fuel Oil) and low SOx fuel (1%) and for this reason many operators have

decided to adopt scrubbers. LNG, widespread in Northern Europe throughout the ECA area, is struggling to spread in the Mediterranean basin, where there is yet no sufficiently large network of bunkering stations to allow operators to refuel at a variety of ports.

2.2.3. Final considerations

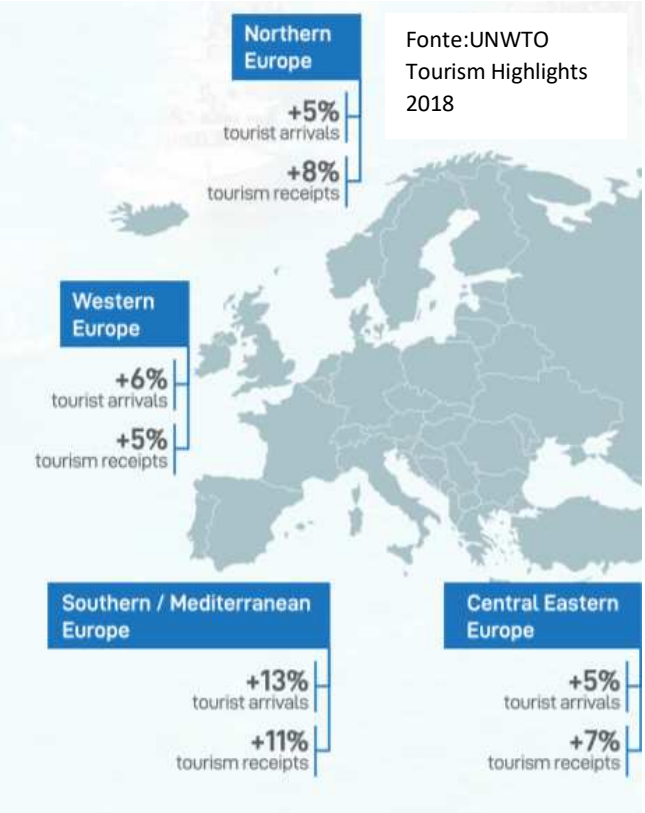
The connections with fast ferries and boats such as hydrofoils and catamarans are an attractive transport model and can be the right answer to a specific question, however they remain a sensitive sector susceptible to market variations and other factors that limit its performance with respect to other competing methods.

One of the major limitations of transport by sea is determined by the connections to the port of origin and the port of departure, which often require transit connections to reach specific destinations on land, with different changes of means to reach the final destination, making it less efficient the service, especially if one or more alternatives are present.

Overcoming these limitations by ensuring a high frequency, which can allow for lower costs per way, is often not a viable hypothesis, and the price factor has a significant impact, especially when both at the origin and destination one operates on smaller airports, with relatively small potential user pool.

However, there are new elements of positivity, which derive from technological and non-technological innovations, which can be summarized as follows:

- tickets sold and the availability of offers have become more transparent for users, thanks to online ticketing
- many shipping companies have formed alliances with ground-based service operators to offer packages that include transportation links, hotels and tourist attractions in order to promote the business.
- a more advanced management of customer relations has increased total revenues, also through active marketing activities and accessory services offered on board
- loyalty programs introduced by some operators offer discounts on various routes.



Fonte:UNWTO Tourism Highlights 2018

- Revenues from a range of other services sold by operators are used to cross-subsidize lines (e.g. other services are sold at higher prices to compensate for losses due to low "economy" rates (Kapsa and Roe, 2006)
- slowly increases the use of cleaner fuels and the adoption of technologies that reduce the environmental impact of maritime transport

Southern Europe is the area that has the highest growth rate of tourist arrivals and tourism revenues in 2017, with Italy and Spain registering an increase in arrivals of more than 6 million each.

It is therefore considered essential to carefully check, from the perspective of the customer / passenger, and in consideration of what has been described, whether the establishment of new connections between Italy and Croatian ports are functional to make up for a potential transport demand that may have a continuity and relative stability over time.

An important factor in the success of these types of connections is the good port infrastructure, adequate passenger service and availability of transport services to nearby cities, organized in a professional and careful manner.

2.3. Characteristics and dynamics of maritime passenger transport in the Adriatic

In the Adriatic Sea there are more than 40 ports that provide passenger transport services with ferries, hydrofoils and other fast boats, 10 of which are particularly relevant for international traffic. The sector showed positive signals in 2018, which is estimated to be confirmed also for the year 2019.

In fact, the 2018 data show 19 million boardings and disembarkements in 30 Adriatic ports per and of these 6 million with reference to routes that connect different Member States.

Montenegro is the country that has most recently benefited from the increase in traffic, especially of cruise ships, but also the regions of Šibenik and Zadar have seen an increase in total traffic to their main ports, unlike what happened for the ports of Emilia-Romagna, Kras and Istria, which have suffered declines in passenger traffic, mainly due to the reduction of fast connections between the two shores of the Adriatic.

According to the 2016 analysis carried out by Shippax, despite the increase in the fleet of ferries in the Mediterranean, data on orders for new RO-PAX ferries and the financial performances of the major European operators indicate a modest recovery in the sector, which is characterized by more and more as freight transport, due to the conversions and refit carried out by shipowners, which could indicate a low marginality of passenger transport compared to the transport of vehicles with goods in charge.

The 10 leading ports of the Adriatic Sea for passenger traffic recorded about 6 million passenger transports on transnational routes to destinations in Italy, Croatia, Albania, Montenegro and Greece (2018)

2.3.1. Lines in Adriatic and reference ports

Many ferries, hydrofoils and fast catamarans connect in the horizontal and vertical ports of the Adriatic, with routes that have both commercial, tourist and seasonal characteristics.

It is evident that Italian and especially Croatian domestic routes are the exclusive preserve of national operators.

Collegamenti di traghetti e mezzi veloci in Adriatico e numero di tragitti sulle linee

Fonte: Risposte Turismo 2019 Adriatic Sea Turism Report

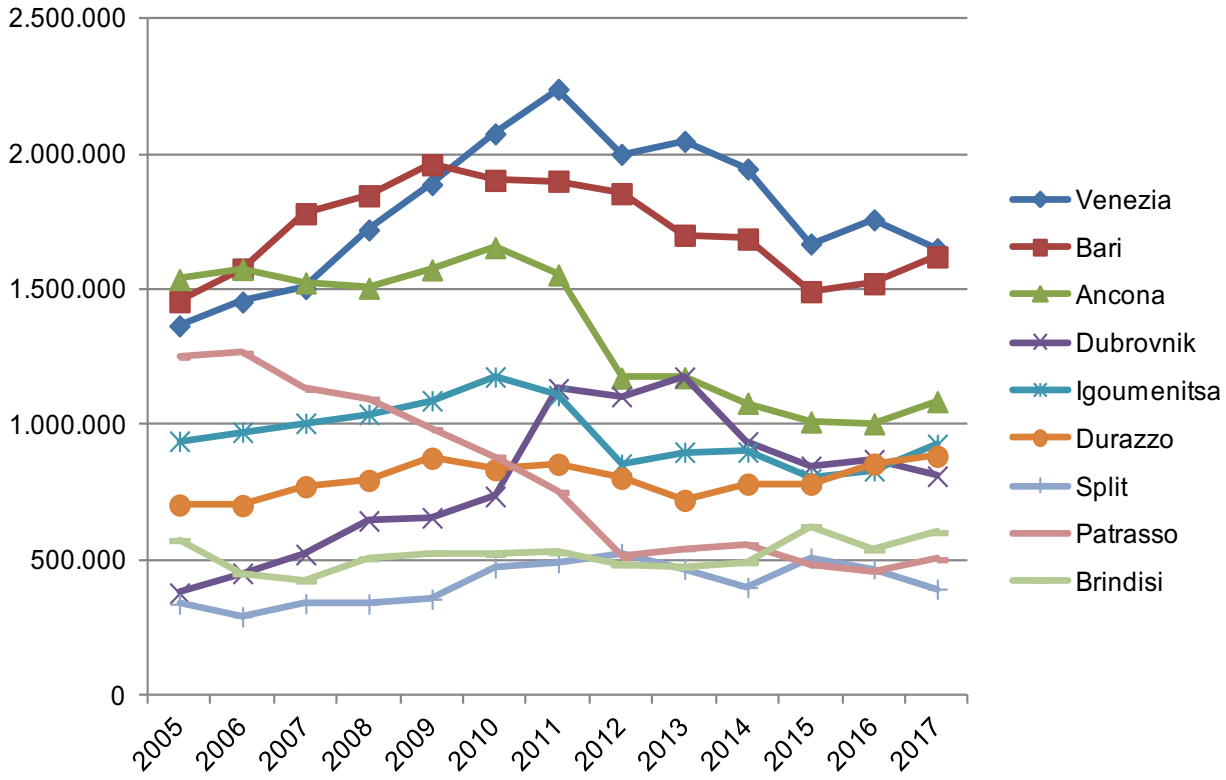
In this picture emerges a particular dynamism of the hydrofoil and fast catamaran operators, but some lines do not have continuity of service over the years, a circumstance that could indicate a poor profitability of the line in the presence of fluctuations in demand or other endogenous and exogenous market variables .

The Italian ports with the most frequent routes with the other shore of the Adriatic are Venice, Bari, Ancona and Brindisi, while Ravenna is characterized exclusively by RO-RO transport.

In 2019, high-frequency routes were also carried out for the Albanian ports of Durazzo and Vlore, as well as the Greek ports of Igoumenitsa, Patras and Corfu, and the new line between Bari and Bar da Jadrolinja was launched.

The following graph shows the data for the period 2005-2017, including cruise ships, which shows a recovery trend for all ports, with the exclusion of Venice, Dubrovnik and Split, after the decline in the 2008-2015 period which has the Italian and Greek ports were hit the most.

Totale Passeggeri - traghetti e crociere – Porti principali

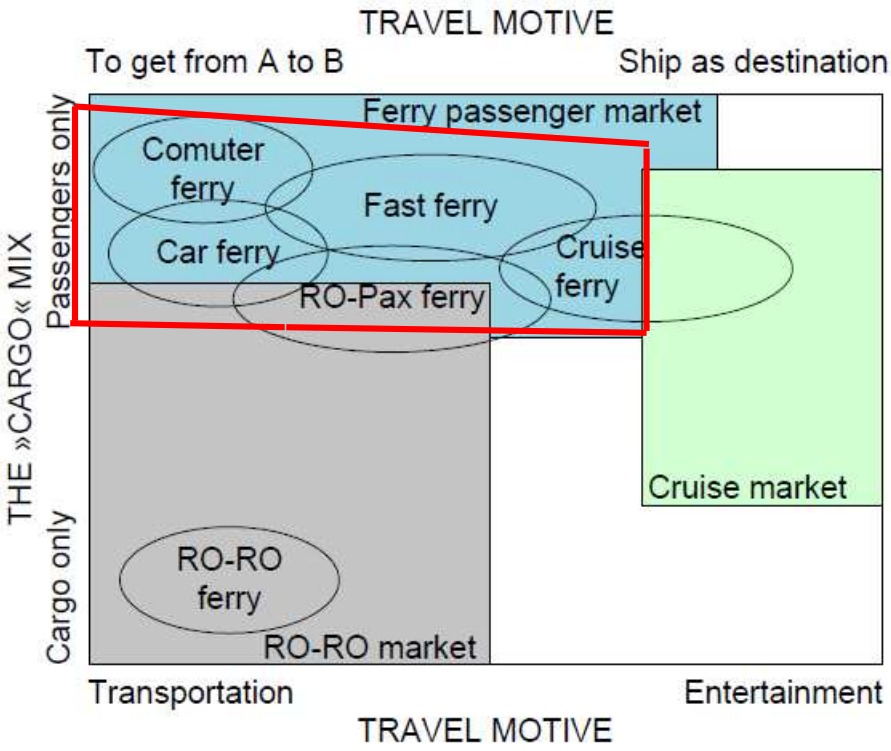


Fonte: AIC Forum report sul Traffico Marittimo nell'area Adriatico- Ionica

2.3.2. Characteristics of maritime passenger transport demand between Italy and Croatia

In the general context of passenger traffic in the Adriatic Sea, for the purposes of this study, we proceeded with a contextualized analysis restricted to international passenger traffic between Italy and Croatia, as better identified and specified by the types of transport and reasons included in the inside the red line of the graph, which is characterized by:

- the exclusion of cruise ship passenger traffic and RO-RO traffic
- a specific focus on fast transport between the two shores of the Adriatic



Fonte: (Wergeland, 2012)

The main evidence and results of the analysis are reported below, starting from the historical data of passenger movement, the evolution of demand over the last decade and other evidence provided by different series of traffic data and processing carried out by the following projects and organizations:

- EA Seaway
- MOSES
- Risposte Turismo
- AIC
- Eurostat

to arrive at conclusions regarding:

- Emerging trends
- Kind of traveller and passenger and type of trips
- main reasons for choosing this type of transport
- seasonality

The results of this analysis form the basis on which to formulate future demand forecasts for the cost-benefit analysis, useful for providing an expected forecast for the medium-term sustainability of fast connections between Termoli and Croatia.

We proceed with the identification of the main ports active in passenger transport in Italy and Croatia, to then present quantitative details of the movements recorded in recent years and carry out investigations that provide a reasoned and specific picture of the status quo and future potential of direct connections between Italian ports and Croatian ports of direct interest for this study.

2.3.3. International ferry and other passenger traffic from Italian and Croatian ports

In order to elaborate hypotheses and demand scenarios for connections between Termoli and Croatia, it is useful to start from the representation of ports that carry out passenger traffic on an annual and seasonal basis, remembering that Croatian ports perform more local and national service than is the case for the major Italian ports of the Adriatic.

The differentiation between operational ports throughout the year in passenger transport with ferries and those active only in the "high season" tourist period, provides useful indications on which ports of origin and destination are characterized by a high seasonality of this type of services.

Port available all year long	Italy	Croatia
	Trieste, Venezia, Ravenna, Ancona, Bari, Brindisi	Umago, Poreč, Rovigno, Pola, Raša/Bršica, Fiume, Lussino, Zara, Šibenik, Spalato, Ploče, Korčula, Ubli, Cavtat e Dubrovnik
Seasonal ports (from 1st of april to 31 october)	Cesenatico, Civitanova Marche, Otranto, Rodi garganico. Termoli, Vasto	Novigrad, Sali, Božava, Primošten, Hvar, Stari Grad (Hvar), Vis, Komiža, Cavtat, Vela Luka

The following tables show the Eurostat quarterly passenger traffic data recorded by the main Italian and Croatian Adriatic ports, despite Italian data being updated as at 31/12/2017, while Croatian data is updated to the first quarter of 2019.

In order to partially compensate for this temporal inhomogeneity and at the same time provide greater detail and better comparability of data on an annual basis, steps were taken to process passenger movement data for Italian ports in the Adriatic, with details of the total number of embarkations and disembarkations, including changes for the year 2018 over the previous year, with the exception of cruise ships.

Passengers flows from/to Italian ports 2015-2017

Porto *(in Migliaia di pax)*	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4
Italia	17.459	6.003	4.632	8.441	16.462	5.779	4.221	10.611	17.971	6.086
Ancona	553	113	87	190	554	122	89	203	614	127
Bari	522	154	125	156	402	121	120	172	500	159
Brindisi	187	89	52	55	225	91	80	93	219	78
Termoli							5	55	144	8
Tremiti	156	8					5	59	163	8
Venezia	150	15	11	53	151	70				

Source: Eurostat 2019

Passengers flows from/to Italian ports trough ferries 2015-2017

	January - December 2017		January - December 2018		DIFFERENce Pax Ferries	
	TOTAL PAX		TOTAL PAX		Totale	%
Port	locali (< 20 miglia)	Traghetti	locali (< 20 miglia)	Traghetti	Pax traghetti	Pax traghetti
Ancona	0	1.038.553	0	1.084.235	45.682	4,40%
Bari	0	1.222.940	0	1.180.169	-42.771	-3,50%
Trieste	0	27.328	0	42.724	15.396	56,34%
Pesaro	0	0	0	10.710	10.710	
Ravenna	0	1.451	0	1.252	-199	-13,71%
Venezia	99.703	104.294	100.069	108.533	4.239	4,06%
Brindisi	0	492.113	0	532.872	40.759	8,28%

Source: Port Authorities

Passengers flows from/to Croatian ports 2015-2017

Port	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019 Q1
Croatia	**1.864**	**1.356**	**3.976**	**8.375**	**1.888**	**1.369**	**4.294**	**8.718**	**1.999**	**1.440**
Biograd na Moru	68	60	119	296	66	55	127	295	68	63
Cres	194	139	484	901	199	151	527	913	206	156
Dubrovnik	103	38	357	777	117	30	374	827	130	33
Hvar	47	30	139	316	49	21	186	423	61	27
Jablanac	133	92	430	1.073	136	97	474	1.064	145	112
Korcula	132	100	239	600	139	105	270	614	148	107
Krk	150	111	351	638	159	123	383	653	164	128
Makarska	45	28	134	383	49	28	140	380	51	30
Novalja	52	38	211	572	48	37	226	574	55	46

Ploce	37	28	80	220	38	30	82	215	41	32
Porec	10	0	56	160	11	0	58	157	14	0
Preko	328	294	451	724	324	283	451	737	323	294
Pola	55	20	168	231	58	21	173	248	62	20
Rab	102	69	272	642	108	75	304	631	111	83
Rabac	45	27	160	365	43	28	171	357	45	27
Rogac	63	53	95	174	65	53	103	174	65	56
Rovigno	3	:	10	38	1	:	17	59	4	1
Sibenik	60	37	139	286	60	34	154	276	62	37
Spalato	594	441	1.117	2.190	591	445	1.212	2.369	625	452
Stari Grad	96	70	197	447	102	79	193	367	105	79
Sucuraj	32	21	88	240	36	22	92	235	38	23
Supetar	297	227	518	913	286	223	519	899	288	220
Trogir	14	11	28	57	15	11	41	95	17	12
Trpanj	37	28	80	219	38	30	82	215	41	32
Vela Luka	:	:	:	:	:	30	64	138	39	30
Vis	38	29	70	154	42	28	73	159	39	31
Zara	378	333	542	960	372	322	551	980	375	336

Source: Eurostat 2019

The routes carried out on an annual basis are often domestic ones in Croatia, and passengers with international destination or origin do not exceed 10% of total passengers.

Regarding connections with ferries, hydrofoils and fast catamarans with Croatia, the port of Split has already registered more than 300 connections in 2019, followed by Zadar, Dubrovnik and Rijeka.

2.4. Passenger traffic between Italy and Croatia: existing connections, competing routes and major operators

The Adriatic Sea registered almost 20 million passengers and over 91,000 touched for 2018, with an increase of 2.4% compared to the previous year, of which almost 50% generated by Croatian ports.

As for Italian ports, the total of movements increased by 1.8% and both the port of Bari and that of Ancona recorded more than 1,000,000 movements each, followed by Venice (210,000) and Brindisi (532.101), which however does not make connections to Croatia.

There are active ferry connections throughout the year almost exclusively on domestic routes, while fast buses serving mainly international routes are predominantly seasonal, such as the fast catamaran lines from Venice, which handle almost 100,000 passengers in summer to and from Croatian ports in Istria of Poreč, Rovinj, Pula and Umag.

In 2019, monohull speed lines were also inaugurated from Pesaro / Cesenatico to Rovinj, Lussino, Rab and Novalja and Trieste activated links with the main Istrian ports.

Passenger traffic in the Adriatic ports of Italy and Croatia 2018 (fast lines)

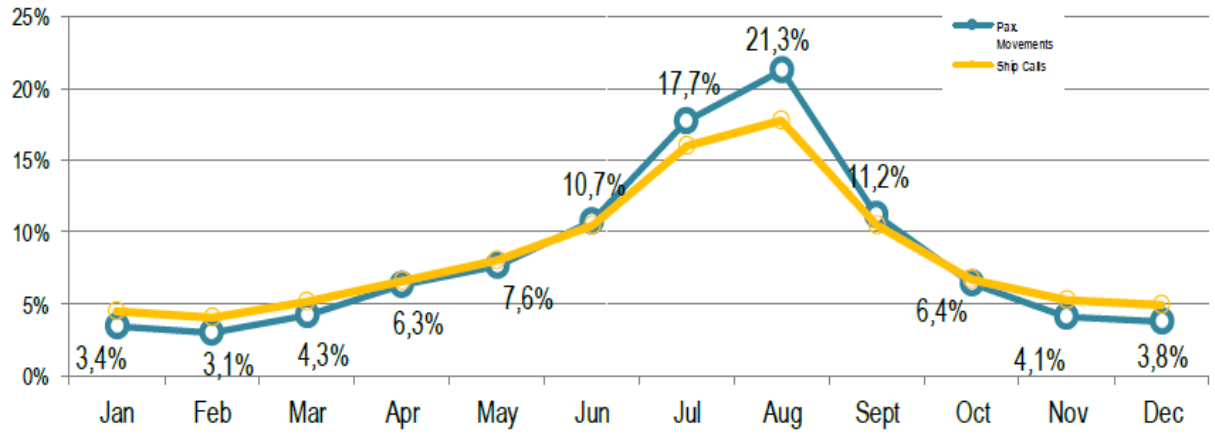
			Traffic 2018		% on total		Variation % on 2017	
	Port	**Country**	Passenger	Stops	Passenger	Stops	Passenger	Stops
1	Spalato	HR	4.886.663	13.615	38,3%	25,28%	1,4%	9,9%
2	Zara	HR	2.389.727	17.000	18,7%	31,56%	0,1%	-6,0%
3	Bari	ITA	1.180.169	2.278	9,3%	4,23%	-3,5%	0,9%
4	Korcula	HR	1.138.017	8.100	8,9%	15,04%	n/a	n/a
5	Ancona	ITA	1.084.235	1.232	8,5%	2,29%	4,5%	1,1%
6	Dubrovnik	HR	558.101	2.932	4,4%	5,44%	-2,0%	10,8%
7	Brindisi	ITA	532.872	1.823	4,2%	3,38%	8,3%	n/a
8	Sibenik	HR	290.266	3.028	2,3%	5,62%	3,0%	0,0%
9	Venezia	ITA	210.120	803	1,6%	1,49%	3,0%	42,1%
10	Termoli	ITA	190.327	737	1,5%	1,37%	-8,3%	3,3%
11	Fiume	HR	12.882	630	0,1%	1,17%	1,3%	1,3%
12	Porec	HR	82.218	491	0,6%	0,91%	-0,5%	-30,4%
13	Vieste	ITA	65.031	n/a	0,5%	n/a	n/a	n/a
14	Pola	HR	55.028	359	0,4%	0,67%	7,3%	26,9%
15	Other ports		76.463	831	0,6%	1,54%	-36,4%	6,1%
	TOTAL		**12.752.119**	**53.859**	**100,0%**	**100,00%**		

Source: *Adriatic Sea Tourism Report 2019*

The 2019 Adriatic Sea Tourism report shows that the most active port, namely Spalato, carried over 3.6 million passengers and the 985,000 lines and fast ferries in 2018; international ferry traffic has generated almost 500,000 passenger movements, accounting for about 10% of total passenger traffic, confirming what is shown by the analysis of the total movements of all Croatian ports, unlike what happens for Italian ports of Ancona and Bari and Venice.
From the reading of the data it emerges that the Croatian ports carry out lines at another frequency for most of the year with average shipping on national routes and high filling rates only in high season, while for the Italian ports of Ancona and Bari the average number of passengers per connection is almost double and is mainly characterized by trans-national transport.
In the context of Italian ports, the Port of Venice is an exception which, excluding cruise traffic not shown in the table above, mainly moves hydrofoils and boats with international passenger flows up to 350.

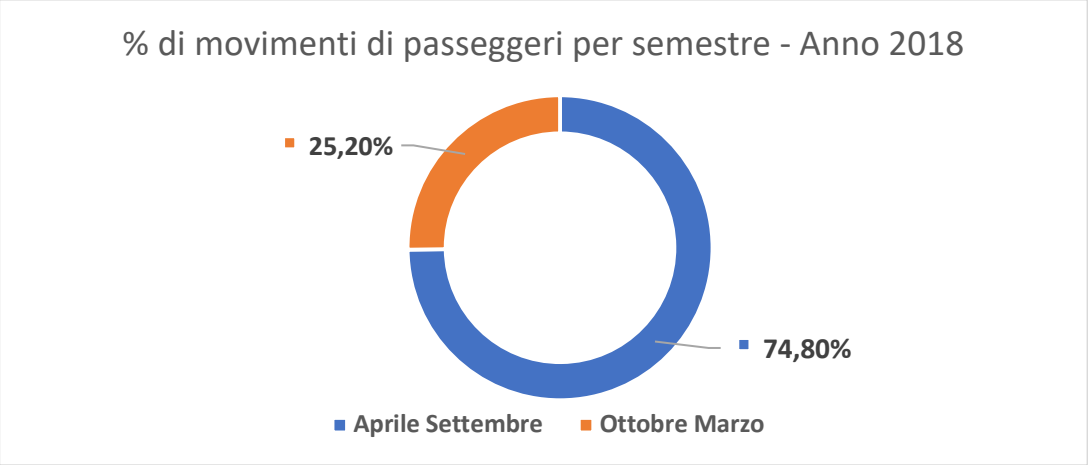
Regarding the distribution of passenger traffic in the different months of the year, the chart below shows the surveys for the year 2018 in Italian, Croatian ports and in the port of Igoumenitsa, with details of passengers (blue line) and touches (yellow line).
In the three months from June to August almost 50% of movements are recorded, which become 74.8% if we also consider the months of April, May and September.

Monthly distribution of 2018 passenger traffic generated by ferries and fast and touched ships



Source: *Adriatic Sea Tourism Report 2019 – Risposte e Turismo*

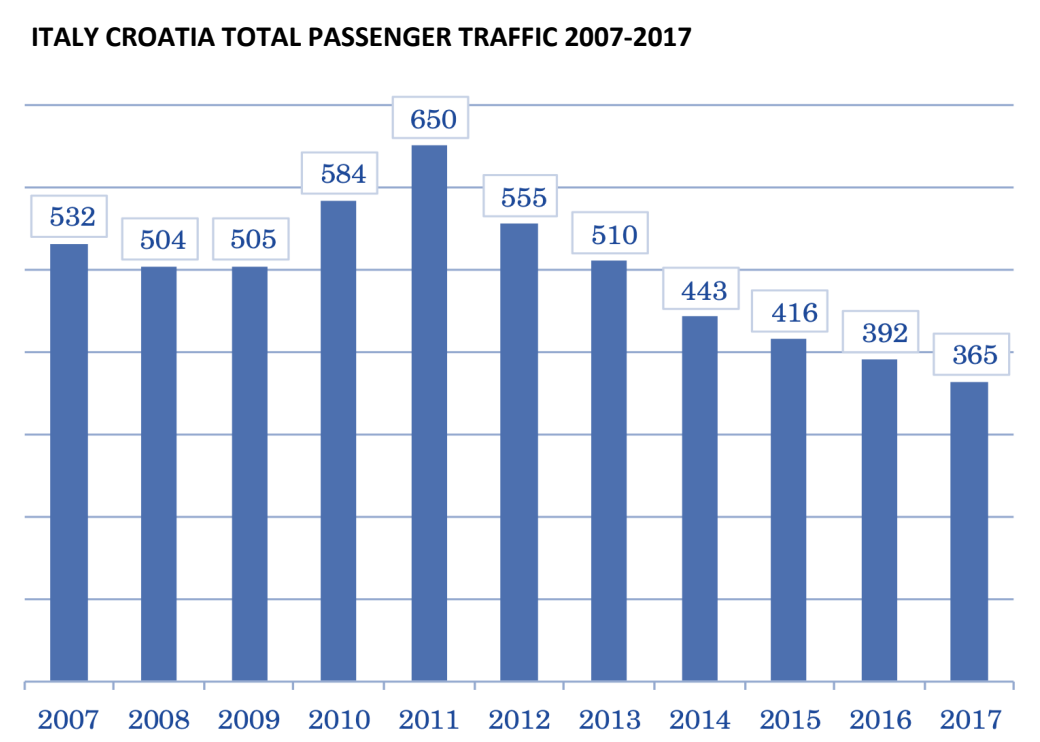
Although the statistics also include data from the Greek port, the representation is considered sufficiently representative of the highly seasonal component that characterizes this type of transport in the Adriatic Sea, which concentrates around 2/3 of the movements in a half and a half semester in the months between June and August, with traffic predominantly in the winter months, particularly with regard to Croatian ports.



Source: Adriatic Sea Tourism Report 2019

2.4.1. The situation in the south- central part of Adriatic

Analysing in detail the area of potential competition for the port of Termoli, which is mainly represented by the ports located along the Adriatic coast between Ancona and Bari, it emerges that the ports of Ancona and that of Bari move together more than 72% of passenger traffic between Italy and Croatia performed with ferries and high-speed boats.



PORTS	2010	2011	2012	2013	2014	2015	2016	2017
Ancona	62,4%	60,2%	61,3%	64,3%	58,5%	60,6%	58,2%	56,5%
Bari	16,9%	19,1%	19,6%	17,5%	20,9%	18,8%	17,9%	16,1%
Venezia	17,2%	17,1%	18,4%	18,2%	20,6%	20,6%	23,9%	27,3%
Other ports	3,5%	3,6%	0,7%	0,0%	0,0%	0,0%	0,0%	0,0%
TOTAL	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**	**100,0%**

Source AIC Forum

In detail, the passengers transited from the port of Ancona, in 2018, were 1,151,266, + 6% compared to 2017. Passenger traffic on ferries is growing, with 1,084,235 transits (+ 14%, in two years) which indicate that Greece remains the leading director of the airport, representing 71% of ferry traffic. Traffic with Croatia is the second most important and has a total of 221,446 passengers, 20% of the total, and generally stable.

Ancona Port	**2016**	**2017**	**2018**	**18 vs 17**
	TOT 2016	**TOT 2017**	**TOT 2018**	**%**
Passenger GREECE	647.213	761.624	771.874	1%
Passenger CROATIA	**228.565**	**206.051**	**221.446**	**7%**
Passenger ALBANIA	73.465	70.197	90.832	29%
Passenger ITALY	1.742	681	83	-88%
TOT PASSENGERS	950.985	1.038.553	1.084.235	4%
FERRY	10.896	11.118	12.854	16%
FERRY *(transit)*	44.005	40.968	54.177	32%
TOTAL PASSENGERS	**1.005.886**	**1.090.639**	**1.151.266**	**6%**

Source: Port of Ancona

Regarding the Ports of Bari and Venice, the historical series do not provide details of the destination of passenger traffic, but exclusively differentiate between local traffic <20 miles and medium-range traffic> 20 miles. The passengers transported on medium-haul routes in 2018 were 1,180,000 for Bari and 108,000 for Venice for destinations mostly Croatian and Greek.

The port of Pesaro has enlivened 10,710 passengers, almost all with destination Croatia.

Summarizing the results of the analysis of passenger transport demand with ferries and fast vehicles (hydrofoils and catamarans) in Italy, Croatia and the EU has remained substantially stable over the last 10 years. The 2018, without considering the internal routes, sees the confirmation of the first place of Croatia among the countries of the Adriatic area (9.56 million passengers handled, + 0.7% on 2017, equal to 48.4% of the total in the area) and the third from Italy (3.29 million, + 1.8% on 2017, equal to 16.7% of the total) preceded by Greece (5.39 million, + 7.0% on 2017, equal to 27.3% of the total).

2.4.2. Existing connections and potential competition

The routes with fast vehicles between Italy and Croatia have mainly the following characteristics:

- seasonal character
- tourist motivation
- pricing in line with the competition on existing Italy-Croatia lines in the absence of public contributions
- maximum distance 120 nautical miles
- prevalent use by Italian tourists or departing from Italy (the lines to and from Venice register a percentage of non-Italian travelers above average)
- discontinuity over time and of operators

Fast maritime connections are active in the 2019 season as follows:

- from Venice to various destinations in Istria and to the Island of Losinj operated by 2 catamarans
- from Cesenatico and Pesaro to Istria, Lussino, Hvar, Zara, Novalja and Rab operated by a monocarena.
- from Trieste to various destinations in Istria and Lošinj

All lines are seasonal with frequencies that vary during the season, which extends from April to the first week of October. Departure times and weekly trips vary depending on the operator and the specific connection.

The operators are:

- Liberty Lines
- Venezia Lines
- Gomo Viaggi
- Atlas

GS Travel, which was supposed to guarantee the Termoli-Ploce and Termoli-Hvar line, did not start the scheduled service.

The consolidated operators in the sector are Liberty and Atlas, while the line from Pesaro-Cesenatico is operated by a small entrepreneur.

The only links with stability and historicity in recent years are those between Venice and Istria, those from Trieste and Pesaro-Cesenatico were established in 2018.

The stability and historicity of the connections from Venice is partly assured by the demand present in the market in all the two directions, namely from Venice to Croatia and vice versa, given the tourist attractiveness of the city of Venice, which attracts Croatian tourists or foreign tourists in stay for holidays in Croatia to the Venetian city.

The line from Trieste also aims to attract tourists from Istria and given the historical and economic-social ties between the two areas, it is possible that the operation will achieve its objective by guaranteeing good employment on the operational routes.

The other past and current connections are instead characterized by the presence of travelers who originate almost exclusively from Italy and who make the round-trip journey, with all the implications that this type of connection entails.

The maximum distances per single section are around 4 hours with peaks up to 5.

It should be noted that in the stretch of coast that runs from Ancona to Bari, there are currently no fast connections to Croatia and therefore there is currently no potential direct competition in the central-southern Adriatic to a Termoli-Croatia line.

In Adiratico south central are active ferries instead, operated by Ancona operated by Snav and Jadrolinja towards Split, Zara, Stari Grad (Hvar) and from Bari to Dubrovnil with cadences ranging from 1 to 5 trips a week.

This type of connection is a competitor with a potential fast Termoli-Croatia service, especially for travellers who intend to travel to Croatia or Italy for periods longer than 5 days, considering journey times and boarding and disembarkation.

For information, it should be noted that there are connections from Termoli, Peschici, Rodi Garganico and Vieste both fast and with ferries, with destination to the Tremiti Islands.

For a complete overview of all existing connections, the main links available in August 2019 and their main features are listed in the Tables of the following pages.

CONNECTIONS fast boats ITALY-CROATIA

CONNECTIONS WITH HIGH SPEED CRAFTS ITALY-CROATIA

Departing port	Arrival port	Distance (Nautical miles)	Travel time	€/mile	Average speed	Period	Frequency	Type of boat	Passenger capacity	Vehicles	Tariff range (one way)	Tariff range (round way)	Port taxes	Operator
Trieste	Pirano	11,34	2hr-2hr15-0hr40	0,79	30	29 giugno -29 settembre	**6/week**	Monocarena Sofia M	206	10 bici	9	14		LIBERTYlines
Trieste	Parenzo	25,92	1hr10-1hr45	0,62	30	29 giugno -29 settembre	**4/week**	Monocarena Sofia M	206	10 bici	16	25		LIBERTYlines
Trieste	Rovigno	47	1hr40-2hr30-2hr	0,45	30	29 giugno -29 settembre	6/week	Monocarena Sofia M	206	10 bici	21	32		LIBERTYlines
Trieste	Lussino piccolo	112	4hr05	0,31	30	29 giugno -29 settembre	2/week	Monocarena Sofia M	206	10 bici	35	53		LIBERTYlines
Venezia	Pirano	60	2hr30	1,15	38-42	27/04-05/10	1/week	Catamarano San Pawl/ San Frangisk	310		69-74	138-148	19	VENEZIA LINES
Venezia	Parenzo	50,6	2hr45	1,17	38-42	27/04-06/10	04/1-05/4-06/6-07/7-08/7-09/6-10/3	Catamarano San Pawl/ San Frangisk	310		59-84	118	19	VENEZIA LINES
Venezia	Rovigno	60	2hr45	0,98	38-42	27/04-06/10	04/1-05/4-06/7-07/7-08/7-09/7-10/3	Catamarano San Pawl/ San Frangisk	310		59-84	118	19	VENEZIA LINES
Venezia	Pola	69,2	3hr15	0,88	38-42	giugno-settembre	06/2-07/4-08/4-09/1	Catamarano San Pawl/ San Frangisk	310		61-86	122-172	19	
Venezia	Pola	69,2	3	0,94	36	27/4-06/10		Catamarano Adriatic Jet	343		65	130		ATLAS
Venezia	Parenzo	50,6	3hr30	1,28	23	27/4-06/10		Catamarano Prince of Venice	303		65	130		ATLAS
Venezia	Umago	50	3hr30	1,30	23	27/4-06/10		Prince of Venice	303		65	130		ATLAS
Venezia	Rovigno	60	2hr30	1,08	36	27/4-06/10		Adriatic Jet	343		65	130		ATLAS

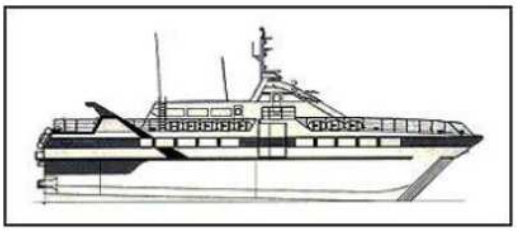
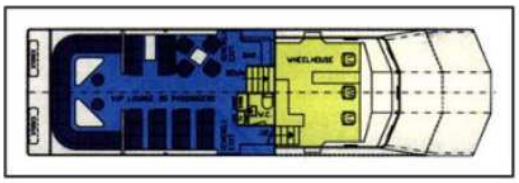
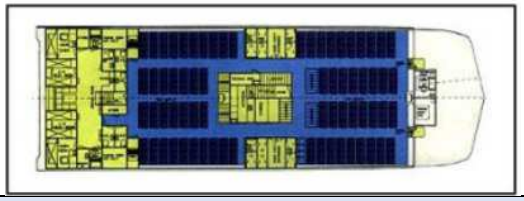
Departing port	Arrival port	Distance (Nautical miles)	Travel time	€/mile	Average speed	Period	Frequency	Type of boat	Passenger capacity	Vehicles	Tariff range (one way)	Tariff range (round way)	Port taxes	Operator
Venezia	Umago	50	2hr30	1,38	38-42	giugno-agosto	06/1-07/1-08/1	Catamarano San Pawl/ San Frangisk	310		69-74	138-148	19	
Cesenatico	Lussino	94	5h	0,74	35	Aprile Settembre	Varia (04/2-05/1-06/1-07/0-08/1-09/2)	Don Paolo-Monocarena	374	0	70-90	130-160	15	
Cesenatico	Novalja	111	7h	0,72	35	Aprile Settembre	07/3-08/4	Don Paolo-Monocarena	374	0	80-100	145-180	15	
Cesenatico	Rab	117	5h	0,68	35	Aprile Settembre	07/8-08/9	Don Paolo-Monocarena	374	0	80-100	145-180	15	
Cesenatico	Rovigno	78	3h	0,77	35	Giugno-Settembre	07/6-08/8-09/1	Don Paolo-Monocarena	374	0	60-75	115-140	15	
Cesenatico	Zara	127	5h	0,59	35	Aprile Settembre	04/2-06/3-07/1-08/8	Don Paolo-Monocarena	374	0	75-95	135-170	15	
Pesaro	Lussino	84	3,5 h	0,83	35	Aprile Settembre	Varia (04/2-05/1-06/1-07/0-08/1-09/2)	Don Paolo-Monocarena	374		70-90	130-160	15	
Pesaro	Novalja (Pago)	101	5,5 h	0,79	35	Luglio-Agosto	07/3-08/4	Don Paolo-Monocarena	374		80-100	145-180	15	
Pesaro	Rab	107	5,5 h	0,75	35	Luglio-Settembre	07/8-08/9	Don Paolo-Monocarena	374		80-100	145-180	15	
Pesaro	Zara	115	4h	0,65	35	Aprile Agosto	04/2-06/3-07/1-08/8	Don Paolo-Monocarena	374		75-95	135-170	15	
Termoli	Hvar	103	4hr20	0,92	38	29/06-14/09	1/week cax-2019	Zenit - catamarano	300	0	95-123	178-220		
Termoli	Ploce	130	5hr45	0,69	38	Maggio e settembre/ottobre	1 week cax-2019	Zenit - catamarano	300	0	90	169		

CONNECTIONS ferries ITALY-CROATIA

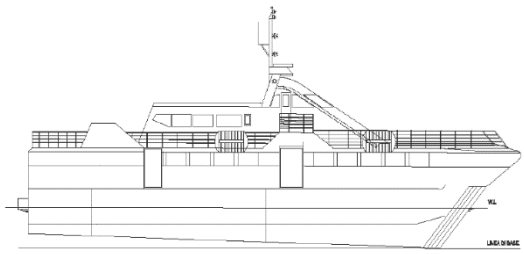
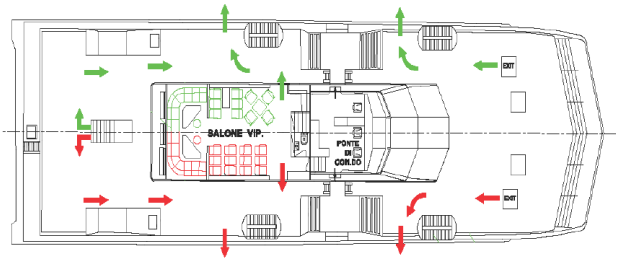
Departing port	Arrival port	Distance (Nautical miles)	Travel time	€/mile	Average speed	Period	Frequency	Type of boat	Passenger capacity	Vehicles	Tariff range (one way)	Tariff range (round way)	Port taxes	Operator
Ancona	Spalato	136	9hr-11hr	0,29	16,5	Aprile-Ottobre	4/week	Aurelia	2280	650	39,99	63-97		SNAV
Ancona	Spalato	136	11,15 h	0,26	23	Tutto l'anno	4/week	Marko Polo	1000	270	35-55	63-97		JADROLINIJA
Ancona	Stari Grad	138	14,15 h	0,28	23	Agosto	1/week	Marko Polo	1000	270	38-44	?	15	JADROLINIJA
Ancona	Zara	92	9h	0,82	17,5	03/06-21/09	2-5/week	Zadar	1053	280	75-97	135-175	15	JADROLINIJA
Bari	Dubrovnik	111	10h	0,72	20	16/04-02/11	2-7/week	Dubrovnik	1300	300	80-96	144-173	15	JADROLINIJA

2.4.3. High speed crafts operating on Italy-Croatia lines

2.4.3.1. San Frangisk e San Pawl

Name	**San Frangisk e San Pawl**
  	  
Caractheristics	
Type of boat	Catamaran with air cushion
Origin	AA Marine Brodrene – Hyen - Norway
Delivery	01/06/1990
Hull type	Single hull
Hull material	Composite
Lenght	34,43 mt
Width	11,30 mt
Draft	2,15 mt
Gross weight	395 tonn
Nert weight	140 tonn
Class	Det Nirske Veritas + 1A1-R90 LIGHT CRAFT
Capacity	
Passengers	320
Maximum speed	50
Average speed	38-42
Power Units	
Engine	2X1920 kW MWM TBD 604 V16X
Type of engines	2 waterjet variabili
Fan Engines	2 x 405 kW MWM TBD 234 V8
Consumption	900 lt/h

2.4.3.2. Zenith

Name	Zenith
  	  
Caractheristics	
Type of boat	Catamaran HSC
Origin	Eikeford Marine A/S -Eikeford - Norvegia
Delivery	1990
Hull type	Single hll
Hull material	Rinforced fiberglass
Lenght	36,35 mt
Width	11,30 mt
Draft	2,30 mt
Gross weight	391 tonn
Nert weight	140 tonn
Class	100 -A -1.1
Capacity	
Passengers	330
Maximum speed	40
Average speed	28-32
Power Units	
Engine	2X1690 kW MWM 4S 16cyl-Vee 170x195 Trp
Type of engines	2 waterjet
Fan Engines	2 x 405 kW MWM TBD 234 V8
Consumption	1100 lt/h

2.4.3.3. Don Paolo

Name	Don Paolo
  	
Caractheristics	
Type of boat	Monocarena HSC
Origin	Cantieri Navali Rodriquez Spa – Pietra Ligure - Italia
Delivery	1992
Hull type	TMV 47 Single hull
Hull material	Light aluminium
Lenght	47,00 mt
Width	7,60 mt
Draft	1,26 mt
Gross weight	391 tonn
Nert weight	149 tonn
Class	100 -A (UL) -1.1
Capacity	
Passengers	340
Maximum speed	34
Average speed	28
Power Units	
Engine	2X1690 kW MTU 396 TE 74LS 16cyl-Vee 165x185 Trp
Type of engines	2 waterjet Steerable Kamewa
Fan Engines	n.d

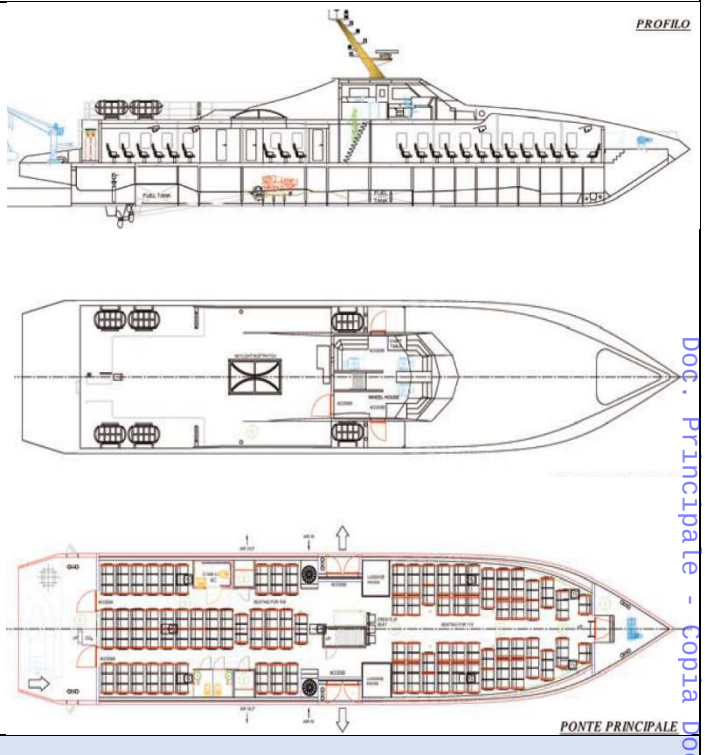
2.4.3.4. Adriatic Jet

Name	**Adriatic Jet**
  	
Caractheristics	
Type of boat	HSC M1 AUT 3
Origin	Iris Catamaran, La Rochelle Pallice France
Delivery	2001
Hull type	Single hull
Hull material	Steel
Lenght	42,80
Width	10,60
Draft	1,68
Gross weight	339 ton
Nert weight	128 ton
Capacity	
Passengers	343
Maximum speed	36 nodi
Average speed	28 nodi
Crew	5
Power Units	
Engine	2 MTU x 2320 Kw
Type of engines	Water Jet
Consumption	n.d

2.4.3.5. Prince of Venice

Name	**Prince of Venice**
 	
Caractheristics	
Type of boat	Trimaran HSC
Origin	NORTH QUEENSLAND ENGINEERS AND AGENTS PTY. LTD. / CAIRNS Australia
Delivery	13/06/1989
Hull type	Single hull
Hull material	Aluminium alloy
Lenght	39,60 mt
Width	15,60 mt
Draft	2,0 mt
Gross weight	369 tonn
Nert weight	131 tonn
Capacity	
Passengers	303
Maximum speed	28
Average speed	23
Crew	
Power Units	
Engine	2 - MTU 16V 2000 M72/ 2 x 1.440 kw (tot. 2.880 kw)
Type of engines	2 - water jet
Consumption	n.d.

2.4.3.6. Sofia M

Name	**Sofia M**
  	
Caractheristics	
Type of boat	Monocarema HSC
Origin	Liberty Shipyard Trapani - Italia
Delivery	2010
Hull type	Single hull
Hull material	Light aluminium
Lenght	37,60 mt
Width	7,00 mt
Draft	2,30 mt
Gross weight	242 tonn
Nert weight	Tonn
Class	100 -A -1.1
Capacity	
Passengers	206
Maximum speed	31
Average speed	30
Power Units	
Engine	3X1080 kW Cartepillar C32 ACERT
Type of engines	3 fixed propellers
Consumption	900 lt/h

3. COST BENEFIT ANALYSIS

3.1. Forecast model of demand

Starting from the broad base of overall traffic data, the evidences already illustrated and considering the dynamics of maritime passenger transport, three scenarios have been developed for the years 2020-2029:

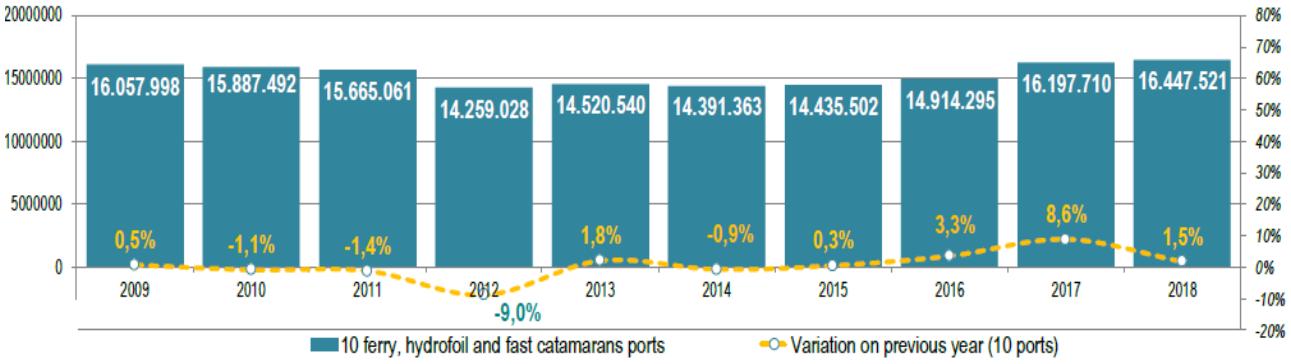
- A: **pessimistic:** passenger traffic decreases faster or increases more slowly than in the past
- B: **realistic** (basic scenario): passenger traffic follows the trend seen in recent years
- C: **optimistic**: passenger traffic decreases less or increases more than in the past

To calculate the variation in future demand, a prudential indexing factor is applied as follows:

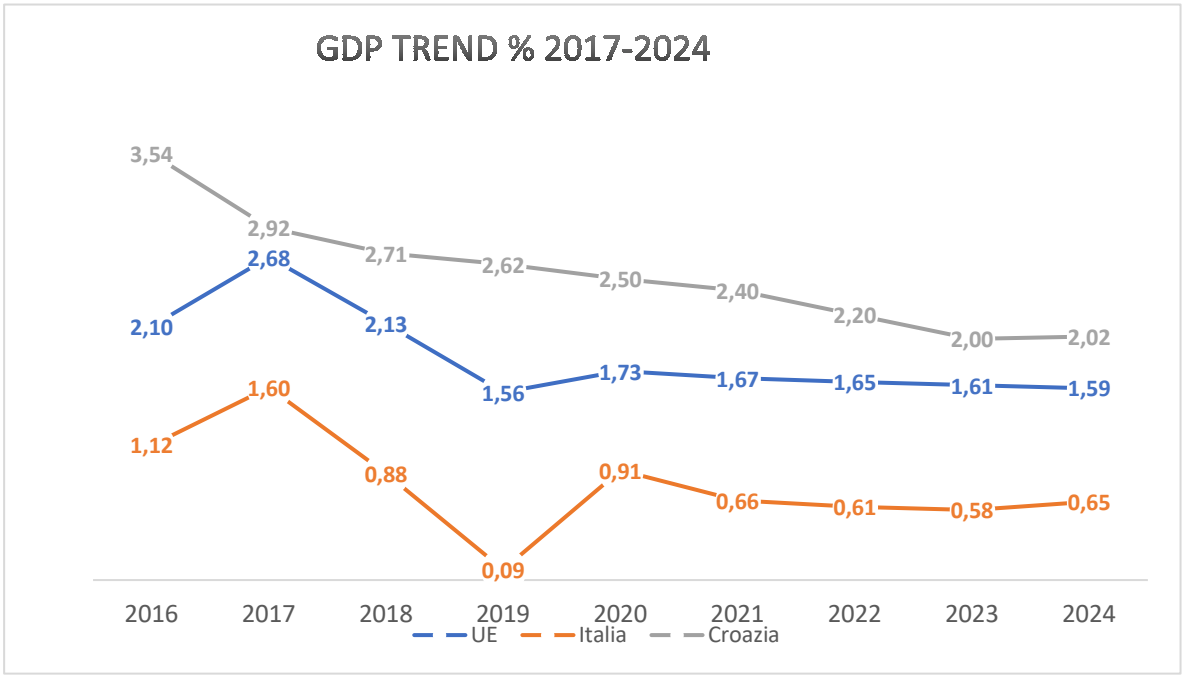
- we consider that the demand maintains a correlation with the GDP trend of the two countries (although there is a "delay" in the response of the demand to changes in GDP, an elasticity of 1 is considered), and since it is mainly traffic generated by Italian citizens and, to a lesser extent, Croatian citizens, the average of the GDP growth forecast for Italy is taken as reference. It is attributed to this a weight of 50%, for Croatia of 30%, and for the EU 20%, assigning to the so determined factor a weight of 70% on the indexing coefficient of the future demand.
- we assume an estimated traffic value based on 2020, to which an annual increase is calculated, based on the average increase in passenger traffic in the Adriatic in the last 5 years (with the exception of cruise passengers) in the 10 main ports (see following graphs), which is attributed a final weight of 30% in the indexing coefficient of future demand. This is in consideration of the volatility recorded in some years and the inhomogeneity of the available data.

For both parameters a demand elasticity of 1 is assumed.

Trend of passengers movemets in 10 Adriatic Ports 2009-2018 escluding cruises



Souce: Adriatic Sea Tourism Report 2019



Source: Own elaboration on data of World Economic Outlook – International Monetary Fund 2019

The calculation of the coefficient of variation of demand is determined as follows for the period 2020-2024:

Calcolo coefficiente previsionale domanda traffico passeggeri Italia Croazia

% incremento annuo PIL	2016	2017	2018	2019	2020	2021	2022	2023	2024
UE	2,10	2,68	2,13	1,56	1,73	1,67	1,65	1,61	1,59
Italia	1,12	1,60	0,88	0,09	0,91	0,66	0,61	0,58	0,65
Croazia	3,54	2,92	2,71	2,62	2,50	2,40	2,20	2,00	2,02
Media	**2,25**	**2,40**	**1,91**	**1,42**	**1,71**	**1,58**	**1,48**	**1,40**	**1,42**
Previsionale									
Media ponder,				1,14%	1,55%	1,38%	1,29%	1,21%	1,25%
Traffico effettivo	3,30	8,6	1,5	**2,56%**	media ultimi 5 anni				
Coefficiente previsionale					**base**	**1,74%**	**1,67%**	**1,62%**	**1,64%**

For the years after 2024 up to 2029 a linear progression of 1.5% is adopted instead.
The estimated initial demand for 2020 also takes into account, for the purposes of assessing potential traffic up to the year 2029, the capacity of the new connection to respond to the demand of a pool of users not only from Molise, and at the same time to subtract quotas of traffic to other modes of transport, in line with the recommendations contained in the 2011 White Paper on transport.

Based on historical observations, interviews with tour operators and meetings with maritime line managers, it emerged that the line could attract travellers, as well as from Abruzzo, Marche and Puglia, also from Campania (in particular the provinces of Benevento and Avellino) and Lazio. Given the considerable crowding towards the islands **of Ponza, Ischia, Capri and Stromboli**, and the difficulty of organizing travel and stay, the Croatian islands of Hvar and Korcula are a valid alternative destination, especially in the months of July and August

The prevailing travel motivation assumed is:

- **tourism or in any case attributable to the "leisure" sector**

Infrastructures supporting alternative methods to sea travel

As shown in the table below, investments in Adriatic countries in the railway and road sector, except for Italy, indicate that road congestion will increase in the coming years and this will contribute, together with air transport, to subtracting shares of movements to the road. The railway is not a real alternative, given the low level of development in Croatia, Slovenia and other Balkan countries.

The improvement of the connections to Termoli by rail with fast connections, by bus (local lines and Flixbus) increases the attractiveness and the convenience of the transport proposals from the port of Termoli, which can also be reached on foot from the railway station.

Investments in transport infrastructures (Source OECD 2019)

Marittimi

	2014	2015	2016
Albania	2 172 219.9	5 843 452.6	2 586 404.6
Croazia	69 682 760.1		
Grecia	24 807 145.1	20 435 543.4	8 814 449.1
Italia	1 168 000 000.0	1 059 000 000.0	615 000 000.0
Montenegro	19 000 000.0	7 000 000.0	1 000 000.0
Slovenia	23 000 000.0	16 000 000.0	25 000 000.0

Ferroviari

	2014	2015	2016
Albania	693 109.6	549 358.1	0.0
Croazia	130 720 666.4	60 021 013.9	44 329 418.0
Grecia	180 605 280.5	220 250 025.7	307 757 694.6
Italia	4 742 000 000.0	2 861 000 000.0	3 524 000 000.0
Montenegro			
Slovenia	270 000 000.0	376 000 000.0	84 400 000.0

Stradali

	2014	2015	2016
Albania	192 720 205.2	179 237 483.8	89 140 668.5
Croazia	279 516 936.1	238 376 674.5	197 358 816.1
Grecia	1 597 943 957.0	1 385 201 658.0	2 843 430 923.0
Italia	3 860 000 000.0	5 151 000 000.0	3 511 000 000.0
Montenegro	9 000 000.0	12 000 000.0	16 000 000.0
Slovenia	128 000 000.0	102 000 000.0	100 000 000.0

Aereoportuali

	2014	2015	2016
Albania	0.0	0.0	0.0
Croazia	77 934 665.9	139 742 579.5	175 857 721.1
Grecia	52 872 584.9	43 488 564.2	48 776 899.0
Italia	123 000 000.0	148 000 000.0	71 000 000.0
Montenegro		3 000 000.0	
Slovenia	1 000 000.0	1 000 000.0	0.0

To date, the connection by air transport **is not an alternative mode,** given the lack of connections to airports that can be easily reached from Termoli, as shown in the table below:

Air flights to Croatia

Flights Italy-Croatia summer 2019			
		CARRIER	**Flight time**
Bari	**Dubrovnik**	Volotea	1 ora 0 min
Napoli	**Spalato**	Easyjet	1 ora 5 min
Bergamo	Dubrovnik	Volotea	1 ora 35 min
Bergamo	Spalato	Volotea	1 ora 15 min
Bergamo	Zara	Ryanair	1 ora 15 min
Milano	Zara	Easyjet	1 ora 15 min
Milano	Dubrovnik	Easyjet	1 ora 30 min
Milano	Spalato	Easyjet	1 ora 20 min
Palermo	Spalato	Volotea; Croatia Airlines	1 ora 25 min
Roma	Dubrovnik	Vueling; Croatia Airlines; Alitalia; Iberia	1 ora 15 min
Roma	Spalato	Croatia Airlines, Vueling; Alitalia	1 ora 15 min
Roma	Zara	Vueling	1 ora 15 min
Venezia	Dubrovnik	Volotea; easyjet; Croatia Airlines	1 ora 20 min
Venezia	Spalato	Easyjet; Volotea	1 ora 05 min

The only Bari-Dubrovnik and Naples-Split routes shown in the table could constitute potential competing alternatives, but considering the distance of both airports from Termoli of about 200 km, reachable by rail with minimum journey times of 2h 15 min for Bari and 4h 22 min for Naples and the cost (Termoli Bari Palese cost 24 € Termoli Capodichino 52), these do not appear able to subtract significant quotas of potential demand to fast maritime transport. They are not a convenient alternative neither in terms of time nor in total cost, if not partly, due to the potential quota of passengers resident in Puglia and Campania (especially in the provinces of Foggia, Benevento, Avellino and Caserta) intending to travel to Split and neighbouring islands. As explained in detail below, the destination of Dubrovnik is not considered feasible as a fast connection considering the distance from Termoli.

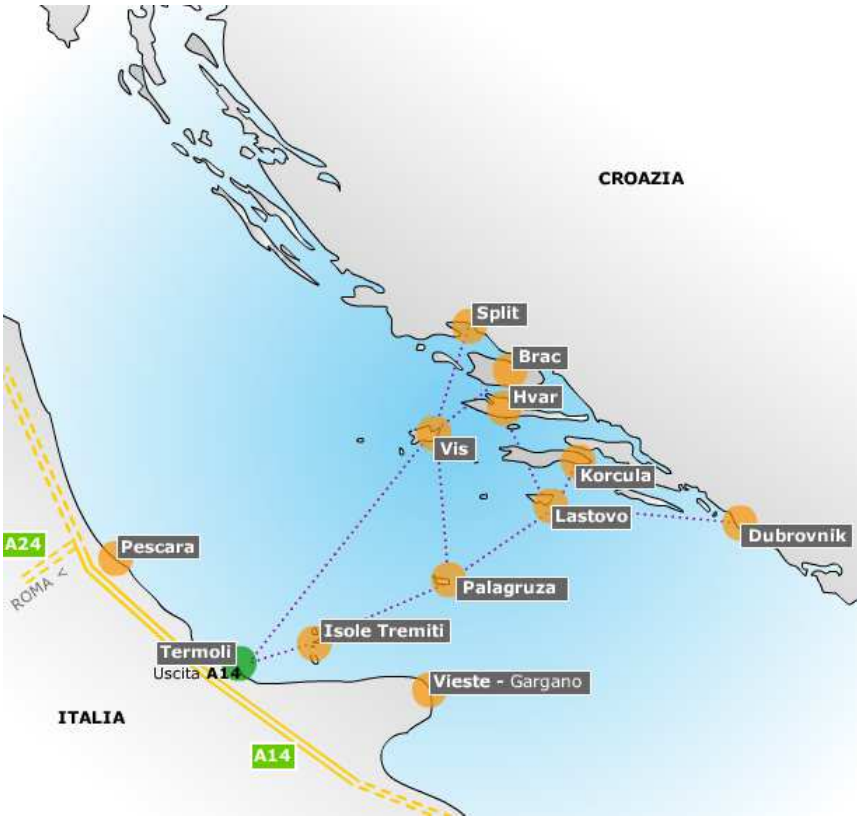
Should air connections be established from the airports of Pescara to Split, these could constitute an alternative, considering the trip continuation towards the islands with the connections of the Jadrolinja ferries.

<u>Some other numbers and trends to support the forecasting model</u>

- International traffic with ferries in the Italian Adriatic ports: 2018 + 2.56%
- Passenger movements from Ancona to Croatia 2018 + 7%
- The most complete forecasting econometric model (based on GDP and tourist arrivals) of traffic for Croatia foresees for 2025 an increase in the total number of maritime passengers for 2025 by 38.9% compared to 2013
- Increase in religious tourism towards the destination of Medjugorje

3.2. Connection proposal, options' analysis

It is believed that Northern connections with Croatia are not to be taken into consideration due to the excessive distance, and that the area of potential demand of Temoli should be compared with the competition of present and future connections from the Adriatic ports located in the direction that goes from Ancona in Bari (Ancona, Civitanova Marche, Pescara, Ortona, Vasto and Bari). From the recent information received, it seems that the port of Ortona is aimed at specializing exclusively in freight traffic. As illustrated in the analysis of existing connections and of competition, there is no maritime service capable of connecting the two shores of the Adriatic quickly along the coast from Ancona to Bari.



Distances

Following the comparison with operators in the sector, and the type of boat to be used, it is deemed necessary to take into consideration routes with a maximum length of 120 nautical miles, for the multiple reasons described in this study.

Target ports

Within this range, possible and potential tourist attractions are ordered from north to south:

- Spalato Split (Split) 118 mn
- Bol (Brac) 113 mn
- Lesina Hvar (Hvar) 98 mn
- Cittavecchia Stari Grad (Hvar) 108 mn
- Vis 91 mn
- Vela Luka (Korciula) 96 mn
- Corzula (Korciula) 118 mn
- Uble (Lastovo) 92 mn

Porto Tolero (Ploce) is 130 mn away but is believed to be less attractive for tourism purposes, given its poor connection to islands and areas of the country. It can instead be considered for organized trips to Medjugorje, which however is subject to the competition of current connections, more functional to the type of traveller and travel purpose.

Time available for travellers / users

It is considered that most potential target users stay in Croatia for 2-5 days, with few passengers who choose to come and go in a day and others who plan to stay in Croatia for more than 7 days.

Competitors

The port virtually competing for the indicated destinations is the port of Pescara, while from Ancona the distances towards the potential destinations identified are all greater than 130 nautical miles, and therefore difficult to carry out with a high-speed craft in the two directions on the same day.

The journey by car to Ancona and boarding the ferry to Spalato and then to Lesina (Hvar) or Kocula is a possible alternative for travellers who intend to stay in Croatia for a period longer than 5 days, compared to the entire trip. entirely with the car.

Destinations

The destinations of major tourist interest and with the best connections to the other islands and the mainland, and which have similar distances to Termoli are Lesina (Hvar) and Vela Luka (Korciula). Hvar is connected by local lines to Split, Brac, Korciula, Lastovo, Vis and Dubrovnik, while Vela Luka is connected with Split, Brac, Hvar and Dubrovnik.

Both destinations are under 100 miles and can be reached with 3 and a half hours of navigation. On the other hand, in the high season both ports are very crowded and there is a real risk of waiting in the harbour or being redirected to Stari Grad and Korcula.

The alternative to these can be constituted by the destinations of Vis and Lastovo, slightly closer than Lesina and Vela Luka (15-20 min less navigation), but smaller and with more limited connections and tourist attractiveness, but to be taken in consideration for any proposed return journeys during the day.

It is not considered that the destinations of Split and Ploce may represent an option to be considered, in the absence of situations or incentives that cannot be foreseen in the current state of affairs. Both are reachable by round trip in a day, but subjecting crew and vehicles to considerable stress, and increasing costs (around + 15%) and the risks of stops and delays.

The operating costs for the 4 suggested destinations vary only marginally, and therefore the combination, exclusion or substitution between them does not affect the results of the cost benefit analysis.

Suggested links / routes

In consideration of the above, for the formulation of the demand forecast, the following links were considered:

- **Termoli - Hvar** port of Lesina
- **Termoli - Kocula** port of Vela Luka

Based on the identified connection routes, a forecast model was developed that includes the following components:

- Frequency of connections
- Rates
- Total monthly occupancy rate by category of traveller

An equal average occupancy level was assumed for both hypothesized sections.

3.2. Demand forecast

3.2.1. Foreword

Contrary to what happens in other markets where extremely rapid changes can occur, transport systems slowly change due to the inherent strong barriers to change caused by the high intensity of capital required.
This reality models choices related to new capital investments, which determines medium-term rigidity and a series of industrial choices and socio-economic implications that have led to unexpected negative impacts (such as congestion, air quality in cities and climate change) and which present a so-called "inertia" and are now difficult to reverse.
Configuring and setting up a new maritime line with fast boats is a complex process, and requires sufficient reliability of demand forecasts for an operator to take it into consideration, while weighing at the same time some typical characteristics and criticalities such as:

- speed compared to cost and comfort
- service level with respect to cost
- seasonality

As emerged from the analysis of the demand carried out in the previous chapters, the transport by high speed craft boats in the Mediterranean and in the Adriatic in particular, if local-national lines are excluded, **is characterized by high volatility**, both in terms of existing connections and their regularity, and consistency over time.
It is **an interesting but limited market**, in which small operators often operate very small fleets and old generation vehicles characterised by a non-particularly virtuous cost and environmental performance.
As already pointed out, the statistical data also do not allow to obtain enough detail, especially for the smaller ports regarding the origin/destination of the movements, which does not allow to have a medium-term visibility on the main international traffic demand trends.

To develop traffic forecasts, some working hypotheses are defined, such as:

- Project impact area, necessary to limit traffic analysis and related economic impacts. It is important to identify the existing demand in the absence of the project and the expected

impact of the new connection, as well as to identify other modes of transport potentially involved;

- Degree of complementarity and competition between the various modes of transport. In particular, it is necessary to evaluate the competing methods, routes, rates and alternative costs for users, price regulation policies, congestion and capacity constraints, and new investments planned for the future;
- Sensitivity to demand with respect to changes in the quantity and quality of the supply of transport services.

3.2.2. Termoli Croatia connections data and time series

Since 2002 a seasonal service linking Termoli - Croatia - Termoli operated (with a boat capacity of 354 passengers) which moved 6,700 and 5,700 passengers respectively in 2003 and 2004.

Historical data and connections Termoli - Croatia								
Year	Boats	Trips Departures	Trips Arrivals	Total Trips	Pax departure	Pax arrival	Total pax	Average Pax/ trip
2002	1	27	27	54	1844	2045	3889	72
2003	1	62	61	123	2940	3781	6721	55
2004	1	41	43	84	2881	2881	5762	69
2005	1	27	27	54	2677	2623	5300	98
2006	1	9	9	18	478	613	1091	61
2007	1	5	7	12	564	406	970	81
2008	0	0	0	0	0	0	0	0
2009	1	8	8	16	535	528	1063	66

Until 2018, various and discontinuous attempts were made by operators in the sector that did not allow to develop a forecast based on historical data series. Incidentally, also for the year 2019 the start-up of the service was foreseen, then cancelled.

3.2.2. Frequency of connections and traffic forecasts

The introduction of connections with a progressively greater frequency and seasonal coverage was hypothesized, until reaching full capacity in the third year of operation (2022), in order to initially reduce the risk of making routes with few passengers (or cancel journeys) and to allow optimization of all operational and programming aspects based on elements and experience gained.

The following table shows the connections that are expected to be made at full capacity (2022) from May 15th to October 15th.

Frequency of connections in the various year until link is at regime							
Year 2020	May	June	July	Aug	Sept	Oct	Total
Weekly trips	2	6	8	8	4	0	**28**
Monthly trips	8	24	32	32	16	0	**112**
Weekly return trips	1	3	4	4	2	0	**14**

Frequency of connections in the various year until link is at regime							
Monthly return trips	4	12	16	16	8	0	**56**
Year 2021	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	
Weekly trips	2	6	8	10	6	2	**34**
Monthly trips	8	24	32	40	24	4	**132**
Weekly return trips	1	3	4	5	3	1	**17**
Monthly return trips	4	12	16	20	12	2	**66**
Year 2022	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	
Weekly trips	4	8	10	10	6	2	**40**
Monthly trips	16	32	40	40	24	4	**156**
Weekly return trips	2	4	5	5	3	1	**20**
Monthly return trips	8	16	20	20	12	2	**78**

For the years after 2022 there are no changes to the frequency of scheduled trips.

3.2.2. Passengers, occupancy rates by class and type and period

A specific model was developed in order to produce revenue forecasts that consider not only the monthly occupancy rate (load factor) but also the tariff dynamics according to the season and the type of passenger.

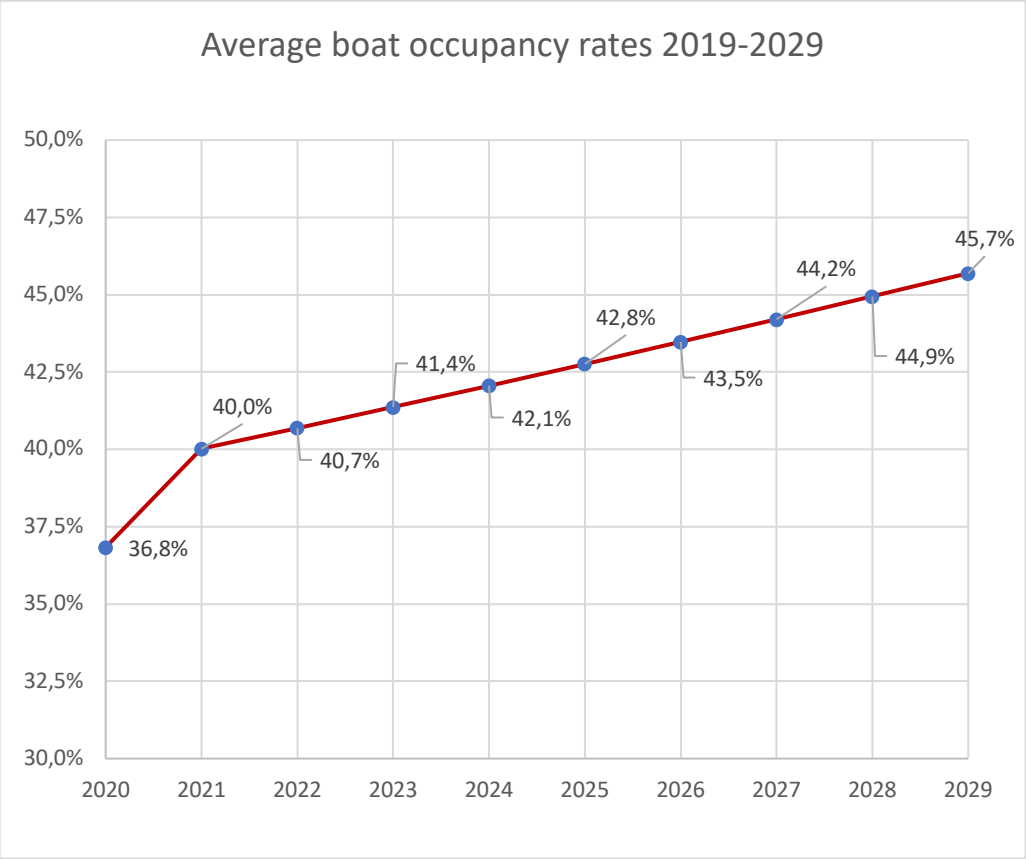
The following table shows the average occupancy data expected on a monthly basis, which follow the progression deriving from the application of the forecast coefficient developed and described above.

As for the frequency, also for the filling rate the starting hypothesis is very prudent the first year, with an increase starting from the year 2021 and a progression exclusively based on the application of the coefficient starting from 2022.

The results of the processing are shown in the table.

Passenger occupancy rates (load factor)						
Period	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**
2020	25,0%	37,0%	45,0%	52,0%	37,0%	25,0%
2021	28,5%	39,7%	48,8%	54,9%	39,7%	28,5%
2022	29,0%	40,3%	49,7%	55,9%	40,3%	29,0%
2023	29,4%	41,0%	50,5%	56,8%	41,0%	29,4%
2024	29,9%	41,7%	51,3%	57,7%	41,7%	29,9%
2025	30,4%	42,4%	52,2%	58,7%	42,4%	30,4%
2026	30,9%	43,1%	53,1%	59,7%	43,1%	30,9%
2027	31,5%	43,8%	53,9%	60,7%	43,8%	31,5%
2028	32,0%	44,6%	54,8%	61,7%	44,6%	32,0%
2029	32,5%	45,3%	55,8%	62,7%	45,3%	32,5%

To determine the composition of passengers by age classes, for the purposes of calculating the applicable tariffs, the age distribution of the inhabitants of Molise was used, even though the potential customers of the service also come from the neighbouring regions. It is assumed in fact that these are mainly organized in groups and therefore beneficiaries of tariffs that do not take into consideration the age classes, or other conditions that allow tariff discounts.



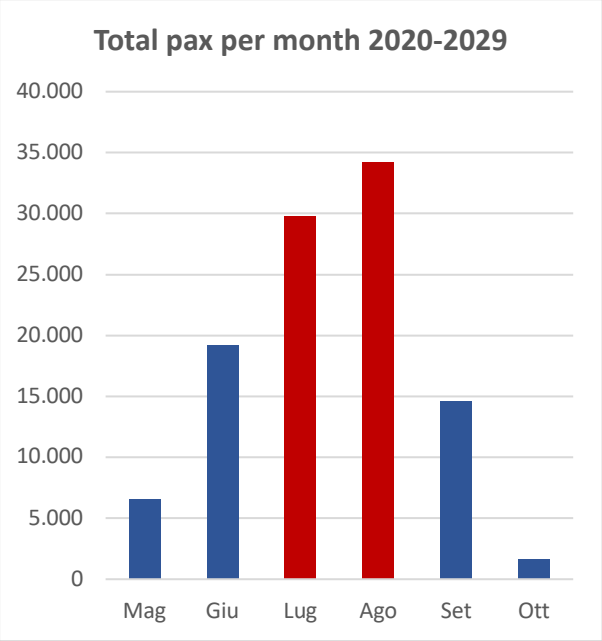
Based on the statistical and subsequently qualitative survey carried out with operators in the sector, a breakdown of passengers was elaborated as follows:

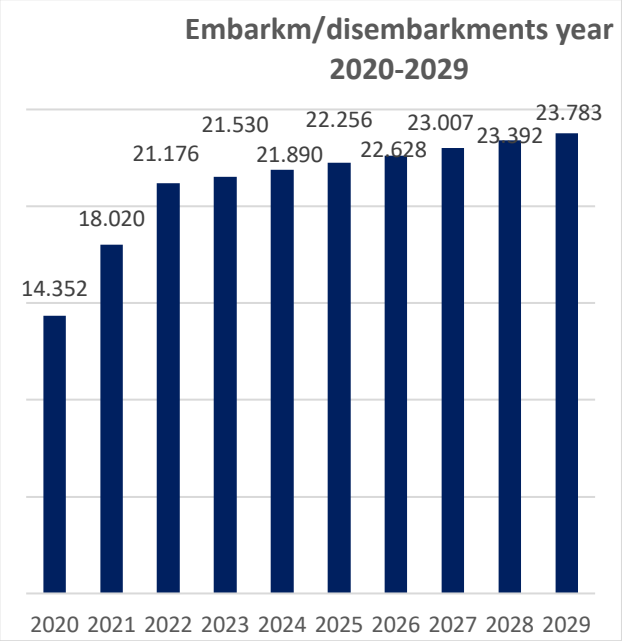
Breakdown of passengers / users by travel class and type		
One way travellers	**3 %**	
Return trip travellers	**97 %**	
	di cui:	
	over 65	*22 %*
	bambini	*9 %*
	famiglie	*5 %*
Viaggiatori organizzati in gruppo sul totale	**60%**	

Group travellers are 60% of traveling passengers.

The total number of passengers is as follows:

Total passenger movements per month and per year 2019-2029							
Period	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Total embarkments/disembrakments**
2020	600	2520	4320	4992	1680	0	**14.112**
2021	684	2784	4688	6593	2784	342	**17.873**
2022	1390	3773	5958	6703	2830	348	**21.002**
2023	1413	3837	6058	6815	2877	353	**21.353**
2024	1437	3901	6159	6929	2926	359	**21.710**
2025	1461	3966	6262	7045	2974	365	**22.074**
2026	1486	4032	6367	7163	3024	371	**22.443**
2027	1510	4100	6473	7282	3075	378	**22.818**
2028	1536	4168	6581	7404	3126	384	**23.200**
2029	1561	4238	6692	7528	3178	390	**23.588**





It is considered that, by dividing the total of embarkments and disembarkments by 2, approximately the total number of traveling passengers is obtained.

This hypothesis is validated in both national and European data and is extensively illustrated in the demand analysis section which shows that embarkation and disembarkation data in individual ports are practically the same.

3.2.2. Tariffs, conventions and commercial agreements

The price formulation and ticket booking system is getting closer and closer to that of air transport and follows dynamic methods.

It is therefore difficult to simulate this dynamic, which, moreover, does not provide for the increase in the published tariff as the deadline approaches or in particularly significant days for the movement of passengers.

From the analysis of the existing lines between Italy and Croatia and the practice of operators in the Mediterranean, a modelling of prices was adopted based on an average tariff per period to which to apply a discount resulting in the following scheme:

- Travel discount for Return tickets 10%

To this discount it is applied an additional maximum discount of 5% for:

- Children
- Families
- Over 65

For groups, an average discount is calculated on the full published rate of 20% and the payment of a 10% agency / tour operating commission, since in practice the final price is negotiated with the operators according to the packages transacted, and commission can vary from 7 to 15%.

The model therefore foresees that 100% of the tickets sold are divided into;

- Group ticket 60%
- 40% individual booking ticket

For individual booking tickets, 35.5% fall within a discount range (over 65, children and families).

Tariff system		
Type of tariff	**Weight on total**	**Applied discount**
One way trip	1,2%	0%
Groups	60%	20%
Return Tickets	24,6%	10,0%
Return trip for discounted categories (over 65, families and children	14,2%	15,0%

For the class of passengers with individual reservations, a ticketing fee is foreseen for 50% of them who go to an agency, rather than buying the ticket through web channels.

From the comparison of offers for the summer of 2019 and the analysis of competitive prices, the cost per nautical mile / passenger was calculated for the year 2020, formulated on the hypothesis of entry into the free market with non-subsidized prices. The calculated rate for 2020 in mid-season, gross of discounts and promotions, **is equal to € 0.80 / pax / nautical mile**, in line with the average price charged by the competition in the absence of contributions.
In high season this cost rises to € 1.04 (+ 30%).

On the basis of these parameters, the gross tariff, the other tariffs and the weighted average rate per passenger were calculated, resulting from the application to the gross tariff rate percentage by booking category and traveller (which corresponds to a discount class as shown in the Table "Tariff System" above).

The following are the prices for the various types of tickets in the two seasons resulting from the modelling of fares and classes of passengers / reservations.

Tariffe applicate per stagione e classe								
Mid season (apr may june sept oct)								
Termoli Hvar (Lesina) e and Korciula (Vela Luka)	**Average distance in naut. miles**	**One way**	**Return**	**Return + discount**	**Return groups**	**Weighted Average Tariff**	**Taxes and charges return trip**	**Average total price return ticket**
2020	98	78	141	134	125	130	18	**148**
High season (July and August)								
Termoli Hvar (Lesina) e and Korciula (Vela Luka)	**Average distance in naut. miles**	**One way**	**Return**	**Return + discount**	**Return groups**	**Weighted Average Tariff**	**Taxes and charges return trip**	**Average total price return ticket**
2020	98	102	183	174	147	159	18	**177**

NB: Not all operators cumulate the discounts provided by the tariff tables, unlike what is calculated here.

3.2.2. Type and characteristics of the proposed boat

The use of small high-speed boats, the so-called HSC (High Speed Craft) is considered.

Currently two different types of high-speed crafts boats predominate: monohulled vessels and catamarans.

It is difficult to clearly classify these groups and it seems that are mainly the subjective opinions that lead to the choice of one or the other (above all for dimensions greater than 300 gross tons).

The technical definition of an HSC has been established based on a formula that identifies a coefficient of displacement speed. According to the Security Code of the International Maritime Organization (IMO) for high speed crafts units, an HSC is a boat capable of reaching a maximum speed (V), in meters per second (m / s), equal to or greater than:

$$V \geq 3{,}7\ \nabla^{0.1667}$$

where ∇ is the displacement in cubic meters (m3).

In this study an HSC is defined as a boat capable of an operating speed (V) at 28 knots or more (V ≥ 28 knots).

In maritime transport the definition of a node is the speed required to travel a nautical mile, or 1852 meters, in 60 minutes.

Requirements and typicality of the management of high-speed passenger boats

High-speed boat (HSC) connections require specific infrastructures and services, and coordination that ensures reduced times throughout the transport chain to ensure high ship utilization rates.

Ports are one of the main bottlenecks in international passenger transport, as port management is a traditional business and the reaction to change is slow, also because of the costs to be incurred to improve their infrastructure and services.

The terminal must be located as close as possible to the open sea, because the path subject to speed limitations must be as short as possible, and the low-speed sections must be minimized in areas such as archipelagos, where it can interfere with recreational vehicles and water sports.

Some additional considerations regarding the use of HSC for the connection:

- An HSC vehicle must reach maximum speed as soon as possible due to efficiency issues
- Fuel consumption in the HSC is sensitive to the total weight and its application to passenger transport only is ideal, many of the RO-PAXs with speeds of 40 knots have been abandoned due to the high cost of ownership
- High-speed vehicles are more susceptible than conventional ferries to cancellations due to adverse weather.
- Need for good connections to the port and accessibility by car and public transport as well as on foot, need to have parking available.
- It must be considered that the sense of well-being of the passengers is crucial and the maximum sailing time on board an HSC is four hours.

In a certain way, a high-speed boat is like an airplane, which means that the operator (i.e. the owner) should keep the weight of the boat as low as possible and load the minimum necessary amount of fuel on board. Consequently, bunkering should be carried out at each trip, which requires special attention and organization, especially during the brief stops scheduled in the ports.
This is not always possible in the high season and in Croatian ports that are very crowded, and the cost of fuel is currently higher than in Italy.
There are three main techniques for refuelling high speed crafts:

- Tanker
- Bunker ship or barge
- Collector connected to the tank

The use of a tanker or a refuelling barge entails lower investment costs, although it also entails greater security risks, which is a particular problem in ports where people have free access. In addition, tank trucks and barges must provide a just-in-time service in refuelling on time to avoid delays. In other words, managing the supply of HSC is a complex process that requires planning and efficiency.
The use of a storage tank with a collector is a very fast operation, allowing frequent refuelling to keep the weight of the ship low and allows for short rotation times. Refuelling can be done with the manifold in less than 10-15 minutes. For safety reasons, it is used to fill the tank when the port area is free from people.
In order to contain costs, fuel can be found in the port of arrival or in the port of departure. However, when storage is located in only one port, the reduced costs for the structure must be compared with the increase in transport costs (due to the additional weight of the fuel in the ship), in order to avoid sub-optimization and maintain the lowest possible total costs for the operation.
However, after analysing fuel prices and services in Croatian ports, it was decided to consider that the medium departs from the port of Italian origin **with the fuel required for the outward and return journey, with the addition of a reserve of 20% security (about 10,000 lt),** as also suggested by the practice of the previous experiences described by the operators concerned.

Characteristics of the proposed boat

For the formulation of the cost-benefit analysis we considered the use of an HSC with the following maximum features described in the sheet below:

Characteristics	
Type of vessel	HSC (High speed craft) hydrofoil, single hull, catamaran, or trimaran
Type of hull	Single hull
Hull material	Composite or alluminium alloy
Lenght	± 35 mt
Width	± 11 mt
Draft	± 2,15 mt
Gross tonnage	± 400 ton
Net tonnage	± 150 ton
Capacity	
Crew	7 Unità
Passengers	300
Max speed	± 35
Cruise speed	± 30
Power Unit	
Motor	± 2X 2000 kW diesel
Propulsion	water jet variables or propellers
Fuel consumption	± 920 lt/h

The new models on the market, produced mainly in Norwegian and Australian (catamarans and trimarans) and Italian (monohulls and hydrofoils) shipyards, thanks to improvements in the engine (light alloy engines) and to the profile of the hulls can allow significant savings compared to vehicles produced and powered in the early 2000s by over 40% fuel (650/700 lt / h) with the same performance and gross tonnage and with extremely improved travel comfort.

However, it was decided to take as a baseline a medium / low consumption boat profile for the high speed craft of similar tonnage and cruising speed, as they are more available in the used and lease market, with purchase prices for models with maximum 8 years of age ranging from 3.5 to 5 million euros and leasing rates in the range of 600 / 800,000 euros per year.

For boats with these characteristics, the number of nautical miles that can be travelled daily in normal sea normal conditions is a maximum of 220, in order to limit maintenance and physical-mechanical stress, which causes faster engine and hull obsolescence

Catamaran construction period early 2000

New generation catamaran (2019*)*

Single Hull construction period early 2000

New generation hydrofoil

3.2.2. Incidence of bad weather on the regular operation of the service

Delays and cancelled journeys are expensive for the operator: in addition to the evident loss of revenue from tickets, there are operating costs (salary for employees, additional port fees, etc.), compensation and passengers and a decrease in customer confidence in operating company.

Often this implies that customers will probably not travel again with the same operator and line if there are alternatives available, or they will opt for different travel solutions.

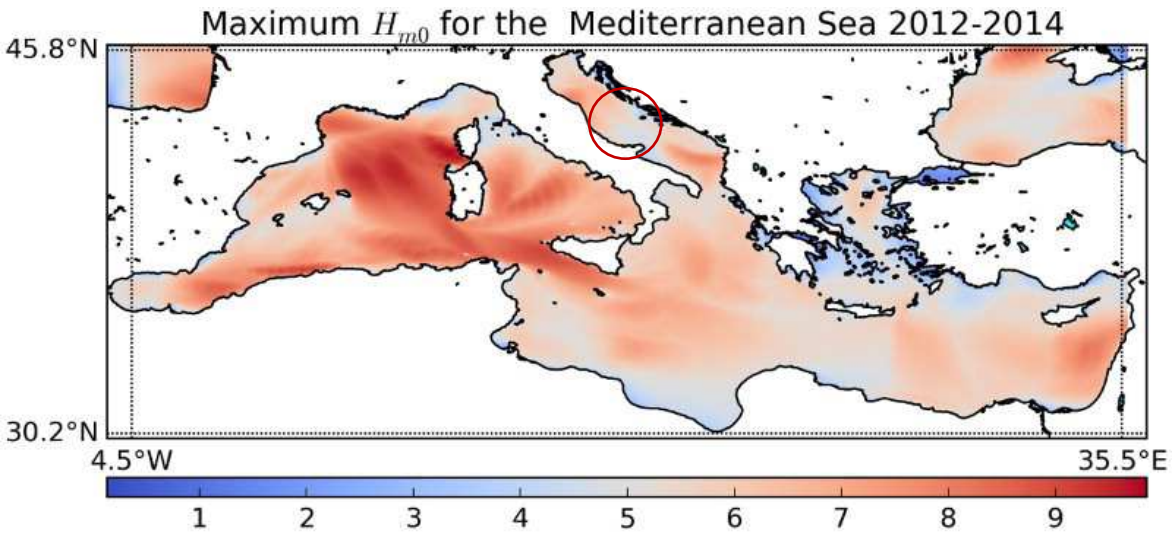
Cancellations are more accepted by the user if the operator is able to offer a substitution with a conventional ferry instead, but currently there are no ferry services available from Termoli to Croatia. Alternative connections are only from Bari to Dubrovnik and from Ancona to Split.

To avoid a high percentage of cancellations, it is therefore necessary to examine the meteorological conditions in the various places of the year, to determine whether they are favourable or not for the high-speed service or to plan an exclusively seasonal line.

The Adriatic Sea is characterized by relatively high and short waves compared to the commonly "fully developed" waves observed in ocean waters, which can be explained by the specific characteristics of the Adriatic sea's climate, that is the onset of very strong winds on a limited basin, such as the mistral, the sirocco and the neverino.

Sea conditions and particular winds are present on the Termoli-Croatia sections which are believed to be considered for the purposes of calculation and of the actual implementation of the connection with respect to the planning of the same.

The figure below shows the measurements for the 2012-2014 period of the World Wave Atlas, which indicates the maximum wave height in the Termoli - South Central Croatia section of 6 m.

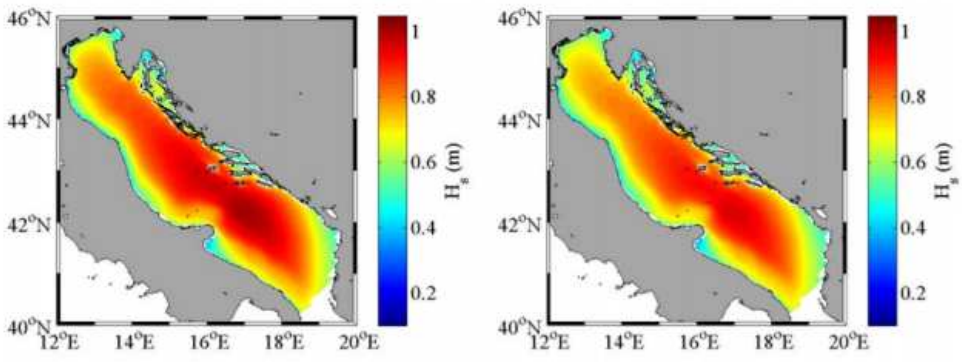


It was decided to adopt the most long-term observations and forecasts contained in the CNR-ISMAR study, which finds in the Middle Adriatic:

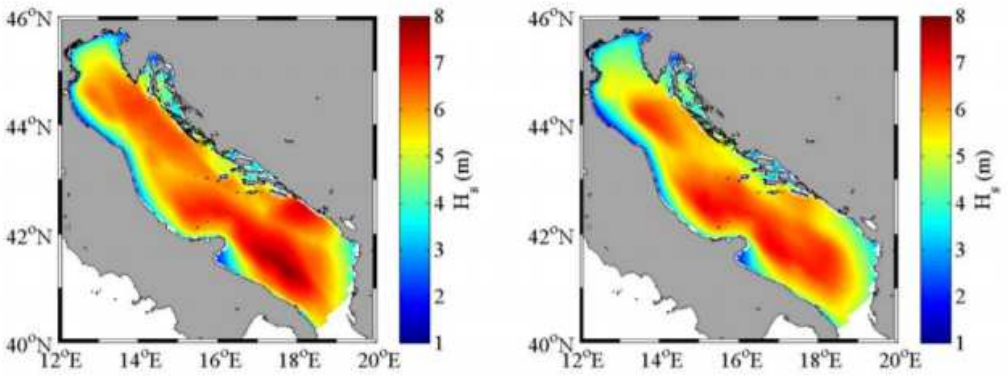
- or average annual wave height of 0.8 - 0.9 meters
- or annual average maximum wave height: 7 meters, exceptional events 13 meters
- or average annual hours with waves over 2 meters: 700
- or average annual hours with waves over 5 m: 15

The model adopted by the study foresees that the wave phenomena are reduced by about 5% in the very long term (2070-2090) for the Northern and Southern Adriatic and increase slightly in the Central Adriatic.

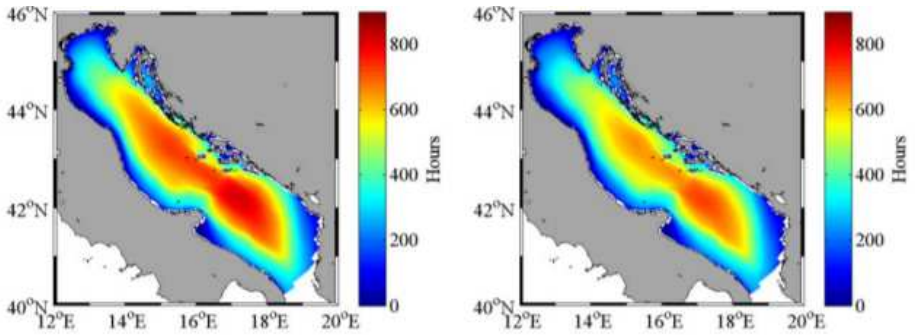
Historic measurements and forecasts of medium and maximum wave height in the Adriatic Sea



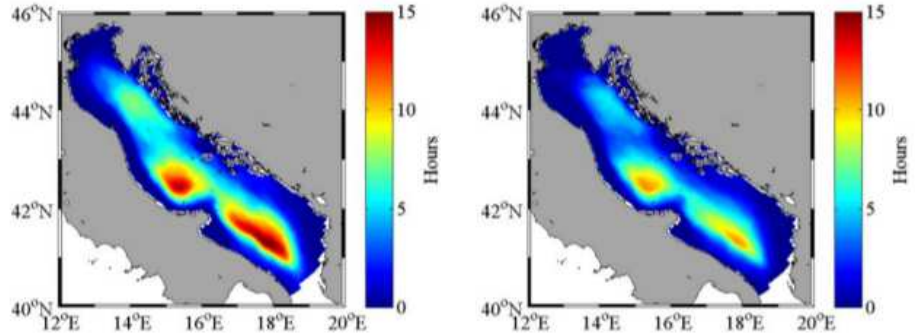
Average H_S (in meters). Numerical simulations of the present climate (left) and the future scenario (right) are shown.



Maximum H_S (in meters). Numerical simulations of the present climate (left) and the future scenario (right) are shown.

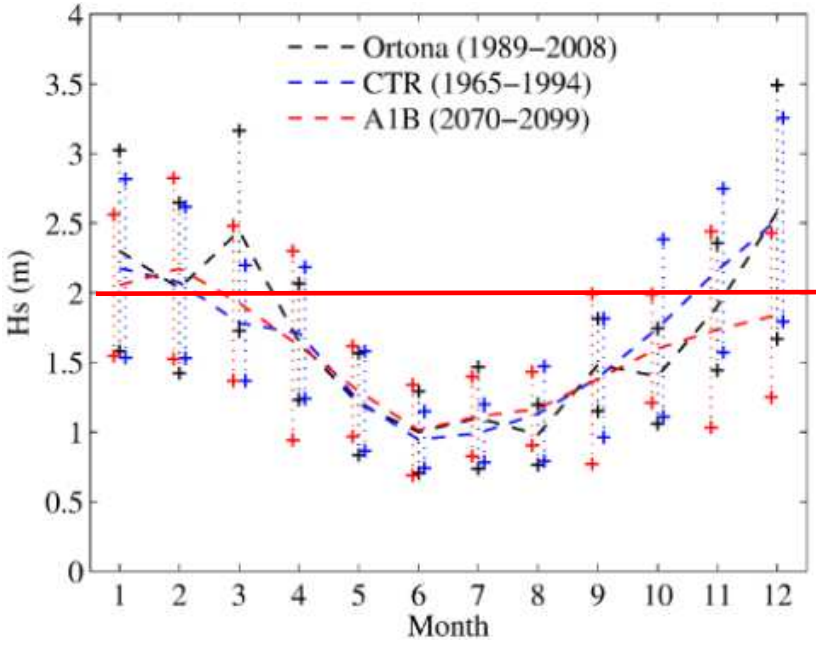


Yearly average number of hours with H_s greater than 2 m. Numerical simulations of the present climate (left) and the future scenario (right) are shown.

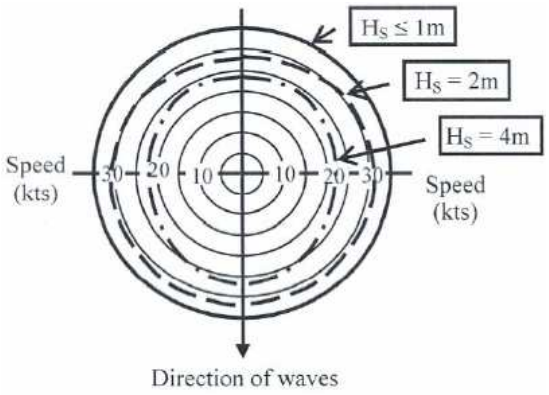


. Yearly average number of hours with H_s greater than 5 m. Numerical simulations of the present climate (left) and the future scenario (right) are shown.

As regards the seasonal nature of the wave phenomena, the graph of the annual cycle of the 95th monthly percentile of the height of the Hs (m) waves on the Ortona area, the closest to Termoli, is reported below as the more reliable “proxy” among the survey areas carried out by the study.



For reasons related to **the safety of high speed crafts**, these can travel with a wave height limit that does not exceed 4 meters, but also taking into account the comfort of the passengers, the reduction in speed and therefore the consequent lengthening of the travel time, it is assumed that with waves formed over 2 meters the trip will be cancelled.



Guidelines for uniform operating limitations of High-Speed Craft – IMO 2019

It is therefore noted that the months of January-March and November-December are critical in order to guarantee regularity of the service.

Although there is no data on the average distribution of waves over 2 meters in the 12 months of the year, which occur for an average of 700 hours / year, it is assumed that 80% of them are recorded in January, February, March, April, November and December.

For the period of activity of the connection from May to October, therefore, the following is assumed:

- hours in which navigation is precluded to high speed crafts vehicles: 140 in total (20% of 700)
- uniform 24-hour distribution of wave events > 2 mt
- navigation in 12 daylight hours
- 6 days of sea conditions that do not allow the service to be performed, more likely to be recorded in the months of May and October
- extreme events with an average frequency of 1 per month with uniform distribution

Waves > 2 mt	
Hours per Year	700
Hours in the period of connection scheduling	140
Operational hours per day	12
Distribution	Linear
Extreme events per month	1
Days of stop/cancellation due to sea conditions	5,8
Days of stop due to extreme events	7,0
Number of annual one way trips	176
Probability of event during operating hours	50%

incidence of cancellations on total annual trips	3,6%

On the basis of these data and hypotheses, a 3.6% negative correction on the total number is applied to the number of sections performed annually, considering a linear distribution of the statistically detected phenomena in the 24 hours, and applying it to the 12 day hours of operation, to calculate the actual expected impact on the service.

Probability of event during the connection hours	Cancelled trips a year (rounded up x excess per unit)
25%	3
50%	6
75%	10
100%	13
Total trips per year at full capacity (2021)	176
Incidence of cancellations in rounded percentage	**3,6%**

3.2.2. Rates and price system

The maritime transport sector is under increasing pressure on costs and ticket prices, and the determination of tariffs is the result of competitive price analysis, elasticity of demand and potential market segmentation.

The online purchase has helped to reduce costs and increase the sales of many operators and, as already highlighted, the maritime transport sector has adopted the ticket price management system that is increasingly similar to that of low-cost flights (dynamic pricing and booking), with rates that vary, even significantly, for the same route, depending on the "timing" of the purchase, within two substantial price ranges of "average" and "high" season.

Added to this are special promotions for day trips (mainly for shorter routes such as Venice-Istria and Trieste-Istria), and other types of discounts for over 65, children and families.

For the **market price calculation**, we proceeded as follows:

- surveyed the average gross rates for the "mid-season" period (April, May, September and October) and "high season" (June, July and August) one-way and return, as published by the operators or resulting from research via main Web portals, such as DirectFerries.it, TraghettiLines.it, Amatori.com, Afeery.it, Traghetti.com, Ferries - Croazia.it, Triphit.com and the direct websites of companies such as Snav, Jadrolinja, Ellade Viaggi.
- rates were calculated in euros per nautical mile, to which were added the costs for port fees in a fixed amount.
- percentages were applied to the above rates on the total number of passengers for the classes of passengers who benefit from discounts: over 65, children, families and groups, based on the demographic profile of Molise
- weighted average tariffs have been calculated in consideration of the applicable discounts
- for each year of the projection, the expected increase in Consumer Prices (CPI) for Italy estimated by the International Monetary Fund (IMF 2019) is applied to the total ticket price (tariff + port and other charges) and the OECD

-

Few operators apply the "fuel surcharge", which is not considered in this analysis as it is not significant in terms of determining the average ticket price.

For the purpose of this study the rates are determined based on the principles of "full recovery of costs", according to which the tariffs applied to the user allow the recovery of the total cost, including the capital cost.

3.2.2. The price of fuel

The price of fuel is one of the major cost components of maritime transport and has a significant impact on high speed crafts transport vehicles.

The price of crude oil has shown significant volatility in the last decade and future price movements have a great impact on the present value of an investment (VAN) and therefore on the profitability and convenience of starting a new fast sea connection.

A future projection of the price of fuel oil is therefore necessary, in order to conduct the analysis of the potential profitability of the connection in a multi-year perspective that also considers factors that can significantly vary the expected returns.

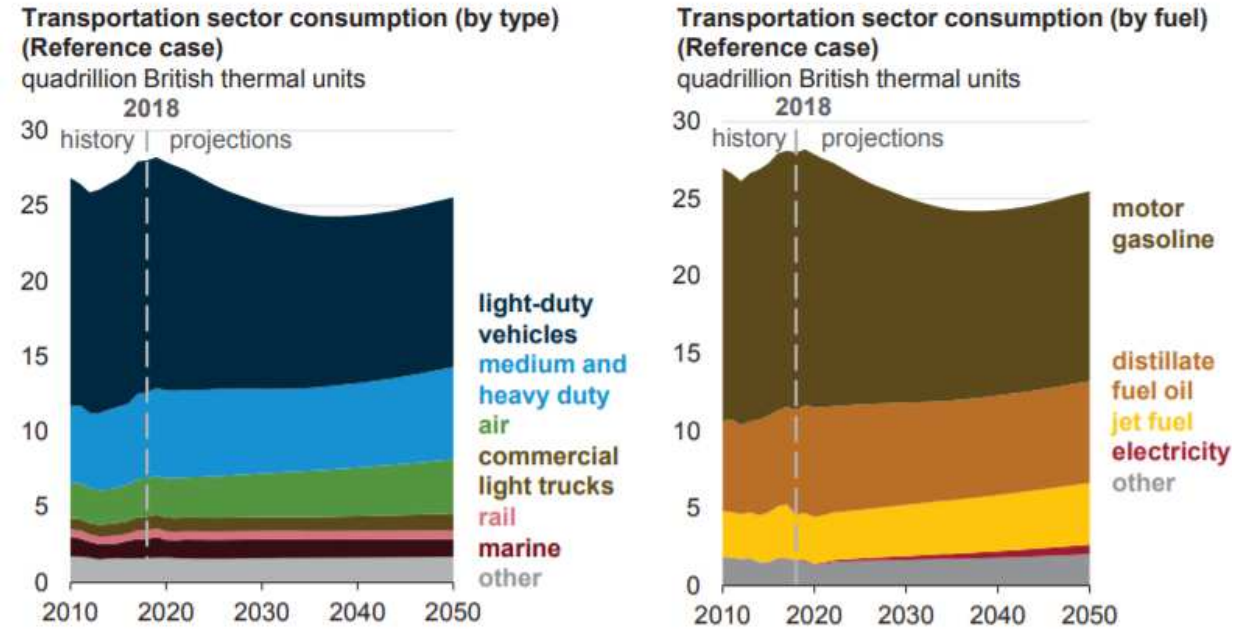
A multitude of political and scientific factors influence the price of oil and economic forecasts are made difficult by methodological problems and by the lack of adequate explanatory data (Kaufmann, et al., 2008). Various articles have been published concerning the development of the world oil price, which present different opinions on the future oil supply and price schemes.

Baumeister and Kilian (2013) calculated the errors resulting from six different forecasting models that use a maximum forecast time of 24 months and have combined the different models in order to improve the forecasting power of the oil price. The conclusion of the study is that no specific model is superior to the others and that a weighted combination of forecasting models minimizes forecasting errors.

For the purpose of this study it was decided not to proceed with the use of models, but to use the forecasts of the Report of the Department of Energy Administration (EIA) of the United States of January 2019, in which three scenarios are envisaged on the future development of the real oil price up to 2050: a reference scenario, as well as one of high prices and one that assumes low crude oil prices. The report envisages, in the critical hypothesis of the absence of geopolitical shocks, the data on the gross internal growth rates of the OECD and non-OECD countries and on the consumption of liquid fuels per dollar of Gross Domestic Product.

The report predicts a peak in energy consumption for transport in 2019, in view of the greater efficiency in consumption which more than compensates for the increase in travel and movement of goods, with the forecast that this trend will only be reversed starting from 2040.

Projection of consumption for transport 2018-2050



Source EIA 2019

From January 2020 all the fuels used in ships, the so-called "bunker", which today consists essentially of fuel oil with a sulphur content of 3.5% must be brought to a level of 0.5%, practically assimilating it to a distillate such as diesel marine (MGO). The basic requirements for marine fuels are defined in the ISO 8217 standard. The quality grades DMX, DMA, DMB and DMZ according to ISO 8217 "Petroleum products - Fuel (class F)" are also commonly called "marine diesel".

However, the vehicle that is proposed to be used for the Termoli Croatia connection normally uses marine gas oil (MGO) with a maximum sulphur content of 1.5% and it is not possible to adopt solutions to LNG (liquefied natural gas), the real alternative to diesel engines in the medium term. It is possible that work must be carried out on the motors (injectors, pumps and other systems) depending on the type of specific motorization.

To replace the MGO, starting from the year 2020 it will be mandatory to use an LSMGO with sulphur content of max 0.5% which does not present significant price differences (Rotterdam MGO price 556 $ / MT and LSMGO 550 $ / MT recorded in August 2019).

Both fuels consist exclusively of distillates, that is all those components of crude oil which evaporate in fractional distillation and are then condensed from the gaseous phase into liquid fractions.

Marine diesel is similar to diesel but has a higher density. Unlike heavy fuel oil (HFO), marine gas oil must not be heated during storage.

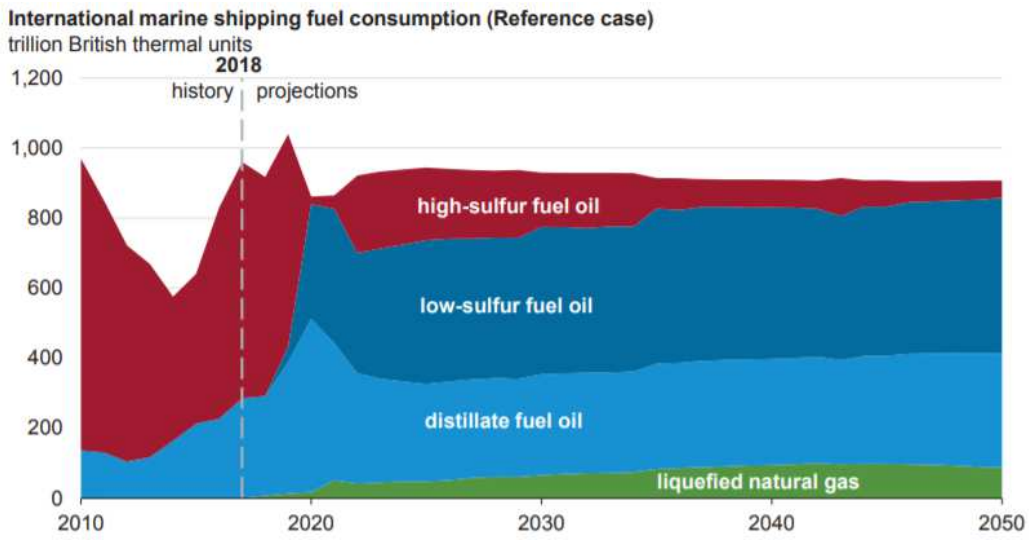
Unlike heavy fuel oil or heavy marine diesel oil (MDO) with a large percentage of heavy fuel oil, marine gas oil, which is based on lighter distillates, has a low viscosity, and can be easily pumped into the engine at temperatures of around 20 ° C.

LSMGO price at the port of Piraeus spring-summer 2019 and previous year prices

The new IMO rules will create tensions on the prices of marine gas oil, which however, according to the EIA, will affect the price of fuel only in 2020, even if the new obligation will surely have repercussions on the structure of the oil industry both in production and distribution.

The International Chamber of Shipping indicates that if oil were to return to levels above $ 75 a barrel, the bunker could exceed $ 400 a ton compared to the current 280.

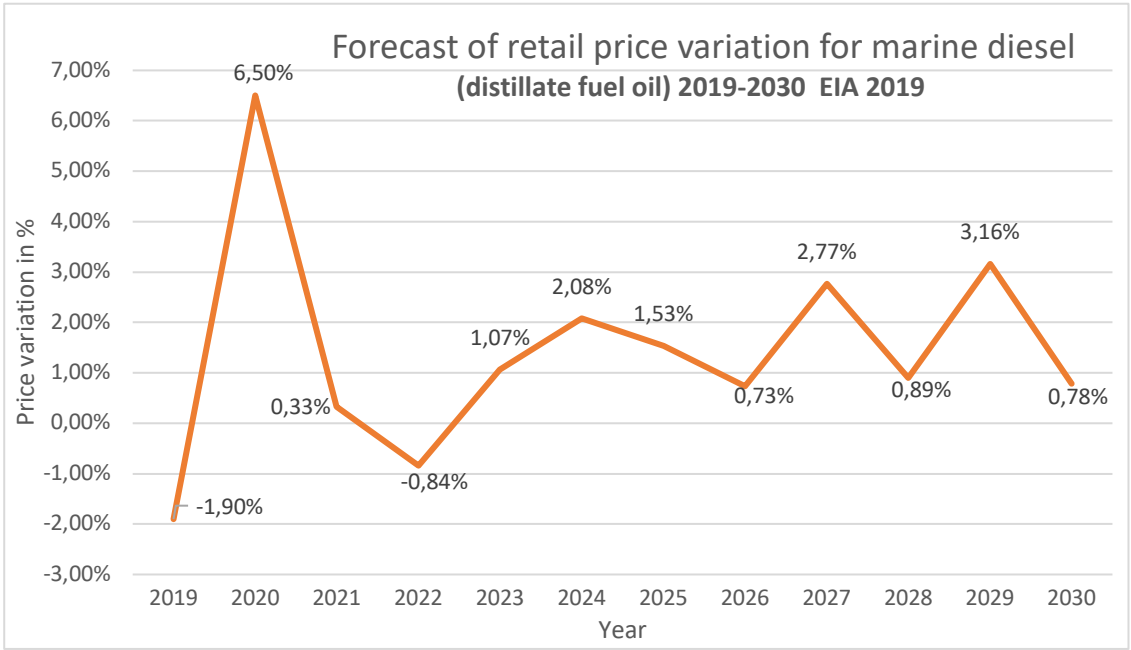
In consideration of these developments and the degree of uncertainty regarding the actual evolution of fuel prices, given the impact on the total costs of the service hypothesised, the possible fluctuations of the service outside the forecast price bands will be the subject of this study of a specific sensitivity analysis.



Source EIA 2019

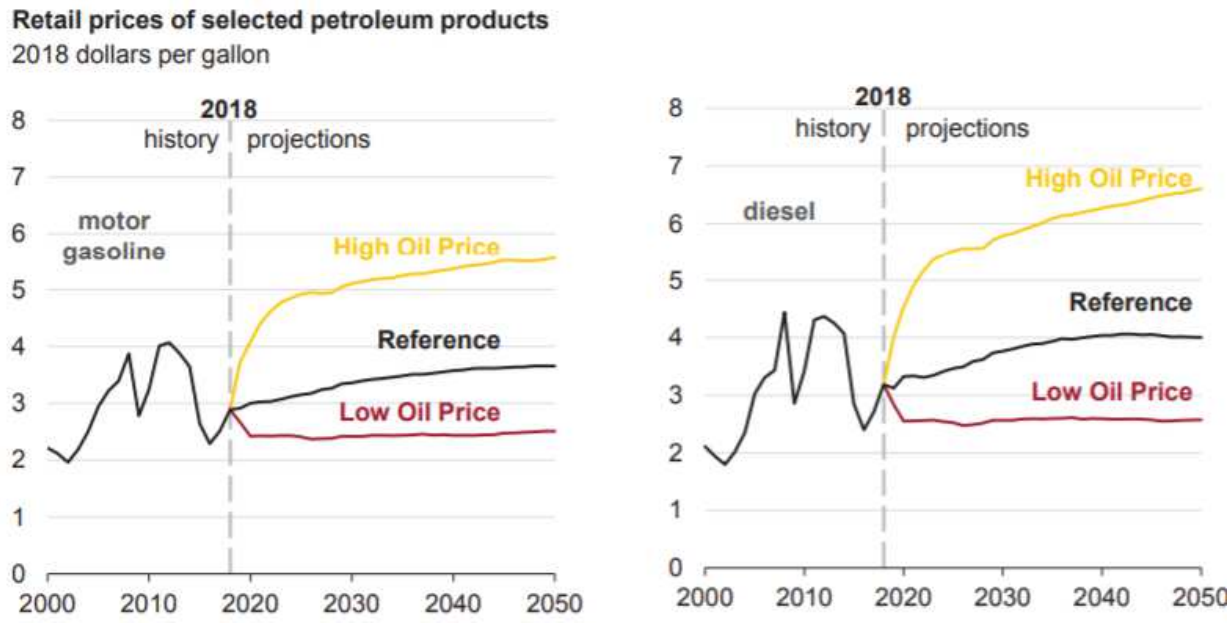
Therefore, for the purposes of calculating the fuel cost:

- it is assumed the average price of the subsidized LSMGO recorded in Termoli in August 2019 (€ 0.53 / lt)
- the annual price changes indicated in the "reference" projection of the EIA are applied
- a stable euro / dollar exchange rate is expected
- It is assumed that no legislative and tax changes occur in Italy that significantly affect the price of marine fuel



The sensitivity analysis will simulate the application of the minimum and maximum increases foreseen by the forecast fork indicated in the graphs below.

As can be noted, while the downward variation in the price is limited to 38% compared to the "Reference" price, the price increase itself in the hypothesis of a strong increase in crude oil prices can reach 70%.



3.3. Checklist

Many of the parameters discussed in the previous chapters can be considered as a checklist in order to ensure that the potential operator and public administration do not neglect essential elements.

The considerations made are schematized, with the addition of other important aspects to be evaluated / verified.

Parameter	Specific considerations	Comments
Passengers	High and Mid season Typology	The user base varies in months and seasons. In-depth market research is required
Frequency	High and Mid season	Need to ensure a minimum and regular frequency
Competition	Other operators, land and air transport	The flights' market can offer very competitive alternatives
Level of efficiency	Transport with HSC must be carried out with very tight schedules and times	
Level of comfort	Incidence of sea conditions, noise	Importance of raising the level of other service components to be competitive
Competitive alternatives	for price, travel time and ease of "combination" and purchase	
External factors	Fuel price fluctuations Long-term user preferences Seasonal changes in demand Political decisions	
Authorizations and permits	Environmental impact EU directives Local legislation	In addition to European legislation, local restrictions apply to the operation of HSCs
Speed limits	Routes to and from destinations and speeds allowed Distance that can be travelled at maximum cruising speed	
Weather conditions and protection	Wind, waves and tides Maximum 2 mt wave limit	Port protection and ease-of-speed mooring Specific statistics and local experience to be evaluated
Distances between ports	Open sea distances Distances subject to speed restrictions	More than 4 hours in the open sea are not recommended. With rough sea the limit is less

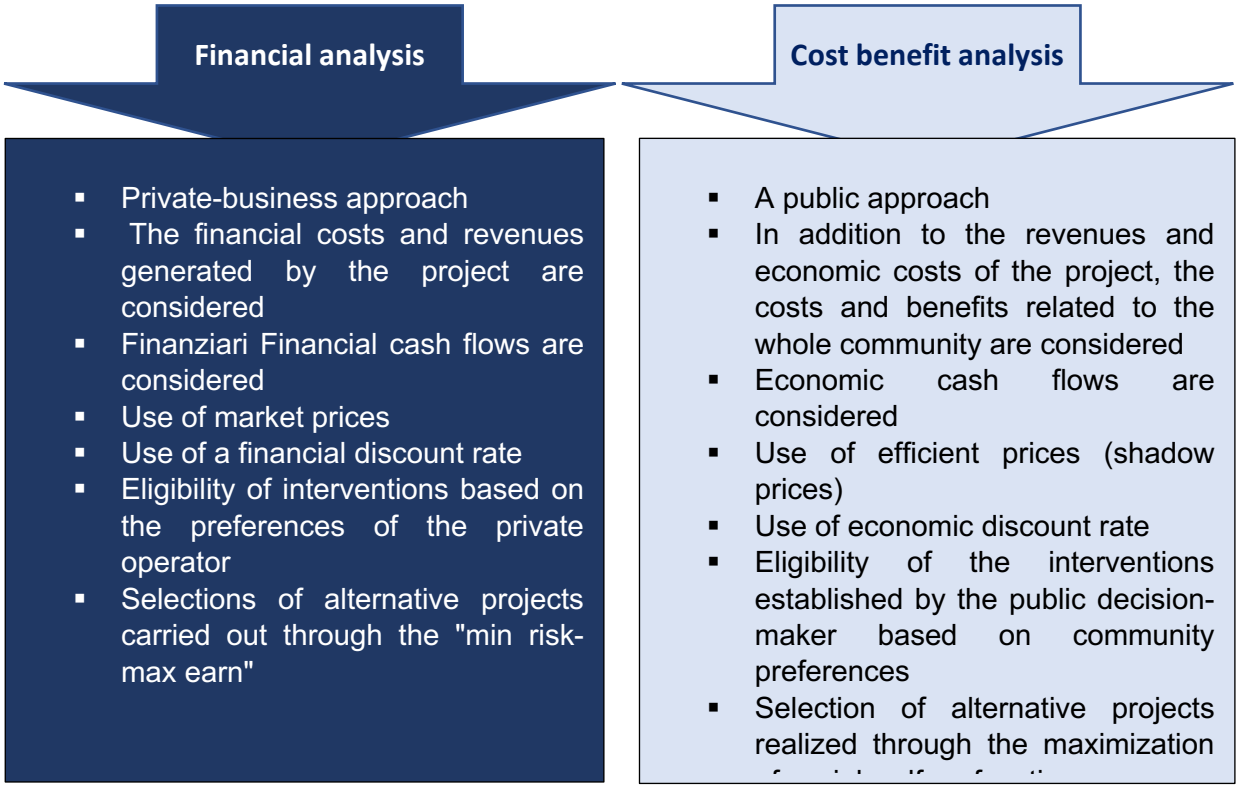
Parameter	Specific considerations	Comments
Physical requirements	Draft Width Length all out Height Gross tonnage	The HSCs have a very small draft but the "squat" effect must be verified near the port of Termoli in particular, also for its effects on speeds and routes
Connections from ports and equipment	Roads, traffic, bus and train connections	
Ports and boat equipment, necessary investments	Terminal and boat Other technical facilities of the ports	
Port area	Viability and terminal area Waiting areas Bars and restaurants Barriers and gates toilets Parking lots	
Entry to the port / terminal	Security checks Forbidden areas Check-in gate ticket offices	Check bottlenecks in the vicinity and at the port of Termoli (narrow street in the middle of the city center)
Boat capacity	Parameterize on expected demand	
Efficiency and flexibility	Maneuverability requirements Ramps, landing stairs boarding Total times of boarding, disembarking, refueling ("turnaround time")	Limiting expectations and times is essential
Arrival and departure: maneuverability of the boat in the approach to the terminal	Simulation of the approach to the port and mooring maneuvers Features that facilitate approach procedures Communication procedures to the Coast Guard (VTS, route planning, etc.)	The simulation is part of the safety procedures for each new type of boat that enters the port

3.4. Methodology for carrying out the cost benefit analysis

The methodology used for the study was that of multiple analysis, which considers the different perspectives (and interests) of the actors involved:

- or public sector finance
- financial private (or economic development)
- or social
- or environmental

The diagram below shows the main features of the different analysis perspectives used here:



The multiple vision of the basic perspectives is a fundamental element of the analysis conducted. The methodology is particularly useful in describing and highlighting how and by whom the benefits are enjoyed and how and to whom the costs are distributed in the various hypotheses and scenarios formulated.

In detail, the procedural steps of the cost-benefit analysis of the Termoli-Croatia maritime connection project are the following:

1. Estimate of the internal economic benefits and costs of the project, with the application of corrections from externalities of the returns and financial costs.

2. Estimate of the external benefits and costs of the currently available investment project; in particular we proceeded with:

- Identification of differential traffic flows ("scenario with intervention" minus "scenario without intervention") in the demand segments identified for the connection, to be placed at the base of economic evaluations.
- Identification of the externality and benefit macro-categories to be considered, essentially attributable respectively to environmental externalities, accidents and road congestion and - as regards benefits - to net employment effects (direct, indirect and on the induced)
- Quantification of the externalities and benefits connected to the levels of the different demand segments of the situation without intervention (inertial scenario) and of the situation with intervention (intermediate demand scenario).
- The re-aggregation of the values of the externalities and the differential benefits for the whole demand of the maritime service

3. Development of the economic plan in the useful life of the project;

4. Determination of project economic indicators, with subsequent "stress testing" which includes:

- The financial analysis, for an ex ante evaluation for the "financing party" that is public or private, based on FNPV (net present financial value) and IRR (internal rate of return).
- The economic analysis with the ex-ante evaluation of the broader economic benefits for the enlarged community, with the consequent quantification of an ENVV (net present economic value) and ERR (economic return rate)

The approach suggested by the European Commission for economic analysis followed, which requires starting from the financial analysis (investment costs, management costs and operating revenues) to arrive at the economic analysis through five phases, specifically:

- application of appropriate conversion factors of market prices into shadow prices
- calculation of the positive and negative externalities generated by the project through the monetization of non-market impacts and externalities for the community involved
- inclusion of further indirect effects, if relevant
- applying a discount rate to the estimated costs and benefits
- calculation of economic performance indicators (net present value, economic rate of return, benefit / cost ratio)

In this way, a new calculation is obtained, which includes the social costs and benefits of the project under examination that allows the project to be evaluated from the point of view of collective utility.

5. Sensitivity analysis;

6. Risk analysis.

3.4. Costs

3.4.1. Investment costs

The table shows the investment costs provided to the operator for the purchase of the high speed crafts sea transport vehicle (here are also included c / c replacements for extraordinary maintenance), and of the public lender as regards the accommodations at the Port of Termoli and their temporal distribution over the duration of the project.

Investments	Total €	2020
Civil works and port arrangements	**50.000**	50.000
Boat	**4.000.000**	4.000.000
Total investments costs	**4.050.000**	4.050.000

There are no costs for the acquisition of software and other tangible and intangible assets linked to the development of booking systems via Web, assuming that the operator is already equipped with it. The costs for the management of the booking system are included in the "other costs" of the income statement.

3.4.2. Costs for infrastructure works

For a regular and efficient performance of the maritime connection service, infrastructural adjustments are required at the port of Termoli, in order to speed up the boarding and disembarkation procedures and ensure a functional and fast performance of the ground operations, an essential requirement for high speed maritime transport.

The works and the necessary accommodations and the associated costs associated with them are described below.

	Note di Indirizzo	
1		The total area subject to intervention, located in the NE pier of the Termoli port is approximately 236.00 square meters identified parallel to the edge of the quay along the driveway, of which approx. 157.00 for the area to be used for shading and sqm. 79, to be used for cables.

2	It should be noted that this area is currently partly delimited by a fence with "new jersey" elements and overlying "orsogrill" type wire mesh, contemplated in the request for state concession.	 
3	Inside the area (30.30x 5.20 m) aligned tensile-gazebos will be placed, positioned at 0.00 from that of the square and having a height of 2.80 ml.	
4 	The area will be served by electricity deriving from the probable connection to the post placed behind the vongolare roof, in order to feed the info-board installations within the requested area.	 
5	All the works described above will be realized with simple assembly of preformed elements and simply bolted to the ground, which will retain the	

	characteristics of easy removal.			
	Stima delle voci di costo			
		Min	**Max**	**Medium**
3	Removable tensile structure of mt. 30 x 5 modular (modules of 5 x 10) height 3 m with top covering cloth and lateral curtain walls in fireproof PVC. Including installation and safety measures and lighting system.	8.000 € x 3 pz = 24.000 €	12.000 € x 3 pz = 36.000 €	30.000 €
4.1	Compulsory section-excavation works for positioning electric energy performed with an excavator. including cutting and removal of asphalt and road foundations, conservation of sub-services. Including the supply and laying of sand bed, backfilling with suitable material coming from the excavation, mechanical compacting, loading of the excess materials with landfill and restoration of the covering (18-22 € / ml).	18 € x 70 ml = 1.260 €	22 € x 70 ml = 1.540 €	1.400 €
	Ad hoc repositioning of the existing "new jersey" and overlying wire mesh in order to correctly delimit the areas dedicated to boarding and disembarking passengers (Omni)	2.000 €	4.000 €	3.000 €
4.2	Supply and installation of polyethylene corrugated pipe (100 mm diameter) for the construction of	6 € x 70 ml = 420 €	8 € x 70 ml = 560 €	490 €

	underground power lines (6 - 8 € / ml). Supply and installation within power cable conduit (100 mm diameter) (3 - 5 € / ml). Supply and installation of an adequate electrical panel. (500 900 € / each)	3 € x 70 ml = 210 € 500 € x 1 = 500 €	5 € x 70 ml = 350 € 900 € x 1 = 900 €	280 € 750€ **1.520 €**
-	Connection costs of ENEL NOT CONSIDERED because the supply point is already present on site	-	-	-

Total costs foreseen at the Termoli Port	
Total	33.500 €
Unexpected cost (about. 10%)	3.500 €
VAT (22%)	8.140 €
TOTAL	45.140 €
MAXIMUM ESTIMATED VALUE	**50.000 €**

It should be noted that these costs will be borne by the Molise Region and will not be charged to the maritime operator who will make the connection.

3.4.2. Other “una tantum” costs

For the purpose of establishing the maritime line, no other one-off capital costs are envisaged, any miscellaneous costs are included in the items of other costs in a lump sum or with specific determination.

3.4.3. Residual value

The investments made with the Project have an economic useful life equal to the time horizon considered and therefore do not give rise to a residual value, neither in financial nor in economic terms.

The purchase of the HSC provides for a residual accounting value equal to zero, having assumed the purchase of a used vehicle of about 8 years of age.

3.4.4. Financing of investment costs

The use of a 7-year naval loan was envisaged, in the hypothesis of the purchase of used ships of a maximum of 8 years of age, with a French-type repayment plan.

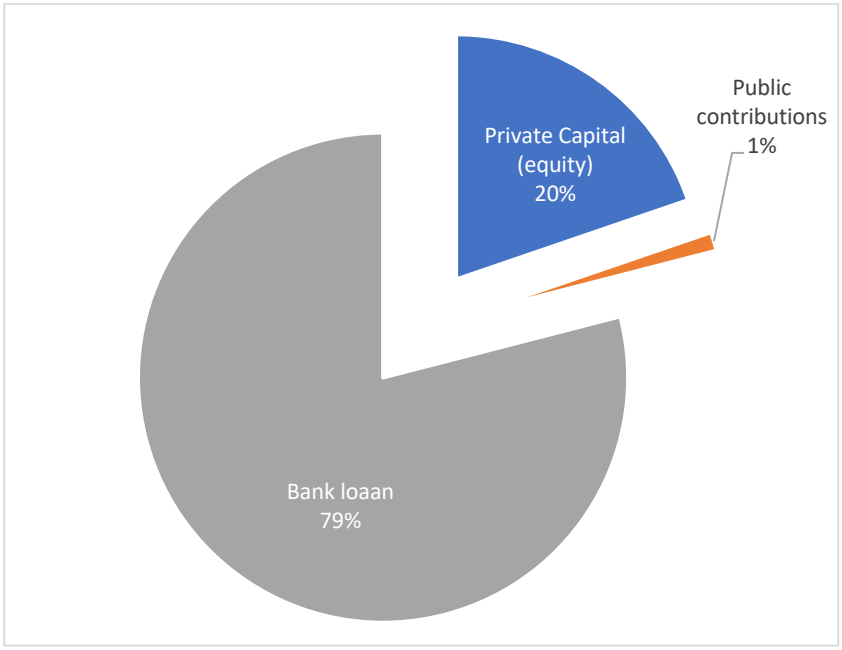
The interest rate applied is prudently established at 4.5%, as the provision of collateral by the operator is not envisaged.

Investment cost coverage:

- 20% own capital
- 80% bank loan

The operation thus structured is comparable in terms of cost to a ship leasing, which could have an "all inclusive" instalment (insurance, maintenance and other charges) of 6 / 700,000 € / year for a boat with similar characteristics.

Financing sources by type



3.4.4. Personnel costs

Personnel costs are divided into:

- crew (crew)
- or ground staff
- administrative and marketing and management staff

On-board staff (crew)

For the definition of the cost of the on-board personnel, we proceeded with the assumption of the minimum cost determined by the CCNL of seafarers, as established by the agreement of 1 July 2015 for the renewal of maritime cabotage work contracts, specific Section “Unit fast HSC, DSC and hydrofoil boats for passenger transport ”. Increases for seniority, indemnities, overtime and other income items were applied to the contractual minimum, in accordance with the National Collective Labor Agreement, in consideration of the fact that, for daily journeys of over 180 nautical miles, overtime must be envisaged.

It has been considered that for the commander, the chief engineer and the first officer are recognized the full salary in the six months of the service and that in the months of non-operation of the connection the cost decreases by 50% (the fact was taken into account that the month of April is intense due to the preparation procedures of the boat, sea trials and other tests).

Medium-term contracting is necessary in order to ensure that key personnel are maintained even for the following years, as for the type of boat it is difficult to find commanders authorized to sail fast in the Adriatic, and who in any case prefer permanent contracts with respect to seasonal proposals.

For the other on-board personnel, seasonal contracts were considered.

Salaries of on board personnel (crew) year 2020 (€)

Role	Unit	Minimum contractual salary	Seniority	Base salary	Other allowances	Overtime €/h	Hours	Total Overtime	Gross salary x unit	Costo totale stimato nave mese	Costo totale stimato nave giorno
Commander	1	2.527,64	500	3.027,64	300	16,0	60	960	6.153	6.153	205
Machine director	1	2.378,94	450	2.828,94	250	15,0	60	900	5.710	5.710	190
First official	1	1.741,44	300	2.041,44	175	11,0	60	660	4.128	4.128	138
Petty Officer	1	1.499,47	220	1.719,47	150	10,0	60	600	3.544	3.544	118
Common	2	1.328,56	120	1.448,56	133	8,5	60	510	3.001	6.003	200
Young man	0	1.205,45	80	1.285,45	120	7,8	60	468	2.688	-	-
Ship’s boy	1	1.135,31	80	1.215,31	113	7,5	60	450	2.552	2.552	85
Total	**7**								**27.776**	**28.089**	**936**

Ground personnel

Two part-time seasonal workers (7 months) are expected to support boarding and disembarking and for other coordination work with the Harbor Master's Office, the Port of Termoli, the State Police and other competent bodies.

Salaries of ground personnell (€)					
Role	**FTE**	**Months**	**Salary**	**Gross cost**	**Actual monthly cost**
Logistics / disembarkation embarkation	0,40	5	1.700,00	2.295,00	918,00
Other support	0,30	5	1.250,00	1.250,00	375,00
Total ground personnel	**0,60**		**2.950,00**	**3.545,00**	**1.293,00**

Personnel administration and management

For the management and administration of the service, an administrative / accounting officer, a company administrator and a sales and marketing manager are provided for support.

The continuous contribution of dedicated resources is essential, especially in the first 2 years of starting the service, and it is believed that the contribution of tour operators and the inclusion of the service in tourist packages is fundamental to the success of the operation. Specialized personnel will have to work on the sale of the maritime connection, also in combined form with transfers by bus and train for groups, which will probably constitute more than 50% of the passengers transported.

The administrator will have to keep the relationships with the institutions and the request for permits and authorizations with the bodies in charge and with the Croatian counterparts.

It is considered that the personnel dedicated to the management work all year round, even if not at full speed, as detailed in the table below.

Salaries of administrative and management personnell (€)					
Role	**FTE**	**Months**	**Salary**	**Gross cost**	**Actual monthly cost**
Bookeeping	0,25	12	1.800,00	2.430,00	607,50
Administrator	0,25	12	3.000,00	4.050,00	1.012,50
Organisation and promotion	0,50	12	2.700,00	3.645,00	1.822,50
Tot amministrative	**1,05**		**7.500,00**	**10.125,00**	**3.442,50**

Personnel costs are updated annually throughout the analysis period, based on the IPC variation forecast (consumer price index). No costs were envisaged for seniority or special allowances, covered by the general "unforeseen" item in the cost / income statement.

The total cost of personnel for the year 2020 is € 244,977. The costs are adjusted annually based on the IPC variation forecasts (consumer price index).

3.4.5. Ordinary and extraordinary maintenance costs (O&M)

The implementation of the Project does not require to sustain current or ordinary maintenance costs additional to those incurred by the Molise Region for the arrangement of the Port of Termoli.

As regards the maintenance costs of the boat, a cost of:

- € 70 for each hour of planned navigation, including lubricants, filters, pumps and spare parts
- extraordinary maintenance of the vehicle is provided every 3 years (years 2022-2025-2028) for a cost equal to 60 € for the total hours of navigation made in the period.
- no boat storage / hauling costs are foreseen except for routine and extraordinary maintenance in shipyard.

Costs are adjusted annually based on the IPC change forecast (consumer price index).

The total of ordinary and extraordinary maintenance costs in the 10 years is equal to € 704.590 and in the year 2020 is € 29.498.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Ordinary	29.498	35.179	42.091	42.697	43.355	44.057	44.850	45.657	46.479	47.316
Extraordinary			56.422			110.511			116.479	

3.4.5. Fuel consumption

Fuel costs are calculated by multiplying the price of LSMGO marine oil (low sulphur marine oil), with subsidized treatment for “offshore” passenger transport for the number of hours of navigation provided by the table of Termoli Croatia connections hypothesised.

The price calculated for the year 2020 is € 0.574 / lt (+ 6.5% compared to the average seasonal cost for 2019 along the ports of the Molise / Marche coast). The increase is equal to what was forecast by the EIA in its January 2019 Report.

No fuel costs are counted for auxiliary engines, as the boat benefits from connection to the electricity line at the port of Termoli and a consumption increase of 7.5% was included for the consumption count.

Fuel consumption per one-way trip							
Year	Distance in nautical miles	Average cruise speed	Average Travel time/ h	Gross nr of trips	Delays and unforesee n events	Hours of navigation per trip	Total hours of navigation
2020	98	28	3,50	112,00	7,5%	3,8	421

This price is adjusted annually based on the EIA 2019 forecasts for the 2019-2050 period (for more details see the “Fuel Price” chapter). The total cost of fuel in the first year of operation is € 222,372 for a total of 421 hours of planned navigation.

3.4.6. Mooring, piloting and parking costs

The mooring costs have been calculated per route based on the fares published by the ports of Termoli and the Croatian ports. Prudentially, the costs for piloting (Local Practice) were applied to each berth, even though this is not a legal requirement for ships below 500 gross tonnage.

An average stationary time of 6 hours was foreseen in the Croatian ports, with the rates published for the high season reduced by 30% in consideration of the stationing required also in the mid-season months (May June September and October).

From the information received during the sight in place and from the comparison with local maritime operators, the cost for the annual parking at the Port of Termoli, the base port of the boat (Home port), is not provided. It was assumed a 10% of occasions in which it is compulsory to stay and overnight the boat and the crew in a Croatian port, calculated on the number of journeys carried out, with relative parking and board and lodging costs.

All the aforementioned costs are adjusted on an annual basis by taking as a reference only the expected changes in the Italian Consumer Price Index (CPI). Mooring, parking, piloting and other costs for the year 2020 have been calculated at € 13,118.

3.4.6. Insurance cost

Based on the verification with national and international brokers and operators, the overall cost of insurance, for damages, P&I (Protection and indemnity through a P&I Club), delays and crew for the year 2020 has been estimated at € 30,000.

Annual adjustments to the premiums were not applied, considering the progressively decreasing value of the boat resulting from its tax depreciation.

3.4.7. Promotional costs

Promotion costs are calculated by applying a flat rate to expected revenues for the year. The percentage of 2.5 is applied for the first 3 years of service and 1.5 for subsequent years.

The promotion costs provided for the first year of activity amount to € 29.943.

3.4.8. Other costs

There are costs for:

- general administrative expenses (overheads) on a flat-rate basis, in the ratio of 1.5% on expected revenues e
- for regulatory compliance, authorization and administrative, as well as for legal assistance, various practices and charges. Costs are calculated on a flat-rate basis, as a percentage of 1% of expected revenues for the year

- for unforeseen events, a percentage of 0.5% is attributed, which corresponds to a risk provision, as recommended by the Assarmatori.

The other costs assumed for the year 2020 are equal to € 35,931

3.5. Revenues

The revenues of the project are represented by the incoming financial flows paid directly by the users for the service provided by the operator.

No transfers or subsidies / subsidies have been foreseen nor are any other financial revenues (eg interest from bank deposits) considered as revenue for the project for the purpose of calculating financial profitability, because they are not directly attributable to the use of the goods / services provided by the project. Instead, they will be taken into consideration in verifying the financial sustainability of the project.

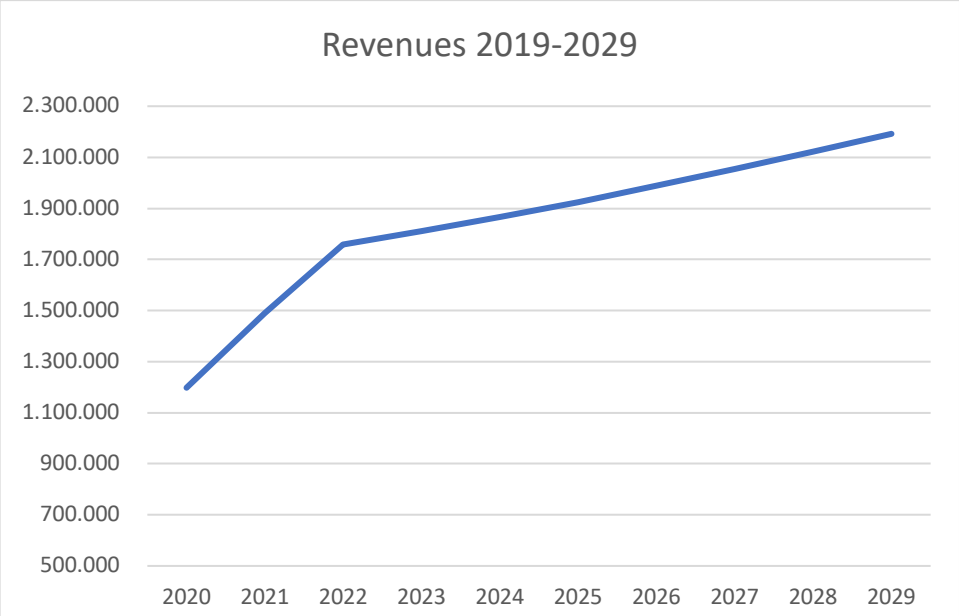
It is considered that:

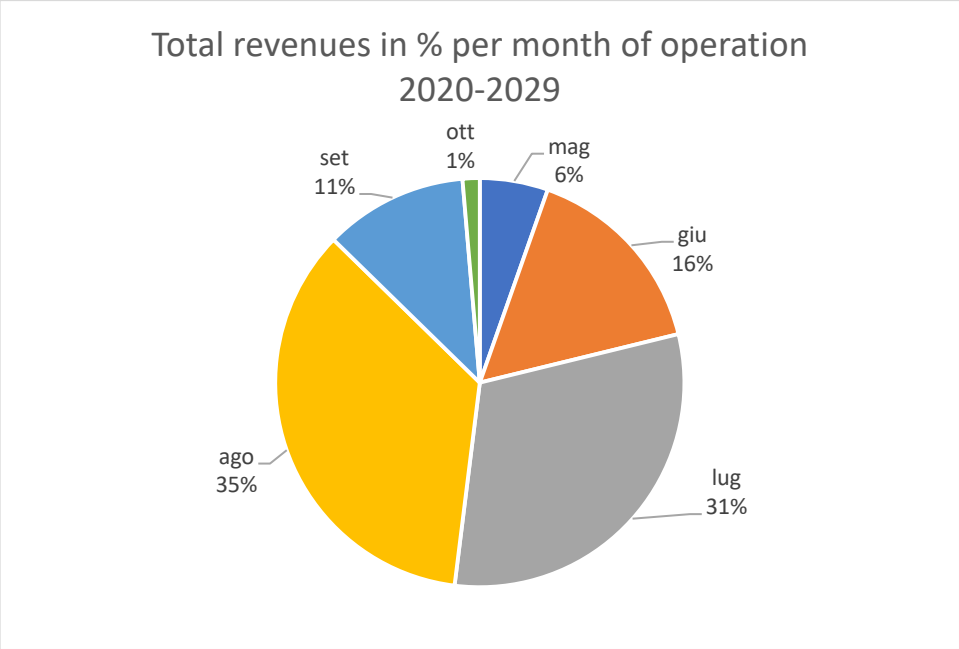
- The tariffs and fees applied to the user allow the recovery of the total cost, including the capital cost, related to environmental services;
- The costs associated with the exhaustion of resources and the relative preventive measures are supported by those who cause pollution and / or the exhaustion of resources;
- The pricing systems are proportional to the marginal social cost, which includes the costs associated with the investment, the environmental services rendered, the pollution produced, the preventive measures adopted, and the scarcity of the resources used.
- The principle of full cost recovery envisages that:
- the tariffs are aimed at recovering capital costs, operating and maintenance costs, including environmental and resource costs;
- the tariff structure maximizes the revenue of the project net of public subsidies, taking into account in any case the economic availability of the users (ie their ability to sustain the expenditure).

Revenues derive from the price of transport tickets multiplied by the quantities sold, with the weighted application of discounts and facilities for groups of passengers, as detailed in the demand and tariff forecasts. It should also be noted that:

- revenues from joint ticketing and group bookings with operators of ground transportation services (bus and train) have not been taken into consideration
- revenues consider annual ticket price increases (see Tariffs) and the trend of increased demand that can be deduced from the progression of the TOC (employment rate), which varies based on the coefficient elaborated taking into account the GDP parameters and the projections of demand growth linearly extrapolating the trend of maritime passenger transport in the Adriatic over the last five years.
- a reduction is applied to revenues to take into account the incidence of travel cancellations, while on the cost side, the same are maintained to cover unexpected charges in the event of such occurrences.

Estimated Revenues for the year 2020 are € 1,197,715 and in the tenth year € 2,191,841.

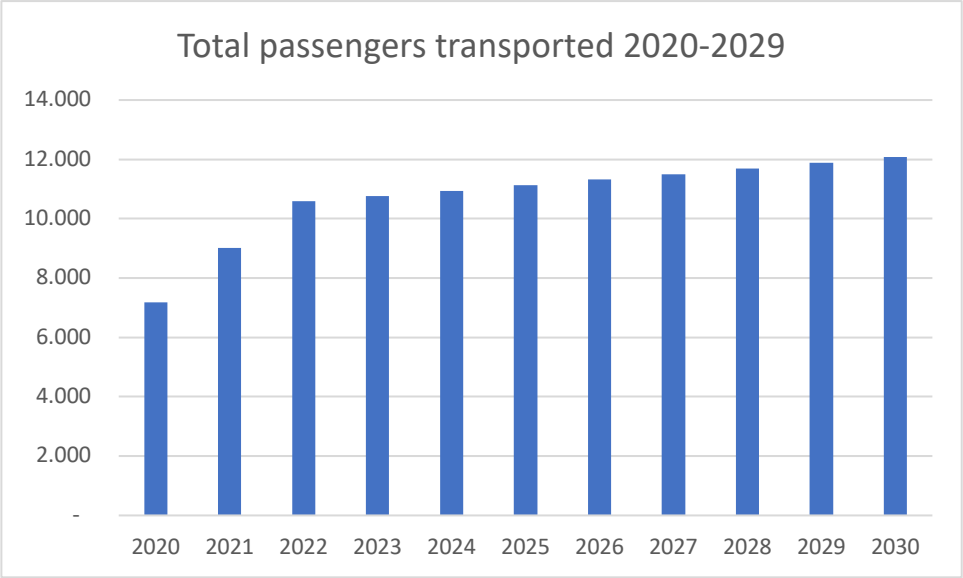




For the purposes of a more detailed reading of the revenue projections, the table below shows the total number of embarkations and disembarkations generated by the maritime connection

and the presumed number of traveling passengers (it is assumed, by approximation, that 100% of passengers make the round trip or that the same number of passengers travel on the Termoli Croatia and Croatia Termoli section).

Total embark/disembrakments 2020-2029 and total passengers transported								
Year	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Total**	**Tot pax**
2020	600	2.664	4.320	4.992	1.776	-	14.352	**7.176**
2021	684	2.857	4.688	6.593	2.857	342	18.020	**9.010**
2022	1.390	3.873	5.958	6.703	2.905	348	21.176	**10.588**
2023	1.413	3.938	6.058	6.815	2.953	353	21.530	**10.765**
2024	1.437	4.003	6.159	6.929	3.003	359	21.890	**10.945**
2025	1.461	4.070	6.262	7.045	3.053	365	22.256	**11.128**
2026	1.486	4.138	6.367	7.163	3.104	371	22.628	**11.314**
2027	1.510	4.208	6.473	7.282	3.156	378	23.007	**11.503**
2028	1.536	4.278	6.581	7.404	3.208	384	23.392	**11.696**
2029	1.561	4.350	6.692	7.528	3.262	390	23.783	**11.891**



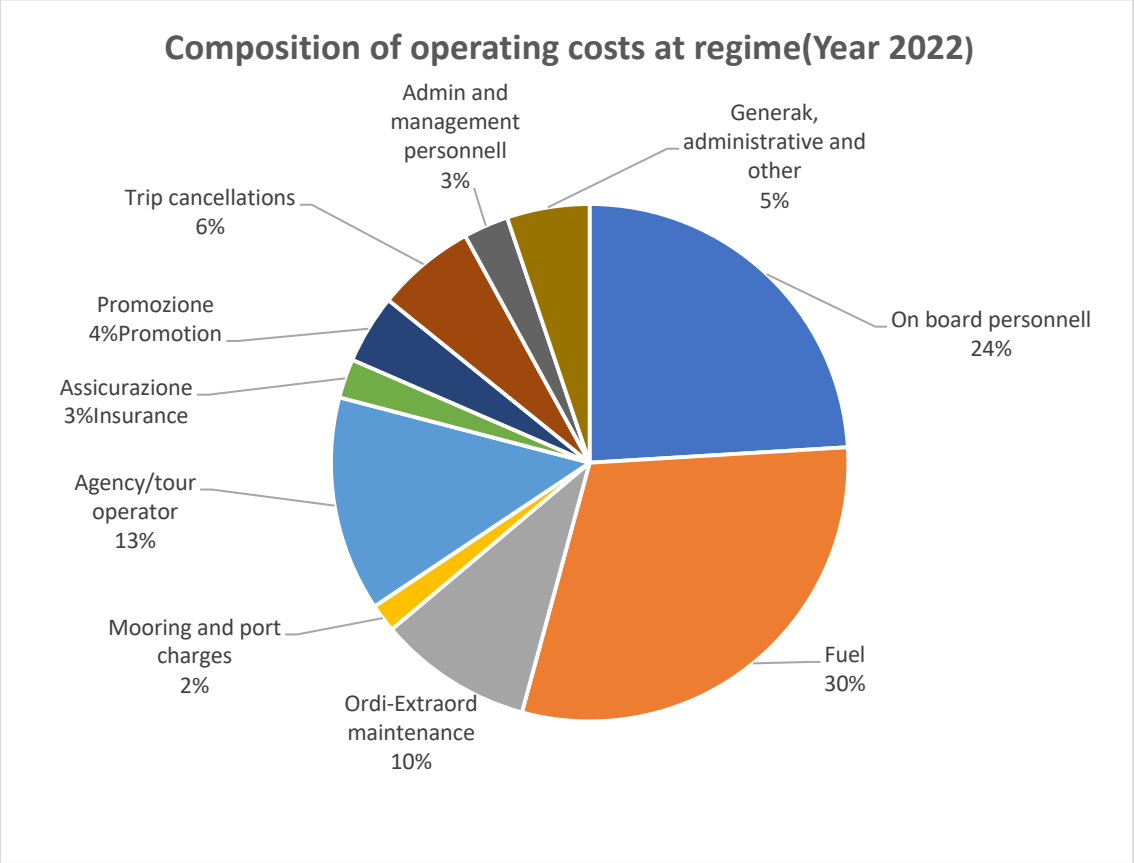
3.6. Summary of cost and revenue projections

The summary table below provides a reading of operating costs and revenues for the first five years, useful for identifying the main figures and results of the model developed and their time progression.

Financial charges are not included, nor are the costs for taxes and other fiscal charges, which may vary based on the investment cost hedging choices. The complete projection is provided in the final part of the document.

As it turns out, no public contributions are foreseen in terms of availability fees or other forms of contribution to the costs of a possible service concession.

Operational costs and revenues of the maritime line 2020-2024					
Values in euro	**2020**	**2021**	**2022**	**2023**	**2024**
Annual Hours of navigation	421	497	587	587	587
Personnel on board (crew)	219.284	236.858	245.617	249.129	252.939
Fuel	222.372	262.949	308.155	311.438	317.902
Ordinary and extraordinary maintenance	29.498	35.179	98.512	42.697	43.355
Parking, mooring and port charges	13.118	15.118	18.113	19.057	19.368
Agencies/tour operators	93.412	116.286	137.227	141.158	145.324
Insurance	30.000	30.000	30.000	30.000	30.000
Promotion	29.943	37.249	43.972	27.165	27.996
Cancelled trips	43.118	53.638	63.319	65.197	67.190
Total yearly operational costs	**680.744**	**787.277**	**944.915**	**885.841**	**904.072**
Administrative Personnell cost	25.693	27.752	28.778	29.189	29.636
General, administrative and compliance costs	35.931	44.699	52.766	54.331	55.991
Totals costs	**742.368**	**859.727**	**1.026.459**	**969.361**	**989.699**
Revenues	**1.197.715**	**1.489.951**	**1.758.873**	**1.811.018**	**1.866.376**
Availability payments	0	0	0	0	0
Other contribution	0	0	0	0	0
EBITDA	**460.347**	**635.224**	**737.413**	**846.657**	**881.677**



Economic data: averages in the project period				
	Average in the period 2020- 2029			
Services (unit of measure)	**Passengers**	**Price**	**Revenues**	**Costs**
Passenger transported Termoli Croazia	10.602	173,0	1.840.442	942.377
TOTAL	-	-	1.840.442	942.377

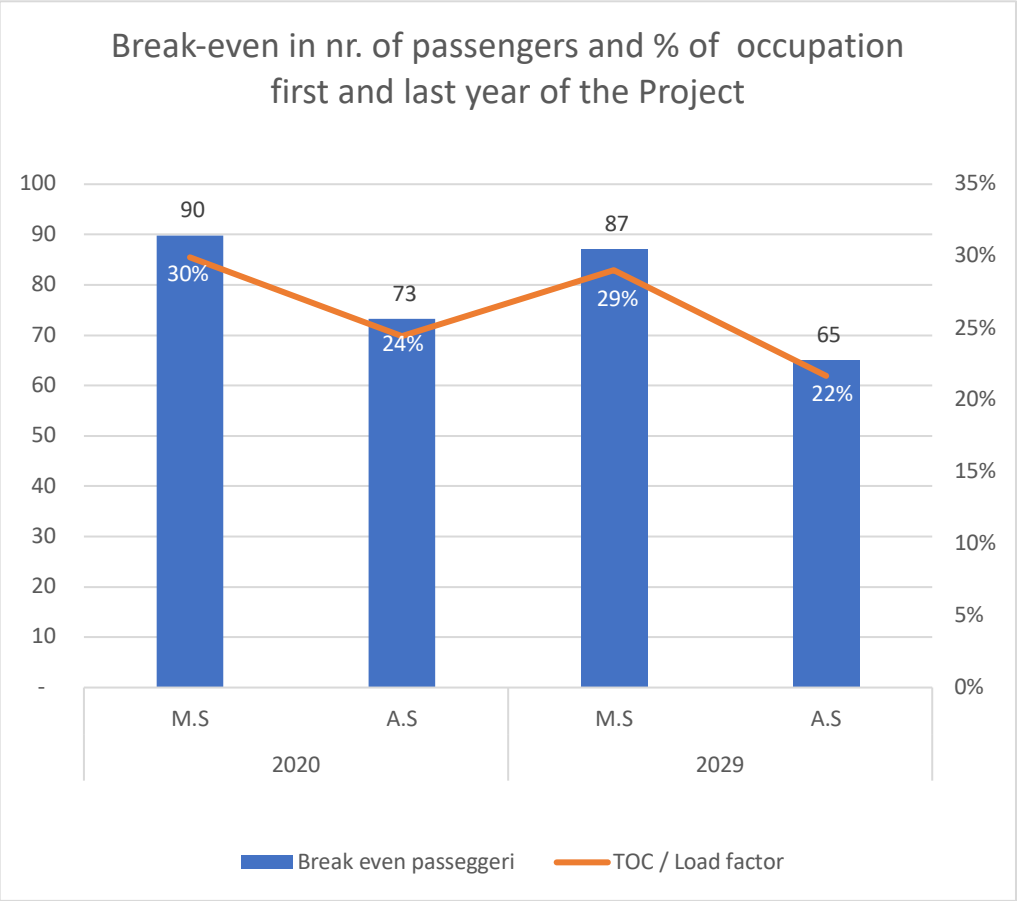
For the purpose of verifying the economic convenience of operations, a break-even calculation was carried out in terms of passengers carried and ship occupation.

For this calculation all operating and general costs directly applicable to the boat and to its operations were attributed, with the exclusion of administrative personnel costs, financial charges, different and general costs.

Break even passengers per year and season																				
	2020		2021		2022		2023		2024		2025		2026		2027		2028		2029	
Mid and High season	M. S	H. S.	M. S	H. S	M. S	H. S	M. S	H. S	M. S	H. S	M. S	H. S	M. S	H. S	M. S	H. S	M. S	H. S	M. S	H. S
Break even passengers	90	73	92	71	84	65	85	65	85	66	85	66	85	66	86	66	86	66	87	65
Load factor	30 %	24 %	31 %	24 %	28 %	22 %	28 %	22 %	28 %	22 %	28 %	22 %	28 %	22 %	29 %	22 %	29 %	22 %	29 %	22 %

It should be noted that in 2020, in mid-season the number of passengers required to reach break-even is equal to 90, i.e. a 30% occupancy is required, while in Alta 73 passengers are sufficient with occupancy of available seats equal to 24 %.

For the following years the **break-even settles at 87 passengers on average and 65 in the high season.**



3.6. Results of the elaboration

3.7. Financial analysis

The purpose of this is to offer an ex ante evaluation of the validity of the proposed Project.

The Cost Benefit Analysis (CBA) is a support for the judgment and the decision with respect to the opportunity to realize an investment project from the point of view of the variation of the collective well-being and is a precious input for the decisions about the co-financing opportunity of projects by the public sector.

The "Guide to the CBA" of the European Commission (2014) defines the CBA and divides it into two separate analyses: economic analysis and financial analysis. While the economic analysis provides an evaluation of the project from the social point of view, the financial analysis provides an evaluation of the project from the private point of view (normally coinciding with the investor subject), taking care to insert all the financial items that contribute to the determination of the cash flows generated by the project.

The financial analysis allows, therefore, to:

- Evaluate the profitability of the project
- Verify the financial sustainability of the project
- Describe the cash flows that are the basis for calculating the costs and socio-economic benefits.

In particular, the financial analysis of projects eligible for public co-financing should demonstrate the existence of a financial deficit (i.e. a negative Net Present Financial Value) and the need for an intervention that makes the project financially viable.

Following the European Commission's Guide, the methodology used in this analysis to determine financial profitability is that of Discounted Cash Flow (DCF), an approach that requires considering a series of assumptions:

- only cash flows (income and expenses) are considered;
- the project's cash flows are determined based on an incremental approach, i.e. based on the differences (in terms of costs and benefits) between the scenario with the project and the scenario without a project;
- the aggregation of cash flows that occur in different years requires the adoption of an appropriate financial discount rate to correctly discount the value of future cash flows.

The basic parameters

The time span of the assessment extends from the year 2020 to the year 2029 and assumes that the infrastructural improvements in the Port of Termoli and the purchase and preparation of the boat and crew are carried out within the month of April 2020.

In line with the indications of the Guide to the cost-benefit analysis of the European Commission's investment projects (2014), a 4% financial and social (economic) discount rate of 3% is applied.

Costs and benefits are expressed in constant values (2020 euros) in line with the use of a real discount rate for cash flows. The base year for the discounting of flows is therefore 2020.

Type	Parameter
Year of calculation and price level	2020
Financial discount rate	4%
Social discount rate	3%
First year of operation	2020
Time horizon - calculation period	10 years

Intervention framework	
Years of project duration (investment + management)	10
Total investment cost (M €)	4.050.000
Total investment cost (M €) - present value	**4,050.000**

Use of funds	euro	%
Civil works and accommodation	50.000	*1,2%*
Boat	4.000.000	*98,8%*
Total investment costs	**4.050.000**	***100%***

Financial assumptions	
Cash remuneration	0,2%
Private / own capital	12,0%
Rate applied to bank financing	4,5%

	Amortization structure	
a	Year of management start	2020
b	Years of management	10
c	Year of end of management	2029
d	Amortization start year	2020
e	Years of amortization	10
f	Year of amortization termination	2029
g=100/e	annual depreciation rate (%)	10,0
(*)	Accounting residual value	0
h	Asset value	4.050.000
i	Total public contributions	50.000
l=h-i	Initial value of the assets to be amortized	4.000.000
l/e	Annual depreciation rate	400.000
	(*) calculated as: total cost inv - [min (e, b) * g * h]	

The net present financial value

The evaluation of the financial equilibrium of the Project requires to account for cash flows that occur at different times of the time: for this operation the methodology used in financial mathematics for the "discount" of values is used. Conceptually, it is the inverse operation of capitalization, which adds compound interest to the initial capital over time, obtaining the so-called "mount". With the discounting, the present value is calculated which, capitalized over time at a specific interest rate, will produce a known future value.

By discounting all the cash flows relating to a given phenomenon, the net financial present value is obtained (FNPV):

$$\mathrm{FNPV} = \sum_{t=0}^{n} a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \ldots + \frac{S_n}{(1+i)^n}$$

This value depends on the reference year used: in this study the year used is 2020.

3.7.1. Financial analysis results

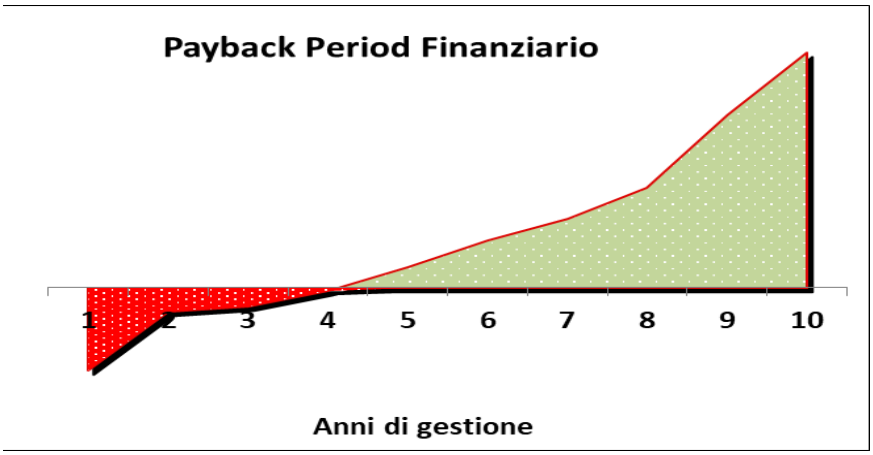
The realization of the project entails the need to face investment costs in the years 2019-2020 for € 4,050,000, of which 50,000 hypothetically borne by the public body promoting the initiative.

The discount rate used to evaluate the financial return is obtained with the WACC (Weighted average cost of capital) formula, which combines and weighs the rates of return on equity and banking capital (respectively 10% and 4.5%) .

The net financial value of the project is € 2,118,085, the financial IRR 43.62%.

Financial profitability indexes	*Base Scenario*
Discount rate (WACC) for NPV calculation	*5,9%*
Financial project internal rate of return (FRR)	**43,62%**
Financial Net present value of the Project (FNPV)	**2.118.085**
NPV /PV Investment	**52,30%**

In the basic hypothesis**, the financial payback of the investment is around 4.5 years.**



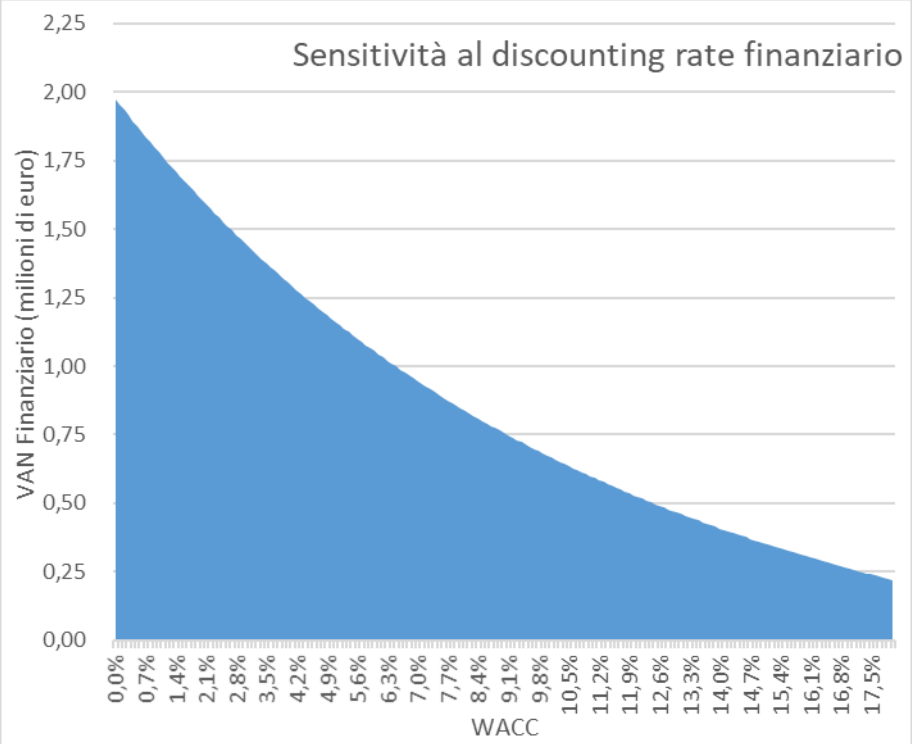
The average gross operating margin (EBITDA) for 10 years is € 826.958.

The following are the complete financial cash flows, which are the basis for the determination of the projected financial IRRs and NPVs set out above.

	Financial Cashflow	Total (nominal)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
+	**Net cashflow**	**3.389.314**	**-3.545.779**	**614.962**	**686.853**	**755.220**	**777.037**	**714.112**	**823.762**	**851.756**	**795.497**	**915.895**
+	Private Capital (Equity)	**800.000**	**800.000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
+	Total public contributions	**50.000**	**50.000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
+	The Banks	**3.200.000**	**3.200.000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
+	Other Banks	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
=	**Cash Flow for the Debt and Financial Management**	**7.439.314**	**504.221**	**612.731**	**685.741**	**754.774**	**776.553**	**713.064**	**822.619**	**851.143**	**794.291**	**915.249**
-	Interest (with initial pre-amortization)	**-576.000**	**-133.714**	-113.143	-92.571	-72.000	-51.429	-30.857	-10.286	0	0	0
-	Repayment of capital	**-3.200.000**	**-457.143**	-457.143	-457.143	-457.143	-457.143	-457.143	-457.143	0	0	0
+	Interest income on the CCN	**886**	**98**	63	85	89	93	95	98	103	106	111
=	**Net Financial Cash Flow**	**3.627.433**	**-158.539**	**42.508**	**136.111**	**225.720**	**268.074**	**225.159**	**355.289**	**851.246**	**794.397**	**915.360**

	Net Financial Cash Flow Without Public Contribution	**3.577.433**	**-208.539**	**42.508**	**136.111**	**225.720**	**268.074**	**225.159**	**355.289**	**851.246**	**794.397**	**915.360**
	Cumulative net cash flow	**9.776.199**	**-158.539**	**-143.924**	**-7.813**	**217.907**	**485.982**	**711.141**	**1.066.430**	**1.917.675**	**2.712.073**	**3.627.433**

The graph illustrates how the NPV varies as the WACC (weighted cost of capital) varies, which in the case of the Study is assumed to be 5.9%. For a reduction of one million euros in the NPV, the WACC must increase by + 4%, which indicates a low average sensitivity of the Project to the change in the cost of capital.



The projected operating IRR is envisaged below, which allows, unlike the Financial IRR, to identify the actual rate of return of the project, i.e. the intrinsic profitability of the same, allowing comparisons with similar business initiatives.

The Project Operating NPV is obtained by discounting the net cash flow from operations at a rate of 4%.

Operating profitability indices	
discount rate for the calculation of the NPV	*4,0%*
Project Operating IRR	**11,31%**
Project Operating NPV	**1.762.842**
VA investment	4.425.262
VA management	6.435.628
Operating profitability index	**45,43%**

Bankability indexes

The **DSCR** (Debt service coverage ratio) expresses the ability for the company to generate sufficient flows for debt service in its two components represented by principal and interest**.**

It is equal to the ratio, calculated for each given period of the time horizon envisaged for the duration of the loans, between the operating cash flow generated by the project and the debt service including the principal and interest portion. It is used to analyse the sustainability of a given level of debt, allowing it to assess its risk and its cost.

For this type of investment, which presents considerable uncertainties on the demand side, the desirable DSCR is> at 1.6. The higher this index, the easier it will be to obtain credit from banking institutions, at a more favourable rate.

The **LLSCR** (Loan Life Coverage Ratio) represents the bankability indicator during the period of existence of the debt and is equal to the ratio between the sum (cumulative and discounted) of the cash flows serving the debt valued at the beginning of the project until last year of repayment of the debt, increased by the cash reserve usable for the same debt, and the residual debt calculated at the initial moment in which the valuation is carried out.

It is used for the analysis of the sustainability of a given level of debt and makes it possible to assess its risk and its cost. This indicator has a less immediate interpretation than the DSCR, but a value higher than the unit represents a guarantee for the lenders.

The values achieved by the bankability indexes of the investment project are shown below, which provide precise indications on the capacity of the investment to repay the contracted debt.

Bankability indexes			2020	2021	2022	2023	2024	2025	2026
DSCR - Debt Service Coverage Ratio			1,741	1,074	1,24	1,427	1,527	1,461	1,760
LLCR - Loan Life Coverage Ratio			1,372	1,448	1,713	2,042	2,467	3,157	5,949

	DSCR	LLCR
Years of calculation (debt repayment)	7	7
Minimum (time span: operation)	**1,074**	**1,372**
Period of Minimum DSCR/LLCR	2021	2020
Average DSCR/LLCR	**1,462**	**2,592**

The following page provides details of the operating flows for the period 2020-2019 that the Project can generate.

The results of the analysis are summarized in an overview:

Profitability indices	Operating	Financial
discount rate for the calculation of the NPV	*4,0%*	*5,9%*
Project TIR	**11,31%**	**43,62%**
Project NPV	**1.762.842**	**2.118.085**
VA investment	4.425.262	
VA management	6.435.628	
VA / VA investment		50,79%
Profitability index	45,43%	

Average EBITDA for the 10 years: € 826.958 - margin of 44% on revenues.

1	Operating cash flow	Total (nominal)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
+	Tariff revenues used in cash flow	**18.404.421**	1.197.715	1.489.951	1.758.873	1.811.018	1.866.376	1.924.817	1.988.264	2.053.867	2.121.700	2.191.841
+	Availability fee	**0**	0	0	0	0	0	0	0	0	0	0
-	Costs for services	**-3.453.295**	-245.521	-296.990	-345.397	-336.908	-345.869	-355.335	-365.583	-376.171	-387.110	-398.411
-	Personnel costs (before social security charges)	**-2.887.181**	-244.977	-264.609	-274.395	-278.318	-282.574	-291.793	-301.853	-307.250	-317.862	-323.548
-	Fuel costs	**-3.089.768**	-222.372	-262.949	-308.155	-311.438	-317.902	-322.779	-325.138	-334.135	-337.120	-347.781
-	Ordinary / extraordinary maintenance	**-704.590**	-29.498	-35.179	-98.512	-42.697	-43.355	-154.568	-44.850	-45.657	-162.958	-47.316
	EBITDA	**8.269.587**	**455.347**	**630.224**	**732.413**	**841.657**	**876.677**	**800.341**	**950.839**	**990.654**	**916.651**	**1.074.785**
-	Amortization instalments	**4.000.000**	*400.000*	*400.000*	*400.000*	*400.000*	*400.000*	*400.000*	*400.000*	*400.000*	*400.000*	*400.000*
	Operating income	***4.269.587***	*55.347*	*230.224*	*332.413*	*441.657*	*476.677*	*400.341*	*550.839*	*590.654*	*516.651*	*674.785*
	Operating income net of charges.	***3.693.587***	*-150.367*	*117.081*	*239.842*	*369.657*	*425.248*	*369.484*	*540.554*	*590.654*	*516.651*	*674.785*
-	Taxes on net operating income	**-922.549**	0	-28.099	-57.562	-88.718	-102.060	-88.676	-129.733	-141.757	-123.996	-161.948
=	**Net Operating Cash Flow (= EBITDA-Taxes)**	**7.347.038**	**455.347**	**602.124**	**674.851**	**752.939**	**774.617**	**711.665**	**821.107**	**848.897**	**792.655**	**912.836**
-	Total investment cost	**-4.050.000**	-4.050.000	0	0	0	0	0	0	0	0	0
+ / -	Change in the NWC	**55.509**	21.000	10.606	10.889	1.835	1.936	1.399	1.512	2.246	1.636	2.413
+	Final residual value	**0**	0	0	0	0	0	0	0	0	0	0
=	Net Cash Flow	**3.352.547**	**-3.573.618**	**612.731**	**685.741**	**754.774**	**776.553**	**713.064**	**822.619**	**851.143**	**794.291**	**915.249**

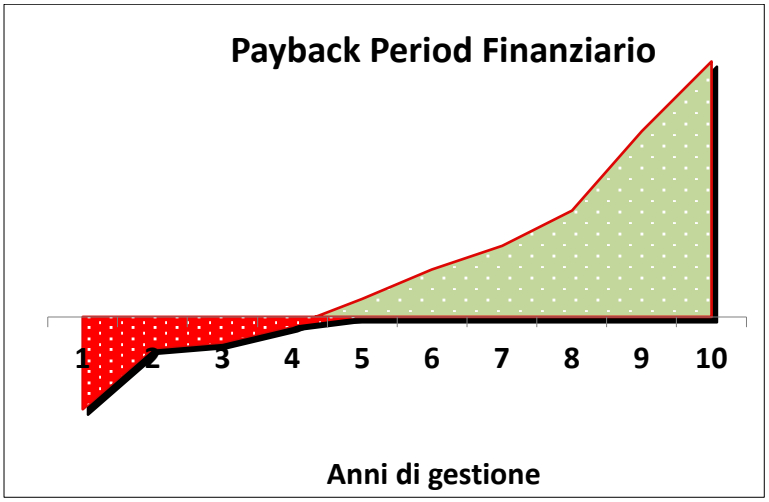
3.7.1. Scenario analysis (pessimistic and optimistic)

In the scenario of lower demand growth than that of the market and that is zero growth in the 7 years after the scheduled entry into the system, the results would be the following:

Profitability indexes	Pessimistic scenario	
	Operating	Financial
discount rate (WACC) for the calculation of the NPV	4%	5,9%
Project IRR	**8,91%**	**38,59%**
Project NPV	1.092.334	1.572.679
NPV / PV Investment		**38,83%**
Operating profitability index	**29,67%**	

The financial return on investments is only extended by 6 months to 5 years. This confirms the degree of prudence applied to the forecasts of variation in demand over the years.

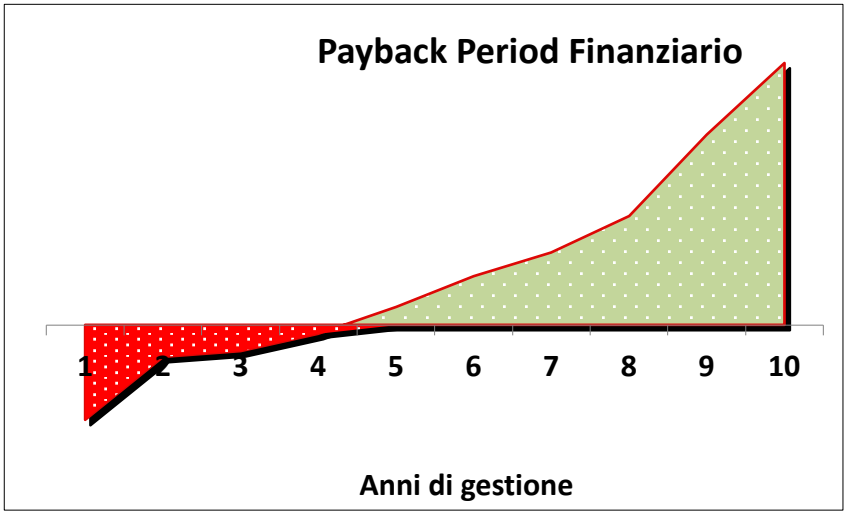
However, the operating IRR drops to 8.9%, and may not be very attractive for an operator due to the type of activity and related risk.



The gross operating margin (EBITDA) for the 10 years is equal to € 706.405.

The financial return on investments, assuming an increase in demand in the period equal to that recorded in the Adriatic on average over the last 2 years (+ 5%), provides for a 3.8-year payback.

Profitability indexes	Optimistic scenatio	
	Operating	Financial
discount rate (WACC) for the calculation of the NPV	*4%*	*5,9%*
Project IRR	**14,10%**	**48,70%**
Project NPV	2.738.788	2.945.679
NPV / PV Investment		**72,73%**
Operating profitability index	**68,37&**	



The average EBITDA would amount to € 1,006,789.

From the results of the analysis carried out **it is possible to hypothesize the investment proposed without a public contribution, under the conditions and with the assumptions highlighted in the model prepared by the present Study**

3.8. Economic analysis

It is considered necessary to specify that in the hypothesis of an almost entirely private investment, such as that considered in this Study, it is not necessary to carry out the economic analysis.

However, a broad analysis was considered to quantify the benefits for the Molise community and the wider community, deriving from the activation of the Termoli-Croatia sea connections.

This quantification can be useful if the public body decides to ensure the connections on a stable basis or increase its frequency (which could lead to lower filling rates and losses for the operator), and for any other possible evaluation.

For the purpose of cost-benefit analysis, the simulation of the choice of the fast maritime transport mode is carried out with respect to the sole option of competing the car according to the criteria of the theory of casual utility, in the minimization of the general cost of transport perceived by the traveller in making the journey, given the limits related to both its perception of the state of the road network, and to the knowledge and discretization of its behaviour.

The assignment model is multimodal and takes into account the parameters of cost, capacity, speed and journey times in the section for road and sea mode.

The benefits are measured based on the changes in the parameters described below.

Consumer surplus

The consumer surplus, defined as the excess of willingness to pay by users compared to the general cost of transport for a specific trip.
By "generalized cost" is meant the overall inconvenience for the user to move from a given starting point to the relative destination using a specific mode of transport.
The value is calculated as the sum of the monetary costs incurred (e.g. tariffs, tolls, fuel, etc.) plus the travel time (and / or equivalent inconveniences, such as waiting times) also expressed in the form of equivalent monetary value. Any reduction in the general cost of transport for the movement of people leads to an increase in consumer surplus.
The elements considered for estimating the consumer surplus are the following:

- Rates paid by users
- Travel time
- Vehicle operating costs for those traveling by road

For the purposes of this calculation the following have been assumed as alternative connection systems:

- travel by car to Croatian destination (Split) near the islands of destination (Hvar and Korcula)
- travel by car to Ancona or Bari, travel by Ro-Pax ferry to Split and Dubrovnik respectively, and new boarding in Ro-Pax to the islands of destination.

The use of air transport has not been taken into consideration as for now, for the reasons already given, it is not considered a competing alternative given the complexity of making the journey from origin to destination.

It has been assumed that only 20% of the total number of passengers transported by the Termoli Croatia high speed crafts sea transport envisages a stay of 5 days or more, as otherwise, the travel time would be too long compared to staying in Croatia (and vice versa for Croatians intending to stay in Molise).

Surplus of the producer / operator

The producer surplus is equivalent to the revenues accrued by the operator of the Termoli Croatia line less the costs incurred.

The variation of the producer surplus is calculated by subtracting from the change in revenue due to the increase in the sale of maritime transport tickets the variation in costs incurred by the producer due to the increase in the operating costs of the boat.

Since no Termoli Croatia high-speed line is operational, the variation of the producer surplus assumes the assumption of 100% of the costs and revenues foreseen by this Study.

The elements considered for the estimation of the producer surplus are the following:

- Rates paid by users and collected by the operator / producer;
- Operator / producer operating costs

In the economic analysis, the fees paid by users for the use of the maritime link appear in the form of cost to the user in estimating the consumer surplus, and at the same time in the form of the producer's revenue in the estimation of the producer surplus.

This implies that, as regards the existing traffic, the effect of the tariffs on the analysis is null. This condition, on the other hand, does not apply to the calculation of the benefits relating to the traffic generated / induced and to the hijacked traffic: in these cases the benefits are approximated by the "goal rule" and the producer's revenues and the costs charged to the user do not they cancel each other out..

Direct and indirect effects of an economic nature and externality

Investment and management spending trigger a multiplicative process that translates into an increase in added value and employment that the financial analysis is unable to grasp.

Added to this are the negative or positive environmental and non-environmental externalities that will be counted in detail.

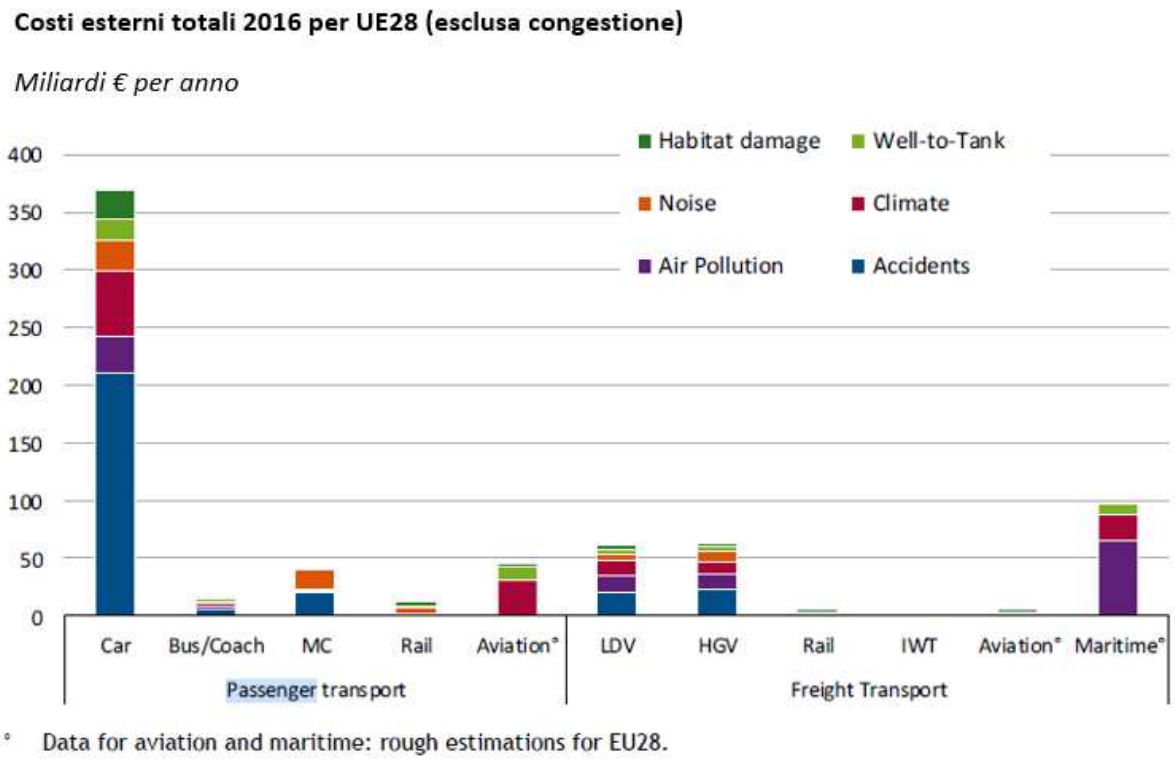
3.8.1. Externalities: accidents, emissions, noise, climate change, travel time

3.8.1.1. Total externalities related to transport in EU countries 28

The table below shows the total external transport costs for EU28 by transport mode and cost category for 2016, as identified by the European Commission Handbook on the external cost of transport 2019.

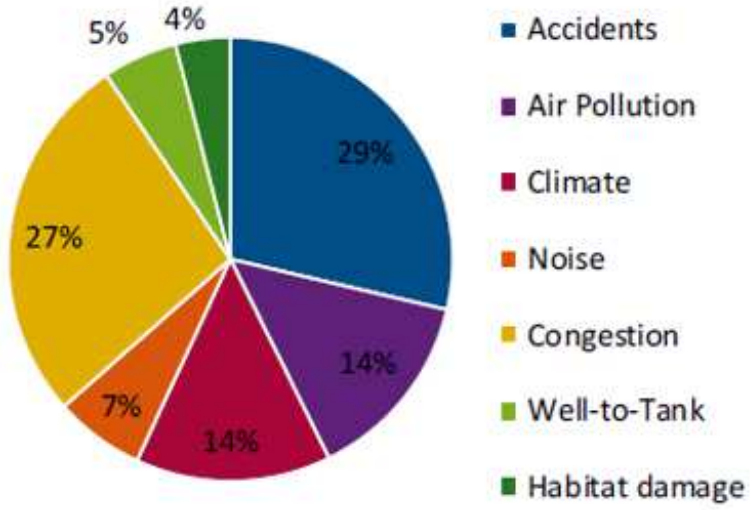
Total external costs for road, rail, inland waterways, aviation and maritime transport (excluding congestion costs, since they are not calculated for all modes) amount to € 716 billion, which corresponds to 4.8% of GDP total in the EU28. Congestion costs amount to another 271 billion euros for 2016 (delay costs generated by road transport). Total external costs, including congestion costs, amount to € 987 billion (6.6% of GDP).

For air and sea transport, the detailed calculation of external costs was carried out only for a series of selected airports and ports, however there is no survey of costs for maritime passenger transport.



The total external costs for EU28 for air and sea transport are estimated only approximately. For the 33 selected EU airports the external costs amount to 33 billion euros, for the 34 selected EU ports the costs amount to 44 billion euros.

Percentuale delle differenti categorie di costi esterni 2016 per UE 28



Including data for aviation and maritime: rough estimations for EU28.

The most important cost category is incident costs of 29% of total costs, followed by congestion costs (27%). The costs of climate change and air pollution both contribute to 14% of total costs, noise costs to 7% and damage to habitats to 4% of total costs. The emission costs for the production and distribution of energy and fuels amount to 5% of the costs.

Road transport is the predominant mode that causes by far the most external costs (83% of total costs, including aviation and seafarers; 97.5% excluding aviation and seafarers). Maritime transport causes 10%, air transport 5%, rail transport 1.8% and inland waterways 0.3% of costs. 69% of total costs are due to passenger transport, 31% of costs are caused by freight transport (including light commercial vehicles).

3.8.1.2. Methodology and input for the calculation of externalities

As suggested by the European Commission's 2014 Cost Benefit Analysis Guidelines, believing that the project is able to change passenger traffic volumes, the consumer surplus must be estimated for the cost and time reduction introduced by the new line and all the differentials of externalities (positive or negative) generated by the transfer / replacement from one mode to the other.

It has been assumed that:

- the new line generates / induces new demand for 35% of passengers transported, the remaining 65% constitutes traffic diverted from other modes
- 30% of passengers have + 5 days available and can therefore consider moving to Croatia by car as an alternative
- only 20% of Termoli-Croatia travellers who travel by car travel the entire route by road to Split and then board the local ferry, the remaining 80% reach the destination ports via ferry with embarkation at Ancona via Spalato for then embark on the local ferry. The option to reach Bari by car to board for Dubrovnik was discarded, as the connections to the target islands are infrequent and the entire trip would therefore be too long and uncertain for the time
- there is a potential demand of at least 40,000 passengers a year, as indicated in the Forward-looking framework and prospects for development of traffic and port activities - 2010.

The following table summarizes the result of this segmentation (years 2020-2023), useful for calculating the externalities generated by the Project and the consumer surplus.

Segmentation of demand and travel conditions Termoli- Croatia					
	Variables and hypothesis		**2020**	**2021**	**2022**
		Pax trip	7.176	9.010	10.588
Total pax of new demand generated		*35%*	2.512	3.153	3.706
Existing demand deviated from other modes		*65%*	4.664	5.856	6.882
	of which time available < 5 gg	*70%*	3.265	4.099	4.818
	of which time available > 5 gg	*30%*	1.399	1.757	2.065
	pax >5 gg decide fast maritime connection	*50%*	700	878	1.032
	pax >5 gg would drive to Split	*20%*	140	176	206
	pax >5 gg would go by car via Ancona	*80%*	560	703	826
	Total passengers removed from the mode totally road		**840**	**1.054**	**1.239**

The calculation of externalities and producer and consumer surplus was as follows:

- account was taken of the calculation of the externality differential (between sea and car) generated exclusively by the replacement of passengers by car for the Termoli-Spalato and Termoli-Ancona route by car with ferry boarding to Split (total 840 pax / year in the 2020), The net benefit resulting from externalities on the enlarged community (countries of the Italian and Croatian Adriatic coast) was calculated.
- The pkm emission costs of the Croatian ferry from Spalato to the islands were not considered, prudently reducing the total effective benefits brought by the fast connection.
- Externality savings for the new demand generated were not considered.
- with reference to the traffic of "substitution" of the already existing demand, diverted from other modalities (65% of the total) towards the fast maritime transport, they have not been attributed surplus to the consumer from reduced tariff cost, in how much the differentiation of the prices and the ferry offers and the possible combinations, after an in-depth analysis of all the options at all operators, lead to a maximum savings of 7%, compared to a much higher volatility and prices.
- only for the new demand generated (35% of the total), it was preceded by the estimate of the net effects on the operator's surplus, as per the recommendations and practices of the EU and of the World Bank.
- the time saving value was considered for 100% of passengers transported, among consumer surpluses.

Cost / benefit of environmental externalities for car travel

The analysis was carried out in the perspective of cost for an Italian traveller. Regional corrective factors were not applied to Molise and the average cost calculated for Italy for the entire journey was applied, including for the Croatian section.

Unit costs are used for the following components applied to Italy:

- Accidents
- air pollution
- climate change
- noise
- cost of producing and transporting fuel (well to tank)
- damage to the habitat

The total cost for negative externalities generated by car transport in 2020 is € 7.9[1] per passenger Km (pkm) (in Croatia the external cost of car transport is 10.2), as indicated in the Handbook on the external cost of transport.

Congestion costs are excluded, assuming that the journey is made on motorways and without crossing urban centers.

Cost / benefit of externalities for travel by fast shipping

Since the total cost of externalities for maritime passenger transport was not provided in the Handbook, the cost of transporting goods in € cents / tkm of inland waterways as "proxy" was taken as the reference proxy. navigable, applying a multiplier 4 to the costs related to climate change and air pollution, due to the higher consumption and emissions per tonne transported

[1] Ref: Table 73 pag. 137 Handbook on the external cost of transport – gennaio 2019 Commissione Europea

and that the average fill percentage of the boat envisaged by the demand forecast. The result of the processing is shown in the Table.

Cost	Value € cent/tkm river transport	Correction multiplier	Value € cent/tkm Fast boat
Accidents	0,1	1	0,1
air pollution	1,3	4	5,2
climate change	0,3	4	1,2
cost of producing and transporting fuel (well to tank)	0,1	0	0,1
damage to the habitat	0,2	1	0,2
Total	**2,00**		**6,80**

The value obtained (€ 6.80 -cent / tkm) was subsequently divided by the correction factor, equal to 7.14 calculated with the following formula:

1000/70 x (1-50%)

where

- 1.000 kg per tonn
- 70 kg the average weight per passenger
- 50% the average occupancy rate of the vehicle

It results a cost per passenger / km equal to € -cent pkm of 0.95[2].

The differential of the external costs between maritime and automobile transport was calculated from 7.9 to 0.95 = € 6.95 cent pkm.

At this cost a further correction was applied since the average number of passengers per car charged here is 2.3, unlike the Handbook, which is based on 1.6 passengers, being mainly "calibrated" for local transport or interregional.

The cost differential due to externality between the route by car and the route with high speed crafts maritime transport thus determined, is equal to € -cent 4.54 per passenger / km.

€-cent pkm	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Overall external cost difference for fast line / car	4,54	4,58	4,62	4,66	4,70	4,74	4,78	4,82	4,86	4,90

To update the cost of environmental externalities to the 10-year project, the same approach is used as for the time value described in the Calculation of time value (VOT) section below. Below is the annual differential for the years of operation of the line.

Differential in km travelled by auto and by high speed craft												
	Distances return trip	diff km sauto/mare	Diff. .000 km 2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Car Ancona Return	528	165	92,366	115,97	136,28	138,56	140,88	143,23	145,63	148,06	150,54	153,06
All car Return	2.504	2.141	299,597	376,15	442,04	449,43	456,95	464,59	472,36	480,267	488,29	496,46
By sea	362											
Total km subtracted to car mode			391,96	492,13	578,33	588,00	597,83	607,83	617,.99	628,33	638,84	649,52

To the costs / benefits resulting from the application of the described approach, the differential was added for the externalities generated by the Ro-Pax Ancona Split, using the cost pkm.

The "External costs of Maritime transport" study of the European Parliament of 2007 is one of the few sources that approximate the cost in € cent per passenger km of maritime transport, starting from the estimate of € cents 1.6 / 2.4 tkm for the Ro-pax class , not directly comparable with a 400 ton tonnage high speed craft traveling at about 30 knots of speed, but with less resistance to forward movement in water.

Therefore, a simplified method of allocating costs has been assumed as follows:

- 2,4€-cent per tkm per Ro-pax (got the highest value for adjusting prices from 2007 to today)
- 1 car every 2,3 pax (average value adopted above for the calculation of transfer from car to fast maritime means, the authors do not mention the pax number per car assumed for the calculation of the Ro-pax cost)
- Average weigh car 1,5 ton, average weigh of passenger 70kg

Externalities produced by journey:

=2,4*1,3 = 3.12 €-cent

=2.3*0,07 =0,161 per passenger

= total 3,281

Distance in converted nautical miles: 252 km

In Tabella si riporta il calcolo dei costi delle esternalità evitate negli anni d'esercizio (costo che si produrrebbe con passeggeri che imbarcano auto nel traghetto Ancona-Spalato in alternativa all'utilizzo del mezzo veloce).

Monetization of benefits for externalities avoided over the years (2020-2029) (€)									
2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
19.940	24.509	28.443	28.901	29.366	29.839	30.319	30.808	31.304	31.809

For the calculation of the total external costs of the transport we proceeded with the sum of the routes by car avoided and the sections with ferry and it was subtracted from this the share of externality deriving from the transport with fast shipping.

Since this differential is positive, it has been included in the count of benefits in the economic analysis.

Calculation of the time value (VOT)

The economic value of time savings is given by the difference between the marginal evaluation of the time associated with travel and that associated with leisure time.

There is no theoretical basis for inferring the economic value of non-work journeys starting from wages; rather, values must be derived based on behavioural factors.

According to international methodological practice, the time for non-work trips is interpreted and evaluated in monetary terms as a "quota" of the value of time for business trips.

The average travel time savings were calculated by estimating the average time savings compared to road and ferry mode, based on the lines active in 2019 between Ancona and Bari and Croatian ports near the destinations of the Termoli Croatia fast sea line).

We proceeded by comparing the travel time with the fast sea transport with the average of the times calculated for the main alternative options to the fast sea line, considering waiting times and stops. An equal number of journeys of the fast sea line towards each of the two target destinations was assumed, and the weighted time saving differential was calculated based on the preferences assumed by the traveller with respect to the 2 travel alternatives.

The average differential time saved, thus calculated, is 11.95 hours.

The result was applied to this result “rule of the half” (Rule of Half – RoH), based on:

$$\Delta CS \text{ (new users and users derived by other methods)} \approx 1/2*(CG0-CG1)*(T1-T0)$$

Where:

- CS it is represented by the consumer / traveler surplus
- CG is the generalized cost and
- T the travel time in the hypothesis "0" of the use of other connections / modes and "1" of use of the high-speed craft

Delta travel times /h				
Kind of connection	**ore**	Time to Korcula hrs	Time to Hvar hrs	Delta hrs between fast and others solutions
Fast maritime line from Termoli	4,0			
Only car till Split and ferry for islands		21,0	17,0	11,8
Car till Ancona + Ferry till Split + ferry for islands		19,0	15,0	12,0

Time savings for passengers										
Year	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Round trips	7.176	9.010	10.588	10.765	10.945	11.128	11.314	11.503	11.696	11.891
Saved hrs AR	85.753	107.667	126.526	128.642	130.794	132.981	135.205	137.466	139.765	142.103
Correction (50%)	42.877	53.834	63.263	64.321	65.397	66.490	67.602	68.733	69.883	71.051

Time factorization

For the purposes of monetizing the time factor, we used the Time Value (VOT) indicated by the Handbook on the external cost of transport for "non-work" trips in Italy, equal to:

€5,9/ hrs in 2020 (meaning 35% of the VOT on a working time of € 16.7/hrs/person)

The real value of time is directly related to real wages; consequently, it will grow hand in hand with the expected wage, which is traditionally supposed to be in line with the growth of per capita GDP. The VOT is consequently updated annually based on the estimate of a GDP growth per capita of 1.2% for the next 10 years with elasticity factor of 0.7, as per the main economic literature and indications of the Guidelines to the cost benefit analysis of the European Commission.

Value attributed to the passenger's time										
€-hrs/pax	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Time value (VOT)	5,90	5,95	6,00	6,05	6,10	6,15	6,20	6,26	6,31	6,36

3.8.2. Results of the economic analysis

The economic analysis monetizes the impacts of the project on the community; in particular this project produces effects on the consumer / producer surplus, due to the factors of reduction of travel time and reduction of environmental externalities with respect to travel by car or car + ferry.

It should be noted that in the presence of an extremely limited public contribution and corresponding to the cost of arranging the area of the Port of Termoli functional to the embarkation / disembarkation of passengers (1.25% of the total investment cost) VANE (current net economic value) and TIRE (Internal rate of economic return) have limited significance.

It is however considered useful for public decision-makers to know the overall economic costs / benefits generated by the launch of the Termoli line of Croatian islands with fast maritime passenger transport, applying the methods described so far and consistent with the indications of the European Commission for the evaluation of investments in the transport sector, properly revised, where appropriate.

The knowledge of the estimate of the balance of benefits costs due to the externality of the Project can be the starting point for a more in-depth verification of the opportunity to co-finance the Project in various forms allowed by the rules on state aid of the European Union, such as moreover, it has been done since 2018 by the Friuli Region for the connections from Trieste to ports of Istria and as in the intentions of the Abruzzo Region for connections from Pescara / Ortona to Croatian ports.

Any further considerations may be carried out and other economic benefits evaluated, such as for example the induced product from the transit of non-resident travellers in the Molise Region and others, which at the present time is not known and which would require a thorough investigation of both sources secondary to sending questionnaires and conducting interviews with stakeholders and users.

Below is a summary of the main economic results and indexes useful for the evaluation for the year 2020 and the totals for the 10 years of planned operation of the line. The detail of the complete flows is provided in a separate table.

Investment

Assumed basic investment for boat purchase and for works and accommodation Termoli Port, with fiscal and market correction.

Investment	Conversion coefficient	Year 2020
Civil works	0,8254	41.268
Boat	0,8837	3.534.880
Total Investment		**3.576.148**

Reversal of the tax component from the costs and benefits of the project

The fiscal correction is necessary in order to avoid that amounts that actually constitute part of the expenditure are considered among the costs, but that they will fall in the future in the financial resources of the public administration - and therefore of the community - in the form of tax revenue. This last point implies that not only the relative components of indirect taxation, but also the returns in terms of indirect and direct taxes associated with the set of interactions that originate from the investment for the start-up of the connection line are reversed from the amounts indicated. .

All the expense items referring to the financial flows already corrected for the tax component and for market imperfections, pre-multiplied by the relative correction coefficients are reported.

Tax and market correction		
Operating revenues (surplus operator)	Conversion coefficient	**2020**
Tariff revenues used in cash flow	0,8590	180.050
Total operating revenues		**180.050**
Management costs		
Services costs	0,8991	-62.110
Personnel costs (before social security charges)	0,4392	-37.655
Fuel cost	0,8385	-44.441
Ordinary maintenance	0,85	-8.824
Total management costs		**-153.029**
Other elements		
Tax revenue from operations (addizionale IRPEF on EBTIDA) (+)	0,0900	378.843
Public contribution (-)	0,3000	15.000
Availability fee (-)	0,3000	0
Total other elements		**393.843**

Total net benefits for the 10 years: € 1,259,797 including the benefits deriving from the investments, which affect only the figure for the first year (see complete table for details).

Calculation of indirect and induced effects, environmental externalities and other externalities

The operator's surplus is calculated by default, attributing a proportional percentage of revenue and cost to the generated demand (35% of all passengers transported) which forms the basis of the calculation. In reality, the demand generated does not produce costs proportional to the cost of total passengers, but a lower cost, proportionate only to the fixed costs.

Calculation of direct and indirect effects, environmental externalities and other externalities

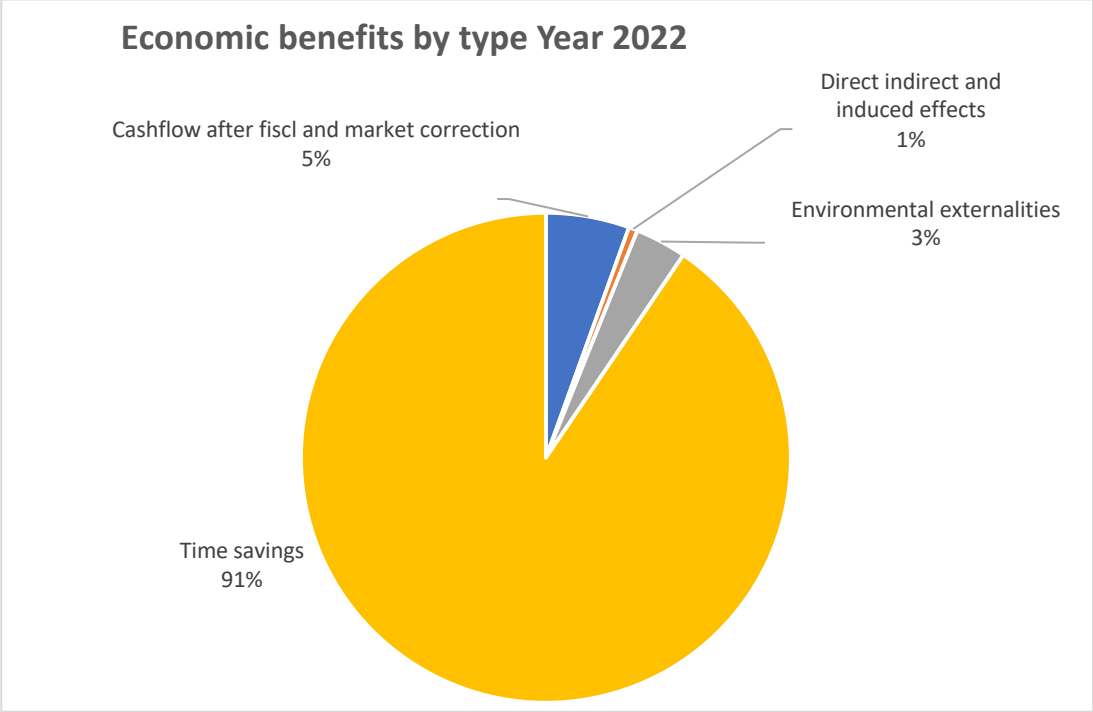
Indirect and induced effects	Conversion coefficient	2020
Impact of investments (euro)		
GDP activated by investment in building	95,1264	39.257
GDP activated by investment for boat	Second hand =0	0
GDP activated by general expenditures	87,7513	0
Total		**39.257**
Impact of consumption (euro)		
GDP activated by service costs	78,3165	25.102
GDP activated by personelle costs	45,6101	
Total		**25.102**

Environmental externalities	2020
Net impact of the establishment of the maritime line	
Difference in costs for the externality of the transport between car mode up to Split and sea and car mode up to Ancona and embarkation by ferry to Split	19.940
Total	**19.940**

Other externalities	2020
Monetization of total time savings for travellers (100% of passengers on the Termoli delta high speed craft)	**505.944**

The results of the processing carried out together with the addition of other long-term indications are reported:

TOTAL OF BENEFITS (euro)	2020
Surplus operator	27.021
Other elements	393.843
Indirect and induced effects	64.359
Environmental externalities	19.940
Other benefits (time savings for travellers)	505.944
Total	**1.011.807**
Annual net economic activation in the operation phase of the Termoli Croatia line	**871.081**
Social discount rate applied	3%
Present value of net economic activation in the operational phase including externalities	**6.831.689**



As with the vast majority of projects in the transport sector, the present sees the time saving component of travellers as a primary benefit item, also considering that for the calculation of benefits from reduced externalities very prudent criteria were adopted and that an extremely low propensity of travellers is assumed to alternatively travel the entire route from Temoli to Spalato by car.

It should also be remembered that the operator's surplus was calculated exclusively for revenues and costs from tariffs paid by passengers which constitute "new demand generated" (35% of the total) and not that replacing other methods, in application of the principle that the remaining passengers would in any case have travelled at equivalent costs (with operators who would obtain equivalent revenues equivalent costs) and the two items are cancelled.

Even considering these elements, a socio-economic analysis shows a generation of social well-being that makes the project worthy of public support.

For an analytical reading of the economic results and the expected flows, the following pages show the total economic benefits and total economic flows for the period 2019-2029, with an annual breakdown.

Economic benefits 2019-2029 — Fast maritime connection line Termoli - Croatia

Operating revenues	Conversion coefficient	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Tariff revenues used in cash flow	0,8590	180.050	223.981	264.407	272.246	280.568	289.353	298.891	308.753	318.950	329.494
Total operating revenues		**180.050**	**223.981**	**264.407**	**272.246**	**280.568**	**289.353**	**298.891**	**308.753**	**318.950**	**329.494**
Management costs											
Costs for services	0,8991	-62.110	-77.264	-91.209	-93.913	-96.784	-99.815	-103.105	-106.507	-110.024	-113.662
Personnel costs (before social security charges)	0,4392	-37.655	-46.843	-55.297	-56.937	-58.677	-60.514	-62.509	-64.572	-66.704	-68.909
Fuel cost	0,8385	-44.441	-55.284	-65.262	-67.197	-69.251	-71.420	-73.774	-76.208	-78.725	-81.328
Ordinary maintenance	0,85	-8.824	-10.523	-29.468	-12.772	-12.968	-46.235	-13.416	-13.657	-48.745	-40.438
Total operating costs		**-153.029**	**-189.914**	**-241.236**	**-230.819**	**-237.681**	**-277.984**	**-252.803**	**-260.944**	**-304.198**	**-304.337**
Surplus operator		**27.021**	**34.067**	**23.171**	**41.427**	**42.887**	**11.369**	**46.087**	**47.809**	**14.752**	**25.158**
Other elements											
Fiscal revenue from operations (additional tax on EBITDA) (+)	0,0900	378.843	19.852	23.071	26.512	27.615	25.211	29.951	31.206	28.875	33.856
Public contribution (-)	0,3000	15.000	0	0	0	0	0	0	0	0	0
Availability fee (-)	0,3000	0	0	0	0	0	0	0	0	0	0
Total other elements		**393.843**	**19.852**	**23.071**	**26.512**	**27.615**	**25.211**	**29.951**	**31.206**	**28.875**	**33.856**
Direct, indirect and induced effects		**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Impact of investments (euro)											
Invest activated GDP in construction and accommodation	95,1264	39.257	0	0	0	0	0	0	0	0	0
GDP activated by investments in the boat	0,0000	0	0	0	0	0	0	0	0	0	0
Total		**39.257**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Impact of consumption (euro)											
GDP activated by costs for services	78,3165	25.102	31.227	36.863	37.956	39.116	40.341	41.670	43.045	44.467	45.937
GDP activated by personnel costs	45,6101	0	0	0	0	0	0	0	0	0	0
Total		**25.102**	**31.227**	**36.863**	**37.956**	**39.116**	**40.341**	**41.670**	**43.045**	**44.467**	**45.937**
Environmental externalities											
Accidents, noise, air pollution, climate change		19.940	24.509	28.443	28.901	29.366	29.839	30.319	30.808	31.304	31.809
Other externalities											
Monetization of travellers' time savings		505.944	640.574	759.098	778.276	797.939	818.099	838.767	859.958	881.685	903.960
TOTAL ECONOMIC BENEFITS		**537.345**	**759.787**	**865.373**	**925.598**	**950.444**	**906.388**	**1.002.564**	**1.029.828**	**984.530**	**1.034.068**

SUMMARY OF ECONOMIC FLOWS 2020-2029 - Fast maritime connection line Termoli - Croatia

Flow calculation	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Cash flow after fiscal and market correction *	-3.185.284	53.919	46.242	67.939	70.502	36.580	76.039	79.015	43.626	59.013
Direct, indirect and induced effects	-33.268	2.567	3.030	3.120	3.215	3.316	3.425	3.538	3.655	3.776
Environmental externalities	19.940	24.509	28.443	28.901	29.366	29.839	30.319	30.808	31.304	31.809
Other Externalities	505.944	640.574	759.098	778.276	797.939	818.099	838.767	859.958	881.685	903.960
TOTAL FLOWS	-2.692.668	721.569	836.813	878.236	901.023	887.834	948.551	973.320	960.271	998.559

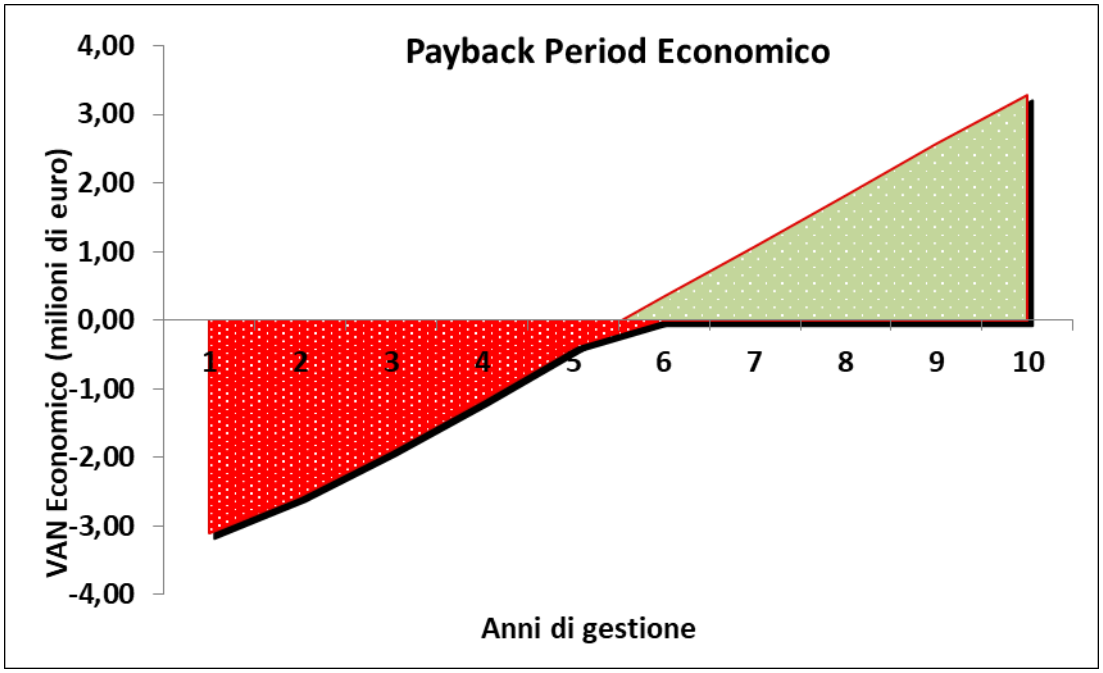
* Includes the costs of investment in the boat and for accommodations at the Port of Termoli

3.9. Economic indicators (profitability ratio)

As in the case of financial analysis, the calculation of the cash flow is followed by that of the profitability indices, specifically the ENPV (Economic net present value) and the IRR (internal rate of economic return).

IRR Economic	**%**	**20,26%**
Social discount rate	**%**	***3,0%***
ENPV Economic	**euro**	**3.285.452**

The economic payback period stands at 5.8 years.



3.10. Risk analysis and sensitivity

In this section the issue of risk related to the establishment of the Termoli Croatia fast maritime line is addressed.

All documentary research was conducted and meetings were held with sector experts and maritime and tourist operators, within the limits of the limited availability of time and resources, in order to be able to formulate useful considerations for the correct evaluation and risk management during the preparation and management of the 'operation.

Risk assessment is implemented by performing the following steps:

- sensitivity analysis;
- qualitative risk analysis;
- probabilistic risk analysis;
- risk prevention and / or mitigation actions.

These aspects will be dealt with in a synthetic way, but as far as possible, in order to highlight the most critical issues inherent in the operation.

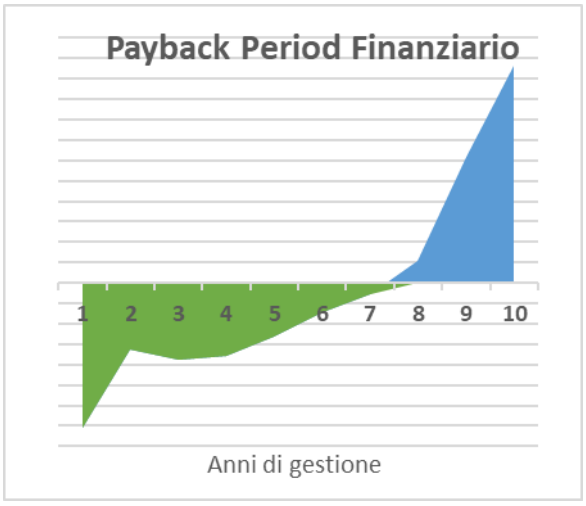
These critical issues could be further investigated and verified with meetings and visits to stakeholders and sector operators. It is believed that a high level of information, documentation and communication with the enlarged community is the first and fundamental risk mitigation measure.

3.10.1. Sensitivity analysis

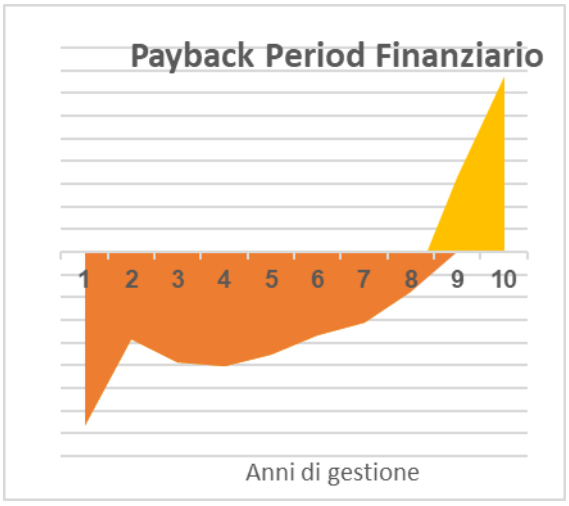
Variable Nr. 1: Investment costs

The impact of the higher cost of the boat on the payback period of the investment is simulated, with an increase in cost of 20% (€ 4.8 million) and 30% (€ 5.2 million) compared to the assumed cost (4 million euros).

Investment costs +20%



Investment costs + 30%



A 20% increase in cost increases the financial payback by more than 3 years, a 30% increase by 5 years. The simulation shows how the financial payback time, which goes from 4.5 years of the basic hypothesis to 6.5 in the event of a 20% increase and 6.8 in the 30% case, significantly increases.

The lengthening of the financial payback implies possible difficulties in the management of the cash in the case of a small operator, as well as less attractiveness for the same of the operation.

Operating profitability ratios & investment costs +10%

Discount rate for NPV	*4,0%*
Operating IRR	7,63%
Operating NPV	994.815
Operating profitability index	23,48%

Financial profitability ratios & investment costs +10%

Discount rate (WACC) for NPV	*5,9%*
Financial IRR	28,49%
Financial NPV	1.548.208
NPV / PV Investment	31,86%

+20%	**DSCR**	**LLCR**
Years (debt reimbursement)	7	7
Minimum (time span: operation)	**0,903**	**1,173**
Period of Minimum DSCR/LLCR	2021	2020
Media DSCR/LLCR	**1,245**	**2,168**

Operating profitability ratios & investment costs +30%

Discount rate for NPV	*4,0%*
Operating IRR	6,11%
Operating NPV	610.801
Operating profitability index	15,04%

Financial profitability ratios & investment costs +30%

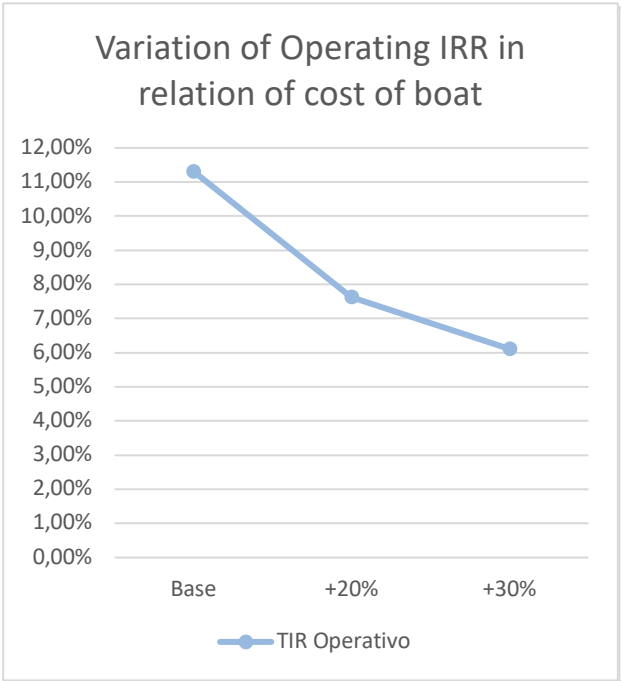
Discount rate (WACC) for NPV	*5,9%*
Financial IRR	22,80%
Financial NPV	1.263.269
NPV / PV Investment	23,99%

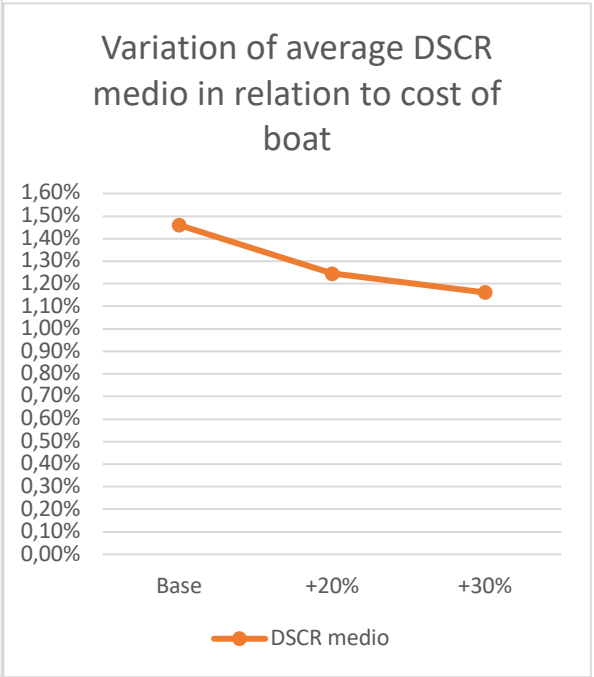
+30%	DSCR	LLCR
Years (debt reimbursement)	7	7
Minimum (time span: operation)	0,837	1,097
Period of Minimum DSCR/LLCR	2021	2020
Media DSCR/LLCR	1,161	2,005

In both cases, the project's operational IRR (TIR) achieves little interesting levels of performance, which could make the operation exposed to greater risks and with greater difficulty in finding a lender / manager-

The average DSCR is critical in both cases of increase, and reaches the minimum in 2021, which indicates that a possible financing institution may require guarantees and collateral to mitigate the risk.

The objective availability verified by naval brokers to acquire vehicles with the indicated characteristics suggests that the probability that the expected acquisition cost will increase significantly is LOW.





Variable Nr. 2: Incomes

We now simulate the effect of total revenues lower than the forecasts on the payback period, which is important for the purpose of assessing how sensitive the transaction is to changes in the occupancy rate of the vehicle or to downward variations in rates. Revenue is expected to fall by 10 and 20%.

Ricavi -10%

Ricavi -20%

A 20% drop in revenues lengthens the financial payback at maturity after the duration of the project, which makes the project less interesting, signalling a strong risk associated with the activity in the absence of certainties on the demand side.

Operating profitability ratios & Incomes -10%	
Discount rate for NPV	*4,0%*
Operating IRR	**6,85%**
Operating NPV	**648.055**
Operating profitability index	**19,23%**

Financial profitability ratios & Incomes -10%

Discount rate (WACC) for NPV	*5,9%*
Financial IRR	**24,92%**
Financial NPV	**1.126.344**
NPV / PV Investment	**27,81%**

-10%	DSCR	LLCR
Years (debt reimbursement)	7	7
Minimum (time span: operation)	**0,860**	**1,130**
Period of Minimum DSCR/LLCR	2021	2020
Average DSCR/LLCR	**1,200**	**2,107**

Operating profitability ratios & Incomes -20%

Discount rate for NPV	*4,0%*
Operating IRR	1,56%
Operating NPV	**-517.497**
Operating profitability index	-8,16%

Financial profitability ratios & Incomes -20%

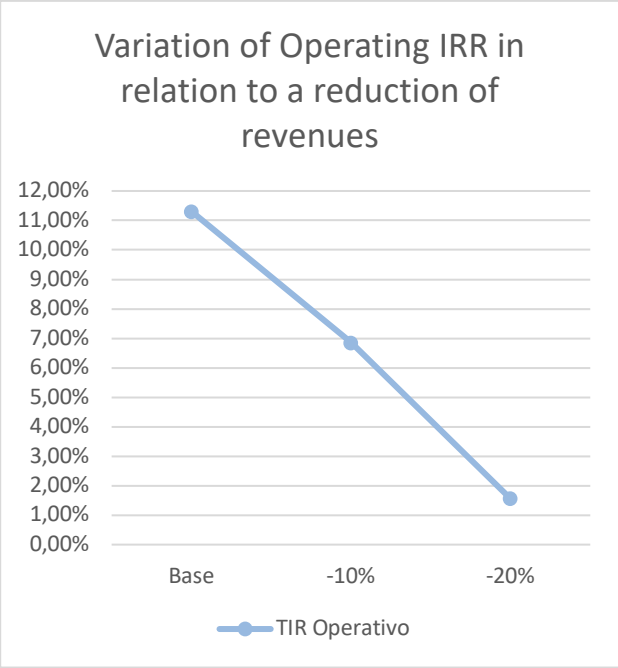
Discount rate (WACC) for NPV	*5,9%*
Financial IRR	7,31%
Financial NPV	87.139
NPV / PV Investment	2,15%

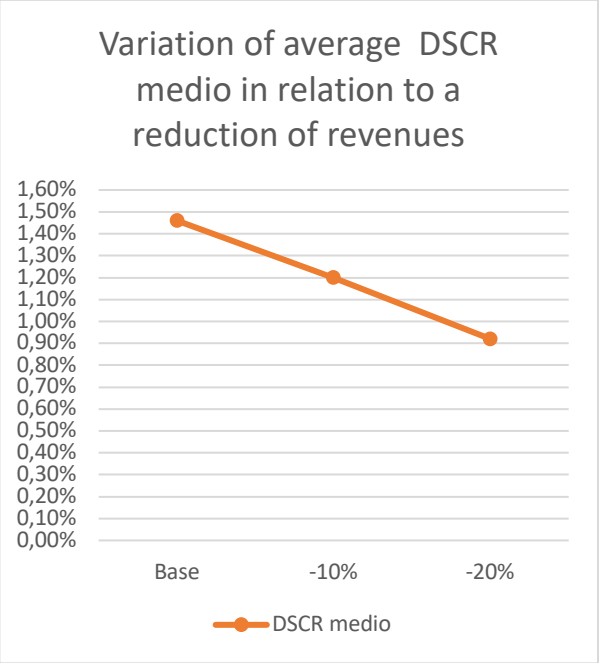
- 20%	DSCR	LLCR
Years (debt reimbursement)	7	7
Minimum (time span: operation)	**0,597**	**0,874**
Period of Minimum DSCR/LLCR	2021	2020
Average DSCR/LLCR	**0,923**	**1,612**

In the case of -10% of revenues, the DSCR is critical in the first few years, which shows that a risk of wrong forecasts of demand or other unforeseen events make it difficult to repay the debt (or any leasing installment) without the contribution of own means of the operator.

With -20% of revenues for the entire project period, with the same costs (lower boat occupancy rate), the ability to repay the debt is compromised and the operation is not sustainable.

The probability that revenues for the period amounted to -10% compared to forecasts is HIGH MIDDLE as the competition in the sector, low dynamism of the Molise territory, low presence of tourists, and other factors can determine a deviation of this magnitude, which however it is remediable.



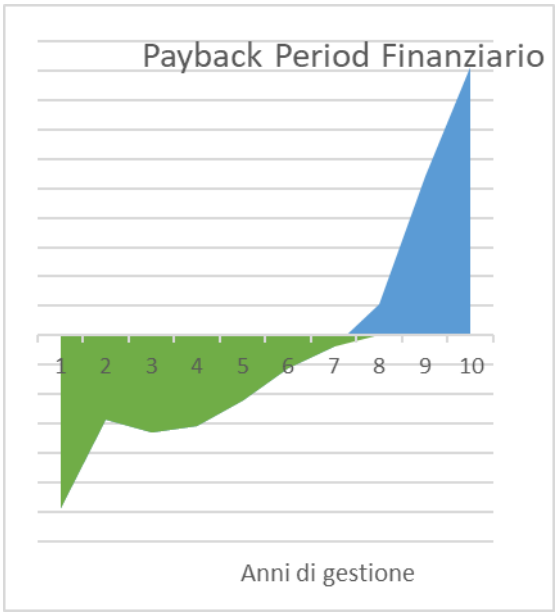


Variable Nr. 3: Fuel costs

The cost of fuel is one of the components that most affects management and therefore the effects of a variation of 10, 20% and 35% over the duration of the project are simulated.

Fuel costs +10%

Fuel costs +35%



Operating profitability ratios & Fuel cost variation	+10%	+20%	+30%
Discount rate for NPV	*4,0%*	*4,0%*	*4,0%*
Operating IRR	10,60%	9,87%	8,75%
Operating NPV	1.576.931	1.391.020	1.112.154
Operating profitability index	41,06%	36,69%	30,14%

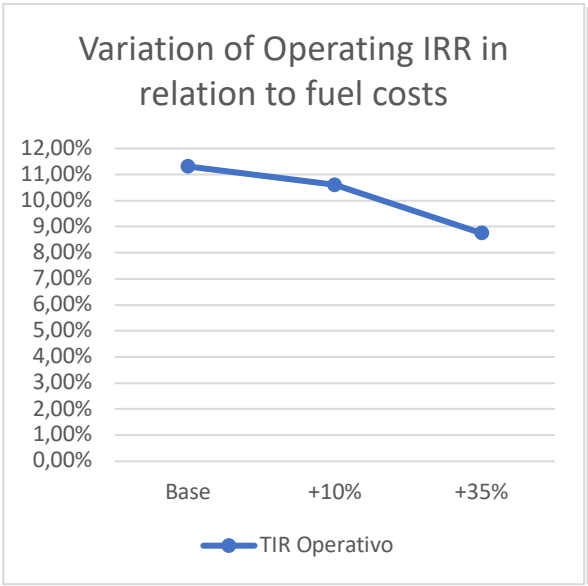
Financial profitability ratios & Fuel cost variation	+10%	+20%	+30%
Discount rate (WACC) for NPV	*5,9%*	*5,9%*	*5,9%*
Financial IRR	40,30%	37,04%	30,07
Financial NPV	1.952.448	1.786.810	1.479.803
NPV / PV Investment	48,21%	44,12%	36,54%

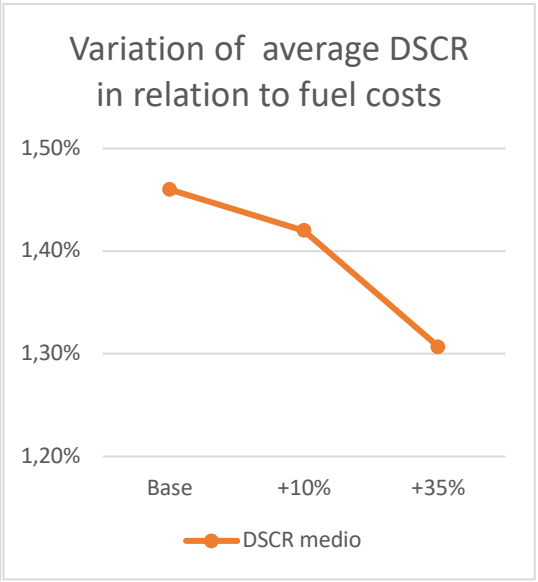
+10%	DSCR	LLCR
Years (debt reimbursement)	7	7
Minimum (time span: operation)	**1,039**	**1,331**
Period of Minimum DSCR/LLCR	2021	2020
Average DSCR/LLCR	**1,418**	**2,512**

+20%	DSCR	LLCR
Years (debt reimbursement)	7	7
Minimum (time span: operation)	**1,004**	**1,290**
Period of Minimum DSCR/LLCR	2021	2020
Average DSCR/LLCR	1,374	**2,431**

+35%	DSCR	LLCR
Years (debt reimbursement)	7	7
Minimum (time span: operation)	**0,952**	**1,228**
Period of Minimum DSCR/LLCR	2021	2020
Average DSCR/LLCR	1,307	**2,310**

The analysis shows how the increase in the cost of fuel becomes critical when the average price over the years of the Project approaches or exceeds 20%.





It is clear that the incidence of this cost depends on the operator's ability to adjust the rates, applying or adjusting the fuel surcharge, but this policy can have the effect of leading to a

reduction in revenues due to lower travel occupancy rates , depending on the user / traveller's propensity response to the price increase.

It is believed that there is a MEDIUM probability that the price of fuel will also suffer sharp increases in the period 2020-2029, but that these increases are not permanent, causing effects that can be managed by the operator, especially if they occur after the third year of operation, when the connection is up and running.

In summary, the analysis shows that, compared to the basic projections, changes in investment costs> 10%, fuel> 20% and decreases in revenues> 10% make the project at risk of self-sustainability.

3.10.2. Risks analysis

The risk matrix that follows shows the main risks associated with the start-up of the Termoli-Croatia sea connections, the probability that a specific risk will materialize and its effect on the operation of the connection itself and the success of the investment project.

Type of risk	Probability	Effects on operations
Market	Medium	High
Procedural/Authorization	High	High
Financial	Medium	Medium
Operativity	Medium	Medium
Regulatory	Medium Low	High
Technology	Low	Medium
Other risks	Low	High
Contracts	Medium	Medium

Market risk is considered to be the most complex to manage, as demand depends on a series of factors, even independent of the capacity and willingness of the operator.

In particular, competition from the neighbouring ports of Pescara and Ortona, with similar connections or that in any case can subtract significant quotas from the demand, can cause significant problems.

It is believed that the strategy to mitigate this risk cannot be separated from close collaboration and dialogue with the Ports and neighbouring administrations, in order to avoid competing in the same market segment with similar proposals. In this sense it is useful to find synergies and collaborations with the aim of providing better quality of service and more options for travellers, integrating the proposals and differentiating operations to offer coverage of the Termoli Croatia connection with greater frequency and stability over time.

An adequate preventive marketing campaign and the arrangement of agreements with tour operators and agencies is necessary, as, as described, it is believed that organized groups constitute a large part of the demand.

Joint ticketing and land transport company agreements (Bus and train), considering the location of Termoli can certainly contribute to reducing market risk.

The procedural and authorization risk remains one of the biggest, and can have very serious impacts on the Project, as it can lead to delays in the start-up of operations and management. It is also a risk depending on the will and response times of the Public Administration which unfortunately are never certain.

It should be noted that the smaller the operator, the more it will be possible to face such risks. For several reasons, the structured operator will be a greater guarantee of the success of the Project.

Operational risk is linked to a series of conditions linked to events inside and outside the operator and must be reduced with the involvement of personnel with experience in the shipping lines sector and carrying out continuous communication with the reference bodies within the Port. Important for this purpose to have the possibility of using a means of replacement in the event of technical problems that cannot be resolved in the short term.

Financial risk, given the economic and financial projections is considered not to be a decisive aspect. The transaction is bankable and leasing as a replacement for the loan is a valid option, albeit more expensive. Also, in this case the size of the operator and the risk associated with it is crucial in containing any problems related to the finance component.

Regulatory risk, as it is regulated at European and consolidated level, is not considered particularly relevant. We operate in a regulated sector where risks can emerge from the introduction of more restrictive rules (see the case of the standard on low sulphur fuels that will come into force in 2020) related to safety, consumer protection and the environment.

To reduce the regulatory risk, it is necessary to use new generation means and to have staff or consultants up to date on the subject and attentive to those that are assumed to be the future changes that will impact the sector.

Technological risk is considered low, considering that passenger transport vehicles are equipped with "mature" technologies. The more innovations in the boat's equipment, the higher the risk, as both the assistance and the replacement of components, the market could still be poorly organized, and lead to long remediation times, with very serious effects on operations.

This is the case of the adoption of clean fuel, such as the LNG, which has not yet been applied to vessels of small tonnage and does not have an adequate distribution network in our country.

The risk of force majeure is linked to climatic events, the incidence of which is already foreseen in the Study and statistically predictable. Vehicles such as hydrofoils and fast catamarans are particularly sensitive to sea conditions and therefore it is considered appropriate to consider in advance the effect that they can have on the operation of the line.

Other risks can be linked to the overcrowding of the ports of destination during the high season, which involve greater risks of accidents and delays, which may even block the port's operations.

3.10.2.1. Risks at a glance

The activity of starting up maritime connections with high speed crafts passenger vehicles between Termoli and Croatia presents risks related to authorization times, the speed of procedures, including those for boarding passengers, the ability to intercept and organize demand and offer a service of good level, where the strength is the speed of the connection.

Surely the size of the operator is decisive in reducing these risks ex-ante, and just as important is the careful planning and coordination with the stakeholders and operators in the tourism and transport sector to create the right synergies and avoid competition from similar services by type and catchment area.

Preparation for events and critical situations that have a good chance of occurring is fundamental to guarantee the quality of the service, customer satisfaction in a medium-term perspective and the reliability of the same.

All this entails costs, which however, in a perspective of careful risk management, more than compensated in the medium term by user loyalty, positive word-of-mouth and the reputation of the operator on the reference market.

4. Conslusions

Foreword

The present study started with an analysis of the existing situation on passenger traffic between Italy and Croatia and then elaborated a specific focus on existing services and their characteristics.

This analysis came to the identification of the existence of a potential demand for fast passenger transport from Termoli to the Croatian islands of Hvar and Korcula in particular, in consideration of technical aspects related to the duration of the journey and relative to the attractiveness of the destinations and easy connection to the mainland and other Croatian islands.

To date there is no fast connection to Croatia in the ports from Ancona to Bari, and this is certainly a market opportunity, which, if well managed, and in coordination with other operators in the sector and institutions with programming competence, can bring benefits to the territory and contribute to intra-EU mobility.

The planned connection is seasonal (15 May-15 October) with monthly connection frequencies ranging from 2 to 40 round trips per month and starting from the 2020 base year to progressively become fully operational in 2022 (3 years).

The ideal vehicle for this type of connection is a catamaran, a monohull or a hydrofoil with the capacity to travel at 28-30 knots and with a transport capacity of about 300 passengers.

To allow a greater financial sustainability of the operation and at the same time guarantee its cost-effectiveness of operation, it is proposed to purchase a used vehicle of no more than 8 years of age for two types of considerations: this should allow a level of comfort and perception of quality on the part of the medium-high type user and would facilitate his financing by banking institutions and leasing companies. The estimated cost of the investment is € 4 million.

There are no public contributions, except for an indirect contribution of € 50,000 for accommodation and adjustments to the Port of Termoli relating to the management of boarding and disembarking of passengers.

4.1. Results of the analysis

Given the qualitative and quantitative characteristics described above, the operation presents:

- a payback period of around 4.5 years and a good gross profitability over the entire period of operation of the line (2020-2022), with annual revenues ranging from 1.2 million in the first year of the year to around 2.2 million at the end of the period.
- an operating TIR of 11.31%, acceptable to a private operator, especially given the average sector profitability.
- DSCR and LLSCR bank sustainability indexes averaging 1.462 and 2.592 respectively at the lower limit of acceptability for the banking system as regards the

DSCR of the early years, which indicates a level of financial risk inherent in the investment.

- economic benefits greater than costs, which are characterized in order of importance in benefits to the user for time savings, followed by benefits for reduced externalities from air pollution, noise, climate change and damage to the habitat.
- The total economic benefits generated by the project result in a net present value, including the externality benefits of € 6,831,689 and the activation of economic benefits on an annual basis of € 871,081.
- The project's economic TIR is 20.26%.

These data indicate a generation of economic and social well-being that makes the project worthy of public support.

However, an "intrinsically" initiative is exposed to possible changes in key factors, such as demand, fuel costs, adverse weather conditions for extended periods.
As demonstrated by the sensitivity analysis, the explicit nature of one of these variations, if significant (increase in fuel cost> 20% and decrease in revenues> 10% throughout the period) could put the sustainability of the initiative at risk.

4.2. Final considerations

From the analysis of previous and current similar initiatives in the Adriatic area, it emerged that fast sea connections are characterized by a notable discontinuity of operators and connections offered by origin and destination. Most of the companies operating this type of connections are Italian, except for Atlas Kompas as the only Croatian operator currently on the market.

This could be a sign of a limited profitability of this type of transport, in particular if frequency and stability in the connections is not guaranteed for at least 4-5 months a year.

With few exceptions, current and past operators are medium-small entrepreneurs in the sector, by definition very sensitive to changes in market conditions and specific profitability of connections, and almost always operating with only one means available.

With a view to promoting stable connections from Molise to Croatia, it is certainly important to rely on operators of the sector with consolidated experience who can benefit from economies of scale of a certain type and that can count on adequate financial, organizational and management support. of a network of consolidated relationships in Italy and abroad.

In this sense, recent public support initiatives in Friuli-Venezia Giulia for connections between Trieste and Stria and the Abruzzo Region for Ro-pax connections between Pescara-Ortona to Croatia, show that the public contribution in the forms allowed by the European Regulations , is fundamental to reducing the risk of the operator in the first 2-3 years of operation, and contributes to ensuring that stable and reliable connections are activated in the medium term.

The specific market risks of the Termoli Croatia line are mainly represented by the potential competition of the Port of Pescara with the establishment of new lines to Croatia and new low-cost air connections from airports near Termoli, such as Pescara and Bari with destination Split.

The analyses carried out have shown that the demand is very fluctuating and that the offer must find the right balance between costs and benefits for the user, as well as reliability, speed and comfort.

Careful preparation and promotion of activities and close collaboration with national and international tourism and transport operators is fundamental to the success of the initiative, in consideration of the fact that the analysis has shown that the most important category of users / travellers is represented by organized groups.

The sensitivity and market analysis highlighted criticalities from possible and to date unforeseeable increases in the cost of fuel, also linked to the entry into force of the international legislation for the containment of emissions and the obligation to use low-grade fuels sulphur or alternatively the installation of scrubbers that reduce harmful emissions.

The speed of public administration in issuing permits and authorizations remains a determining factor, which can seriously jeopardize the success of the initiative and the motivation of the operator.

4.3. Reccomendations

When considering the launch of a new maritime liaison service, there are many factors to consider ensuring its commercial success. For most maritime ferry services or fast means that fail the cause lies in inappropriate ship selection, too high initial investment costs and excessive confidence in market demand that can be attracted.

An in-depth market survey is required to determine the characteristics of potential customers and passengers, as well as a financial analysis to establish the profitability of the proposed service. In order to achieve efficiency, the flow should be as constant as possible, a feature that seems to penalize the present and historical connections between Italy and Croatia, with few exceptions.

To obtain a sustainable transport line, the operator and the Administration must take into account the long-term changes in people's preferences, in a market that is slowly adapting to the dynamism of low-cost flights in Italy and abroad.

Knowledge of seasonal variations and imbalances in national and cross-border transport flows typical of the Adriatic Sea are factors that must be taken into consideration. In the same way external factors must be taken into consideration, which are very difficult to control but whose determination is essential for the assessment of options and related risks, as repeatedly emphasized in this document.

Long-term passenger preferences

People can change their way of traveling for many reasons. Often the cause is an external factor, and other factors that influence the success or failure of a service are the promotion, the competition of recently opened lines and / or new air connections, a widespread voice on the quality of the service, a good one or bad reputation and other typical market factors.

The analysis carried out and the interviews held with employees and stakeholders operating in the Adriatic highlighted that in most circumstances operators need time to start their own business and gain market share, and that often, when the effect of novelty decreases, the company has difficulty in reaching acceptable levels of profitability, due to low rate of occupancy of the vehicles for long periods of time.

When a new maritime fast connection service is in competition with an existing ferry line, it is particularly important to give passengers a feeling of improvement and satisfaction with respect to the "traditional" service, which must be translated into the ease of purchasing the ticket, speed in the reach the port of departure, speed of embarkation and disembarkation procedures and travel comfort.

Seasonal variations of passengers

Most of the routes for passenger traffic in the EU and the Mediterranean in particular, show seasonal variations, peaking during the summer holidays when people tend to travel more.

Shipping line operators work hard to improve balance by offering cheap tickets in low season or, if possible, to use the vehicle on another more attractive route, but this is not possible for fast boat connections, as with critical sea conditions the comfort and the speed of navigation are compromised, much more than what happens for the ferries.

If the profitability falls below critical values, the service can reduce the on-board staff or temporarily put the vessel out of service until June, as often happened in the fast connections between Italy and Croatia.

External factors

As per the analysis carried out, there are also external factors that cause fluctuations in the volume of the different flows.

The question is: how can all external factors be taken into account when planning a fast-maritime service?

Since long-term forecasts are almost impossible in a complex system, where unexpected changes can occur, flexibility and adaptability are essential for the survival of the service.

In this sense, a public intervention aimed at compensating for possible fluctuations in profitability and demand, to allow regularity and quality of service, can be decisive for the success of new initiatives, including the one being analysed in this Study.

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