

Regional report on small ports phenomenon in the Lika-Senj County

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1. Introduction

The FRAMESPORT project has the aim to create a coordinated initiative to support the sustainable development of the small ports of the Adriatic basin in a strategic perspective. Therefore, the objective is to turn small ports into a proactive driver of the socio-economic development of this coastal area. This strategic goal requires a multifaced and interdisciplinary approach, including both the adoption of concrete pilot projects as well as identification of priority themes to be promoted within the overall strategy. These actions are going to be performed by adopting a bottom-up approach, involving local and national stakeholders since the beginning of the project. Also, the various project partners have been selected to guarantee a wide territorial cover. Their aim is to address the planning and management topics, the business models implementation, the enhancement of training and competence, as well as the development of Information and Communication Technologies (ICT) tools and services. In addition, the project aims at developing an ICT platform that collects and systematizes the key data on small ports in order to use this information to drive sustainable development. The portal is going to work as a bridge between the two sides of the Adriatic basin, the Italian and Croatian one. In this way, it is possible to create a more consistent and united network of small ports, businesses and institutions, and promote their sustainable performance, infrastructure and policies in order to favor their development and growth.

The point was to extract the most valuable information regarding the ports and harbors that present a safe haven for many domestic and international passengers. Report has been split into several chapters, each of which had a mission to provide a summary keeping in mind few key points.

The beginning of the document starts with an introduction to the necessity of this report and a description of Lika - Senj County in a nutshell.

Following chapter was based on listing all of the port areas under the management of county port authorities, current state of the art which was illustrated through tables and figures, showing percentage-wise how are Lika Senj County's ports comparing to other regions. The key take-away was to provide the reader with statistic data presenting the levels of adoption of certain trends, port infrastructure and superstructure, as well as an overall offer port has.

After that, a SWOT analysis was made in order to simplify the external and internal elements that most of Croatian ports have to face. Despite being an up-and-coming competitor on the Mediterranean, LSC is facing a lot of the opportunities to further develop this segment of business

and tourism. Nonetheless, there are also some threats, therefore during the decision-making process all of the elements have to be considered.

Final chapter focused on some of the key metrics that greatly impacted charts and thus should be considered to place county ports within the current timeframe and final remarks were made.

1.1. Purpose of the document

This document is region-based and has the aim to depict an overall picture of the current state of the ports and harbors within a given territory, by presenting relevant information on the existing facilities and single port characteristics and services, on the basis of the data collected through the questionnaire provided under WP5¹. Each document is regionally based so each individual region gets appropriate attention when describing their initial status. The content of this regional report is extracted and fragmentized, so the partner is able to provide a document which consists of a full set of data on ports and harbors under the management of county port authorities inside of a region. The key is, after collecting the data from questionnaires present the baseline information on the existing facilities and individual port characteristics and services it provides.

Such information will then serve as to compose the overall puzzle drawing the detailed picture of the two coastlines of the Adriatic Sea, as well as representing a first source of information for ultimately filling the FRAMESPORT platform.

It has to be mentioned that this report in its statistics does not encompass privately held marinas (e.g., ACI Marina), but only ports of regional and local significance.

¹ https://ec.europa.eu/eusurvey/runner/IUAV_questionario_framesport_servizi_porti

2. The region in a nutshell

2.1. Geographical context and socio-economic description of the region/county

Lika-Senj County is located between the Primorje-Gorski Kotar County in the northwest, Karlovac County in the north, Zadar County in the south and southeast and Bosnia and Herzegovina in the east. It has a central geographical position and an important connecting area within the territory of the Republic of Croatia.

Figure 1 Lika - Senj County in regards to map of Croatia



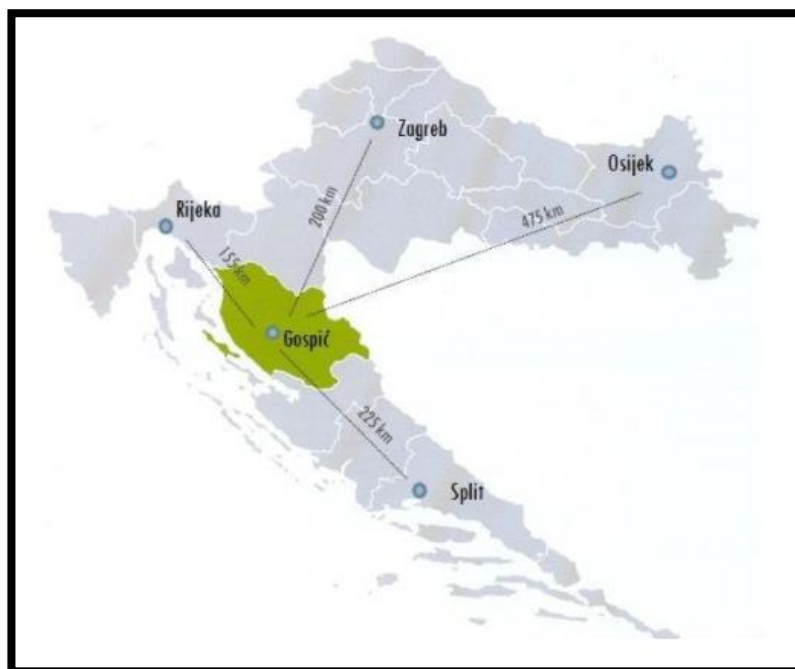
Source 1 Wikipedia: Lika – Senj County

In terms of surface area among counties in the Republic of Croatia, it is the largest county with 5,350.50 km² and covers 9.46% of the state territory. It spreads exclusively in most of the Lika hinterland, and includes most of the Velebit mountain and its Senj-Karlobag coast and the northwestern part of the nearest island of Pag. The county also owns a part of the territorial sea (596.63 km² or 1.9% of the Croatian sea area), which increases not only its area but also its significance, and with 2.29 km² of island area it makes 0.07% of all Croatian islands.

According to the 2011 census, the County has 50,927 inhabitants, which is a significant decrease of 5.12% compared to 2001, when it had 53,677 inhabitants. Population density fell from 10.03 inhabitants / km² to 9.52 inhabitants / km², which is significantly below the average for the Republic of Croatia (75.16 inhabitants / km²) and thus the least populated county.

Lika-Senj County includes 4 cities (Gospić, Novalja, Otočac and Senj) and 8 municipalities (Brinje, Donji Lapac, Karlobag, Lovinac, Perušić, Plitvice Lakes (Korenica headquarters), Udbina and Vrhovine).

Figure 2 Distance to Croatia's bigger centers



Source 2 <https://www.licko-senjska.hr/index.php/o-zupaniji/opci-podatci>

The seat of the County is the City of Gospić.

The importance of the County in Croatia and abroad is primarily determined by the function of the geo-traffic intersection between the three leading polarization hotspots in the country - Zagreb, Rijeka and Split, then the affiliation of its continental area to the geostrategic and ecological core of

Croatia's wealth, and tourist-valuable areas (coastal areas), areas of national parks and nature parks and karst river basins.

A special place belongs to Velebit, the longest and most prominent Croatian mountain, which divides the area of the County into two facades: coastal and continental. Velebit is also a Nature Park and a world biosphere reserve within which there are two national parks (Paklenica National Park and Northern Velebit National Park). There is also the Lika mountain-karst valley with the orographic rim of Plješivica and Kapela, which, due to its geological-geomorphological predisposition, is the largest natural reservoir of quality drinking water in Croatia, and also the extremely attractive rivers Gacka, Lika, Una and Korana.

According to the number and diversity of protected natural objects and sites, the County has one of the leading, and by their share in the total area, the absolute leading place among Croatian counties (2,368 km² or 58% of all national parks and nature parks in Croatia). Among them, the Plitvice Lakes National Park, the Paklenica National Park, the Northern Velebit National Park and the Velebit Nature Park have a central place.

The natural heritage of this county is complemented by the richness of diversity of other protected nature objects, such as new nature parks, strict nature reserves, special reserves (floristic, forest vegetation and forest park), protected landscapes, protected plant and animal species and their habitats, hydrological, geomorphological and paleontological monuments of nature, monuments of park architecture.

The position of the County between the southern - Adriatic and northern - Danube area of the Croatian state gives it special significance. According to physiognomic-homogeneous characteristics, the County consists of two larger and significantly different spatial units: continental Lika-mountain and coastal foothills-island units.



The coat of arms of Lika-Senj County is in the shape of a shield. In the triangular (heart-shaped) shield on the blue field is the golden flower of the Velebit degenia



(degenia velebitica) consisting of four oval, slightly pointed petals at the top, inside which are four anthers, and on the stem are two sharp oblong leaves.

The flag of the County is white and blue. The ratio of width and length is 1: 2. In the middle of the flag at the intersection of the diagonals is the coat of arms of the County. The coat of arms is placed on a white background, and the edges of the shield are golden.



Above and below the coat of arms over the entire length of the flag stretch two blue stripes, equidistant from the coat of arms.

2.2. Regional transport and mobility overview and main features

Road traffic

Lika-Senj County achieves its central traffic importance in the Republic of Croatia through a network of classified public roads in the total length of 1,927.68 km. State roads account for 600 km, county roads for 525 km and local roads for 802 km. Among the state roads, the D1 road, which connects Zagreb with Split, is of special importance and thus represents the most important link between the north and south of Croatia, which acquires special importance in the tourist season. Apart from it, the state roads D8 Jadranska magistrala, D23, D25, D50, D218 are also important.

The share of the road network of Lika-Senj County in the road network of Croatia is 6.4%. Based on legal provisions, they are managed by Hrvatske autoceste on sections of the motorway, Hrvatske ceste d.o.o. network of county roads, and road maintenance is performed by the company Lika ceste.

With the construction of the Zagreb-Split motorway through Lika-Senj County, the county has strengthened its central traffic importance in Croatia and gained an additional opportunity for economic development.

Figure 3 Infrastructure map of Lika - Senj County



Source 3 hgk.hr/documents/brosura-za-investitore-web576d240ab7e6c.pdf

Railway traffic

In Lika-Senj County, railway traffic has a long tradition. The basis of railway traffic is the main auxiliary railway line Ogulin - Knin - Split, the famous Lika railway built in 1925, which passes through the Lika-Senj County in the length of 107 km. With the independence of the Republic of Croatia, the Lika railway became a strategic determinant of the development of the state's railway transport. With the new structure of the state, the Una corridor was temporarily abandoned as a connection between the north and the south, so the entire railway traffic in that direction was taken over by the Lika railway. As this railway was built with modest horizontal and vertical elements of the route and a maximum speed of 70 km/h, the journey on the route Zagreb - Gospić takes over 4 hours.

The condition of the facilities on the railway route is unsatisfactory. The station, station and railway facilities destroyed and devastated by the war were only partially repaired. The station buildings in Gospić were almost completely destroyed, and in other places they were minimally trained for the function.

Maritime traffic

The tradition of maritime traffic is related to the former importance of the ports of Karlobag and Senj. With the construction of better infrastructure and the connection of the port of Rijeka with the rest of Europe, these ports have lost greater traffic significance. Apart from smaller touristic ports and harbours and that segment of the maritime sector on the mainland and on the Pag island, international traffic was on a rapid decline. It is important to mention ferry ports Prizna – Žigljen and Stinica - Mišnjak which connect the mainland and the islands.

Air traffic

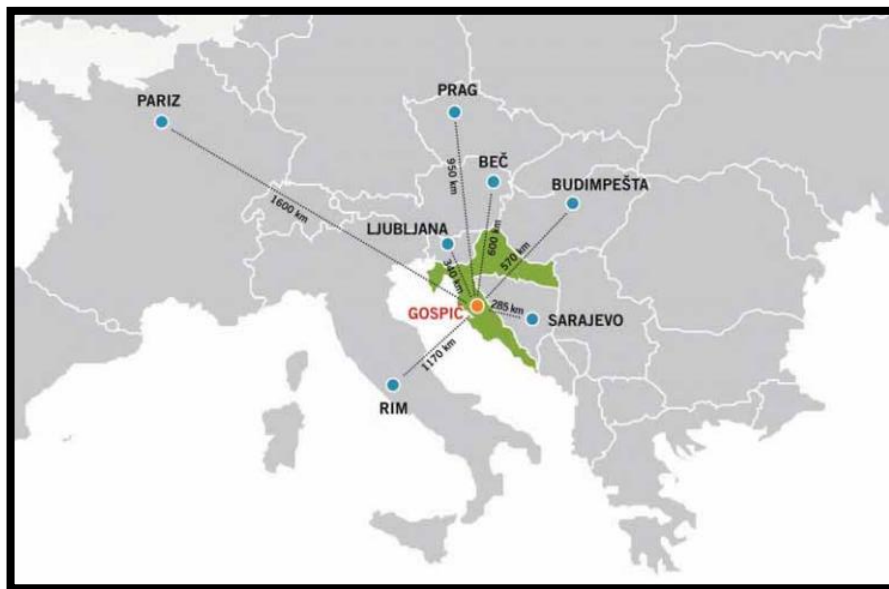
There are two airports in the county - Udbina and Otočac, which were used for military and sports purposes, as well as part of the airport Željava, which is located along the state border with Bosnia and Herzegovina.

Udbina Airport is located on the edge of Krbavsko polje. It is about 60 km away from Gospić, and a little less than 50 km from Plitvice Lakes. The runway allows the aircraft to take off with a total payload of 27 t, a length of 28 m and a wingspan of 36 m. The airport can only be used during the day.

Otočac Airport is located 4 km southeast of Otočac, at an altitude of 463 m with a grassy (stabilized) runway. It is intended for the traffic of sports and tourist aircraft, for air taxis, gliders and recreation.

Željava Airport was used for military purposes only. Until the solution of the border line with Bosnia and Herzegovina, its purpose and use are uncertain, because one part of the runways is on the territory of the neighboring country.

Figure 4 Map of Europe and Republic of Croatia



Source 4 <https://www.hgk.hr/documents/brosura-za-investitore-web576d240ab7e6c.pdf>

2.3. Overall governance and transport planning references

A feature of the economy of the Lika-Senj County is the lag behind the achieved economic and social level of development of Croatia. The economic backwardness of the county was affected by the lack of its own accumulation, poor transport connections, lack of highly qualified personnel and war activities. These problems also affected the change in the structure of the county's economy. Changes in population development, especially due to natural and social characteristics (e.g., war) in the short term have changed the demographic picture of the area. The unfavorable population structure is a limiting factor in the economic development of the county, such as the lack of professional staff as a fairly limiting factor in the development of enterprises.

Better functional and traffic connection of certain areas of Croatia through the county will enable, through the policy of sustainable use of the county's natural resources, faster economic development, and influence the growth and development of urban centers. High-quality transport connections will improve the demographic picture of this area, i.e., slow down negative demographic trends. Due to the severity of the social and economic crisis present in this area in recent decades, a large number of residents have emigrated. Suffering and migration, as a consequence of the aggression against the state of Croatia, further worsened the demographic picture of the county. Of the total population of the county, the share of the working age population is 57.6% (Croatia 63.7%). The age coefficient in the county is 30.5% and exceeds the critical level of 12%. The educational structure of the population is not satisfactory because the share of the population with completed high school, college or university is lower than the national average.

The development of Lika-Senj County is focused on tourism, agriculture and the wood industry, which is envisaged by the County Long-Term Development Study. There are 730 active companies in the county. Most of them are from trade, manufacturing, tourism and catering, transport services and construction. The economy of the county is characterized by the existence of micro and small entrepreneurs, and when it comes to companies, 99% of them are active from the ranks of micro and small entrepreneurs, while medium-sized the remaining 1%. Most entrepreneurs are engaged in trade and provision of services. Existing industrial capacities are characterized by poor technical and technological equipment, outdated technology and low level of raw material processing. Due to this situation, average salaries are low, payments are late, and there is a lack of professional staff. This situation causes insufficient production programs for the needs of new markets, so there is a reduction in housing and investment spending.

3. Analysis of regional small ports phenomenon

3.1. Overall description of available infrastructures (position, visualisation, berth details and capacities, hinterland connection)

3.1.1. County Port Authority of Senj



Figure 5 Ports under management of County Port Authority of Senj

- Barić Draga harbour – 0 berths
- Baška Draga harbour – 50 berths
- Jablanac harbour – 66 berths
- Karlobag port – 90 berths
- Klada harbour – 110 berths
- Krivača harbour – 115 berths
- Lukovo harbour – 66 berths
- Lukovo Šugarje harbour – 27 berths
- Prizna port – 0 berths
- Senj port – 270 berths
- Starigrad harbour – 68 berths
- Stinica port – 0 berths
- Sveti Juraj port – 38 berths
- Cesarica harbour – 62 berths

A town on the Velebit Channel at the foot of the Velebit and Senjsko bilo mountain ridges. The oldest town on the northern Adriatic is semi-circular in shape, and is surrounded by high hills on three sides and by the sea on the fourth. It has become the most important town between Rijeka

and Zadar. Its significance is mainly due to the land connection between the coast and the interior. In the winter, Senj is the coldest town on the Adriatic due to the frequent rushes of cold continental air across the Vratnik Pass. South of Senj lie bays with beautiful beaches. This was the site of an important prehistoric Illyrian settlement.

In the 4th century, it was known by the Greeks as the town of Senia. In the Roman era, it was the main fortified commercial port serving as a connection with the interior. In the medieval Croatian state, it became important when a diocese was established here in 1154. The Frankopans assumed control over Senj in 1271 and began to build a wall and defence towers. The Hungarian King Mathias Corvinus occupied it in 1469 and declared it a royal town and the seat of the captaincy, which was the seed of the Croatian Military Frontier. After 1526 the town was ruled by the Habsburgs. In that period, it was surrounded by new fortifications, the inner part of town was surrounded by a wall, and the magnificent Nehaj Fortress was built on a hill above the town.

The Uskoki, refugees from the areas occupied by the Turks, began to move to Senj in 1527. The Austrians accepted them as experienced soldiers who could defend the Military Frontier. For an entire century, Senj was the main military stronghold in the battles against the Turks and the Venetians. After the 1615 war between Austria and Venice, they had to move out. Between 1809 and 1813, Senj was part of Napoleon's Illyrian Provinces, followed by the Military Frontier again. In 1871, it became part of Croatia. After the fall of Yugoslavia in 1941, it was occupied by the Italian army. After Italy's capitulation in 1943, it was bombed by German planes and severely damaged.

The numerous cultural and historical monuments in Senj include the Sabac kula (13th century) and Papinska kula (1513-21) towers, the Renaissance Church of sv. Marija (St. Mary) on the Art Square, the town castle from around 1340, the large town gate, the fountain on the main square, and the Cathedral of sv. Marija (St. Mary) from 1248 on the old square. Other attractions include the preserved part of the defence wall with towers, numerous portals and individual houses. A special attraction of Senj is the Nehaj Fortress on the Trbusnjak hill. It was built in 1558, when the Turkish and Venetian military power was at its peak. Senj resisted both and remained free. The commander of the Senj Uskoki, Ivan Lenkovic, ordered the destruction of all churches and monasteries outside the town wall and used the material to build a fortress, which was unassailable at the time. There is a viewpoint at the top of the fortress.

The port is not safe when northwesterly or westerly winds blow, and it is also not recommended when the bora blows. Berths are available at all three piers and breakwaters. There is a 10-ton lift. The Ujca campsite has a small harbour.

County Port Authority of Senj	Maximum vessel length in meters	Minimal seabed depth in meters	Width of port entrance in meters	Total port area in square meters
1. Barić Draga harbour	10	1	40	500
2. Baška Draga harbour	40	1	50	600
3. Jablanac harbour	70	2	50	700
4. Karlobag port	40	0,5	80	3500
5. Klada harbour	30	0,5	80	1200
6. Krivača harbour	*	0,5	80	1100
7. Lukovo harbour	30	0,5	60	660
8. Lukovo Šugarje harbour	*	1,5	100	450
9. Prizna port	90	1	70	4700
10. Senj port	80	1	150	6800
11. Starigrad harbour	10	1	100	920
12. Stinica port	90	2	100	13500
13. Sveti Juraj port	30	1	70	3800
14. Cesarica harbour	*	0,5	70	1100

Figure 6 County Port Authority of Senj - port statistics

3.1.2. County Port Authority of Novalja

Lika-Senj County is located between the Primorje-Gorski Kotar County in the northwest, Karlovac County in the north, Zadar County in the south and southeast and Bosnia and Herzegovina in the east. It has a central geographical position and an important connecting area within the territory of the Republic of Croatia.



Figure 7 Ports under management of County Port Authority of Novalja

- Žigljen port – 0 berths
- Tovarnele port – 62 berths
- Stara Novalja harbour – 12 berths
- Novalja port – 360 berths
- Metajna harbour – 25 berths
- Drlijanda harbour – 10 berths

A long and narrow island that extends along the Velebit Channel parallel to the mainland. The northeastern coast is steep and high, while the southwestern coast is low, but both are rugged and have numerous bays, coves and capes. The fine sand in the bays created a series of incredibly beautiful beaches. Most of the island is rocky and bare, and only occasionally covered with Mediterranean shrubbery and pine woods. There are fields and vineyards in the valleys and pastures between them. No large island on the Adriatic is exposed to such fierce gusts of the bora as Pag, yet this has its advantages. The wind that blows across the Velebit Channel brings with it a salty mist, the salty drops fall on the pastures and make the dewy grass extremely nourishing for sheep.

This is the reason why there are such excellent delicacies as the famous Pag cheese, Pag smoked ham and Pag lamb. Tourism is developed in almost all the small settlements that line the coast and

the Pag Bay. The traditional art of lace-making is particularly important. The island is accessible by ferry (Prizna-Žigljen) and across a bridge that spans the Ljubacka vrata Narrows. The Velebit bora can severely obstruct the ferry traffic in the winter month. As the southernmost Kvarner island, Pag is often classified as part of Northern Dalmatia, with which it is connected by a bridge. Historically, it has always been connected with Dalmatia. The other influence came from the island of Rab, and this duality is still present in the lives of the islanders.

Novalja - A tourist town with a port on the southwestern part of the island. It has retained its Mediterranean appearance. The clustered old part of town was built in a typical coastal style, and the new part has significantly expanded. The Zrce beach is one of the most beautiful beaches on the Adriatic coast. Novalja was built on the site of the ancient settlement of Novalja. Parts of the Roman aqueduct have been preserved. The port is protected from northwesterly and southeasterly winds. There are moorings for 20 boats and a 5-ton lift behind the first, partly completed breakwater. Local boats are moored behind the second one. There are also a few moorings in front of the hotel. A good anchorage for medium-size yachts can be found in the middle of the bay at a depth between 5 and 8 m.

Pag town - The administrative, cultural and tourist centre of the island is situated at the end of a picturesque bay lined with 20 kilometres of sandy beaches. Tourism has become the main economic activity, but the inhabitants still engage in sheep breeding, wine growing, fishing and salt production as well. The Pag saltpans are as old as the town itself. In the past, they employed most of the inhabitants. A special activity in Pag is lace making. The lace-making school was established in 1906.

Stara Novalja - A settlement on a bay of the same name. The coast is lined with a 5-km-long sandy beach, which is protected from the bora and the jugo. Ever since the ferry landing was moved, Stara Novalja has been a peaceful settlement, suitable for a family vacation. There are moorings east and west of the former ferry landing. They are well-protected from the bora and the jugo. Good anchorage is available in the Drljanka Bay.

Šimuni - A small settlement on the southwestern part of the island. In the naturally protected bay lies a marina, and there are beautiful beaches and a camp along the coast. This is one of the largest areas for sports and underwater fishing. ACI Simuni Marina (023) 698-020 - There are 175 berths at a depth of up to 10 m, 30 spaces for dry storages, a repair shop, a launch ramp and a 15-ton lift. Entering the bay when the bora or the jugo blow particularly strong is almost impossible.

Figure 8 County Port Authority of Novalja - port statistics

County Port Authority of Novalja	Maximum vessel length in meters	Minimal seabed depth in meters	Width of port entrance in meters	Total port area in square meters
1. Žigljen port	120	2	150	107000
2. Tovarnele port	50	1	50	49331
3. Stara Novalja harbour	40	1	100	-
4. Novalja port	50	0,5	300	229859
5. Metajna harbour	25	0,5	50	-
6. Drljanda harbour	80	0,5	100	-

3.2. Overall description of available services for users (technical services, nautical services, waste collection, touristic services)

Port services are one of the essential mechanisms to ensure the proper execution of the different commercial activities taking place inside ports and harbors. Some of the main functions that will be covered in this paragraph include nautical and technical services, ecological aspect and touristic services.

As previously mentioned, services offered inside ports are mostly centralized, meaning that most services are being offered in the ports inside biggest cities, which is not odd as the most services require proximity of other related services.

The following paragraphs will consist of statistical information interpretation based on the data collected through dedicated FRAMESPORT questionnaires. Lika - Senj County contributes the report with 20 ports and harbours of local and county significance ranging from ports in city centre, anchorage berths, buoys, berths in autocamps as well as ferry ports and small bays and coves on surrounding archipelago. Each port has an individual value which contributes the ultimate goal of providing and serving of nautical users while trying to maximize the offer and services.

3.2.1. Nautical technical services

The Port services are the provision activities needed to ensure the running of the Port, aimed at enabling the operations associated with maritime traffic to be carried out in conditions of safety, efficiency, regularity, continuity and non-discrimination.

Mooring and unmooring services - Its function is to pick up a vessel's mooring lines, take them and attach them to the elements arranged on the docks or moorings for this purpose, following the instructions of the vessel's captain, in the mooring sector designated by the Port Authority, and in the order and layout convenient for facilitating docking unmooring and undocking operations.

The unmooring service is understood as being the function whose aim is to detach the mooring lines of a vessel from the fixing elements to which it is moored, following the sequence and instructions provided by the captain and without affecting the conditions of the vessels moored next to it. Approximately 40% of ports and harbours within the Lika – Senj County offer their users the service of mooring and unmooring of the incoming/departing vessels. Appreciation from newcomers is probably immeasurable but definitely taken into account if they decide to come back.

Presence of basic services in the port:

Table 1 Statistic representation of basic services in ports

Lowering and lifting of the vessel into the sea – 25%	Vessel storage space – 0%
Hull washing – 15%	Trailer for moving the vessel – 15%
Temporary storage space – 10%	Cranes (self-propelled, land) – 20%

Availability of boat repairing service/overhaul shipyard falls under the segment of high-end port level of equipment due to the fact that port has to ensure a large enough area for vessel manipulations with all the appropriate infrastructures and superstructure elements.

Table 2 Statistical representation of boat services/maintenance offer in LSC ports

Sales of technical products for vessels in shops and / or warehouses – 5%	Electrical services – 5%
Hull repair – 5%	Supervisor – 0%
Manufacture and repair of sails and awnings – 5%	Dry dock/Slipway – 0%
Sales of technical products for vessels (custom) – 5%	Electronic services – 0%
Upholstery services – 5%	Warehouse – 5%
Rope fitting and adjustment services – 5%	Plasticization of vessels / glass plastic – 5%
Marine engine service – 5%	Ship joinery – 5%

From the table above, it can be seen that the overall size and relatively small area on which the ports are built on are fairly constricting regarding the developmental needs. Weighted average corresponds to **4.1%** meaning that the aforementioned services are available only in 0.8 ports in Lika – Senj County. Percentages are defeating but they were not unexpected taking into the consideration that most of these ports are improvised and were built in a way to ensure a safe haven for vessels without spending too much of resources on anything other than basic needs. The main reason behind this table lays in a simple explanation where none of the shipyards belong to the port area (which was originally stated in the question). Port area is differently defined and only services with direct permissions (concessions) are able to conduct their business in direct port area, thus none of the listed activities can classify under port offer. The other reason lays under the premise that almost all of the berths in these ports are intended for domicile population.

Technical diver service – service providing the expert in sub-aquatic work who is available when the emergency situation arises (slashed ropes/buoys, concrete weight at the bottom...) – **100%**.

Fire protection system on the berths – **30%**

3.2.2. Ecological aspect

The greatest environmental effects of the small ports, according to the boaters, concern fuel and different types of waste, such as litter, septic tanks emissions, toxic antifouling paints and grey waters from boats. Too few places to empty septic tanks, or tanks being out of order, increases the risk of boaters emptying tanks into the sea. Due to ongoing incremental of eco-friendly movements, ports should also be able to follow trends to improve their offer and business overall. Interesting idea suggests ports could use recyclable and environmentally friendly products and maybe even provide ideas on how boaters could act more environmentally friendly.

Overall ecological impact could be decreased in couple of different ways:

- Taking better care of the waste management infrastructure (emptying containers regularly, locating them close to the ports and enabling waste sorting),
- Better maintenance of shore pump-out stations (checking and repairing them regularly, providing proper instructions on how to use them and ensuring sufficient shore pump-out stations that are safe and easy to use),

- Generally increasing boaters’ environmental consciousness
- Limitation of single-use plastic items and favor the use of more sustainable materials
- Marking visitors’ berths better, to make them easier for boaters to find.

Table 3: Statistical representation of ecological aspect in LSC ports and harbours

Presence of a port wastewater monitoring system – 0%	Presence of desalination equipment – 0%
Presence of a separate waste collection system in the port – 0%	Presence of air purification system in the shipyard (within the port) – 0%
Presence of a sewage treatment plant in the port – 5%	Presence of water purification plant inside the shipyard – 0%
Presence of ecological tanks for collecting waste oils and wastewater – 45%	Level of environmental education and activities promoted for users and staff – 70%
Presence of a proper battery disposal service – 0%	Level of promotion of sustainable modes of transport – 5%
Existence of Environmental Management System Certification (renewable annually) – 0%	Fuel distribution centers/Pump out stations – 5%

3.2.3. Touristic services

Touristic services can be defined as an overall offer to port's end users enriching the existing offer beyond basic needs. Tourist services encompass the whole array of fields in which costumers search for individual satisfaction which in turns affects the entire perception of available ports.

Welcoming tourists in their own language carries a certain dose of respect and welcoming feeling. Lika - Senj county throughout the history wasn't under the Italian (Venetian) influence like Istria, Primorje – Gorski Kotar and Dubrovnik – Neretva County, resulting in a slightly lower presence of Italian speaking population but nonetheless, employees working with a mostly nautical guests learned the language and most of them actively uses it.

Knowledge of Italian and English is at **100%** in ports and harbors all over the Lika - Senj County. Slovenian and German are following with above average percentage because of the proclivity of tourist arrivals from these countries.

Sport fields and facilities also play a huge role in enrichment of tourist offer. Cities from Lika – Senj county are fairly developed in terms of cultural events and infrastructural needs, but ports are mostly in secluded places, sometimes even a bit harder to reach for by land, thus, are consequently slightly “under-equipped”. By no means that alludes those ports are struggling to find customers but exactly opposite, people are running away from crowded places to those a bit more secluded. In the category of sports activities (wind surfing, sport clubs, sailing schools and diving schools) 4 out of 20 ports in the whole Lika – Senj county are in possession with at least one of these activities, meaning that **80%** of ports doesn't have any additional content regarding the sea-related sport activities. Other sports and wellness facilities are similarly distributed (mostly ports in bigger cities are sufficiently equipped while the smaller harbors are often not). **15%** of ports have a tennis court in a close vicinity, while **10%** are within a 1 km from soccer fields. **5%** of ports are close to a pool facility while only **10%** of ports are in the kilometer range from gym and golfing facilities.

Wellness facilities are an essential accessory in modern day's world with the ever-rising demand for various forms of SPA and beauty centers. Only 1/5 of ports have at least one of the forms (SPA center, health resort, medical center, beauty center, hair saloon or barber shop) of wellness facilities in their near vicinity.

Availability of port facilities for people with limited movement abilities is a big advantage as the social inclusion does not represent an obstacle when it comes to visiting LSC ports and harbors.

Regarding the facilitation of accommodation to people with reduced mobility, almost none of the ports have some kinds of ramps, bridges or lifts to ease the movement of those whom it may concern but the infrastructural elements are not making things more difficult than it should be.

To facilitate the movement on land, various modes vehicles for rent are available throughout ports and harbors. As only one port from 20 surveyed has all of the land transportation vehicles, it can be concluded that only **5%** of ports in Lika – Senj County have access to quads, rent-a-cars, bikes, mopeds and scooters.

The following table summarizes the average distance from ports to important facilities such as police station and fire department. Presumably, this has to be one the biggest factors while choosing the port. Vicinity of these institutions provide an end-user with valuable information regarding the first steps after some kind of emergency ensures.

Proximity of other transport related facilities provide an average distance (from all of the ports -> institution/facility) to end users that might want to explore other options of travelling through Croatia while still being based in chosen port.

Table 4: Average distance (Lika-Senj County ports – transport and facilities)

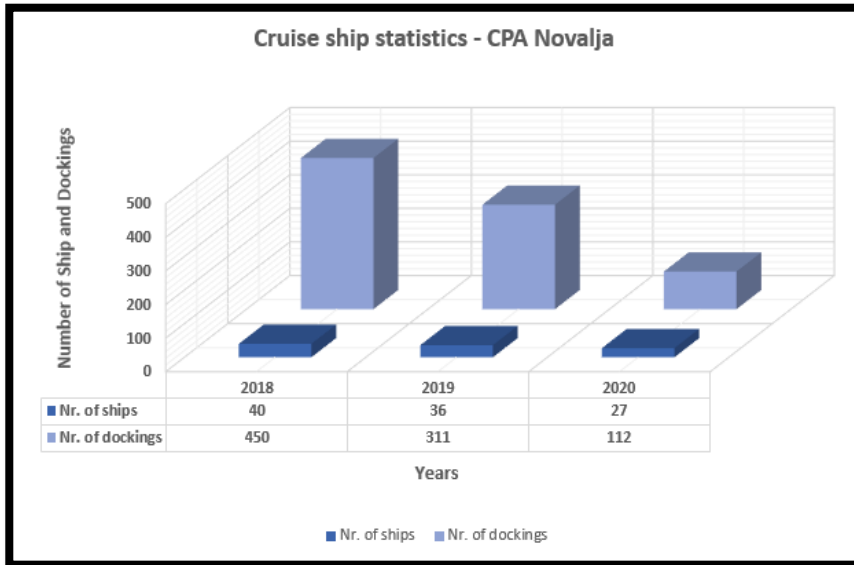
Train station	79.75 km
Airport	102.75 km
Bus station	16.40 km
Freeway	61.50 km
Police station / Fire department	18.90 km
Hospital / Medical service	18.50 km

As for pet-friendly facilities, it should be noted that they’re not guaranteed in the harbors and ports included in this survey. On the contrary, most of the marinas (privately held or managed are not included into this survey) do so, thus underlining the opportunity to further investigate such aspects for marinas due to ever-increasing demand from end users with facilitation of accommodating their pets.

Catering facilities such as restaurants and coffee shops are a necessity within any kind of touristic hotspot. Most of the ports and harbors are in a walking distance from facilities like such, even though they do not technically belong to the port areas (concessions).

3.3. Overall information on annual traffic data (cargo/ro-ro/passengers/locals)

Figure 9 Cruise ship statistics in port of Novalja



As for the collected information regarding ports in Lika – Senj County, couple of data sets were able to be extracted and compared in order to gain an insight where the market was headed during the last couple of years. As mentioned before, the vast majority of berths provided by the county is originally intended for the domicile population of Lika – Senj mainland and

island, therefore, data on cruise ships is presented. Like everywhere in the world, great loss for any kind of cross-border tourism sector ensued. This can be seen from the above attached chart where number of arrived ships (companies) dropped 25% which is not a lot considering the fact that travel restrictions later were mostly focused on people and vessel arrivals. In that segment, it can be seen that number of cruise ship dockings fell 75.1% in regards to the number from two years prior.

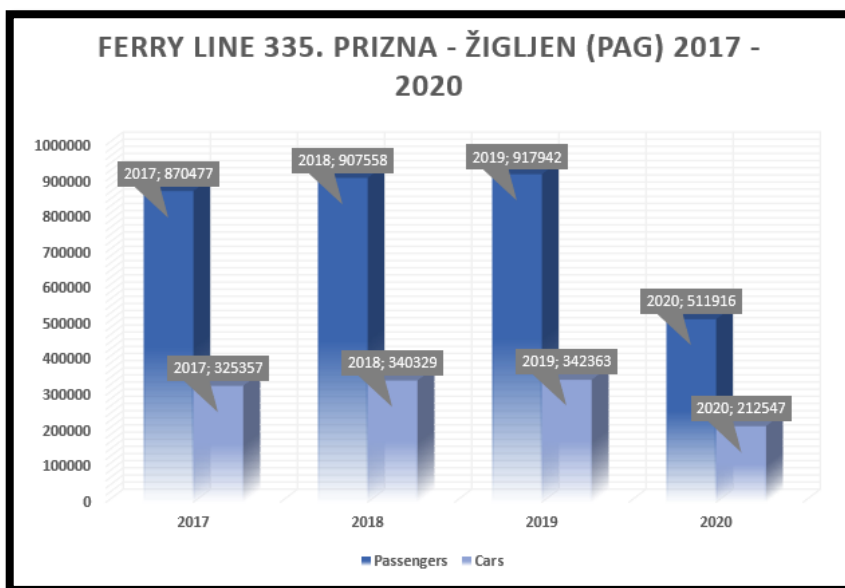
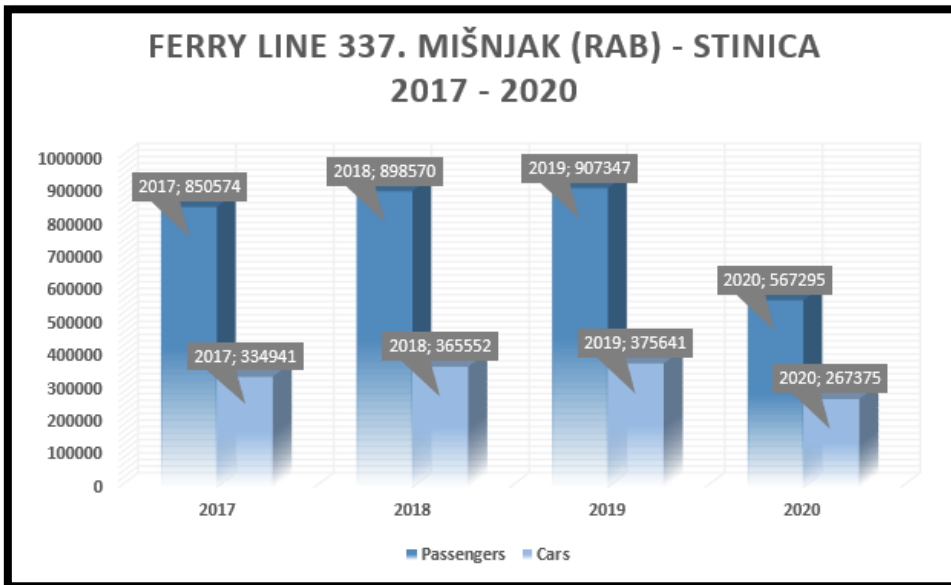


Figure 10 Statistics on ferry line from Prizna - Žigljen (Pag island)

Ferry lines are type of passenger voyages that are happening according to a pre-determined schedule where the usual practice is that there are higher number of arrivals and departures during the peak seasonal months. This chart points out the fact that in the year 2020, number of cars

transferred in the ferry line from Prizna to Žigljen on island of Pag went from 342363 in the previous year to 212547 in 2020, which is a 38% drop. The number of passengers in the same time frame went from 917942 to 511916 which is a 44.2% drop. Good thing is that, according to certain projections, the number of passengers in 2021 almost completely restored to 2019 levels.

Figure 11 Statistics on ferry line from Mišnjak (Rab island) – Stinica



Similarly to the chart before, the drop in the trend is obvious, but at this point it cannot be a surprise anymore. Travel restrictions in the year before made their mark in the historical view at the charts. Ferry line number 337 connects mainland which territorially

belongs to Lika – Senj County and port of Mišnjak which is on Rab island. The Ro-Ro ship that connects these two places also travelled almost half the capacity in the year 2020. The number of transported cars saw a 28.8% drop during the pandemic, while the number of transported passengers on the line from Stinica to Mišnjak suffered a 37.5% drop. Luckily, 2021 showed great results up to date regarding the number of arrivals and over-night staying's in Croatia.

4. SWOT analysis on small ports phenomenon

<p>Strengths</p> <ul style="list-style-type: none"> • Natural beauty, clear sea, indented coast and numerous islands • Favorable climatic characteristics • Ecologically preserved landscape and underwater world • Strategic position • Traffic connection / accessibility • Supporting tourist infrastructure (service activities) • Hospitality • Educational structure of staff • Nautical infrastructure (nautical ports tourism) • Personal safety and safety of navigation • Possibility of expanding existing ports and harbors 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Insufficient number of berths • Lack of berths for larger yachts • Content of the offer in marinas and level of service • Level of technical service in marinas • Seasonality of demand • Content of the destination offer and quality of services • Need for a more sustainable management and improvement of services for waste collection and water treatment • Inconsistency of legal regulations • Administrative barriers • Inadequate categorization of ports of nautical tourism • Lack of nautical development strategy
<p>Opportunities</p> <ul style="list-style-type: none"> • Opening new markets • Uptrends in tourism • LSC is becoming an increasingly popular tourist destination • Improving traffic accessibility • Adoption of a nautical development strategy tourism • Climatic conditions favorable for significant season extension • Increase in the quality of another tourist offer • Foreign investment 	<p>Threats</p> <ul style="list-style-type: none"> • Recession in the world market • Marine pollution • Reconstruction of the coast • Insufficient awareness of the need for protection of environment and biodiversity conservation • Inadequate legal and other regulations • World pandemic • Wide urbanization of natural beauty

For the purposes of analyzing the development of nautical tourism in Lika – Senj county, a research tool known was used called SWOT analysis. SWOT analysis, also known as situational analysis, is an intuitive method of examining and evaluating the internal (strengths and weaknesses) and the

external (opportunities and threats) of the environment or factors in the function of observing the condition and possible development of a particular phenomenon, in this case small port phenomenon.

The SWOT analysis presents a matrix of questions and answers related to factors that could affect the development and business result of ports. Such an analysis is carried out with a certain nautical tourism experts and managers, as well as coordinators and moderators. SWOT analysis is a tool that helps to identify, detect and identify key development factors, development potentials, and development constraints and as such is a key step from the analysis of the present status to think about the future, desired and possible, determining the development vision, strategic goals, measures and projects.

Competitive advantage can only be built on available potentials if these are rare and have no suitable substitutes among the competition. If the competitors are in know of that and they cannot imitate the advantage but rather have to focus on their external opportunities and neutralization of the threats. Because of the above fact, nowadays more and more attention is paid to intangible assets (knowledge and skills, technologies, patents, organization, reputation, etc.).

Nautical tourism ports still do not provide the required level of structure and the quality of the offer that boaters expect, especially compared to natural and ambient characteristics and benefits we're gifted with. Due to the lack of additional content, from the accommodation facility in the ports and sports fields to restaurants, nautical equipment shops, supermarkets, boat services, cranes, slipways, etc., the income of the ports is significantly smaller than which is possible, and its structure is unfavorable.

The biggest advantages are favorable natural features, i.e., a high degree of indentation of the coast, connectivity and complementarity of the island and coastal belt, the existing tourist infrastructure and capacities from other activities, as well as the benefits of locations for the construction of various types tourist ports and other nautical - tourist capacities. However, with all the above-mentioned advantages that nautical tourism has, there are also some shortcomings that need to be minimized in order to successfully compete in the global nautical market.

Some negative factors, respectively the shortcomings of nautical tourism and the limiting factors of its development are: seasonal character activities in nautical tourism, occupation of the sea and the coast, usurpation of the coast, sea pollution with oil and its derivatives, bacteriological pollution of

the sea by wastewater and substances, devastation of biological resources of the sea, pollution of the sea with various wastes and impurities and the destruction of fish and water resources.

5. Summary and conclusions

The aim of this regional report was to provide an overview of the current state of the Lika – Senj County Port Authorities and port areas under their management thanks to the processing of data collected through the questionnaire filled by the county port authorities.

Though Lika - Senj County ports have one of the best predispositions for success due to favorable geolocation in the Mediterranean, as well as vicinity to neighboring states that share a similar view on the sector, even development is far out of the reach. Most of the small Adriatic ports belong to a category of “satellite ports”, meaning they serve a purpose as a temporary seclusion place, as some of the berths are improvised with homemade equipment. Some of them are illegally made and artificially prolonged so there isn’t any kind of structural cohesion between berthing piers. It isn’t possible to make investments in all of the ports at once, thus, process of becoming sustainable and self-persevering is scheduled as a long-term goal.

As stated throughout the report, centralization seems to be the biggest obstacle that isn’t going away any time soon, as most of the content and tourist offer is concentrated in bigger cities (and ports). The natural flow of development would have to be in a form of an outflow when the levels of overcapacity hit in bigger ports. This has been proven as correct in the years before the COVID-19 pandemic. A lot of the Croatian ports started to achieve peak numbers in docking and passengers, and in that point of culmination, every available place that remotely resembled a berth started to attract nautical clients.

These ports are one of the greatest assets to the Croatian tourism which desperately needs to be properly addressed and valued. Following trends and socially acceptable movements are key to achieve a first step towards becoming a sustainable port. As long as the trend before 2019 continues after the solution to pandemic is found, value will continue to be extracted from Croatian tourism beauties. Nautical tourism has an unlimited potential when it comes to future upgrades as the demand keeps growing.