WPT1: D.T1.2.9

FUA REPORT
INCLUDING SULPITER TOOL FEEDING &
CALIBRATION IN RIJEKA

Draft
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Authors:	**City of Rijeka**
Status (F: final; D: draft; RD: revised draft):	**Final**

1. Introduction

This document arises from the FUA reports of each involved city and will provide the inputs for the deliverable T1.2.11 “understanding Freight behaviour and impact on FUA”.

The information included in this template will be used for the transnational report (D.T1.2.11) and for the final output of the work package O.T1.7.
As this document contains the minimum requirements needed for preparing the transnational report, PP12 engaged all information available from the surveys conducted in the Rijeka FUA to satisfy these requirements. Where such information was not available from the surveys, PP12 included i8nformation from other relevant documents and act that are in force in Rijeka.

The descriptions laid down in this document contain information derived from the surveys conducted in shops and with transport operators (Nace codes G & I), and the Freight quality partnership. Where such information was not available, the aim was to complete the inquiries with information available from other sources, if possible.

The surveys cover mandatory distribution flows. The industrial flows were not concluded in this study.

2. The territorial contest

FUA name
Rijeka FUA. The study area covers the majority of the municipalities surrounding the City of Rijeka and Rijeka as well. The areas include territories of the Rijeka Agglomeration in which the relevant commercial activities are carried out and which are covered by more important traffic routes, including local, county and state roads, and routes to and from border crossings, bypasses and motorways.
Km^2 involved in the study-area
The total area of the study area is 652,75 km^2. The spatially smallest zone of the Rijeka FUA is the zone of the City of Rijeka. The City of Rijeka is located on the area of only 44 km^2 and has over 128 000 inhabitants, making it very densely populated and the most commercially active area in the County Primorje – Gorski kotar in which it is located. The biggest zone is zone 4, with 221,08 km^2, that includes a large industrial zone and warehousing facilities, and is an origin for a lot of delivery routes.
N. of inhabitant
The total number of inhabitants in the Rijeka FUA is 202,169. As mentioned, the most densely populated zone is the City of Rijeka with 128,624 inhabitants. Zone 2 has 26,860 inhabitants, Zone 3 15,760, Zone 4 19,679 and Zone 5 11,246 inhabitants. The most densely populated area is the City of Rijeka with 2923 inhabitants per km^2, and the least densely populated zone is Zone 5 which includes the municipality Matulji with 63 inhabitants. This is due to the

fact that the city of Rijeka is not a municipality and is located on a limited area. The surrounding cities and municipalities however, are located on a several times larger territory and the inhabitants are more disperse.

N. of municipalities involved

The study area includes 5 cities and 5 municipalities, with only the city of Rijeka not being a municipality. The other cities include a municipal area as well. The cities involved are Rijeka, Kastav, Opatija, Lovran and Bakar while the municipalities are Viškovo, Klana, Čavle, Kostrena and Matulji.

N. of working units (employers)

The number of employers in the study area where regarded in light of the commercial activity carried out in the area. The commercial activities studied are retail and wholesale, regarding that the surveys were focused on activities in NACE codes G and I, and the interviewees were hospitality and accommodation providers, retail and wholesale entities and transport operators.

There are 287 entities with the registered office in the area in retail, and they employ 1419 employees. In wholesale, there are 584 entities which employ 1673 employees. These numbers cover only businesses which are registered in the cities and municipalities of the study area while the survey covers even those that have businesses located in the study area but are not registered there with a base.

N. of zones used in the tool and in the o/d matrix

The study area of the Rijeka FUA was divided into 5 zones. The zones where divided according to size, population density, intensity of commercial activity and transport routes.

The zones are: Zone 1. City of Rijeka with the most intense commercial activity, Zone 2. Opatija, Lovran with the strongest tourist intensity, Zone 3. Kastav, Klana, Viškovo, Zone 4. Čavle, Bakar, Kostrena strong in wholesale and an important traffic route and Zone 5. Matulji covering routes to the Croatian – Slovenian border.

Zoning criteria

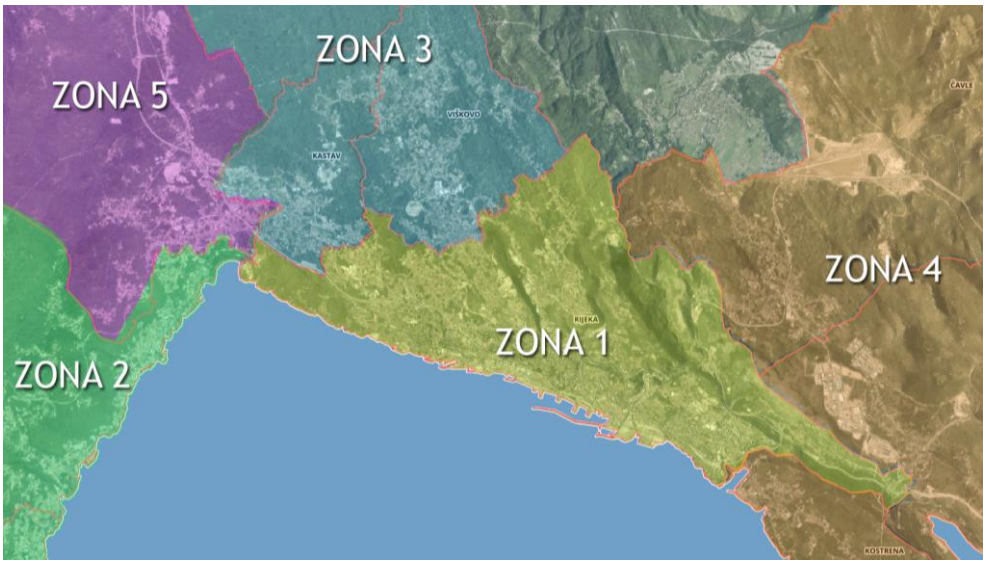
All the zones belong to the same nuts 2 level in which the Republic of Croatia is divided into the Continental, and Adriatic region which is 2, level 2 regions. The Rijeka FUA belongs to the Adriatic Croatia region.

The country is further divided according to counties. The Rijeka FUA is located whole in the Primorje-Gorski kotar county. The zones differ according to size and it was challenging to divide the area into zones because of the geographical location of the area. The Rijeka FUA is located on a coastal area and is the principal port of the country located in Kvarner bay. Two important land transport routes start in Rijeka due to its location. The first route is to the Pannonian Basin given that Rijeka is located alongside the narrowest point of the Dinaric Alps (about fifty kilometres or 31 miles). The other route, across Postojna Gate connects Rijeka with Slovenia, Italy and beyond.

The terrain configuration consists of the coast and into the hinterland, mountains rising steeply just a few kilometres from the shore. The landscape contrast has an important role in the distribution of inhabitants and possibilities for routing traffic. The zones in the coastal part of Rijeka FUA have a much greater number of inhabitants than the inland, which has important roads connecting the area to neighbouring countries and the Croatian capital of Zagreb, which is an important origin of goods delivery.

The zones follow the administrative borders of the municipalities included in the study area because of the need to overlap maps with administrative borders and main local, regional and national roads in the area. As the City of Rijeka is the most intense area of commercial activity, and the most congested by daily traffic (the city takes upon about 60 thousand vehicles every day), daily migrations revolve around the city so it is the smallest zone territorially but the most commercially active. Zone 5. Includes important traffic routes to the Istrian peninsula and the western borders. Zone 4., is a large industrial zone connected by road and railway and the location of large warehouses used as the delivery origin for the Rijeka FUA. These are, respectively the largest zones of the Rijeka FUA with almost 400 km^2. They are also less populated. As oppose to the Zone of the City of Rijeka with almost 3 thousand inhabitants per km^2, only zone 2., with Kastav, Klana and Viškovo has over 200 inhabitants per km^2. Zone 4. Čavle, Bakar, Kostrena and Zone 5. Matulji have 89 and 63 inhabitants per km^2, respectively.

Map of the FUA Rijeka study area



Picture 1. Rijeka FUA

3. Current freight mobility impact

Analysis of survey on distribution flows.

The survey on distribution flows was carried out among **232** interviewees.
Per supply chain:

- Category 1 (Caffe bar, Restaurant, Hotel): 101
- Category 2 (Food products): 45
- Category 3 (Consumer goods): 63
- Category 4 (Textile products): 23

Almost 50% of interviewees use DDP delivery mode, while the other 50% use ex-work and off truck deliveries.

Share of DDP, EX-WORK and OFF TRUCK delivery modes:

1. **DDP** = **115** (49,57%)
2. **EX-WORK** = **13** (5,60%)
3. **OFF TRUCK** = **104** (44,83%)

4. **OWN ACCOUNT COLLECTION**: **122** (52,59%)

While the absolute majority of shop employees have stated that the duration of deliveries is up to 10 minutes, transport operators say that it is rarely or never less than 10 minutes per delivery.

The majority of interviewees have, on average, 3.9 suppliers, and 45% have goods delivered 3 or more times per week. Mondays and Wednesdays are the busiest days in the week in terms of deliveries with the share of 62% and 59%, respectively.

The number of suppliers per category goes as follows:

Category 1 (Caffe bar, Restaurant, Hotel): 6,258
Category 2 (Food products): 7,974
Category 3 (Consumer goods): 0,71
Category 4 (Textile products): 0,81

Over 90% of suppliers complete deliveries from 6 am until 12, and 10% deliver in the afternoon hours.

Hourly distribution of suppliers		
TIME	N. OF SUPPLIERS	PERCENTAGE
06-07	31	13,36%
07-08	60	25,86%
08-09	41	17,67%
09-10	36	15,52%
10-11	37	15,95%
11-12	7	3,02%
12-13	6	2,59%
13-14	6	2,59%
14-15	4	1,72%
15-16	3	1,29%
16-17	1	0,43%

The number of items per delivery varies according to the destination of delivery. Kiosks receive from 1 to 10 items which usually weigh up to 3 kg. Caffe bars receive up to 30 items, and stores (supermarkets, retail stores, grocery stores etc) can receive from 1 up to a 100 items that can weigh up to 2000 kg depending on delivery. The number of load units per deliveries is max.200, and min. is on average 13,82.

Over 53 % of suppliers use private parking when delivering goods, but more than 35 % park illegally.
The interviewees were not very outspoken about problems during deliveries as they usually consider deliveries a task that the supplier has to take on. Shop employees and owners do not consider the problems that suppliers have to undergo to deliver goods, but only that they receive goods. The majority of all interviewees did not share any opinion on problems or suggestions to improve the delivery system and that is why this was one of the key topics in the freight quality partnership with transport operators because transport operators have knowledge on specific problems and problematic locations destined for deliveries which they must use in daily operations.

The problems shared in the survey are:

1. Delivery time
2. Difficult access to loading/unloading areas
3. Difficult movement of goods from parking to customers premises
4. Lack of loading bays

This part of the questionnaire was not of particular interest by the shop interviewees, because they only receive goods delivered by the supplier or third party, in most of the cases. The question was largely skipped and left unanswered.

These inputs made it very clear that a direct dialogue is needed to address these issues in order to fully grasp the topic of transport logistics in the Rijeka FUA. The different everyday issues are not often considered by the authorities when drafting a logistics plan, and it is needed that the behaviours and opinions of professionals are taken into account so that the operators are introduced to the possibilities of measures which can be used in the development of logistics plans. The questions about daily issues with the logistics operations should be aimed at the transport operators because they carry the full logistics operation from origin to destination. Only transport operators can provide complete information to daily kilometres per trips and provide information as problems in deliveries. The shops whose employees do not collect goods by themselves, and only receive goods, cannot provide information as to the trip description of a delivery vehicle, parking location for a delivery, nor answer questions on the fleet.
These questions are better directed to the transport operators and shop representatives so they can be discussed in the freight quality partnerships. Such operations should be regarded as a joint operation, not 2 independent ones. However the information on problems in the delivery operation is not substantial, and the suggestions were skipped altogether, the information listed above coincides with the information gathered from the survey with transport operators.

The surveys conducted in the SULPiTER study of the FUA Rijeka Rijeka didn`t provide any quantitative or qualitative information on the O/D flows connected with the Port of Rijeka. To involve the Port of Rijeka Authority in the SULP development, the representatives of the City of Rijeka will have a thematic meeting with the Port representatives, to discuss the SULPiTER project goals as part of the Freight quality partnership sessions which will be carried out in 2018.
Though the Port of Rijeka does not interfere with the logistics issues determined by the project study, the Port`s logistics will be examined in the SULP development. The Port is part of different planning acts developed by the City of Rijeka, most notably the Development strategy of the City of Rijeka 2014-2020, in which such synergies are planned as with: Rijeka Gateway project, the Regional traffic Master Plan, Rijeka European Capital of Culture and the sustainable Urban Energy Action Plan. The Port of Rijeka is also in view of the Development Strategy of the Urban Agglomeration Rijeka 2016-2020 that covers most of the Rijeka FUA.
Due to the fact that the Port is an important part of the economic development of the area, it is also inseparable from this logistics project and its implementation. More information on the Port development below.

Analysis of survey on transport operators flows.

The survey on transport operators has been conducted among 15 companies that deal with logistics in transport and which have an impact on the delivery system of the Rijeka FUA. The 15 companies interviewed, have a combined fleet of 200 vehicles that include: cars, Caddy cars, vans, light trucks, trucks, heavy trucks and mopeds for currier companies.

All transport operators make delivery trips from manufacturer or warehouses to their final destinations and the frequency of deliveries depends on the type of goods for the end destination. While the survey on distribution flows has shown that the shops regard the delivery process as an operation of up to 10 minutes, all transport operators point to the duration of 20 minutes and more. A total 73% of transport operator`s deliveries last up to 20 minutes and over.

The transport operators also point out to the issue that the parking spot for vehicles in the city of Rijeka centre is reserved for 30 minutes, while they make 5-6 deliveries from that location which can last even more.
The weight of vehicles used for deliveries can take from 1.5 to 3.5 tonnes of item weight.
All delivery vehicles run on diesel fuel exclusively, and none use types of fuel or alternative fuels.

The frequency of movement per trips is very diverse, but for a specific destination, it is from once a day, to once a week at least. 40% of interviewees make one or more delivery trips a day, 40% make 2-3 delivery trips a day, and 20% of interviewed transport operators make deliveries several times a week. 47% of all deliveries start at 8 AM.

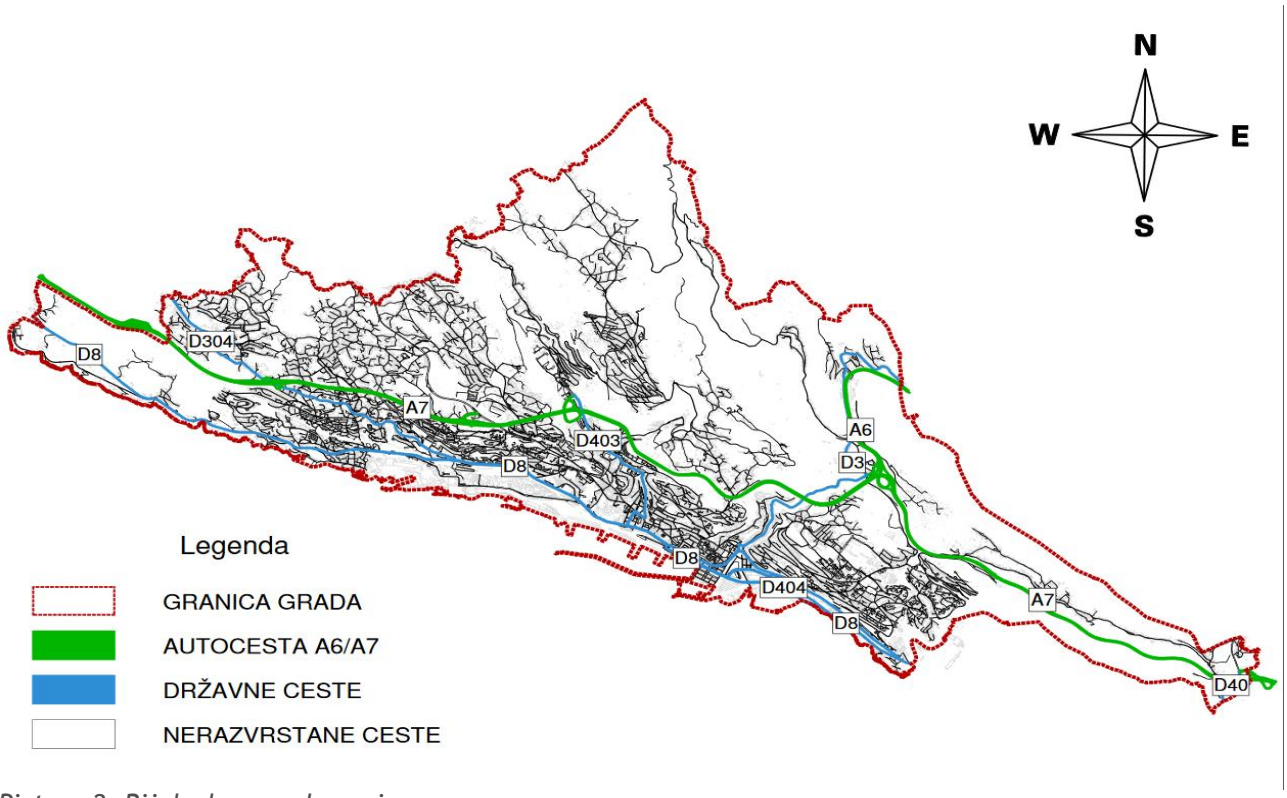
The parking of these interviewees ranges from usual private parking at the end destination, but also includes parking on the road and any place when it comes to textile goods.
Parking is one of the biggest issues when it comes to delivering goods, not only the availability of parking spots for deliveries which are often occupied by non - delivery vehicles, but also the accessibility, and duration of the delivery spot which can be occupied by a certain operator for a limited time. Another issue is the duration of delivery operations in terms of goods acceptance. While the shop owners state that deliveries take up to 10 minutes, the transport operators report the duration of 20 minutes as the usual duration of services. Shops do not take into account the time that the transport operators have to wait after unloading goods to complete the operation with the goods receivers, and several transport operators mentioned issues in the procedure of accepting goods and its duration.
73% of interviewees report that the deliveries take up to 20 minutes and more.

When it comes to usual hours of delivery, the deliveries are usually in regular working hours and only 20%, or 3 of the interviewed companies are able to make deliveries in other hours than the ones specified. Some influence on this fact is due to the working hours of the recipients of goods, and unwillingness of employers to pay for working overtime, before or after hours.
All stakeholders involved do admit to the need to arrange the delivery system in a comprehensive way and to improve the whole supply-demand chain operations.

The problems with the delivery operation are often and existing for all transport operators. Some of the occurring issues are the lack of loading space, lack of unloading space, the need to use a forklift and it is not a possibility, the duration of loading operations, difficult access to the loading and unloading point, the lack of available positions for loading and unloading, and the lack, or absence of coordination between deliveries. These issues are most quoted by the interviewed companies.

Analysis on traffic counts.

Before the Rijeka bypass was completely built, the city roads in the center of the City of Rijeka would take upon almost 70 thousand vehicles daily. When the Rijeka bypass`s final kilometres were constructed, the average daily count of vehicles was up to 72 thousand per day. The bypass was completed in late 2009 in full profile from the junction Matulji to Orehovica in the length of 8,85 km. It has branches to Trieste, Ljubljana, Zagreb and Split. After the completion of the bypass, the daily traffic load on the city roads decreased to an average of 60 thousand vehicles daily.



Picture 2. Rijeka bypass shown in green.

Traffic counters were included in the city traffic system in 2002, with the installation of the automatic traffic management system and introduced the ability to count traffic on 6 points and categorize vehicles that enter the City of Rijeka center. The majority of vehicles enters Rijeka from 7 to 8 am on their way to work, and the least in the evening hours. The months with the most traffic load are March, April and May, and the month with the least traffic is July because of the summer holidays.

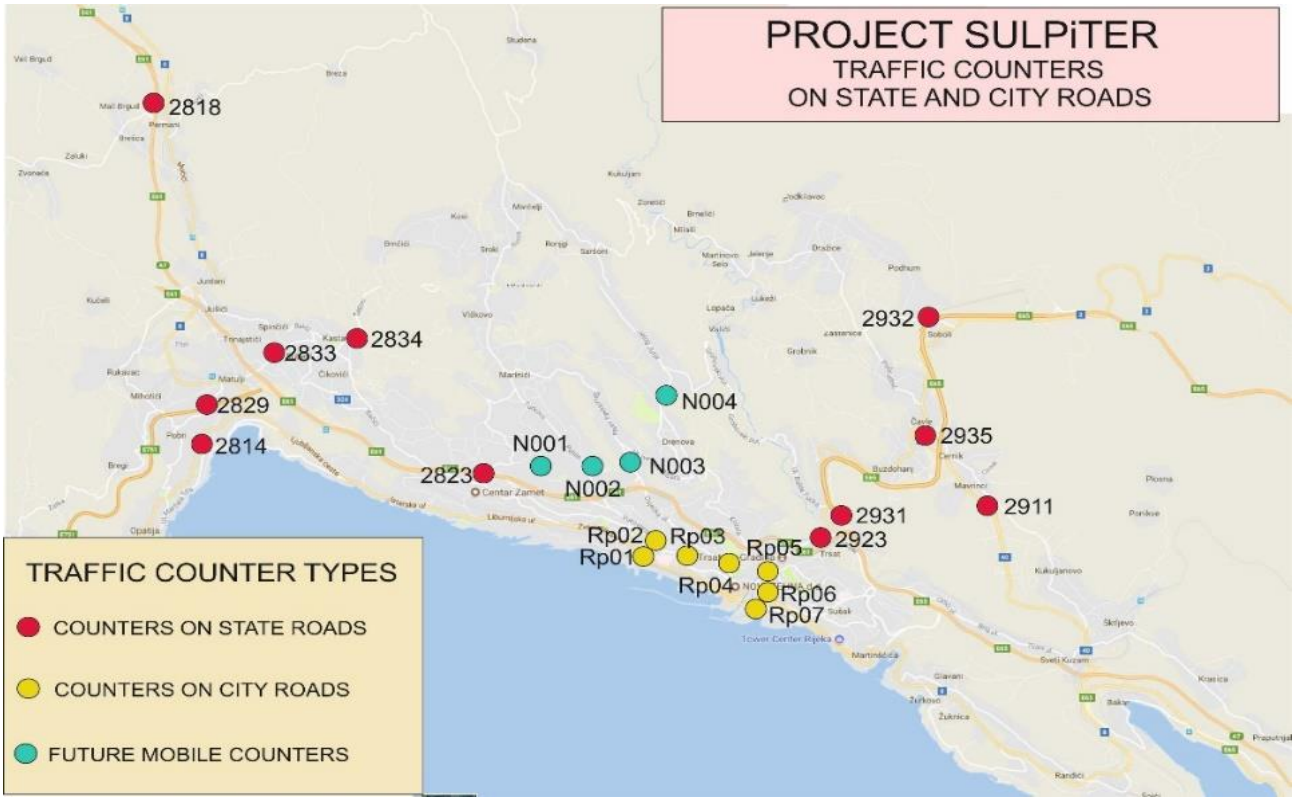
The information for the project will be obtained by counting traffic by 18 available traffic counters and 4 points will be counted manually. 11 counters are available that cover state roads, 7 counters that cover city roads are strategic ones, able to categorize vehicles immediately, and, after assessing the needs of the project, 4 additional locations will be covered by manual counting.

The most important counters relate to the traffic in the city center which was identified by the authorities and by the transport operators, as the points with the most issues. The days taken into account were Monday and Friday, out of tourist season, and the results show that on both days, 93% of all traffic consists of personal vehicles, 4% are commercial vehicles with the chassis from 6-9m (vans and light truck), 2-3% are trucks, and 1% heavy trucks (over 12m in chassis length). The peak hours for personal vehicles are from 7-8 am, in morning commute, and the total decline is after 9 pm. The cargo traffic begins to intensify after 8 am, and the numbers remain steady throughout the day, with the total decline at 12pm. From 60 thousand vehicles daily on the city roads, around 35-40 thousand directly come into the wider city center.

When considering whether to include industrial flows in the SULPiTER study of the Rijeka FUA, the first stakeholder that came to mind was the Port of Rijeka stakeholders. Rijeka is known as a harbour city with cargo traffic entering the very heart of the city by sea.

To make sure that the cargo coming from the port is not an issue for daily city traffic, a stretch on the Rijeka bypass was built connecting the Rijeka harbour to the industrial zone in Kukuljanovo. This allows the cargo traffic to exit the city on the east and not to come in contact with the city roads and daily traffic. The port cargo is also transported through the circular tunnel located under the eastern part of the city of Rijeka. Considering all this information, and due to the fact that port traffic has little impact on city logistics, it was decide to include only distribution flows in the project study.

Picture 2., shown above, shows the state road D404, which is a stretch from the terminal of the Port of Rijeka, to the junction Draga, where the road connects to the A7. The total length of the road is 4.3 km.
The Port of Rijeka is embarking on projects which aim to enhance capacities and efficiency in freight transport, one of which leans on the reconstruction of the railway. The construction of the multimodal platform in the Port of Rijeka is starting with the modernization of the Rijeka traffic route.
Concretely, in terms of freight transport, the plans include construction of 4 new rail tracks, a contact line, signal and telecommunication devices, a new light network and the reconstruction and expansion of the tunnel Sušak.
The latter reconstruction, will mean that the freight that is transported by the railway through the railway tunnel Sušak from the port terminal Brajdica, will be transported through the Rijeka center for next 2 years, while the 37 million € project is realized. The contract for the project Rijeka Brajdica implementation was signed by HŽ infrastructure and the Port of Rijeka Authority in April 2018.



Picture 3. State and city roads in the Rijeka FUA + traffic counters

Introduction to the O/D Matrixes (quantity, deliveries, vehicles) from the tool, for each considered supply chain

The quantity model matrix is calculated for 4 supply chain categories including: Foodstuffs, Home accessories, HORECA services and Textile products. These are the categories derived from target groups that we would like to cover. The logic behind it is that in the main urban zones this type of retail shops are predominant and have the main impact on traffic flows. For the quantity matrix the results are presented in Annex 1.

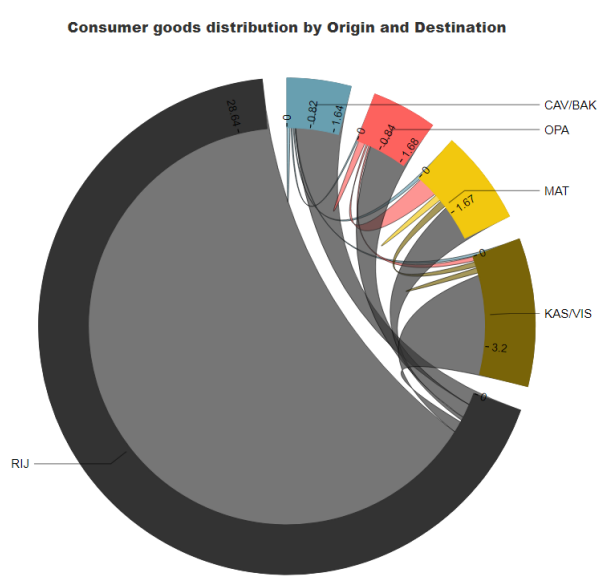
Both, the quantity and delivery matrices` results show a significant number of goods delivered in a narrow urban zone where the high concentration of shops/cafe/restaurant is located. Daily deliveries are predominated and with a higher number of trips than in other zones.

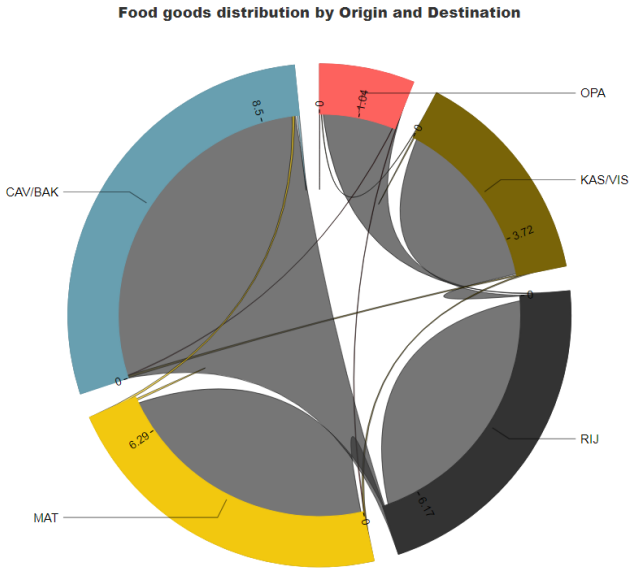
From the vehicle matrix, one may conclude that there is a very high pressure on the supply side in the morning hours. This leads to a high occupation of dedicated parking lots and their unavailability. MGV vehicles have more share in delivery of goods for all supply chain categories, around 59% compared to 41% of LGV.

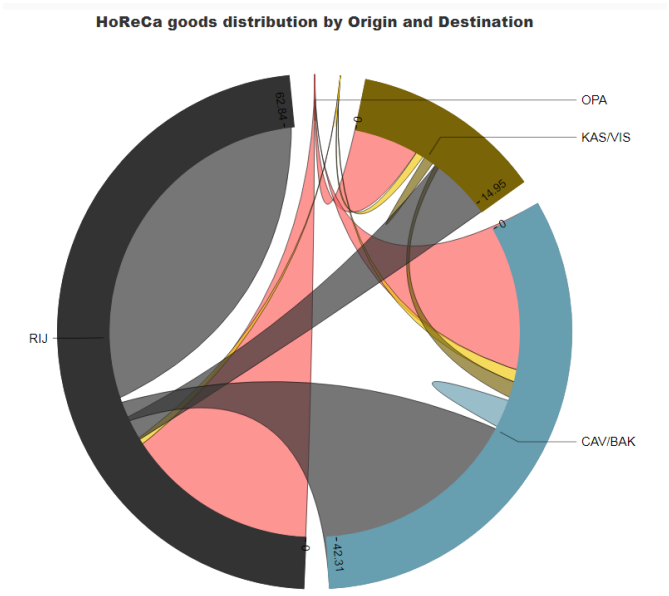
Matrix quantities, e.g.: are some relations predominant among the others? Do you see a homogeneous distribution or a concentration in some zones? Do you see some unexpected phenomena?

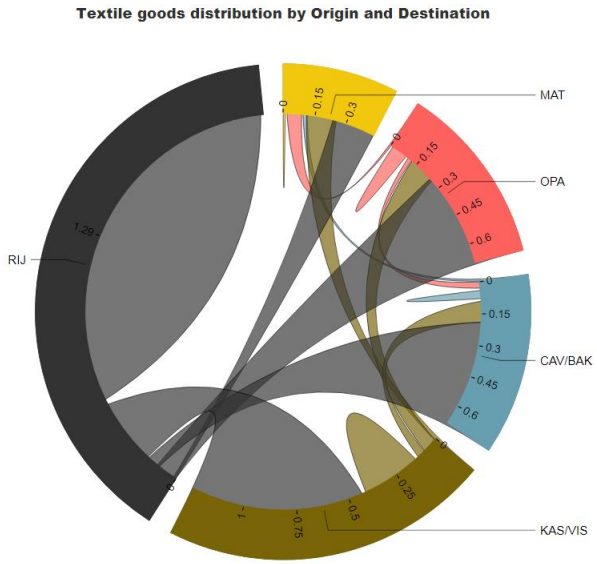
The results from the quantity matrix follows the expecting values especially in highly populated area in the centre of the urban area. This is especially noted for HORECA and home accessories supply chains where a lot of restaurants, caffe-bars and shops are located and where in-zone trips are heavy concentrated. For foodstuffs trips are evenly distributed between zones where large distribution centres were located.

The results may be justified also in correlation with socio-economic data. Zone 1 is relatively large and a highly densely populated area where there are 63% of inhabitants of FUA. Therefore, it will be wise to consider the zone partitioning according to different criteria in future analysis.









Matrix deliveries, e.g.: are some relations predominant among the others? Do you see an homogeneous distribution or a concentration in some zones? Do you see some unexpected phenomena?

Zone 1 is predominated because there is a high concentration of entities included in target groups especially for categories 1 and 2. Consequently, there is a non-homogeneous distribution if we consider the entire functional urban area. However, the characteristic of the urban area may require the consideration of a more selective approach in zone composition for further validation and calibration.

Matrix vehicles, e.g.: are some relations predominant among the others? Do you see a homogeneous distribution or a concentration in some zones? Do you see some unexpected phenomena?

The majority of all deliveries derived from the surveys, considering all supply goods chains, are within regular working hours. Most of the deliveries are carries out in the morning hours, from 06-12 am, while a minor number of deliveries takes place in the afternoon hours, around 10%.

There are no deliveries carried out overnight or very early in the morning according to the survey data. What is remarkable though, is the small share of third party deliveries (but high for HoReCa). The first freight quality partnership, which took place in December in Rijeka, brought to light the standpoints of transport operators and distributers which took part in the meeting on the subject of the delivery system. The transport operators and distributers stated that they have no problem in adapting their working hours if there were to be new rules or a new system of delivery adopted. The participants shared that they would very much like a uniform set of rules which would be applied to all participants in the delivery process and which everyone would have to follow.

As mentioned above, by examining the results from the vehicle matrix, it seems that there is a strong pressure on the suppliers in the morning hours. Not only does this lead to high occupation of parking positions destined for delivery and their unavailability, but also, what was mentioned in the fqp and surveys, that the positions are often occupied by commercial agents who do not deliver goods, but take the opportunity to use free parking spaces on their way to customers.

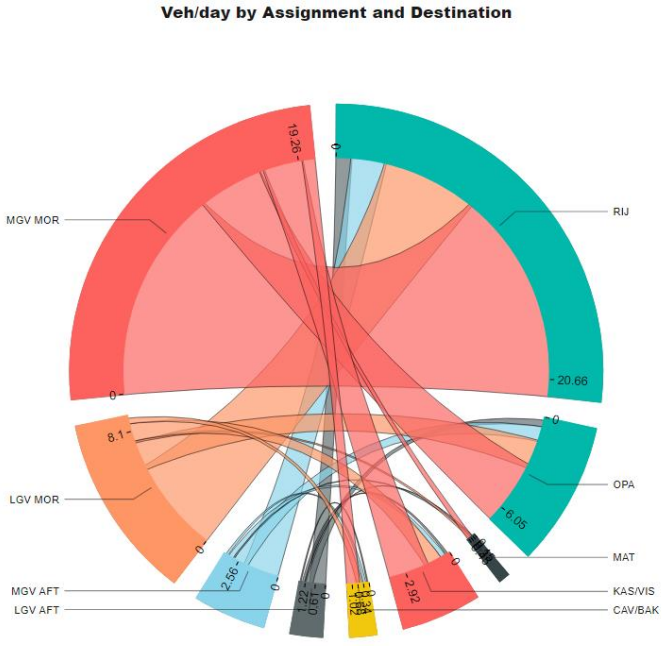
Also, what has to be mentioned, as the parking positions for deliveries are too few, a supplier makes delivery runs to 5 or 6 commercial entities, and in that way, occupies the delivery position for more time than they are allowed to.

As mentioned above, MGV vehicles have more share in delivery of goods for all supply chain categories, around 59% compared to 41% of LGV.

Please provide a comment (qualitative description) for you tool's results:

A detailed qualitative description of the tool results would require modelling different scenarios and simulations, as well as assessments that need further analysis. The survey did not provide complete information as to the type of vehicles used, delivery routes, fuel etc., but partial information based on a percentage of the examined universe. The information in the continuation of this document will provide some information from other studies conducted, which contain related information and more recent data, such as the Sustainable Energy Action Plan of the City of Rijeka 2014-2020. More complete information will surely be provided by analysis in the near future.

What can be added however, is that since 2010, the number of vehicles registered in the area was around 70.000, and the number slowly declined ever since. In 2014, there were 61.711 personal vehicles registered in the area, and 19.63% owned by companies. The survey on the transport operators also shows, that most of the vehicle fleet used for delivery is acquired on leasing.



In 2014, all of the vehicles, which included public and private transport, used over 500 million kWh, petrol and diesel being the majority with 54,38% and 44,7%, respectively, and LPG having a share of 0,92%. The survey on distribution flows didn`t provide full information as to the kilometres travelled by each vehicle, vehicle type, or origins, because not all shops answered such questions. They often use DDP or off truck deliveries (see above), and do not even know these answers. These specific questions could be better analysed with transport operators than shops.

The structure of vehicles involved in the said fuel consumption is the following: 69,49% were personal vehicles, 23,33 % were freight and utility vehicles, 6,08% were buses and 1,10 % were mopeds and motorcycles.

This information is from the 2016 Revision of the Rijeka SEAP, analysing information from 2014. There are no such recent information available, and the numbers are based on the total number of vehicles with the area licence plates. This is therefore, an expert estimation. Even if there were such recent measuring devices available in the area, which there are not at this point, it would be not be possible to match the information from the measurements to the study conducted by the project. There are no measuring devices which could relate emissions to exact vehicles. Also, the surveys did not provide information such as kilometres conducted by each type of vehicle in the study area, so it would be difficult and inaccurate to estimate what are the impacts of the logistics transport, from the SULPiTER study, to the total pool of emission in the FUA Rijeka.

Hopefully, in the near future, we will embark on new projects to improve this field.

Since 2013., the public transportation vehicles have started being replaced with vehicles that run on CNG, and the new procured utility vehicles run on electricity, for which over a dozen electric charging stations have been installed in the Rijeka functional urban area.

The Action plan Revision however, reveals that some reductions to CO2 emissions have been achieved:

CO2 reduction 2008 - 2014	
SECTOR	REDUCTION ACHIEVED IN t CO2
Vehicles owned by the City/companies	22 t CO2
Public transportation	1.306,57 t CO2
CNG public filling station	522 t CO2

Source: SEAP Rijeka Revision 2016

https://www.rijeka.hr/wp-content/uploads/2016/09/Revizija-SEAP-a-Rijeka.pdf

Considering the fact that the regional governments will be in charge of the installation of infrastructure for alternative fuels in their administrative borders, the City of Rijeka will have to take on a detailed mapping of needs in the road traffic field, so that the infrastructure would be built optimally. The mapping of infrastructure will be divided in three different areas: mapping of infrastructure for private vehicles, mapping of infrastructure for public transportation and mapping of infrastructure of the fleet for the city, public companies and national administration. For every one of these areas, a methodology will be proposed for mapping driving cycles in that segment of traffic as well as the optimal number and locations of charging stations. What also should be taken in account is that the number of vehicles on alternative fuels significantly increases in the tourist season. All of these elements will be further developed and analysed by the year 2020.

LSI calculation

The first Logistics sustainability index calculation was carried out after the first freight quality partnership in Rijeka, where private stakeholders shared their experiences with the logistics policies that are in force

in Rijeka. After discussing the issues with the logistics system in the Rijeka FUA, by their opinion, the parties discussed the proposed measures which could be included in the Rijeka SULP document, and how would those measures affect their business. The private stakeholders who participated in the freight quality partnership in Rijeka have, like before when interviewed for the feedback document in 2017., determined that the issues in the logistics of FUA Rijeka, are exclusively in the Rijeka centre, and did not point out other FUA locations as problematic.

The measure whose inclusion in the Rijeka FUA logistics system would be well received by the participating stakeholders, is the last mile (and less) delivery of goods by electric vehicles.

The stakeholders shared their experiences with this measure in different locations (during tourist season, such as Baška, Krk, Stari Grad) and explained the ratio behind this proposal. Delivery locations in the Rijeka center are limited to a specific duration of delivery. When the supplier or 3rd party delivery needs to use the delivery parking on these locations, it is often occupied. If there were to be a system developed which could assign time slots to interested companies, then the delivery companies can approach the delivery location on their assigned time slot, and transport the goods to the electric vehicle that will make the last mile delivery.

This is also a good idea, according to private stakeholders, because they often have only 30 minutes to use the delivery location, but have to deliver to up 5 locations in the city center in that time range.

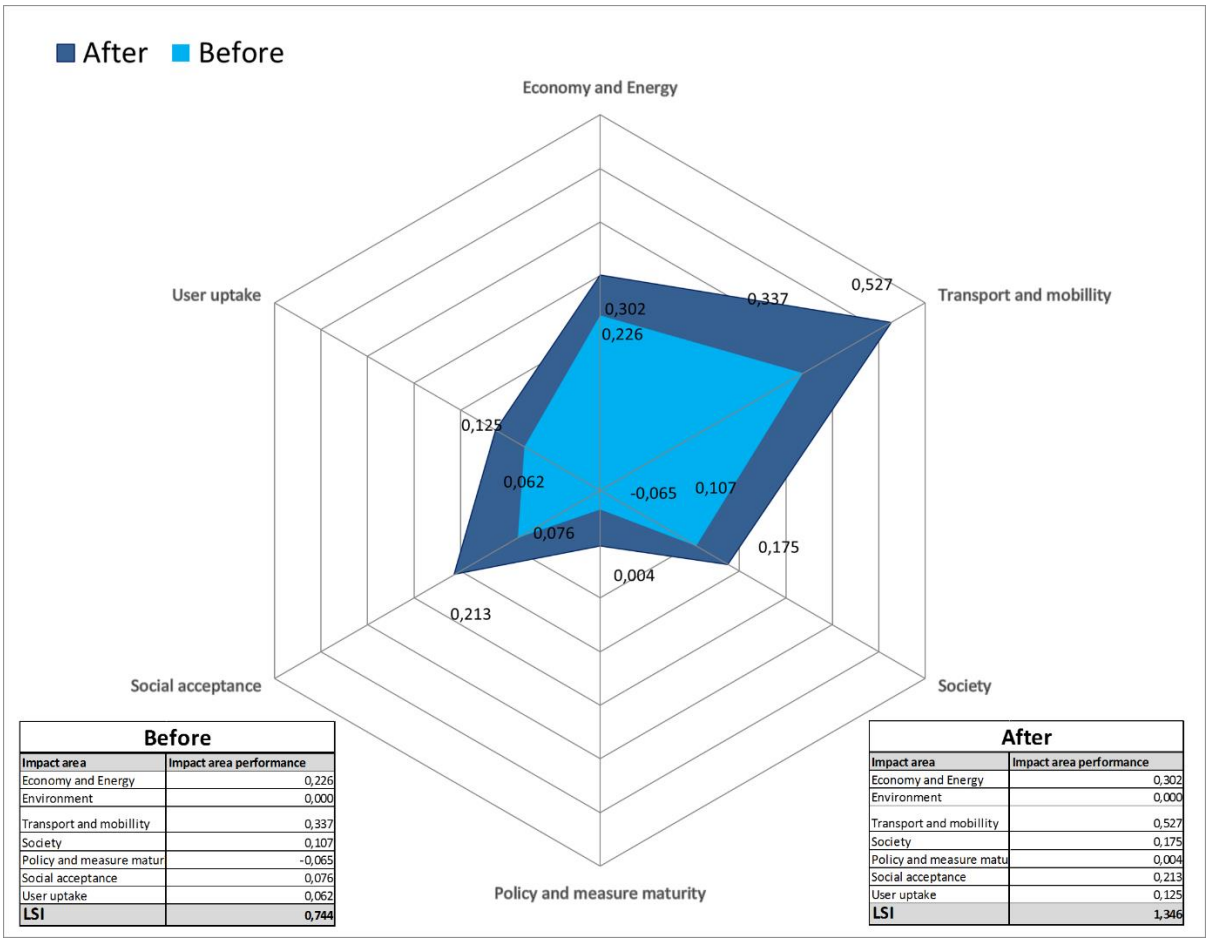
For the calculation of the LSI, the following hypothesis and measures of action were defined:

H: the introduction of a hotspot for unloading goods will increase the quality of the deliveries in Rijeka

M: enforcing the measure of a hotspot for goods acceptance from the hotspot to the end users

- Defining hotspot locations
- Equipping hotspot locations and ensuring 3rd party delivery services to the end user
- Setting up signs and informatics support for stakeholders
- Regulatory support (redefining delivery hours and monitoring)
- Developing IT support/reservation services and assigning time slots

For every area of influence (impact area), except for environment, there was a need to define multiple criteria and indicators of assessment because of the principle of the multi-criteria analysis (showing the impacts and intensity among criteria). The impact area for environment was not included because of the need to qualitatively evaluate the criteria. As explained before in this document, it is impossible to connect the environmental impact of the logistics vehicles included in this study and its impact on the environment as oppose to the total impact of traffic on the environment. The surveys did not provide information which could be used for such an estimation.



Before	
Impact area	Impact area performance
Economy and Energy	0,226
Environment	0,000
Transport and mobillity	0,337
Society	0,107
Policy and measure matur	-0,065
Social acceptance	0,076
User uptake	0,062
LSI	**0,744**

After	
Impact area	Impact area performance
Economy and Energy	0,302
Environment	0,000
Transport and mobillity	0,527
Society	0,175
Policy and measure matu	0,004
Social acceptance	0,213
User uptake	0,125
LSI	**1,346**

These numbers were calculated based on expert evaluation, which is one of the possible and legitimate approaches to the LSI calculation. Experts from different fields related to the chosen impact areas brought on their research and data, and evaluated specific indicators.

The goal is to further study this measure`s inclusion in the SULP document by getting more feedback in the future freight quality partnerships. There are plans to explore other measures which are also interesting to the competent traffic authorities, in addition to the one calculated now, and to see how the stakeholders would react to their introduction in the logistics policies.

4. Annexes

Please find in annexes to the deliverable:

1. Complete tables of the O/D matrices (in Excel worksheet)
2. The final results of the LSI calculation (in Excel worksheet)
3. The surveys (questionnaires in national language in Word & Excel documents)