

Template for the report on LCTP draft

LOCATIONS - Low Carbon Transport in Cruise Destination Cities

WP3 – Testing

Activity 3.5 Mid-way stock-take

Grad Zadar (City of Zadar)

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1. Introduction

1.1 The template

This template, based on Deliverable 3.3.1 (Capacity Building Manual, final version dated 14/03/2017) which serves as reference, is to be used to produce a synthetic report in English providing all essential information on the finalized LCTPs.

The template consists of 5 sections (or steps), namely 'Work-plan and team', 'Initial assessment', 'Participatory process', 'Design of the plan', 'Monitoring and funding'.

The report has to be completed in all its sections in English, respecting the format and the number of characters. Please use diagrams and bullet point lists whenever possible to facilitate evaluation.

The report has to be sent no later than May 15, 2018 in a Word format to:

mmarcof@fcirce.es; locations@area.trieste.it

Those partners that decided to produce full versions of their LCTPs in English, should send them to the same addresses. It is advisable to fill in the report in any case, to facilitate the assessment.

LCTP synthetic reports and/or full translations will be used to carry out LCTP evaluation.

2. Low Carbon Transport Plan

2.0 Step 0: Work plan and team

The City of Zadar (EU Funds Administration Department; Administrative Department for Spatial Planning and construction and Administration Department for Utility activities and protection of the Environment) and outer experts: for the implementation of EU projects - DRIOPE d.o.o. and transport – assistant professor Dino Županović, PhD participated in drafting the LCTP plan. The herein mentioned project team was created with the goal of gathering stakeholders from legislative and executive authorities, experts in the preparation and implementation of EU projects and experts from the field of transport. Details on the members of the project team are illustrated in Table 1.

Table 1: Details of the project team in charge of defining LCTP within the LOCATIONS project

PARTICIPANTS			TASKS
NAME	ORGANIZATION	ROLE	
Šime Erlić	City of Zadar Administrative Department for EU Funds	Head of Department for EU Funds	Public procurement for external expert; Responsibility for LCTP drafting, implementation and funding; Communication with Stakeholders; Defining tourist interview structure
Ivana Vrsaljko	City of Zadar Administrative Department for EU Funds	Senior associate Department for EU Funds	
Valentina Jačan	DRIOPE	CEO	Legislative and strategic (EU, national, regional, local) documents analysis; Transportation system data analysis (state-of-the-art); Assembling relevant data for LCTP; Interview results analysis; Defining possible objectives, activities and indicators; Defining various possible scenarios; Preparing draft LCTP and synthetic report version(s); Communication with stakeholders
Roko Baljak	DRIOPE		
Associate Professor Dino Zupanovic, PhD	DRIOPE	Traffic &Transportation External Expert	

During the process of drafting the LCTP process, contacts have been realized with the city Administrative Department for Spatial Planning and Administrative Department for Utility Activities and Protection of the Environment as main stakeholders in the later process of LCPT application monitoring and financial implementation. It was agreed that all contacts with the aforementioned offices would be coordinated through the Administrative Department for EU Funds. In cooperation with an external expert and the existing transport- technology solutions as well as the spatial (geospatial) possibilities, the initial set of goals, activities and indicators was proposed, which would be included and define the LCTP.

Based on the defined tasks, the most important stakeholders were determined and included in the later drafting process, and they participated in the activities connected with cruising tourism in the City of Zadar region whereby their roles, importance and possibility of contributing to the drafting of LCTP were precisely determined. A detailed list of stakeholders is illustrated in Chapter 2.2 Step 2: Participatory process / 1. Stakeholders identification

2.1 Step 1: Initial assessment

2.1.1 Context analysis

1. EU, national, regional and local framework of reference.

The Port of Zadar is classified as a port of comprehensive TEN-T network. It is a port open to public transport of particular international interest for the Republic of Croatia. International, state and local functions are performed in the port of Zadar, and it is the second port on the Croatian coast according to the number of transported passengers. Freight transport is limited due to physical limitations and the proximity of the port of Rijeka. The development of the port is directed towards road and railway transport, passenger transport and cruise ship transport. The passenger transport taking place in the port is approximately 2.5 million passengers and 350 thousand vehicles. Listed below are the strategic documents at city, county and national level with the pertaining goals, priorities and measures that refer directly and are connected to the drafting of LCTP with the LOCATIONS project.

City of Zadar Development Strategy

Strategic Goal 1. Preservation and sustainable development of space and improvement of the city's infrastructure system

- Priority 1.3. Development of the city's traffic network
 - Measure 1.3.4. Development of maritime infrastructure and services, and support to the port of Gaženica port as a port of international significance
 - Measure 1.3.5. Improving the public transport system and creating preconditions for the development of intermodal transport
 - Measure 1.3.6. Development of bicycle traffic
- Priority 1.4. Sustainable energy management and increased share of renewable energy sources
 - Measure 1.4.1. Encouraging the use of renewable energy sources

Urban Development Strategy of Zadar

Objective 3. Sustainable management of spatial resources with improved quality of urban environment

- Priority 3.1 Improving transport connectivity and sustainable urban mobility
 - Measure 3.1.2. Improving public and suburban transportation systems
 - Measure 3.1.7. Improvement of intermodal infrastructure and traffic in the dormancy of ITS UP
 - Measure 3.1.8. Development of pedestrian and bicycle traffic

Zadar County Strategy

- Priority 2.4. Improved transport network and increased multimodality
 - Measure 2.4.2. Improving the public transport system and creating preconditions for the development of intermodal transport
 - Measure 2.4.5. Promotion and development of cycling traffic

National Traffic Development Strategy

General Purposes:

CO1 - Change the distribution of passenger traffic in support of public transport and modes of transport with zero emission of harmful gases. This includes public transport in agglomerations and the local regional context (trams, local bus lines, etc.), rail transport, public transport by sea, regional and remote bus services as well as pedestrians and cyclists.

CO7 - Increase the interoperability of the transport system (public transport, rail, road, maritime and air traffic and inland waterway traffic).

Specific objectives for public transport and forms of transport with zero emission of harmful gases:

SC4 - Increase efficiency and reduce the economic impact of public transport management and organization.

SC5 - Increasing the attractiveness of the public transport by improving the fleet management and modernization concepts

General measures:

G.4 Increasing multimodality in passenger traffic and the development of intermodal passenger nodes

G.12 Decrease of negative impacts of transportation on the environment

Specific measures

City, suburban and regional traffic

U.5 Increasing multimodality

2. Current cruise-related flows features, trends, etc., in the city/port

With the construction of Zadar passenger port Gaženica with all the inner roads, terminal buildings and car lots conditions have been acquired for passenger and car embarking and disembarking according to the following capacities:

- 7 ferryboats on local lines length 50-150 meters in length;
- 2 ships of international navigation 150-200 meters in length;
- 3 ships on cruising trips 200-350 meters in length as well as the possibility of accommodating RO-RO ships on the same moles.

The data on the number of arrivals, passengers and crew members on cruise ships for the period from 2010 to 2018 are illustrated in the following tables and graphs. Table 2 and Graph 1 show a continuous increase in the number of arrivals and passengers in Zadar. Projections for 2018 are 139 foreign ships for cruise trips, 180,000 passengers and 70,00 crew members in Zadar Port.

Table 2: Number of arrivals, passengers and cruiser crew members in Zadar port in the period from 2010 to 2018

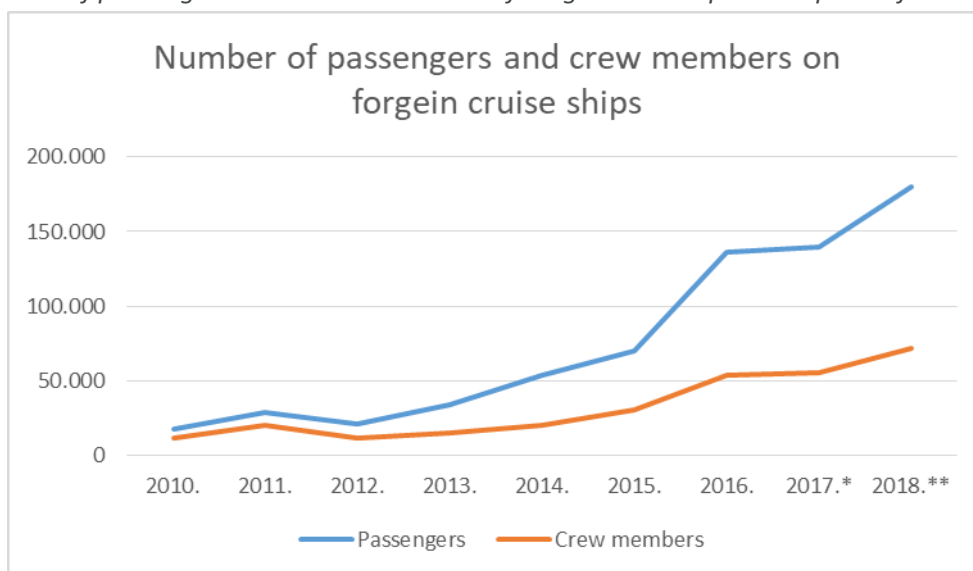
Year	Arrivals	Passengers	Crew members
2010.	80	17.157	11.224
2011.	72	28.667	20.176
2012.	57	20.958	11.171
2013.	69	33.647	15.024
2014.	77	53.791	20.247

2015.	92	70.366	30.513
2016.	114	136.462	53.400
2017.*	105	140.000	55.000
2018.**	139	180.000	72.000
* by end of year			
** projections according to announcements			

Graph 1: Number of foreign cruise ship arrivals in the period from 2010 to 2018



Graph 2: Number of passengers and crew members on foreign cruise ships in the period from 2010 to 2018

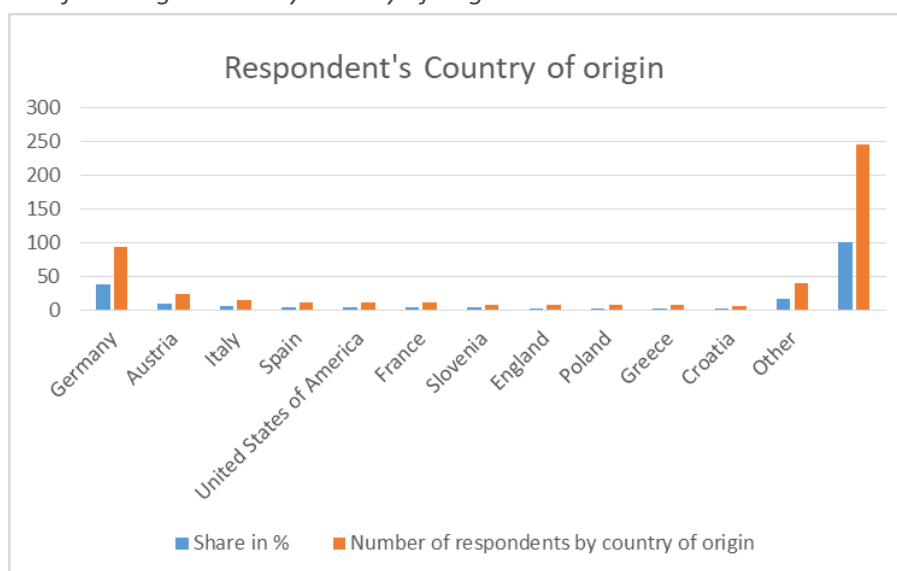


Since the port of Zadar presently functions exclusively as a port of call, there are no data on the origin and destination of cruise tourists as well as their distribution according to the multimodal split of their arrival. However, taking into consideration the proximity of the airport and the excellent road connection and passenger port terminal capacity, future expectations are (and efforts are being made) to make Zadar Port a home port.

Research on passenger and crew activity in a destination has been performed with the method of surveys. The basic content of the research covers the socio-demographic profile of passengers, activities in the destination, satisfaction with the destination service and suggestions on service improvement. Information on the movement of passengers within the port have been acquired through interviews of Zadar Port authority employees and by observing the movement and organization within the international pier of the port. Research has been performed on a sample of 245 examinees in the period from 10/9/2017 to 10/10/2017. The following results have been acquired from analysis of the gathered data.

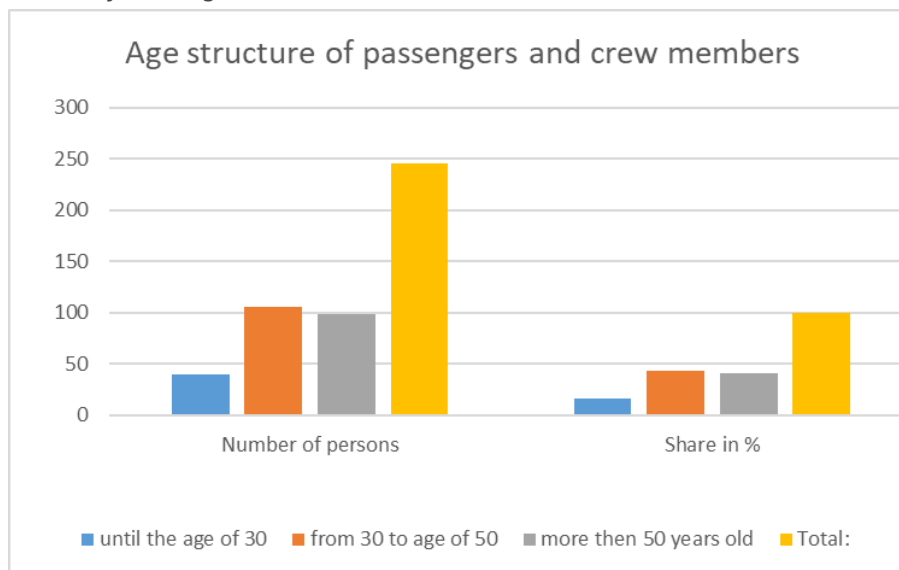
The division of cruise cruising tourists by country of origin is illustrated in Graph 3. Based on the illustrated, it is evident that the highest average of cruise ship tourists derives from European Union countries; Germany - 38.2%, Austria - 9.8%, Italy - 6.2%, Spain - 5%, France - 5%, followed by the USA – 5% and other countries - 16.7%.

Graph 3 3: Division of cruising tourists by country of origin



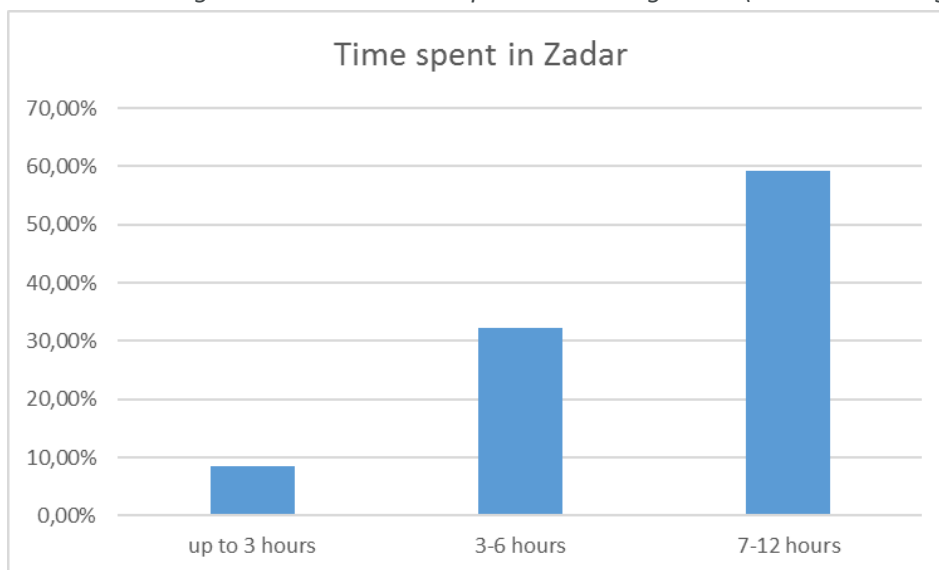
Graph 4 illustrates the age structure of cruising tourists; younger than 30 – 16.3%, from 30 to 50 years of age - 44%, and older than 50 – 40.4%. During the analysis of the stated data, the period of data collection is to be taken into consideration, the postseason period where guests of older age traditionally travel respectively, which also influences the modality of their transportation.

Graph 4: Age structure of cruising tourists



The greatest number of examinees – 54.18% spent from 7 to 12 hours in Zadar, 32.24% spent from 3 to 6 hours, while 8.57% spent up to 3 hours. Interesting to mention is the significantly shorter stay of the ship crew members in the destination – mainly up to 3 hours, and the reason is their work tasks on the ship.

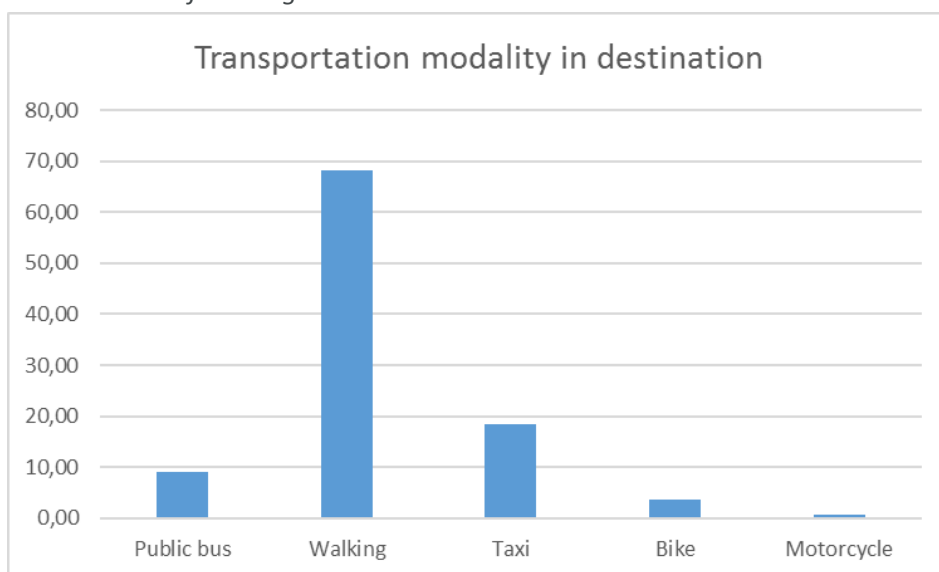
Graph 5: Distribution according to the time a tourist spends in visiting Zadar (and surroundings)



Due to the excellent road connection, besides a visit to Zadar and its surroundings cruising tourists are offered visits to the nearby national parks of Krka and Kornati (local tourist boats only), which was chosen by 31% of examinees. A majority of 69% of examinees did not choose organized excursions to other cities or destinations in the Zadar proximity but were transported by shuttle buses to the old nucleus of the City of Zadar.

Tourists who wished to visit the small town of Nin did so most often in rented taxis. A modal division of the means of transport is illustrated in Graph 6.

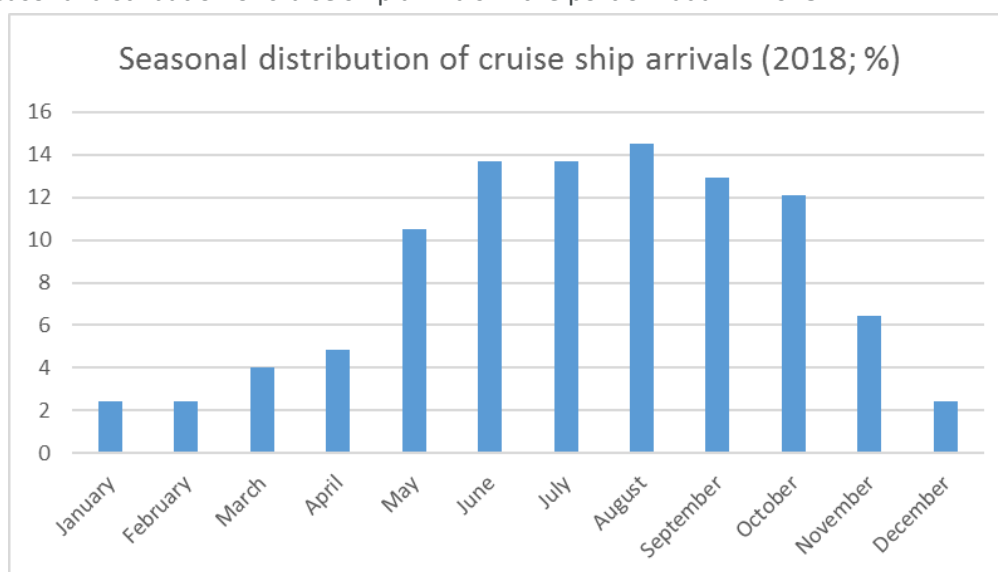
Graph 6: Modal distribution of cruising tourists and crew members



Public Transportation – PT; buses) was used by 9.0% of examinees. However, this data is not relevant for it was later established that examinees had incorrectly assorted shuttle bus transport under PT. Walking was chosen by 68.2%, which also does not represent a reference data for it was also later established that tourists had incorrectly classified sightseeing (walking) of the old nucleus of the City of Zadar as none of the offered/ walking. Taxi transport service was used by 18.4% of examinees, and that was most often used by crew members who wished to reach the destination, the center of the City of Zadar respectively, as soon as possible, and examinees visiting the nearby localities (Biograd na moru, Nin). A small percentage of examinees used motorcycle and bicycles most often rented for a short period as well as crew members who used bicycles to move around the port area.

The seasonal distribution of cruise ship arrivals in the port of Zadar is illustrated in Graph 7.

Graph 7: Seasonal distribution of cruise ship arrivals in the port of Zadar in 2018



3. Cruise-sector mid- to long-term (5 to 10 years) development trends

Development trends on the number of cruise ship arrivals and their passengers in the port of Zadar have been drawn up during 2015 and 2016 and have shown to be correct for they followed the real trend of their number. A detailed overview is illustrated in Table 3 where it is visible that continuous increase of cruiser calls is expected in the port of Zadar, and in line with this and increase in the number of passengers. In comparison with year 2018, an increase of 22.25% is foreseen by 2020, 36.78% between 2020 and 2025 after which the trend foresees a decreasing percentage in the number of passengers to 17.97% by 2030, and 15.48% by 2035.

Table 3: Forecast in the number of cruise ship and passenger arrivals in the period from 2018-2035

Cruise traffic							
	Total	Pax transit	home port	Total	Number of calls		
					large	medium	small
2018	169 421	144 741	24 680	289	23	57	210
2020	217 907	179 697	38 210	350	30	72	249
2025	344 690	279 920	64 770	532	52	103	377
2030	420 215	335 681	84 534	634	69	112	452
2035	497 181	389 146	108 035	729	88	118	524

4. Current cruise-related mobility and transport management policies and public & private initiatives addressing the existing flows.

The port of Zadar is at a distance of approx. 3.5 km from the historical nucleus of the City of Zadar in southeastern direction. A fast road connects the port directly to highway A1 and the nearby airport as well as state road D8 connection with the City of Zadar and its city traffic network. There is also a railway track between the port and the city (there is no infrastructure for passenger reception in the port). It was closed to traffic in mid-2014 and it is foreseen for the route to be arranged as a new cycling trail tower the inner-city center. It is possible to reach the city on foot from the port following the attractive walkway by the sea or the sidewalk that follows the state road. The geospatial position of the port of Zadar is illustrated in Figure 1. There is a taxi and PT station the port area. The most frequent means of transport of cruising tourists between the terminal and the inner-city center are shuttle buses managed by concessionaires (the concession granted by Zadar Port Authority).

Figure 1: The geospatial position of the historical nucleus of the City of Zadar and the port of Zadar (terminal)



5. Weighted list of negative impacts linked to cruise-related flows

With the relocation of the sea port from the inner-city center of the City of Zadar to Gaženica Port, great relief of the city road network has been achieved whereby the main negative consequences have disappeared – congestions, the reduction in the number of vehicles entering the city area, particularly the inner-city which also resulted in a reduction of gas emission as well as noise level. Albeit to a much smaller extent, problems have, however, appeared in connection with the transport of cruising tourists between Gaženica Port and the inner-city center in terms of optimal route choice of shuttle buses, and primarily the location – terminal of passenger exchange (embarking / disembarking) in the inner-city center. The appearance of shuttle buses in the inner-city traffic undoubtedly influences the reduction of the level of service, and, as such, the increase in the congestion of the mentioned network. A list of negative influences of cruising tourism thus arises from the aforesaid:

1. Congestion of the road traffic network caused by shuttle buses entering the inner-city center
2. Congestion of the road traffic network caused by inadequate stopping of shuttle buses in the inner-city center area

6. Existing road network, transport services and infrastructure in the city/ port

The port of Zadar is connected with the inner-city center by the following modalities: public bus transport – PT, taxi, shuttle buses, pedestrian zone, while the introduction of bicycles is in process. Considering the

specific and international character of cruising tourists (reception in the limited traffic zone), the most frequent form of their transport between the terminal and their destination is represented by shuttle buses managed by concessionaires (concession granted by the Zadar Port Authority). In leaving the international terminal, it has been made possible for cruising tourists to use all modalities but it is necessary to emphasize that the city public transport timetable is not adapted to the arrival /departure of cruiser ships but completely subject to the timetable of local ferry lines connecting the nearby islands with Zadar. Due to this, shuttle buses represent the primary means of cruising tourist transport to the inner-city center. Taxi transport (located outside of the international terminal) is mostly used by the crew members due to the speed and easy accessibility to most destinations.

2.1.2 SWOT/CAME analysis

Table 4: SWOT analysis

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ✓ Modern passenger terminal ✓ Attractive tourist destination with rich cultural heritage ✓ Geospatial location with multimodal transportation connections ✓ Safety of the cruise vessels and passengers 	<ul style="list-style-type: none"> ✓ Lack of adequate shuttle bus terminal within inner city center ✓ Lack of ITS and other traffic optimization systems ✓ Master plan/SUMP have not been defined yet ✓ Insufficiency/inadequate national legislation regarding ecological port/terminal facilities and services ✓ Port remains to be port of call not home port
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ✓ Defining shuttle bus terminal location within inner city center ✓ Defining new cycling routes between terminal and inner city center ✓ Regulating vehicle emissions within the inner-city center ✓ Stimulating/subsidizing electrical/hybrid/LPG PT/taxi vehicles ✓ Optimization of the traffic light system (ITS implementation - implies PT priority) ✓ Becoming a home port ✓ Defining local and regional development strategies ✓ Positive tourism trends ✓ Quality Increasing of other touristic offers ✓ Access to green/sustainable energy sources 	<ul style="list-style-type: none"> ✓ Insufficient political engagement for the implementation of the LCPT (City of Zadar does not have jurisdiction over the Port of Zadar) ✓ Disturbances in tourist emitting markets ✓ Environmental pollution

- ✓ Creating new business opportunities for SME
- ✓ Expected stability of the Region

Table 5: CAME analysis

Corrective Strategy	Adaptive Strategy
Use EU and local/national funding strategies for implementing LC solutions.	Use city authorities to support the adoption of LC solutions including SUMP/SEAP.
Maintaining Strategy	Exploring Strategy
Further development of sustainable cruise tourism policies.	Implementation of ITS to support LC solutions.

2.2 Step 2: Participatory process

1. Stakeholders identification

In order to define the LCTP goals and measures for the needs of the LOCATIONS project, joined stakeholders were determined, as well as those who showed interest in cruising tourism in the City of Zadar area. They are the City of Zadar (administrative departments for: EU funds, spatial planning and utility activities and protection of the environment), Zadar Port Authority, the concessioner performing tourist transport service between the terminal and the inner-city center (Terra Travel), Liburnija as the city public transport service (PT – public transportation), Zadra Nova as the carrier of development activities and projects of the City of Zadar and Zadar County, and Zadar City Tourist Office. Cruising tourists belong to a special group among which a survey was carried out as additional basis for defining the LCPT goals and measures with the goal of achieving a better insight and understanding of the existing state-of-the-art system. Additional support throughout the entire LCTP drafting process was realized with the assistance of an external expert from the field of transport. The main role, as well as the bearer of the entire project, is definitely the City of Zadar with its pertaining offices. Table 6 illustrates the importance and influence of the stakeholders.

Table 6: The importance and influence of the stakeholders in the development, implementation and monitoring of LCPT

Importance/Interest	
Low	High

Influence/Power	High		City of Zadar Zadar Port Authority DRIOPE
	Low	Liburnija Zadra Nova	Cruise Tourists Terra Travel

2. Participatory process design and implementation

In order to define the LCTP strategy, goals and measures during the preparation phase of the LOCATION project joined stakeholders were determined, as well as those who showed interest in cruising tourism in the City of Zadar area. They are the City of Zadar (administrative departments for: EU funds, spatial planning and utility activities and protection of the environment), Zadar Port Authority, the concessioner performing tourist transport service between the terminal and the inner-city center (PT – public transportation), ZADRA NOVA as the carrier of development activities and projects of the City of Zadar and Zadar County and DRIOPE company as an expert in the implementation of EU projects and offering advice in the field of transport. A survey was performed among cruising tourists with the goal of achieving from them a better insight in the state-of-the art system and its perception. The description of stakeholders is illustrated below and the assessment of their importance is illustrated in Table 7.

Table 7: Participatory process meetings structure (timetable and conclusions)

PARTICIPANTS	DATE	CONTRIBUTION/CONCLUSIONS
<i>First Round</i>		
City of Zadar (COZ), Zadar Port Authority (ZPA)	11/05/2017	Initial local meeting; Defining baseline for LCTP; Public procurement for external expertise
COZ, ZPA, REA Kvarner (REAK)	19/07/2017	Presentations of possible stakeholders; review of available transportation system data
Cruise Tourists	10/09/2017 10/10/2017	Interviewing process; Acquisition of input data
COZ, ZPA, Liburnija	01/10/2017	Defining current system state regarding PT lines and future plans between terminal and inner city center
COZ, DRIOPE	06/10/2017	Initial meeting with external expert; Presenting gathered data; Setting baseline objectives, actions and indicators for LCTP
COZ, ZPA, Terra Travel	10/10/2017	Acquiring additional data regarding shuttle bus concessionaire and their business model
<i>Second Round</i>		
COZ, DRIOPE, ZPA, Terra Travel, ZADRA	31/01/2018	Presenting draft of LCTP and gathering stakeholders' feedback
COZ, DRIOPE	06/02/2018	Finalizing LCTP draft and fine-tuning – strategy, objectives, actions, and indicators.

COZ, DRIOPE, ZADRA	10/04/2018	Insight into ongoing and planned projects related to LCTP
COZ, DRIOPE, REAK	02/05/2018	Final check on LCTP synthetic report
COZ, ZPA, Terra Travel	04/05/2018	Presenting final LCTP and informing about its implementation in concessionaire business model

Zadar Port Authority has been a relevant stakeholder that has given the most data from research as they have given a permission to ask their passengers about their view on transport and Zadar in general. This data has been the starting point for all further analysis of LOCATIONS project. Liburnija Zadar has already shown initiative in acquiring a new set of low-carbon emission buses, which will make an immediate impact on low-carbon emissions as well as increase the general effectiveness of public transport in Zadar. Bus connecting of Gaženica and the inner-city center remains under monitoring process to achieve its optimization. Terra Travel has been a resourceful stakeholder for providing access to tourist data regarding their current position as commissionaire in the Port of Zadar. All stakeholders have been resourceful stakeholders in the process of providing input data for state-of-the-art analysis as well as providing insight into future trend predictions. DRIOPE was involved regarding traffic and transportation expertise.

2.3 Step 3: Design of the plan

1. Definition of the current scenario

Projections for 2018 anticipate 139 arrivals of cruise ships according to the announced arrivals, with about 180,000 passengers. Regarding analyzed interview data, approximately 69% of cruise passengers have chosen to visit the Old Town center of Zadar by shuttle buses. The shuttle bus service is operated by concessionaires from the Port terminal to the inner-city center in a total length of approx. 3.5 km in each direction. Since the Port of Zadar is not under the jurisdiction of the City of Zadar, rather on both national jurisdiction and concessionaire's management there is no direct possibility for the City of Zadar to influence shuttle bus procurement and operations management. Cruise tourists can also use the PT – Liburnija bus line and taxis. Since the Port of Zadar by design represents a regional multimodal point, it is also incorporating the local ferry lines terminal (the City of Zadar has several outlying inhabited islands whose population migrates on a daily basis for schooling and work purposes). Therefore, at the present primary optimization criteria of the existing bus PT line timetable is to match local ferry lines rather than cruise ship arrivals. Adjusting the PT bus line with cruise ship arrivals would represent a great challenge for PT provider Liburnija in both organizational and financial manner with a questionable outcome. Another aggravating fact in this process represents the location of PT bus station located outside the restricted terminal area and therefore not as attractive for cruise passenger's use.

Interview analysis defined exclusive usage of taxis by cruise ship crewmembers, therefore identifying shuttle bus transportation as the most important modality for the City of Zadar cruise tourism. Regarding shuttle bus(es) circulation, currently there are three different routes for shuttle busses to reach the inner-city center, leaving each driver with the decision on which route to utilize. Also varying shuttle bus capacities and their usage came into focus during state-of-the-art analysis stressing out some discrepancies and leaving space for further optimizations. Although this process might sound simple, objectively it might not be easily achievable without better cooperation between cruise ship operator(s), Port Authority and

shuttle bus(es) concessionaire(s). Currently only legally necessary volume of information exchange is present between cruise companies, Port Authority of Zadar and shuttle bus concessionaires.

Within the City of Zadar, a major issue regarding cruise tourists shuttle bus transportation pinpointed inadequate shuttle bus terminal (both capacity and location) as the weakest point causing shuttle buses to enter the inner-city center and cause traffic congestions, which can furthermore have negative synergic influence on inner city traffic flows, especially during the summer/tourist season. In manner of addressing and solving this problem, the City of Zadar has already implemented measures in the form of dedicating a certain number of existing parking slots as provisory shuttle bus terminal.

2. Definition of vision and objectives

The main vision is to focus on establishing a sustainable transport system for the future between the Port and the City of Zadar based on synergic effects of three objectives: *state-of-the-art analysis*, *decreasing shuttle bus/PT vehicle emissions*, altogether making a plausible *reduction of inner city traffic congestions*, especially during the summer/tourist season. Measures contained within the named objectives incorporate optimization of shuttle bus capacities, defining their traversing routes, implementation of legislative acts defining PT emissions within the inner-city center, defining location(s) of shuttle bus terminal(s) and defining new and alternative cycling routes for cruise tourists to reach the inner-city center. The City of Zadar is also actively encouraging interested shuttle bus operators and PT authorities to engage in the commercialization initiative and to bring forward the change to zero emission public transport in the City. Electric shuttle/urban buses also represent an alternative solution that could lead towards reducing emissions in PT. However, implementing electrical powered buses also incurs much higher investment costs in both buses and accompanying charging infrastructure compared to conventional diesel buses. In addition, their adoption by concessionaires is questionable in the near future due to their lack of flexibility in terms of the concessionaire's business plan.

3. Definition of actions and indicators

The definition of actions and indicators within the LOCATIONS project fall under three main objectives: *State-of-the-art analysis*, *decreasing of shuttle/PT vehicle emissions* and *reducing inner-city traffic congestions caused by shuttle/PT vehicles*. The first objective was set to provide state-of-the-art system analysis based upon which the second objective with accompanying set of actions and indicators was set. The third objective was set as a logical result of the second objective's action implementation.

Table 8: Definition of objectives, actions and indicators within LOCATIONS project

	Implementation (Month)	Output	Indicators
Objective 1 - State-of-the-Art Analysis			
Action 1.1 State-Of-The-Art System Analysis	6-13	Acquiring data defining current process state	Number of passengers and their transportation modalities
Objective 2 - Decreasing shuttle/PT vehicle emissions			
Action 2.1 Shuttle bus capacity optimization	13-21 (24+)	Shuttle bus number optimization	Average number of passengers per shuttle bus

Action 2.2 Defining primary and alternate shuttle bus routes	13-21	Travel time optimization between port and inner city center	Duration of travel times on designated travel routes
Action 2.3 Proposal/acceptance of legislative defining maximum allowed shuttle bus/PT emissions in inner city area	13-21 (24+)	Proposal/ acceptance of legislative defining maximum allowed shuttle bus/PT emissions in inner city area	Number of submitted legislative acts
Action 2.4 Defining locations for shuttle bus terminals	13-21	Defined locations of shuttle bus terminals	Number of defined shuttle bus locations
Action 2.5 Defining new cycling/walking routed between port and inner city center	13-21 (24+)	Defining new cycling/walking routes	Length of newly introduced cycling/walking routes
Objective 3 - Reducing inner city traffic congestions caused by shuttle/PT vehicles			
Action 3.1 Inner city center traffic congestion decrease	13-21 (24+)	City center traffic congestion decrease	Number of shuttle busses entering inner city

4. Development of future scenarios

The “Do-nothing” scenario implicates retaining the current state of the system which is not probable as certain measures, LCTP measures at least, in the experimental mode have been implemented (provisory inner-city terminal).

The most probable scenario is based upon defining the shuttle bus terminal within the inner-city center and defining legislative regarding the allowed vehicle exhaust emissions within the inner-city center.

The best possible case of improvement of the existing state implies the implementation of multiple solutions of reducing exhaust emissions in the inner-city center and the wider area of the City of Zadar. The primary goal should be directed towards the construction of a shuttle terminal in the inner-city center of the City of Zadar aimed at reducing the negative influence of traffic congestions. The following activity implies the determining of the shuttle bus route between the port of Gaženica and the inner-city center of the City of Zadar, whereby it is important to determine the accurate route distribution (determine the primary and secondary routes) taking into consideration that it most often concerns convoys (platoon) of shuttle buses. It is important, at the same time, to monitor the full capacity of the shuttle bus during passenger/visitor boarding in the port of Gaženica, in order to achieve the optimal capacity of the shuttle bus, achieve the optimal quantity of emission gases according to mileage per transported passenger respectively. With the goal of achieving maximum ecological acceptability, it is necessary for the City of Zadar to determine through legislature the limits – minimum value of emission gases (EURO norms) for vehicles trafficking in the City of Zadar area. It is additionally necessary to encourage the use of ecologically acceptable propulsion units in vehicles trafficking in the City of Zadar area, particularly in the port of

Gaženica route – inner-city center in the form of hybrid (gasoline-electric) and / or gasoline units with LPG (liquid petroleum) installment. The best possible case is the use of only shuttle buses on electricity.

The following goal is the conversion of the existing railway route lines into cycling trails on the attractive and geographically suitable (flat) coastline area between the port of Gaženica and the inner-city center of the City of Zadar, as well as from the inner-city center towards the north-western parts of the city (Borik, Puntamika, Nin), with direct influence on the expansion of the Zadar City tourist offer contributing directly to its tourist attractiveness by paying particular attention to the rising trend of cycling tourism.

Table 9: Review of implications regarding possible LCTP action(s)/scenario implementation

Objective 1 - State-of-the-Art Analysis			
<i>Scenario</i>	<i>"Do-nothing"</i>	<i>Most probable</i>	<i>Best possible</i>
Action 1.1 State-Of-The-Art System Analysis	YES	YES	YES
Objective 2 - Decrease of shuttle/PT vehicle emissions			
Action 2.1 Shuttle bus capacity optimization	NO	NO	YES
Action 2.2 Defining primary and alternate shuttle bus routes	NO	NO	YES
Action 2.3 Proposal/acceptance of legislative defining maximum allowed shuttle bus/PT emissions in inner city area	NO	YES	YES
Action 2.4 Defining locations for shuttle bus terminals	NO	YES	YES
Action 2.5 Defining new cycling/walking routed between port and inner city center	NO	NO	YES
Objective 3 - Reducing inner city traffic congestions caused by shuttle/PT vehicles			
Action 3.1 Inner city center traffic congestion decrease	NO	YES	YES

2.4 Step 4: Monitoring and funding

2.4.1 Monitoring LCTP implementation

The foreseen monitoring and implementation of defined objectives, actions and indicators belongs solely to the City of Zadar regarding its jurisdiction. The presentation and detailed overview of the monitoring and funding process is available in table 10.

Table 10: Monitoring and funding process overview

City of Zadar = COZ	Start-End (Month)	Amount Source	Costs Classification					
			Staff	Description	External Expertise	Description	Investments	Description
Activity 1.1 State-Of-The-Art System Analysis	6-13	-	City of Zadar, Zadar Port Authority, Terra Travel, DZ	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by LOCATIONS and COZ
Activity 2.1 Shuttle bus capacity optimization	13-21 (24+)	-	City of Zadar, Shuttle bus concessionaires, DZ	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by LOCATIONS and COZ
Activity 2.2 Defining primary and alternate shuttle bus routes	13-21	-	City of Zadar	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by COZ and LOCATIONS
Activity 2.3 Proposal/acceptance of legislative defining maximum allowed shuttle bus/PT emissions in inner city area	13-21 (24+)	-	City of Zadar	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by COZ and LOCATIONS
Activity 2.4 Defining shuttle bus terminal location	13-21	-	City of Zadar	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by COZ and LOCATIONS
Activity 2.5 Defining new cycling/walking routed between port and inner city center	13-21 (24+)	-	City of Zadar, Zadar Tourist Board	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by COZ, LOCATIONS and other/future EU projects
Activity 3.1 Inner city center traffic congestion decrease	13-21 (24+)	-	City of Zadar	Allocated through LOCATIONS & COZ	Yes	Allocated through LOCATIONS & COZ	Not needed*	*Funding by COZ, LOCATIONS and other/future EU projects

* The term "Not needed" is referring that all planned actions represent "soft" measures whose planned implementation is through the City of Zadar departments and will not require additional funding.

2.4.2 Funding

Since the planned “soft” measures within the LOCATIONS project should at a certain point of time lead to the implementation of “hard” measures in order to improve the overall system usability, planned funding for implementation of such measures is through the following institutions and projects:

- City of Zadar
- City of Zadar participating EU projects
- EU projects: ITU; CB-GREEN; Urban Green Belts; MOBILITAS; IRENE; OptiTrans; LivingStreets; CHESTNUT
- Future EU Projects
- Zadar Port Authority
- Nacional funding (OP Competitiveness and cohesion)

Regarding the varying complexity and combinations of possible implementations (i.e. e-busses and charging infrastructure), costs could vary in-between 1,000,000.00 EUR to several million EUR regarding the number of e-buses purchased and not counting possible subsidies for concessionaires operating shuttle bus lines between the Port of Zadar and the inner-city center to support them in the acquisition of zero-emitting shuttle buses.

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ANNEX 1 – LCTP measure description template

1). State-Of-The-Art System Analysis

Measure implementation comprised of analysing all relevant strategical documents regarding cruise tourism and traffic-transportation on both national and local levels in order to provide insight into the designated ways of development. It comprised series of meetings with local stakeholders to identify their roles and level of involvement (importance) regarding cruise tourism in the City of Zadar (COZ). Additionally, the interviewing of cruise passengers/tourists provided necessary data and information regarding their perspective on the current system state-of-the-art. The critical issue was to gather as much as possible information from all parties involved. This measure represents a starting point for defining all other measures presented.

2). Shuttle bus capacity optimization

Since Port of Zadar is located about 3 km from inner-city center, most commonly shuttle busses operated by concessionaires are used for transferring cruise passengers back and forth to the terminal. Due to specific circumstances of not knowing the exact number of tourists for transfers as well as multiple concessionaires, presence situations occur where shuttle busses are not optimally occupied, i.e. a certain number of seats can remain unoccupied. Critical issues can be recognized through a varying number of passengers regarding different cruiser sizes calls along with the fact that the Port of Zadar is not within the jurisdiction of COZ making it difficult to achieve complete shuttle bus capacity optimization. Certain measures can be taken by COZ since all shuttles are transferring tourists into the inner-city center. Therefore, COZ could influence concessionaires through: 1) education about the positive effects on reducing the number of shuttle vehicles used; 2) Adjusting shuttle vehicle size; 3) Providing benefits for using shuttles with lower (zero) emissions; 4) Providing certain penalties/rewards for non/optimally occupied shuttles. This measure falls under the category of soft measures meaning it is cheaper/easier to implement. If the applied measure could provide benefits for all parties: 1) concessionaires could lower their operational costs by optimizing their shuttle fleet; 2) COZ would reduce unnecessary shuttle entrances into the city; 3) Allowing convenient cruise passengers' transfers, reducing transfer time and extending visitation time.





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3). Defining primary and alternate shuttle bus routes

Measure implementation comprises of defining the primary and secondary route connecting cruise terminal with the inner city center. Using real time traffic information shuttle (and taxi) drivers should receive instructions on the preferred (shortest arrival time) route to take. Three critical issues arise from this measure's implementation: 1) Definition of named routes by the COZ; 2) Distribution of real time traffic information towards shuttle (and taxi) drives; 3) Actual tracking of routes taken by shuttle (and taxi) drivers. Accordingly, the first issue is definable as there are two available routes. The second issue solution comprises of incorporating the currently available real time distribution system available through vehicle built-in navigation systems that are already capable of receiving real time traffic information and recalculate routes accordingly. The second approach would be through city enabled ITS. The third issue solution is to require all shuttle vehicles to have fleet tracking alike devices allowing COZ to track their movements as a part of COZ ITS. Depending on the implementation approach, this method falls into soft, hard or both categories. Cruise passengers' benefit from this measure's implementation would be more conveniently transfers of cruise tourists, saving time on transfers and extending their visitation time.

4). Legislative defining maximum allowed shuttle/PT vehicles emissions in the inner-city area

Measure implementation comprises of COZ as local authority able to define and adopt legislation regarding maximum allowed shuttle (and other PT) vehicles' emissions stimulating the adoption of more environmentally acceptable shuttle and PT vehicles (i.e. higher EURO norm, e-Shuttles or LPG powered vehicles). The critical issue within this measure implementation is manifested through possible higher investment costs for concessionaires (both shuttles and taxis) although their mitigation is possible by providing a certain implementation grace period. This measure falls under both soft (from the COZ point of view) and hard (from the concessionaires' point of view) measure category. This measure does not directly affect cruise passengers but has an overall environmentally friendly effect.





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5). Defining locations of shuttle vehicles terminals

Defining shuttle terminals within the inner-city center is of major relevance to the successful implementation of LCTP as it directly affects shuttle impact on COZ traffic flows. The determination of shuttle terminal(s) needs to be determined in such a manner so as to allow easy access for shuttles whilst minimizing the negative shuttle influence on COZ inner traffic flows as well as providing cruise passengers easy access to the inner-city center. The critical issue is for COZ to define the most appropriate terminal(s) location(s) regarding available geospatial locations. This measure falls under hard measures, as it requires a certain level of construction work. This measure is participated to allow more convenient cruise passengers' transfers, reducing transfer time and extending visitation time.

6). Defining new cycling/walking route between the port and the inner-city center

Measure implementation comprises of COZ and responsible national authority cooperation in order to set a new cycling/walking route by using the existing railway corridor since it is no longer in use. Additionally, extending the existing walking route following the seashore leading from the inner-city center to Punta Bajlo is also possible. The critical issue within this measure implementation lies within the willingness of responsible national authority to provide the necessary approvals and land use conversion. This measure falls under soft and hard measures and needs national level authority approval for successful implementation. This measure would provide cruise passengers (and all other tourists as well) an attractive way of reaching the inner-city center and even the connection to adjacent settlements like Zaton.

7). Inner-city center traffic flow optimization

This measure implementation depends on the implementation of measure no. 5 and its effect of minimizing negative shuttle influence on COZ inner traffic flows. Additionally, the enhancement of its positive effects is achievable through planned implementation of ITS solution(s) providing additional services to all traffic users (i.e. parking space guidance system). The segregation of shuttles from the inner-





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city flows should produce various positive effects on COZ inner-city flows. The measure's critical issue is a strong relation to successful implementation of measure no. 5. This measure falls under the category of soft measures and has a dependency on the successful implementation of other measure. This measure has no direct effect on cruise passengers' needs, but is participated to allow more convenient transfers, reducing transfer time and extending visitation time.

