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Implementation status report on the new traffic regime

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	WP1 Alternative fuels & clean vehicles		WP7 Energy-efficient freight logistics
	WP2 Collective transport & intermodal integration		WP8 Transport telematics
x	WP3 Demand management		WP9 Project coordination
x	WP4 Influencing travel behaviour		WP10 Project management
x	WP5 Safety, security & health	x	WP11 Research and Technological Development
x	WP6 Innovative mobility services	x	WP12 Impact and process evaluation
		x	WP13 Dissemination, citizens' engagement, training and knowledge transfer

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1. Introduction

The activities of measure 5.5-LJU Reduced speed zones started in the year 2008 within the EU-co-funded CIVITAS ELAN project. It should be noted that the introducing of the new traffic regime is a long-term large project by the City of Ljubljana. It has already started before the start of the ELAN project. Compared to the size of the overall project the ELAN activities of this measure are only a small part. However, often in this report activities which are not financed by the ELAN project are summarised as they cannot be separated from the ELAN activities.

The objectives of the measure are distinguished in three levels: long-term (high level), strategic level and measure level. The long term objective of the measure is to reduce the air pollution caused by passenger traffic. The strategic level objective of the measure is the reduction of passenger traffic and the decrease of its velocity. The measure level objective of the measure is an enlargement of reduced speed zones in the city of Ljubljana by 30%.

The main objectives of the measure are:

- reduce the number and impact of road accidents;
- increase safety for all road users, especially the most vulnerable ones;
- enhance public space and the well-being of residents and visitors;
- improve cooperative efforts among city enforcement agents;
- provide training for better qualitative implementation of enforcement tasks.

The City of Ljubljana wants to reduce the speed limit in most of the city centre from 50 km/h to 30 km/h and enforce this new speed limit effectively. The municipality also plans to introduce new pedestrian zones, new parking areas for people living in new pedestrian zones, one-way streets and reduced speed streets or zones. On three of all four main Ljubljana avenues the speed limit between the highway ring and the inner ring is 60 km/h. On the fourth one, Celovška cesta, a four-way road as well, the speed limit between the highway ring and the connection with A2 highway is 70 km/h. On these avenues the speed limit violations are under permanent control by a system of radars. The public will be informed about the benefits of the measure and devices will be installed to help sanction violation. The reduced speed limit will not only help to improve safety in the city centre but also contribute to less transit traffic passing through the city centre.

The City of Ljubljana has started planning the 30 km/h zone and installed traffic signs throughout the entire area in the city centre. Critical road sections are fitted with modern traffic control devices that will help to enforce the speed limit. Additionally, equipment to monitor and keep records of violations has been purchased. Traffic calming devices will be used to further enhance road safety. Beside already installed radars and calming devices the municipality is planning to install new ones. Based on the analysis of internal enforcement behaviour structures, training on enforcement culture and communication will be provided. Training workshops are planned for municipal employees and enforcement agents. The new traffic regulations and the suitability of the traffic control devices will be tested. Most of this has been already implemented. The rest will be, but due to the financial crisis may be implemented little later than planned.

The City of Ljubljana expects that the measure will result in:

- fewer road accidents (following the trend of fewer road accidents already noted in the time of the ELAN project);
- increased safety for the population, especially weaker traffic participants;
- increased safety for cyclists and pedestrians in the city centre;

- decrease of the average driving speed (assured by enlarged areas of reduced speed zones and pedestrian zones);
- increase in effective sanctioning of traffic violations (assured with a larger number of stationary and mobile radars);
- improved quality of life, health of residents in inner city area (impact of Breg project, new green areas and trees planted in the city centre);
- improved quality of urban space (new solutions for an added quality to urban and ambiental space in the city centre);
- more attractive walking environment (huge and compact pedestrian area in the city centre, with a new feeling of traffic safety for pedestrians).

2. Background

2.1. Ljubljana – the current situation

The City of Ljubljana, the capital of Slovenia, is the political and cultural centre of Slovenia and an important commercial-business, congress, fair, transport, scientific and educational centre. It covers an area of 275 km² and has 270,000 inhabitants or 370,000 people, counting students and commuters. Most of the commuters come from the vicinity of the City of Ljubljana. It is the largest city in Slovenia and also the most important economic centre.

Its transport connections, industrial concentration, scientific and research institutions and industrial tradition are all factors that have contributed to the leading economic position of the City of Ljubljana. It serves as the seat of the national government, public administration and all government ministries in Slovenia. The headquarters of the Slovenian National Assembly and the Office of the President of the Republic of Slovenia are also located here.

According to official statistics, the City of Ljubljana is the safest city in Eastern Europe – and it was even selected as fifth most idyllic place to live in Europe (by Forbes) and as the most honest city in the world (by Reader's Digest). Due to its very high quality program, it received the prestigious UNESCO title of "World Book Capital 2010", despite strong competition from outstanding cities around the world. The city of Ljubljana (MOL) is divided into 17 internal territorial units (districts).

2.2. Transport

The City of Ljubljana has a relatively well-developed and extensive transport infrastructure. Its highway and railway connections provide speedy access to other Slovenian regions and its international airport – the Ljubljana Jože Pučnik Airport. There are also good transport connections between the individual parts of the city. Most of the daily commuters travel by car. It is estimated that approx. 130,000 cars enter Ljubljana each day. This figure makes up a third of all the cars driving in Ljubljana per day while the city's inhabitants make up the other two thirds. Residents usually go to their destination by car or public transport while some opt to go by bike or walk.

Due to the large increase in the number of cars, the City of Ljubljana (COL) is striving to change the transport habits of the city by encouraging the use of public transport. This would significantly reduce the burden on the environment and partly release traffic areas, especially in the city centre. Projects are currently underway to promote connections between private and public transport modes, implementing Park and Ride (P&R) schemes for cars and cyclists. COL has also introduced a single payment scheme for city services. The payment system for using public transport in Ljubljana has been modernized through the introduction of the Urbana card, which is a speedy and convenient cashless payment system to pay for using

the city bus. It grants you the possibility to reboard buses within 90 minutes of payment for the first bus ride at no extra charge. The Urbana card can also already be used to pay for funicular rides up to the Ljubljana Castle and to pay for parking on white zones and parking areas that are managed by the public company “Ljubljanska parkirišča in tržnice”.

2.3. Urban planning and traffic policy

The fundamental transport policy directives for the Municipality of Ljubljana (COL) are described in detail in the strategic part of the municipal spatial planning documents (OPN ML-SD). The principles of sustainable mobility are being implemented in the city to replace the existing transportation system with more energy efficient, less environmentally harmful, less space consuming and healthier modes of transport in the city and the region.

The policy directives and guidelines are:

- Ljubljana is a regional centre in which traffic conditions should allow the free flow of vehicular traffic at all times, including under urban-peak conditions. There should be enough parking spaces to satisfy demand; however, it is necessary to reduce this demand by providing qualitative public transport alternatives from the starting point of the trip;
- By providing high-capacity parking lots at transfer points outside the city centre, Park and Ride (P&R) facilities will encourage the use of public transport.
- It is necessary to provide the inhabitants of Ljubljana with an adequate number of parking spaces in public parking garages;
- reduce greenhouse gas emissions as much as possible by reducing the need for personal transport and promoting the use of public transport, cycling and walking;
- reduce the area intended for automotive traffic (particularly slow- speed zones) and give priority to non-motorised users;
- restrict traffic flows in the city centre as well as in individual, quiet and densely populated residential zones, where there would be no transit traffic;
- divert as many passengers as possible from private cars to public transport;
- eliminate the conflictive traffic black spots with unsatisfactory safety ratings;
- In the cycle network planning and infrastructure, it is necessary to ensure basic conditions such as continuity, directness, attractiveness, safety and comfort, which will help increase bicycle traffic and reduce car traffic and will consequently contribute to the improvement of traffic and living conditions.



Map of streets in the city centre of Ljubljana

3. Implementation of the measure 5.5-LJU – Reduced speed zones

3.1. Preparatory phase

Several research studies were conducted in the project. One of them showed that traffic security (road safety) in Ljubljana in 2009 improved compared to 2008. There were less deadly traffic accidents and less traffic accidents with worse or light injuries. In 2009 there were no fatal traffic accidents with children involved (5.5-WD1).

In September 2008 COL started to introduce reduced speed zones. The speed limit was reduced from 50 km/h to 30 km/h. Following the sustainability principles the area of limited speed zones in Ljubljana is constantly increasing. After the preparatory phase, a large change was introduced regarding the spreading of the pedestrian zones in the city centre. On its 30th session, on 6 July 2009, the city council adopted a decree for a pedestrian area by COL.

The legal ground on the new city enforcement model was enabled through changes in the Law of Security of Motorway Traffic (ZUCP-1F) in 2009. With several mobile radars Robot, type Multiradar C, city enforcement agents have started with measurements and giving tickets for exceeding the speed limitations. Speed violations measurements have been, at the beginning, conducted on more than 40 locations. In the following years that number rose. In a combination of stationary and mobile radars used at the same time, the mobile ones have proven to be more effective and user-friendly.

In the investigation phase of the project, an analysis of traffic safety on the territory of COL has been conducted. The number of traffic accidents has lowered in 2009, compared to 2008,

2009 was the year when the first phase of the Breg pedestrian zone project has been implemented (banks of Ljubljanica river between Čevljarski bridge and Zoissova street). That concluded the 1st phase of Breg pedestrian zone as well.

Stakeholders and measure partners

The identification of relevant stakeholders was the first step of the measure implementation (Milestone 3.1-M1). Measure 3.1-LJU is closely connected to measure 5.5-LJU. A list of state and local institutions, public entities, companies, city administration, projects, enterprises and other institutions directly included in the project are listed in this chapter.

- **Republic of Slovenia, Ministry of the Environment and Spatial Planning**
Slovenian Environmental Agency – ARSO
Vojkova cesta 1 B, 1000 Ljubljana
- **Republic of Slovenia, Ministry of the Environment and Spatial Planning**
Slovenian Environmental Agency – ARSO
Water Management Office
Vojkova cesta 1 B, 1000 Ljubljana
- **Republic of Slovenia, Ministry of the Environment and Spatial Planning**
Slovenian Environmental Agency – ARSO
Water Management Office
Middle Sava Basin Section
Einspilerjeva ulica 06, 1000 Ljubljana
- **Republic of Slovenia, Ministry of Culture**
Institute for the Protection of Cultural Heritage Slovenia
Metelkova ulica 4, 1000 Ljubljana
- **Institute of the Republic of Slovenia for Nature Conservation**
Cankarjeva cesta 10, 1000 Ljubljana
- **Institute for the Protection of Cultural Heritage Slovenia**
Ljubljana Regional Unit
Tržaška cesta 4, 1000 Ljubljana
- **Museum and Galleries of Ljubljana - MGML**, Gosposka 15, 1000 Ljubljana
- **Hidrotehnik vodnogospodarsko podjetje d.d.**, Slovenčeva ulica 97, 1000 Ljubljana

- **KPL d.d.**, Tbilisijska cesta 61, 1000 Ljubljana
- **KPL Rast d.d.**, Tbilisijska ulica 61, 1000 Ljubljana
- **Tisa d.o.o.**, Ižanska cesta 213, 1000 Ljubljana
- **Besting inženiring d.o.o.**, Aljaževa ulica 30, 1000 Ljubljana
- **Mineral d.d.**, Podpeč 46, 1352 Preserje – donator
- **Atelje Vozlič**, Tavčarjeva 13, 1000 Ljubljana
- **Municipal Office of Ljubljana (MOL)**
Mestni trg 1, 1000 Ljubljana
- **MOL City Administration**
Commercial Activities and Traffic Department
Trg MDB 7, 1000 Ljubljana
- **Finance and Accountancy Department**
Dalmatinova 1, 1000 Ljubljana
- **Public Procurement Office**
Dalmatinova 1, 1000 Ljubljana
- **Legal Affairs Office**
Adamič Lundrovo nabrežje 2, 1000 Ljubljana

3.2. Implementation phase

3.2.1. Pedestrian zones

The old town has been almost completely renovated. The central city park has also been renovated, reviving the former promenade between the Tivoli park and the Ljubljana Castle in the city centre. The characteristic districts and areas of the city will maintain their recognisability, while the radial roads will be transformed. The city parks and green areas will be connected into an all-round green system via new green corridors. The riverbank of the Ljubljanica River has been comprehensively refurbished with new bridges, footbridges and barges, forming a central public space for the city. By closing off the city centre to motorised traffic and implementing a new goods delivery system, the project of sustainable mobility is being realized in Ljubljana.

Activities regarding reduced speed and pedestrian zones, monitoring of violations within them and regarding new arrangement of public spaces are in line with the objectives of measure 5.5-LJU. The same is true regarding the implementation of the traffic regime changes in those areas, combined with video control provided through COL's traffic centre.

The above mentioned new arrangement of public spaces was realized with COL's funding outside the CIVITAS-ELAN project. The CIVITAS-ELAN measures input is equally important and can be recognized in new ideas and suggested ways of more sustainable and citizens engagement involvement ways of their implementation in 5.5-LJU.



Traffic calming zones and pedestrian zones in the city centre of Ljubljana in 2012

Ljubljana now has extensive slow-speed and pedestrian zones and it is planning to introduce new ones. The process has started before ELAN, but the majority of the now existing zones have been achieved through and during the time when measure 5.5-LJU is being implemented. The plan is to continue with this process after the ELAN project as well, of course taking into account COL's financial possibilities. The logical and planned direction of this extension will be to connect two central park and forest areas (Grajski grič – Rožnik), areas surrounding the river Ljubljanica and stream Gradaščica and the residential areas closest to the city centre. The above map shows the status of the implementation of the reduced speed zones and pedestrian zones in the city centre in 2012 (in yellow). The implementation follows the objectives defined in the 2009 Decree of Pedestrian Area in the City of Ljubljana

The traffic system is regulated by the Decree on Pedestrian Zones, which determines pedestrian zones where vehicles are strictly forbidden (strict regime) and pedestrian zones where vehicles are restricted (non-strict regime). Currently, the city centre is closed off to traffic all the way from the roads of Zoisova cesta and Slovenska cesta on one side and the streets of Resljeva ulica and Kopitarjeva ulica on the other side. Other places that are closed off to traffic include the arcades at the market place, the street named Mačkova ulica and Ciril-Metodov trg (Cyril Methodius square).

Due to the expansion of pedestrian zones in the city centre, both in line with the 2009 Decree of Pedestrian Area in the City of Ljubljana and the new payment system for on-street parking, an increase in stationary traffic occurred on the edge of the city centre. Both sides of the streets were occupied with stationary traffic throughout the whole day, hindering the flow of traffic. So it was also necessary to revise the traffic arrangements on the edge of the city centre. The adoption of a new decree on the direction of traffic on main roads and side roads has enabled new one-way traffic arrangements in Ljubljana which are gradually being implemented. Through these new traffic arrangements and one-way streets, the city is expected to obtain 1,200 new parking spaces.

Before 2008, there were several traffic calming zones in Ljubljana: in the area of Stare Črnuče (at the cemetery), on the street named Puharjeva ulica (a school zone) and at the market place – stretching from the arcades to Pogačarjev trg (Pogačar square), to the street named Mačkova ulica, to Ciril-Metodov trg (Cyril Methodius square) and to Krekov trg (Krek's square). Later on, traffic calming zones were created in front of the following schools: the Prežihov Voranc Primary School, the Kette and Murn Primary School, the Vižmarje Brod Primary School, the Oskar Kovačič Primary School and the primary school named OŠ Narodnega heroja Maksa Pečarja. In traffic calming zones, pedestrians have priority over other road users. Drivers have to be extra careful when driving through traffic calming zones, especially since children are permitted to play in these areas. The maximum speed limit in traffic calming zones is 10 km/h.



Traffic calming zones and pedestrian zones (in yellow) in the districts of Krakovo and Prule in the Ljubljana city centre in 2012.

3.2.2. Traffic calming zones and pedestrian zones – implemented at Breg, Ljubljana

The Breg Project was carried out in two phases; the first was entitled the Breg Embankment along the Ljubljanica River – Phase 1: From the Cobblers' Bridge to the “Zoisova cesta” road and the second was entitled the Breg Embankment along the Ljubljanica River – Phase 2: Stairs to the Ljubljanica River and Path along the Water. The Breg Project is a large long-term project and construction costs were financed outside the CIVITAS-ELAN project. The

financing was provided from the city budget. The EC funding by ELAN partly contributed to the planning costs. Nevertheless, ELAN's impact was evident regarding the fact that the CIVITAS spirit and ideas could have been included from the project's beginning phase and due to the fact that the Measure Leader was the head of the project on the department's side as well.

The Breg Project envisages the elimination of motorised traffic from the area of Breg along the Ljubljana riverbank, creating pedestrian areas and providing pedestrians with a place to hang out and relax right next to the water or even take a dip in the river. The project solutions give us the possibility to merge waterside leisure activities with other water-based activities, and many new possibilities are opening up in the waterside area of the city. The proposed solutions are bringing life and splendour back to the Ljubljana River and giving the city something to be proud of once again.

The area of Breg is a pedestrian zone that stretches from the road named Zoisova cesta to the Cobblers' Bridge (Čevljarški most) and Zlata Ladjica (a café serving food and beverages); its newly arranged public areas along the waterside are a wonderful place for leisure activities, cultural events, children's play and recreation. All the local residents, passers-by and visitors can take part in the events in Breg. There is a lovely path along the Ljubljana River and newly paved areas in the shade of chestnut trees, where people can engage in leisure activities.

The area cascading down towards the Ljubljana River is intended to be used not only as a starting point for boat trips, but also for monodrama events and theatre shows that can take place on the water or on dry land. The newly renovated public area of Breg is large enough to host all sorts of activities. On weekends, the flea market is held there and, every so often, outdoor galleries are set up there. It is a peaceful ambient where people can go to play chess or engage in other leisure activities. All this and more is possible in the renovated area along the Ljubljana River, which has given life to the city and helped it survive during hard times. The project solutions for Breg and the Ljubljana riverbank are giving the river the presentation it deserves – even mythologically - since it is said that the Jason and the Argonauts and their ship sailed down the Ljubljana River with the Golden Fleece on their way from Kolhida, on the coast of the Black Sea, to the Adriatic Sea.

As part of the first phase of the project, the areas under the chestnut trees and areas alongside buildings have been paved with sandstone from Sečovelje. On the paved area under the chestnut trees, there is now a path with engraved stone markings for blind people. The wooden fence at the edge of the embankment under the chestnut trees has been replaced with a new metal rail. There are now new lights illuminating the sidewalk and new metal benches with Kerrock seat boards between the chestnut trees (in a straight line). Both the roadway and central area under the Novi trg square have been paved with granite cubes, forming arch-shaped patterns on the road and wavy patterns in the area under the "Novi trg" square. A part of the pavement at the Cobblers' Bridge (where the granite cubes form patterns of circles) has been reconstructed according to the original design by Jože Plečnik, the most famous Slovenian architect. In the renovated areas of Breg, there are also cast stone benches composed of individual cubes (in sets or individually) and illuminated with ground lighting.

The sculpture in front of the Zois Palace (Zoisova palača) is also a bench with horticultural plants. An additional number of trees have been planted in Breg (in accordance with dendrological studies). A cluster of plane trees has been trimmed to form a hall roof and there are also several smaller clusters of birch trees. The roots of all newly planted trees are protected by cast iron spools. All the public lighting in Breg has been fully replaced. The areas alongside buildings are illuminated by newly installed lights on the building façades. The pavement under the chestnut trees and lights is illuminated by linear lights on the new metal fence. The renovated area of Breg (which is a pedestrian zone) is protected by newly installed retractable bollards, allowing the controlled entry and exit for residents, deliveries and emergency services.

As part of the second phase of the project, a path has been constructed alongside the wall that runs along the Ljubljana River all the way from the "Zoisova cesta" road to the Cobblers'

Bridge (Čevljarški most). A terrace and stairway have been constructed in the centre of the “Novi trg” square. The new spatial arrangements of the river and streets include a pier where boats and other watercrafts can stop for passengers to embark or disembark. The pier is envisaged to enable urban and inter-urban mobility on inland waterways within the territory of the City of Ljubljana and the suburban municipalities. Repairs were made on the lower part of the concrete wall and on the stone support columns, designed by the architect Alfred Keller.

The existing fountain at the “Novi trg” square has been restored in accordance with the guidelines on conservation and restoration and under the supervision of expert representatives in the field of monument preservation. A new concrete foundation has been laid and improvements have been made to the public utility infrastructure in the area. Another addition to the renovated area of Breg is a fountain, which has been restored back to its original form. The renovation of Breg was concluded by erecting a monument to Ivan Hribar, who served as Mayor of Ljubljana from 1896 to 1910 and is generally considered as a best Mayor of Ljubljana.

The Breg Project (with details on all the experience gained in project planning and coordination, and in the executive work) was presented at two expert meetings held at the Ljubljana City Hall (Mestna hiša):

The new arrangements were presented to the public by the project manager in the article “Experiences in the Implementation of a Pedestrian Zone in the City of Ljubljana” as part of lectures from the CIVITAS ELAN Open Academy programme and the workshops on “Taking pedestrian zones a step further”, held in the large conference room at the Ljubljana City Hall. (March 2011)

The implementation of pedestrian zones in the City of Ljubljana was presented by the project manager in the article “The Introduction of Pedestrian Zones in Ljubljana with a Focus on the Breg Pedestrian Zone” as part of the “Training Workshop on Pedestrian Zones & Parking Management” (June 2011).

3.2.3. Ljubljana Traffic Warden Service

The Ljubljana Traffic Warden Service is a minor offence authority in the City of Ljubljana. Pursuant to regulations, it is in charge of developing a safety and security program for the City of Ljubljana and, on the basis of this, it is responsible for public safety and public order within the territory of Ljubljana.

Responsibilities:

- monitor and ensure the safe and smooth flow of traffic in residential areas;
- protect the roads and the environment;
- ensure safety on public routes, recreational areas and other public areas;
- protect public property, natural heritage and cultural heritage;
- maintain law and order;
- lead misdemeanour proceedings in accordance with the law;
- keep records of imposed measures and misdemeanour proceedings in the manner prescribed.

Department for misdemeanour proceedings

Responsibilities:

- lead misdemeanour proceedings in accordance with the law;
- keep records of imposed measures and misdemeanour proceedings in the manner prescribed.

Department of City Wardens

Responsibilities:

- develop a safety and security program for the City of Ljubljana ;
- monitor and ensure the safe and smooth flow of traffic in residential areas;
- protect the roads and the environment;
- ensure safety on public routes, recreational areas and other public areas;
- protect public property, natural heritage and cultural heritage;
- maintain law and order;
- lead misdemeanour proceedings in accordance with the law;
- keep records of imposed measures and misdemeanour proceedings in the manner prescribed;
- supervise the implementation of regulations and other acts adopted and used by the City of Ljubljana to settle matters within their jurisdiction;
- carry out other tasks stipulated by law or other regulations drawn up on the basis of the law.

Department of Finance and Technical Operations

Responsibilities:

- carry out organizational, financial, administrative and technical tasks;
- take care of coordination and offer support to the other operating segments;
- take care of and manage the material and technical assets;
- carry out tasks relating to the budget preparation and implementation plan;
- prepare reports and analyses pertaining to the traffic warden service.

4. Monitoring and evaluation

4.1. Traffic control and traffic flow monitoring systems

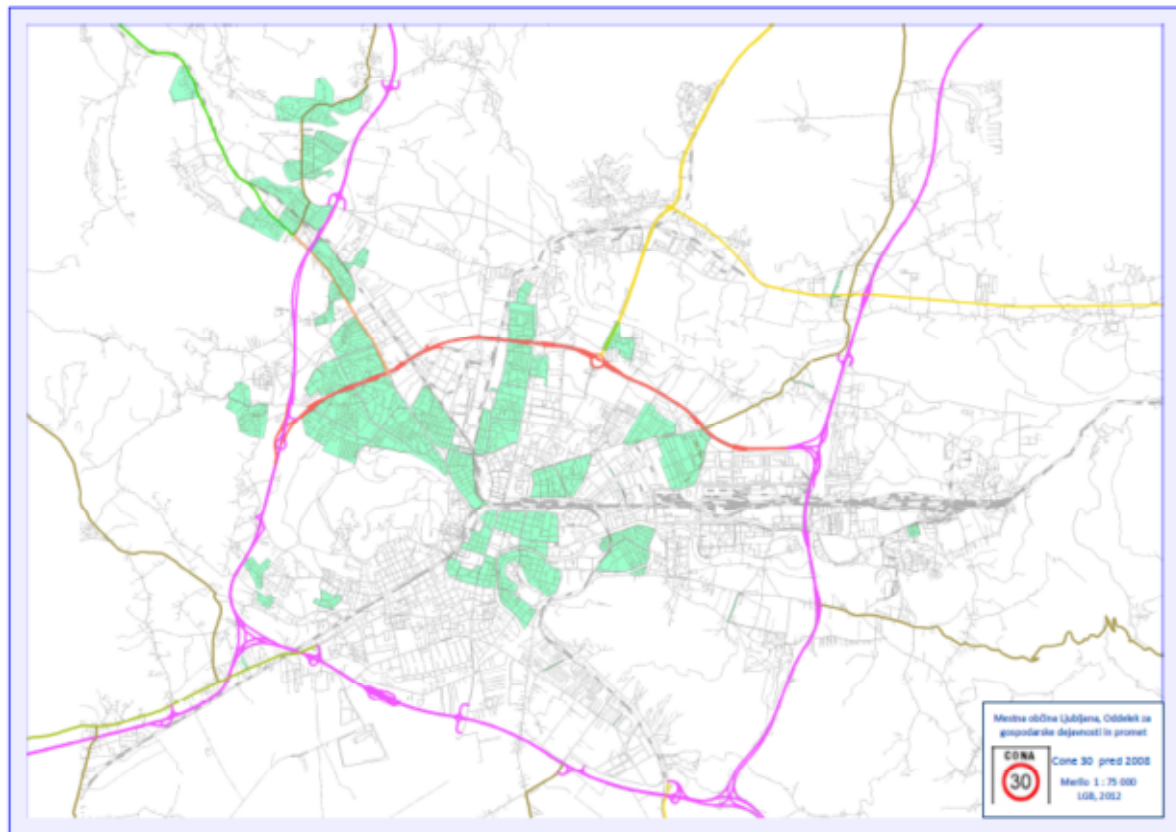
In traffic calming zones, traffic control is conducted via a remote controlled system with automatic retractable bollards, making it possible to monitor and record the vehicles that go in and out. Only vehicles with special identification cards can enter and exit the traffic calming zones. At the points of entry and exit, there is a communication device (connected to the control centre) with commands that transfer data from one end to another in order to control and monitor the system at the individual locations. The points of entry and exit are closed off by automatic retractable bollards or automatic lifting barriers.

The City of Ljubljana uses a number of systems to monitor traffic flows, such as manual traffic volume counts, nu-metric traffic counters and preventive warning signs that show how fast you are driving. It also uses video surveillance to regulate traffic flows and monitor areas, to control and manage traffic lights and pedestrian crossings, to monitor traffic calming zones and to monitor escalators.

It uses a variety of traffic calming devices (speed bumps, barriers, light signals, etc.) in order to prevent people from driving too fast and to alert them about the speed limit on that part of

the road. Traffic calming measures are also used as technical solutions on the roads and road network and to regulate traffic in high-traffic areas.

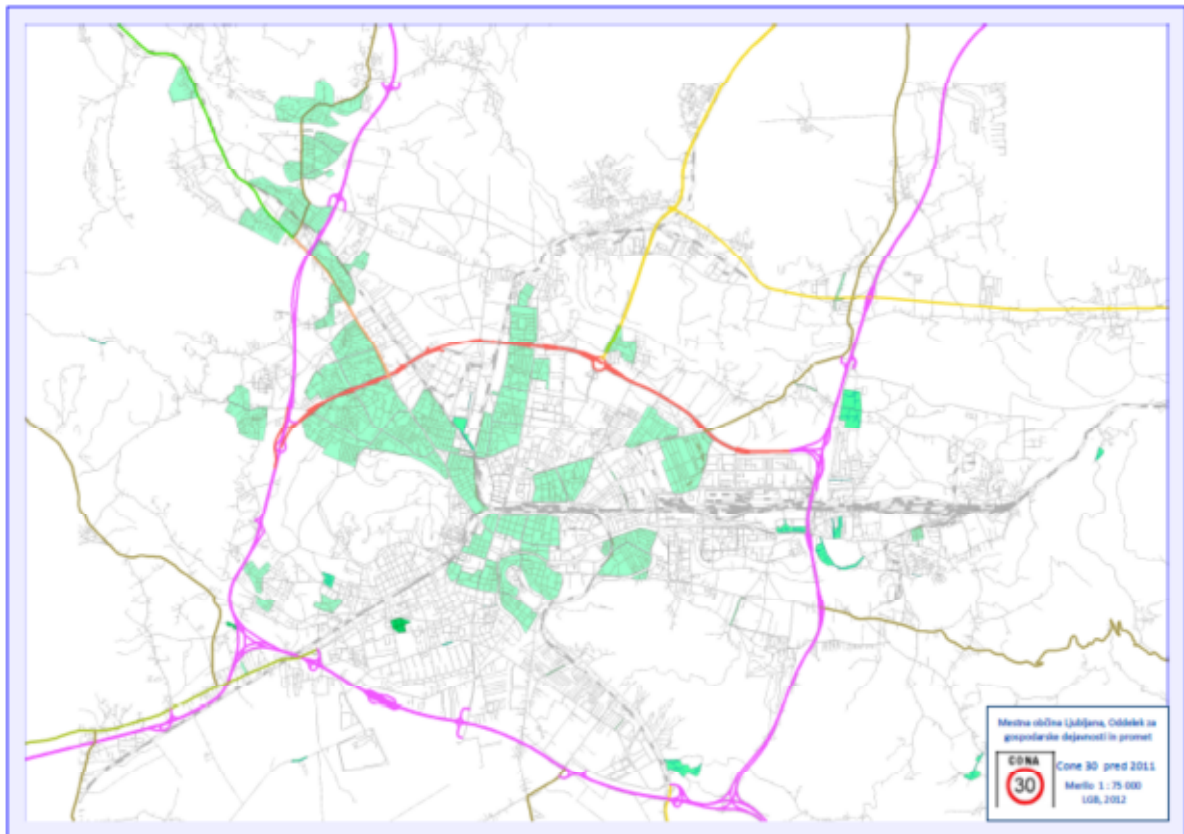
In line with the objective of measure 5.5-LJU to reduce the speed of motorway traffic to 30 km/h, to enlarge the areas of pedestrian zones and reduced speed zones, control speed limit violations and thus reduce the number of accidents, in the city centre have been and will be implemented all tasks planned within this CIVITAS-ELAN measure. Locations of all radars introduced in the frame of the CIVITAS-ELAN project are listed in chapter 11.



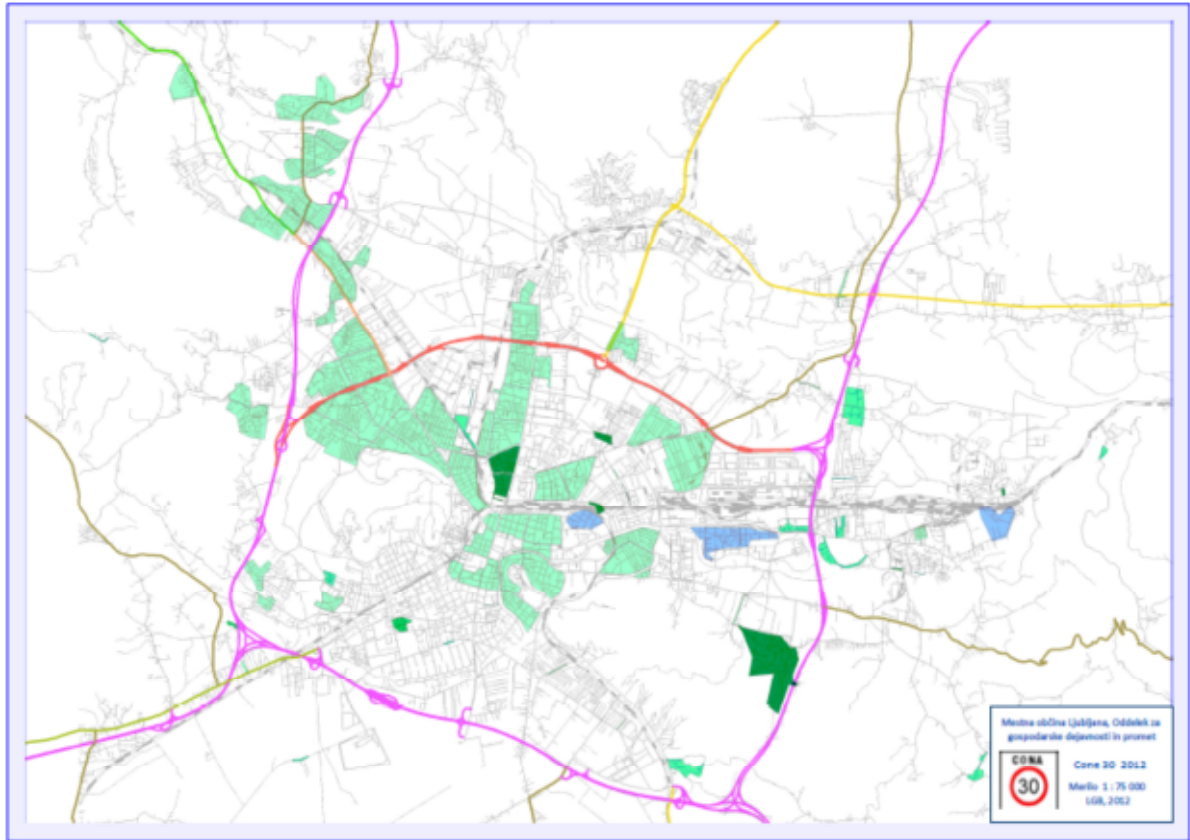
Speed limits in the City of Ljubljana before 2008 (in green are 30 km/h reduced speed zones in COL, before 2008)

The maximum speed limits for Slovenia are:

- 50 km/h – in urban areas;
- 30 km / h – in restricted speed zones;
- 10 km / h – in traffic calming zones and pedestrian zones;
- 130 km/h – on highways/ motorways;
- 100 km/h – on fast roads, reserved for motorised vehicles;
- 90 km/h – on all other roads.



Restricted speed zones in the City of Ljubljana before 2011 ((in green are 30 km/h reduced speed zones in COL, before 2011)



Restricted speed zones in the City of Ljubljana in 2012 (with dark green and blue are marked 30 km/h reduced speed zones in COL, introduced in 2012)

	Year	Length (sum)
Total		181,903
	Before 2008	152,436
	2008	9,739
	2009	1,398
	2011	10,841
	2012	7,489

Tabular display of length of streets and roads in restricted speed zones in the City of Ljubljana before 2008 and up to 2012.

The three maps and the table above elucidate the increase of reduced speed zones from 2008 to 2012. Also, they show the impact of measure 5.5-LJU on this process within COL.

4.2. Preliminary impact evaluation results

4.2.1. Traffic violations in reduced speed zones

The results on speed violations extrapolated from the reports already processed for 2010 show the following (some data inputs are still missing). The results are presented in a share (%) of drivers who exceeded the speed limit (the data sample was taken during September and October 2010):

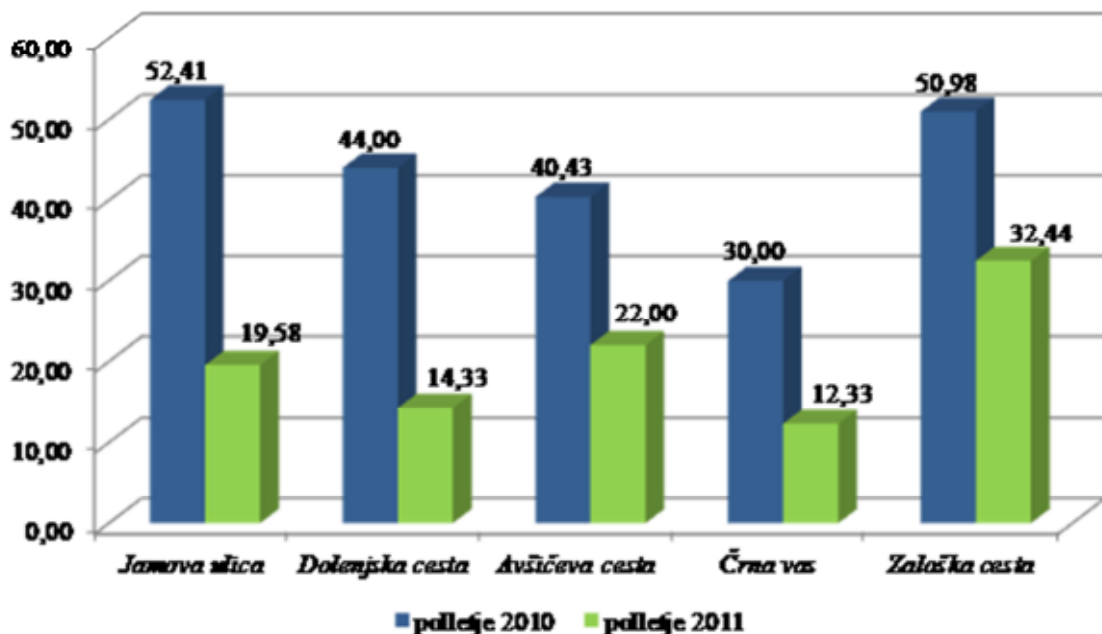
40 km/h zone violations:

- 61% - Jamova cesta
- 7% - Partizanska cesta

30 km/h zone violations:

- 78% - Jarška cesta
- 65% - Kamnogoriška cesta
- 73% - Martinova cesta
- 83% - Povšetova cesta
- 15% - Prule
- 44% - Prušnikova cesta
- 85% - Vodnikova cesta

The figure below shows the data on speed violations measurements with installed radars in the first half of 2011, compared to first half of 2010. An average number of speed violations in an hour on 5 listed locations is presented. The 5 chosen locations have had the largest number of violations in the first half of 2010. On all locations, including others that are not on this table, the number of violations was notably reduced. On most locations even more than 50%. (Source: City traffic wardens evidence 2011).

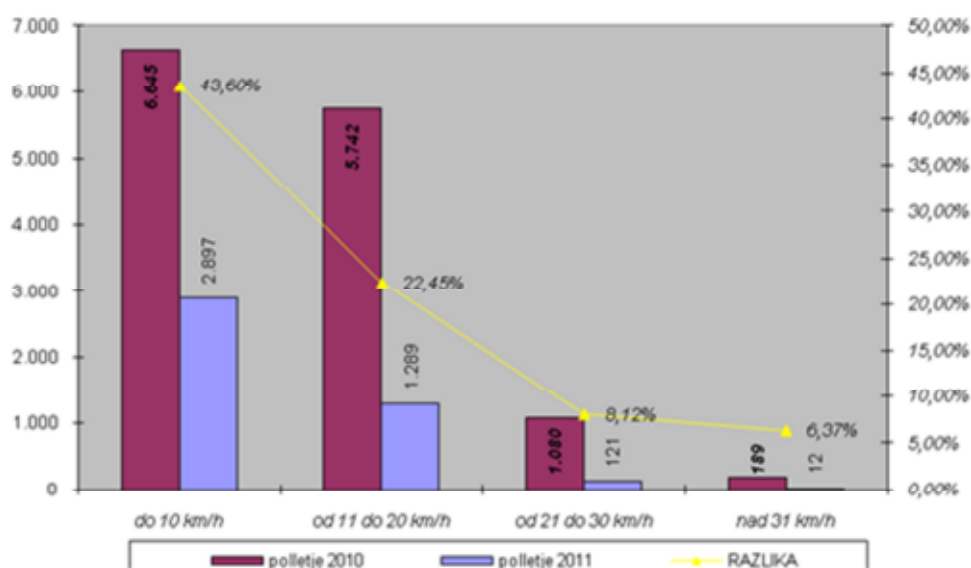


The data for traffic violations (for 2008/09) have been obtained with a significant delay and are currently being processed. The comparative evaluation results are pending.

The first objective of installation of preventive radars was to influence a reduction of speed violations and number of accidents, mainly caused by high speed. The data collection of number of these violations was an important objective as well. The locations for radars were selected within the framework of the CIVITAS-ELAN project and in line with measure 5.4-LJU Safe routes to schools. Following the main objective to maintain the “0” school children deaths and casualties, radars have been installed at the following locations:

- Dunajska cesta 392, Črnuče (in the direction towards Domžale);
- Jarška cesta 55;
- Prušnikova cesta (in front of a school);
- Litostrojska cesta;
- Clevelandska cesta (near a school);
- Zaloška cesta (in front of a school);
- Partizanska ulica;
- Vodnikova cesta (near a school);
- Njegoševa cesta;
- Komenskega ulica.

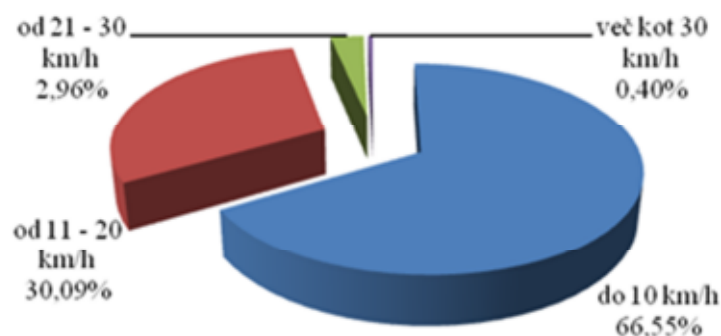
The following graph illustrates a notable decrease of the number of speed violations after the installation of these radars.



Number of speed violations regarding the severity of speed violation in first halves of 2010 and 2011, including the trend of reduction of violations number (yellow line) (source: same, 2011.)

Drastic reduction of speed violations in the first half of 2011, compared to the first half of 2010, is a result of City traffic wardens office activities and policy. Drivers have maybe been more sensitive due to media announcements on new radars as well. Some of them maybe because of one or few tickets for speed violations in 2010.

What is important, comparison has shown a 68,37% reduction of evidenced speed violations in first half of 2011, compared to the same period in 2010.



Proportion of speeding violations in the first half of 2011. (Source: city traffic wardens application, 2011.)

From the above graph we can see that almost all violations are up to 20 km/h speeding (96,64%). Despite a small number of higher violations (3,36%) it is still a matter of high concern due to the fact that all speed measurements were held close to schools, hospitals and in residential areas.

4.2.2. Pedestrian areas

Pedestrian areas have been increased substantially during the project. The number of streets that have been changed to pedestrian areas are 34 (as shown in the table below).

Status on 24.9. 2007 :	Status on 1.4.2011:
Total number: 61	Total number : 95
Adamič Lundrovo nabrežje between Kopitarjeva ulica and Pogačarjev trg	Adamič Lundrovo nabrežje between Kopitarjeva ulica and Pogačarjev trg
Barvarska steza	Adamič Lundrovo nabrežje between Pogačarjev trg and Stritarjeva ulica
Cankarjeva cesta-Štefanova ulica	Ajdovščina, Figovec
Cankarjeva cesta-Tomšičeva	Barvarska steza
Cankarjevo nabrežje	Breg
Čevljarjska ulica	Cankarjeva cesta-Štefanova ulica
Čevljarjski most	Cankarjeva cesta-Tomšičeva
Čopova ulica	Cankarjevo nabrežje
Dolničarjeva ulica	Cigaletova ulica between Dalmatinova ulica and Nazorjeva ulica
Dvorni trg	Ciril Metodov trg
Gallusovo nabrežje from no. 31 to Karlovška cesta	Čevljarjska ulica
Gledališka stolba	Čevljarjski most
Gerberjevo stopnišče	Čopova ulica
Gornji trg	Čufarjeva ulica
Gosposka ulica between Trg francoske revolucije and Križevniška ulica	Dolničarjeva ulica
Gregorčičeva ulica between Vegova ulica and Slovenska cesta	Dvorni trg
Hribarjevo nabrežje	Erjavčeva cesta between Prešernova cesta and Igriška ulica
Jurčičev trg	Gallusovo nabrežje from no. 31 to Karlovška cesta
Kapiteljska ulica	Gledališka stolba
Kastelčeva ulica	Gerberjevo stopnišče
Kleparska steza	Gornji trg
Ključavničarska ulica	Gosposka ulica between Trg francoske revolucije and Križevniška ulica
Knafļjev prehod	Gregorčičeva ulica between Vegova ulica and Slovenska cesta
Kratka steza	Hrenova ulica between Karlovška cesta in Gornji trg
Krekov trg	Hrenova ulica from Karlovška cesta to Grudnovno nabrežje
Križevniška soteska	Hribarjevo nabrežje
Križevniška ulica	Jurčičev trg
Krojaška ulica	Kapiteljska ulica
Levstikov trg	Kastelčeva ulica
Mala ulica from Dalmatinova to Mali trg	Kladežna ulica
Mala ulica from Mali trg to Trubarjeva cesta	
Mestni trg	

<p>Miklošičeva cesta from Prešernov trg to Nazorjeva ulica Muzejska ulica from Šubičeva ulica to Tomšičeva ulica Nazorjeva ulica Obrežna steza Park Ajdoščina between Puharjeva and Štefanova Petkovškovo nabrežje from Prešernovega trga to Za Čreslom Plečnikov trg Pod Trančo Pogačarjev trg Puharjeva ulica between Župančičeva ulica and Slovenska cesta Prečna ulica Prešernov trg Reber Ribji trg Salendrova ulica Soteska Stari trg Stritarjeva ulica between Adamič Lundrovio nabrežje and Mačkova ulica Trg francoske revolucije between Vegova ulica and Gosposka ulica Tromostovje Trubarjeva cesta from Resljeva cesta to Vidovdanska cesta Usnjarska ulica Vodna steza Wolfova ulica Za Čreslom Znamenjska ulica Židovska steza Židovska ulica</p>	<p>Kleparska steza Ključavničarska ulica Knafljev prehod Krakovska ulica Kratka steza Krekov trg Križevniška soteska Križevniška ulica Krojaška ulica Levstikov trg Mala ulica from Dalmatinova to Mali trg Mala ulica from Mali trg to Trubarjeva cesta Mali trg Mačkova ulica Medarska ulica Merosodna ulica Mestni trg Miklošičeva cesta from Prešernov trg to Nazorjeva ulica Muzejska ulica from Šubičeva ulica to Tomšičeva ulica Nazorjeva ulica Obrežna steza Osojna pot Petkovškovo nabrežje from Prešernovega trga to Za Čreslom Petkovškovo nabrežje from Za Čreslom to Resljeva cesta Plečnikov trg Pod Trančo Pogačarjev trg Puharjeva ulica between Župančičeva ulica and Slovenska cesta Prečna ulica Prešernov trg Reber Rečna ulica Ribji trg Rimska cesta-Igriška ulica Rožna ulica between Karlovška cesta and Gornji trg Rožna ulica between Karlovška cesta and Grudnovno nabrežje Salendrova ulica Sodarska steza Soteska Stari trg Stiška ulica Stritarjeva ulica between Adamič Lundrovio nabrežje and Mačkova ulica Stritarjeva ulica between Mačkova ulica and Ciril Metodov trg Študentovska ulica Trg francoske revolucije between Vegova ulica and Gosposka ulica Trg Republike Tromostovje Trubarjeva cesta from Prešernov trg to Resljeva cesta Trubarjeva cesta from Resljeva cesta to Vidovdanska cesta Ulica na Grad Ulica Josipine Turnograjske Usnjarska ulica Valvazorjeva ulica from Prešernova cesta to Šubičeva ulica Vodna steza Vodnikov trg Vožarski pot between Karlovška cesta and Gornji trg Vrtna ulica Wolfova ulica Za Čreslom Znamenjska ulica Zvezdarska ulica Žabjak from Rožne ulice to Vožarski pot Židovska steza Židovska ulica</p>
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4.3. Process evaluation results

4.3.1. Barriers

Institutional

- Initial problems with acquiring permits for the implementation of the measure – since the majority of the areas that are under this measure is near to a river, the permits on a national level were required (water is under national jurisdiction). At the beginning of the measure implementation the barriers related to this issue emerged.

Cultural

- During the implementation of the measure there was a strong opposition by the residents and shop-owners, which resulted in decreased rate of the implementation of the measure.
- Increased attacks on city wardens for issuing parking penalties in reduced speed zones.

Involvement, communication

- During the implementation of the measure there was a strong opposition by the residents and shop-owners, which resulted in decreased rate of the implementation of the measure.

Organizational

- Difficulties with data collection – the system for measuring speed, violations and accidents was not established. There is a difficulty in reaching an agreement about the provision of data with a person that is responsible for gathering and distribution of the data within the transport department of COL. This results in poor performance of the measure from the evaluation point of view.
- Data sources are scattered, currently there is no centralised data archive at COL (2011). This prevents the efficient use of data and consequently causes delays in measure implementation/evaluation

Spatial

- During the implementation of the measure there was a strong opposition by the residents and shop-owners, which resulted in decreased rate of the implementation of the measure; currently the barriers are too many activities in a single urban space (eg. Pedestrians, cyclists, freight delivery, restaurant gardens/terraces...)

4.3.2. Drivers

Political / strategic

- Extended political interest-increase in reduced speed/pedestrian zones

Cultural

- Creation of new public spaces – new public spaces are very well accepted by the public. The majority of city's events now take place in these areas (fairs, cultural events, etc.)
- Removal of cars from the city centre is very well accepted by the public.

Involvement, communication

- Exchange of information – the increased cooperation with the police resulted in a provision and more systematic acquisition/provision of data related to traffic violations

Political-strategic/ Organizational

- Extended political interest-increase in reduced speed/pedestrian zones and the fact that cars are being forced outside city centre gives more opportunities to further enlarge pedestrian zones.

Organizational/ Spatial.

- The construction of the new large parking garage in the city centre, which is also available for the inhabitants (reserved parking spaces for a minimal monthly parking fee) has reduced the negative first reactions towards the closure of the city centre for motorised traffic

5. Citizen engagement and dissemination

5.1. Trainings and meetings with local residents

Meetings with local residents are held within regular meetings of all of COL's departments with residents and quarters leaderships (5.5-WD5, 5.5-M8). The introduction of such a big extension of the pedestrian zones and reduced speed zones, bringing many positive changes but also changes in the habits of the citizens (limited approach with ones car to ones home, for example), required an especially sensitive approach to citizens engagement.

Within measure 5.5-LJU many contacts with important stakeholders were made by the ML and several of COL's departments, getting important feedback used in the preparatory and later phases of the implementation of the measure.

A lecture "Planning for pedestrians – a step ahead of pedestrian zones" and a training workshop on pedestrian zones & parking management on this process of citizens engagement and pedestrian and reduced speed zones introduction was held by the Measure Leader of 5.5-LJU in the City Hall on 8 June 2011 (5.5-WD5b).

The city wardens office staff are regularly introduced to all legislation changes and are trained to use all technical novelties. This process is permanent and was executed in the last few years as well. Three trainings were held in 2010 and one in 2009. Altogether there are 15 warden officers trained to work with the radars. There was no need for an additional training in 2011 as no new staff was hired (5.5-WD3, 5.5-WD5d).

6. Summary and lessons learned

One of the most profound changes is that a wide area in the centre of Ljubljana has been turned into a well-designed and efficient pedestrian zone. The road network has been revised with new one-way roads and streets in accordance with the objectives and strategies of traffic calming.

There have also been some changes in terms of restricted speed zones, more areas have been turned into calming traffic areas and pedestrian zones, new parking arrangements have been made for residents living in the pedestrian zone, and the number of one-way roads/streets in Ljubljana's road network has increased.

In addition to all these changes that have been taking place at such an incredible pace, another novelty is an underground garage which was constructed under Kongresni trg (Congress square) and has 334 parking spots available for residents who live in the city centre, in areas closed off to traffic.

The realization of these new arrangements in the centre of Ljubljana is helping to achieve a better quality of life in the city, providing the city with qualitative urban public areas, uniting the whole area and enabling a smooth flow of foot traffic. It is also contributing to an increase in trade, tourism and catering services in the city centre (gardens) and indirectly reducing traffic pollution (noise and air pollution).

This comprehensive interdisciplinary project of implementing restricted traffic areas, restricted speed zones and pedestrian zones in the centre by rearranging and reconstructing the public utility infrastructure was enabled through strong political support, a great deal of media engagement, a professional approach and good management.

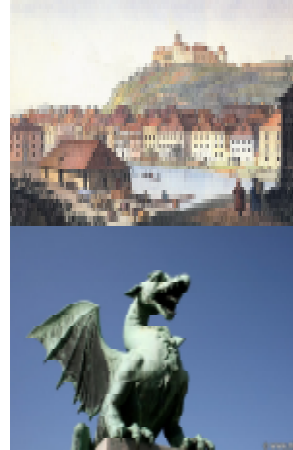
There is no doubt whatsoever that the entire project CIVITAS-ELAN project has influenced a new, sustainable approach and brought to Ljubljana new ideas on mobility of people. The same is true for measure 5.5-LJU. More emphasis on citizens engagement and new dynamics to implementation are some of these contributions. With an active participation of all stakeholders many misunderstandings and possible opposition to changes have been avoided, good practices from other CIVITAS cities have been introduced and false solutions excluded. The biggest problem that such projects face is always a financial matter. Another major problem were annoyed drivers, passing through the city or travelling to work by motorised vehicles, especially during the early stages of realization. However, with the new stationary traffic arrangements and the construction of the parking garage under Kongresni trg (Congress square), the townspeople are positively accepting the new arrangements for public areas as well as the restricted speed zones, traffic calming zones and pedestrian zones in Ljubljana. The reaction of inhabitants of the pedestrian zones and owners or renters of shops and restaurants in the Breg pedestrian area had a rather negative opinion about the pedestrianisation at the beginning. Already during the construction and due to meetings with stakeholders it started to change. When the construction was finished the reactions of inhabitants and all other are now very positive and flattering. It is expected that the survey on satisfaction with the pedestrian zones which is currently being conducted will confirm this.

7. Annex – Presentation on traffic calming zone and pedestrian zone – Breg in Ljubljana held at the CIVITAS ELAN Open Academy

The City of Ljubljana – the Ljubljana Gap

The City of Ljubljana is a medium-sized European city with a population of 276.000. It is situated in the Ljubljana Gap, which has served a transit route for thousands of years:

- Legend has it that Jason and the Argonauts ended up on the Ljubljanica River while fleeing with the golden fleece which they had stolen from King Aeetes;
- numerous archaeological artefacts have been discovered in the area, including the world's oldest wooden wheel (3350-3100 BC);
- the railway line that runs through Ljubljana was constructed as part of the route from Vienna to Trieste;
- Ljubljana is located at the exact intersection point of two Pan-European corridors (V. in X.).



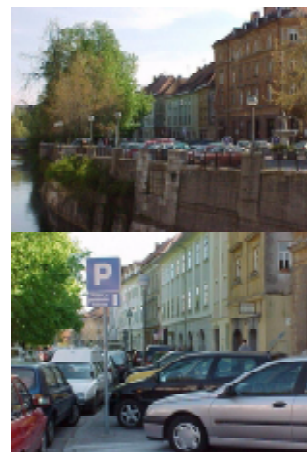
Data source:
commons.wikimedia.org
www.mike

Open Academy-March 2011-Ljubljana -Boris Jagodič

Pedestrian Zones

In line with the sustainable mobility goals of the City of Ljubljana, the following solutions are being implemented in the city in order to create a new social space and improve the quality of life for its citizens:

- pedestrian zones;
- traffic calming zones;
- public parking facilities for residents living in pedestrian zones;
- one-way traffic schemes;
- limited-period parking zones.

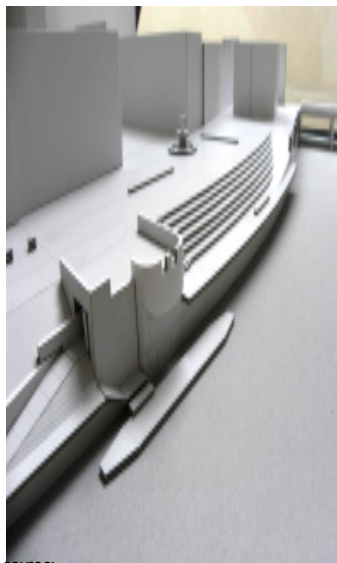


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The Breg Project in Ljubljana

Preparation of project documentation

- outline solution
- preparation of project documents
- terms and conditions set forth by spatial planning authorities
- preparation of implementation plan and construction documents
- approval from spatial planning authorities
- Implementation plan
- project realization



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Data source:
skyscrapercity.com

The Breg Area (by the Ljubljanica River)

Work zone

The work zone is the area along the Ljubljanica River between the road named Zoisova cesta and the Novi trg square, and along the street wall in Breg, Ljubljana. The Ljubljanica riverbank is government-owned and the rest of the work zones is owned by and under the jurisdiction of the Ljubljana Municipal Office of Ljubljana (MOL).

The area has been designated as a protected area with certain kinds of restrictions such as those that apply to:

- cultural heritage areas
- land along inland waterways
- road buffer zones



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Data source: kam.si
ui rs

The Breg Project

Five terraces and an additional set of stairs have been constructed at the water edge of the “Novi trg” square, and the existing walls have been repaired.

A new walking path has been made along the Ljubljanica river (on the existing retaining wall), which starts at the Cobbler’s Bridge (Čevljarški most) and ends at the road named Zoisova cesta.

The roadway from the “Zoisova cesta” road to the “Novi trg” square has been modified, and the street has different spatial arrangements.

The public utility infrastructure has been renovated, areas have been paved with sandstone from Sečovelje and granite cubes, trees have been planted and urban equipment has been installed.

The Breg Project was created by the architects Matej in Vesna Vozlič.

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Data source:
A.Rebec

Svetlana.si

Formal Bases



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Data source: M.Vozlič

Construction Contractors

The construction work on the road was carried out by KPL d.d., Gradnje-rast-inženiring, Tbilisjska cesta 61, 1000 Ljubljana.



The construction work along the river was carried out by Hidrotehnik vodnogospodarsko podjetje d.d., Slovenčeva ulica 97, 1000 Ljubljana.



Data source: B. Jagodič

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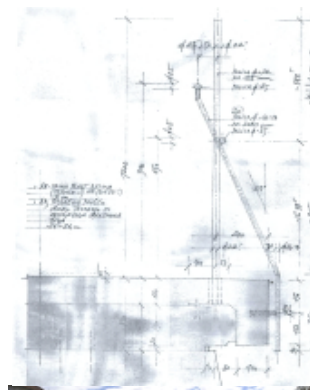
Special Features of the Breg Project

Previously, there was no wall cap on the existing river retaining wall (angle: +287.59) in the area of Breg.

A precast concrete wall cap was placed on the top of the retaining wall from the "Novi trg" square to the "Zoisova cesta" road (width: 1.30 m; incline: 7%).

The construction work along the river and on the street involved tearing down the riverside wall under the "Novi trg" square. This was achieved by a clean cut through the concrete wall.

The constructions designed by the architect Alfred Keller have been preserved in accordance with the standards and guidelines for the conservation of cultural heritage.



Data source:
M. Vozlič

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Fountain on the “Novi trg” Square

The construction and restoration works were conducted within the scope of the contract, which was obtained through a legally regulated procurement procedure. The investment scheme involved restoring and completing the existing fountain on the “Novi trg” Square, correcting the location and laying a new foundation.

The stone masonry products such as supporting cylinder over the first bowl and a ribbed vase with a cone-shaped neck on the top of the fountain were made in accordance with the standards and guidelines for the conservation of cultural heritage and with respect to photographic records of the fountain in the garden named “Uršulinski vrt”, which date to 1952.

Open Academy-March 2011-Ljubljana-Boris Jagodič



Data source:
B. Jagodič

Monument

The monument to Ivan Hribar, who served as Mayor of Ljubljana from 1896 to 1910, was made by the academic sculptor Mirsad Begić; The monument was erected in Breg, in the vicinity of Keller’s balcony.

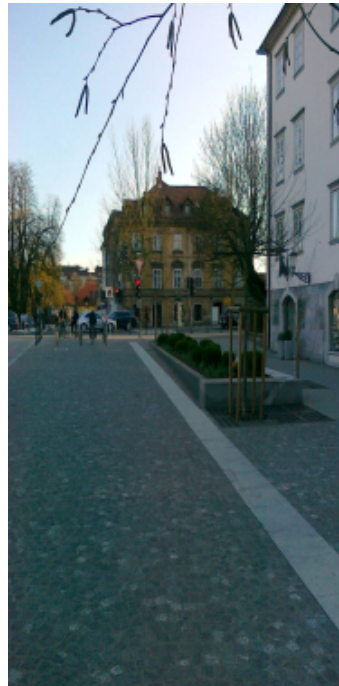


Data source: B. Jagodič

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In Breg

A monolith, made of tonalite from the Pohorje mountains, was erected in front of the house at Breg 22, Ljubljana, which was once the home of the baron Žiga Zois, who was a mineralogist, botanist and Patron of the arts.



Data source: B. Jagodič

Open Academy-March 2011-Ljubljana-Boris Jagodič