

# Road Safety in South East European regions

## Safety of cyclists in Slovenia

*(Project Report)*





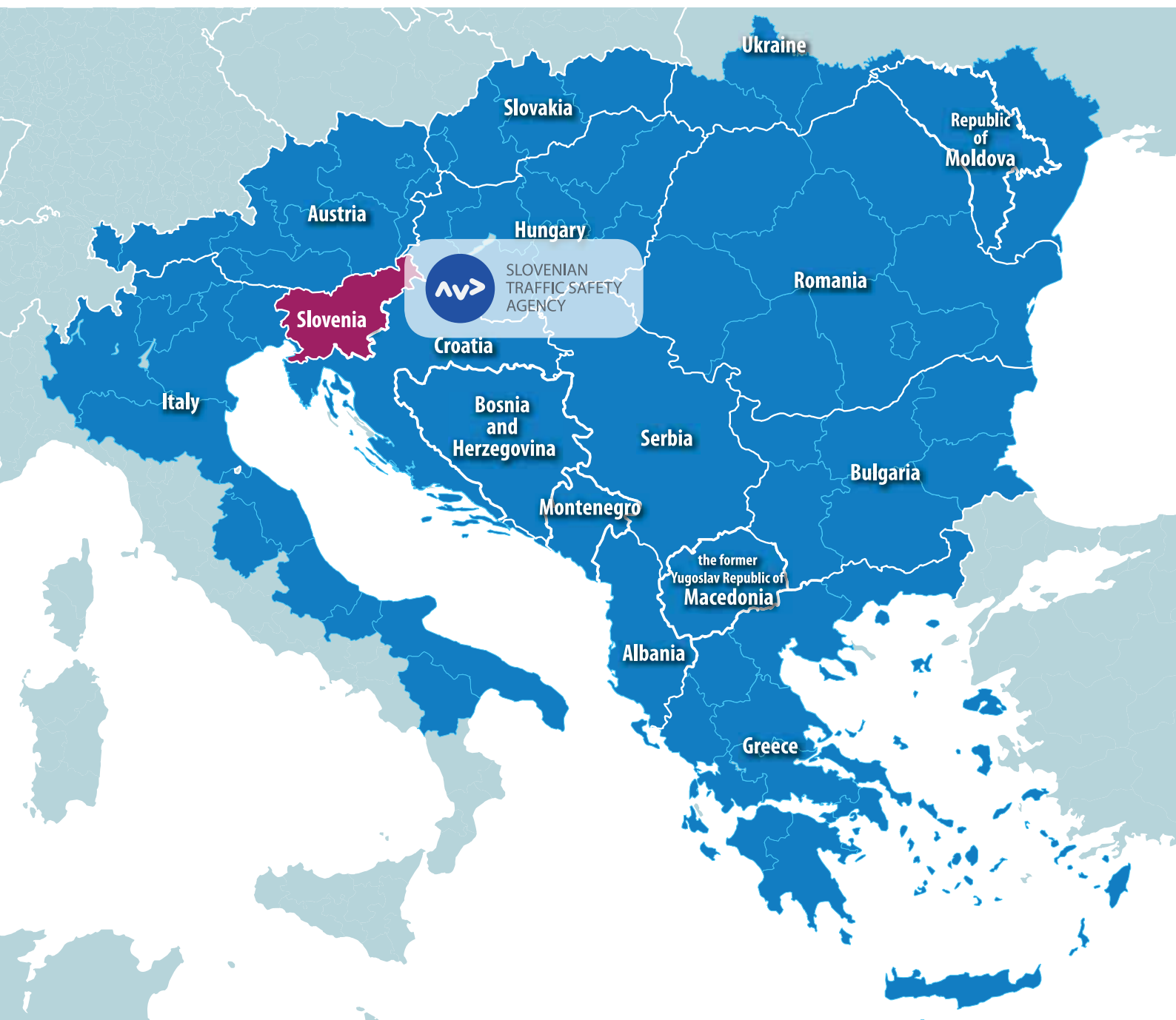
# Road Safety in South East European regions Safety of cyclists in Slovenia *(Project Report)*





# Contents

<b>1. About ROSEE</b>	<b>7</b>
<b>2. AVP as a central institution for road safety in Slovenia and a partner of ROSEE</b>	<b>8</b>
2. 1 Our work within ROSEE	9
<b>3. General review of AVP activities within ROSEE</b>	<b>11</b>
3. 1 Establishment of the National Advisory Group	11
3. 2 Organization of transnational ROSEE - SENSOR onference	12
3. 3 Workshop "Safety of cyclists"	14
3. 4 Education of representatives of local communities, police and city traffic wardens	14
3. 5 Media activities and press conferences	16
3. 6 Transnational cooperation and promotion of ROSEE	16
3. 7 Preventive materials produced and disseminated	20
3. 8 Pilot projects within ROSEE and results	20
<b>4. Pilot Project in Osrednjeslovenska and Podravska Region</b>	<b>23</b>
4. 1 SWOT analysis	24
4. 2 Pilot in Podravska region - "Sharrow" in Maribor	28
4. 3 Pilot in Osrednjeslovenska region - "Cyclists counter with display" in Ljubljana	32
4. 4 Speed management strategy	34
<b>5. Change of legislation and development of strategic documents</b>	<b>37</b>
5. 1 Technical specifications for "sharrow" - amending Guidelines for planning of cycling infrastructure	37
5. 2 National strategy for safety of cycle traffic (proposal)	38
5. 3 National Report on road safety situation in Slovenia	38
5. 4 Review of best practice examples of safe cycling in Europe	39
<b>6. Preventive campaigns and raising awareness events</b>	<b>41</b>
6. 1 Preventive campaign for cyclists and public appeal for improving safety of cyclists	41
6. 2 Promotional and educational short film on "sharrow"	41
6. 3 Competitions "What do you know about traffic"	41
6. 4 Other preventive events organized within AVP pilot project	42
6. 5 Raising awareness letter to all Slovenian mayors	44
<b>7. Evaluation and analysis of pilots</b>	<b>47</b>
7. 1 Transnational replicability and stakeholders' feedback	48
7. 2 Analysis of general indicators in pilot regions	49
7. 3 On-field survey on pilots (before/after analysis) and pilot specific indicators	50
7. 3. 1 Cyclist counter with display in Ljubljana (Dunajska road)	50
7. 3. 2 "Sharrow" – shared lane marking in Maribor (wider area around Slomšek square)	52
7. 4 Cost effectiveness of pilot activities or measures	54
<b>8. Conclusions</b>	<b>57</b>



» ROSEE- Road Safety in South East European regions project involved 6 countries: Slovenia, Italy, Romania, Hungary, Greece, Bulgaria. The aim of the project was to improve road safety performances on primary and secondary networks in the South-East Europe area. «





# 1

## About ROSEE

Road safety is a fundamental quality of the transport system. Each participant in the road traffic or the traffic service wants to have such a system that meets their needs and expectations. The quality of life of all citizens depends on the level of road safety. In order to ensure and improve road safety we have to encourage more responsible behaviour of road users, respect of traffic rules and raising awareness about the importance of road safety. At the same time we should encourage the use of safe vehicles and safe road infrastructure.

ROSEE is an EU project that aimed to improve and promote road safety in Slovenia from various perspectives. ROSEE project involved 6 countries: Italy, Romania, Hungary, Greece, Slovenia, Bulgaria. The aim of the project was to improve road safety performances on primary and secondary networks in the South-East Europe area and is financed by "South-East Programme – Transnational Cooperation Programme".

### Promote road safety and improve road network accessibility in South East Europe.

In the South-East Europe area, like in other regions, road crashes and injuries are responsible for social and economic losses. South-East Europe regions are among the "worst road safety performers in Europe". This situation is holding down the development of the South-East Europe region and requires urgent improvements in order to reach the 2020 EU road safety target. The cooperation in the framework of this project gives the possibility to these countries to adapt the so-called best practices of the leading countries.

Road safety is important for smooth accessibility of SEE regions. The road crash and injury toll within SEE regions accounts for social and economic losses affecting the development of South East European Space. In the EU 56% of road deaths occur on rural roads while 37% of fatalities are counted in built-up areas. 44% involves vulnerable road users such as pedestrians, cyclists and riders of powered two-wheelers.

ROSEE supported governments at the national and regional level in the selected South-East European regions to improve coordination in promoting, planning and operation of primary and secondary road networks with an emphasis on improving traffic safety performance and network accessibility. When networks are managed well, road crashes are infrequent and the severity of road crash injuries can be reduced.

The structure of ROSEE project was divided into 6 work packages:

- WP1: Transnational project and financial management
- WP2: Communication activities
- WP3: Policy and data analysis
- WP4: Safe roads and mobility
- WP5: Safe road users
- WP6: Monitoring and evaluation

ROSEE project partners were:

ALOT s.c.a.r.l. - Agency of East Lombardy for Transport and Logistics (ALOT);  
Association EU CONCEPTS R&D (EUcon);  
GRSP Hungary Association (GRSP HU);  
University of Brescia, Department of Civil, Architectural, Land and Environmental Engineering (UniBS);  
KTI Institute for Transport Sciences Non Profit Ltd. (KTI);  
National Technical University of Athens / School of Civil Engineering / Department of Transportation Planning and Engineering (NTUA);  
Automobile Association of Slovenia (AMZS);  
Slovenian Traffic Safety Agency (AVP);  
University of Ljubljana, Faculty of Civil and Geodetic Engineering, Traffic Technical Institute (UL FGG-PTI);  
iRED, Open Youth Institute for Research, Education and Development (iRED)

The duration of ROSEE project was from October 2012 until December 2014, with total budget of: 2.191,853.44 €.

## ② AVP as a central institution for road safety in Slovenia and a partner of ROSEE

Slovenian Traffic Safety Agency (AVP) is a legal body of public law in the field of road safety, established in 2010. Slovenian Traffic Safety Agency is the central institution for traffic safety with a mission to reduce the worst consequences of accidents (fatalities and injuries). Agency performs regulatory, developmental, technical, and other tasks regarding drivers and vehicles, analytical and research work in the field of road safety, prevention, education, training and assesses safety of road infrastructure. Agency follows VISION ZERO: no fatalities in road accidents in Slovenia. AVP is leading and coordinating the National program for road safety, which includes key measures and activities for improving road safety in Slovenia in the next decade. Regarding these areas, the agency is also involved in bilateral relations and various international organizations.

In Slovenia, there were 125 fatalities and 8.742 injured people in road accidents in 2013. The social cost of road accidents is estimated at 478 million Euros (registered and damage assessment of road accidents) which represents 1,36% of gross

domestic product. To achieve the goal of reducing the number of fatalities and severely injured in road accidents by 50%, which represents the common European objective in the field of road safety, but is also set in the National Program of Road Safety for the period 2013 – 2022, special attention should be paid to the vulnerable road users - pedestrians, cyclists, drivers of motor two-wheelers, as well as children and elderly in traffic.

Estimation is that until the end of 2022, the share of vulnerable road users (pedestrians, cyclists and elderly) will be around 75% of all fatalities in road accidents. Therefore, it is necessary to focus on vulnerable road users.

Slovenian Traffic Safety Agency as a ROSEE partner decided to implement a pilot project focusing primarily on the safety of the cyclists in Osrednjeslovenska and Podravska region. In the past decade, when Slovenia halved the number of deaths on the roads, the share of fatalities among cyclists has been increasing.





## 2. 1 Our work within ROSEE

The general objective of the AVP pilot project was contribution to the decrease in the number of road deaths among cyclists and decrease in seriously injured cyclists. Other objectives were to raise awareness related to road safety behaviour, by establishing new preventive activities for cyclists' safety, mainly promotion of safe cycling and at the same time focusing on mobility, ecology, health benefits and reducing congestion in urban areas and also to foster a new dynamic among road safety stakeholders by improving knowledge and enhancing communication and cooperation between the various areas related to cyclists' safety.

Slovenian Traffic Safety Agency as a partner of ROSEE project had a key role of improving safety of cyclists and promote safe cycling with following activities:

- Implementation of **innovative traffic-technical measure "sharrow"** – shared lane marking in Maribor;
- Implementation of **the first cyclists counter with display** in Ljubljana;
- Proposal of the **change of legislation** regarding planning of cycling infrastructure (technical specifications for "sharrow");
- **National strategy for safety of cyclists' traffic**
- Production a **short promotional and educational film on "sharrow"**
- **Evaluation of the pilots with on-field survey**
- **SWOT analysis**
- Implementation of **preventive campaign on national level** for improving safety of cyclists
- Raising awareness letter to all Slovenian mayors
- Public appeal for improving safety of cyclists
- **Preventive events** (Bike festival 2014, European mobility week in 2013 and 2014, Vtroje – cycling to work etc.)
- **National competitions** "What do you know about traffic" in 2013 and 2014
- Establishment and coordination of a **national advisory group**
- **Expert meetings and workshops** (meeting with Dutch representatives, workshop safety of cyclists, meetings of national advisory group, etc.)
- Review of best practice examples of safe cycling
- Production and dissemination of **preventive materials** (500 cycling helmets, 2.500 brochures, 100 manuals for mentors of traffic education, 300 manuals Safe driver, 25.000 stickers Safe bike, 500 leaflets of "sharrow" and 500 leaflets of cyclists counter, 10.000 reflective arm-bands)
- **Transnational cooperation** by participating on CEE project market and CEE Round Table in Brno.
- Co-organization of **transnational ROSEE-SENSOR conference**



Preventive events were mainly organized in order to promote safe cycling to different populations, starting from children in primary schools by competitions "What do you know about traffic".





# 3

## General review of AVP activities within ROSEE

Slovenian Traffic Safety Agency's role in ROSEE project was mainly to systemically connect road safety experts and key stakeholders for improving safety of cyclists, starting from governmental institutions, non-governmental actors, local stakeholders and other interested parties. Our aim was to sensitize professional public and also wider public on the introduction of new infrastructure and other measures in Slovenia. We were raising awareness mainly with preventive events and preventive campaign, and also educating road users about new measures and

tolerant behaviour on our roads. Furthermore, AVP implemented practical innovative traffic-technical measures on field.

AVP was also responsible for tasks of work package 3 relating to road safety data, analysis, institutional and legislation review and establishment and coordination of National Advisory group as a high-level group of experts and decision-makers on national and local level.

### 3.1 Establishment of the National Advisory Group

Slovenian Traffic Safety Agency established Slovenian National Advisory Group (NAG) in December 2012. Group of relevant national or regional decision-makers and other key stakeholders such as roads or transport administration, NGOs, education, research etc., was created to ensure the project fits within national policies. Other tasks of NAG are also: contribution to overall objectives for the network coordination, planning, operation and road safety; determination of national or regional safety priorities for the primary and secondary networks, where these do not

yet exist, and discussion of standards for road safety that could be applied at the transnational level. Conclusions of NAG were communicated to the transnational working group as recommendations. The advisory group also oversees the development and testing of a model approach for improving promotion, coordination and operation of the primary and secondary network, including the development of a strategy and the implementation of pilot projects within ROSEE.

Members of Slovenian NAG group were:

- Vesna Marinko, Slovenian Traffic Safety Agency, (NAG leader)
- Robert Štaba, Automobile Association of Slovenia
- Branka Leskovšek, Automobile Association of Slovenia (later replaced by Katarina Možina)
- Jure Kostanjšek, University of Ljubljana, Faculty of Civil and Geodetic Engineering – Traffic Technical Institute
- Peter Lipar, University of Ljubljana, Faculty of Civil and Geodetic Engineering – Traffic Technical Institute
- Stanislav Zotlar, Slovenian Roads Agency
- Zvonko Zavasnik, Ministry of Infrastructure and Spatial Planning
- Janez Bertoneclj, Municipality of Ljubljana
- Goran Jovanović, Institut for Road Safety
- Andraž Murnkovič, Slovenian Traffic Safety Agency
- Matija Svetina, University of Ljubljana, Faculty of Arts
- Marjetka Česnik, Automobile Association Piran
- Robert Vehovec, Police
- Marta Novak, The National Education Institute of the Republic of Slovenia
- Rok Humar, Municipality of Piran

For Slovenia, AVP was responsible for the coordination and continuous cooperation among National Advisory Group and all Slovenian project partners. NAG meetings were held regularly throughout the project duration. The purpose of NAG meetings was to continuously inform and update NAG members on implementation of ROSEE project and pilot projects of all three Slovenian partners (AVP, AMZS and UL FGG-PTI) and to receive their feedback, suggestions or orientations on how to further improve the implementation of the project in the view of road safety

situation and needs on national and local level. As from the beginning NAG members were mainly acquainted with an application "RSA/RSI Courses & Software Tool" that was developed for a comprehensive review of road safety, first results of the survey on travel habits and preparatory activities for transnational conference. Later on, NAG members discussed and gave comments on topics addressed in National Report on road safety situation, which was prepared by AVP. National Report covered following chapters: current road safety situation in Slovenia, road safety legislation,



policy and institutional capacity, analysis of STA and LPIC questionnaire, road network conditions and road users' behaviour. NAG members also discussed on RSI/RSA introductory courses implemented within ROSEE,

speed management courses and whole implementation process of the pilots. At the end, National Advisory Group had a key consulting role on pilot projects evaluation.

### 3. 2 Organization of transnational ROSEE - SENSOR onference

The transnational ROSEE–SENSOR conference was held in Ljubljana on 7th of November 2013. There were 145 participants attending transnational conference. The conference was attended by representatives of highest political level in Slovenia: Mr. Janko Veber, Presidents of Slovenian National Assembly; Mr. Samo Omerzel, Minister of Infrastructure and Spatial Planning, Mr. Igor Velov, Acting Director of Slovenian Traffic Safety Agency. Their attendance shows the political commitment towards better road safety in Slovenia. The conference was attended also by the representatives of the policy making, municipal road safety councils, road safety auditors, Police, city traffic wardens, research, non-governmental organizations, foreign experts and other who contributed to the discussions during the conference. The first panel session about

road safety in the region involved in a joint discussion including Minister of Infrastructure and Spatial Planning of Republic of Slovenia, together with important road safety specialists in Europe: representatives of European Transport Safety Council, Austrian Road Safety Board, Priority Area Coordinator and representatives of SEE programme. Additionally, the Slovenian experts presented road safety situation and the new Resolution of National Road Safety Program (2013 - 2022). After the introductory panel session, the participants of the conference split into separate round tables titled "Behaviours, Speed Management and Vulnerable Users" and "Identifying and Improving High Risk Roads in SEE" organised by ROSEE and SENSOR projects respectively.

#### ROSEE Roundtable: Behaviours, Speed Management and Vulnerable Users

Within ROSEE Roundtable two main topics were addressed - Behaviour and Speed Management and Behaviour and Vulnerable Road Users (VRU). After a short presentation on the status of road safety overall Europe for VRU, based on data referred to the period 2001-2009, pushing for a debate within the international audience, the direct simple questions were addressed, such as:

How to train and engage vulnerable road users in risk compensation techniques?  
How to design and manage junctions for the protection of vulnerable road users?  
How to integrate the protection of vulnerable road users in the urban mobility plans?  
How to cope with vulnerable road users in the complex urban design?  
What is the feed-back from the implementation of mixed use zones (living streets, residence zones, etc.)?

Starting from the notion that speed contributes to about one third of all fatal accidents and it is an aggravating factor in all accidents, the behaviour and speed management topic has been introduced focusing on the important reasons why we should pay attention to it, among them the fact that we can even talk of several kind of "speed" to monitor, such as excessive speed, meaning driving above the speed limit, or inappropriate

speed, namely driving too fast for the conditions, but within the limits. The audience has been then stimulated to answer to the following questions: Which is more efficient in managing speeds: enforcement, campaigns or infrastructure interventions?

Which are the appropriate enforcement techniques for speed management?

How to manage road classification of existing roads and speed limits, both in urban and ex-urban environment?

How to integrate speed management in urban mobility plans?

A lively forum opened on the issues, offering the chance for an exchange of ideas and experiences between participants coming from Belgium, Austria, Slovenia, Italy, Greece, Romania, Bulgaria, Hungary, countries that have very different road safety performances within themselves. People from Slovenian municipalities underlined that enforcement campaigns should be properly communicated to the road users and that decreased speed limits should be properly communicated to the road users to increase their acceptance. ETSC representative stated that actions should focus on training vulnerable road users to safer behaviour rather than communicating risks and that traffic education should be continuous.

#### SENSOR Roundtable: Identifying and Improving High Risk Roads in SEE

The session began by asking participants to keep in mind the following questions:

- Are the projects using a "Safe Systems" approach?
- Which roads do most deaths and serious injuries happen on?
- Are these politically important roads? Eg TEN-T?; strategic?; trade routes?
- Are we measuring things that lead to death and serious injury?
- How do we prioritise for upgrading or rehabilitation?
- Do funding mechanisms distort road safety?
- Are we able to measure potential benefits?

A presentation on the role of safer infrastructure, vehicles and behaviour in Slovenia was given and the role of EuroRAP and iRAP methodologies in supporting decision-making in Slovenia were explained. A representative of the Serbian road safety agency presented the approach to road safety on major roads, the links with the EuroRAP methodology and investment and the measures being taken toward implementation. Furthermore, the survey of the 131km major road IA-2, "Ibarska magistrala" was presented. This had been assessed using the EuroRAP-iRAP methodology to provide a Star Rating. There was a demonstration of the ViDA software



used in this assessment. Representative of the Road Safety Foundation presented on "How we score what we score", illustrating the background to the EuroRAP Star Rating and showing an example road section that had been rated. The discussion that followed focused principally on the role of traffic cameras in reducing fatal and serious crashes, where these

should be used and how effective they were. In the concluding remarks the rapporteur reminded conference participants that implementation is of countermeasures is key – "...no lives are saved until implementation takes place".



Slovenian Traffic Safety Agency (AVP) co-organized the transnational ROSEE - SENSOR conference in Ljubljana in November 2013. The conference was attended by representatives of high political level- Mr. Janko Veber, President of Slovenian National Assembly, Mr. Samo Omerzel, Minister of Infrastructure and Spatial Planning, Mr. Igor Velov, Acting Director of Slovenian Traffic Safety Agency. Their attendance shows the political commitment towards better road safety in Slovenia.



**ROSEE - SENSOR CONFERENCE**  
Grand Hotel Union, Ljubljana  
November 2013

### 3.3 Workshop "Safety of cyclists"

The workshop was organized by AVP in March 2013 in Ljubljana. There were 38 participants of workshop and 9 guest speakers, all professional experts or representatives of NGO's directly involved with road safety or cycling in Slovenia. The topics were:

- Pedestrians and cyclists coexistence
- Health aspects of cycling among elderly
- Project Mobile 2020
- Aspects of cyclists' safety
- ROSEE project
- Planning of safe cycling infrastructure
- Preventive activities for improving road safety
- Safety of cyclists in Maribor

The draft of National cycling strategy was presented, which initially summarize the conclusions of main causes, locations and timeframes of traffic accidents involving cyclists, all supported by statistical data. The draft also includes recommended measures in the field of road traffic regulations, construction of road infrastructure, training and raising awareness of road users to improve the safety of cyclists in traffic. During the discussion it was pointed out that it is necessary to improve the quality of data on road accidents and report any accident with severe consequences, do an in-depth analysis and propose

measures to improve the safety of cyclists. Equally important is also to strengthen the functioning of civil society bodies in the identification of "black spots" and proposals to solve the problems.

In relation to the topic of cyclists' training it was found that it would be necessary to update the training programs for cyclists to ride safely in traffic in order to promote cycling, in addition to regular training programs such as bicycle exams for children, regular training programs for other target groups are needed, especially for the elderly, as well as for younger children.

A lack of institutions in Slovenia which would comprehensively address both safety of cyclists and cycling traffic was underlined within discussion. Mostly, the problem that cycling in practice is not treated as a road traffic component in urban environment was pointed out. Participants of the workshop discussed also other topics relating to cycling, for example: poorly maintained infrastructure, lack of proper parking facilities for cyclists, conflicts between cyclists and pedestrians etc. All presentations are available on AVP website: <http://avp-rs.si/novice/680-delavnica-seminar-na-temo-varnost-kolesarjev-in-kolesarskega-prometa>

### 3.4 Education of representatives of local communities, police and city traffic wardens

One of the key tasks of AVP is also education and training of different stakeholders related to road safety. In ROSEE project our focus was to educate mostly representatives of local

communities, police and city traffic wardens on various topics including road safety management and road safety inspections.

#### Road safety inspection and road safety audit courses

AVP organized road safety inspection and road safety audit courses (RSI/RSA courses), together with UL FGG-PTI. The courses took place in September 2013, where 52 people were participating. Main topics were: human behaviour, planning of safe road infrastructure, road safety audit and road safety inspection, error forgiving roads, software for RSI/RSA implementation and also practical case of road safety inspection.

RSI/RSA courses represented shortened version of professional training of road safety auditors, which is under the jurisdiction of the Slovenian Traffic Safety Agency and is primarily intended for representatives of local authorities dealing with road safety and the scope of providing safe transport infrastructure (local road safety councils, technical committee, which carry out on-field inspections in the field of road safety, representatives

of municipal departments and inspectorates, responsible for transport infrastructure and other ROSEE project stakeholders). By recognized experts in the field of road safety and infrastructure various topics were presented: topics on the management of traffic participants (human factors), the design of safe road infrastructure and verification of road safety ("Road Safety Audit", either in the design phase or during the operation of roads- "Road Safety Inspection"). In the final phase of the course there was also traffic-safety inspection of roads ("Road Safety Inspection") carried out on-field.

All presentations are available on AVP website: <http://avp-rs.si/novice/747-izobrazevanje-predstavnikov-lokalnih-skupnosti-s-podrocja-presoje-varnosti-cest>.

#### Road safety management course

Road safety management course took place in January 2014, organized by AMZS. At the seminar participants gained knowledge on basics of road safety, with cases of case studies, collection and processing of road safety data and institutional

framework of road safety management. The training was free and was aiming primarily on managers of road infrastructure, road safety council members, road maintenance, police officers, city traffic wardens and other participating in ROSEE project. AVP





participated actively with lecture on road safety management on a national level and the National Program for road safety for the period 2013 – 2022 was presented.

The goal of the road safety management course was firstly to acquaint participants with the objectives of the safe systems approach as part of results focused road safety management, and secondly, to understand the levels of the road safety management pyramid and institutional management functions.

The safe systems approach is a "philosophy" for managing the road transport system towards the achievement of measureable results. The safe systems approach views road crashes and injuries as largely predictable, and therefore preventable, as opposed to fatalistic acceptance of road death as "price of progress". A key aspect of the safe systems approach is a focus on achieving results, while building on road safety management system pyramid (from institutional functions at the bottom, to interventions and up to results at the top of the pyramid).

**Workshop "Safety of cyclists"**



**Education of representatives of local communities, police and city traffic wardens**



Slovenian Traffic Safety Agency covers within its jurisdiction on national level road safety inspection and has trained the first generation of licensed road safety auditors.

### 3. 5 Media activities and press conferences

Slovenian Traffic Safety Agency has a major role in Slovenia about raising awareness on road safety, promoting new traffic solutions and approaches and promoting safe behaviour in traffic to all road users. Within project ROSEE we had an excellent opportunity to focus on safety of cyclists and to promote implemented measures for improving their safety and promote safe cycling. Our events were attended by main political representatives (President of National Assembly, Minister of Infrastructure and Spatial Planning, mayors), other representatives from local authorities

and police as well as recognized experts in the field of road safety, NGO's and others. On the other hand, our pilots were positively recognized and supported by wider public and widely promoted by the media. AVP organized 3 press conferences and prepared 4 press releases. Altogether, 23 press articles were published (including broadcasting on national TV, radio, press articles and web articles). With media coverage, we estimate that around 39.100 people were affected.

#### Press conference within Transnational ROSEE-SENSOR conference 7.11.2013 in Ljubljana

Within ROSEE-SENSOR transnational conference which was held in November, 2013, there was also press conference organized after panel session. The speakers were ETSC Director, acting director of AVP, representative of AVP, representative of ROSEE project leading partner, representatives from Municipality of

Maribor and Municipality of Ljubljana and representative of University of Maribor- Faculty of Civil Engineering. The speakers presented efforts within ROSEE project to improve road safety, mainly within two pilot projects for the safety of cyclists in Osrednjeslovenska and Podravska region.

#### Press conference 3.10.2013 and 26.10.2013 in Maribor

European project ROSEE, along with innovative traffic measure 'sharrow', were presented at the press conference in Maribor Town Hall in October 2013. As a ROSEE project partner, Slovenian Traffic Safety Agency's main tasks were activities that contribute to a greater safety for cyclists. A new traffic measure – "sharrow" was presented by representatives of AVP, Municipality of Maribor, University of Maribor- Faculty of Civil Engineering and Maribor Cycling Network.

Second press conference also took place in October 2013, in Maribor. Press conference was aiming to promote newly implemented measure "sharrow" in Maribor in order to inform inhabitants on the location how and where to cycle in the "sharrow" zone. A few press articles and TV broadcasting were published after the press conference.

### 3. 6 Transnational cooperation and promotion of ROSEE

AVP as a central institution for road safety in Slovenia has been participating in different bilateral relations as well as international organizations in the field of road safety. The work in international environment contributes to exchange opinions, best practice, know-how and enables us to transfer new knowledge into

national environment, as well as promote our best solutions and approaches to foreign audience of road safety experts. We have promoted ROSEE project and AVP pilots in two international events- at CEE round table in Brno and at CEE project market in Ljubljana.

#### CEE Round table in Brno (Czech Republic)

In October 2013, Central and Eastern Europe programme held round table discussion on traffic safety. Slovenian Traffic Safety Agency, as one of the partners in EU project ROSEE, presented planned pilot measures for improvement of the cyclists' safety that were later implemented in cooperation with the Municipality of Maribor and the Municipality of Ljubljana. In addition to implementation of two traffic measures - 'sharrow' (shared lane marking) in Maribor and cyclists counter with display in Ljubljana, Slovenian Traffic Safety Agency was planning to further promote the safety of cyclists through a variety of preventive and educational events and workshops. Within the ROSEE project we carried out training of assessment of the road safety for representatives of local communities. We also intended to bring cycling even closer to the general public by using different communication tools and preventive material.

The conference also presented examples of good practices and projects or measures on safety at pedestrian crossings, railroad crossings safety, measures and data related to elderly traffic participants, different cycling safety measures, as well as some of the international projects that were at that time still in progress (ROSEE, SOL).



**CEE conference  
Project Market**  
Ljubljana  
October 2013

**CEE Round table**  
Brno (Czech Republic)  
October 2013



**Press conference within ROSEE**  
attended by Mr. Antonio Avenoso (ETSC Director), Mr. Igor Velov (Acting Director AVP), Ms. Vesna Marinko (AVP), Mr. Alberto Milotti (ROSEE project manager), Mr. Aleš Klinec (Municipality of Maribor), Mr. Zvone Milkovič (Municipality of Ljubljana) and Mr. Marko Renčelj (University of Maribor, Faculty of Civil Engineering).

European project ROSEE, along with innovative traffic measure "sharrow", were presented at the press conference in Maribor Town Hall in October 2013.





## Press articles regarding project in Slovenia and AVP pilots

### Policisti poostreno nad motoriste, preventivna akcija tudi za kolesarje



### Zakaj na Dunajski cesti preštevajo kolesarje?



"The European project ROSEE is preventive-educational project, which aims to reduce the number of traffic accidents and deaths mainly among cyclists and pedestrians. The project is implemented in several countries of South Eastern Europe, which are among the worst in ensuring road safety."



"In Slovenia there are 13% of the road fatalities and 25% of the serious injuries among cyclists. This situation requires serious attention and action that is why Slovenian Traffic Safety Agency as one of the ROSEE project partners implemented pilot project focusing on safety of the cyclists in Osrednjeslovenska and Podravska region where is the highest number of injured cyclists."



Press articles regarding  
project in Slovenia  
and AVP pilots



[slovenskenovice.si/novice/slovenija/v-prestolnici-shtejejo-kolesarje](http://slovenskenovice.si/novice/slovenija/v-prestolnici-shtejejo-kolesarje)

**ŠTEVEC** Tweet Všeč mi je 3 0

## V prestolnici štejejo kolesarje

Objavljeno: 31.03.2014 16:28  
Avtor: V. A.  
Ključne besede: kolesar, števec

**Prvi števec je postavljen v Ljubljani blizu podvoza na Dunajski.**



"An innovative traffic-technical  
measure was implemented on  
wider area of Slomšek square in  
Maribor so called „Sharrow“  
which allows all drivers including  
cyclists equal participation in  
road traffic."

## CEE conference in Ljubljana

In Ljubljana, there was international conference held in October 2013 on the topic: "Cycling in CEE cities" within Central and East European Programme. AVP had a great opportunity to present ROSEE project and AVP pilot activities from Ljubljana and Maribor on the CEE project market.

### 3. 7 Preventive materials produced and disseminated

AVP organized and coordinated many preventive events in the lifetime of ROSEE project. Preventive events were mainly organized in order to promote safe cycling to different populations, starting from children in primary schools by competitions "What do you know about traffic", wider public of cyclists and pedestrians on Bike festival and events within European Mobility Week, expert public on round tables, workshops and conferences, working population within V.troje campaign (for cycling to work and from work), mentors of traffic education within seminars etc. For the purposes of these kinds of events, AVP besides ROSEE promotional materials (folders, postcards, block notes, posters, leaflets and a roll-up) produced and disseminated also 39.400 pieces of preventive materials (10.000 reflective arm-bands, 500 leaflets on "sharrow" and 500 leaflets on cyclists counter, 2.500 brochures, 300 manuals for drivers, 100 manuals for mentors of traffic education, 25.000 stickers Safe bike and 500 cycling helmets). Materials are not just informative and educational nature, like brochures and manuals, but also have a practical safety purpose – for example: reflective arm-bands and helmets.

### 3. 8 Pilot projects within ROSEE and results

Pilot projects focusing on safety of cyclists were implemented in Osrednjeslovenska and Podravska region. Pilots have the most important role within ROSEE project and had the most influence on the safety of cyclists or promotion of safe cycling. Therefore, pilot measures, activities and results are more specifically described in the following chapters.

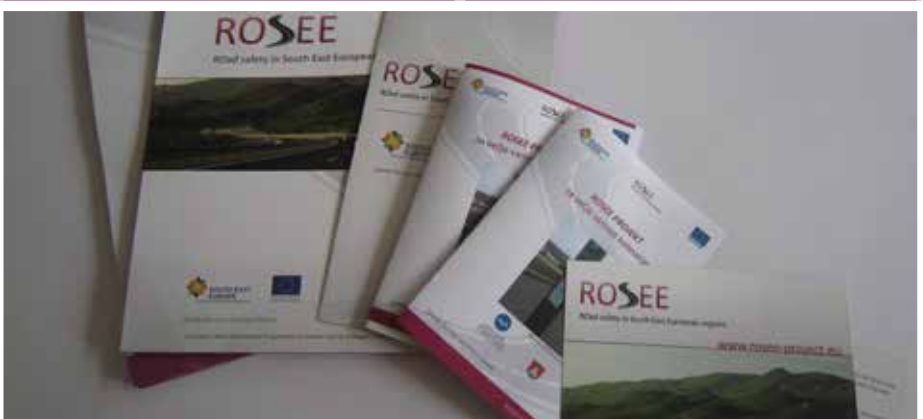
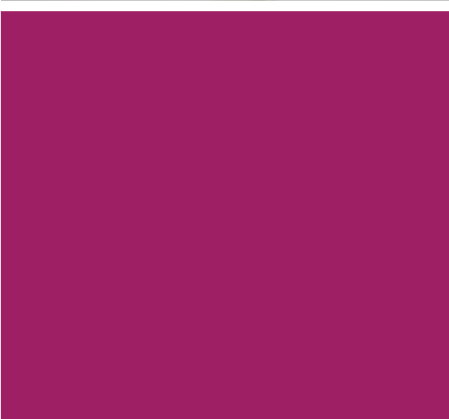




**Preventive materials produced and disseminated**  
for promotion of safe cycling and ROSEE project



Slovenian Traffic Safety Agency (AVP) directly affected population by 39.400 pieces of ROSEE preventive materials produced and distributed on different events (500 cyclist helmets, 2.500 brochures, 500 leaflets for sharrow and 500 leaflets for cyclists counter, 100 manuals for mentors, 300 manuals for drivers, 25.000 stickers, 10.000 reflective armbands).





» Within AVP's ROSEE pilot project „Cyclist counter with display" was placed in Osrednjeslovenska region, exactly on Dunajska road towards the city center of Ljubljana. It counts the cyclists which pass the counter each day and shows them how many cyclists have passed this spot on that day. «



# 4

## Pilot Project in Osrednjeslovenska and Podravska Region

One of the key tasks within ROSEE project was to implement different measures and activities for improving safety of cyclists and to promote safe cycling. First of all, among vulnerable road users as a targeted population, cyclists were chosen due to the number of fatalities in road accidents among them. In the last decade, the number of fatalities in road accidents has halved, but at the same time the share of fatalities among cyclists has been increasing in the last decade. AVP implemented pilot project in order to improve cyclists' safety on Slovenian roads and also encourage people to cycle more, especially in urban areas in Osrednjeslovenska and Podravska region. Below is a summary of AVP project pilot activities and results.

### *Two main innovative traffic measures were implemented in pilot regions:*

- **"Sharrow"** was implemented in Podravska region - in Maribor (wider area of Slomšek square). "Sharrow" is a road marking, which indicates that cyclists can use the whole lane together with other drivers.
- **"Cyclist counter with display"** was installed in Osrednjeslovenska region - in Ljubljana (Dunajska road towards the city center). It counts the cyclists which pass the counter each day and shows them how many cyclists have passed this spot on that day.

Before the planning and implementation of pilots, SWOT analysis has been made in order to assess our role in development of safe cycling in pilot regions, but mostly to help us accomplish our goals and overcome the troubles in the implementation process.

## 4.1 SWOT analysis

### The role of the Slovenian Traffic Safety Agency in development of safe cycling in Osrednjeslovenska and Podravska region

During the pilot project a SWOT analysis was carried out to develop safe cycling in Slovenia. SWOT analysis, which is a tool that identifies the strengths, weaknesses, opportunities and threats of an organization, will help us identify gaps and overlaps in the pilot project. Specifically, SWOT analysis is a basic, straightforward model that assesses what an organization can and cannot do as well as its potential opportunities and threats. It is the most renowned tool for audit and analysis of the overall strategic position of the organization and its environment. The method of SWOT analysis is to take the information from an environmental analysis and separate it into internal (strengths and weaknesses) and external issues (opportunities and threats).

Once this is completed, SWOT analysis determines what may assist the organization in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve desired results. A consistent study of the environment in which the organization operates helps in forecasting/predicting the changing trends and also helps in including them in the decision-making process of the organization.

SWOT analysis represents a document for orientation, which focused on the role of the Slovenian Traffic Safety Agency to develop and promote safe cycling in Slovenia, focusing on the Osrednjeslovenska and Podravska region.

Internal factors			
STRENGTHS	Knowledge and information. Motivation. Personal contacts. Tradition and experience with the preventive work and staff management. European project ROSEE.	Lack of staff. Preoccupation of staff. Loss of time in administrative work. Reduction of the budget.	WEAKNESSES
OPPORTUNITIES	Cyclists' safety is a part of the national programme for road safety. NGO's. Cycling events. Municipal Road Safety Councils at the local level. Participation of cyclists' organizations (Ljubljana and Maribor Cyclists Network). Cooperation with primary schools – competition »What do you know about traffic«. Knowhow from other EU projects.	Financial situation in EU countries and in Slovenia. Possible worse road safety situation in Slovenia. Lack of safe cycling infrastructure. Lack of political support for road safety preventive activities .	THREATS
External factors			

Table 1: Abstract of SWOT analysis.

### Strengths

Strengths are the qualities that enable an organization to accomplish their mission. Strengths are the beneficial aspects of the organization or the capabilities of an organization. These are also the basis on which continued success can be made and continued/sustained. Strengths can be either tangible or intangible. These are what an organization is well-versed in or what it has expertise in, the traits and qualities organization's employees possess (individually and as a team) and the distinct features that give organization its consistency.

Slovenian Traffic Safety Agency is a legal body of public law in the field of road safety, established on September 1st 2010. Slovenian Traffic Safety Agency is the central institution for traffic safety. Its mission is to reduce the worst consequences of accidents (fatalities and injuries). Agency performs regulatory, developmental, technical, and other tasks regarding drivers and vehicles, analytical and research work in the field of road safety, prevention, education and training. As a member of many international organizations (ETSC, La PRI, FERSI, IRTAD, CIECA etc.) the agency **has the opportunity to gain knowledge**



**and to exchange views on international level.** Each year AVP representatives attend and organize international conferences, seminars and educational courses on international and national level, where personal contacts are made. AVP also has an access to road traffic accidents data and has the ability of performing data processing.

Road Safety Council (which became a part of the agency in 2010) has the tradition and experience with preventive work and staff management, as its performance goes back to 1972. The Road Safety Council was established for developing, implementing and updating preventive activities and measures for road safety. In the framework of its activities they also developed and carried out some of the most **well-known preventive activities – which have become traditional**, such as national cycling courses and competition in primary schools, dissemination of preventive materials, such as yellow rue, reflective bodies, armadillo figure etc. Road Safety Council is also responsible for preparing and organizing traffic-educational programs, technical support, coordination, training and monitoring of municipal road safety councils, preparing and issuing preventive expert materials and also coordination and support of NGO's, social responsible companies and international organizations. Its work is crucial to combine and integrate road safety preventive activities on local and national level. Its role is also in coordinating local road safety councils to ensure that preventive activities and measures can be successfully implemented on a local level and in schools in most municipalities.

Well established **preventive activities** of the agency cover a wide range of road safety topics. Agency coordinates preventive campaigns on speed, alcohol, safety belt, pedestrian safety, safety of motorcyclists, railroad crossing safety and prevention campaign in schools and at local road safety councils and also assistance and cooperation with local communities and civil society. The agency has **valuable experience in project management** and is involved in several international researches and projects which together with other countries contribute to traffic safety. The Agency (Road Safety Council) was the developer of the international project VAMOS and it participated

in international projects such as DRUID, EUCHIRES, SUPREME, SARTRE and RoadSafetyWeb. Experiences from the projects are valuable and useful for our work in enhancing road safety on different levels and from different perspectives. Knowledge was gained on areas such as: preparation of joint research projects, promoting exchanges of research results, best practices and research skills, cooperation between different organizations and, ultimately, providing technical assistance for different bodies of European Union to develop appropriate measures in the field of road safety.

Slovenian Traffic Safety Agency participates in **the project ROSEE** (ROad Safety in South East European regions), which is approved under the 4th call of the SEE Programme in the priority axis: Improvement of the accessibility. Within the project we work on improving cyclists' safety on our roads and also encourage people to cycle more, especially in urban areas. The general objective of the proposed project is contribution to the decrease in the number of road deaths among cyclists and decrease in seriously injured cyclists. Aim of the pilot project is to raise awareness related to road safety behaviour, by establishing new preventive activities for cyclists' safety. The main goal will be achieved by promotion of safe cycling, at the same time focusing on mobility, ecology, health benefits and reducing congestion in urban areas and also by fostering a new dynamic among road safety stakeholders by improving knowledge and enhancing communication and cooperation between the various areas related to cyclists' safety.

The preventive campaign for cyclists' safety was coordinated by AVP in 2013 and 2014. In the preventive activities there are different stakeholders involved (national authorities, municipalities, and civil society), for example: the Police, Ministry of Infrastructure and Spatial Planning, Ministry of Education, Science and Sport, Municipality of Ljubljana, city traffic wardens, municipal road safety councils, Regional Environmental Center, Safe Journey Institute, Maribor Cycling Network and other. Within the preventive campaign, also **cycling events** were organized, where promotion of safe cycling was the priority.

## Opportunities

Opportunities are presented by the environment within which an organization operates. These arise when an organization can take benefit of conditions in its environment to plan and execute strategies that enable it to become more profitable or successful. Organizations can gain competitive advantage by making use of opportunities. Organization should be careful and recognize the opportunities and grasp them whenever they arise.

**Cyclists' safety is a part of the Resolution of National Programme for road safety 2013-2022**, which has been set on national level, where vision zero and goals for the next decade were defined. The parliament voted on the national programme for road safety, which was submitted by the government. We

may assume that preventive activities and measures for groups of vulnerable road users, which also include the group of cyclists, have a strong political support and public acceptance in Slovenia. Activities that are planned for improving cyclists' safety within the national programme are: preventive activities for promotion of helmets and lights on bicycles, raising awareness among drivers, establishment of standards for infrastructure measures on national and local level, establishment of cycling strategy, construction of cycling routes, systematic and comprehensive implementation of road safety educational content in kindergartens and schools etc.

The contribution of the private sector to road safety is very



important in Slovenia. There were more than 20 partners from private sector, mainly NGOs, co-financed by Slovenian Traffic Safety Agency until 2011. After 2011, the budget for road safety has been reduced and there has been no partnerships established since, with exception of continuous cooperation with national radio network. However, various actors carry out road safety activities in cooperation with the public authorities, mainly with ad hoc agreements of cooperation within a specific preventive campaign. Their contribution may be in terms of management of particular activities, expertise, research, funding and communication on key road safety issues. Currently, in Slovenia there are **about 35 NGO's working in the field of road safety and prevention**. A few of them are committed to improving conditions for regular use of bicycles for transport, recreation and tourism purposes. Overall these organizations are representing different interests of cyclists, including their safety in traffic. Most active **cyclists' organizations in Slovenia** are: Slovenian Cyclists Association, Slovenian Cyclists Network (Ljubljana Cyclists Network, Maribor Cyclists Network and Obala Cyclists Network).

In Slovenia there are a few widely recognized traditional **cycling events**, for example: the Franja Marathon, Juriš na Vršič, Race across Slovenia, Bike Festival and other recreational events, races, and cycling marathons. For example, from April to October 2013, there were 48 registered recreational cycling public events in Slovenia. Also other cycling events in lesser extent are organized each year in Slovenia by AVP, local municipalities and NGO's. According to the number of cycling events, we can conclude that cycling is popular and widespread.

Slovenian Traffic Safety Agency in cooperation with Road

### Weaknesses

Weaknesses are the qualities that prevent organization from accomplishing its mission and achieving its full potential. These weaknesses deteriorate influences on the organizational success and growth. Weaknesses are the factors which do not meet the standards they should meet. Weaknesses are controllable. They must be minimized and eliminated.

Slovenian Traffic Safety Agency has 102 employees, 26 of them are working in central location, and others are located in 16 driver test centers for driving licensing. Employees in central location perform different tasks, such as regulatory, developmental, technical, and other tasks regarding drivers and vehicles, analytical and research work, prevention, education, and training. They also perform independent investigation of the factors and causes of traffic fatalities and provide expert work for preparation and implementation of national programme for road safety. Other tasks are also assessing road infrastructure safety (within jurisdiction), providing education and raising public awareness about new technical standards, solutions and other measures. Employees in driver test centers for driving licensing are responsible for theoretical and practical testing of

Safety Council of Municipality of Ljubljana organized **National competition** »What do you know about traffic« in June 2013 (and also May in 2014). Competitions "What do you know about traffic" have a long tradition and are a traditional form of preventive actions for cyclists, **running from the school level within primary schools in cooperation with municipal road safety councils**, at the regional level and finally at the national level. Slovenian Traffic Safety Agency is responsible for the content design, implementation of competition and the organization of the national competition. Competitions "What do you know about traffic" are also supported by the Ministry of Education, Science and Sport. The competition is organized for school children (cyclists and drivers of mopeds), who test their theoretical knowledge of traffic rules, driving skills on polygon and practical driving in real traffic situations. The aim of this sort of competition is to encourage children to compete in knowledge and safe behaviour in traffic. The competition also means additional incentive to learn traffic rules and developing safe driving skills in broad number of involved children.

In Slovenia, several **projects financed from EU funds**, for example ROSEE, CHAMP, MOBILE2020, CIVITAS Elan, BikeTrackBike and others focusing on cycling, are ongoing or have already completed. Many information and knowledge is gathered as a result of these sorts of projects. Slovenian Traffic Safety Agency has an opportunity of collecting and combining information, sharing knowledge and actively participating on different aspects of cycling in Slovenia, through conferences, meetings and seminars, which are usually organized by one of the project partners. However, new solutions, ideas or even infrastructure measures for safe cycling from EU countries can be available for different stakeholders in Slovenia.

candidates for drivers. Employees besides regular tasks also work on different ad hoc activities and on European projects, where the **difficulty of employing new staff** is a problem because of employment restrictions in public sector in Slovenia. Also the student work in different preventive activities and events is no longer possible, because of strict limitations due to financial crisis. Work that has been previously assigned to staff in other forms of employment (students and part-time employees) is now rescheduled on employees in the agency, which are overburdened and preoccupied. Due to lack of administrative staff, the employees working on road safety content have to undertake also some of the administrative work, for example bookkeeping, mail, preparing travel orders etc.

Slovenian Traffic Safety Agency is a legal body of public law and therefore is a subject to strict savings measures in the public sector due to financial crisis. The agency's budget is threaded by every rebalance of the national budget. The agency's budget, assigned to program implementation has been affected by strict reduction of financial funds in the last three years.





## Threats

Threats arise when conditions in external environment jeopardize the reliability and profitability of the organization's business. They compound the vulnerability when they relate to the weaknesses. Threats are uncontrollable. When a threat comes, the stability and survival can be at stake.

**Overall, current financial situation in Slovenia** has declined. The Slovenian GDP per capita has been decreasing for the last four years. The economy slid into recession in 2009 and again in 2011, due to the fall in domestic consumption, and decrease in export. The reduction of public and private sector indebtedness is significantly weighing on growth amid tight financial conditions, growing unemployment and stalling export performance. The fiscal austerity, the freeze on budget expenditure, the failure of the efforts to implement economic reforms, inappropriate financing, and the decrease of export are reasons for the decrease in domestic consumption. In addition, the construction industry was severely hit in 2010 and 2011. In the broader perspective also the European economy is unpredictable in consequently is difficult to predict financial situation in Slovenia in the future.

Due to financial crisis the national **budget on road safety is significantly reduced**. Many preventive activities, mostly media advertising, infrastructure improvements and maintenance, preventive events and production and dissemination of preventive materials for different groups of vulnerable road users are considerably reduced or not existing at all. There is a possibility of worsening road safety situation due to factors listed above.

**Safe and regulated cycling infrastructure** is one of the requirements related to financial situation in the country. Maintenance, development and improvement of cycling infrastructure is necessary for improving cyclists' safety, especially in urban areas where heavy traffic occurs. When infrastructure managing is not keeping up with growth of cyclist traffic, there is a great possibility of worsening of the safety of cyclists.

A national cycling network encompasses about 2700 km of cycling connections. In accordance with the Public Roads Act the cycling infrastructure in the city is co-financed by each community. Cycling connections should continue and link long distance connections to so-called main and regional cycling connections through Slovenia. The cycling connections network must assure safe, healthy and comfortable use of bicycle for daily needs of work and living, recreational and sport needs, access to the most important tourist places and natural sight places. It has to be designed in a way that it assures comfort and safety for cyclists and does not affect the environment. The main problem is that the small part of the network is already implemented. Most of the proposed network is still in the status of strategic plans set only as proposed directions. The technical documentation will be prepared step by step for the each link under the priorities. The most important priority is safety of cyclists (Source: National Cycling Network Development Strategy in the Republic of Slovenia).

Political situation in Slovenia is currently unstable and mostly focused on financial and economic topics. Therefore the importance of road safety could not be a priority on political level anymore. Slovenian Traffic Safety Agency as an autonomous central institution for road safety in Slovenia could be jeopardized as a result of **political tendencies of savings on road safety**.

## 4. 2 Pilot in Podravska region - "Sharrow" in Maribor

Within Podravska region, the city of Maribor was chosen as most suitable location for pilot project focused on cyclists. Maribor is a city where the cycling is becoming more popular and cycle traffic is increasing. AVP with cooperation of road safety experts, municipal road safety council, Police and Maribor Cycling Network and their consent to examine the road safety situation in the Maribor city centre implemented new traffic-technical measure "sharrow". The first step was to do a road safety inspection. Slovenian Traffic Safety Agency covers within its jurisdiction on national level road safety inspection and has trained the first generation of licensed road safety auditors, who assess the safety of road infrastructure in all phases of design, construction and operation. Scope of work of auditors in Slovenia is currently mandatory for the assessment of the motorway network, which is part of the trans-European road network. However, road safety auditors are now responsible for the technical assessment of secondary roads and roads managed by the local communities where the issue of road safety is most acute.

Location of Slomšek square in Maribor (and surrounding streets) is a populated location where there are a lot of cyclists and a few institutions, such as University of Maribor, University Library, Slovene National Theatre Maribor, Post Office, Faculty of Medicine etc. In the discussed area there are very rare specific surfaces dedicated to cyclists, in most of the cases on this road sections there are none. Due to the relatively frequented motor traffic, mostly short-term parking is causing a significant number of arrivals/departures from the area, problem of cyclists' safety and adequacy of existing traffic management solutions for cycling traffic arises.

Road safety site inspection was implemented on the wider area of Slomšek square (including Orožnova street, Gledališka street, Slovenska street and Strossmayerjeva street) in the October 2013. As a result proposals for improvements were made for each inspected location.



Meeting with local stakeholders for planning pilot in Maribor.



"BEFORE"



Maribor, Slomšek square  
and surrounding streets  
**before implementation  
of AVP pilot project SHARROW**



There was deficit of cyclists elements,  
pavement condition, road markings.



AVP solutions was implementation  
of "Zone 30", implementation of  
"SHARROW" and new road markings.

Location	Deficit description	Proposal of improvements
Orožnova Street	<p>In the area of Orožnove St. currently there are no marked surfaces for cyclists. Despite one way traffic, there are also cyclists riding in the opposite direction. Wrong-way riding represents inadequate traffic safety behaviour, especially because of a parallel parking arranged. Existing road width does not allow safe driving or encounters between cyclists and motor vehicles.</p> <p>Damaged carriageway: cracks, cracks in a shape of a net, potholes, deformations at the edges.</p> <p>Damage of the carriageway around drain covers and drain channels at the edge of a carriageway.</p> <p>Poorly visible road markings, practically erased on most frequent spots.</p>	<p>Implementation of "Zone 30".</p> <p>Implementation of "sharrow".</p> <p>New road markings.</p>
Slomšek Square	<p>In the area of Gledališka St. there are no surfaces dedicated to cyclists.</p> <p>One-way traffic.</p> <p>Carriageway is in relatively good condition.</p> <p>No road markings.</p>	<p>Implementation of "Zone 30".</p> <p>Implementation of "sharrow".</p> <p>New road markings.</p>
Gledališka Street	<p>In the area of Slovenska St. there is a cycle track only in one direction.</p> <p>At the intersection of Slovenska St. and Strossmajerjeva St. cyclist traffic is not directly regulated.</p> <p>One-way traffic.</p> <p>There are visible cracks on the carriageway (cracks, cracks in a shape of a net).</p> <p>Poorly visible road markings.</p>	<p>Implementation of "Zone 30".</p> <p>Implementation of "sharrow".</p>
Slovenska Street	<p>In the area of Slovenska St. there is a cycle track only in one direction.</p> <p>At the intersection of Slovenska St. and Strossmajerjeva St. cyclist traffic is not directly regulated.</p> <p>One-way traffic.</p> <p>There are visible cracks on the carriageway (cracks, cracks in a shape of a net).</p> <p>Poorly visible road markings.</p>	<p>Implementation of "Zone 30".</p> <p>Implementation of "sharrow".</p> <p>New road markings.</p>
Strossmajerjeva Street	<p>At the intersection of Slovenska St. and Strossmajerjeva St. cyclist traffic is not directly regulated.</p> <p>In the area of Strossmajerjeva St. (from the intersection with Gosposvetska St. to intersection with Smetanova St.) there are no surfaces dedicated to cyclists.</p> <p>Two-way traffic.</p> <p>There are visible cracks on the carriageway (cracks, cracks in a shape of a net);</p> <p>Poorly visible road markings.</p>	<p>Implementation of "Zone 30".</p> <p>Implementation of "sharrow".</p> <p>New road markings.</p> <p>On intersection with Gosposvetska st. implementation of "cycling box".</p>





"AFTER"



Maribor, Slomšek square and surrounding streets **after implementation of AVP pilot project SHARROW**

Within AVP'S ROSEE pilot project there was "SHARROW" implemented - road marking, which indicates that cyclists can use the whole lane together with other drivers, also "Zone 30" and bike boxes were implemented and new road markings were delineated.



On the basis of suggested location by local authorities and proposal for improvements, that was a result of RSI on the wider area of Slomšek square, AVP and Municipality of Maribor implemented an innovative traffic-technical measure **"sharrow" (shared lane marking)**. "Sharrow" comes from the expression share the road and represents an innovative traffic-technical measure still unknown among the wider public. Sharrow is shared space for cyclists together with motorized traffic. It is indicated by road marking, which is placed in the center of a lane. This marking indicates that a cyclist may use the full lane and is not pushed to the side. Sharrow firstly appeared in United States of America. A symbol for sharrow was invented in 1993 in city of Denver within Denver Bicycle Master Plan. In 2004, there was an experiment in San Francisco called shared lane markings. After that, in the period between 2008 and 2010 a considerable number of such projects across USA, Canada and Australia were conducted.

In 2011, sharrow also came to Europe – in Netherlands, Czech Republic and now also in Slovenia.

The area of Slomšek square and its surrounding streets consists of one way narrow streets around the square, with no place for cycle lanes and many parked vehicles at side and at the same time the speeds of motorized traffic are low. The group of experts, representatives of local authorities, police and NGO's chose this location in Maribor as best to implement "sharrow" in order to increase cyclists safety. Additionally, a **bike box** was implemented within the reconstruction of Slomšek square in Maribor. At intersections (with traffic lights) cyclists have a place to wait which allows them to ride first at the green light. Also other measures were implemented: such as stands for bicycle parking, less parking places for cars and more for motorcycles and on some parts also the **„Zone 30"** was introduced.

### 4. 3 Pilot in Osrednjeslovenska region - "Cyclists counter with display" in Ljubljana

The Municipality of Ljubljana calls for changing transport habits in the direction of sustainable mobility, where urban cycling represents fast, enjoyable and effective way of transport in an urban environment. Ljubljana is becoming friendlier for cyclists with many improvements in recent years. Therefore, it is not surprising that the share of journeys made by bicycle is growing and currently represents 12% of all journeys. At the constant promotion of cycling there is a high probability that this share will increase by 40% until 2020, as municipality have set in Transport Policy. Municipality of Ljubljana also won the European Mobility Week 2013 award among 30 other cities from 12 countries and became the only city which received the ETM award twice. The award confirms that it is widely recognized that their efforts are on the right path on which the municipality strives for a better quality of life and services for citizens. Municipality of Ljubljana also won prestigious Eurocities award for safe school routes portal.

Cyclist counter is an effective tool that can help make cyclists a visible part of the urban traffic. It is responsible for displaying the counts in real time with daily or cumulative year to date formats.

The counter registers the cyclists with a sensor line – a loop in the asphalt on the bike lane a few meters in front of the counter. The counter only registers cyclists on one side of the street, you can double the numbers up to estimate how many cyclists use both directions. Cyclist counter has to be installed on a cycling path with heavy cyclist traffic, where a lot of cyclists pass each day. An added benefit would be if it is also visible to drivers and pedestrians.

Slovenian Traffic Safety Agency together with Municipality of Ljubljana installed cyclist counter on Dunajska road in Ljubljana, towards city center. The area of pilot implementation was suggested by local authorities, because Dunajska road is one of the locations in Ljubljana with most heavy motor traffic and there is large number of cyclists daily as well. Counter had already been installed on this location before, but the counting was not visible to cyclists and other passers-by. Due to AVP pilot project, the cyclists counter with display was installed at the end of March 2014.





Cyclists counter with display  
in Ljubljana



Slovenian Traffic Safety Agency  
together with Municipality  
of Ljubljana installed cyclist  
counter on Dunajska road in  
Ljubljana, towards city center.



This kind of infrastructure improvement is **devoted to promotion of cycling and increasing bicycle use** and is immediately enjoyed by the cyclist. The cyclist counter represents the integration of infrastructure and public data in a way that is transparent, interactive and even fun for citizens and it shows them that they count. It has the effect of making one feel counted as a valued member of society while **sending a clear signal to the larger community that cycling is a priority.**

Cyclist counters also serve the very practical function of **providing a steady stream of real-time data** to authorities (for example: municipalities) on how cyclists are traveling through the city. Timely and robust data can play a vital role in a municipality's funding and planning decisions. Nowadays, the congestion,

climate change, immobility and obesity are the reasons to do things differently. The number of cyclists cannot suddenly increase just because of a cyclist counter, but it can either be a first step and a signal to citizens saying that cyclists are a priority. Information about how many cyclists are around can be a powerful tool for those who argue for more bike paths and more cyclist-friendly streets, and it can probably also encourage other people to join them. Cycling is affordable and healthy mode of travel and it also reduces pollution, emissions and relieve congestion. Cyclist counter is an effective equipment to promote cycling to wider public.

### 4. 4 Speed management strategy

AVP pilot project was focusing mainly on promotion of safe cycling in Ljubljana and Maribor. The capital city Ljubljana is a part of Osrednjeslovenska region, with its population of 286.000 inhabitants. Maribor is the second largest city in Slovenia and has a population of 95.000 inhabitants. According to the OECD, Cycling, Health and Safety, Research Report (2014), Ljubljana is ranked fourth among capital cities in Europe with most cycling traffic.

On Slovenian roads we are facing road safety problems mainly related to non-compliance of traffic safety rules and in some cases relatively low culture of road users. The consequences of such behaviour are often seen in road traffic accidents, which have serious impact, both for individuals as well as society as a whole. Undoubtedly, the loss of life is the most serious consequence of road accident. Nevertheless, serious and slight injuries of road users and substantial material damage as results in traffic accidents constitute a national problem. In the first place among the priority areas we should highlight the problem of speed. Speeding on European and Slovenian roads is a major factor in road accidents, especially the ones with the severest consequences. Despite the trend of slowing speeds and reducing the number of fatalities and serious injuries in recent years, the number of fatalities in road accidents which occur due to the speeding remains high.

**Main aim** was to improve safety of vulnerable road users, focusing mainly on improving safety of cyclists. **Other objectives** were to reduce the number of road accidents involving cyclists and their consequences by improving conditions for cycling; and to reduce the number of road accidents involving cyclists and their consequences that occur due to speeding. Another objective was to promote safe cycling in order to encourage people to cycle more by improving general conditions for cycling and also reducing the risk of road accidents.

In Osrednjeslovenska region 384 road accidents happened in 2013, where 72 accidents happened due to speeding. 3 people were killed, 39 were seriously injured and 300 were slightly

injured. In the wider area of the cyclist counter (Dunajska road towards the city center and surrounding streets), there were 8 road accidents involving cyclists in 2013. In these accidents, 7 cyclists were slightly injured, 1 cyclist was severely injured and 1 cyclist had no injuries. In three road accidents, the cyclist caused the road accident. Only 2 out of 9 cyclists were wearing a helmet. Children or adolescents were not involved in these accidents. 4 out of 9 cyclists were in the age group between 45 and 54. The most common cause of the traffic accidents is right of way.

In Podravska region there were 270 road accidents, 63 of them happened due to speeding. 1 person was killed, 20 were seriously injured and 223 were slightly injured. On the area of "sharrow" implementation in the center of Maribor, there were 2 traffic accidents involving cyclists. In one of the accidents, the cyclists had slight injuries. Both cyclists caused the traffic accidents, one cyclist was 15 years old, the other one was 23 years old. None of them was using a cycling helmet.

This strategy aimed at continuation of cooperation and coordination among different stakeholders in the field of road safety. On pilot areas in Osrednjeslovenska and Podravska region, local authorities have very important role in order to improve road safety situation, mostly in relation to road infrastructure, such as assessments, maintenance and upgrading. Very important part relating road safety on local level is also strong and regular cooperation among local authorities, city traffic wardens and police, especially regarding speed enforcement. Regular measuring of average speeds of motorized traffic and also measuring average speed of cyclists should be implemented in order to understand the situation on specific locations. Authorities should continue to use existing road safety data and combine it with proposed data of average speeds to determine resource allocations for road maintenance and upgrades on the segment. In this strategy also several other measures were proposed and planned, mainly from preventive aspect and promotion of safe cycling (for example: "Zone 30", installation of preventive speed table, updated guidelines to plan cycling infrastructure, informing and promoting new measures etc).



Implementation of "sharrow"  
as AVP's ROSEE pilot  
project is a traffic-technical  
measure to improve safety of cyclists  
from infrastructural and  
behavioral point of view.







## 5

# Change of legislation and development of strategic documents

## 5.1 Technical specifications for "sharrow" - amending Guidelines for planning of cycling infrastructure

Technical specifications for the implementation of »sharrow« – shared lane marking, were prepared as one of the results of project ROSEE. Within the project, where we focused primarily on the safety of cyclists and on promotion of safe cycling, we implemented "sharrow" in the broader area of Slomšek square together with Municipality of Maribor.

Shared lane marking – »sharrow« is a measure where cyclists are allowed (with special traffic signals – markings) to use the

full lane - riding in the middle of the lane. The drivers of motor vehicles are indicated that the road should be equally used together with cyclists. For drivers of motor vehicles the measure makes it easier to notice cyclists, while cyclists are not pushed to the side of the road. This way they can avoid damaged roadway and the sand on the sides or opening the door of motor vehicles parked at the side.

### The conditions and criteria to introduce a measure of sharing the lane

Characteristics of road infrastructure:

- When the **space limitations** do not allow the execution of a different (better) shape surfaces for cyclists, for example. bicycle lane or bicycle path.
- Only within urban center;
- In the case of a two-lane road (with two-way traffic) when the roadway width is between 5,0m and 7,0m;
- In the case of single-lane road (with one-way traffic), where the direction of cyclist traffic should be identical to the direction of travel of motor traffic;
- Where the slope (climb) does not exceed 3%. For example, when a downhill there are no particular restrictions;
- When there is proper safety width correctly implemented along marked parking spaces and carriageway (min. 0,5 m);
- It is recommended that a larger area is regulated by the same principle of managing cyclists traffic, so as to achieve better predictability and, consequently, appropriate managing both cyclists and other road users (particularly motor vehicle drivers).

Traffic characteristics:

- The sections where the density of motor vehicles traffic is low - no more than 400 vehicles in the peak hour;
- The speed of motor vehicles must be relatively low (measured speed of motor vehicles V85% must be less than 40 km/h)
- Implemented area with limited speed ("zone 30");
- Limited share of commercial vehicles (including buses) is 10%.

Traffic safety requirements:

- In cases where existing arrangements of traffic (eg. cyclists on the road) cyclists feel "threatened" by drivers of motor vehicles
- When cyclists with riding on the sidewalks (because cycling surfaces do not exist) endanger the safety of pedestrians
- All groups of cyclists (also children and elderly) should be able to cycle safely

## 5. 2 National strategy for safety of cycle traffic (proposal)

The proposal of National Strategy provides an analysis of the road safety situation and taking into account the experience of cycling's most developed countries and cities. Furthermore it suggests a range of actions to support the vision of Slovenia as a country defined with clear objectives, where cycling is safe mode of transport. The strategy defines the conditions that affect the safety of bicycle traffic and identifies the stakeholders required for its improvement and the level of their operation. It specifies statistical trends up to 2023 with quantified objectives. Based on the established guidelines activities and measures are precisely defined for individual areas, while given the timeframes and responsible stakeholders.

The proposal of National Strategy in the first chapter gives a general overview on the field of cycling in Slovenia. The proposal later puts proposed measures into the context of cycling population structure, legislative framework and policy documents of road safety, infrastructure characteristics and the structure and specificities of the relevant stakeholders. Starting from the fact that the vast majority of traffic accidents involving cyclists occur in urban areas, the document points to increasing bicycle traffic in urban centers and pays particular attention to the state of cycling infrastructure in Slovenian cities. It also compares the typical regulation of transport regimes and cycling infrastructure in Slovenia with the situation in countries that set a good example of regulation and safety of bicycle traffic.

The strategy suggests that, with the exception of investments in the national network of cycling connections, significant improvements are possible without large investments in the construction of separate cycling network. Improving the safety of bicycle traffic requires compliance with the principles of directness, continuity, safety, convenience and attractiveness of

cycling connections at the spatial and transport planning, modern knowledge on safe cycling and on traffic management and quality of the design and implementation of a variety of measures that allow public roads and the areas for cyclists, pedestrians (and in some cases for motor vehicles) become safe for vulnerable road users, ultimately, with the help of high-quality maintenance.

In Slovenia we have a wide range of actors on the systemic, institutional and individual levels who are dealing with the safety of bicycle traffic. Then follows a brief section on the safety of bicycle traffic in the world, where the examples of good practice are given in the field of promotion of bicycle traffic safety, training riders for safe cycling, cooperation authorities and non-governmental organizations, media campaigns in support of the safety of cyclists and bicycle traffic, etc.

On the basis of statistical trends and taking into account the Resolution on the National Programme of Road Safety for the period 2013- 2022 and the measures envisaged in the strategy quantified, the objectives to reduce the number of deaths and seriously injured cyclists in Slovenia are given. In conclusion, the chapter also identifies other objectives for improving the safety of bicycle traffic, such as maintaining the trend of increasing bicycle traffic ("safety in numbers"), in which it is primarily necessary to ensure adequate monitoring of bicycle traffic, convert traffic hierarchy in favor of vulnerable groups road users, to reduce the potential for conflict between cyclists and pedestrians, etc.. In the last chapter the activities and measures to improve the safety of bicycle traffic in Slovenia in the field of transport infrastructure, management, technical equipment, vehicles, research, education and training, communication and financing are suggested and explained.

## 5. 3 National Report on road safety situation in Slovenia

Slovenian Traffic Safety Agency prepared a National Report within Work Package 3 (road safety data and analysis). First draft was completed in July 2013, but was later in 2014 amended and updated with new data. On the basis of National Reports from all partner countries a Transnational Report was developed summarizing the contents and providing a comparative picture on road safety in the SEE region.

National report is a document where the most important aspects of road safety situation, legislation and institutional capacity, availability of road safety data and information, road network conditions and road users behavior in Slovenia is presented. Within the ROSEE project we were focusing on vulnerable road users by reviewing road safety data, good practice and campaigns relating to groups of vulnerable road users. We were also focusing on modeling infrastructure improvements (identifying high risk locations on secondary road, developing implementing measures etc.)





## 5. 4 Review of best practice examples of safe cycling in Europe

The document presents an overview of some of the best practices and interesting measures of improving the safety of cyclists and generally improving conditions for cycling. Examples were gathered mainly from cycling more developed countries, such as Denmark, Netherlands, United Kingdom and others, but can also spread to other European countries, which are still developing in the field of cycling infrastructure and improved conditions for cyclists. An overview of best practices can raise awareness among the ROSEE project partners and the wider interested public about activities and measures in the field of provision of safe cycling and possibly give the idea for the further development and promotion of safe cycling in cycling less developed countries. The document includes examples of good practice from the aspect of reducing negative outcomes of road crashes and the aspect of avoiding road crashes in the first place. The examples in the document cover the areas of engineering and planning measures, education and training, encouragement and promotion and other examples of best practice.

For example, **cycling highways** are presented in the document. Cycle highways give cyclists a safe, smooth ride and eliminate as many stops as possible in connecting city center with the suburban towns. In addition to the stripes painted on the asphalt that indicate the route, cyclists can also enjoy amenities such as air pumps, safer intersections and traffic lights timed to average cycling speed, reducing the number of stops. The initiatives are intended as a way to encourage more commuters to travel by bicycle, even if their commutes are longer than 10 km. For example, in Copenhagen the network is still in construction and it will increase the number of cycle lanes in Greater Copenhagen by 15 percent. Secondly, **sustainable LED lightning system for bicycle path** is described as a measure where LED lights are located on the last stretch of bike lanes leading up to a busy intersection and start flashing and alerting turning vehicles to the presence of cyclists. In the document also **the green wave** from Denmark, **Traffic Eye Zürich**, **Yakkay helmets**, **Love London Go Dutch** campaign and many other measures for cyclists are presented.



so within project ROSEE, we've introduced sharrow to Slomškov Square.

Promotional and educational short film on "sharrow"

Sharrow should be implemented in areas with limited speed ("zone 30").



Drivers immediately notice the manoeuver cyclists intend.



cycling on the edge of the road is often dangerous,





# 6

## Preventive campaigns and raising awareness events

### 6.1 Preventive campaign for cyclists and public appeal for improving safety of cyclists

In the context of preventive action that was led and coordinated by Slovenian Traffic Safety Agency we wanted to give special attention to a tolerant and responsible behaviour of all road users, both cyclists and pedestrians as well as drivers of motor vehicles. The goal was a decrease in number of fatalities and severely injured among cyclists. Preventive campaign which started in April and continued in the month of May and June (2013 and 2014) was implemented in order to improve the safety of cyclists. Preventive campaign 2014 took place in the framework of the

ROSEE Project. Through our activities and effort to improve road safety we were united with other stakeholders such as the Police, Municipality of Maribor, Municipality of Ljubljana, Ministry of Infrastructure and Spatial Planning, Ministry of Education, Science and Sport, city traffic wardens, Maribor Cycling Network and others. Beside different activities and events also a joint public appeal was made to raise awareness among all road users to encourage safe behaviour and tolerance in traffic.

### 6.2 Promotional and educational short film on "sharrow"

One of the AVP deliverables of ROSEE project was also short preventive video on »sharrow«, with educational and promotional purpose. Implementation of "sharrow" as a pilot project is a traffic-technical measure to improve safety of cyclist from infrastructural and behavioral point of view. Its intention was to show to wider public how to use sharrow, what are the benefits of cycling on areas where »sharrow« is implemented and how it was implemented in Slovenia. "Sharrow" is also presented through the view of different stakeholders directly involved in planning and implementing the measure (Municipality of

Maribor, Slovenian Traffic Safety Agency, University of Maribor-Faculty of Civil Engineering and Maribor Cycling Network).

The short film is also available on Youtube in Slovenian and English language:

<https://www.youtube.com/watch?v=QYyMmPf1ByY>

<https://www.youtube.com/watch?v=ztQ8e0goS-g>

### 6.3 Competitions "What do you know about traffic"

#### Competition "What do you know about the traffic 2013", Ljubljana, 1.6.2013

Slovenian Traffic Safety Agency in cooperation with Road Safety Council of Municipality of Ljubljana organized the national competition »What do you know about the traffic«. The competition was held on Saturday, June 1st 2013 in the primary school Poljane and its surroundings.

The competition was organized within the project ROSEE and was held under the auspices of the Mayor of Ljubljana. At the official opening and a short cultural program prepared by the school children Poljane all participants were addressed by acting director of Slovenian Traffic Safety Agency, who emphasized the importance of competition, improving knowledge and skills and managing traffic situations for children's own safety and the safety of others. He wished them success at competition and responsible behaviour in traffic in the future. Among the speakers

who addressed the children were also host of the competition Poljane school headmaster, the representative of Ministry of Infrastructure and Spatial Planning and the president of Road Safety Council of Municipality of Ljubljana.

Children (cyclists and drivers of mopeds) tested their theoretical knowledge of traffic rules, driving skills on polygon and practical driving in real traffic situations. The aim of this sort of competition is to encourage children to compete in knowledge and safe behaviour in traffic. The competition also means additional incentive to learn traffic rules and developing safe driving skills in broad number of involved children.

The competition which was organized under the project ROSEE is an event with effective approach to influence road users'

behaviour at early age. Slovenian Traffic Safety Agency will continue to focus on cyclists' safety within the pilot project in the third period of ROSEE project, where the suggestions for safer cyclists' infrastructure and other measures will be proposed.

A short analysis of the results of the national competition "What do you know about the traffic" shows that the competitors

were highly successful, particularly in the theoretical part of knowledge of road traffic regulations where as much as 38 % of all participants took the test without faults. Slightly more troubles they had in driving skills on the polygon, but the most challenging was the practical driving in real traffic situations, where none of the contestants drove without faults.

### **Competition "What do you know about the traffic 2014", Brezovica, 31.5.2014**

This year's competition was already 23rd national competition in Slovenia. Competitions "What do you know about traffic" were taking place at the school level, at the municipal/regional level and then finally national competition. This school year, there were 176 Slovenian primary schools competing with over 1,700 pupils, then 47 municipal qualifying competitions were carried out from over 90 Slovenian municipalities.

Also this year, children (cyclists and drivers of mopeds) tested their theoretical knowledge of traffic rules, driving skills on polygon and practical driving in real traffic situations. The best contestants received awards that will help them also in traffic

safety: the best rider received a cycling T-shirt and an anorak, good manual driver and other safety products. Ten of the best competitors received various awards: cycling gloves, manuals good driver, reflective vests, lights, etc. Also, all participating contestants received T-shirts with the help of local donors, as well as the cycling helmet and diploma for participation granted by AVP. Organization of national competition was under auspices of AVP with the help of many other stakeholders, such as Police, exam commissions as assessors, participating schools, city traffic wardens and representatives of Slovenian Association of Drivers and Mechanics and other volunteers, teachers etc.

## **6. 4 Other preventive events organized within AVP pilot project**

### **Expert meeting with Dutch representatives**

In March 2013 Slovenian Traffic Safety Agency together with Embassy of the Kingdom of the Netherlands organized an expert meeting on development and promotion of safe cycling. Meeting's expert guest was Ms. Angela Van der Kloof from Dutch organization Mobycon. Ms. Van der Kloof is renowned lecturer and expert in the field of cycling, cycling promotion, cycling infrastructure design and it's positioning within urban space. Ms. Van der Kloof is working on the so-called 'kickstand' workshops for development of cycling and cycling policy, along with the presentation of examples of good practice from the Netherlands, etc.

An expert meeting gathered experts and representatives of various national and local agencies and organizations that are engaged in

activities in the field of cycling. The meeting was attended by 20 representatives of municipalities and municipal road safety councils from various Slovenian municipalities (Maribor, Ljubljana, Nova Gorica, Ptuj, Tolmin), representatives of the Police, representatives of Urban Planning Institute of the Republic of Slovenia as well as representatives of NGOs and Slovenian Traffic Safety Agency.

The primary objective of the meeting was Ms. Van der Kloof's presentation of good practices and policies that promote cycling, furthermore opening a discussion and exchanging views and information between various stakeholders, and agreement on possible execution of additional in-depth professional workshops.

### **European mobility week in 2013 and 2014**

European Mobility Week took place between 16th and 22nd of September in 2013 and 2014, where Slovenian Traffic Safety Agency participated with various preventive activities. In 2013 European Mobility Week tagline was "Clean Air, It's Your Move"; in 2014 a tagline was: "Our streets, our choice". Slovenian Traffic Safety Agency participated in preventive events, organized by Maribor's municipal road safety council that took place in Liberty Square (Trg svobode) on 19th of September 2013. Maribor's primary school pupils attended this preventive event by cycling through the city center and participating in variety of educational contents at Liberty Square (Trg svobode). Activities were also conducted within ROSEE project, since pilot project to improve cyclist safety was planned at that time to be implemented in Maribor. AVP organized

a preventive event in Maribor and also in Ljubljana in 2014. Slovenian Traffic Safety Agency participated in the preventive event with safe cycling contents: promoting the use of cycling helmets with demonstrating bicycle helmet effectiveness on the egg, informing on choosing and proper wearing of bicycle helmets, demonstration of the inertia weight of the human head of a cyclist for the purpose of understanding why the use of bicycle helmets is necessary, presentation of bicycle safety training, promotion of an online traffic rules theory test, and the presentation of an international project ROSEE with an emphasis on activities to improve cycling safety.





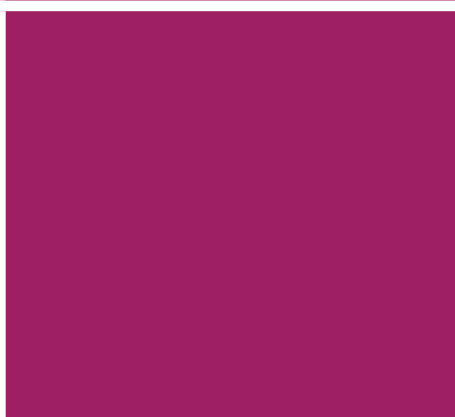
**Preventive activities  
and events for cyclists**  
within ROSEE project led by AVP

In the 2014 there were 176 primary schools and more than 1.700 pupils competing in the event »What do you know about traffic« organized within AVP ROSEE pilot project.



European mobility week  
Maribor  
September 2013

Expert meeting with Dutch  
representatives  
Ljubljana  
March 2013



Bike festival  
Ljubljana  
May 2014



### **Bike festival 2014**

Within the campaign 'You can go far by bicycle' Regional Environmental Center (REC Slovenia) organized Ljubljana Bike festival, which took place in May 2014. Slovenian Traffic Safety Agency participated in the central event of the festival that was held on 24th of May 2014 in Congress Square (Kongresni trg). To festival visitors of all ages, Slovenian Traffic Safety Agency presented contents related to safe cycling: raising awareness about cycling helmets use (each year almost half cyclists are killed because of head injuries); cycling polygon was placed where visitors could try out their cycling skills; in addition, EU project

ROSEE was presented – activities carried out within the project ROSEE aimed to promote road safety and at the improvement of accessibility to the road network in South East Europe. Slovenian Traffic Safety Agency's most recognizable contribution to the ROSEE project was implementation of 'sharrow' in Maribor (Slomšek square and its surroundings), implementation of cyclists counter with display on a cycle lane in Ljubljana (Dunajska road), education of road users and promotion of safe cycling.

### **6. 5 Raising awareness letter to all Slovenian mayors**

Slovenian Traffic Safety Agency sent a raising awareness letter to all 211 Slovenian mayors at the beginning of ROSEE pilot project in May 2013. We explained more about the project, our previous work and our planned activities to improve safety of cyclists in Slovenia and at the same time invited them to join us with their activities for road safety, mainly focusing on cyclists.



Enakopravni, toda bolj ranljivi.

Preventive activities  
and events for cyclists  
within ROSEE project led by AVP

Preventive campaign for cyclists



European mobility week  
Maribor  
September 2014







Within AVP's ROSEE pilot project "Sharrow" was implemented in Podravska region, exactly on wider area of Slomšek square in Maribor. "Sharrow" is a road marking, which indicates that cyclists can use the whole lane together with other drivers.





# 7

## Evaluation and analysis of pilots

During the project implementation Slovenian Traffic Safety Agency was continuously monitoring indicators of road safety in Slovenia in general and also in Osrednjeslovenska and Podravska region as pilot regions. We were developing a pilot model within ROSEE project in Osrednjeslovenska and Podravska region, where effective measures for traffic safety of cyclist were executed.

Two main innovative traffic measures were implemented in pilot regions:

- **"Sharrow"** was implemented in Podravska region - in Maribor (wider area of Slomšek square). "Sharrow" is a road marking, which indicates that cyclists can use the whole lane together with other drivers.
- **"Cyclist counter with display"** was installed in Osrednjeslovenska region - in Ljubljana (Dunajska road towards the city center). It counts the cyclists which pass the counter each day and shows them how many cyclists have passed this spot on that day.

The impact of the pilots was continuously measured through various indicators, such as:

- **Strategic documents** such as Technical specifications for "sharrow", National Strategy for safety of cycle traffic (proposal), Best practice examples of safe cycling from EU, National Report on road safety etc. and **promotional tool developed** (a short promotional and educational film on "sharrow").
- **Involved stakeholders** (representatives of Municipality of Ljubljana, representatives of Municipality of Maribor, Slovenian Cycling Association, Maribor Cycling Network, Police, city wardens, etc).
- **Trained mentors** for road safety education (manuals for mentors of road safety education are disseminated on seminars before the competition "What do you know about traffic")
- All **school children** in the 5th grade of primary schools are involved in education and training for safe cycling. They test their knowledge on theory test and also their cycling skills on polygons and in real traffic situation. The best of them compete on the schools, regional and finally on the national competition "What do you know about traffic".
- **The evaluation with before/after analysis** (on-field surveying and online survey).
- AVP has been regularly preparing **analysis of road safety situation in Slovenia** (the analysis includes key information on road safety situation and comparison with previous years. The data on road traffic accidents and their consequences is also included, completed with the comparison of fatalities by month, road users and statistical regions. Additionally, in the analysis also the most frequent causes of road traffic accidents and comparison of these in the last five years are included. AVP also collected data of the number of cyclists on the location of the cyclists counter before the cyclist counter with display has been installed. This data showed a high number of cyclists within several months and consequently served as justification of cyclist counter implementation on that exact location.
- **Media reporting** - media articles, press releases and information on AVP official website regarding pilot project (altogether around 39.100 people were reached by media publishing).
- Procurement/production and dissemination of different **preventive materials** (for example: cyclist helmets, brochures for cyclists, leaflets, manuals, stickers etc.). AVP procured 500 cyclist helmets, 2500 brochures, 500 leaflets for sharrow and 500 leaflets for cyclists counter (printed), 100 manuals for mentors, 300 manuals for drivers, 25.000 stickers). This material was disseminated within meetings, conferences, sent to municipal road safety councils and schools and mostly was disseminated within **preventive events**. The events were mainly organized in a way that random passers-by were participating (for example: dissemination of informative leaflets on »sharrow« on the area of implementation of technical measure; Bike festival 2014 in Ljubljana, European Mobility Week 2013 etc.). All preventive materials were used solely for the purpose of ROSEE project promotion to wider public and promotion of safe cycling in the context of the pilot project objectives, conducted by AVP.
- **Raised awareness** about safety of cyclists and various preventive activities implemented for cyclists'

safety on the local level, as a result of awareness letter to all Slovenian mayors sent by AVP.

- Within the Action plan for **preventive campaign for cyclists**, the analysis of cyclists'

safety in Slovenia has been prepared, including data on:

- cyclists fatalities in road traffic accidents,
- seriously and slightly injured cyclists,
- comparison of road accidents including cyclists within 5-year period,
- use of helmet among cyclists,
- road accidents including cyclists in urban areas and outside urban areas,
- age groups of cyclists involved in road accidents,
- causers of road accidents among cyclists,
- injured cyclists within statistical regions in Slovenia,
- road accidents involving cyclists in the different types of roads,
- the most common causes of road accidents involving cyclists,
- the most common types of road accidents involving cyclists,
- other involved road users,
- comparison among EU countries regarding fatalities among cyclists.

### 7. 1 Transnational replicability and stakeholders' feedback

Both pilot measures ("sharrow" and cyclists counter with display) that AVP implemented within ROSEE project could also be implemented in other European countries. There could be knowledge transfer or "know-how" mainly between other project partners' countries but also others. Beside knowledge transfer, the regulations proposed in Slovenia due to new measures (for example: technical specifications for "sharrow" and guidelines for planning cycling infrastructure) could also be transferred to other countries. Cyclists counter with display is a traffic-technical measure that could be implemented without limitations anywhere where there are cyclists present, in order to promote safe cycling and make cyclists visible part of community. On the other hand, implementation of "sharrow" – shared lane marking is appropriate at the locations under certain conditions, such as speed limitations (for example: Zone 30), low average speeds of motor vehicles, width of the road surface, no freight transport, low traffic density and others which should be taken into account by other countries who implement this kind of traffic measure for cyclists. A short promotional and educational film could also be used in other

countries with minor adjustments regarding language and traffic signs. Conditionally, also the legislation could be transferred into other EU countries, mainly technical specifications that determine conditions and other characteristics (environmental, traffic-technical etc.) for proper "sharrow" implementation. AVP developed a model to approach wider public and connect different stakeholders from governmental organizations, local authorities, NGO's, expert groups and other interested groups.

In Ljubljana, the cyclists counter with display was placed on the area of Dunajska road in March 2014. In Maribor, a „sharrow" was implemented in October 2013 (a common traffic surface which enables the cyclists to share the traffic lane by using the space in the middle of the roadway). Both measures were implemented in order to promote safe cycling and were accompanied also by other preventive activities (preventive action for safety of cyclists, preventive events for road users with preventive materials disseminated, cycling competition for children in primary school, production of educational film, development of strategic documents etc).



Vesna Marinko, Project Manager  
of ROSEE (AVP)  
and Mateja Markl,  
Project Officer of ROSEE (AVP)



In Maribor we targeted directly **900 people** on field before and after the implementation of a pilot (300 in survey, 100 at European Mobility Week, 500 by leaflets). By media publishing about pilot on TV (2 articles), radio (1 article) and web articles (4) we affected directly **21.400 people** in Maribor. Altogether, we distributed **3.990 different pieces of preventive materials** (250 brochures I am cyclist, 50 manuals Good driver, 1.800 stickers Safe bike, 40 cycling helmets and 1.850 reflective armbands). In Ljubljana we targeted directly **1.311 people on field** before and after the implementation of a pilot (400 at Bike festival, 301 in survey, 38 in workshop, 20 at round table, 52 at RSI/RSA, 500 leaflets). With media reporting **3.100 people** were affected (3 press articles and 1 web article). In Ljubljana, we disseminated **9.030 pieces of different preventive materials** (2.000 brochures

I am cyclist, 10 manuals Good driver, 3.500 stickers Safe bike, 120 cycling helmets and 3.400 reflective armbands).

On the national level, we directly affected **3.830 people** (212 mayors, 3.400 competitors on competitions »What do you know about traffic«, 148 participants of ROSEE-SENSOR conference and 70 mentors of traffic education). With media publishing we affected additionally **14.600 people** (broadcasting on national TV, 2 radio articles, 2 press articles and 6 web articles). We disseminated around **26.380 pieces of preventive materials**, in majority to municipal road safety councils and primary schools for implementation of activities for cyclists (schools competitions) and on different events.

## 7. 2 Analysis of general indicators in pilot regions

During the project, the general survey on road safety and people's public opinion and their travel habits was made. The summary of results and analysis of road safety in pilot regions for main topics

of speed, alcohol and seat-belt use is shown below:

### Perception of traffic and traffic safety in general – Slovenia:

- Over 80 % of respondents are worried because of traffic safety in Slovenia.
- Over 60 % of respondents think that our roads are not safe or not safe at all.
- Among suggestions for improvement of traffic safety, respondents most often mentioned renovation of traffic infrastructure and improvement of traffic culture among participants in traffic.
- Most respondents (about 40 % of all) use car the most on a daily basis.
- Two thirds of respondents need up to 40 minutes to get to work/school; about two tenths of participants need more than an hour to get there.
- Largest share of participants goes to work/school by car, but would prefer to get there on foot.
- Among factors that would contribute to larger use of bicycles as means of transport to work/school, we can find: maintenance of bicycle paths, distance and better options of parking for the bicycles.

### Speed

In 2013 (before the pilot) there were 18.542 traffic offences related to speeding in Osrednjeslovenska region. This number represents 21,8 % of all traffic offences in 2013 in Osrednjeslovenska region (Police Administration Ljubljana). After the implementation of cyclists counter, the data shows that there were 5.600 traffic offences related to speeding in the 3-month period from 1.4.2014 to 30.6.2014. This number of speeding violations represents 25,1 % share of all traffic offences in Osrednjeslovenska region.

In 2013 there were 13.319 traffic offences related to speeding in Podravska region, which represents 34 % of all traffic violations in Podravska region in 2013. The data shows that there were 7.470 traffic offences related to speeding in the 6-month period after the implementation of "sharrow" from 1.11.2013 to 30.4.2014. This number of speeding violations represents 34,2 % share of all traffic offences in Podravska region.

### Alcohol

In 2013 (before the pilot) there were 3.193 traffic offences related to alcohol in Osrednjeslovenska region, which represents 4 % of all traffic violations. In 2013 there were also 84.986 ordered alcohol breathing tests, 3.506 (4 %) were positive (above maximum permitted limit) in Osrednjeslovenska region. After the implementation of cyclists counter, there were 880 traffic offences related to alcohol in the 3-month period from 1.4.2014 to 30.6.2014 in Osrednjeslovenska region. This represents 4 %

share of all traffic violations. In this period there were also 20.188 ordered breath controls (alcohol test), in 944 (5 %) cases the result was positive – above the maximum permitted limit.

In 2013 there were 2.106 traffic offences related to alcohol in Podravska region, which represents 5 % of all traffic violations. In 2013 there were also 76.857 ordered alcohol breathing tests, 2.408 (3 %) were positive (above maximum permitted limit) in Podravska region. After the implementation of "sharrow", there

were 1.082 (5 %) traffic offences related to alcohol in the 6-month period from 1.11.2013 to 30.4.2014 in Podravska region. In this period there were also 39.344 ordered breath controls (alcohol

test), in 1.247 (3 %) cases the result was positive – above the maximum permitted limit.

## Seat-belt use

In 2013 (before the pilot) there were 12.873 traffic offences related to not using seat-belts in Osrednjeslovenska region, which represents 15 % of all traffic violations. After the implementation of cyclists counter, there were 3.587 (16 %) traffic offences related to not wearing seat-belts in the 3-month period from 1.4.2014 to 30.6.2014 in Osrednjeslovenska region.

In 2013 there were 7.022 traffic offences related to not using seat-belts in Podravska region, which represents 18 % of all traffic violations. After the implementation of "sharrow", there were 4.079 (19 %) traffic offences related to not wearing seat-belts in the 6-month period from 1.11.2013 to 30.4.2014 in Podravska region.

## 7. 3 On-field survey on pilots (before/after analysis) and pilot specific indicators

Slovenian Traffic Safety Agency performed an on-field survey before and after the implementation of pilots. The purpose of the survey undertaken was to gain insight into public opinion about the traffic safety and the conduct of participants, above all cyclists, car drivers and pedestrians, in traffic at the locations of the cyclists counter (Ljubljana) and the implemented „sharrow" area (Maribor) before and after the implementation of these measures. The survey has shown preliminary image of public opinion on road safety and road users' behaviour and also the public opinion after the implementation of these measures in order to find out if the measures were noticed and how they were accepted by road users. On-field survey was integrated with web survey (with 629 respondents) as well.

Field interviewing in Ljubljana (in the cyclist counter surroundings) was conducted in September (ex-ante) and in April 2014 (ex-post). Altogether, in Ljubljana 301 respondents (cyclists and pedestrians) were interviewed. Before the implementation of the cyclists counter 151 respondents and after the implementation of the cyclists counter 150 respondents were interviewed. Respondents were aged above 15 years. Field interviewing in Maribor was conducted in September 2013 (ex ante) and in April 2014 (ex-post). Altogether, in Maribor 300 people were interviewed (cyclists and drivers) on Slomšek square. Before the measure 150 people and after the measure 150 were interviewed. All respondents were aged above 15 years.

### 7. 3. 1 Cyclist counter with display in Ljubljana (Dunajska road)

#### *How is the overall impact measured?*

The overall impact is measured by the on-field survey (interviewing of 301 respondents on the location of cyclists counter). The comparison of the answers before the implementation of measure and answers afterwards has been made. The effectiveness of the

implementation of cyclists counter can be measured through the positive opinions of respondents and support to implement such measure also on the other locations.

#### *What is the methodology for monitoring and evaluation?*

AVP (Osrednjeslovenska region)	Cyclists counter with display
Start and end dates	27/03/2014 (Date of implementation of cyclists counter) 26-27/09/2013 (Ex-ante survey) 04-07/04/2014 (Ex-post survey)
Type (infrastructure/user)	Infrastructure and user.
Indicators used	Opinions, support of the pilot, feelings of endangerment, road safety analysis.
Methods of collection	Questionnaires (on-field and web), before/after survey, statistic road safety data.
Comments	Cyclists counter was visible in public and in media and was positively accepted by road users, mostly by cyclists and there was also support expressed for further implementation on other similar locations.





## Summary of the results

- At the location in Ljubljana, over a fifth of respondents already experienced a conflict traffic situation before the measure implementation.
- The same is true for a tenth of participants after the implementation.
- At the location of interviewing before the measure, 45 % of respondents didn't feel threatened, which is also true for 58 % of respondents at the location of interviewing after the measure implementation.
- About two thirds of respondents noticed its implementation.
- Almost all respondents find the bicycle counter noticeable and think that it's noticed the most by pedestrians.
- About half of the respondents before the implementation and 40 % of respondents in the research after the implementation think that the bicycle counter improves the traffic safety at the location.
- 80 % of respondents before implementation and 84 % respondents after implementation support the implementation of bicycle counter at the location in order improve the traffic safety, respondents suggest tighter control of the traffic and improvement of culture of participants in traffic.
- About two thirds of respondents in Ljubljana evaluate the road as safe or very safe.

Data from cyclist counter:

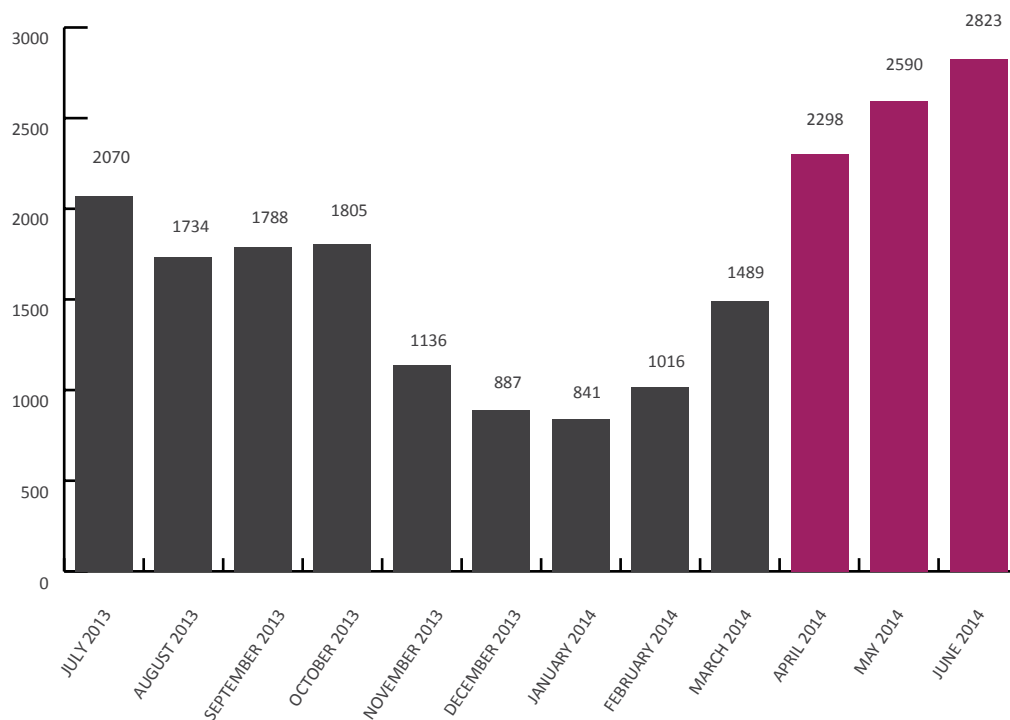


Figure: The average number of cyclists per day/months before and after the pilot

Before the implementation counting was conducted by installed loop in the asphalt, there was no display to show the count of cyclists. After the implementation of cyclists counter with display, the count of cyclists became visible to all cyclists and also pedestrians in vicinity.

Month	Total number of cyclist	Average number of cyclist per day
JULY 2013	64178	2070
AUGUST 2013	53756	1734
SEPTEMBER 2013	53637	1788
OCTOBER 2013	55941	1805
NOVEMBER 2013	34081	1136
DECEMBER 2013	27498	887
JANUARY 2014	26067	841
FEBRUARY 2014	28448	1016
MARCH 2014	46159	1489
APRIL 2014	68937	2298
MAY 2014	80282	2590
JUNE 2014	84689	2823

Figure: Total numbers of cyclists per month

The data from cyclists counter show small increase in the number of cyclists at the location of the pilot after the implementation of cyclists counter with display. Data deficiency in the fluctuation in the number of cyclists is that weather conditions and time of year are not taken into account. The figure shows the average count of cyclists per month from the beginning of the ROSEE pilot project until the end of it. Available data from July and August 2014 show that there is increase in the number of cyclists recorded by the counter in comparison to last year data for the same months.

Absolute numbers of cyclists also show that there are fewer cyclists in winter months (December, January and February). The more realistic comparison could be made after longer time period of data monitoring. Also the results from on-field surveys (by surveying people before and after the pilot) show that the

implementation of the first cyclists counter was well recognized and accepted. Furthermore, the majority of people support the implementation of cyclists counter on that location and would support it on other appropriate locations.

The Municipality of Ljubljana has in the recent years invested in a lot of various measures for cycling promotion, for example: bicycle rental system, planning and designing the areas for cyclists, activities for promotion of cycling etc. The implementation of cyclists counter with display was one of such measures for further promotion of safe cycling. At the same time the increase in the number of cyclists in Ljubljana as urban center has been recorded due to cyclists counter implementation.

### 7. 3. 2 "Sharrow" – shared lane marking in Maribor (wider area around Slomšek square)

#### *How is the overall impact measured?*

The overall impact of the pilot, namely the effectiveness of the measure, was measured by the on-field survey – by interviewing 300 respondents on the location of "sharrow". The comparison of the answers before the implementation of measure and answers

afterwards was made. The effectiveness of the implementation of "sharrow" can be measured through the positive opinions of respondents and support of such measure also on the other locations.



### ***What is the methodology for monitoring and evaluation?***

AVP (Podravska region)	"Sharrow" – shared lane marking
Start and end dates	The end of October 2013 (Date of implementation of "sharrow") September 2013 (Ex-ante survey) * results analyzed in November 2013 04-26/04/2014 (Ex-post survey)
Type (infrastructure/user)	Infrastructure and user.
Indicators used	Opinions, support of the pilot, feelings of endangerment, road safety analysis.
Methods of collection	Questionnaires (on-field and web), before/after survey, statistic road safety data.
Comments	"Sharrow" was positively accepted by road users, mostly by cyclists, and there was also support expressed for further implementation on other similar locations.

### ***Summary of the results***

- At the location in Maribor, 28 % of respondents already experienced a conflict traffic situation before the measure implementation.
- The same is true for 14 % of participants after the implementation.
- At the location of interviewing 25 % of respondents felt threatened before the implementation, after the implementation this share went down to 18 %.
- Almost three quarters of drivers or cyclists noticed "sharrow" after its implementation.
- Generally, respondents think that "sharrow" is noticed more by cyclists as it is by car drivers.
- Participants think that the main purpose of "sharrow" is greater traffic safety, greater safety of cyclists and increased attention of car drivers regarding the cyclists.
- More than 80 % of respondents think that "sharrow" contributes to larger safety in traffic; over 80 % of participants would support the implementation of "sharrow" on other similar locations in the city.
- About three quarters of respondents in Maribor evaluate the road as safe or very safe.

The complete survey report is available on [www.rose-project.eu](http://www.rose-project.eu)

Additionally, hidden speed measurements were taken on the "sharrow" area in Maribor, precisely on Orožnova street, where speed limits are set to 50 km/h. Measurements were taken from 5:00 to 7:00 AM on 50 vehicles. It should be noted that the number of cyclists at the time of the measurement is minimal. Such timeframe of measurements was chosen deliberately to get the highest speed of motor vehicles and the speed of vehicles in the "unrestricted" conditions. The area of speed measurements and position of the radar is shown in the image below.

- In this area the speeds of motor vehicles are relatively small, because: along the carriageway there are parking lots (longitudinal parking);
- the presence of cyclists on the road reduces the speed of motor vehicles;
- pedestrians are crossing the carriageway outside the marked pedestrian crossings;
- on part of Orožnova st. there is a bicycle lane which runs opposite to the driving of motor vehicles.

The speed measurement results, which are displayed in real speed of motor vehicles, can be summarized as follows:

- Minimum measured speed was 20 km/h, maximum measured speed was 55 km/h
- Average measured speed was 31,74 km/h,
- V85 was 36,5 km/h.

As is evident from the results obtained, the speeds of motor vehicles are not problematic on this area. Even more, due to hidden measures at the time when there are a low numbers of pedestrians and cyclists, we can assume that the speeds of motor vehicles are even lower during the day. Therefore, in terms of

speed of motor vehicles, safety of cyclists who are on the road (on a lane with "sharrow") is not particularly at risk. The results of speed measurements are formally and legally valid, due to the Decision of type approval and Certificate of suitability criteria on the laser speedometer.

### 7. 4 Cost effectiveness of pilot activities or measures

Slovenian Traffic Safety Agency carried out various activities within ROSEE project. Within our pilot we established preventive actions, such as organization of different preventive events, where different groups of vulnerable road users could test their riding skills on polygons and try out different equipment (e.g. to show the importance of using bicycle helmet). We promoted safe cycling by installing cyclists counter in Ljubljana – to show the cyclists that they count as a valuable part of a society. Within our pilot in Maribor, where technical-infrastructure measure "sharrow" was implemented, the wider area of Slomšek square was rearranged also by implementing "zone 30" in some sections. By organizing cycling competition "What do you know about traffic" for pupils in primary school, the education and cycling training of children has been carried out. Some of these various activities have already been evaluated as cost effective in some other studies, as shown below.

According to ROSEBUD, head injury is known to be a major cause of disability and death resulting from bicycle accidents. Increasing bicycle helmet wearing should help to reduce the number of head injuries. To reduce head injuries to cyclists in all forms of accidents, including those involving a motor vehicle, every cyclist could

be required to wear a bicycle helmet, and violations would be punished. Additionally, such an obligation could be accompanied by an information campaign. **Moreover, it is sometimes assumed that campaigns are a potential alternative and could replace an obligation.** According to an example from Germany, in total, about 20 % of the fatal and severe injuries may be avoided by helmet wearing, if all bicyclists wore helmets. The current average helmet wearing rate is 6 % (2004) almost constant over the recent years. The calculation in ROSEBUD WP4 has shown, that at an increase of the helmet wearing rate up to 26.6 % the measure would start to be cost-effective (ROSEBUD, Examples of assessed road safety measures- a short handbook, 2006).

The accident rates of bicyclists and pedestrians could be reduced if more would be done to make these vulnerable road users as visible as possible. Lights and reflectors are essential for their visibility. With reflective devices cyclists and pedestrians could improve their own conspicuity and thereby make themselves easier to be detected and identified by other road users. Every bicycle should be equipped with reflective material of sufficient size and reflectivity to be visible from both sides when directly in front of a motor vehicle's head lamps.

Activity example	B/C ratio	Source
Bicycle helmets, campaign and law in Normandy and Sweden	1.30 – 3.09	Elvik R. (1999,2001,2003), Elvik R.; Amundsen A.H. (2000)
Improving bicycle conspicuity in Norway	>1	Promising (2001)

Source: Road Safety and Environmental Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making: Examples of assessed road safety measures (2006)

Costs associated with the measure, besides investment and installation cost, are maintenance cost, depending on size of zone and features installed; ecological cost, which may increase carbon emissions especially if features are inappropriate distance apart encouraging braking and acceleration and through traffic has not been discouraged. Benefits are less accident costs, positive health effect because of more walking and cycling instead of using car. Traffic may be reduced especially through

the elimination of through traffic. Flows are reduced typically by 15 – 25 %. The benefit-cost ration depends on the installation cost of the zone, but typically installation costs will be more than recovered in the first year of operation. Results from calculations made in the Handbook of Road Safety Measures (Elvik, R) show that there are reasons to expect much higher benefit than cost for 30-zones.

Activity example	B/C ratio	Source
30 km/h zone	Effective	SUPREME, Thematic report, Part F5: Infrastructure (2007)

Source: SUPREME, Thematic report (2007)





Government guidance on the evaluation of major projects says that a **'medium' value-for-money project will have a BCR of between 1.5 and 2**, and a 'high' value-for money project a BCR of at least 2. When done properly, cycling is one of the most cost-effective transport investments: cycling infrastructure investment produces very high rates of return. **An assessment of the London**

**Cycle Network+ gave it an overall BCR of 3.94**, which is excellent for a transport project, far surpassing most major road or public transport projects. Cycle training appears to have the highest BCR: a case study of cycle training in London funded by TfL found that the overall **BCR was 7.44**, which is very high indeed.

Activity example	B/C ratio	Source
'Medium' value-for-money project for cyclists	1.5 – 2.0	DfT, Value for Money Assessments (2013)
Cycling infrastructure investment	3.94	CTC Campaigns Briefing, Cycling and the Economy (2014)
Cycle training	7.44	SQW Consulting. Valuing the Benefits of Cycling: A Report to Cycling England (2007)

Source: The National Cycling Charity, CTC Campaigns Briefing, Cycling and the Economy (2014)

While the results of a cost-benefit analysis is rarely transferable between different countries, even for the same implementation case due to the vast differences in costs, applied methodologies and other factors, a rough estimate of the cost effectiveness of a given measure can be given. Based on the international examples, the B/C ratio of the pilot in Ljubljana and Maribor will very likely be favorable (over 1), and will probably be within the interval defined by the cases cited above (1.5- 7.44). In order to provide a conservative estimate, the lowest value shall be taken into consideration.

Main stakeholders in AVP pilot project besides AVP were: traffic police in Osrednjeslovenska and Podravska region, city traffic wardens in Ljubljana and Maribor, municipal road safety councils

in Osrednjeslovenska and Podravska region, municipalities (mostly Ljubljana and Maribor), primary schools, experts in the field of traffic planning, traffic safety and road design, Cyclist Federation of Slovenia, Ljubljana Cyclist Network and Maribor Cyclist Network. Municipality of Ljubljana and Municipality of Maribor were two main stakeholders regarding implementation of pilot measures of in Ljubljana (cyclists counter) and pilot project in Maribor ("sharrow"). Both municipalities were responsible for implementation of measures and were also the investors of the measure. Cooperation among all stakeholders was continuous and successful throughout the whole project planning and implementation phase. Also the evaluation results will be made available to all stakeholders interested.



AVP altogether reached 45,091 people directly and indirectly, with implemented pilot measures, promotion and other activities within the ROSEE project.





# 8

## Conclusions

Slovenian Traffic Safety Agency (AVP) has within ROSEE project provided systemic and comprehensive approach in the field of road safety and vulnerable road users. Among vulnerable road users as a targeted population, AVP chose to focus on cyclists due to the number of fatalities in road accidents among them. In the last decade, the number of fatalities in road accidents has halved, but at the same time the share of fatalities among cyclists has been increasing in the last decade. AVP's two pilot projects were dedicated to improving the safety of cyclists and promotion of safe cycling. Overall activities covered different approaches of managing road safety, starting from connecting stakeholders and working on local as well as national level, leading and coordinating national preventive campaign, organizing and participating in preventive and promotional events. Furthermore, AVP has within the framework of the project also worked on legislation area and road safety analysis and made a comprehensive evaluation of pilot measures and other activities. The major benefits from pilots are actually executed and implemented practical traffic-technical measures on the field for cyclists.

As results of ROSEE project, AVP also prepared strategic proposals for including "sharrow" into guidelines of planning cycling infrastructure and a national strategy for safety of cycle traffic. The significant part of ROSEE project was also education and training of different stakeholders, mainly representatives of local authorities, police, city traffic wardens, road safety auditors, etc. as well as children and mentors of traffic education in primary schools.

Of all activities two innovative technical approaches implemented on the field should be highlighted that had most effect on road safety and promotion of safe cycling. With cooperation of local authorities we implemented "sharrow" in Maribor (Slomšek square) and cyclists counter with display in Ljubljana (Dunajska road). **"Sharrow" – shared lane marking** represents a new traffic regulation, appropriate for streets with no space for cycle lanes, low speeds (speed limit 30 km/h) and no freight transport. Where "sharrow" is implemented cyclists can ride in the middle of a lane together with other drivers and are no longer pushed to the side. Therefore, cyclists can avoid damages on the edge of a lane and zone of opening car doors which are parked at the side. The Slomšek square and its surrounding streets were rearranged for the safety benefit of cyclists, not only with "sharrow" implemented, but also with Zone 30 and bike-box introduced. To promote safe cycling on "sharrow" educational short video was made. **Cyclists counter with display** was implemented in Ljubljana and represents an effective tool for promotion of cycling and increasing bicycle use. It can help make

cyclists a visible part of the urban traffic and is responsible for displaying the count of cyclists in real time. All activities, measures and legislation as well as a model to approach wider public and connect different stakeholders that AVP implemented within ROSEE project are transferable and internationally applicable. Also a few other Slovenian municipalities have already shown the interest to introduce "sharrow" into their local streets, for example Novo mesto and Bled. So it is very important that we have prepared also the technical instructions how and where to implement "sharrow". The evaluation showed that the number of cyclists has increased on the location of cyclists counter and "sharrow" was positively accepted by cyclists and drivers. The respondents who were questioned on-field would also support both measures also on other similar locations.

Altogether we have reached 45,091 people directly and indirectly, with implemented pilot measures, promotion and other activities within the ROSEE project (on-field surveys, festivals, workshops, round tables, conferences, competitions, media reports in newspapers, on radio and TV, etc). As part of all our activities, we have also distributed 39,400 pieces of preventive materials intended primarily to promote safe cycling (bicycle helmets, brochures, manuals, reflective arm-bands and stickers for the bike).

The two AVP pilot projects certainly touched even more people, as the information about the new traffic measures were also disseminated through other stakeholders involved in the implementation of pilot projects, especially the Municipality of Ljubljana and Municipality of Maribor, non-governmental organizations (mainly Slovenian Cycling Federation and Maribor Cycling Network), the local road safety councils, as well as schools and teachers, other unorganized groups of cyclists, experts in the field of road safety, participants in seminars, workshops and conferences and participants in the survey, which took place both on site as well as online. We believe that our pilot projects in Ljubljana and Maribor have stimulated public debate on safe cycling and many road users were encouraged to at least occasionally replace a car for bike and for more tolerant and responsible behavior in traffic. Relevant national and local authorities were hopefully encouraged to give greater attention to the improvement of cycling infrastructure.



---

Published by: Slovenian Traffic Safety Agency, Kotnikova ulica 19a, 1000 Ljubljana, [www.avp-rs.si](http://www.avp-rs.si)

Year of publishing: 2014

Authors: Vesna Marinko, Mateja Markl, Tina Bizjak

Photos: Slovenian Traffic Safety Agency

Design and printing: Aanima d.o.o., Ljubljana







SLOVENIAN  
TRAFFIC SAFETY  
AGENCY

Slovenian Traffic Safety Agency  
Kotnikova ulica 19a, 1000 Ljubljana, Slovenia  
[www.avp-rs.si](http://www.avp-rs.si)