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**Polycentric Sustainable
Urban Mobility Plan
for Boka Bay and the
Old Royal Capital of Cetinje**

Poly-SUMP



Sustainable mobility is the ability to meet society's desires and needs to move freely, gain access, communicate, trade and establish relationships without sacrificing other essential human or ecological values, today or in the future.

– World Business Council for Sustainable Mobility, Mobility Project 2030.



Sustainable Mobility Plan for the Bay of Kotor and Cetinje

I have the pleasure to present this Sustainable Mobility Plan for the Bay of Kotor and Cetinje, categorized as a monograph of strategic importance, which deals with the critical issue of sustainable mobility in the Bay of Kotor and Cetinje.

The aim of the Sustainable Mobility Plan is to improve accessibility and ensure quality and sustainable mobility and transport to, through and within the urban area in order to create "functional city" and its hinterland.

It is a strategic plan that builds on the existing planning practice and strives to meet the mobility needs of people, men, women, both young and old, today and tomorrow for a better quality of life in this area. This Sustainable

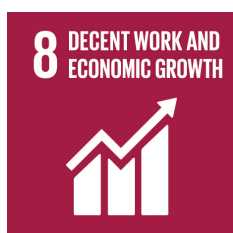
Mobility Plan aims to create a sustainable urban transport system that:

- Ensures the accessibility of jobs and services to all;
- Improves safety and security;
- Reduces pollution, greenhouse gas emissions and energy of people and goods;
- Increases the attractiveness and quality of the urban environment.

It also defines a range of specific activities and programs that will contribute to the sustainable development of the area based on an analysis of the current traffic situation in the Bay of Kotor and Cetinje.

In the course of its implementation, the Sustainable Urban Mobility Plan will also create the necessary conditions for reaching some of the objectives set forth in each of the Sustainable Development Goals - which were recognized by the leaders of global goals as our common priorities for the period from 2017 to 2021

- Goal 3 - Ensure healthy lives and promote well-being for all at all ages by encouraging walking
- Goal 7 - Ensure access to reliable, sustainable and modern energy for all by encouraging new forms of transport
- Goal 8 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation by encouraging the use of new technology
- Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable by promoting better planning for encouraging the use of non-motorized means of transport in local communities.
- Goal 13 - Take urgent action to combat climate change and its impacts by reducing the reliance on motorized transportation and carbon emissions



Involvement of citizens and local authorities in planning and collaboration between sectors, as well as in collaboration between competent authorities and neighboring towns is an essential part of any new plan. I hereby call for a broad public debate and taking part in all the ideas and measures proposed in this Sustainable Mobility Plan and I hope that the result of it will be solutions for urban mobility that meets the needs of people and businesses and improves the quality of life for all.

Fiona McCluney

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The GEF unites 182 countries in partnership with international institutions, non-governmental organizations (NGOs), and the private sector to address global environmental issues while supporting national sustainable development initiatives. Today the GEF is the largest public funder of projects to improve the global environment. An independently operating financial organization, the GEF provides grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. Since 1991, GEF has achieved a strong track record with developing countries and countries with economies in transition, providing \$9.2 billion in grants and leveraging \$40 billion in co-financing for over 2,700 projects in over 168 countries. www.thegef.org.

Review of the monograph “Polycentric Sustainable Urban Mobility Plan for Boka Bay and the Old Royal Capital Cetinje 2016-2020”, various authors, UNDP Montenegro

The monograph “Polycentric Sustainable Urban Mobility Plan for Boka Bay and the Old Royal Capital Cetinje 2016-2020” presents the results of the project “Development of Low Carbon Tourism in Montenegro” launched by the United Nations Development Programme (UNDP), aiming at improving transport infrastructure, within the framework of developing sustainable tourism in Montenegro. The main outcome of this project is a strategic document for improving the transport system of the coastal Municipalities of Herceg Novi, Tivat and Kotor, as well as the Old Royal Capital of Cetinje, entitled Polycentric Sustainable Urban Mobility Plan (Poly-SUMP). This strategic document involves an innovative methodology, developed by the European Commission, which promotes the development of interactive solutions through the collaboration of experts with stakeholders from the examined region.

The structure of the plan consists of a detailed view of the current situation of the transportation system in the Boka Bay and Cetinje region, with special reference to its effects on the environment, the analysis of the institutional and planning framework of the examined region, as well as the assessment of all opportunities and barriers. The proposed solutions include the basic components of a strategic plan and consist of the vision and goals for the development of sustainable urban mobility, the scenarios and measures, the description of individual measures, as well as the action plan and guidelines for monitoring the plan implementation. The five annexes of the plan present in detail: examples of ToRs and the content of the individual studies and surveys, the proposed Memorandum of Understanding, CO₂ savings, the description of specific measures proposed for each planning period, as well as a detailed description of the planned measures.

The complex development problems of modern cities demand careful consideration and the development of innovative approaches. Traditional methods of spatial planning, based on solid regulations and vertical decision-making are replaced by new instruments for urban development, which are better suited to the needs of public administration and the communities. Global problems and accelerated urban growth, primarily impose efficiency criteria in providing adequate quality of life. Strategic Planning, as one of the newest instruments for urban development, is particularly focused on respecting the principles of sustainability. Its main characteristic is the selection of development policies and vision for the future, through close collaboration of a wide network of local stakeholders. The monograph “Polycentric Sustainable Urban Mobility Plan for Boka Bay and the Old Royal Capital Cetinje 2016-2020”, in principle, represents an academic and professional contribution for the development of a strategic plan, which could be used as an effective instrument for integrated and interdisciplinary management of urban development. The special significance of the monograph is reflected in the innovative strategic planning methodology used, which focuses on sustainable urban mobility in polycentric areas, and was applied in the most attractive touristic region of Montenegro. The polycentric sustainable urban mobility plan brings new experience in local planning practices and provides useful guidance for the application of this methodology to similar development problems of urban centers in Montenegro and the wider region.

Based on its characteristics, this monograph is considered of national importance, according to the categorisation of the Ministry of Science of Montenegro.

Belgrade, 31 Aug 2016

Reviewer:

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FOREWORD

In an effort to promote sustainability in tourism, minimize Montenegro's carbon footprint and promote sustainable transport options, the UNDP Montenegro launched in 2015 the project "Towards Carbon Neutral Tourism", funded by the Global Environment Fund (GEF). The Project focuses, among others, on improved low carbon and carbon neutral transport infrastructure to support public and non-motorized transport.

Within the framework of the project, it was considered of great significance to focus on the area of Boka Bay and the Old Royal Capital of Cetinje, which consists of one of the greatest touristic attractions in Montenegro. The examined area comprises of the three coastal municipalities of Herceg Novi, Tivat and Kotor, as well as the Old Royal Capital of Cetinje. The main objective is to develop, in collaboration with the four involved Municipalities, a Polycentric Sustainable Urban Mobility Plan (Poly-SUMP) for the region that will focus on promoting sustainable urban transport solutions and improve the quality of life for both permanent residents, as well as the tourists visiting the area.

By developing a Poly-SUMP for the period 2016-2020, the four municipalities, for the first time receive a dynamic strategic document created with the participation of all stakeholders in the area, which is based on a new methodology, developed by the European Commission.

The Poly-SUMP will be the core document that sets out the way in which the beneficiaries' plans, priorities and programmes for transforming the transport system will deliver change over time and across a range of different policy objectives. Using creative thinking, pooling resources and the best use of innovation and technology, can generate the capacity to continue to make more progress in addressing all the issues and impacts that transport can create, primarily on reducing GHG emissions.

The Poly-SUMP defines the vision, strategic priorities and measures that reflect the aspirations and the ways in which this vision will be achieved. At the same time, the action plan that contains 24 measures gives a special dimension to the document, making it an integrated and dynamic strategic document.

On behalf of the Centre for Sustainable Development, a programme jointly implemented by the Government of Montenegro and UNDP, based on the model of a close partnership, I would like to thank all those who participated in its drafting. We are especially grateful to the municipality of Tivat, Kotor and Cetinje for their trust and to the working group colleagues who were the most involved in the preparation of the Poly-SUMP.

Manager of the Centre for Sustainable Development,
a programme jointly implemented by the
Government of Montenegro and UNDP,
based on the model of a close partnership,
doc. Dr Jelena Janjusevic

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BokaCet 2020

1. General

Sustainable Urban Mobility Plans (SUMP)¹ are strategic plans that build on existing practices in planning and take into account the integrated, participatory and evaluation principle to meet the needs of urban residents for mobility and ensure a better quality of life in cities and their surroundings. Such plans are developed mostly for urban areas and communities characterized by monocentrism, i.e. the concentration of human activities in one area. Polycentric sustainable urban mobility plans (Poly-SUMP)² are developed with the same objectives, however, unlike SUMP's, these are targeted at areas characterized by a dispersed distribution of activities, i.e. areas (regions) that include several urban centres, which have a population between 5,000 and 200,000 inhabitants. The methodology for the development of a Poly-SUMP was developed within the framework of the European project "Polycentric Urban Mobility Plan (Poly-SUMP)", which was funded by the European Commission, and involved the following partners: ISIS (IT), Panteia (NL), Trivector (SE), Missions Publiques (FR), The Heart of Slovenia (SI), Region Marche (IT), BOKU (AT), Anatoliki (GR), Cimac (PT), and ICLEI Europe (EU). In order to select between the SUMP and the Poly-SUMP methodologies, it is necessary to clearly analyse and gain an understanding of the geographic area under study.

2. The examined geographical area of Poly-SUMP 2020

The geographical scope of the Plan includes the area of Boka Bay³ and the Old Royal Capital of Cetinje, which covers an area of 1,526 km². The area of Boka Bay, from Herceg Novi to Kotor, also includes the towns: Risan, Perast, Dobrota and Prcanj. The length of the bay surrounded by the Dinaric Alps (on the west by Mountain Orjen, and on the east by Mountain Lovcen), including the existing traffic lane, is 28 km. The longest part of the Bay is the Strait of Verige, of total length 2.3 km and 340 m width. The total population of the examined area is 84,153 inhabitants. Taking into account this data, as well as the fact that this geographical area has four different urban centres, it can be considered as a smaller region for the development of a Poly-SUMP.

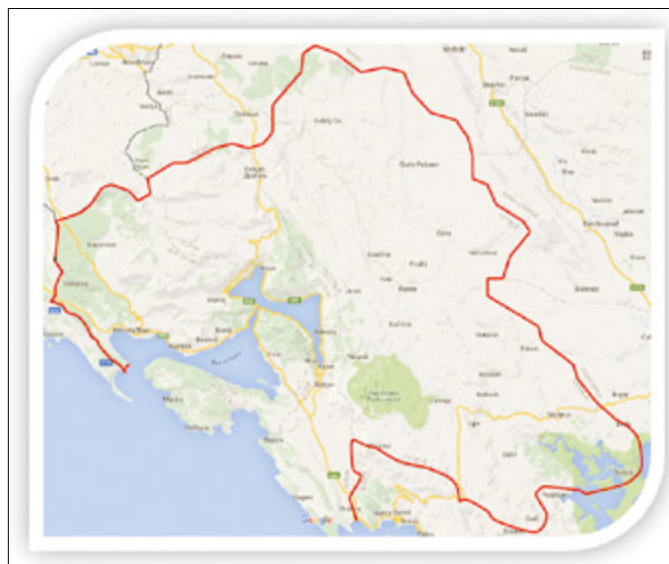


Figure 1. The Boka Bay Area and the Old Royal Capital of Cetinje
Source: Working team, Google maps

Herceg Novi is located at the area between Orjen (1,895 m), the highest mountain of the Dinara massive, and the entrance to Boka Bay, one of the most attractive bays in Montenegro. The coordinates of the city are 42°27' north latitude and 18°33' east longitude (Source: Municipality of Herceg Novi, 2015).

The city of Herceg Novi is considered the administrative, cultural and economic centre of the area. In terms of network position, it consists of the connection point with Croatia and the European Union over the border crossing Debeli Brijeg, while it is also very close to the International Airport of Dubrovnik.

¹SUMP is Sustainable Urban Mobility Plan – European Platform on Sustainable Urban Mobility Plan – ELTIS, www.eltis.org/mobility-plans

² Poly-SUMP is Policentric Sustainable Urban Mobility Plan – Planning Sustainable Mobility Together – <http://www.poly-sump.eu/>

³ Boka Bay includes the cities of Kotor, Tivat and Herceg Novi.

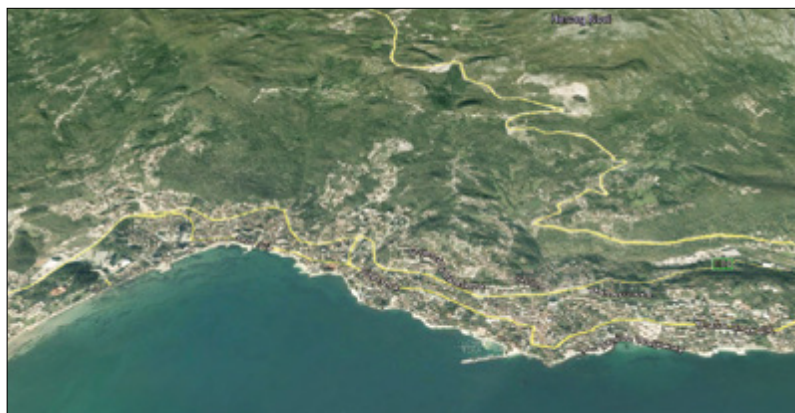


Figure 2. Herceg Novi Source: Google earth



Figure 3. Kotor Source: Google earth

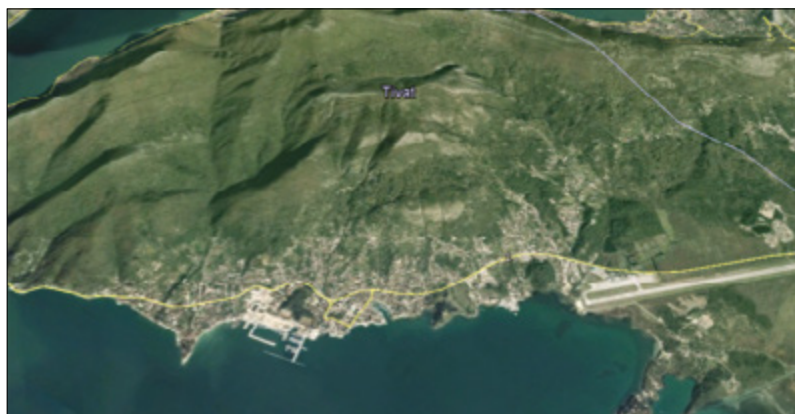


Figure 4. Tivat Source: Google earth



Figure 5. Cetinje Source: Google earth

Kotor is located in the Southeast tip of the bay with co-ordinates 42° 25' N and 18° 47' E. The city is located on the alluvial plain of River Skurda, which flows along its northern wall, and the spring Gurdic on the south wall. On the east side, there are the slopes of Lovcen with hill Sveti Ivan (260 m), while on the southwest side, the sea provides a gateway with international connections (Source: Municipality of Kotor, 2013).

Being included in the World Heritage List of UNESCO, Kotor's special significance is reflected in its own cultural heritage. Kotor is located on the route of the Adriatic highway (which goes directly through urban areas and along the walls of the Old City, one of the most visited tourist attractions in Montenegro), while it is connected with other coastal and continental areas by the Vrmac tunnel.

Tivat is located at the central part of Boka Bay, under the Lovcen branch Vrmac (710 m), on the northeast side of the town. On the opposite side, there is the Tivat bay, which is the largest of the four bays in the area. Tivat Bay with its unique characteristics impresses every visitor. Tivat is located at 42° 26' north latitude and 18° 42' east longitude (Source: Municipality of Tivat, 2012).

Tivat is the smallest municipality on the Montenegrin coast, but has a large tourist and economic importance for the entire country. Tivat Airport is located within the area of the Municipality, and consists of the sole air link of the region to other destinations.

The Old Royal Capital of Cetinje belongs to the Karst area (the so-called Cetinje field, with a field area of 7 km²) and is located at 671 m above sea level. The distance from the sea is 12 km. Cetinje is located at 42° 23' 27" north latitude and 18° 55' 45" east longitude. It is located on the main road junction (highway Podgorica - Cetinje - Budva), which belongs to the SEETO Route 4, connecting the Boka Bay with the capital of Montenegro and the northern part of the country. It

is of particular importance due to its history, and there are two national parks located within the municipality of Cetinje, namely Lovcen and Skadar Lake. The area of Cetinje is divided into two parts: the coastal area of Skadar Lake, which is also the border with Albania, and a highland area characterized primarily by Mountain Lovcen (Source: the Old Royal Capital of Cetinje, 2012).

While the area of Boka Bay is characterized by a Mediterranean climate in the humid sub-tropical zone, the Old Royal Capital of Cetinje is characterized by a continental climate with dry summers and wet winters (Cetinje is one of the cities with the highest rainfall in Europe, about 4,000 mm).

3. The Objectives of the Poly-SUMP 2020

The development of the Poly-SUMP for the period from 2016 to 2020, aims to define the action plan according to which all proposed measures would be implemented, in order to improve and develop sustainable urban mobility in Boka Bay and the Old Royal Capital Cetinje.

The plan is based on a new EC methodology for the development of Poly-SUMPs, which takes into account the polycentric characteristics of a region and its specific transport needs.

The present Poly-SUMP will facilitate the development of a more accessible, safer, cleaner, greener and more reliable transportation system in the area, taking into account the specific characteristics of the region, such as the significant seasonal variations in traffic, due to its tourist attractions, but also the capacity limitations of the existing transport system.

The plan focuses on land and maritime transport and provides solutions for non-motorized and motorized transport modes. More specifically, the Poly-SUMP aims at:

- improving the accessibility and interconnection of parts of the examined area
- improving intermodal transport
- improving and increasing the use of public transport system
- promoting the use of bicycles in the region through the development of a cycling network of paths/lanes
- improving road safety
- implementing solutions proposed by Poly-SUMP guidelines (flexible solutions for public transport, the introduction of electronic ticketing systems and passenger information systems)
- promoting environmentally friendly transport solutions in municipal and regional transportation systems
- improving air quality (renewal of the existing fleet or introduction of electric/solar/methane-powered vehicles, providing quality public transport services, including the public maritime transport, as an alternative to private transport)
- reducing motorized traffic in the urban centres (constructing parking facilities outside the city centres, introducing parking policy schemes in the city centers)
- promoting the future development of low-carbon transport options (eg. Cable car Kotor - Cetinje).

It is important to mention, that in parallel with this plan, the Ministry of Sustainable Development and Tourism (2016 c) developed the Draft Spatial Plan for the Montenegrin coastal area (SPSPCZ). The results of the Poly-SUMP of Boka Bay and the Old Royal Capital of Cetinje were incorporated into a National Spatial Plan of strategic importance, highlighted in the section related to the measures and guidelines for the development of Sustainable Mobility Plans⁴.

Although the term Sustainable Urban Mobility⁵ is recognised through certain planning documents and proposals, which aim in general at sustainability, a Poly-SUMP includes and presents proposed measures at the level of detail that allows for a more efficient Process of further elaboration and implementation. The latter constitutes the main distinctive advantage of a Poly-SUMP when compared to existing plans. It should be noted that this document is primarily a plan and that the elaboration of the proposed measures will be done in specific studies and individual projects during the period of its implementation.

The development of this plan will enable all future plans and ideas to be based on the same principles set forth in this document to ensure the consistency of the planning approach. This means that of equal importance will be large infrastructure projects, such as the Adriatic-Ionian highway or the construction of a tunnel in the area of the Boka Bay, as well as projects related to stationary traffic planning or improving the local main roads. The Poly-SUMP that refers to the area of the Boka Bay and the Old Royal Capital Cetinje should become an umbrella document for all transport planning activities in this area. It will establish the desired direction and present the key initiatives to achieve the vision and strategy for the next few years.

The first plan of this type in the Poly-SUMP region, developed for a both geographically and conceptually complex area, will serve as a model plan for other municipalities to set up and develop their own transportation strategies, following the methodology for the development of the plan, the research activities carried out for the analysis of the current situation, as well as the Process of designing proposals for concrete measures.

4. Methodology for Poly-SUMP development

Poly-SUMP is a relatively new concept in urban mobility planning for polycentric regions, which characterizes many different urban centres. Based on the Poly-SUMP Guidelines, published by the EC, a "Polycentric city region" is defined as a network of medium-to-small cities and peri-urban villages in a relatively compact area and not dominated by a central large city (metropolis) (Poly-SUMP, 2014, page 5). The compact space can be defined as a space in which the distance for daily commuting is not more than an hour in both directions. The polycentric city region characterises a capital (the largest) city with a relatively small population (fewer than 200,000 inhabitants in a larger region or fewer than 100,000 inhabitants in a smaller region) and a number of intermediate poles, smaller than the capital city, but with a population of greater than 5,000 inhabitants. The population of these regions is mostly concentrated in medium-to-small urban poles. Higher and middle urban hierarchy functions are scattered across the different centres.

According to the Methodology employed (Poly-SUMP, 2014), the following methodological steps are defined in the development of the Poly-SUMP:

1. Prepare well by understanding your Region

- a. Assess the urban mobility planning context and practices
- b. Profile polycentricity and mobility patterns

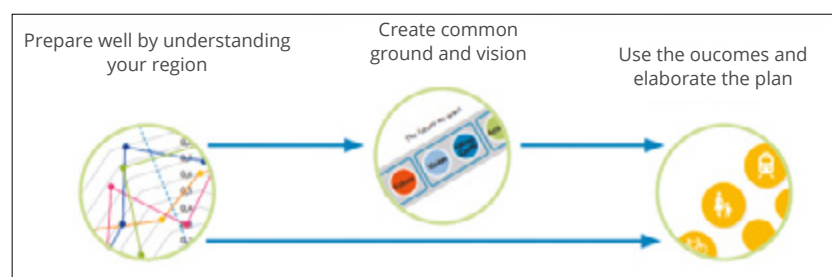


Figure 6. Poly-SUMP Methodology

Source : The Poly-SUMP Methodology, Guidelines (2014)

2. Create common ground and vision

- a. Organise a Future Search Workshop (FSW)

3. Use the outcomes and elaborate the plan

- a. Follow-up on the results of the workshop and refine the actions identified
- b. Prepare the Poly-SUMP and use the outcomes

⁵ "Sustainable mobility is the ability to meet society's desires and needs to move freely, gain access, communicate, trade and establish relationships without sacrificing other essential human or ecological values, today or in the future" - World Business Council for Sustainable Mobility, Mobility Project 2030

The main difference between the approach used for the preparation of this document and the classic approach for the development of planning documents is the different roles of the key actors in the Process of the plan development. While the traditional approach relies mainly on the experience of consultants - expert teams with the role of the contracting authority confined to the body that monitors the development of the plan, this approach involves a more intensive (primary) role of all stakeholders involved, as well as the contracting authority.

4.1 The role of stakeholders (end users)

The proposed methodological approach involves the active participation of all stakeholders in the entire Process: from the collection of documentation and data, definition of objectives, vision for the whole area, and elaboration of possible planning scenarios to the detailed description of the planned measures.

This role is derived from the nature of the subjects i.e. the institutions and organisations involved in the planning and implementation of plans in the region. With that in mind, it is clear that this group of stakeholders has the greatest responsibility for the final contents of the draft Poly-SUMP measures.

The inclusion of this group of stakeholders is achieved through the “Future Search” workshop (FSW)⁶ for the area of Boka Bay and Old Royal Capital Cetinje, as well as through the work of the technical team in charge of project monitoring. The participants of the workshop were all interested parties/stakeholders, different organisations and institutions, in order to provide efficient input/contribution to the analysis, which includes the past and current situation and future mobility in the municipalities of the area.

Their task was to agree on a vision and action plan that would serve as a guide to all stakeholders for the development of measures/options regarding mobility in this part of Montenegro.

The “Future Search” Workshop was held in Tivat, in hotel Palma from 19 to 20 November 2015. The workshop was attended by 38 representatives from various institutions and organisations, including: Ministry of Transport and Maritime Affairs, Ministry of Sustainable Development and Tourism, Municipality of Tivat, Municipality of Herceg Novi, Municipality of Kotor, Municipality of Budva, Old Royal Capital Cetinje, the capital of Podgorica, TO Cetinje, TO Herceg Novi, PE for Coastal Zone Management, Police, Port of Kotor, Montenegro Airports, Centre for Sustainable Development – UNDP- organisation Biciklo.me, as well as private taxi services and travel agencies from the Bay.

The main results of the “Future Search” workshop refer to the definition and validation of the visions, objectives and planned measures by the key stakeholders in this Process. Upon completion of the workshop, three possible scenarios of planned measures for the examined region were adopted. In the next step, stakeholders chose one scenario by filling out dedicated questionnaires and gave detailed descriptions of the measures, ways of implementation and financing of preparatory actions, etc.

4.2 Role of the Consultant

As previously stated, the Poly-SUMP methodology promotes the role of stakeholders and that distinguishes it from the traditional approach to planning.

In this regard, the role of the Consultant in this Process is to bring closer to the stakeholders a new approach to planning, in order to stress their importance and responsibility in this task, and also the importance of inter-regional connectivity and cooperation in order to: (i) create the necessary conditions for the implementation of a sustainable transport policy, and (ii) on the basis of their experience and expertise, to be the “technical support” to stakeholders in defining proposals for innovative, sustainable and technically enforceable measures.

The role of the consultant is, therefore, primarily to prepare, on the basis of research results, collected documents and other data and FSW results, an analysis of the current situation in the area and draft a plan in accordance with the chosen scenario.

⁶ Future search workshop (FSW) is mandatory part of the process of development of Poly-SUMP, and its methodology is given in Poly-SUMP, 2014

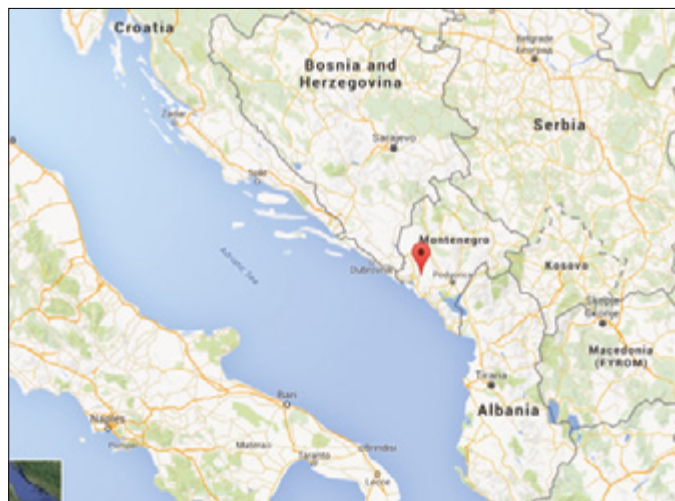


Figure 7. Region Boka Bay and Old Royal Capital Cetinje

Source: Google maps

5. General overview of mobility and current situation of the Boka Bay and Cetinje area transport system

For the purpose of the plan development, data were collected from the following sources:

1. Collected existing planning documentation⁷
2. Official statistics – MONSTAT (<http://www.monstat.org/cg/>)
3. The REBIS Study (World Bank, 2015)
4. Traffic studies conducted for the purpose of this Plan
5. Data collected from project stakeholders.

The existing planning documentation has been analysed by reviewing the current characteristics of the transport system of the municipalities in the area in order to identify the proposed goals and measures in the field of sustainable mobility.

The population that inhabits the examined area amounts to 13.58% of the total population of Montenegro. The largest contribution has Herceg Novi - 4.98%, Kotor-3.65%, Tivat-2.24% and Cetinje-2.69%.

5.1 The current state of the transport system in the area

The first step to creating a polycentric plan for sustainable urban mobility (Poly-SUMP) is the understanding of the region under study and the analysis of the actual characteristics of the area in terms of traffic, transport infrastructure, transport services, as well as the various socio-economic characteristics.

In order to evaluate the polycentric potential of the region, at this level, an individual analysis of the towns was carried out. The existing state of the traffic and transport system has been presented for every town in the region, for all modes of transport: road, maritime and inland waterway, air, with a special emphasis on public passenger transport and non-motorized traffic.

5.1.1 Road transport

Kotor

The most important main road is M-2 (E-65, E-80), which, as a section of the Adriatic road, has an international character and connects the Municipality of Kotor with other areas along the Adriatic main road. The total length of the main road on the territory of the municipality is 51.2 km, of which 40.1 km is built with modern asphalt pavement, while 11 km of the road is characterized by light asphalt construction (according to: Municipality of Kotor, 2013).

Generally, the infrastructure of the main roads in the municipality of Kotor can be characterised as relatively satisfactory. However, the volume of traffic with a strong seasonal peak character, the lack of lanes for left turns, side activities and interferences, and the intersections with other traffic and pedestrian flows significantly reduce the projected capacity.

⁷ In bibliography reference [4] to [27]

Through the construction of the branch of the regional road R-11 Lipci (Morinj) - Vilusi and the subsequent reconstruction of the intersection with M-2 in Morinje in 2013, a significantly better connection with this part of the Coast hinterland was achieved, while it also substantially relieved the Bay from traffic congestion, especially in the summer season. This is the road with modern surfacing, with a road width of 7 m and a length within the municipality of 18.7 km.

Local roads within the municipality have the function of linking the settlements that are not located along the main and regional roads. Within the municipality, there are 41 registered local roads, of total length of 180 km, out of which 117 km with asphalt or concrete base paving. Most of the local roads are in poor condition, and their maintenance is usually limited to patching potholes in the pavement.

Existing streets within the municipality are generally consistent with the urban plans, but their width, type of pavement and other characteristics generally do not meet the requirements of urban planning. The total length of the streets is 30 km. Pavement structure is mainly concrete and asphalt.

Tivat

The Adriatic main road, which tranverses the city, is an important traffic artery due to its connection to the larger area of Europe. Suburban areas and city roads of the secondary road network are also connected to the Adriatic main road.

The section of the Adriatic main road within the municipality of Tivat is gaining the character of an urban road with a heterogeneous traffic structure, both in terms of origin (transit, origin-target local traffic) and vehicle category. Such a transport structure has poor spatial characteristics: roadway without (left/right) turn lanes, mostly without pedestrian and cycle lanes and problematic intersections and local connections (according to: the Municipality of Tivat, 2010).

The City street network is organised in such a way that the town centre is dominated by an orthogonal road network, which in 100-150 m grid covers the city and offers a quality transport service.

The secondary road network, which enables access to houses and parcels, has only partly sidewalks, while drainage issues are not addressed or resolved by constructing open channels along the roads. The streets are paved, but do not have curbs.

Cetinje

The road network of the Royal Capital Cetinje consists of 32 km of main roads, 87 km of regional roads and about 337 km of local roads. Local roads cover the greatest part of the road network in the capital. Most of them are paved, however, of poor infrastructure characteristics (width 3.0 m, adverse grade, poor retaining walls, lack of drainage channels, culverts and shoulders, etc.).

The Old Royal Capital Cetinje is linked to the main road and a number of regional and local roads and, in this way, to the main traffic arteries of the country. The main road has not contributed to the expected integration of the territory of the Royal Capital (Cetinje - Rijeka Crnojevica). On the contrary, the area around the lake today is even more isolated.

The Old Royal Capital Cetinje is also linked to the Adriatic main road and hence connected to vital traffic flows in Montenegro and the wider region. Regarding main roads, it is linked with the central areas of the northern and coastal regional system (Podgorica and Budva), and through many regional roads with Kotor, Niksic, Danilovgrad and Virpazar (via Rijeka Crnojevica). The main road (M-2.3) link Royal Capital with Podgorica (30.7 km) and Budva (27.9 km), and regional roads (R-1, R-15, R-23) link it with Kotor via Njegusi (42.8 km), and Niksic over Cevo (66.1 km) (according to: Old Royal Capital Cetinje, 2014).

The transport system in the city is oriented towards the direction of a longer axis across the city and connects relatively well the city areas. The total length of the city streets is 40 km. The road network in the Royal Capital is not developed in accordance with the related traffic growth. For decades, its maintenance was not in accordance with the volume of traffic. A significant increase in motorisation, untimely and inadequate measures for traffic regulation and the lack of a comprehensive treatment of the transport system of the city resulted in several negative consequences and led to a significant drop in the level of transport services and the safety of all road users in the Royal Capital.

Herceg Novi

The total road network consists of a main road of total length of 27.6 km, which is the part of the Adriatic main road, and stretches from the border with Croatia (Debeli Brijeg) to Kamenari, continuing to Kotor- if ferry connection to Tivat is not used- Budva and further on. The main road passes through the urban core/centre (from Igalo over Topla to Herceg Novi) and, in addition to its function of providing transit transport, is a main city road (delivery, parking, hiking). However, this road also faces the problems of a dysfunctional passenger and cargo transport. It connects all local roads including the road to Trebinje. Local roads, mostly built in the coastal area and rarely in the hinterland, due to high altitude zones, have a total length of 124 km. This network should also include 31.8 km of unclassified roads. The local road network has the minimal horizontal elements, with steep inclines, poor pavement, without adequate road equipment and an extremely low level of maintenance. The specificity of Herceg Novi is a promenade that goes along the coast with a total length of about 6 km from Igalo to Meljine (according to: Municipality of Herceg Novi, 2015).

Parallel to the main road from Igalo over Herceg Novi, there is a one-way traffic direction road, acting as the artery of the urban zone with significant limitations, reducing the level of security and traffic safety. During the summer tourist season, the influx of passenger cars on the road causes frequent traffic jams and congestion, partly because of difficulties to control parking.

5.1.2 Maritime and waterway transport

Kotor

The Port's available area of activity is divided into two basic parts: the port and marina part. The wharf length of the port segment is BERTH I (total 188 m) and BERTH II (total 150 m). The operative coast of the marine segment is 417 m long. Its part is also the pontoon with a capacity of 14 berths on pontoons type "S". The inland part of the operational coast occupies 4,000 m². Port operations are taking place on the surface of the plateau, in a zone of 6 m width (according to: Municipality of Kotor, 2013).



Figure 8. Port of Kotor
Source: <http://rs.seebiz.eu/>

The Port Authority and customs operate throughout the year, thus offering complete international services. The Port Authority of Kotor has offices in Herceg Novi, Zelenika and Tivat, and administrates in the area from Cape Sveta Nedjelja to Prevlaka and the river Jaz, covering a shore length of 140.8 kilometres.

The Port of Kotor is in a phase of expansive growth, particularly in terms of security and providing the service of cruiser passenger traffic. The latter is the

reason for recent investments in infrastructure (construction of a new administrative building and passenger terminal in 2014) and the current implementation of the installation of two pontoons with the supporting infrastructure. It serves about 250 cruise ships annually, with more than 200,000 passengers, while the number of yachts docking increases from year to year, currently amounting to approximately 1,500 annually. Therefore, a pilot project is proposed for new berths on the location Plagenti for mooring ships of up to 330 meters, with two mooring buoys, for which a pilot boat has already been purchased. The Port of Kotor has a certificate of environmental protection and system management quality 9001 and 14001.

The small port of Risan consists of an L-shaped pier of a total length of 70 meters, with berths (moorings) for smaller vessels from the inside, while larger vessels can dock along the outer side of the pier (of 88 m length with rubber bumpers. For mooring in the harbour, 19 bollards and a number of iron rings are available. However, the larger vessels can anchor in front of Risan, where the depth is 13-20 meters.

It should be noted that in addition to the Port of Kotor and Risan harbour on the territory of Kotor, there is the Lipsi oil terminal/petroleum installation. The delivery of oil to the petroleum installations is carried out by sea (maritime route) (as the delivery of products to retail destinations is mainly conducted by road i.e. auto-tankers). The Lipci Berth can accommodate vessels up to 6,000 tons and up to 8m draft depth.

Tivat

Maritime transport, especially passenger, as a viable alternative of connecting various settlements of the Tivat Municipality should be restored, since it functioned in the past. Marinas exist in all the coastal towns, and there are conditions for the establishment of simple shipping lines between these settlements and among all other towns of the Boka bay. The Tivat Marina has a certificate of environmental protection and quality management systems 9001 and 14001 (according to: Municipality of Tivat, 2012 a).

Port operation is based on constructed coastal infrastructure that includes: posts, inner harbour, piers and marinas. In order to introduce maritime passenger and tourist traffic, the existing port locations Lepetane, Opatovo, Donja Lastva, Pine, Krasici and Durasevici will constitute the key maritime infrastructure. The new piers can be built on the sites of future tourist facilities and space for tourist activities. The construction of a high-capacity marina of up to 600 berths with all the necessary services and facilities at the site of Arsenal in Tivat has been partly realised (Porto Montenegro). In the first phase of construction, from 2008 to 2010, the marina was equipped with 250 berths, while currently it has five breakwaters with 500 constructed berths for yachts of different sizes (varying from 12 to 180 meters in length). The phase 2a resulted in an additional 152 berths and 546m of wharf and the phase 2b in an additional 56 berths and 425 meters of wharf for ships with a maximum length in this section of 130 meters. Since 2010, Porto Montenegro has achieved the status of border crossing, so all customs procedures can be done at the marina, while , in addition to supply, the servicing of yachts is also possible(according to: Municipality of Tivat, 2012 a).

The local population uses the existing harbour-berth Kalimanj in Tivat with 374 berths. In addition to these, in a smaller service marina is operational in Bonici. On this site, the air service Tivat is also located, initially equipped for the reception of goods/petroleum products by maritime transport for vessels up to 3,000 tons with 5.2 meters draft.



Figure 9. Marina Porto Montenegro
Source: <http://rs.seebiz.eu/>



Figure 10. Skadar Lake

Source: http://www.androidvodic.com/mesto-foto-galerija_crna-gora_skadarsko-jezero-virpazar-rijeka-crnojevica



Figure 11. Small port Skver

Source: <http://www.morskodobro.com/index.php/korienje-morskog-dobra/luke-od-lokalnog-znaaja/luka-herce>

potential, which currently does not serve its purpose, resulting in underutilised infrastructure left to decay. The rehabilitation of the existing piers, which are not particularly attractive for nautical tourists, such as Skver, can be realised through their inclusion in local maritime traffic or excursion tours.

Skver harbour is located on the northern coast of the Herceg Novi bay, on the opposite of the Boka Bay entrance, but sailing in/sailing out is limited due to concrete anchor blocks, rocks, underwater rocks and sewer pipes within a radius of 200-300 meters from the pier. For mooring, 14 metal and 20 stone bollards along the inner side can be used, whose length is 210 m, with approximately 2 m depth along the shore. Therefore, the larger vessels can anchor just fifteen meters from the breakwater head, though not during the winter, due to the high waves and winds (according to: Municipality of Herceg Novi, 2015).

The main activity of the Port of Zelenika is commercial passenger and cargo port for handling passenger ships and cargo, with capacities in the closed and open storage areas; within the port there are no special terminals (traditional port). The port is registered for international maritime traffic and the function of border crossing (with branch offices Port Authority and customs duties). The border crossing uses a NW quay length of 134 m with eight bollards for mooring. In addition, the port uses a SW quay length of 130 meters with nine bollards. Large ships can anchor in the area between Zelenika and Kumbor, considered as the best anchorage point in

As part of the improvement Process for maritime traffic across Montenegro, especially in Boka Bay, a new VTMS⁸ sensory station has been installed on the hill Obosnik in Lustica for the control and management of maritime transport, as part of the infrastructure of Maritime Safety Department Of Montenegro i.e. the Maritime rescue coordination centre⁹ (radars, VHF transceivers, radio-communication equipment, software VTMS, weather stations, radio goniometers, etc.).

Cetinje

In the area of the Old Royal Capital Cetinje there are potentials for improving lake traffic, which would be of particular importance for the development of tourism in this area. In this sense, it would be necessary to activate waterway lines on Skadar Lake, including the construction and reconstruction of docks for the increased number of smaller vessels.

The inclusion of this type of transport by activating the waterway line Skadar Lake - Bojana river - Adriatic Sea is considered to be extremely important, not only from the tourist point of view, since this area would be directly involved in the Mediterranean flows of nautical tourism, but also for other economic aspects and general scope.

Herceg Novi

An underdeveloped local maritime and nautical traffic led to the deterioration of existing port infrastructure. The arrangement of docks represents constructed

⁸ VTMS – Vessel Traffic Monitoring Information System

⁹ MRCC – Maritime Rescue Coordination Centre

Herceg Novi bay. In addition to the port, there is a small marina for yachts and boats.

In addition, it is expected that the Shipyard Bijela will be operational after the announced privatisation (now bankrupt) and expected investments in the program of overhaul/repair of yachts and megayachts. This will intensify the transportation of cargo (raw materials and equipment) by sea in Boka Bay (as to some extent the number of road freight vehicles on the national network in Boka). It covers an area of 121,000 m², a water area of 350,000 m², with enclosed facilities of 32,050 m² and an outer surface of 87,000 m². The equipment consists of two docks - a large floating dock with of 250 m length and 44 m width, lifting capacity of 33,000 tons, with a crane lifting capacity of 12 tons and a smaller dock of 184 x 25.5 m (thoroughly overhauled in 1999) with a lifting capacity of 10,000 tons and crane capacity of 7,5 tons, a quay length of 160 m and another of 510 m with cranes and the possibility to repair ships up to 120,000 tons. The wharf length is 1,200 meters, while the shipyard had two tugboats of 450 and 250 KS, respectively.

The ferry line Kamenari - Lepetane is operational during the summer as well as the winter period (schedule) between Herceg Novi (Kamenari) and Tivat (Lepetane). This maritime line is only 4 kilometers long, but it represents a significant alternative to the main road because the length of the trip is shorter for 22 kilometers. Currently, six ferries - vessels run on the line operated by Maritime Transport Ltd. with a frequency of departures arranged within 24 hours, daily. In addition to pedestrians and cyclists, ferries are transporting all types of motor vehicles.



Figure 12. Fairy line Kamenari - Lepetane

Source: <http://skalaradio.com/2012/04/01>



Figure 13. Bus station Kotor

Source: <http://www.dan.co.me/>

5.1.3 Public Passenger Transport

Kotor

Public transport in the municipality of Kotor constitutes mainly bus and taxi services. The lines of public bus transportation are related to the Adriatic main road: The new settlement Skaljari - Risan - Kostanjica - Dragalj, Kotor - Bigovica - Krimovica, new settlement Skaljari - Kostanjica, Kotor Riva - Gorovici, Kamp - Stoliv, Kotor Riva - Mirac, new settlement Skaljari - Sveti Vraci, Kotor - Kavac. Kotor has a bus terminal/ bus station owned by AP Autoboka. The bus terminal occupies an area of 5,238 m², and includes: bus station with an area of 509 m², parking for buses with 10 platforms, parking for taxi vehicles and parking space for station guests (according to: Municipality of Kotor, 2013). In the adopted urban plan, the reconstruction of the bus station with all the services is planned.

From the bus station in Kotor, there are intercity bus lines within Montenegro and lines serving international traffic towards Bosnia and Herzegovina, Croatia and Serbia. There is also a line for Tetovo in the former Yugoslav Republic of Macedonia. The number operational national intercity and international bus lines that stop at the

bus station is 96 (according to: Datadesign, 2015), and while certain lines are operating on a daily basis, others are not. The number of departures during the day to other cities in the region is 62.

On the territory of Kotor, 38 entrepreneurs and companies are operating with licenses for taxi services with limited liability. Every entrepreneur or Ltd. within its license can have more than one vehicles, albeit with an obligatory copy of the valid license for all. The total number of vehicles with a copy of the taxi license is 109. In the area of Kotor, there are also 30 rent-a-car agencies, which have about 153 available vehicles (according to: Datadesign, 2015).

Tivat

Public transport in the municipality of Tivat is realised by bus and taxi transport. The lines of public bus transportation are related to the Adriatic highway. Tivat has a bus terminal/ station for the arrivals/ departures of passengers.

Public transport takes place exclusively along the main road, and the central bus stop is receiving long-distance and local bus transfers. The transport network in the other areas of the Municipality of Tivat faces certain problematic issues, both in terms of cross sections and in terms of routes. All roads in the suburbs are dependant on the connections to the main road that leads to the city and there is a lack of longitudinal parallel connections along the main road.

The linear structure and the specific position of Tivat defined the longitudinal route lines of urban and suburban transport along the north – south direction: Lepetane/Herceg Novi - Donja Lastva - Tivat - Zupa - Radanovici - Radanovic/Kotor/Budva.

Within the municipality, there are 4 lines operating in total: Tivat – Lepetane, Tivat – Gradišnica, Tivat – Krasici and Tivat – Radovici.

During the tourist season, the number of daily departures increases with three additional departures per each line, while the line Tivat – Ostrvo Cvijeca with six or eight daily departures.

The bus station in Tivat is mainly of transient type and serves 116 national intercity and international bus lines, out of which some are operational every day, and some are not (according to: Datadesign, 2015). The bus station

is well located in term of its accessibility from the main street and road network, but is far away from the city centre. The taxi stand is located near the bus station, facilitating further transport of passengers, and parking for passenger vehicles.

In 2015, the construction of the first phase of the new bus station (and a small shopping centre) was completed near the existing temporary bus stop at Zupa¹⁰. The new bus station has over 1,000 m² of closed business space, 8 platforms for buses of total area of 828 m² and a small parking for passenger cars of employees.

The taxi service in the Municipality of Tivat is performed by two registered taxi companies with 89 issued licenses. According to the records of the relevant Secretariat for finance and economic development, there are 30 registered rent-a-car agencies in Tivat, with 99 registered vehicles¹¹.



Figure 14. The newly built bus station in Tivat

Source: <http://www.cdm.me/drustvo/crna-gora/tivat-dobija-autobusku-stanicu-za-ponos>

¹⁰ Private-public partnership principle.

¹¹ The number of registered vehicles in rent-a-car agencies in the municipality does not determine the number of vehicles that are simultaneously available considering that these vehicles are used on the whole territory of Montenegro and in international traffic.

Cetinje

It is noted that Cetinje is significantly different from other cities with similar characteristics, and this difference is because a city of about 15,000 inhabitants has no significant public passenger transport. The public passenger transport service does not fully comply with the needs of the population. Underdeveloped road infrastructure with poor exploitation characteristics resulted in the limited service of public transportation.

The bus stop in the urban core is well placed in terms of its location - the inner city centre and its accessibility to the main street and road network, but it is considerably far away from the suburbs. Within the municipality of Cetinje, there is no public passenger transport for suburban areas that would allow the population in remote rural areas a quality traffic link to the administrative centre. There is also no single tariff system. Passenger bus transportation is conducted by private companies that have formed timetables/schedules and use the bus stop in Grahovska Street, which is separated from the road by a median strip. However, the coverage and the availability of bus lines is mostly depending on the market conditions. From the bus terminal, 95 bus lines operate serving intercity and international traffic, while only a number of these operate on a daily basis (according to: Datadesign, 2015). Most of these lines are connecting Cetinje and some of the cities in the Boka Bay.

Taxi services in Cetinje are performed by registered taxi companies and private entrepreneurs that include 46 registered taxis (the number of issued licenses), transporting 365,320 passengers annually.

As for the availability of rent-a-car service, in the area of Cetinje, there are currently eight registered rent-a-car agencies.



Figure 15. The bus stop in Cetinje

Source: <https://busticket4.me/autobuska-stanica/detalji/Cetinje/MNE/>

Herceg Novi

Public transport in the municipality of Herceg Novi also includes solely bus and taxi transport. The lines of public bus transportation are mostly connected to the Adriatic main road. In the area of Herceg Novi, there are two bus stops: a) in Herceg Novi - the bus station, and b) in Igalo, which most of the intercity lines use as initial or final station.

The bus stop, which is currently located in Igalo is actually a greater expansion on the main road with minimal supporting facilities, lacking a platform, posing traffic safety issues. The lack of a modern designed and constructed bus station with all the complementary and supplementary facilities does not only constitute a technical, traffic and security issue, but also an economic and development issue for Herceg Novi.

Outside the tourist season in Herceg Novi, and from Herceg Novi bus station, there are around 100 intercity



Figure 16. Bus stop in Herceg Novi

Source: <http://www.jeffshanberg.com/montenegro/herceg-novi/herceg-novi-bus-station>

trips per day that cover the area of Montenegro and Serbia. During the summer season, the number of lines triples intensifying the problem of the lack of a modern and safe bus station, as well as a network of adequately equipped services and parking for hundreds of buses. The adopted planning documents, foresee the relocation of the existing bus terminal from its current location, because the traffic requirements exceeded the available capacity for a number of years. The plan is to relocate the bus station in Igalo.

From the existing bus station, 73 regular intercity and international bus lines depart, some operating every day, and some not. The location and structure of the city defined the routes and the lines of the urban and suburban transport. According to available data, there are two city lines in the project area:

- Igalo – Kamenari – Igalo (through the town)
- Igalo – Meljine – Igalo (round)

There are also six suburban lines, which operate on a daily basis on defined routes, while the number of departures is significantly different in the off-season period in comparison to the seasonal period, when the number of departures increases in each of the lines.

Taxi service in the Municipality of Herceg Novi is performed by two registered taxi companies and private transport with 120 taxis. According to available data, nine rent-a-car agencies operate in the area of Herceg Novi.

5.1.4 Freight traffic and distribution centres

Kotor

Due to the extremely limited capacity of the primary road network in Kotor (to which significantly contributes freight traffic transit and supply flows), the supply of the urban core of Kotor, especially the Old Town, as well as all the facilities along the Adriatic main road, is becoming considerably more difficult. A particular problem is the transport of goods within the Old Town, whereby due to the high demand for supply, especially in the summer tourist season, amendments to the Decision on the Organisation of the town and the suburbs of Kotor allow greater flexibility for the freight delivery time limit (but exclusively for electric vehicles and vehicles without the drive engine) (according to: Municipality of Kotor, 2013).

Within the territory of Kotor, there are no terminals that consolidate the services of storage, handling and distribution of consumer goods,, except for the terminal and distribution stations for the supply of motor fuels.

The terminal Lipci in the area of Kotor boasts a reservoir area of 12,200 m³, with five reservoirs for the storage of petroleum products. At the terminal, liquid cargo is received exclusively by sea, while the transport of products to distribution stations on the territory of Boka Bay is carried out by road (tank trucks).

In addition, an industrial zone (i.e. zone of warehouses) has been formed at the area of Duba along the Adriatic main road for the distribution of goods in the municipalities of Kotor and Tivat. There are also a number of facilities for wholesale and retail, high-capacity storage and retail space.

Tivat

The Project of Management and Regulation of Traffic Flows in Tivat regulates also cargo transport, stipulating that trucks can only use the Adriatic main road, while entry into the city zone is allowed only for vehicles with up to 4 t load capacity, with the possibility of exemptions for vehicles with special permission. In addition, for the offices located in the pedestrian zone "Pine", where entry is prohibited for all types of motor vehicles, supply is done from the side streets. The introduction of electric vehicles for supply is planned.

However, on the territory of the municipality, there are no cargo terminals that combine storage, handling and distribution functions. The exception is the terminal for liquid fuels of the aviation service Tivat, located next to

the airport, which covers 15,000 m², with 4.840 m³ volume tanks (according to: Municipality of Tivat, 2012 a). Although this terminal was initially equipped with a pier for ships and dispensing, now with the underground pipeline installations, most of the fuel is transported to storage by tank trucks.

Cetinje

According to the Decision on Regulation of Traffic in the Royal Capital, traffic for freight vehicles weighing over 3.5 tons is prohibited on the street network of Cetinje, apart from the ring road (Mojkovacka Street) and parts of the Boulevard Crnogorskih heroja and Lovcen street. The movement of vehicles of larger capacity is allowed by exception in other parts of the street network following approval from the Secretariat for Utilities and Traffic (payment of fees is necessary) (according to: Capital Cetinje, 2012).

The Old Royal Capital does not own a cargo terminal, for the purpose of urban goods distribution; however, an area for this purpose (near the Public utility company) has been allocated by the Decision on the Regulation of Traffic.

The supply of businesses in the central zone is regulated by Article 9 of the Decision on Regulation of Traffic in the area of the Royal Capital, according to which supply vehicles have time-limited access during the day.

Herceg Novi

The Decision on the Regulation of road Traffic and street network of Herceg Novi limited the movement of trucks over 4 tons, or more than 2.5 tons, while cargo transport for vehicles of more than 8 tons is prohibited on many local roads (with the exception for those obtaining a specific approval of the Secretariat for communal and residential services and environmental protection).

A permanent parking slot for commercial vehicles used for the public transport of goods is allocated at the area near the warehouse of building materials (according to: Municipality of Herceg Novi, 2015).

In the municipality of Herceg Novi, in Igalo, the so-called service zone has been formed, which includes number of companies with many individual storage facilities that combine the functions of storage, wholesale, retail and distribution of all types of goods, owned by private entities. All these companies have their own fleets, which include freight vehicles, that is, auto trains (companies for storage of construction materials and equipment),- medium-heavy trucks and light trucks i.e. vans for the supply and "door-to-door" delivery (vehicles for transporting food products are equipped with refrigeration system).

5.1.5 Bicycle and pedestrian traffic

Kotor

In addition to the large share of passenger cars in the total daily traffic, walking is the primary form of movement in Kotor. The system for pedestrians consists of sidewalks and squares. The total length of the streets is 30 km, and the surface of the pavement on the area covered by urban planning is around 30,000 m² (according to: Municipality of Kotor, 2013).

There is no dedicated space on the streets for bicycle traffic, and this takes place on sidewalks and roads.

Bicycle traffic in the area of Kotor is taken into consideration within the cycling route EuroVelo 8 passing through Kotor, although the project has not been implemented, as well as within the local routes of Montenegro, whereby Top trail 1 passes along the Bay and through the centre of Kotor. The existing cycle routes are passing along the Adriatic main road through the centre of Kotor. The safety of cyclists on this route is very questionable due to the high intensity of traffic. In addition, the unfavourable terrain in the area of Kotor makes difficult the deve-



Figure 17. Perast Sustainable Transport

Source: <http://skalaradio.com/2014/05/15/integrirani-saobracaj-u-perastu>



Figure 18. Bike sharing Tivat

Source: <http://www.vijesti.me/vijesti/opstina-tivat-obnavlja-biciklisticke-stanice-u-gradu-839462>

of transport in the Old Royal Capital. Pedestrian facilities consist of a sidewalk along the existing road network, while the renewal and upgrading of infrastructure according to the traffic requirements is necessary. The existing facilities for pedestrians should be adapted to the specific needs of users in places where such requirements arise. A construction of new scenic trails is planned in the area of the Royal Capital and this concept could be implemented also in the road network, if there are spatial possibilities (according to: capital Cetinje, 2012).

Bicycle traffic as a mode of transport is not developed and there is no adequate infrastructure for it. Currently, bicycles are used mostly for recreational purposes. The development of this mode of transport is planned by adopted planning regulations, that place an emphasis on the development of cycle tourism and the development of cycling paths in Cetinje. Due to the favourable conditions for the use of bicycles for tourist purposes, bicycle rental (rent-a-bike) is available in Cetinje through certain hospitality and accommodation facilities, as well as through the National Parks of Montenegro (NP Lovcen).

Herceg Novi

As in other cities of similar size, walking in Herceg Novi is one of the primary modes of transport. Traffic infra-

development of not only recreational cycling and trails, but also the so-called utility trail that tourists and residents can use to carry out daily activities.

The project Perast Sustainable Transport has been implemented in the area of the Municipality, which prohibits traffic in the main street of Perast during the summer months and offers users (tourists) various non-motorized alternatives modes.

Tivat

Pedestrian traffic is not supported by adequate infrastructure. Near the sea, which is the most attractive area, a continuous connection for pedestrians over the entire area of the Municipality is not possible (according to: Municipality of Tivat, 2010).

The provisions for pedestrians essentially consist of a sidewalk along the existing and newly planned facilities, a large paved area in front of large commercial buildings or residential-business facilities, car-pedestrian roads and the waterfront, where motor vehicle traffic is prohibited.

There is no dedicated lane on the road for cycling traffic, except for bicycle paths in four streets in the centre of Tivat, which were recently marked within the framework of the project of *Bike sharing Tivat*.

Cetinje

According to the available data on the distribution of modes of mobility, walking is the second basic form

structure provisions for this mode of transport are not adequate. Pedestrian infrastructure consists of a sidewalk along the existing buildings, paved surfaces in the central zone and steps over great altitudes (by: Municipality of Herceg Novi, 2015).

The specificity of Herceg Novi is a pedestrian overpass/footbridge that follows the coast, along a distance of about 6 km, starting from Igalo to Meljine. The Footbridge has two regimes (summer and winter): during the summer on some longer or shorter sections is overcrowded and in winter period is mostly deserted, essentially unused.

Bicycle traffic is not developed as expected due to the characteristics of the terrain. On the promenade along the coast, there are cycling flows, which in the future, in terms of infrastructure, should be adequately marked and equipped. This would contribute to the promotion of recreational cycling for tourist and residents and would also motivate the residents to use bicycles as alternative means of transport, where the terrain conditions allow.

As a contribution to the development of recreational cycling, a cycling trail is constructed at the picnic area on the slopes below the Orjen resort.

5.1.6 Parking

Kotor

Parking on the entire city area is not addressed adequately. The situation is particularly difficult in the central part of Kotor, near the public buildings, being the most attractive part of the city. The existing parking spaces are not sufficient or well arranged. There is an evident problem of parking for cars and motorcycles, and especially trucks and buses.

There was no appropriate analysis and expert assessment of this segment in Kotor and, hence, the elaboration of the appropriate study and the subsequent harmonization of planning documents was initiated in 2015. The plan is to develop the stationary traffic project i.e. provision of parking facilities from the Vrmac tunnel to the health centre in Dobrota and to the beginning of Peluzica (parallel with the development of the project of traffic regulation).

According to data from the Annual Report of the Ministry of Sustainable Development and Tourism of Montenegro (2015), Kotor has 120 available parking places where parking is charged. The maintenance and management of parking lots is conducted by the local government (LG). A special towing vehicle in cooperation with traffic and municipal police, is towing illegally parked vehicles, in accordance with the Montenegrin Law on Road Traffic Safety (June 2012).

Tivat

Existing structures in the city, as well as the impossibility of new construction interventions and intensive growth of individual motorisation, resulted also in problems in traffic flows in Tivat, particularly due to parking problems.

According to current records of the number and types of parking lots, there are 913 parking spaces in total. Parking spaces are free of charge, with the exception of two public parking facilities at the Airport and Arsenal-ska Street, managed by the Parking Service. In Tivat, there is a "tow truck" service that is, in cooperation with the police, moving illegally parked vehicles, in accordance with the Montenegrin Law on Road Traffic Safety.

The lack of specially arranged and equipped areas for this category of vehicles results in an additional burden for the street network, reduced parking space for passenger cars, obstruction of the area intended for pedestrians and cyclists and negative environmental impacts on the entire city. There is also no organised accommodation for drivers and vehicles in transit, while waiting for cargo or passengers.

Cetinje

One of the major problems in the transport system of Cetinje is the lack of parking spaces (1,100 parking spaces for the approximately 7,000 registered motor vehicles). The maximum load on an already insufficient parking space capacity is imposed at the historical centre of the city. The reconstruction of the Student square will reduce the existing number of parking spaces by 80. With regard to the spatial possibilities, underground parking (parking garage) or above-ground parking lots (or prefabricated or solid construction) should be considered in the future. In particular, there is a lack of parking spaces for freight vehicles (according to: capital Cetinje, 2012).

The study of the billing system and control of parking in the Old Royal Capital, developed in 2015, identified two parking zones in Cetinje, divided into red and yellow, with 998 arranged parking spaces for cars, 35 parking lots (i.e. parking garages), and 40 parking spaces for buses.

The Decision on Traffic Regulation in the Royal Capital, in addition to parking for passenger vehicles and special parking spaces for taxis and buses, determines one parking space for trucks (Sankova gomila). Within the city, the service for moving illegally parked vehicles is active, in accordance with the Montenegrin Law on Road Traffic Safety.

Herceg Novi

Stationary traffic is one of the largest traffic and urban problems in the area examined. In the current situation, the evident absence of the necessary capacity for the parking of passenger cars and buses on tourist sites and settlements should certainly be set as an imperative priority to planners and designers within the Process of urban planning and development of technical documentation, as well as to the authorities with regard to the implementation Process.

The Parking Service manages the stationary traffic in Herceg Novi, which has four public parking lots on which the automated ramp system controls parking. They consist of constructed parking lots and prefabricated parking structures/systems with a total number of 300 parking spaces (according to: Municipality of Herceg Novi, 2015).

In addition to the public parking in the municipality, there is a larger number of marked general parking places in the frontal part of the streets from Igalo to Herceg Novi - divided into two parking zones (red I and yellow II). Apart from the difference in prices, there is no differentiation between these zones in terms of parking duration (as there are no time limits).

Payment of parking can be done by various types of tickets or by sending SMS from a mobile phone. Special towing vehicles services work on the principle of cooperation with the traffic and municipal police and following their instruction, these move the illegally parked vehicles, in accordance with the Montenegrin Law on road and traffic safety, and in accordance with the Decision on public parking MA Herceg Novi (1/10/2012). This protects the public areas from violation and their improper and unlawful use.

5.1.7 Air traffic

Kotor

Within the municipality of Kotor, there is no air transport. This is served via the existing airport in Tivat, located at a distance of approximately 5 km.

Tivat

The Tivat Airport is one of two Montenegrin international airports. It serves all cities and towns on the Monte-

negrin coast, and is well connected by a road network, as well as with neighbouring municipalities in the hinterland. It has a great significance for the tourist industry in Montenegro. Tivat airport is located on the east coast of the Bay of Tivat, 3 km southeast of the centre of Tivat. The main road M2 - Adriatic main road passes directly on the north side of the runway. The only runway was constructed in 1971, with a length of 2,500 m, width 45 m, located on the flattened grass path of 2,620 m length and 150 m width. Due to the small width of the platform, the use of taxiways is limited to a Category D airplane, with a wingspan of up to 52 m. The Airport Tivat does not have the equipment for night landing, nor landing in bad weather conditions. The passenger terminal zone is located near the main road, from where there is a road to the terminal facility and parking facilities for cars. The building for the passenger terminal was reconstructed in 2006 and is in a very satisfactory condition. The Tivat Airport has a high seasonal character. Passenger traffic has been fluctuating during the last 20 years, directly associated to the situation of the tourism industry. From 2003 to 2007, it was on a constant rise. In 2007, a record was achieved at Tivat airport: it served 574,011 passengers and 4,079 aircrafts. After a slight decline in the number of passengers in 2008, 2009 and 2010, the AP Tivat in 2011 set a new record of 641,000 passengers. The Tivat airport has no significant freight traffic; 400-660 tonnes of goods are handled annually, mainly upon the arrival (according to: Municipality of Tivat, 2010).



Figure 19. Airport Tivat

Source: <http://www.cdm.me>

Cetinje

In the area of Cetinje, there is no infrastructure for air transport. The nearest air traffic terminals are in Podgorica and Tivat. Cetinje is located about 40 km from the airport in Golubovci and about 45 km from the Tivat Airport.

Herceg Novi

In the area of Herceg Novi, there is no air transport. This is served by the existing airport in Tivat, which is at a distance of about 20 km.

5.1.8 Sustainable mobility

The analysis of existing documents provided evidence of each city's clear commitment to the development of strategic and operational measures in the field of sustainable mobility in the future. All valid planning documents define the objectives and measures that should enable the transport systems in these areas to function more environmentally friendly and in accordance with the principles of sustainable urban mobility.

Guided by its strategic commitments, some municipalities implemented individual projects, such as the bike sharing scheme of Tivat. The municipality recently adopted the Project of Management and Regulation of Traffic Flows in Tivat (according to: Municipality of Tivat, 2012a), which includes the study of sustainable transport and the introduction of bicycle traffic along the coast of Donja Lastva to Zupa, as well as to four streets in the centre of Tivat. Six bike stations for bicycle renting are set up (with six parking bollards), and arranged at strategic points along the promenade of Tivat. The entire project is realised due to the bilateral agreement of the two Mini-

stries in charge of environmental protection - Montenegro and Italy, the Municipality of Tivat and the Italian company DFS Engineering Montenegro, entrusted with consulting services.

Herceg Novi and Kotor implemented similar projects, such as traffic restrictions during the summer months in Perast (ecotourism zone), cycling and hiking trails in the foothills of Orjen (Municipality of Herceg Novi), etc.

For the bus station in Cetinje, the implementation of the project Green Welcome Centre is on-going (currently, the entire bus station is being equipped and prepared for opening). The purpose of this centre will be to provide information to tourists and station visitors about the timetables, tourist offer, etc. The plan is to develop this project for at least one more station in the region.

There is a number of projects and plans that are in the stage of planning or project documentation, for example the cable car Kotor - Cetinje, whose implementation would reduce the time travel from 1-1.5 h, which is the current duration of the existing route, to 45 minutes. There is also the feasibility study of introducing maritime public transport by using a solar-powered vessel for the Boka Bay area. The Special Purpose Spatial Plan for the Coastal Zone is also currently drafted. A Plan for the coastal zone of Montenegro is developed for all six coastal municipalities, as well as the territorial sea and internal waters, except for the area covered by the border of the National Park "Skadar Lake" in the Municipality of Bar and the National Park "Lovcen" in the Municipality of Budva. This plan should be the basis for the optimal utilization of resources and the preservation, protection and improvement of the areas of the coastal region. The Plan covers the period up to 2030 and, since it includes the Coastal region, it can be considered as regional.

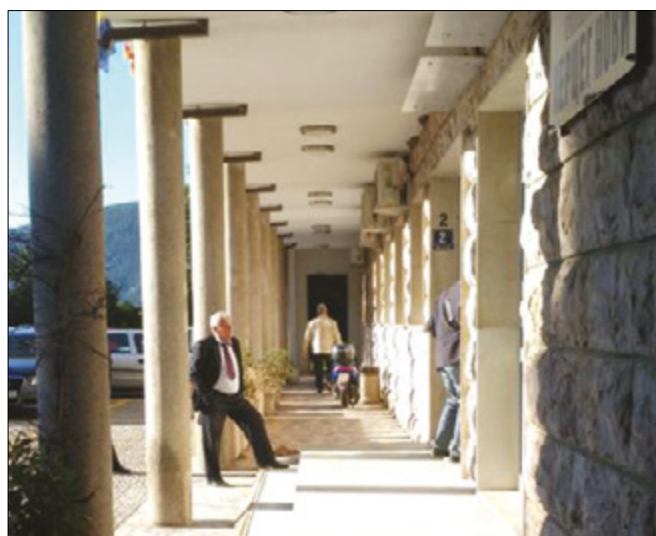


Figure 20. Examples of good practice (ramps for people with disabilities on the Montenegrin beaches, access ramp at the entrance of the Municipality of Herceg Novi)

Source: <http://www.paraplegicari.com/main/index.php/vijesti/itemlist/date/2014/7>

Sustainable mobility implies an understanding and appreciation of the needs of persons with reduced mobility and special needs, as well as the application of the "universal design" principle with the aim of ensuring the accessibility of this category of users. At the state level, specific legislation has been adopted, providing accessibility standards for people with disabilities (see: Ministry of Sustainable Development and Tourism, October 2013 and the Law on Amendments ..., July 2014). The state of Montenegro provided the legal framework for the enhanced mobility of people with special needs in terms of accessibility, and local authorities should implement the Law and allow the unhindered access and movement of these users. In this region, there are initiatives of municipalities (defined through local action plans in the field of disability - LPAI) to adapt public use facilities and areas for public use - streets, paths in the park, promenade, pedestrian bridges - to the needs of disabled persons. For example, in the municipality of Kotor, there is an initiative for the implementation of these measures, but the facilities of key importance for the mobility of people with disabilities remain inaccessible or partially accessible. Their movement along the streets is limited, due to the lack of lowered curbs on sidewalks, which are often crowded with cars, as well as the absence of audible signals. Certain architectural configurations also prohibit the disabled persons' access to cultural and sporting events in the city. There are, however, certain positive examples whereby the special

needs of disabled groups have been addressed by local authorities, such as ramps in the Montenegrin beaches, ramps at the entrances of the municipality's institutions buildings, dedicated parking slots, etc.

Anyhow, it is necessary to fully implement the existing legislation and to improve and adapt the infrastructure by appropriate measures, to enable PWD to live independently and participate in all aspects of life.

5.2 Mobility of the population and polycentric profile of the region

An Average traffic volume on the Adriatic highway, which passes the Bay, is about 14,000 vehicles per day in the low season and about 20,000 in the high season. The data presented are obtained from automatic traffic counters at the section Radanovici. On the road Cetinje – Podgorica, there are about 8,000 vehicles per day in the low season and about 11,500 in the high season. For the road Cetinje - Budva there is no official data from automatic traffic counters, but based on survey results, daily traffic amounts to 6,000 vehicles/day, in the low season and 10000 veh/day in the high season. Normally, traffic in the urban areas, here traffic counts are obtained at intersections, is higher by up to 30% on certain access points, given its urban/local nature.

The results of the research, carried out for the purpose of this Plan, show the traffic counts for the daily trips for ordinary purposes (going to work or to school), as shown in Figure 21.



Figure 21. Traffic count of daily trips for ordinary purposes between municipalities

Source: Working team – traffic flow modelling

Data collection contributed to the understanding of the polycentric urban structure of the region, its mobility patterns and transport infrastructure. Some data are collected at the regional level, while some at the level of municipalities or the municipality's centre. The following data are collected and used to create a polycentric regional profile:

1. The number of residents in each municipality and town
2. The number of employees in each municipality
3. Estimated number of jobs/work places in each city
4. The average travel distance (km) or the average area radius (km)
5. The average travel distance between the municipalities or the average distance between the municipalities (km)
6. The share of public transport in the daily mobility trends (%)
7. The share of non-motorised modes of transport in the daily commuter flows (%)
8. The number of movements within the municipalities and between municipalities.

For the development of the polycentric profile, EU's Poly-SUMP TOOL is used, a tool that is specially designed for the development of sustainable mobility plans (<http://www.polysump.eu/tool/analysis>).

Through the application of this tool, and based on the above collected data, the following indicators of the regional polycentricism are calculated:

1. Share of population living in the intermediate poles over the total population. Calculation is based on the structure of the region (eg. the concentration of the population in the largest city, in the city of more than 5000 inhabitants, and in less than 5000 inhabitants).
2. Density of housing in the region.

3. Distribution of work places: represents the available number of work places in the centres of the region.
4. Distribution of employed inhabitants: represents the number of employees in relation to the number of jobs in the region.
5. Average travelling distance to work place: represents the average length of travel to work.
6. Share of public transport trips (working day): represents the level of use of public transport in the region to perform daily travels.
7. Share of non-motorised trips (working day): represents the level of use of non-motorized means of transport in the region to perform daily travels.
8. Interdependence index in transport demand (working day): represents the quotient of the number of movements during the day performed within each city internally and the number of external trips.

Figure 4 depicts the polycentric profile of the examined region.

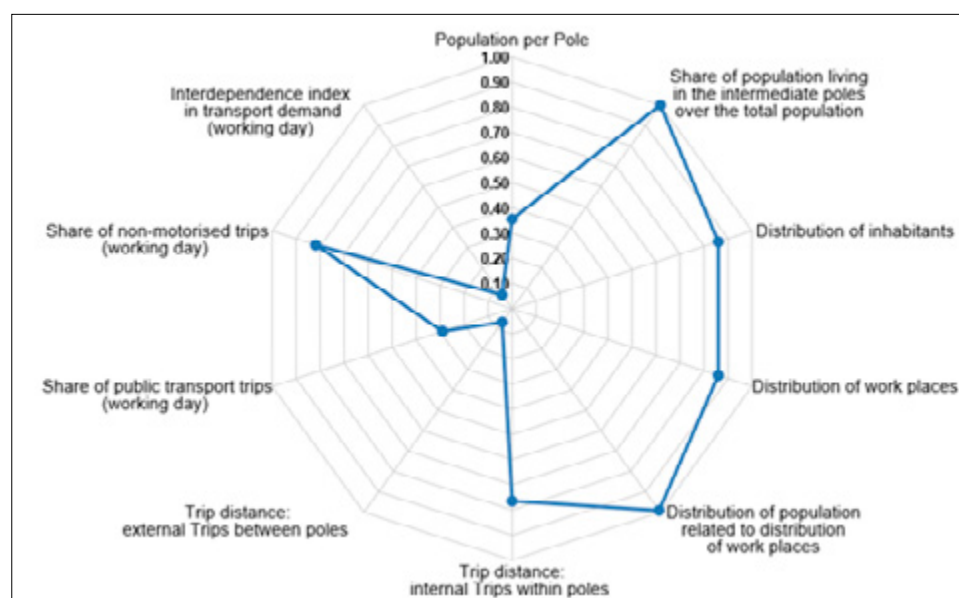


Figure 22. Regional profile of polycentricism

Source: Polycentric profile tool – Poly-SUMP <http://www.polysump.eu/tool/analysis>

From the above chart, the following conclusions can be drawn:

1. From the point of socio-economic quantifiers and their spatial distribution, the region can be considered as highly polycentric - right side of the chart with 4 out of the 10 indicators. The indicator *values share of population, distribution of work places, the ratio of the distribution of population and the distribution of jobs and the ratio of the average number of inhabitants per city and the total population*, are close to

- 1.0, indicating a high polycentricism of the region.
2. Medium and higher polycentricism of the region is shown in the following parameters: *Average travel distance and participation in non-motorized transport*, whose values are around 0.8.
3. Low to medium polycentricism of the region is evident from the values of the following parameters: *share of public transport and the number of inhabitants per town*. The values of these indicators range between 0.3 and 0.4.
4. From the point of traffic and economic quantifiers, the region can be considered low polycentric - left side of the chart with 2 of out of the 10 indicators. The indicator values: *average travel distance between towns and interdependence index of transport demand*, which is close to zero, are an indication of a weak connection between towns in this regard.

The value of indicators *Participation of non-motorised transport* is relatively high on the polycentric chart. This result could be interpreted as a commitment and strategic orientation towards the use of non-motorized means of transport, which is not the case. This value is a direct consequence of the size of cities and socio-economic conditions, as well as the underdeveloped public transportation system in the region.

The very low value of the *Average travel distance between cities* indicator is the result of the significant spatial distance of the town (Cetinje) from other cities in the region.

5.3 Identification of low-carbon measures

The identification and analysis of the proposed low carbon measures¹² is based on the existing planned projects by both local and national authorities, as well as the priorities set by the four Municipalities within their Strategic and Development Master Plans.

The proposed measures for all four cities are divided into the following categories:

- Construction of new transport infrastructure (new motorways, railways, urban road networks, etc.)
- Promotion of public transport and introduction of new public transport services
- Promotion of other sustainable low carbon transport modes (cycling, walking)
- Development of parking facilities and parking pricing policies
- Promoting a shift to new technologies and cleaner fuels and the energy efficient use of fuels

The identified projects were then examined, at a preliminary level, in terms of their GHG emission reduction potential. In order to quantify the GHG emission savings for each intervention, the principles of the Global Environmental Facility (GEF) methodology for calculating GHG emissions were used. The basic steps of the applied methodology are as follows:

1. Establishment of a baseline: calculation of the estimated baseline emissions for a scenario without the examined intervention ("no project" scenario).
2. Calculation of the direct emissions impact of the examined intervention: calculation of the emissions for a scenario with the implemented project ("project" scenario).
3. Comparison of the above: the baseline emissions estimation will be compared against the estimated GHG emissions calculated for the implemented project. The difference between the "no project" scenario and "project" scenario (baseline emissions) equates to the direct impact of the project, that is, the GHG emissions reduction achieved by the project.

The approach adopted for the identified projects depended on how they reduce GHG emitted per Vehicle Kilometre Travelled (VKT). More specifically, the identified options are grouped under four different categories:

1. Transportation Efficiency Projects: projects that reduce GHG emitted per VKT by reducing the GHG intensity of the vehicle operation, the fuel or the transportation network.
2. Public Transport Projects: projects that reduce GHG emitted per VKT by shifting traffic towards public transport because of improved public transport services, reducing total vehicle kilometres of public transport by reorganizing the routes, improving fuel efficiency due to improved vehicle speed and operations.
3. Non-motorized transportation projects: projects that reduce GHG emitted per VKT by shifting traffic towards non-motorised transport options (cycling and walking). (See: <https://www.thegef.org/gef>)
4. Travel demand management projects: projects that reduce GHG emitted per VKT by either reducing demand for transportation or encouraging more energy efficient consumption of transportation resources through modal shift.

An overview of the expected emission savings for each city is presented in the following Tables, while tables providing the overview of savings per year are presented in Annex 3.

¹² Measures/actions/ infrastructure solutions that are characterized by reduced GHG emissions

Table 1: Estimated CO2 emissions savings for identified low carbon options

Project Category	<i>Tivat</i>		<i>Kotor</i>		<i>Herceg Novi</i>		<i>Cetinje</i>	
	Estimated annual savings in tons of CO2 emissions		Estimated annual savings in tons of CO2 emissions		Estimated annual savings in tons of CO2 emissions		Estimated annual savings in tons of CO2 emissions	
	Year 10	Year 15	Year 10	Year 15	Year 10	Year 15	Year 10	Year 15
Non-motorized transport projects	3,269,358	7,027,355	5,240,723	10,804,512	10,266,836	20,604,493	6,211,931	12,502,374
Public transport projects	3,183,317	6,837,369	5,123,880	10,546,512	10,043,446	20,111,226	6,112,769	12,283,415
Travel demand management projects	3,227,172	6,936,509	5,183,436	10,681,144	10,157,310	20,368,628	6,163,312	12,397,675
Transportation Efficiency Projects	-	-	-	-	-	-	7,665,845	15,292,276

Table 2: Comparison between the baseline (no-project scenario) and “project” scenario for all project categories for Year 15

		Non-motorized transport projects	Public transport projects	Travel Demand Management projects	Transportation Efficiency projects
<i>Tivat</i>	Baseline CO ₂ (tons)	37,305,175			-
	Project CO ₂ (tons)	30,277,819	30,467,806	30,368,665	
	% Reduction	18,84%	18,33%	18,59%	
<i>Kotor</i>	Baseline CO ₂ (tons)	47,273,468			
	Project CO ₂ (tons)	36,468,956	36,726,956	36,592,324	
	% Reduction	22,86%	22,31%	22,59%	
<i>Herceg Novi</i>	Baseline CO ₂ (tons)	77,520,915			
	Project CO ₂ (tons)	56,916,421	57,409,688	57,152,287	
	% Reduction	26,58%	25,94%	26,28%	
<i>Cetinje</i>	Baseline CO ₂ (tons)	47,486,817			
	Project CO ₂ (tons)	34,984,443	35,203,402	35,089,143	32,194,541
	% Reduction	26,33%	25,87%	26,11%	32,20%

5.4 Institutional framework

The existing institutional framework in relation to sustainable development can be characterised as very complex, due to its national and local character, as well as the undesirable conflicts of jurisdiction or the blocking of legal acts with bylaws and local acts. For this reason, there is a need to, rather than obtain declarations of commitment, create more effective coordination mechanisms of implementation and monitoring, as well as to provide financial resources and adequate staff capacity to achieve sustainable development. For the Region of Boka Bay and Cetinje, in particular, the most important institutions among them are shown in Table 3:

Table 3. Institutional framework

	Institution	Directorate/Direction/ Department	Assignments/ responsibilities	Plans/strategies
European level	European commission			White paper; Action urban mobility plan and the negotiation chapter no. 14 EU
National level	Ministry of Sustainable Development and Tourism	Directorate for Spatial Planning	Planning and implementation of spatial measures at national level	Proposal of the National Strategy for Sustainable Development 2016-2020 Draft Spatial Plan for the Montenegrin coastal zone 2016–2020 ¹³ .
	Ministry of Transport and Maritime Affairs	Directorate for Road transport Directorate for railway Transport Directorate for maritime Transport Directorate for Air Transport Directorate for State Roads	Planning and implementation of traffic and transport measures at national level	
Local level	Municipality of Herceg Novi	Secretariat for Spatial Planning, Construction, Municipal services and Environmental Protection	Strategic and operational management of traffic at the municipal level	The strategic plan of the Municipality of Herceg Novi
	Municipality of Tivat	Secretariat for Spatial Planning and Environmental Protection and	Strateško i operativno planiranje i upravljanje saobraćajem na nivou opštine	Strateški plan Opštine Tivat
	Municipality of Cetinje	Secretariat for Housing-Communal Services and Transportation	Strategic and operational planning and traffic management at the municipal level	The strategic plan of the Municipality of Tivat
	Municipality of Kotor	Secretariat of urban planning, construction and spatial planning	Strategic and operational management of traffic at the municipal level	The strategic plan of the Municipality of Kotor Multi-year Investment Plan

¹³ Development of policies, strategies, projects and programs in the field of spatial planning and management and spatial development, as well as monitoring and implementation of measures; participation in the harmonization of national legislation with EU legislation in the field of spatial planning; integrated planning and spatial management; drafting laws and other regulations in the field of spatial planning and coastal zone etc.

5.5 Review of the planned framework for the development of Poly-SUMP

The Policy of sustainable transport development in the Region is formed mostly through the following documents:

White Paper - Transport regulations - Programme Guidelines (European Commission, 2011) - Strategic directions for the development of the EU transport policy in order to develop economically viable and sustainable mobility.

Action plan on urban mobility of the EU (European Commission, 2009) - It presents short and medium term practical measures relating to the specific requirements for integrated urban mobility.

EU negotiation chapter 14 - Transport policy (MFAEI, 2013) - The EU legislation in the field of transport has the aim of improving the functioning of the internal market by promoting safe, efficient, environmentally least harmful modes and the most suitable users of transport services. The acquis covers the sectors of road transport, railways, inland waterways, combined transport, air and sea transportation. The acquis relates to the technical and safety standards, security, social standards, state aid control and market liberalisation (in the context of the internal transport market).

Montenegro Development Directions 2013-2016 (Ministry of Finance 2013) - Through this document, Montenegro has established the vision for socio-economic development, with individual investments and development measures necessary for their implementation and proposed solutions for the harmonization of sectoral goals and national strategies in various areas of development. Development directions, with concrete projects and financial structure, represent the basis for programme budgeting and the establishment of direct links between resources and development priorities, as well as the more efficient use of IPA funds. Development directions are aligned with the Strategy for Southeastern Europe 2020.

Draft National Strategy of Sustainable Development of Montenegro 2016-2020 (Ministry of Sustainable Development and Tourism, 2016) - This strategy represents an improvement of the strategy prepared in 2007. The document overcomes the omissions, which were the reason for not achieving the objectives defined by the initial strategy. The document contains the methodology for strategy development, visions and guidelines for sustainable development, priority directions of a sustainable development, the institutional and legislative framework for the implementation of the strategy and the relevant international framework for the preparation of the strategy. The strategy includes priority themes and issues of sustainable development by 2020. In the draft NSSD, the traffic sector is not separately addressed, but is integrally shown within other sections. Nevertheless, in chapter 2.4.2.6, as well as in the Global goal 11 and Strategic objective 4.134, it can be recognized that this strategy gives importance to traffic and traffic origin pollution reduction as an important factor of sustainable mobility.

The National Strategy on Integrated Coastal Zone Management in Montenegro until 2030 (NS ICZM) (Ministry of Sustainable Development and Tourism) - This document has been prepared as a regional plan for the entire coastal area, which, among other things, aims at assessing existing capacities and their level of sustainability. The strategy should focus, facilitate and accelerate the sustainable development of the coastal areas of Montenegro, contribute to the implementation of the ICZM Protocol (Protocol on Integrated Coastal Zone Management) and the harmonisation of the national framework of action with the relevant EU policies. NS ICZM aims to improve the spatial planning system and encourages the strengthening of coordination mechanisms, the development of management results-oriented practices and the introduction of systematic monitoring of coastal Processes. Such a system will contribute to preserving the integrity of ecologically valuable habitats and coastal area ecosystems, landscapes and cultural heritage, the protection of the narrow coastal area from linear urbanisation and development of rural areas, essentially meeting in this way the priority goals of the ICZM Protocol. The objective of ICZM is that through an integral overview, it will highlight the interdependence and possible synergies among sectoral strategies which will be made more effective and efficient, while it will also initiate strategic topics that are currently neglected or not given the appropriate importance.

Strategic Development Plan of the Municipality of Tivat 2012-2016 (Municipality of Tivat, 2012) - The strategic plan defines the vision, mission, strategic priorities and measures. On the other hand, this document contains a special dimension provided by a base of 138 projects that measure and concretise into sets the activities structured into projects.

Strategic Development Plan of the Municipality of Kotor 2013-2017 (Municipality of Kotor, 2013) - The Strategic Development Plan is the basic planning document for the sustainable socio-economic development of LAU (Local Authority Unit), which was conducted in accordance with the for planning that corresponds to European standards [i.e. in accordance with the Law on Regional Development (O.G. 20/11) and the Regulation on the methodology for the development of the strategic development plan of the local government units (O.G.37/11)]. The Plan contains the current state of development of the Municipality, common development objectives, strategic goals and related priorities for their implementation, measures and guidelines for the implementation of the strategic plan, an orientation towards its implementation and other issues of importance for the development. This document sets out guidelines for the preparation of development projects and defines common strategic objectives, in cooperation with neighbouring municipalities.

Spatial Plan of the Municipality of Herceg Novi until 2020 (Municipality of Herceg Novi, 2015) - The main objective for the development of this plan is to establish a planning basis for a balanced economic, social and spatial development of the municipality as a whole. The practical goal of the plan is to establish guidelines for the preparation of urban plans, urban projects, the site studies and all planning documents of a lower order. The task of the Spatial Plan is to provide a strategic framework for the general spatial development of the Municipality by 2020 and to create a set of clearly defined directions of development for further planning. The plan contains a description of the transport and infrastructure system in the Municipality of Herceg Novi, as well as information on the environment.

Strategic Development Plan of the Cetinje 2012-2016 (Municipality of Cetinje, 2012) - The plan includes the analysis of the road network, which mainly consists of local roads. Missing/problematic connections and nodes are: 1) high-quality connection to the Coast (Cetinje-Njegusi-Kotor), 2) better connection from Njegusi to Skadar Lake, 3) better connections along Cetinje-Cevo-Niksic 4) connection Njegusi-Lovcen, 5) adequate bus station Cetinje. The document takes into account the possibility of the development of water transport (waterway line Skadar lake-river Bojana-Adriatic Sea). The document analyses also protected areas (national parks), the state of the environment and biodiversity.

6. Drivers and barriers

The present section of the report lists the main drivers and barriers concerning urban mobility in the examined Region.

Drivers are recognised in:

- Positive attitude of all Municipalities in implementing local initiatives for a sustainable mobility
- New focus on transport policies at local and regional level
- Increased mobility – especially during summer season
- Political support

While barriers are recognised in:

- Regional lack of specific technical skills in terms of planning of sustainable modes of transport
-

- High dependency on private cars
- Congestion and pollution problems on the main road network
- Difficulties in changing mobility behaviour of transport users

Taking into account the specific aspects of the transport system enables the identification of the specific barriers to road transport and public transit network:

Road Transport

- Complicated procedures/bureaucracy for planning and construction of road infrastructure
- Limited or no connection with generating - mobility hubs such as ports, airports, industrial areas etc. which leads to deficient logistics services in the freight sector
- Limited connections with remote areas
- Deficient traffic management and monitoring, information systems and road sign marking
- Malfunctioning and time-consuming approval / financing / Processes

Public transport

- Limited quality of the bus transport services provided
- Old bus fleets
- Need for integrated public transport authorities on a regional level
- Lack or inadequacy of infrastructure for the disabled (see: Ministry of Sustainable Development and Tourism, Oct 2013, and the Law on Amendments..., July 2014).

7. The vision and mobility objectives for the Region of Boka Bay and Cetinje

The vision underlying the present Poly-SUMP-a is that the Region, by improving its transport options, becomes:

Efficient – the Poly-SUMP will facilitate the area's growth agenda in the most efficient and sustainable way possible, strengthening its economy and boosting jobs, while at the same time improving the quality of life for all residents and visitors.

Equitable – the Poly-SUMP will facilitate a more equitable transport system; linking communities together, improving access to jobs and services and offering accessibility to all permanent residents and visitors.

Sustainable – the plan will specifically reduce the impacts of air and noise pollution, greenhouse gas emissions and energy consumption.

Healthy – the plan will contribute to a general rising of health standards across the examined area, through the promotion of walking and cycling and the reduction of air pollution.

Attractive – the plan will contribute to enhancing the attractiveness and quality of the urban environment in local centres and key transport corridors.

More specifically, the main values upon which the Poly-SUMP is developed are:

Improving the quality of life for all residents and visitors

Enhancing social responsibility

*Environmental protection**Promoting sustainability**Promoting equality and respect*

The geographical context, challenges and existing policy frameworks that have been outlined during previous project phases and thoroughly discussed during the Future Search Workshop cover a significant number of wider objectives that the area and the involved Beneficiaries wish to achieve. They also highlight the many and complex interrelationships between social, environmental and economic issues, and in doing so, they therefore help to identify the strategic goals that the examined area has to meet in order to grow and thrive, and provide guidelines on how investment in transport should be made in a balanced way. The following **strategic goals** have therefore been set:

- Reduction of the use of private cars
- Raising awareness – change people’s mentality
- Promotion of multimodal transportation
- Saving natural resources
- Improving accessibility for specific (vulnerable) groups
- Promoting social justice – gender equality
- Reduction of the pollutant emissions
- Improving the quality of public transport services
- Improving regional connectivity

A number of the main transport challenges for Boka Bay and Cetinje are outlined below. These are linked to the strategic goals outlined above that could be met by investing in Transportation plans, projects and programmes.

Table 4. Transport challenges and strategic goals

Transport Challenge	Strategic Goal
Tackling traffic congestion	Reduction of the use of private cars Raising awareness – change people’s mentality Reduction of the pollutant emissions
Managing pollution	Reduction of the pollutant emissions Saving natural resources
Improving road safety	Promoting social justice – gender equality
Increasing transport choices	Reduction of the use of private cars Raising awareness – change people’s mentality Promotion of multimodal transportation Improving accessibility for specific (vulnerable) groups Improving the quality of public transport services
Renewing and maintaining infrastructure	Improving accessibility for specific (vulnerable) groups Improving regional connectivity

Having previously identified the strategic goals for the transport system of Boka Bay and Cetinje and taking into account the transport challenges, policy frameworks, evidence and engagement that have been identified and summarised in previous study phases, a set of more specific transport objectives have been developed to provide a focus for further action and investment in the future. These are:

- ***Reduction of the use of private cars:***

- Reduce the need to travel for some journeys and activities.
- Provide information and choices for people to enable them to travel more sustainably on a regular basis.
- Promote and enable greater use of zero- and low-emission forms of transport.
- Provide reliable alternative means of transport.

- ***Raising awareness – change people's mentality:***

- Promote considerate and courteous behaviour by all users.
- Improve the experience and increase the levels of satisfaction amongst local residents and visitors when travelling in the area.

- ***Promotion of multimodal transportation***

- Increase the efficiency of the transport system through integration

- ***Saving natural resources:***

- Promote and enable greater use of zero- and low-emission means of transport.

- ***Improving accessibility for specific (vulnerable) groups:***

- Increase the availability and accessibility of travel choices for everyone, especially the most vulnerable and those with the greatest need.
- Identify and overcome physical and social travel barriers that prevent people from reaching essential and important facilities and services, and the green and open spaces in the area.
- Create safer, inclusive and accessible streets that everyone can enjoy.
- Develop and maintain convenient and pleasant routes between neighbourhoods/cities.
- Enable people to feel more safe and secure when travelling in the area, especially when using sustainable means of transport.
- Remove barriers that prevent people from accessing jobs, shops, and cultural and touristic attractions.

- ***Promoting social justice – gender equality:***

- Increase the availability and accessibility of travel choices for everyone, especially the most vulnerable and those with the greatest need.
- Identify and overcome physical and social travel barriers that prevent people from reaching essential and important facilities and services, and the green and open spaces in the area

- ***Reduction of the pollutant emissions:***

- Reduce the need to travel for some journeys and activities.
 - Provide information and choices for people to enable them to travel more sustainably on a regular basis.
 - Promote and enable greater use of zero- and low-emission forms of transport.
-

- Use new technology to maximise reduction of carbon emissions.
- **Improving the quality of public transport services:**
 - Ensure that the local transport system is well maintained and more reliable.
 - Increase the efficiency of the transport system using technology.
 - Provide better access to 'real-time' information for all journeys.
 - Improve connections within and between local neighbourhoods and the different city centres.
- **Improving regional connectivity:**
 - Ensure that the area is easy for people to navigate.
 - Improve transport infrastructure.

The way in which the above objectives will be delivered are described in the next Chapter, which consists of a thorough description of the optimal mobility scenario for the Region, as identified by the Beneficiaries and other involved stakeholders during the FSW.

8. The planning scenario and proposed measures

The specific Poly-SUMP methodology defines the way of selection and preparation of planning scenarios, made of measures for promoting and improving sustainable mobility in the region. In the first step, based on the input data on the current state of mobility in the given region, as well as by looking at experiences and possible future trends related to mobility, a set of 36 measures was defined. As a second step, the project team in cooperation with the UNDP Montenegro organised a "Future Search" workshop (FSW) – at the workshop the proposed measures were evaluated by the stakeholders. The main results of the "Future Search" workshop refer to the definition and validation by the key stakeholders of the vision, objectives and planned measures in this Process. Following the workshop, three possible scenarios of proposed measures for the examined Region are adopted: Scenario 1 (BASIC), which is a basic scenario, includes the projects that are considered essential for the urban transport system of the examined Region; Scenario 2 (PLUS) includes the Basic Scenario, as well as some additional projects that will further benefit the system; and Scenario 3 (MAX), which consists of the Scenario 2 along with some additional projects which are of medium to high cost.

In the next step, after considering the presented scenarios by the stakeholders, the Scenario 2 (PLUS) was selected as the most suitable for further elaboration.

The chosen Scenario PLUS includes 24 projects across all project categories (construction of new infrastructure, promotion of public transport and introduction of new public transport services, promotion of other sustainable low carbon transport modes (cycling, walking), promoting a shift to new technologies and cleaner fuels and energy efficient use of fuels, other measures). This Scenario consists of projects that are considered essential for the transport system in the examined region, as well as projects whose implementation would significantly contribute to the better functioning of the transport system and regional connections. A description of the proposed measures included in this scenario is presented in the following Table 5. Measures are grouped into 5 categories:

1. General measures
2. Promotion of Public Transport and Introduction of new Public Transport Services
3. Promoting non-motorized transport modes (cycling, walking)
4. Promoting a shift to new technologies and cleaner fuels and energy efficient use of fuels
5. Construction of new transport infrastructure

Table 5. Planning measures

PROPOSED ACTION / MEASURE			SIGNIFICANCE
General measures	1	Development of new traffic studies and transportation models and/or updating of existing	Regional Local
	2	Educational programmes and promoting campaigns	National Regional Local
Promotion of Public Transport and Introduction of new Public Transport Services	3	Development of an integrated public transport system in Boka Bay and Cetinje	Regional Local
	4	Provision of Passenger Information System (at bus stops, parking areas, etc.)	Regional Local
	5	Provision of the public maritime passenger transport line for the bay: 3 regional lines that connect Herceg Novi, Kotor and Tivat, as well as local lines within each municipality	Regional Local
	6	Construction of parking spaces near bus stations and introduction of a "Park and Ride" system	Local
		Development of lake waterway public transport on Skadar Lake	Local
Promoting non-motorized transport modes (cycling, walking)	8	Development of cycle lanes	Regional Local
	9	Promotion of the bike tourism - the realization of Eurovelo Route 8	National Regional Local
	10	Development of pedestrian zones and construction of the Promenade Lungo Mare	Regional Local
	11	Development of bike sharing scheme	Local
	12	Development of mountain bike networks and development of mountain bike centres (bed and bike)	National Regional Local
Promoting a shift to new technologies and cleaner fuels and energy efficient use of fuels	13	Renewal of the bus fleet and introduction of energy efficient vehicles	Regional Local
	14	Energy-efficient solutions for freight transport (electric vehicles etc.)	Local
	15	The introduction of energy-efficient vessels for the ferry Kamenari-Lepetane connection, as well as for the local maritime public transport lines	National Regional Local
		Construction of the cable car Kotor-Cetinje	Regional Local
Construction of new and reconstruction of the existing transport infrastructure	17	Modernization of technical and exploitation characteristics of the existing transport infrastructure	National Local
	18	Construction of the Adriatic-Ionian highway / construction of fast coastal road	National
	19	Construction of the road Cetinje - Niksic	National
	20	Construction of the Tivat bypass	Local
	21	Construction of the Kotor bypass	Local
	22	Construction of 39 km of local roads in Herceg Novi	Local
	23	Reconstruction of the road Kotor - Njegusi - Cetinje	National
	24	Reconstruction of the old Austro-Hungarian road / Revival of cultural monuments in the hinterland	National Local

9. Description of measures

Measures defined in the previous section were further elaborated in two steps:

1. **By filling out a questionnaire on the specifics of the measures; representatives of Ministries, local governments and other relevant organisations provided information on the measures that were available at that point in their institutions.**
2. **In the second step, the consultant analysed in detail the acquired results to the extent possible in order to develop a planning framework.**

The descriptions of individual measures contain more technical details, based on international experience that should only serve as a basis for the further technical development of these measures.

Special attention is paid to the problem of adapting buildings for persons with disabilities and persons with reduced mobility and the Plan offers suggestions in the context of specific measures. The recommendation is that, in a further elaboration, attention is paid to projects that relate to adaptation measures for the transport system targeted at the vulnerable categories of users.

The descriptions of measures is presented in tabular form and contains the following information:

- Measure title
- The estimated value - depending on the available data, an assessment is provided either for the necessary additional documentation or for the entire investment
- End Users/Beneficiaries - entities that directly benefit from the implemented measure
- Other interested entities - entities that indirectly benefit from the implementation of measure
- Description of measure - description of measure with detailed information that indicates further steps in the implementation
- Process - phased implementation of measure
- Time frame - the time for implementation of measure
- Evaluation - indicators on the basis of how to monitor the implementation of the measure as well as who is implementing it
- Funding sources - possible models of financing
- Risks - potential barriers to the implementation of measure
- The benefits of the project - descriptions of the benefits achieved by the implementation of the proposed measure
- Assessment of the potential of reducing GHG emissions - estimated reduction of GHG emissions

This type of description of the measures enabled their classification into five key categories. In this way, measures are described in the appropriate level of detail to make it easier to initiate their further development.

Each measure is Processed separately in relation to each given parameter. However, as some parameters in some measures are overlapping or repetitive, the overall risks for the implementation of the measures and possible sources of funding will be described herein, highlighted as key risks in the description of each measure.

9.1 The risks in the implementation of Poly-SUMP

There are several barriers and risks associated with the implementation of the Poly-SUMP for the Boka Bay and

Cetinje Region, which need to be properly assessed and controlled so that the adopted Poly-SUMP can lead to the best possible results. Within the present section of the report, an effort is made to identify these risks and also propose mitigating actions.

One of the main barriers for the implementation of the proposed sustainable solutions for the examined region refers to the **lack of available funds** and all financial risks associated with the identified investment needs. The problem of financing needs to be addressed with low start-up financing schemes and new financing models. It is important to investigate all available financing mechanisms for sustainable mobility projects that cities may leverage to implement the Poly-SUMP and at the same time investigate the possibility to combine different financing mechanisms to support all identified sustainable urban solutions.

Another significant barrier for the implementation of the identified sustainable solutions is the **lack of coordination and consensus** among the involved stakeholders. In order to mitigate this risk, it is important to have a clear work plan and management arrangements in place, as well as an agreement on the responsibilities and budget allocation.

More specifically, political approval of the management arrangements is necessary in order to ensure the success of the Plan's implementation, while all actors with a role in adopting and implementing the plan need to have a clear understanding of their responsibilities. The main objectives are to:

- Clarify and formalise the roles of the actors and their resource contributions.
- Ensure transparency of the implementation Process.
- Secure a sound co-ordination among all involved stakeholders.
- Facilitate an efficient implementation Process, making optimum use of the available resources.

It must be noted that all involved municipalities and other stakeholders were actively involved in the development of the SUMP for the Boka Bay and Cetinje region and their views and ideas for the region have been taken into account during the elaboration of this Plan. More specifically, during the Future Search Workshop held in November 2015, different decision makers were consulted and engaged into exchanging ideas for the examined area, forming thus a solid basis for a successful coordination and consensus among them.

Finally, **lack of public acceptance and support** is considered as one of the most important risks in the implementation of SUMPs, especially with regard to the implementation of new pricing schemes. The basis for public acceptability is information, meaning that people have to be properly informed about the projects under implementation and be aware of the overall background, objectives, as well as the exact way each measure will be implemented. Specific mitigating measures include information campaigns to handle low acceptance among citizens and to raise awareness for opportunities and restrictions that will inevitably come along with the measures' implementation. Furthermore, it is crucial to keep the wider public informed during the entire implementation Process, periodically inform the citizens about the progress achieved and also highlight the milestones and celebrate the end results (e.g. organise a festival after the pedestrianisation of an area, or organise a cycling event after the construction of bicycle lanes, etc.).

The third important barrier is the **lack of legislation** that would officially formalise this type of document, hence, it is of vital importance to launch an initiative in this direction. Until then, it is important to try to integrate the proposed Poly-SUMP measures into a variety of plans and strategies so that the Plan achieves its legitimacy.

In addition, the **lack of legal opportunities for the formation of governing bodies** at the level of municipalities or region prevents the coordinated follow-up and implementation of the plan.

9.2 Possible sources of financing

Table 6 shows the possible sources of financing for Poly-SUMP measures, independent from the budgets of local governments, the state budget, etc.

Table 6. Available financing mechanisms

Financing Mechanism	Description	Eligibility Requirements	Benefits	Risks	Examples
CIVITAS – CIVINET http://www.civitas.eu/	CIVITAS is a program designed to help cities to exchange experiences and ideas related to the improvement of the environment, transport solutions, sustainable mobility etc.	The initiative of the city administration Formal political support http://www.civitas.eu/content/discover-civitas-network-and-its-portal	<ul style="list-style-type: none"> • The possibility of cooperation among cities in the region • The possibility of joining European projects • The ability to exchange ideas and experiences with a wide network of cities 	Project implementation can be a long process	From the region: Dubrovnik, Crikvenica, Rijeka etc.
WB Global Infrastructure Facility (GIF) (http://www.worldbank.org/en/news/press-release/2014/10/09/world-bank-group-launches-new-global-infrastructure-facility)	Designed to address financing gaps and to establish a pipeline of global infrastructure. The facility has signed agreements with multiple national governments and private sector participants. The facility will provide end to end support to bring projects to market, with a specific emphasis on private sector support.	GIF outlines 4 criteria : significant development impact, alignment with a host government's priorities, significant complexity requiring multiple partners, catalytic impact in engaging the private sector	<ul style="list-style-type: none"> • Provides technical assistance • Provides an opportunity to engage extensive sources of funding • Provides access to considerable technical and financial advisers 	<ul style="list-style-type: none"> • High complexity to implement • May be a risk that implementation of the emphasis is a long process 	Mechanism is most likely suited to large, complex projects that require a number of participants from the public and private sector. The Facility launched in 2014
KfW Carbone Programme II (http://www.climatefinanceoperations.org/cfo/node/211)	Carbon finance programme sponsored by EIB and KfW, focusing on emissions reducing and sustainable projects. EUR100M fund. Project provides between EUR1M – 20M	Projects are expected to address one of the following issues : Mitigation, Energy, Energy Efficiency, Fuel Switching, Fugitive Methane, Low-Carbon, Renewable Energy, Transport , Waste Management	<ul style="list-style-type: none"> • Provides an opportunity for green solutions in developing countries to access carbon funding 	<ul style="list-style-type: none"> • Mechanism is most likely suited to a limited number of solutions 	<p>Mechanism has been used for various renewable energy and energy efficiency projects; examples projects include:</p> <p>Hunan Taoyuan Huiarenxi Hydropower Project, China</p> <p>Chiller Energy Efficiency Programme, India</p> <p>Biogas Support programm-PoA, Nepal</p> <p>Chiller Energy Efficiency Programme, Philippines</p> <p>Solar Water Heating PoA, South Africa</p> <p>BOS Building Rehabilitation, Poland</p> <p>BOS Boiler Modernization, Poland</p>

Financing Mechanism	Description	Eligibility Requirements	Benefits	Risks	Examples
EBRD SEI (Sustainable Energy Initiative)	SEI uses the full range of EBRD's financing instruments to finance sustainable energy projects. SEI supports Municipal and Infrastructure Energy Efficiency efforts with financial and technical assistance.	EBRD supports select countries in which the organization is active. Eligibility requirements vary by instrument selected to finance the project. EBRD provides loans and equity investments, with different eligibility criteria	<p>Provides technical assistance</p> <ul style="list-style-type: none"> Allows solutions an opportunity to access considerable financial and technical resources 	<p>May require significant commitment from solutions/governing bodies to secure funding</p>	<p>Mechanism is most likely suited to projects that require larger loan or equity assistance. EBRD is capable of providing financial and technical advisory services as well.</p> <p>Examples mentioned include investments in urban infrastructure, solid waste management, and water/wastewater efforts.</p>
German International Climate Initiative http://www.international-climate-initiative.com/en/about-the-iki/iki-funding-instrument/	EUR120M allocated annually to climate and biodiversity projects in developing countries and countries in transition. Funds projects in the following areas: Mitigating Greenhouse Gas Emissions, Adapting to the Impacts of Climate Change, Conserving Natural Carbon Sinks, and Conserving Biological Diversity.	<p>Program issues an annual call for proposals. If a proposal is selected, the project will be required to submit written application for funding.</p> <p>Key themes for funding include:</p> <ul style="list-style-type: none"> Projects that mobilize additional funding, private sector funding in particular Projects that are replicable and transferrable Projects that are measurable, reportable, and verifiable Projects that can share experience and information 	<ul style="list-style-type: none"> Provides technical assistance Provides solutions, an opportunity to access grants with limited, or no, financial commitment 	<p>Funding may be difficult to secure and available to a limited amount of solutions</p>	<p>Mechanisms are most likely suited to solutions that intend to be replicated and are directly related to limiting greenhouse gas emissions</p> <p>Program notes Low Emissions Development Strategies (LEDs) and Nationally Appropriate Mitigation Actions (NAMAs). Specific relevant example includes: Transfer of Climate-friendly Transport Technologies and Measures – project to enable decision makers in developing country governments to develop climate change mitigation measures in the transport sector</p>

Financing Mechanism	Description	Eligibility Requirements	Benefits	Risks	Examples
Global Environment Facility (https://www.thegef.org/gef/climate_change)	GEF provides grants to various types of projects ranging from several thousand dollars to several million dollars. GEF considers grants to Full Sized Projects (FSPs) of greater than \$2M, Medium Sized Projects (MSPs) of up to \$2M, Enabling Activities and Programming Activities.	<p>Eligibility requirements are as follows:</p> <ul style="list-style-type: none"> • It is undertaken in an eligible country. It is consistent with national priorities and programs. • It addresses one or more of the GEF Focal Areas, improving the global environment or advance the prospect of reducing risks to it. Relevant focal areas include climate change adaptation and climate change mitigation • It is consistent with the GEF operational strategy • It seeks GEF financing only for the agreed-on incremental costs on measures to achieve global environmental benefits • It involves the public in project design and implementation. • It is endorsed by the government(s) of the country/ies in which it will be implemented 	GEF provides grants of varying sizes to sustainable transport projects, and boasts numerous examples of their support	Funding may be difficult to secure and available to a limited amount of solutions	<p>Mechanism is most likely suited to solutions proposed for development in developing countries or countries in transition.</p> <p>Relevant examples include: Hydrogen Fuel Cell Buses for Urban Transport in Brazil, Teheran Transport Emissions Reduction in Iran, Metro Manila Bikeways Project in the Philippines, among others</p>

Source: World Business Council for Sustainable Development, Sustainable Mobility Project 2.0 (SMP2.0), Financing Mechanisms for Sustainable Mobility (<http://www.wbcsd.org/documents/financing-mechanisms-for-sustainable-mobility-smp20.aspx>)

9.3 Special Remarks

Some of the categories in the detailed description of measures are approximations, expert estimates or descriptions that are tailored to the currently available data. For a better understanding of the description, further clarifications are provided in this chapter.

The estimated value of individual measures that also included the preparation of the respective study and the project documentation, is provided as a separate value for each study or project individually, as well as for each city. It is important to note that in cases where an integrated approach is allowed (for the study development and the project implementation), then the value of the integrated study would be reduced.

In all transport infrastructure projects, whenever possible, it is necessary to consider the possibility of parallel design of bicycle and pedestrian connections, especially if the planning documents foresee their realisation in the same spatial corridor. This primarily refers to the integration of project documentation for measures such as the following projects: bicycle routes in the Bay, EuroVelo route and Lungo Mare. This also applies to the projects of expansion of the Adriatic main road and the coastal fast road project, in all parts of the Bay, where bicycle routes are planned.

The framework content of the traffic studies is presented in Annex 1. In the same Annex, examples of the terms of reference for some specific studies are given.

The part relating to the evaluation, contains indicators that enable the monitoring of the implementation of measures. For individual measures, there is a suggestion to measure their effectiveness by a degree of customer satisfaction, which includes conducting surveys for users of the transport system concerning the level of services. For a better understanding of this proposal, an example of the survey is given in Annex 1.

Particular attention should be paid to budget savings in CO₂ emissions. The budget is not given for each measure individually but for a set of measures according to their character, such as:

1. Public transport development and promotion projects - reduce GHG emitted per vehicle-kilometres (VKT) by shifting traffic towards public transport as a result of improved public transport services, reducing total vehicle kilometres of public transport by reorganizing the routes, and improving fuel efficiency due to improved vehicle speed and operations. The percentage of private vehicles trips that will switch to public transport due to the new public transport system is 1% for the first 5 years after the project implementation, 1% during the next 10 years after implementation and 2% onwards in a 15 year period after exploitation (calculation according to: <http://www.unep.org/stap/calculatingghgbenefits>). For public transport projects implemented in the Boka Bay (Kotor, Herceg Novi and Tivat) area, the average percentage of savings in terms of CO₂ emissions is estimated at approximately 12% in 10 years after the project implementation and 22% in 15 years after the project implementation.
2. Projects that promote non-motorized transport modes - are projects that reduce GHG emitted per VKT by shifting traffic towards non-motorised transport options (cycling and walking). The percentage of car trips that will switch to non-motorised transport modes is expected to be 1% for years 1-5 after project implementation, 1% in the next 10 years after project implementation and 2% in the period after 15 years of exploitation (calculation according to: <http://www.unep.org/stap/calculatingghgbenefits>). For non-motorised projects implemented in the Boka Bay (Kotor, Herceg Novi and Tivat) area and Cetinje, the average percentage of savings in terms of CO₂ emissions is estimated at approximately 13% in 10 years after the project implementation and 23% in 15 years after the project implementation.
3. Promotion of renewable energy and low-carbon transport option - These projects focus on the development of existing transport services, infrastructure and behaviour that results in a lower intensity of GHG emissions, rather than promote a modal shift towards low-carbon transport options or reducing kilometers travelled by the vehicle (VKT). Realisation of this project will shift traffic from the use of private vehicles to the use of public transport (the percentage of car trips that will switch to the use of public transport or

cycling/walking is estimated at 1% in the first five years after implementation, 2% in the 5-15 years after the implementation and 2% onwards) and at the same time increase the efficiency of the fuel/ lead to less consumption of fuel by the bus fleet.

4. Projects of construction of new infrastructure – these projects do not constitute a low carbon option per se, but are expected to have a significant impact on local traffic conditions and effectively reduce traffic congestion within the city centres, reducing thus GHG emissions. Nevertheless, the improved transport infrastructure is likely to attract more traffic (increased use of private vehicles), given that the road conditions will be significantly upgraded and become more safe. To this end, these projects have a give and take dynamic, which effectively makes measuring the reduction of GHG emissions a difficult Process. Consequently, in a preliminary stage, such as this, the construction of new road infrastructure will not be examined in detail with regard to their GHG emission reduction potential.

A detailed description of the measures, with all the characteristics listed in section 9 is provided in Annex 5 of this report.

10. Action plan

10.1 Timeframe of the plan and priorities

Based on the preliminary assessment of the feasibility of the proposed measures, the suggested time scope of the plan is 5 years, i.e. from 2016 to 2020.

The framework applies to most measures defined by the plan, however, it is expected that the implementation of certain infrastructure measures may exceed the five-year planning framework; nevertheless, their implementation will begin in this period. The following table shows the action plan and priorities for certain measures.

The priorities are scaled from 1 (highest priority) to 3 (lowest priority), and are based on the following criteria:

- The necessity of the measure for the connection of the region
- The necessity of the measure for improving the quality of the transport system and transport services at local level
- The necessity of the measure to promote the introduction of the principle of sustainable mobility in the area
- Certainty of the measure for rapid implementation in terms of already existing initiatives and plans and/or possible rapid provision of financial resources

All measures are reviewed, evaluated and ranked on the basis of the above criteria. The results are shown in the Action Plan Table (Table 7).

Table 7. Overview of the main characteristics of the measures

Proposed action/measure			Significance	Value (eur)
General measures	1	Development of new traffic studies and transportation models and/or updating of existing	R/L	Study H, Novi: around 100,000; Study Kotor: around 60,000; Study Tivat: around 45,000; Study Cetinje: around 65,000; Study Region: around 160,000;
	2	Educational programmes and promoting campaigns	N/R/L	Around 250,000 in planning period
Promotion of Public Transport and Introduction of new Public Transport Services	3	Development of an integrated public transport system in Boka Bay and Cetinje	R/L	Studies: 30,000–50,000; Projects: 15,000–25,000
	4	Provision of Passenger Information System (at bus stops, parking areas etc.)	R/L	Projects: around 8,000; Implementation: 10,000–20,000
	5	Provision of the public maritime passenger transport line for the bay: 3 regional lines that connect Herceg Novi, Kotor and Tivat as well as local lines within the each municipality	R/L	Projects: around 15,000; Boats and equipment cca 3,000,000
	6	Construction of parking spaces near bus stations and introduction of "Park and Ride" system	L	Development of the study: 30,000–50,000 Project development: 15,000–25,000
	7	Development of lake waterway public transport on Skadar Lake	L	Implementation: 2,500,000
Promoting non-motorized transport modes (cycling, walking)	8	Development of bicycle lanes	R/L	Projects around 10,000
	9	Promotion of the bike tourism - the realization Eurovelo Route 8	N/R/L	Study development: around 40,000 Implementation of project: around 100,000
	10	Development of pedestrian zones and construction of Promenade Lungo Mare	L	Lungo mare, Tivat: 180,000, Kotor: 185,000, H. Novi: 200,000, Underpass Kotor: – around 1,000,000
	11	Development of bike sharing	L	Location and research study: 5000–10,000 (per town); Implementation 100,000 – 120,000 (per each town)
	12	Development of mountain bike networks and development of mountain bike centres (bed and bike)	N/R/L	Development of study around 10,000; Development of project for equipping: around 15,000; Construction of facilities: For facilities up to 200 m2 around 255,000 per property without equipping/furnishing
Promoting a shift to new technologies and cleaner fuels and energy efficient use of fuels	13	Renewal of the bus fleet and the introduction of energy efficient vehicles	R/L	Development of the study: around 30,000
	14	Energy-efficient solutions for freight transport (electric vehicles etc.)	L	Development of the studies: around 8,000–15,000 (per town)
	15	The introduction of energy-efficient vessels for the ferry Kamenari-Lepetane as well as for the local maritime public transport lines	N/R/L	Development of the study: around 30,000
	16	Construction of the cable car Kotor-Cetinje	R/L	Implementation: around 46,300,000
Construction of new and reconstruction of the existing transport infrastructure	17	Modernization of technical and exploitation characteristics of the existing transport infrastructure	N/L	Depending on the investment will be defined
	18	Construction of the Adriatic-Ionian highway / construction of fast coastal road	N	Construction: around 1,000,000,000
	19	Construction of the road Cetinje – Nikšić	N	The main design and feasibility study: N/A
	20	Construction of bypass Tivat	L	The main design and feasibility study: around 200,000; Construction: around 5,500,000
	21	Construction of bypass Kotor	L	Construction: around 30,000,000 Project development: Around 40,000
	22	Construction of 39 km of local roads in Herceg Novi	L	Construction: Around 20,000,000
	23	Reconstruction of the road Kotor – Njegusi – Cetinje	N	Project development: around 15,000,000
	24	Reconstruction of the old Austro-Hungarian road / Revival of cultural monuments in the hinterland	N/L	Development of the study: around 30,000 Project development: around 10,000

Sources of funding	Timetable and phases	Beneficiaries	Risks	Priorities
Budgets of local authorities; Donations and grants;	2016–2018 2 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
Budgets of local authorities; Donations and grants; UNDP	2016–2020	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
Budgets of local authorities; PPP; Donations and grants;	2016–2020 4 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
Budgets of local authorities; PPP; Donations and grants;	2016–2018 3 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
PPP; Donations and grants; Credit lines	2016–2020 3 phases	Municipalities of Herceg Novi, Tivat, Kotor	Yes	1
Budgets of local authorities; Donations and grants;	2016–2019 3 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	2
Budgets of local authorities; Donations and grants; Credit lines	2016–2018 4 phases	Municipality of Cetinje	Yes	3
Budgets of local authorities ; Donations and grants;	2016–2018 3 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1/2
Ministry of Transport and Maritime Affairs; Donations from EU funds	2016–2018 3 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	2
National Tourism Organisation of Montenegro; Budgets of local authorities; Donations	2016–2017 2 phases	Municipalities of Herceg Novi, Tivat, Kotor	Yes	2
National Tourism Organisation of Montenegro; Budgets of local authorities; Donations from EU funds	2016–2018 2 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
National Tourism Organisation of Montenegro; Budgets of local authorities; Donations from EU funds	2016–2019 2 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	2
Budgets of local authorities ; PPP; Donations and grants	2016–2020, 3 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
Budgets of local authorities ; PPP; Donations and grants	2016–2018, 3 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	2
Budgets of local authorities ; PPP; Donations and grants	2016–2020, 3 phases	Municipalities of Herceg Novi, Tivat, Kotor	Yes	2
State budget; PPP; Donations and grants	2016–2019 3 phases	Municipalities of Kotor and Cetinje	Yes	1
State budget; PPP; Donations and grants	2016–2020	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	1
Ministry of Transport and Maritime Affairs Credit lines	Cannot be defined within this Plan, 4 phases	Municipalities of Kotor, Cetinje, Herceg Novi, Tivat, Budva, Petrovac, Bar, Ulcinj, Podgorica	Yes	2*
The budgets of state institutions	2016–2020, 3 phases	Municipalities of Cetinje and Niksic	Yes	3
Budget of the local authority; Ministry of Transport and Maritime Affairs; Credit lines	2016–2020 4 phases	Municipality of Tivat	Yes	2
State budget; Budget of the local authority	2016–2020 3 phases	Municipality of Kotor	Yes	1
Budget of the local authority; Donations and grants	2016–2020, 3 phases	Municipality of Herceg Novi	Yes	3
Budget of the local authority; Budgets of the state institutions	2016–2020 3 phases	Municipalities of Kotor and Cetinje	Yes	2
Budget of the local authority; Budgets of the state institutions; Donations	2016–2020 4 phases	Municipalities of Herceg Novi, Tivat, Kotor and Cetinje	Yes	3

11. Monitoring the SUMP implementation

It is essential that the implementation of the Poly-SUMP for Boka Bay and Cetinje is monitored, in order to have a clear vision of how successful the plan has been in progressing towards the vision and objectives for the area. Monitoring the progress enables the involved beneficiaries to demonstrate the value for money achieved from what has been invested on the transport system and also to identify important lessons learnt regarding what has worked well and, more importantly, what hasn't delivered its expected outcomes.

Monitoring will need to occur on two levels:

- at the strategy level - to ensure that Boka Bay's and Cetinje's transport system is achieving the set overarching objectives ; and
- at the scheme level - to understand what results the specific initiatives are delivering.

The monitoring and reporting of the progress and performance achieved through the delivery of the measures described in this Poly-SUMP, requires a framework of appropriate and measurable indicators to ensure that the investment made in transport schemes and initiatives is making a positive contribution towards achieving the Region's long-term strategic goals and local transport objectives.

The monitoring of indicators can take place across a variety of different frequencies, periods and baselines and relies on a number of different monitoring methodologies or sources of information. A number of sources of data and monitoring for urban transport include:

- The degree of implementation of certain measures - monitoring through quarterly meetings of the technical planning team
- Carbon dioxide emissions from transport - Measurements or calculations, annually
- Nitrogen Dioxide emission levels at certain locations - Measurements or calculations, annually
- Traffic flows on main roads - Annual measurements
- Number of bus passengers - Annual measurements
- Minor, serious and fatal casualties resulting from road accidents - Annual statistics from MUP
- Condition of road surfaces and highway structures – Annual report from local directorates and the Road Directorate
- Levels of satisfaction - roads, pavements, road safety and parking services - survey organized once or twice a year after the implementation of certain measures.

In order to ensure consistent the monitoring of the Poly-SUMP, several preconditions should be provided:

- Inclusion of a large number of people who are very well acquainted with the project
- Concretisation of the measures from the action plan through individual future projects
- Coordinated monitoring of the plan's implementation by appointing representatives of municipalities and Ministries.

For this reason, it is proposed that a Memorandum of Cooperation is signed by all stakeholders involved (a proposal for the Memorandum is provided in Annex 2).

The subject of the memorandum is to formalise and establish the cooperation between the municipalities of Tivat, Kotor and Cetinje, as well as the Ministry of Transport and Maritime Affairs and the Ministry of Sustainable Development and Tourism of Montenegro, for the implementation and monitoring of the results of the Polycentric Sustainable Urban Mobility Plan for the Boka Bay and the Old Royal Capital Cetinje.

The signatories of the Memorandum of Understanding should provide with their activities the technical and political support for the implementation, monitoring, development and improvement of the Polycentric Sustainable Urban Mobility Plan for the examined region.

The establishment of a cooperation modus operandi on the Poly-SUMP would involve the:

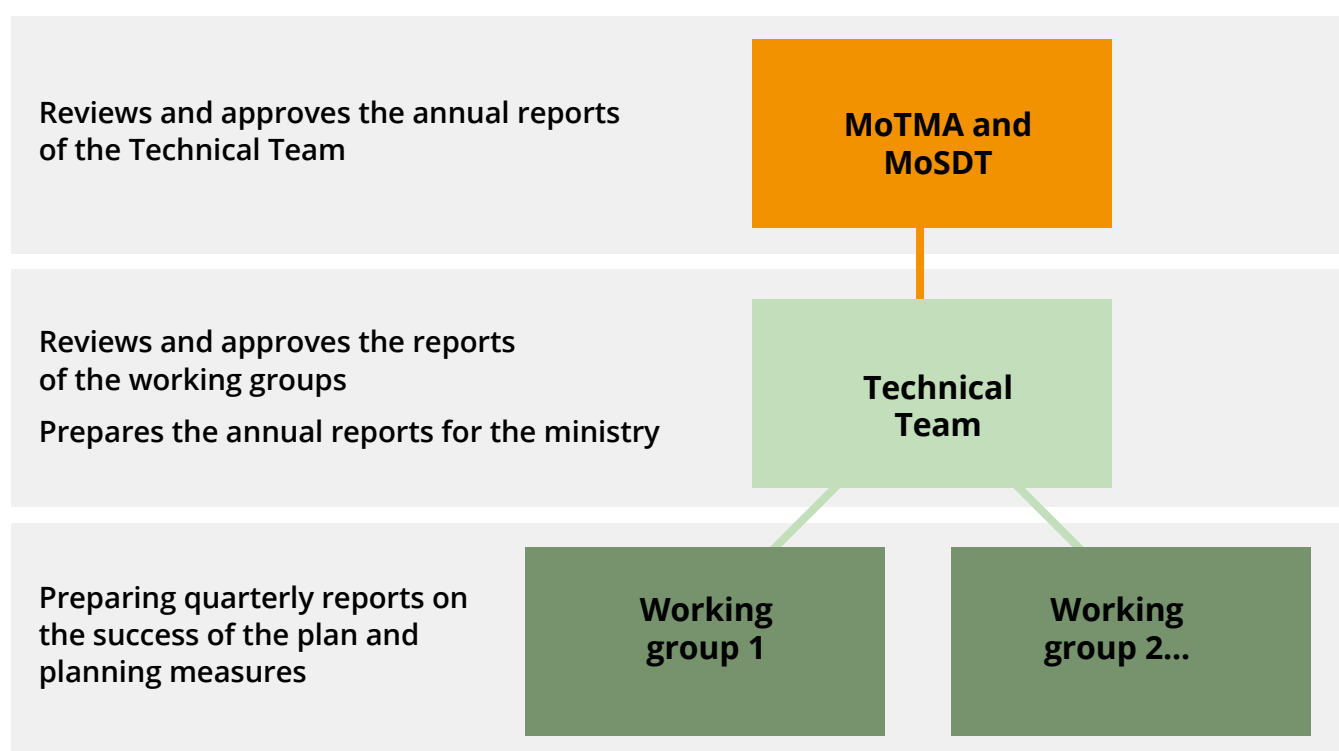
- The Appointment of representatives of municipalities and Ministries
- Establishment of the technical team for the implementation and monitoring
- Establishment of working groups for individual projects (optional)
- Coordinated monitoring of the plan implementation
- Work on concretisation of measures from the action plan through individual future projects
- Inclusion of a large number of people very well- acquainted with the project.

The technical team that will monitor the realisation of measures from this plan should be composed of representatives of all stakeholders (not only members of the local authorities).

This team should meet quarterly, unless there is a need for more frequent meetings during the implementation of certain measures, which can be regulated by the Rules of procedure for this body.

The rules of procedure should define the manner and methods that apply when a certain measure is implemented.

A Working Group should prepare an implementation report for each specific measure and submit it to the Technical Team for consideration and adoption.



The technical team should prepare quarterly and annual reports on the implementation of the plan and submit it to the relevant Ministries.

The reporting on the achieved progress within the context of monitoring of the project's effect on an annual basis will help to ensure that the work of the project beneficiaries and other stakeholders is clearly and regularly presented to the residents, but can also be used to provide information about the adopted decisions and investment priorities in the future.

Conclusion

The Boka Bay with the Old Royal Capital Cetinje has relatively favourable natural and physical conditions for the development of different modes of transport, with the aim to integrate these in the wider environment and transportation network, linking efficiently the region to further destinations.

The analysis undertaken under the present project report, concluded that there are indeed significant opportunities for the Boka Bay area and the Old Royal Capital of Cetinje in terms of sustainable urban transport development, which, however in their majority are not yet in a mature phase. Furthermore, it is evident from the strategies of the municipalities examined, that there is still room for better integration concerning their goals and plans for future investments in the urban environment. The identified low carbon transport options for the region are mainly infrastructure related and aim at providing better transport services within the area. The projects vary from transportation efficiency related projects (pricing schemes, policies to introduce fuel-efficient and hybrid technology in transport), public transport and non-motorised related projects to travel demand management projects.

The development of the Poly-SUMP BokaCet for the period 2016-2020, essentially provided for the first time municipalities of the area under study with a strategic document drawn by the participation of all stakeholders in the region, that clearly and dynamically articulates the development for the next five-year period.

On the one hand, the Plan defines the vision, strategic priorities and measures, which are an expression of the wishes and aspirations and the way these will be achieved. . On the other, this is given a realistic and solid dimension by the associated action plan of 24 measures and related specific activities , stressing also its dynamic nature and development potential of the region.

Overall, the future of the region as a polycentric environment largely depends on the general development strategies of the area and a shared vision of the region, and not just of individual implementation measures of sustainable mobility in the local communities. Therefore, the establishment of a joint body to monitor and work on implementing the proposed measures is crucial to the success of this plan.

Summary

In an effort to promote sustainability in tourism, minimize Montenegro's carbon footprint and promote sustainable transport options, UNDP Montenegro launched in 2015 the project "Towards Carbon Neutral Tourism", funded by the Global Environment Fund (GEF). The project focuses, among others, on improved low carbon and carbon neutral transport infrastructure to support public and non-motorized transport.

Within the framework of the project, it was considered of great significance to focus on the area of Boka Bay and the Old Royal Capital of Cetinje, which consists of one of the greatest touristic attractions of Montenegro. The examined area comprises of the three coastal municipalities - Herceg Novi, Tivat and Kotor, as well as the Old Royal Capital of Cetinje. The main objective is to develop, in collaboration with the four involved Municipalities, a Polycentric Sustainable Urban Mobility Plan (Poly-SUMP) for the region that will focus on promoting sustainable urban transport solutions and improve the quality of life for both permanent residents, as well as the tourists visiting the area.

The Poly-SUMP will be the core document that sets out the way in which the beneficiaries' plans, priorities and programmes for transforming the transport system will deliver change over time and across a range of different policy objectives. Using creative thinking, pooling resources and the best use of innovation and technology can generate the capacity to continue to make more progress in addressing all the issues and impacts that transport can create, primarily on reducing GHG emissions.

Based on the analysis undertaken under the present project, it seems that there are significant opportunities for the Boka Bay area and the Old Royal Capital of Cetinje in terms of sustainable urban transport development which however in their majority are not yet in a mature phase. Furthermore, it is evident that looking at the strategies of the examined municipalities, there is still room for better integration concerning their goals and plans for future investments in the urban environment. The identified low carbon transport options for the region are mainly infrastructure related and aim at providing better transport services within the area. The projects vary from transportation efficiency related projects (pricing schemes, policies to introduce fuel efficient and hybrid technology in transport), public transport and non-motorised related projects to travel demand management interventions.

The Poly-SUMP defines the vision, strategic priorities and measures for the examined region, while at the same time, it provides an action plan of 24 measures which sets a special dimension, making thus, the document a dynamic set of interventions.

Overall, the future of the region as a polycentric environment largely depends on the general development strategies of the area and a shared vision of the region, and not just of individual implementation measures of sustainable mobility in the local communities. Therefore, the establishment of an integrated authority to monitor and work on implementing measures is crucial to the success of this plan.

The Poly-SUMP BokaCet for the period 2016-2020, consists of a strategic document for the four involved municipalities, for the elaboration of which all stakeholders in the region actively participated, that clearly and dynamically articulates the development of the region for the next five-year period.

Definitions and abbreviations

EC	European Commission
GEF	Global Environmental Facility
FSW	Future Search Workshop
NS ICZM	The National Strategy on Integrated Coastal Zone Management in Montenegro until 2030 (NS ICZM)
NSD	National Strategy of Sustainable Development
Poly-SUMP	Polycentric Sustainable Urban Mobility Plan
SPSPCZ	Special Purpose Spatial Plan for the Coastal Zone
UNDP	United Nation Development Programme

Bibliography

1. ELTISplus (2014). *Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan*. . Version January 2014. Downloaded on 22 Aug 2015 from <http://www.eltis.org/mobility-plans>
2. European Commission (2009). *Action Plan on Urban Mobility*.
3. European Commission (2011). *White paper 2011, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*.
4. EuroVelo (December 2011). *Guidance on the Route Development Process*. European Cyclists' Federation. Brussels.
5. Expeditio – Centar za održivi prostorni razvoj & Blue Coach (2015). *Studija izvodljivosti za uspostavljenje održivog pomorskog javnog transporta solarnim katamaranima u Boki Kotorskoj*. Monte Marine Yachting. Kotor.
6. Kenworthy, J. (2007). Urban Planning and Transport Paradigm Shifts for Cities of the Post-Petroleum Age. *Urban technology Journal* 14(2): 47–70.
7. Manual for Calculating Greenhouse Gas Benefits of Global Environment Facility Transportation Projects, Prepared by the Institute for Transportation and Development Policy for the Scientific and technical Advisory Panel of the Global Environment Facility. Preuzeto 12. 9. 2015. sa (<http://www.unep.org/stap/calculatingghgbenefits>)
8. Ministry of Finance, Montenegro (2013). *Development directions of Montenegro 2013-2016. godine*. Podgorica
9. Ministry of Sustainable Development and Tourism (Oct 2013). Rules on detailed conditions and methods of adjusting facilities for access and movement of persons with reduced mobility and persons with disabilities. In: Official Gazette of Montenegro, no. 48/2013. Podgorica.
10. Ministry of Foreign Affairs and European Integrations (2013). *Negotiation Chapter 14, Transport policy*. Podgorica.
11. Ministry of Sustainable Development and Tourism (2015). *The National Strategy for Integrated Coastal Zone Management of Montenegro*. Podgorica.
12. Ministry of Sustainable Development and Tourism (2015a). *Annual report on water supply, waste management and wastewater management, implementation of priority activities in communal activities in 2014, with the proposal of the priority projects for the construction of utility/communal infrastructure in 2016 and proposed measures*. Podgorica.
13. Ministry of Sustainable Development and Tourism (2016a). *Public debate on Draft Special Purpose Spatial Plan for the Coastal Zone of Montenegro*. Downloaded on 15/3/2016 from: http://www.mrt.gov.me/rubrike/javna_rasprava/157011/Javna-rasprava-o-Nacrtu-Prostornog-plana-posebne-namjene-za-Obalno-područje-Crne-Gore-i-Nacrtu-Izvjestaja-o-strateskoj-procjeni.html
14. Ministry of Sustainable Development and Tourism (2016b). *Proposal of the National strategy of Sustainable Development 2016-2020*. Podgorica.
15. Ministry of Sustainable Development and Tourism (2016c). *Draft Special Purpose Spatial Plan for Coastal zone (SPSPCZ) Montenegro*. Podgorica.
16. Municipality of Herceg Novi (2006). *Local Environmental Action Plan*.
17. Municipality of Herceg Novi (1. 10. 2012). Decision on public car parks. In: Official. Gazette of Montenegro - municipal regulations, no. 30/2012.

18. Municipality of Herceg Novi (2015). *Draft Spatial Plan of the Municipality of Herceg Novi by 2020*.
19. Municipality of Kotor (2012). *Support sustainable forms of mobility in coastal cities - Adria.MOVE it*.
20. Municipality of Kotor (2013). *Strategic Development Plan of the Municipality of Kotor 2013–2017*.
21. Municipality of Kotor (2013a). *Multi-year Investment Plan*.
22. Municipality of Tivat (2010). *Spatial-urban development plan of the Municipality of Tivat*.
23. Municipality of Tivat (2011). *Local environmental protection plan 2011–2015*.
24. Municipality of Tivat (2012). *Local Action Plan for biodiversity 2013–2018*.
25. Municipality of Tivat (2012a). *Strategic Development Plan of the Municipality of Tivat 2012–2016*. Municipality of Tivat (2014). *The action plan for adaptation of public traffic areas the movement of persons with reduced mobility and persons with disabilities*.
26. Municipality of Tivat (2015). *Preliminary Design Lungo Mare*.
27. Poly-SUMP (2014). *The Poly-SUMP Methodology: How to develop a Sustainable Urban Mobility Plan for a poly-centric region – Guidelines*. Deliverable 4.2. Downloaded on 22 Aug 2015 from: <http://www.poly-sump.eu/fileadmin/files/tool/PolySUMP-SUMP-guidelines-FINAL.pdf>
28. Old Royal Capital Cetinje (2012). *Strategic Development Plan of Old Royal Capital Cetinje 2012–2016*.
29. Old Royal Capital Cetinje (2014). *Spatial-urban development plan of Old Royal Capital Cetinje – Analytical part*.
30. Old Royal Capital Cetinje (2014a). *Spatial-urban development plan of Old Royal Capital Cetinje – Report on strategic environment impact assessment*.
31. Old Royal Capital Cetinje (2014b). *Spatial-urban development plan of Old Royal Capital Cetinje – Planning part*.
32. Old Royal Capital Cetinje & Metroparking (2015). *Study of billing system and parking control for Old Royal Capital Cetinje with zoning*. Cetinje.
33. UNDP Montenegro (2014). *Resource efficiency and sustainable human development*. Cetinje
34. UNDP Serbia, Belgrade Land Development Agency (2009). *Support to Sustainable Transportation System in the City of Belgrade*. The City of Belgrade, GEF Project Identification Form. Consultant's Estimates.
35. World Bank (2015). *Update of Regional Balkan Infrastructure Study – REBIS*.
36. Law on Traffic Safety on Roads (June 2012). In: *Official Gazette of Montenegro, no.33/2012*. Podgorica.
37. Law on Amendments to the Law on Urban Planning and Construction (July 2014). In: *Official Gazette of Montenegro, no. 33/2014*. Podgorica.

Examples of ToRs and activities of individual studies and surveys

1. EXAMPLE OF TERMS OF REFERENCE FOR PREPARATION OF THE STUDY FOR PUBLIC TRANSPORT OF CITY.....

INTRODUCTION – GOALS

The main objective of this study-research project is the development of a network with new lines /timetables and so on, i.e. reengineering of the existing public transport line network in based on research/analysis conducted on a real system (established transport needs and requirements of the users in space and time, attitudes of the users and potential users, etc.).

The research/analysis conducted in a real system should provide a high-quality, accurate and comprehensive basis of information for future steps to be taken in order to improve the development of the entire system of public, suburban and local transport of passengers.

The new line network must be in accordance with the explicitly identified transport needs and requirements of the system users in space and time in order to create a unique and integrated system of public, suburban and local transport of passengers in the administrative territory of the city.

This study-research project must provide a comprehensive and systematic approach that addresses the planned development of the public transport sector not only responding to demands and adjusting to the current conditions and circumstances, but also optimizing engaged capacities (vehicles, financial and material resources), the static infrastructure of the line network (routes, terminus, stops ...) and the dynamic elements of the system operation (timetables, turnaround time, speed, frequency, interval, etc..).

The implementation of this study-research project should provide results for improving the quality of transport services together with increasing the efficiency of all aspects (subsystems) and establishing the stable economic sustainability of the system.

WITHIN THE STUDY-RESEARCH PROJECT, THE CONTRACTOR SHOULD PREPARE:

1. METODOLOGY OF THE STUDY

- Define the objectives, tasks and limitations of the project
- Define the methodology for the preparation of the study-research project (methodology should be comprehensive and should include a methodology for the elaboration of all proposed analyses in the real system)
- Define the time horizon for interphases of the Study
- Define phase reports which the Contractor submits to the Contracting Authority.

NOTE: Before the commencement of activities on the development of the study-research project, the Contractor shall receive the approval from the Contracting Authority for the methodology of the Study, which must be an integral part of the offer.

2. ANALYSIS OF THE EXISTING LINE NETWORK OF PUBLIC TRANSPORT IN.....

Analysis of the main characteristics of the existing line network of the public suburban and local transport in.....

- Analysis of the transport services market
- Analysis of the static and dynamic characteristics of the existing line networks
- Analysis of the existing range finders
- Analysis of the basic resources in the system of suburban and local transport
- Analysis of the existing transport capacity
- Analysis of the production efficiency results (characteristic sections, definition of lines operating over capacity, significant transfer nodes, etc.).
- Analysis of key performance indicators of the existing line networks (derived characteristics) - Construction length of the network - Exploitation length of the network - Coefficient of overlapping (branching) of the line network- Coefficient of complexity of the line network - Coefficient of density of the stops - Coefficient of availability of line network- Coefficient of density of line network - Coefficient of line network coverage - Coefficient of line network adaptation- Coefficient of line network directness - Coefficient of line network utilization - Walking availability of the line network - Average length of the distance between stations- Coefficient of physical integration (number of multimodal stops) – Ecological suitability of the line network - Production efficiency – Economic efficiency (estimation) - Cost efficiency - Speed of transport - Total number of departures at line network
- Estimation of costs and revenues of the system's operation (estimation of costs and revenues of the operation of the system should be carried out on the basis of the cost of the paid kilometres and the corresponding percentage based on ticket sales and total expenses of a business entity operating on the line network in)

3. DESIGN AND ESTABLISHMENT OF UNIQUE DATA BASE ON CHARACTERISTICS OF TRANSPORT REQUIREMENTS AND FLOW OF PASSANGERS IN PUBLIC SUBURBAN AND LOCAL TRANSPOT IN... ..

In order for the system of public suburban and local transport to respond effectively to the requirements in terms of capacity, quality of service, prices and costs, it is necessary to thoroughly research the flow of passengers and the associated transport needs and requirements and define these in terms of quantity and quality.

As part of this study-research project, it is necessary to carry out and separately present the following independent analyses:

3.1. Systematic passenger counts

Systematic counting should be carried out during the working day on all departures during operation, on the existing line network of the public suburban and local transport of passengers in all vehicles (and ships).

The results of the analysis should be presented in the following reports:

- Distribution of transport requirements in the area (per lines and for the whole system) - Basic characteristics of the transport requirements per lines, turnovers/departures - Derived characteristics of transport requirements and transport operations per turnovers/departures, • Distribution of transport requirements in time (per lines and for the entire system) - Basic characteristics of transport demand per hour - Basic characteristics of transport requirements per working day – Derived characteristics of transport requirements and tran-

sport operations per hour • Derived characteristics of transport requirements and characteristics of transport operations per working day per lines and for the entire system (average length of ridership, number of passengers, unevenness in space and time, etc.).

- Characteristics of the existing transport offer and utilization.

Counting can be carried out using different technologies (manually using forms, using mechanical or electronic counters, etc.).

3.2. Analysis of the characteristics of passengers and travel - Survey of the system users

The aim of the survey is to obtain the opinion of direct beneficiaries on the elements of required and estimated quality of the system and services. The survey should include at least 1000 direct beneficiaries of the public suburban and local transport in..... The survey should be conducted at stops and in public transport vehicles, to ensure sample homogeneity in terms of spatial representation (percentages of representation of surveyed users by suburban municipalities must be proportional to the relative number of scheduled departures) and the socio-economic characteristics of respondents.

Characteristics that should be researched and independently presented:

- The distribution of users by gender – The distribution of users by age – The distribution of users by occupation
- Distribution of start and end of working hours of the system users – The distribution of users according to travel purposes – Way of accessing the station – The distribution of users according to the stopover - Stopover from line to line – The distribution of users according to the frequency of system use – The distribution of users by types of tickets - Walking availability - Walking time to/from the nearest stop – Characteristics of travel in space (source-target movements) - Relation between individual user characteristics and travel (the distribution of users by occupation in relation to the purpose of the journey, the distribution of users by occupation in relation to the frequency of use, the distribution of users by occupation in relation to the type of ticket, the distribution of users according to the frequency of system use in relation to the type of a ticket, etc.) – Requirements regarding the expected quality of the system and services - Relation to the tariff system - Relation to the ticket system and billing system

3.3. The survey of the potential users

The aim of the survey is to obtain the opinion of the potential users on the elements of required quality of the system and services. The survey should be carried out on a representative sample of at least 300 respondents. The survey should be conducted in attractive areas, so that the homogeneity of the sample can be ensured in terms of spatial representation (percentages of representation of surveyed users by suburban municipalities must be proportional to the number of residents) and the socio-economic characteristics of respondents.

Characteristics that should be researched and independently presented:

- The distribution of potential users (by gender, age, income, possession of a vehicles) - The distribution of potential users according to the the form of trip realisation - Reasons for not using the public suburban and local transport - The conditions under which they would use the system of public suburban and local transport, etc. Note: The counts and interviews of the passengers in the system of public suburban and local transport in..... should be carried out in the period April - May –The results should be presented in a report in text format with tables and charts/graphics. The report should be presented in an A-3 format in the Montenegrin language with a summary in English, which shall not be shorter than 2 pages. – Table headers and titles of the charts/figures should be provided in the two languages. - All survey results should be available in a digital format suitable for further Processing within the existing applications and databases of the Contracting Authority.

3.4 Recording of static elements of the existing line network of public suburban and local transport – Range finder - The survey of the geographical locations of the stops and the length of the distance between stations

in a real system – Preparation of range finder for the existing line network - Defining of the line routes per directions.

NOTE: The Contractor is obliged to determine the precise geographical position of the stops and stations in meters, as well as the distance between stations.

4. PREPARATION OF THE STUDY: LINE NETWORK AND DEFINITION OF THE NECESSARY CAPACITIES FOR SUBURBAN AND LOCAL TRANSPORT IN.....

4.1. Definition of the objectives, principles and criteria for establishing a new line network

4.2. Characteristics of a new line network

- Designing of a line network in accordance with the request of the Contracting Authority and defined principles and criteria - Load of a line network with explicitly established transport requirements - Definition of key indicators of a system performance and calculation of their values – Building length of the network- Exploitation length of the network - Coefficient of overlapping (branching) of the line network - Coefficient of complexity of the line network - Coefficient of density of the stops - Coefficient of availability of line network- Coefficient of density of line network - Coefficient of line network coverage - Coefficient of line network adaptation- Coefficient of line network directness - Coefficient of line network utilization - Walking availability of the line network - Average length of the distance between stations- Coefficient of physical integration (number of multimodal stops) – Ecological suitability of the line network - Production efficiency – Economic efficiency (estimation) - Cost efficiency - Speed of transport - Total number of departures at line network

4.3. Designing and defining of the basic elements for the preparation of timetables

- Basic static infrastructure characteristics of line network – Preparation of range finders for new line network - Defining line route per directions –Survey of geographical locations of new stops and length of new distances between stations - Codes of new stops • Basic dynamic characteristics of line network (time of semi-turnover, tracking interval and/or number of departures, etc.) • Defining the optimal capacity of the vehicle (vehicle type) • Input parameters for the timetable (number and limits of the stationary period for each line, frequencies, time of semi-turnover per line for each stationary period, tracking interval per line and/or number of departures, etc.).

4.4. The estimated costs of the system operating (the estimation of costs of the system operating should be carried out on the basis of the paid vehicle kilometres in the system on the existing line network in zones 3 and 4).

NOTE: - The proposal for a new line network should enable a cost reduction of the system of 10% in comparison to the current situation. Error tolerance of solution is $\pm 2\%$. - The modelling should be based on travel matrices and other data from the analyses in a real system of public suburban and local transport. - Modelling should be prepared on the platform PTV VISION (VISUM). All results must be submitted in an open format. - The results should be presented in a report in text format with charts/figures. The report should be in A-3 format in the Montenegrin language with a summary in English, which should not be shorter than 2 pages. - Headings and titles of the charts/figures should be provided in the two languages.

The Contracting Authority is obliged to submit and provide access to all relevant data and documents important for the preparation of the Study and to enable survey in the vehicles of all operators and at all stops of the system.

During the preparation of a new line network, the Contractor should take into account all impending changes based on the Urban Planning Strategy of the city.

2. EXAMPLE OF TERMS OF REFERENCE FOR THE PREPARATION OF PARKING STUDY

TECHNICAL DESCRIPTION OF THE STUDY: ANALYSIS OF THE PARKING CHARACTERISTICS IN..... WITH PROPOSED MEASURES

1. Explanation of Study preparation. On the basis of the Law on, Statute of the city.....
.....Decisiononcityadministration.....andtheDecisiononpublic.....
Secretariat for transport is responsible for the technical regulation of traffic.
2. Purpose of Study preparation. In order to manage city parking zones which are the subject of this Study, it is necessary to determine parking conditions and provide recommendations on the best solutions for improving the parking system. The optimal solution implies an analysis of all the requirements of the parking users, so the systematic approach can provide the acceptable solution. It is necessary to carry out a proper analysis of the situation, surveys and to collect necessary socio-traffic data, which shall enable the analysis of the further expansion of the parking system. The expansions cover peripheral parts of the existing zonal system and those other parts of the city specified in the spatial coverage (area included in the Study - item 3), in which there is a necessity for application of traffic, technical and regulatory measures.
3. Spatial coverage (area included in the Study). The Study includes the following streets and parts of the city:
.....
4. Terms of Reference. The Study should include the following:
 1. Preparation of graphic and orthophoto overview of each zone
 2. Creating a database on the parking operation characteristics within the public traffic area at the locations specified in the spatial coverage (area included in the Study - item
 3. Studies: - minimum accumulation (the minimal number of simultaneously parked vehicles) - maximum accumulation (the maximal number of simultaneously parked vehicles) - the accumulation of the vehicles (number of parked vehicles in a defined time section - hour intervals) – parking volume (the total number of all users of parking spaces) – Parking turnover (number of parked cars per parking lot) - Distribution of users according to the structure of the requirements for parking - sustainability (distribution of parking per retention time of all users and the retention time of visitors: up to 1 hour, 1 to 2 hours, 2 to 3 hours, more than 3 hours) - Distribution of period of vacancy of parking lots by zone residents (up to 9 hours, from 9 to 17, from 17 to 21) – the number of available parking spaces (within a defined time period - hourly intervals). The creation of a database of the parking operational characteristics should be conducted on a representative sample of at least 20% of the parking spaces. 3. The parking user survey should include: - reason for coming to the zone - the intended retention time - time spent in seeking for available parking space- distance from parking to the end point of travel (given in walking time). The survey should be conducted on a representative sample of at least 5% of parking users.
 4. Assessment of the impact of time spent in searching for available parking space on the pollution of the environment due to the unnecessary increase of the volume of dynamic traffic
 5. Analysis of parking characteristics and the assessment of parking conditions - Determining the existing regimes of dynamic and stationary traffic - Determining the number of marked parking spaces in the public traffic area
 6. Overview and presentation of the results obtained by the survey and by the analysis of existing conditions in the field for each zone
 7. Assessment of the zonal parking system justification (proposed solution should analyse residents and visitors demand of the specific zone)

8. The elaboration of an evaluation Process and assessment of the justification for each location
 9. Overview of evaluation results
 10. Proposed measures for improving parking conditions include: arranging of additional parking spaces with Conceptual design (sketch) of the technical regulation of parking on street fronts, proposed parking regime, proposed tariff system and proposed system of control and sanctioning of violations. For the proposed optimal traffic solution, a Technical Report and Bill of works and equipment with the necessary technical characteristics should be submitted.
 11. Conclusion of the Study. Analysis of parking characteristics outside the central zone of the city with proposed measures
5. Maps and layouts for Study preparation. For the Study preparation the Contractor uses publicly available maps and layouts, as well as graphical representations of the traffic conditions of the specific zone. For the graphical-analytical activities of the Study, the Contractor collects data on the population and data on the number of registered motor vehicles.
6. The obligation of the Contractor. The Contractor is responsible the professional and of high quality implementation of the project tasks in accordance with the contract.
- Following the completion of all contractual obligations, the Contractor shall submit the Study to the Contracting Authority in five (5) printed copies and 5 (five) copies in electronic form (CD/DVD). The documents should be in an open format.
- The Contracting Authority reserves all rights to the collected and Processed data, technical materials and analyses elaborated for the purpose of this Study, designs, final documents and other materials used in the preparation of the Study. The Contractor may publish the results of the Study in national and international professional and scientific literature only upon obtaining the written approval of the Contracting Authority. The Contractor is obliged to state the name of the Contracting Authority.....
7. The deadline for the Study preparation is 6 months following the contract signing date.
- Workplan for the preparation and presentation of the Study by phases and units:
1. Overview and presentation of the survey results, presentation of the analysis of the conditions and the proposals of the alternative solutions 4 months after mutual signing of the contract
 2. Presentation of final version of the Study..... 5 months after mutual signing of the contract
 3. Eventual objections of the Commission for Study review..... 15 days after the presentation of the final version of the Study
 4. Addressing deficiencies in accordance with the request of the Commission 15 days after written report of the Commission.
 5. The final submission of the Study..... 6 months from the date of mutual signing of the contract.
- The Record on final submission of the Study should be prepared after receipt of the Study.
8. Cooperation with the Transport Secretary. The preparation of the Study on behalf of the Transport Secretary that monitors and directs the Commission for timeliness and quality in the reception of services, i.e. Study (hereinafter: the Commission for the reception of the Study). Available documentation of the previously prepared parking studies for.....
 Experience of Public Utility Company in the system of parking payment and control at parking lots in

.....shall also be made available to the Contractor. The Contractor is fully responsible for the verification, interpretation and usage of those materials.

9. Reporting. The Contractor shall report to the Contracting Authority on completed tasks in the form of monthly reports. The reports contain information on significant activities implemented regarding the Study. The Contractor shall submit monthly reports for the previous period in written form at the beginning of the next month, but no later than the 15th of the month.

3. EXAMPLE OF TERMS OF REFERENCE FOR THE PREPARATION OF THE STUDY FOR EXPANSION (IMPROVING, CONSTRUCTION) OF CYCLE LINE NETWORK AND CORRIDORS

1. Explanation of Study preparation

2. Purpose of Study preparation

Svrha izrade Studije je poboljšanje uslova za odvijanje biciklističkog saobraćaja, koji će se realizovati izgradnjom i obilježavanjem biciklističkih staza, traka i koridora. Cilj studije je da se, sagledavši specifične zahtjeve i probleme na koje nailaze biciklisti u transportnom sistemu grada, izvrši definisanje biciklističkih staza, traka i koridora u funkciji veće mobilnosti biciklista i korišćenja bicikla kao prevoznog sredstva. Pri definisanju biciklističkih staza, traka i koridora težiti povezivanju centara atrakcije, većih čvorišta javnog gradskog i međugradskog prevoza, objekata državnih organa, fakulteta, studentskih ustanova, škola, javnih institucija, gradskih i opštinskih službi, zdravstvenih ustanova, rekreativnih objekata i parkova.

3. Spatial coverage (area included in the Study)

4. Terms of Reference

The study should include the following:

- 4.1. Based on the concept of a cycle line network, which is defined within the existing planning documents and surveys of cyclists (item 4.3), it is necessary to define the micro-location of the network of cycle trails, tracks and corridors.
- 4.2. It is necessary to present European and international experiences in the design of cycle trails, tracks and corridors, in at least five cities (they should be of similar socio-demographic and geographical characteristics) with developed bicycle traffic, taking into account the specificities of this category of users and the expansion of this form of transport in many European and world cities.
- 4.3. Conduct a survey of cyclists on the requirements for:
 - type and characteristics of cycle trails, tracks and corridors
 - routes of the necessary cycle trails, tracks and corridors
 - parking locations for bicycles along the cycle trails, tracks and corridors proposed by respondents

- locations of the rent a bike stations

The content of the survey should be submitted to the Contracting Authority for approval. After the approval, the survey should be published on the websites of the Contractor and the Contracting Authority. The survey should be conducted on a representative sample. In order to obtain adequate data regarding the use of cycle trails, tracks and routes, it is necessary to establish cooperation with the associations of cyclists.

- 4.4. The results of the survey should be Processed, listing the streets (and the overview map) with the cycle trails, tracks and corridors proposed by respondents.
- 4.5. The proposals of the respondents, cycle trails planned by the existing planning documents and marked cycle trails, tracks and routes should be analysed.
- 4.6. An optimal traffic solution for constructing (improving) the cycle trails or tracks and corridors should be proposed. There should be developed with a view to integrate these within the network of the existing bicycle trails, tracks and corridors.
- 4.7. Following the adoption of the proposed cycle trails, tracks and corridors by the Beneficiary (Commission for the reception of the Study) for the expansion of the network, the following should be carried out:
 - Analysis of traffic and technical requirements and definition of the routes of cycle trails, tracks and corridors, as well as preparation of a graphic overview of defined cycle trails, tracks and corridors in the scale of 1: 250 or 1: 500, chainage, characteristic profiles, photos of the characteristic segments, general Bill of traffic signalization, works and equipment with the necessary technical characteristics, micro-location for the installation of traffic signalization
 - Definition of the regime of dynamic and stationary traffic. If it is necessary to abolish parking spots, the number of those parking spots should be indicated.
 - Graphic overview of the location and the distance of all lateral obstacles and elements of cycle trail or track
 - After examining the conditions in the field (and cycling), the analysis of the traffic conditions on the proposed cycle trails, tracks and corridors in terms of safety of cyclists should be carried out.
- 4.8. Defining parking lots for bicycles along the projected cycle trails, tracks and corridors
- 4.9. Conclusion of the Study

5. Maps and layouts for the Study preparation:

For the purpose of the Study preparation, the Contractor procures maps and layouts on which the existing and planned traffic signs, street furniture with the distance from cycle trails, tracks and corridors are presented.

6. The obligation of the Contractor

The Contractor is responsible for the professional elaboration of the project tasks in accordance with the contract.

Following the completion of all contractual obligations, the Contractor shall submit the Study to the Contracting Authority in X (number) printed copies and X (number) copies in electronic form (CD/DVD). The documents should be in an open format (Word, Excel or Auto CAD).

The Beneficiary reserves all rights to the collected and Processed data, technical materials analysed and pre-

pared for the purpose of this Study, designs, final documents and other materials used in the preparation of the Study. The Contractor may publish the results of the Study in national and international professional and scientific literature only upon obtaining the written approval of the Beneficiary. The Contractor is obliged to state the name of the Contracting Authority.

7. The deadline for Study preparation is maximum XXX days following the contract signing date.

Workplan for the preparation and presentation of the Study by phases and units:

- The Contractor is obliged to submit the proposal of the survey content to the Beneficiary for approval within XX days following the contract signing date.
- The Contractor is obliged to prepare an overview and presentation of the survey results, presentation of the condition analysis and the proposals of the alternative solutions within XX days following the contract signing date.
- The Contractor is obliged to make a presentation of the Study within XXX days following the contract signing date.
- The Beneficiary is obliged to give remarks in written form within XX days following the date of Study presentation.
- The Contractor is obliged to address deficiencies according to the remarks of the Beneficiary within XX days following the date of remarks receipt.
- The Contracting parties agree that the final submission of the Study should be (minimum XXX days, maximum XXX days) following the contract signing date.

REPORTING

The Contractor shall report to the Beneficiary on completed tasks in the form of monthly reports. The reports contain information on implemented significant activities regarding the Study. The Contractor shall submit monthly reports for the previous period in written form at the beginning of the next month, but no later than XX of the month.

Place and date:

L.S. Signature of the authorized person of the Bidder

4. EXAMPLE OF THE CONTENT FOR A TRAFFIC STUDY OF THE CITY OR REGION WITH TRANSPORT MODEL

1. INTRODUCTION

2. METHODOLOGY OF THE STUDY PREPARATION, MODELS AND TRANSPORT RESEARCH

- 2.1. Division into traffic zones

3. TRAFFIC RESEARCH

4. TRANSPORT MODEL

- 4.1. The purpose of the model
- 4.2. Model users
- 4.3. Information base of the model

5. ANALYSIS OF THE TRANSPORT SYSTEM CONDITIONS

- 5.1. Characteristics of travels
- 5.2. Conditions of the traffic on the main highway and street network
- 5.3. Traffic-geographical position
- 5.4. Highway network
- 5.5. Intersections
- 5.6. Freight traffic
- 5.7. Pedestrian and bicycle traffic
- 5.8. Parking
- 5.9. Taxi
- 5.10. Rail traffic
- 5.11. Transport centres

6. MARITIME TRANSPORT

- 6.1. Waterway traffic
- 6.2. Estimation of the conditions of traffic system

7. PREDICTIONS AND FORECASTS OF TRAFFIC DEMAND

- 7.1. Predictions according to the Strategic Plan
- 7.2. Forecast of vehicle traffic demand, mobility
- 7.3. Distribution of flows on networks - network testing

8. CONDITIONS OF EXPLOITATION AND MAINTENANCE OF TRANSPORT MODEL

- 8.1. Recommendations for further priority activities for model supplement
- 8.2. Commercial status of information for certain categories of users

9. PLAN OF IMPROVEMENT MEASURES OF TRANSPORT SYSTEM

- 9.1. Program commitments (principles)
- 9.2. Aspects distribution
- 9.3. Road traffic
- 9.4. Intersections

- 9.5. Public transport
- 9.6. Pedestrian traffic
- 9.7. Bicycle traffic
- 9.8. Construction and regulatory measures
- 9.9. Parking
- 9.10. Planned network of parking lots
- 9.11. Regulation and control of norms, respect due to meeting parking needs
- 9.12. Parking for freight vehicles and buses
- 9.13. Proposal of the structure and dynamics of parking measures implementation
- 9.14. Rail traffic
- 9.15. Waterway traffic
- 9.16. Air traffic
- 9.17. Transport centre

10. CONCLUSION

5. EXAMPLE OF SURVEY CONTENT ON SERVICE SATISFACTION OR REALIZED MEASURE

The methodology and content of each analysis must be the subject of a specific case elaboration. So, at this point, it is not possible to give a precise description of the survey, but rough guidelines for its realisation and content.

The methodology of the survey should define:

2. Time of analysis/timescale (date or period)
3. Analysis methods (direct interview, by telephone, distribution of questionnaires, via internet portals, etc.).
4. Survey coverage (part of the city or entire cities, or entire planned area)
5. Sample (definition of target groups and size of a stratified sample)
6. Establishing of the survey form
7. Method of Processing and presentation of the results

Regardless of the type of the survey, each should contain the following groups of questions:

- Questions concerning the respondent (gender, age or other important information)
- Questions concerning the understanding of the survey subject (how is the respondent familiar with the specific action/measure/project, whether and how he/she uses it, how often, etc.).
- Questions concerning service satisfaction/realized measure, etc. (Is he/she satisfied with the measure and to what extent)
- Questions concerning quality improvement (suggestions and proposals for improving the operation in whole or in the segment of the specific measure).

Examples and templates for the preparation of questionnaires for this type of survey are available at the following sites:

<https://www.qualtrics.com/blog/customer-satisfaction-survey-questions/>

<http://www.questionpro.com/survey-templates/customer-satisfaction-survey-templates/>

Proposal of the Memorandum of Cooperation

MINISTRY OF SUSTAINABLE DEVELOPMENT AND TOURISM

MINISTRY OF TRANSPORT AND MARITIME AFFAIRS

MINISTRY OF ECONOMY

MUNICIPALITY OF TIVAT

MUNICIPALITY OF KOTOR

MUNICIPALITY OF HERCEG NOVI

OLD ROYAL CAPITAL CETINJE

MEMORANDUM OF COOPERATION ON IMPLEMENTATION AND MONITORING OF THE POLY-SUMP SUSTAINABLE URBAN MOBILITY FOR BOKA BAY AND THE OLD ROYAL CAPITAL CETINJE

Ministry of Sustainable Development and Tourism and Ministry of Transport and Maritime Affairs and Ministry of Economy and Municipality of Tivat and Municipality of Kotor and Municipality of Herceg Novi and Old Royal Capital Cetinje

Referring to the transport White Paper - „Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system“ (COM(2011)0144 final), the Poly-SUMP Urban Mobility Plan for the Boka Bay and Old Royal Capital Cetinje was developed as the result of the project «Towards Carbon Neutral Tourism», financed by the Global Environment Facility (GEF) and implemented by the United Nations Development Program (UNDP), based on Article 76 of Law on state administration (“Official Gazette”, No. 38/2003 and “Official Gazette”, No 22/2008 and 42/2011), Articles 15 and 127 of the Law on local self-government (“Official Gazette”, No 42/2003, 28/2004, 75/2005, 13/2006 and “ Official Gazette”, No 88/2009, 3/2010 38/2012 and 10/2014).

Profoundly aware that:

- Urban mobility and plans for its sustainability are becoming more important in cities that are currently facing daily overload of transport network, excessive use of cars, increased GHG emissions, noise pollution, increased number of car accidents followed by many other negative traffic effects,
- There is apparent lack of quality transport infrastructure, primarily railway infrastructure, underdeveloped alternatives to road networks, slow implementation of investments in developing the capacity of passenger and cargo terminals in maritime transport and establishing regular flights dispersion, and still unrealized requirements for more efficient operations of the Tivat Airport, with insufficient air lines, especially in off-season and seasonal periods, as well as insufficient number of regular connections throughout the year,
- There is a need for establishment of the institutional mechanism for further improvement of the dialogue and cooperation in finding and implementing solutions that implies a spatial, energy, environ-

mental and economic dimension and a new approach in solving the urban traffic problems, as well as an integral approach that takes into consideration practices and policies of different sectors, levels of administration and relevant institutions

In order to:

- Reduce the use of the number of vehicles per capita and promote the sustainable modes of transport and travel,
- Increase the quality of life in cities through increased mobility and energy, economic and space efficiency,
- Reduce the negative impact of transport on the environment,
- Increase the safety of the transportation system, and
- Increase social equality in urban mobility

The Ministry of Sustainable Development And Tourism

Ministry of Transport and Maritime Affairs

Old Royal Capital Cetinje

Municipality of Kotor

Municipality of Tivat

Municipality of Herceg Novi and

United Nations Development Program (UNDP)

Express their willingness to further improve the already established forms and contents of cooperation and regulate them through a:

MEMORANDUM OF COOPERATION On implementation and monitoring of the Poly-SUMP Sustainable Urban Mobility Plan for Boka Bay and the Old Royal Capital Cetinje

OBJECTIVE OF COOPERATION

Article 1

This Memorandum establishes the basis for continued cooperation between the municipalities of Tivat, Kotor, Herceg Novi and the Old Royal Capital Cetinje (hereinafter: local self-governments) in the implementation and monitoring of the Polycentric Sustainable Urban Mobility Plan for Boka Bay and the Old Royal Capital Cetinje (hereinafter: POLYSUMP) to:

- Promote public transport and introduce new services in public transport;
- Promote non-motorized forms of transport (cycling, walking);

- Promote shift to new technologies, cleaner fuels and energy efficient use of fuels;
- Construction of new and reconstruction of the existing transport infrastructure.

The overview of the POLYSUMP measures, whose implementation is monitored, their importance, value, sources of financing, period of realization, beneficiaries, risks and priorities are presented in the appendix of this Memorandum and constitute its integral part.

Article 2

The implementation of POLYSUMP will be monitored on the basis of demographic and spatial, socio-economic, transport and environmental indicators that include a number of different frequencies, time periods and starting points that will rely upon a variety of monitoring methodologies and sources of information.

The indicators referred to in paragraph 1 of this Article shall include, but are not limited to:

- Degree of implementation of certain measures - monitoring through quarterly meetings of the technical team of the plan;
- Emissions of carbon dioxide originating from traffic - measurement or calculation on an annual basis;
- The level of emissions of nitrogen dioxide at specific locations - measurements or calculations annually;
- The traffic flow on main roads - measurement once a year;
- The number of bus passengers - measurements once a year;
- Minor, serious and fatal traffic accidents - annual statistics MIA;
- Condition of roads and highway structures – Annual report from local directorates and the Road Directorate
- Levels of satisfaction - roads, pavements, road safety and parking services - survey organized once or twice a year following the implementation of certain measures.

PRINCIPLES OF COOPERATION

Article 3

The signatories of this Memorandum agree to the mutual cooperation on the basics of this Memorandum, based on the following principles:

- **Partnership** - with the aim of achieving and promoting the public interest, the Parties shall cooperate in good faith and in accordance with the law and general acts;
- **Transparency** - the Parties shall make public and accessible information about their plans, programmes, projects and activities;
- **Liability** - Parties shall take full responsibility for the implementation of joint activities;
- **The independence and autonomy** of the Parties, in accordance with the law, is a key condition for the smooth and efficient accomplishment of their role in the realisation of the POLYSUMP.

AREAS OF COOPERATION

Article 4

In the realisation of the subject of this Memorandum, local government units shall:

- provide to the Ministry of Sustainable Development and Tourism and the Ministry of Maritime Affairs and Transport (hereinafter: state administration authorities) initiatives for the regulation of relations of importance for the implementation of the POLYSUMP and take measures of importance for solving the issues within the rights and duties of local government bodies in its implementation;
- make proposals for the undertaking of activities by state administration authorities on the development and implementation of the POLYSUMP measures;
- obtain opinion from the state administration authorities regarding the application of laws that have a direct impact on the implementation and monitoring of the implementation of the POLYSUMP measures;
- participate in the preparation of laws and other acts whose content is of interest for the implementation and monitoring of the implementation of the POLYSUMP measures;
- work on the further development of mutual partnerships, involving them in the development and realisation of projects of common interest.

Article 5

In the realisation of the subject from this Memorandum, state administration authorities shall:

- inform local government units on the measures taken or intend to be taken in all matters of immediate interest for the implementation and monitoring of the implementation of the POLYSUMP measures;
- take into account the complementarity of their programs, projects and activities in the areas of cooperation with local government units;
- provide professional assistance to local government units in relation to the performance of their tasks from the basis of this Memorandum;
- require reports, data and information about the activities and implementation of the measures from the POLYSUMP and
- perform other activities required for the implementation and monitoring of the implementation of the POLYSUMP measures.

Article 6

The signatories of this Memorandum shall, on the partnership basis, in a timely manner and intensively exchange all the relevant information and thus create the basis for the coordination of activities aimed at strengthening the cooperation with the purpose of the realisation of the subject of this Memorandum, as well as timely identify and eliminate problems in its implementation.

Article 7

The signatories of this Memorandum shall cooperate in the field of education and training in the areas covered by measures from the POLYSUMP and for this purpose:

- discuss the plans and programmes of training and development;
- conduct joint training, seminars and exchange of lecturers/trainers;
- exchange of experience and information on the methods and forms of work;
- train experts in different fields of action and
- jointly carry out other activities.

Article 8

The signatories of the Memorandum during the performance of their joint activities shall cooperate with other relevant government authorities, local governments, public institutions, public companies and other legal entities.

The signatories of this Memorandum shall act in a coordinate manner also in the field of international cooperation.

FORMS OF COOPERATION

Article 9

The Parties will establish a technical team for the implementation and monitoring of the POLYSUMP (hereinafter: the Technical team).

The Technical team has a president, secretary and members, as follows:

[The function]

The chairmanship rotates every 12 months between members of local governments.

Each local government will appoint one person to perform the technical and administrative services for the members of the Technical team of the unit of the local government.

Article 10

The tasks of the Technical team from Article 9 of this Memorandum are to:

- organize and synchronize activities of local government units and public services of local government units for the purpose of the implementation of the POLYSUMP measures;
- prepare proposals for operational plans and individual projects in order to concretise POLYSUMP measures;
- follow the dynamic, coordinate activities and ensure the implementation of measures and specific projects;
- perform amendments of operational plans and individual projects prepared on the basis of the POLYSUMP measures;
- submit to the state administration authority quarterly and annual reports on the implementation of measures, operational plans and projects prepared on the basis of the POLYSUMP measures;
- liaise with the competent authorities and institutions in order to realize POLYSUMP and its operational plans and individual projects;
- provide publicity and transparency of the Process.

Article 11

The Technical team can, in order to increase the performance of their activities, establish permanent or temporary working groups and engage experts in the relevant field.

A Decision on the establishment of a working group shall determine its task and composition.

The Technical team may propose to seek the professional assistance of the relevant international organizations

and institutions that implement projects in the fields for which the Technical team is established.

Article 12

The sessions of the Technical team will be held as needed, but at least four times a year (quarterly).

The session of the Technical team is convened by the president, on his own initiative or at the proposal of at least three members.

The manner of work and decision making Process of the Technical Team will be regulated in detail by the Rules of Procedure.

FINAL PROVISIONS

Article 13

The signatories, for certain forms of cooperation, may conclude separate agreements which will be an integral part of this Memorandum.

Article 14

This Memorandum was concluded in good faith and mutual trust.

Each Party may unilaterally terminate the Memorandum, by sending written notice to the other party.

Amendments to this Memorandum may be made with the consent of the Signatories.

Article 15

Any dispute concerning the interpretation and implementation of the Memorandum, the signatories shall resolve in a spirit of good cooperation and mutual respect.

Article 16

This Memorandum is concluded for a period of four years from the date of signing.

Article 17

This Memorandum is effective upon signature, and is made in 7 (seven) identical copies of which each party keeps one (1) copy.

In Podgorica,2016

Calculation of CO₂ savings

Calculation of emission reductions for low carbon options in Tivat

Table 8. Current traffic and CO₂ emissions for Tivat

Model	Number of vehicles	Passengers-km (milion)	Load factor	VKM 1 (million)	Fuel	Average fuel efficiency (MJ/km) ¹	CO ₂ eq (ton)
Busses	67	18,453.00	20,00	922,65	Dizel	11,20	764,692
Trucks	1,144		1,20	11,325,60	Dizel	13,20	11,062,846
Cars	6,647	143,451.00	2,18	65,803,21	Benzin/dizel/LPG	3,60	16,345,518
TOTAL		161,904.00					28,173,056

VKT per vehicle type in Tivat (2014)

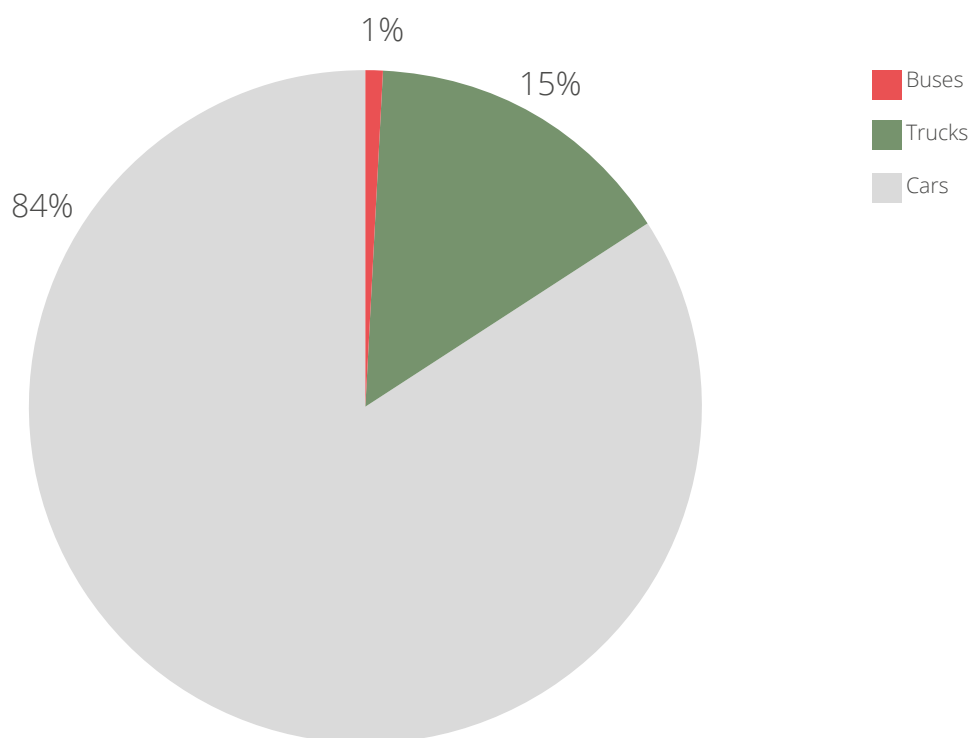


Figure 23. VKM per type of vehicle in Tivat

¹ Source: Kenworthy, J. (2007).

Table 9. Calculation of CO2 emissions reduction for non-motorised measures in Tivat

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	
Buses	922.65	11.20	764,692.32	1,018.68	1%	10.66	803,305.46	1,124.71	1%	10.14	843,868.37	1,241.77	1%	9.65	886,479.50					
Trucks	11,325.60	13.20	11,062,846.08	11,903.32	13%	12.56	11,062,846.08	12,510.51	11%	11.95	11,062,846.08	13,148.67	10%	11.37	11,062,846.08					
Cars	65,803.21	3.60	16,345,517.61	80,059.67	86%	3.43	18,921,628.24	97,404.83	88%	3.26	21,903,742.90	118,507.87	89%	3.10	25,355,849.23					
Bicycles	0.10	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00					
	78,051.56		28,173,056.01	92,981.78			30,787,779.78	111,040.17			33,810,457.35	132,898.46			37,305,174.81					

Non-motorised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	922.65	1%	11.20	764,692.32	1,018.68	1%	10.66	803,305.46	1,124.71	1%	10.14	843,868.37	1,241.77	1%	9.65	886,479.50				
Trucks	11,325.60	15%	13.20	11,062,846.08	11,903.32	13%	12.56	11,062,846.08	12,510.51	13%	13.20	11,627,162.41	12,510.51	13%	12.56	11,627,162.41				
Cars	65,803.21	84%	3.60	16,345,517.61	80,059.67	86%	3.43	18,921,628.24	80,356.67	85%	3.26	18,070,068.97	84,495.49	86%	3.10	17,764,177.51				
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00				
	78,051.56			28,173,056.01	92,981.79			30,787,779.78	93,992.09			30,541,099.76	98,248.09			30,277,819.43				

Table 10. Calculation of CO2 emissions reduction for public transport measures in Tivat

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)
Buses	922.65	1%	11.20	764,692.32	1,018.68	1%	10.66	803,305.46	1,124.71	1%	10.14	843,868.37	1,241.77	1%	9.65	886,479.50				
Trucks	11,325.60	15%	13.20	11,062,846.08	11,903.32	13%	12.56	11,062,846.08	12,510.51	11%	11.95	11,062,846.08	13,148.67	10%	11.37	11,062,846.08				
Cars	65,803.21	84%	3.60	16,345,517.61	80,059.67	86%	3.43	18,921,628.24	97,404.83	88%	3.26	21,903,742.90	118,507.87	89%	3.10	25,355,849.23				
Bicycles	0.1	0%		0.00	0.12	0%		0.00	0.13	0%		0.00	0.16	0.00%	0.00	0.00				
	78,051.56			28,173,056.01	92,981.78			30,787,779.78	111,040.17			33,810,457.35	132,898.46			37,305,174.81				

Non-moto- rised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)
Buses	922.65	1%	11.20	764,692.32	1,018.68	1%	10.66	803,305.46	1,239.38	1%	10.14	929,909.20	1,507.90	2%	9.65	1,076,466.14				
Trucks	11,325.60	15%	13.20	11,062,846.08	11,903.32	13%	12.56	11,062,846.08	12,510.51	0.13	13.20	11,627,162.41	12,510.51	13%	12.56	11,627,162.41				
Cars	65,803.21	84%	3.60	16,345,517.61	80,059.67	86%	3.43	18,921,628.24	80,356.67	85%	3.26	18,070,068.97	84,495.49	86%	3.10	17,764,177.51				
Bicycles	0.10	0.00%		0.00	0.12	0%		0.00	0.13	0.00%		0.00	0.16	0.00%		0.00				
	78,051.56			28,173,056.01	92,981.78			30,787,779.78	94,106.70			30,627,140.59	98,514.05			30,467,806.06				

Table 11. Calculation of CO2 emission reduction for measures of reducing travel demand in Tivat

Basis (No Project Scenario)	YEAR 1				YEAR 5				YEAR 10				YEAR 15			
	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	922.65	1%	11.20	764,692.32	1,018.68	1%	10.66	803,305.46	1,124.71	1%	10.14	843,868.37	1,241.77	1%	9.65	886,479.50
Trucks	11,325.60	15%	13.20	11,062,846.08	11,903.32	13%	12.56	11,062,846.08	12,510.51	11%	11.95	11,062,846.08	13,148.67	10%	11.37	11,062,846.08
Cars	65,803.21	84%	3.60	16,345,517.61	80,059.67	86%	3.43	18,921,628.24	97,404.83	88%	3.26	21,903,742.90	118,507.87	89%	3.10	25,355,849.23
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00
	78,051.56			28,173,056.01	92,981.78			30,787,779.78	111,040.17			33,810,457.35	132,898.46			37,305,174.81

Non-moto- rised measures (Scenario Project)	YEAR 1				YEAR 5				YEAR 10				YEAR 15			
	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	922.65	1%	11.20	764,692.32	1,018.68	1%	10.66	803,305.46	1,180.93	1%	10.14	886,053.56	1,369.02	1%	9.65	977,325.49
Trucks	11,325.60	15%	13.20	11,062,846.08	11,903.32	13%	12.56	11,062,846.08	12,510.51	13%	13.20	11,627,162.41	12,510.51	13%	12.56	11,627,162.41
Cars	65,803.21	84%	3.60	16,345,517.61	80,059.67	86%	3.43	18,921,628.24	80,356.67	85%	3.26	18,070,068.97	84,495.49	86%	3.10	17,764,177.51
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00
	78,051.56			28,173,056.01	92,981.79			30,787,779.78	94,048.32			30,583,284.94	98,375.35			30,368,665.42

Calculation of emission reduction of low-carbon options in Herceg Novi

Table 12. Current traffic and CO₂ emission for Herceg Novi

Model	Number of vehicles	Passengers-km (million)	Load factor	VKM 1 (million)	Fuel	Average fuel efficiency (MJ/km) ¹	CO ₂ eq (ton)
Busses	148	47,910.00	20.00	2,395.50	Diesel	11.20	1,985,390
Trucks	421		1.20	5,599.30	Diesel	13.20	5,469,396
Cars	13,610	394,611.00	2.18	181,014.22	Petrol/diesel/LPG	3.60	44,963,932
TOTAL		442,521.00					52,418,719

VKT per vehicle type in Herceg Novi (2014)

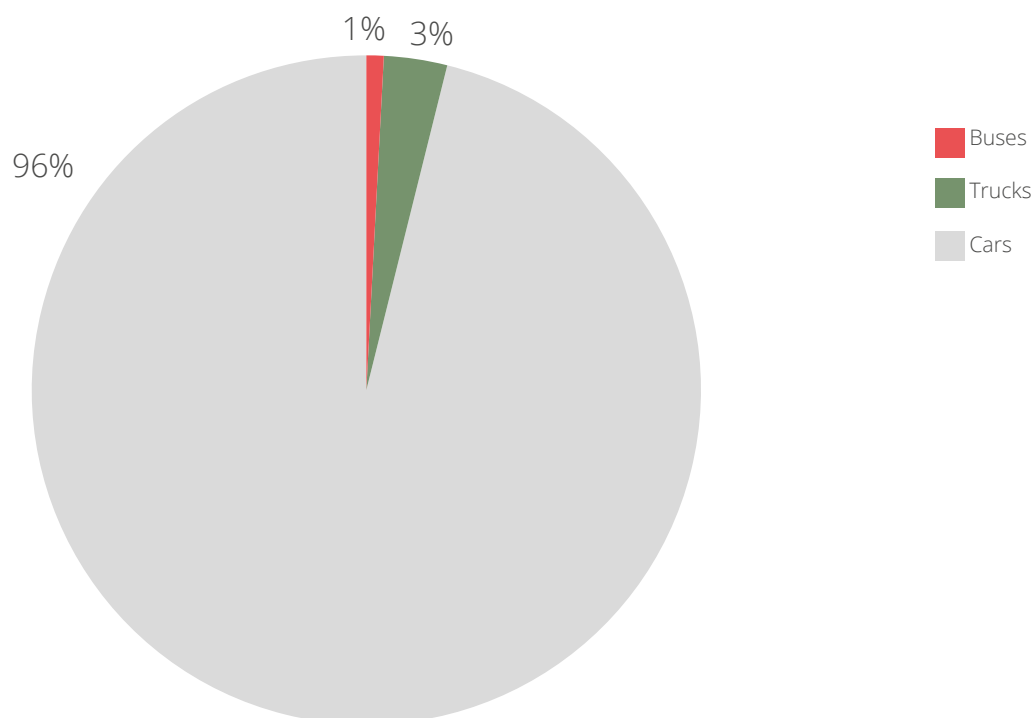


Figure 24. KM per type of vehicle in Herceg Novi

¹ Source: Kenworthy, J. (2007).

Table 13. Calculation of CO2 emission reduction for non-motorised measures in Herceg Novi

Basis (No Project Scenario)	YEAR 1				YEAR 5				YEAR 10				YEAR 15			
	VKM (million)	Participa- tion of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	2,395.50	1%	11.20	1,985,390.40	2,644.83	1%	10.66	2,085,642.69	2,920.10	1%	10.14	2,190,957.22	3,224.03	1%	9.65	2,301,589.60
Trucks	5,599.30	3%	13.20	5,469,396.24	5,884.92	3%	12.56	5,469,396.24	6,185.11	2%	11.95	5,469,396.24	6,500.61	2%	11.37	5,469,396.24
Cars	181,014.22	96%	3.60	44,963,932.29	220,231.48	96%	3.43	52,050,404.96	267,945.26	97%	3.26	60,253,730.46	325,996.38	97%	3.10	69,749,928.69
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00
	189,009.12			52,418,718.93	228,761.34			59,605,443.89	277,050.61			67,914,083.92	335,721.18			77,520,914.53

Nemotri- zovane mjere (Scenario Projekat)	YEAR 1				YEAR 5				YEAR 10				YEAR 15			
	VKM (million)	Učešće modela prevoza (VKM pro- cenat)	Pros- ječna efi- kasnost goriva (MJ/km)	CO ₂ (tona)	VKM (million)	Učešće modela prevoza (VKM pro- cenat)	Pros- ječna efi- kasnost goriva (MJ/km)	CO ₂ (tona)	VKM (million)	Učešće modela prevoza (VKM pro- cenat)	Pros- ječna efi- kasnost goriva (MJ/km)	CO ₂ (tona)	VKM (million)	Učešće modela prevoza (VKM pro- cenat)	Prosječna efi- kasnost goriva (MJ/km)	CO ₂ (tona)
Buses	2,395.50	1%	11.20	1,985,390.40	2,644.83	1%	10.66	2,085,642.69	2,920.10	1%	10.14	2,190,957.22	3,224.03	1%	9.65	2,301,589.60
Trucks	5,599.30	3%	13.20	5,469,396.24	5,884.92	3%	12.56	5,469,396.24	6,185.11	3%	13.20	5,748,390.42	6,185.11	3%	12.56	5,748,390.42
Cars	181,014.22	96%	3.60	44,963,932.29	220,231.48	96%	3.43	52,050,404.96	221,048.50	96%	3.26	49,707,900.18	232,433.71	96%	3.10	48,866,441.16
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00
	189,009.12			52,418,718.93	228,761.35			59,605,443.89	230,153.91			57,647,247.81	241,843.18			56,916,421.18

Table 14. Calculation of Co2 emission reduction for public transport measures in Herceg Novi

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	2,395.50	1%	11.20	1,985,390.40	2,644.83	1%	10.66	2,085,642.69	2,920.10	1%	10.14	2,190,957.22	3,224.03	1%	9.65	2,301,589.60				
Trucks	5,599.30	3%	13.20	5,469,396.24	5,884.92	3%	12.56	5,469,396.24	6,185.11	2%	11.95	5,469,396.24	6,500.61	2%	11.37	5,469,396.24				
Cars	181,014.22	96%	3.60	44,963,932.29	220,231.48	96%	3.43	52,050,404.96	267,945.26	97%	3.26	60,253,730.46	325,996.38	97%	3.10	69,749,928.69				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	189,009.12			52,418,718.93	228,761.34			59,605,443.89	277,050.61			67,914,083.92	335,721.18			77,520,914.53				

Non-moto- rised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	2,395.50	1%	11.20	1,985,390.40	2,644.83	1%	10.66	2,085,642.69	3,217.83	1%	10.14	2,414,347.26	3,914.99	2%	9.65	2,794,856.81				
Trucks	5,599.30	3%	13.20	5,469,396.24	5,884.92	3%	12.56	5,469,396.24	6,185.11	3%	13.20	5,748,390.42	6,185.11	3%	12.56	5,748,390.42				
Cars	181,014.22	96%	3.60	44,963,932.29	220,231.48	96%	3.43	52,050,404.96	221,048.50	96%	3.26	49,707,900.18	232,433.71	96%	3.10	48,866,441.16				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	189,009.12			52,418,718.93	228,761.34			59,605,443.89	230,451.58			57,870,637.85	242,533.97			57,409,688.39				

Table 15. Calculation of CO2 emission reduction for reducing travel demand in Herceg Novi

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	2,395.50	1%	11.20	1,985,390.40	2,644.83	1%	10.66	2,085,642.69	2,920.10	1%	10.14	2,190,957.22	3,224.03	1%	9.65	2,301,589.60				
Trucks	5,599.30	3%	13.20	5,469,396.24	5,884.92	3%	12.56	5,469,396.24	6,185.11	2%	11.95	5,469,396.24	6,500.61	2%	11.37	5,469,396.24				
Cars	181,014.22	96%	3.60	44,963,932.29	220,231.48	96%	3.43	52,050,404.96	267,945.26	97%	3.26	60,253,730.46	325,996.38	97%	3.10	69,749,928.69				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	189,009.12			52,418,718.93	228,761.34			59,605,443.89	277,050.61			67,914,083.92	335,721.18			77,520,914.53				

Non-motorised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	2,395.50	1%	11.20	1,985,390.40	2,644.83	1%	10.66	2,085,642.69	3,066.08	1%	10.14	2,300,483.71	3,554.42	1%	9.65	2,537,455.40				
Trucks	5,599.30	3%	13.20	5,469,396.24	5,884.92	3%	12.56	5,469,396.24	6,185.11	3%	13.20	5,748,390.42	6,185.11	3%	12.56	5,748,390.42				
Cars	181,014.22	96%	3.60	44,963,932.29	220,231.48	96%	3.43	52,050,404.96	221,048.50	96%	3.26	49,707,900.18	232,433.71	96%	3.10	48,866,441.16				
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00				
	189,009.12			52,418,718.93	228,761.35			59,605,443.89	230,299.89			57,756,774.30	242,173.58			57,152,286.97				

Calculation of emission reduction for low-carbon options in Kotor

Table 16. Current traffic and CO₂ emission for Kotor

Model	Number of vehicles	Passengers-km (million)	Load factor	VKM 1 (million)	Fuel	Average fuel efficiency (MJ/km) ¹	CO ₂ eq (ton)
Buses	108	25,059.00	20.00	1,252.95	Dizel	11.20	1,038,445
Trucks	766		1.20	8,732.40	Dizel	13.20	8,529,808
Cars	8,546	212,382.00	2.18	97,422.94	Benzin/dizel/LPG	3.60	24,199,857
TOTAL		237,441.00					33,768,111

VKT per vehicle type in Kotor (2014)

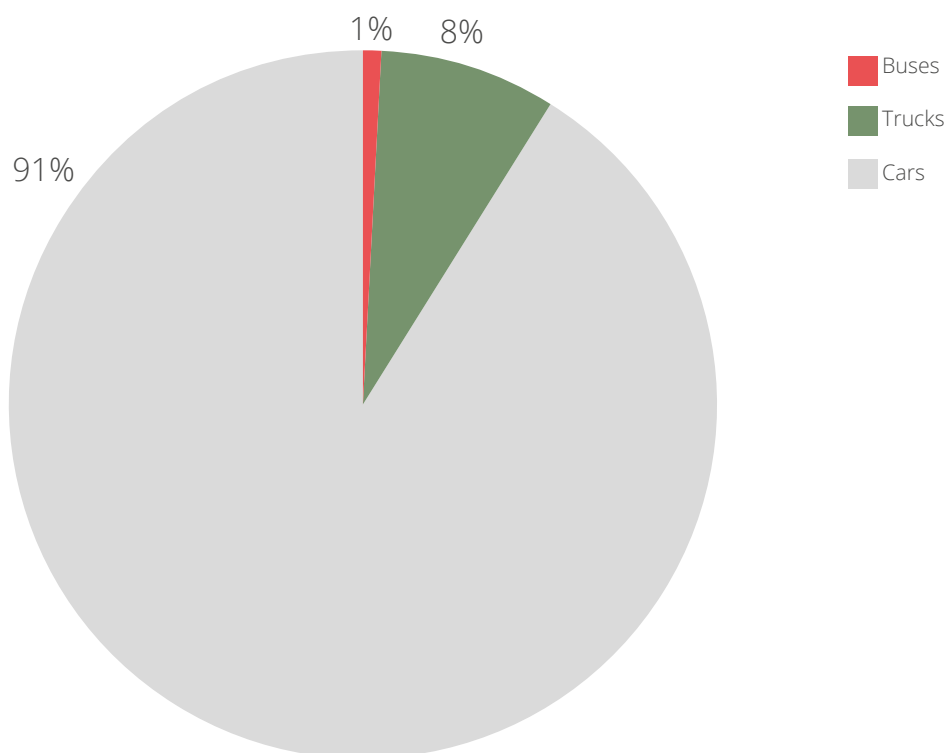


Figure 25. VKM per type of vehicle in Kotor

Table 17. Calculation of CO2 emission reduction for non-motorised measures in Kotor

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,252.95	1%	11.20	1,038,444.96	1,383.36	1%	10.66	1,090,881.24	1,527.34	1%	10.14	1,145,965.29	1,686.31	1%	9.65	1,203,830.81				
Trucks	8,732.40	8%	13.20	8,529,808.32	9,177.84	7%	12.56	8,529,808.32	9,646.00	6%	11.95	8,529,808.32	10,138.05	5%	11.37	8,529,808.32				
Cars	97,422.94	91%	3.60	24,199,857.25	118,529.90	92%	3.43	28,013,839.22	144,209.74	93%	3.26	32,428,918.06	175,453.20	94%	3.10	37,539,828.73				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	107,408.39			33,768,110.53	129,091.21			37,634,528.78	155,383.22			42,104,691.66	187,277.71			47,273,467.85				

Non-moto- rised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,252.95	1%	11.20	1,038,444.96	1,383.36	1%	10.66	1,090,881.24	1,527.34	1%	10.14	1,145,965.29	1,686.31	1%	9.65	1,203,830.81				
Trucks	8,732.40	8%	13.20	8,529,808.32	9,177.84	7%	12.56	8,529,808.32	9,646.00	7%	13.20	8,964,914.27	9,646.00	7%	12.56	8,964,914.27				
Cars	97,422.94	91%	3.60	24,199,857.25	118,529.90	92%	3.43	28,013,839.22	118,969.62	91%	3.26	26,753,089.13	125,097.22	92%	3.10	26,300,210.86				
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00				
	107,408.39			33,768,110.53	129,091.22			37,634,528.78	130,143.17			36,863,968.69	136,429.85			36,468,955.93				

Table 18. Calculation of CO₂ emission reduction for reducing travel demand in Kotor

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,252.95	1%	11.20	1,038,444.96	1,383.36	1%	10.66	1,090,881.24	1,527.34	1%	10.14	1,145,965.29	1,686.31	1%	9.65	1,203,830.81				
Trucks	8,732.40	8%	13.20	8,529,808.32	9,177.84	7%	12.56	8,529,808.32	9,646.00	6%	11.95	8,529,808.32	10,138.05	5%	11.37	8,529,808.32				
Cars	97,422.94	91%	3.60	24,199,857.25	118,529.90	92%	3.43	28,013,839.22	144,209.74	93%	3.26	32,428,918.06	175,453.20	94%	3.10	37,539,828.73				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	107,408.39			33,768,110.53	129,091.21			37,634,528.78	155,383.22			42,104,691.66	187,277.71			47,273,467.85				

Non-motorised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,252.95	1%	11.20	1,038,444.96	1,383.36	1%	10.66	1,090,881.24	1,683.07	1%	10.14	1,262,807.93	2,047.71	1%	9.65	1,461,830.87				
Trucks	8,732.40	8%	13.20	8,529,808.32	9,177.84	7%	12.56	8,529,808.32	9,646.00	7%	13.20	8,964,914.27	9,646.00	7%	12.56	8,964,914.27				
Cars	97,422.94	91%	3.60	24,199,857.25	118,529.90	92%	3.43	28,013,839.22	118,969.62	91%	3.26	26,753,089.13	125,097.22	91%	3.10	26,300,210.86				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	107,408.39			33,768,110.53	129,091.21			37,634,528.78	130,298.83			36,980,811.33	136,791.08			36,726,956.00				

Table 19. Calculation of emission reduction for low-carbon options in Kotor

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,252.95	1%	11.20	1,038,444.96	1,383.36	1%	10.66	1,090,881.24	1,527.34	1%	10.14	1,145,965.29	1,686.31	1%	9.65	1,203,830.81				
Trucks	8,732.40	8%	13.20	8,529,808.32	9,177.84	7%	12.56	8,529,808.32	9,646.00	6%	11.95	8,529,808.32	10,138.05	5%	11.37	8,529,808.32				
Cars	97,422.94	91%	3.60	24,199,857.25	118,529.90	92%	3.43	28,013,839.22	144,209.74	93%	3.26	32,428,918.06	175,453.20	94%	3.10	37,539,828.73				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	107,408.39			33,768,110.53	129,091.21			37,634,528.78	155,383.22			42,104,691.66	187,277.71			47,273,467.85				

Non-motorised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,252.95	1%	11.20	1,038,444.96	1,383.36	1%	10.66	1,090,881.24	1,603.69	1%	10.14	1,203,252.37	1,859.12	1%	9.65	1,327,198.81				
Trucks	8,732.40	8%	13.20	8,529,808.32	9,177.84	7%	12.56	8,529,808.32	9,646.00	7%	13.20	8,964,914.27	9,646.00	7%	12.56	8,964,914.27				
Cars	97,422.94	91%	3.60	24,199,857.25	118,529.90	92%	3.43	28,013,839.22	118,969.62	91%	3.26	26,753,089.13	125,097.22	92%	3.10	26,300,210.86				
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00				
	107,408.39			33,768,110.53	129,091.22			37,634,528.78	130,219.52			36,921,255.78	136,602.67			36,592,323.93				

Calculation of emission reduction for low-carbon options in Cetinje

Table 20. Current traffic and CO₂ emission for Cetinje

Model	Broj vozila	Putnici-km (milion)	Faktor opterećenja	VKM (milion)	Gorivo	Prosječna efikasnost goriva (MJ/km) ⁴	CO ₂ eq (tona)
Buses	80	21,267.00	20.00	1,063.35	Dizel	11.20	881,304
Trucks	355		1.20	4,118.00	Dizel	13.20	4,022,462
Cars	9.495	240,120.00	2.18	110,146.79	Benzin/dizel/LPG	3.60	27,360,462
TOTAL		261,387.00					32,264,229

Current traffic and CO₂ emission for Cetinje

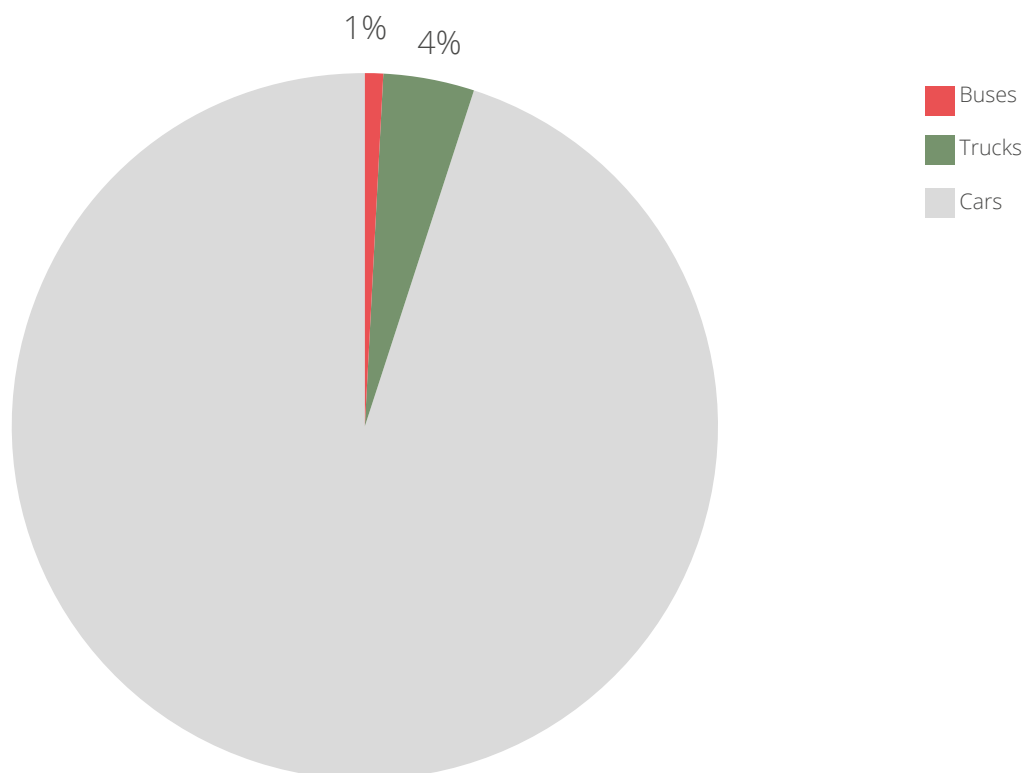


Figure 26. VKM per type of vehicle in Cetinje

Table 21. Calculation of CO2 emission reduction for non-motorised measures in Cetinje

Basis (No Project Scenario)	YEAR 1				YEAR 5				YEAR 10				YEAR 15			
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,296.22	1%	10.14	972,554.52	1,431.13	1%	9.65	1,021,663.66
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	11.95	4,022,462.40	4,780.87	2%	11.37	4,022,462.40
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	163,044.15	97%	3.26	36,664,273.82	198,368.14	97%	3.10	42,442,691.35
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00
	115,328.24			32,264,229.27	139,512.61			36,620,835.11	168,889.34			41,659,290.75	204,580.30			47,486,817.41

Non-motorised measures (Scenario Project)	YEAR 1				YEAR 5				YEAR 10				YEAR 15			
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,296.22	1%	10.14	972,554.52	1,431.13	1%	9.65	1,021,663.66
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	13.20	4,227,648.41	4,548.83	3%	12.56	4,227,648.41
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	134,507.57	96%	3.26	30,247,157.30	141,435.45	96%	3.10	29,735,131.19
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00
	115,328.24			32,264,229.27	139,512.62			36,620,835.11	140,352.82			35,447,360.23	147,415.74			34,984,443.26

Table 22. Calculation of CO₂ emission reduction for public transport measures in Cetinje

Basis (No Project Scenario)	YEAR 1						YEAR 5						YEAR 10						YEAR 15					
	VKM (million)	Partici- pation of modes of trans- port (VKM VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Partici- pation of modes of trans- port (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Partici- pation of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Partici- pation of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Partici- pation of modes of trans- port (VKM percen- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)				
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,296.22	1%	10.14	972,554.52	1,431.13	1%	9.65	1,021,663.66								
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	11.95	4,022,462.40	4,780.87	2%	11.37	4,022,462.40								
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	163,044.15	97%	3.26	36,664,273.82	198,368.14	97%	3.10	42,442,691.35								
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00								
	115,328.24			32,264,229.27	139,512.61			36,620,835.11	168,889.34			41,659,290.75	204,580.30			47,486,817.41								
Non-moto- rised measures (Scenario Project)	YEAR 1						YEAR 5						YEAR 10						YEAR 15					
	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)	VKM (million)	Participa- tion of modes of transport (VKM percen- tage)	Average fuel efficien- cy (MJ/ km)	CO ₂ (ton)				
	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,428.38	1%	10.14	1,071,716.20	1,737.84	1%	9.65	1,240,622.41								
	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	13.20	4,227,648.41	4,548.83	3%	12.56	4,227,648.41								
	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	134,507.57	96%	3.26	30,247,157.30	141,435.45	96%	3.10	29,735,131.19								
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00								
	115,328.24			32,264,229.27	139,512.61			36,620,835.11	140,484.91			35,546,521.91	147,722.28			35,203,402.01								

Table 23. Calculation of CO2 emission reduction for reducing travel demand in Cetinje

Basis	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
(No Project Scenario)																				
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,296.22	1%	10.14	972,554.52	1,431.13	1%	9.65	1,021,663.66				
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	11.95	4,022,462.40	4,780.87	2%	11.37	4,022,462.40				
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	163,044.15	97%	3.26	36,664,273.82	198,368.14	97%	3.10	42,442,691.35				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	115,328.24			32,264,229.27	139,512.61			36,620,835.11	168,889.34			41,659,290.75	204,580.30			47,486,817.41				

Non-motorised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percentage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,361.02	1%	10.14	1,021,172.76	1,577.79	1%	9.65	1,126,363.26				
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	13.20	4,227,648.41	4,548.83	3%	12.56	4,227,648.41				
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	134,507.57	96%	3.26	30,247,157.30	141,435.45	96%	3.10	29,735,131.19				
Bicycles	0.10	0%	0.00	0.00	0.13	0%	0.00	0.00	0.21	0%	0.00	0.00	0.33	0%	0.00	0.00				
	115,328.24			32,264,229.27	139,512.62			36,620,835.11	140,417.62			35,495,978.47	147,562.40			35,089,142.86				

Table 24. Calculation of CO₂ emission reduction for measures of traffic efficiency in Cetinje

Basis (No Project Scenario)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,296.22	1%	10.14	972,554.52	1,431.13	1%	9.65	1,021,663.66				
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	11.95	4,022,462.40	4,780.87	2%	11.37	4,022,462.40				
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	163,044.15	97%	3.26	36,664,273.82	198,368.14	97%	3.10	42,442,691.35				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	115,328.24			32,264,229.27	139,512.61			36,620,835.11	168,889.34			41,659,290.75	204,580.30			47,486,817.41				

Non-moto- rised measures (Scenario Project)	YEAR 1					YEAR 5					YEAR 10					YEAR 15				
	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)	VKM (million)	Participation of modes of transport (VKM percent- tage)	Average fuel efficiency (MJ/km)	CO ₂ (ton)
Buses	1,063.35	1%	11.20	881,304.48	1,174.02	1%	10.66	925,805.95	1,296.22	1%	10.14	972,554.52	1,431.13	1%	9.65	1,021,663.66				
Trucks	4,118.00	4%	13.20	4,022,462.40	4,328.06	3%	12.56	4,022,462.40	4,548.83	3%	13.20	4,227,648.41	4,548.83	3%	12.56	4,227,648.41				
Cars	110,146.79	96%	3.60	27,360,462.39	134,010.41	96%	3.43	31,672,566.76	134,507.57	96%	3.10	28,793,242.50	141,435.45	96%	2.81	26,945,229.01				
Bicycles	0.10	0%	0.00	0.00	0.12	0%	0.00	0.00	0.13	0%	0.00	0.00	0.16	0%	0.00	0.00				
	115,328.24			32,264,229.27	139,512.61			36,620,835.11	140,352.75			33,993,445.44	147,415.57			32,194,541.08				

Proposal of specific measures for the planning period after 2020

Measures to be considered over a longer planning period

: 01 Long-term Measures

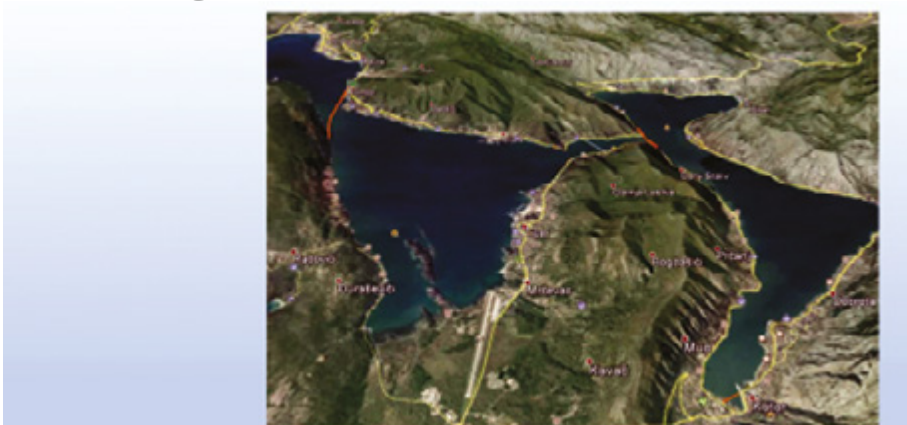


Variant 1: approx. 650 m,

Variant 2: approx. 350 m.

Tunnel connection in the center of Kotor

: 01 Long-term Measures



Tunnel connections in the Bay – proposal for 3 tunnels

- 1 – Tunnel Kumbor approx. 2 km – providing a direct link between Tivat and Herceg Novi, as well as regional connection to Croatia
- 2 – Tunnel Kotor from 350 to 680 m – improving traffic conditions in the Kotor Old Town
- 3 – Tunnel Verige approx. 500 m – providing direct connection to the town of Risan and also connecting Grbalj with the newly constructed road to Niksic

Detailed description of the planning measures

Measure no. 1

Development of new traffic studies and transportation models/and/or innovation of existing

Estimated value:

For Herceg Novi: 100,000 EUR

For Kotor: 60,000 EUR

For Tivat: 45,000 EUR

For Cetinje: 65,000 EUR

For the region: 160,000 EUR

Beneficiaries: Municipalities of Herceg Novi, Kotor, Tivat and Old Royal Capital Cetinje

Other stakeholders: Ministry of Transport and Maritime Affairs



Source: <http://compass.ptvgroup.com/tag/ptv-vissim-en/page/2/?lang=en>

Description of measure

Considering the evident lack of a comprehensive information base on traffic and transport in the region, the polycentric sustainable mobility plan as a measure proposes the updating and elaboration of new transport studies and transportation models based on modern software platforms for the region as a whole, and traffic studies for each city separately. Also, it is necessary to develop sectoral integrated studies (public transport, supply, parking, etc.).

The development of traffic studies for each town in the area would help to collect the transport system data that are required in order to analyse the existing situation, provide a forecast of transportation needs and propose measures to meet these. This information base should be used for the preparation of plans, studies and projects regarding individual transport subsystems to improve the quality of services. This refers primarily to public transport and parking, as well as the traffic regulation projects in specific urban areas.

Of great importance for the transport system planning for the entire area, would be the development of the transport model. Transport models are tools that include a set of traffic data and simulation models used for traffic analysis that assist decision makers in making justified decisions regarding actions to improve the transport system in the region.

Process

I phase

- Development of the complete traffic study and establishment of a traffic database for Kotor and development of city transport model

- Development of the complete traffic study and establishment of a traffic database for Cetinje and development of city transport model
- Development of the complete traffic study and establishment of a traffic database for Herceg Novi and development of city transport model
- Updating of the traffic study for Tivat , establishment of traffic database and development of city transport model

II phase

- Development of the new transport model for the entire region for the analysis of the area as a polycentric region

Time frame

I phase – 9 months (2016–2017)

II phase – 12 months (2017–2018)

Sources of funding

Possible sources of funding are:

- Budgets of local authorities – self-financing or co-financing model with international donors dealing with sustainable development
 - Donations and grants
-

Risks

- Lack of financial sources
-

Project benefits

The development of new traffic studies for the municipalities of Herceg Novi, Tivat, Kotor and the Old Royal Capital Cetinje will contribute to better traffic planning and efficient decision-making process. More specifically, the identified benefits include:

- providing decision-makers with a consistent database, on the basis of which they could carry out the assessment and monitoring of existing transport systems
 - providing a rational basis that helps to assess and identify improvements that will enable safe and efficient traffic flows: pedestrian, bicycle and transit
 - providing the basis for the identification of existing or future deficiencies of the transport system that need to be addressed
 - solve problems concerning transport
 - provide a basis for negotiation concerning the promotion and financing in connection with applications for planning.
-

Measure no. 2

Educational programmes and promoting campaigns

Estimated value: Around 250,000 EUR in planning period

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat and Old Royal Capital Cetinje

Other involved stakeholders: Ministry of Sustainable Development and tourism, NGO, local tourist organisations, NTO, other subjects (UNDP, EU Delegation etc.)



Source: European Mobility Week: "Car free day" campaign

Description of measure

The promotion of sustainable mobility and implementation of appropriate transport solutions require the development of programmes and campaigns to raise awareness and influence public opinion and habits that, in some cases, proved to be an obstacle to the successful implementation of measures of sustainable mobility. Such programs and campaigns may include:

- Implementation of an integrated campaign for cycling in the examined region, presenting the advantages of cycling and cycling infrastructure (the existing bike paths, hiking trails, etc.).
 - o development of a website for the promotion and use of bicycles in the Region
 - o Campaign for the use of bicycles - "We bike!"
- Organisation of events that promote walking and cycling (events without a car, bike tours, organised walks (walkathons) etc.)
 - o European mobility week
 - o Walking day
- Development of programmes specifically designed to promote cycling for family and children.
 - o Public information campaign - "safe routes to school"
 - o Introduction of "Pedibus"
 - Conducting campaigns to strengthen capacity.
- o Eco-driving training

Development of website for the promotion and use of bicycles

The campaign should be based on the Internet. The challenge of developing a robust web platform that everyone can use should not be underestimated. Digital maps showing bike paths in the region should be prepared, and free copies should be distributed to all interested citizens. Citizens will be allowed to contribute to the maps on the Internet and enrich them with the latest amenities. The internet will be used as a platform

on which cyclists can set up their own blogs, share information, and will serve as a communication platform for the recreational use of bicycles.

Campaign for the use of bicycles - "We bike!"

One of the goals of the cycling campaign is to change the behaviour of citizens towards choosing the most efficient means of transport. In this case, the desire to change behaviour is clear: more walking and use bicycles more, and motor vehicles less. The use of public transport instead of private vehicles, combined with walking/cycling use is the general objective of energy savings and reduced environmental impact initiatives.

The campaign is foreseen to include the youngest population, students, the employed and the elderly. Groups of citizens who already use bikes or walk through the city should also participate in the campaign, because they are the best ambassadors and promoters of "green" models. It is important to show to those who walk or ride a bicycle that they made the right choice and, therefore, reward them. The campaign and the behaviour of people from the target group will have a direct impact on those who are in the vicinity of the target group.

People who have a habit of using a bike and who already travel to work by bicycle can become ambassadors for the campaign of "cycling to work". Motivated teachers can be ambassadors of the campaign of "walking to school".

Advertising - especially TV advertising - can be effective, but it is often too expensive for the budget of such a campaign. However, some media companies are willing to sponsor and provide space for a reduced price or for free. These options should be explored at the beginning of the campaign, in the design stage, while specifying the methods of promotion and materials to be used, as well as their quantity and quality.

Target groups can be accessed by printed material. The most obvious channels should be used - schools when the target group are students and employers in the case of the campaign of travelling to work by bike (bike to work). Regarding written communication with the public, the focus should be on the fact that the message is clear and inviting. Introducing a local message on materials for the campaign should also be considered.

Maps of bicycle paths should also be printed, whereby interesting places for a weekend or holiday will be indicated. In addition, other materials can be widely distributed through a public information campaign, using the daily press for faster circulation.

The press is an obvious channel. Sending press releases costs very little, and has much to bring, if newspapers deem the content interesting enough.

Awarding prizes during the campaign should also be foreseen. Bicycle digital devices (smaller devices that show the speed of movement, number of kilometres on the bike, etc.) have proven to be a significant motivating factor for people who have begun to use the bike. Pedometers (an instrument for estimating the distance travelled on foot by recording the number of steps taken) have a similar effect in the pedestrian campaigns.

Winter and "bad weather" are bad periods for a cycling campaign and ideally should be avoided (as well as for pedestrian campaigns), so that participants are offered the best experience of walking or cycling. Therefore, the campaign should begin in the spring and can last until the end of the season that is until the moment when the bicycles are stored before the winter.

To obtain greater attention, the campaign should seek to identify a celebrity who already uses bicycle and is suitable for promotion.

European Mobility Week

The European mobility week (EMW) is an annual campaign of sustainable urban mobility, organised by the city networks EUROCITIES (coordinator), ENERGIE-CITES and CLIMATE ALLIANCE, with political and financial support of the European Commission, Directorate General for the Environment.

The goal of the campaign, which is held from 16 to 22 September each year, is to encourage local authorities in Europe to introduce and promote sustainable transport measures and invite people to use alternatives to private vehicles. The activities of the week culminate with the event “In town without my car!”, officially scheduled for the 22nd of September, when participating towns allocate one or more blocks of traffic only for pedestrians, cyclists and public transport during the day.

Since its introduction, in 2002, the impact of EMW is strengthened in Europe and in the world. A record 2181 cities took part in the campaign in 2009, officially including nearly 237 million Europeans in the campaign. A total of 4,441 permanent measures have been conducted, focusing mainly on the infrastructure for cyclists and pedestrians, traffic calming, improving access to transport and raising awareness of sustainable transport.

Local authorities are encouraged to participate in the EMW by registration to events to mark European mobility week and Car Free Day in the city centre.

The mere promotion and organisation of the European mobility week requires a large organisation effort and coordination at various levels. The campaign is based on the cooperation between the central consortium (EUROCITIES, Energy-Cities, Climate Alliance) and national coordinators with the political support of the European Commission. The most common activities within the Mobility week are:

- promotional rides in the city centre
- drawing on the street
- music programme
- measurement of noise and air pollution
- counting vehicles
- competition for the best children’s drawing
- proposal of new pedestrian zones
- free or cheaper public transport
- citizen survey
- free bike repair for interested citizens
- promotion of bicycles and proclamation of the oldest bicycle and the oldest cyclists.

„Walking day“

Following the example of the World Car Free Day in the framework of the European Mobility Week, days of the week or the month in which the individual urban areas would be closed to vehicle traffic should be provided. For example, walking Saturday or every first weekend of the month, etc. The activities that would be performed in these areas should promote sustainable mobility and greater use of non-motorised means of transport.

Safe to school – „Safe routes to school“

This measure should be realised as soon as possible, as it relates strictly to improving the safe movement of pedestrians of the youngest demographic group.

During the first stage, a study which identifies a safe zone and route to school should be prepared. This can be achieved by analysing accidents around schools with the participation of pedestrians, as well as on the basis of a survey of parents and students about how and which routes they use while travelling to/from school. These roads will be adequately marked and a demo project should be implemented in some schools; this could even mean the closure of streets for traffic around the school before and after classes.

In the second phase, after the routes have been identified, projects of marking of these routes on the streets should be implemented, as well as media campaigns on the implementation of these measures. Information campaigns will help to spread the results achieved and will contribute to the involvement of more parents/children in the action. The campaign should include printed pamphlets and brochures that will be distributed to parents while bringing/taking children to school/from school.

„Pedibus“

In order to encourage walking to school, it is proposed to organise a “pedibus” trip, which will transport children to school in organised groups using the fixed routes by having a specific starting point, designated stations and the final destination. Therefore, there will be a meeting place for children at the beginning of the route and more intermediate stations to the final destination - school.

In order to develop this activity, meetings with representatives of schools and local governments should be organised. Accordingly, campaigns of communication and awareness raising should be organised, and the best results will be achieved by creating a website for the benefits of walking/use of bicycles, the safest routes that parents can choose for their children and information about “Pedibus” in the neighbourhood.

Capacity building

Eco-driving improves road safety and the quality of local and global environment and provides fuel and overall costs savings. All three benefits are important for the promotion of this type of driving to different actors.

This type of driving brings direct benefits to drivers and passengers: more comfort and relaxed atmosphere. Training for eco-driving leads to a direct reduction in fuel consumption by up to 20% after training and 5% in the long term.

Eco-driving reduces noise and air pollution. Noise from the engine of a car that runs on 4,000 revolve per minute is equal to the noise produced by 32 cars at 2,000 rpm. Hence, eco-driving partly alleviates one of the major problems of traffic in urban areas.

Eco-driving is a flexible, economical and safe type of driving. Training in eco-driving requires drivers to use vehicles differently and reach the potential by adjusting their driving behaviour in terms of including the prediction of traffic situations and using the degree of transmission and brakes in an economical way.

Drivers who undergo the training in eco-driving reduce their fuel consumption.

Eco-driving requires investment in equipment, since practically all new cars have a technology that allows ecodriving. The training consists of a theoretical and a practical part. The effects of eco-driving can be calculated by an electronic equipment that records fuel consumption, speed and time of driving before and after training. The driver can also record the results in a special log.

Previous studies have shown that the positive effects of eco-driving are reducing as time from the training passes. Drivers tend to return to old habits, thus fuel efficiency decreases, and the drivers use less and less their acquired knowledge on the economical use of changes in the degree of transmission and brakes. For optimal results, it is necessary to periodically repeat the training sessions.

Before this project, there was no attempt to introduce eco-driving through pilot studies or training in the region. This measure is a real innovation in terms of the standard programme which is implemented in driving schools, and its application by professional drivers.

The first activity must be a training program on eco-driving for instructors for the training of professional drivers - a selected group of 20 people attends the training program and receives the certificate for trainers. By attending this program, these 20 people will be given the possibility of further training of their colleagues in eco-driving. The aim is to award certificates to a group of 20 future trainers for eco-driving, which will contribute to the sustainability of the project and reduce emissions, increase awareness and acceptance of new driving techniques.

Local consultants in the field of transport will carry out the training, with the assistance of international experts with experience in transportation planning.

The eco-driving program pays attention to five key issues:

- Driver training program: in order to reach out to more drivers, eco-driving principles will be integrated into the programs of driving schools and the theoretical driving test. Driving instructors would have eco-driving training.
 - Additional training of licensed drivers: subsidized training for the group of professional drivers. Development of driving simulator that would be used at conferences or workshops and extensive media campaigns on TV, radio and the Internet.
 - Built-in devices for fuel economy: stimulate purchase and use of equipment in cars, such as econometrists and speed control devices through tax incentives for which the programme is advocating. The programme has raised public awareness of these devices through the campaign and demonstration programmes.
 - Tyre pressure: demonstration, training, checking the condition of tires and a public campaign to raise awareness on the need for regular tire pressure checks.
 - Consumer behaviour: it is expected that the program stimulates the purchase of more efficient vehicles by raising consumer awareness on eco-driving through training in driving schools, training on driving style and public campaigns.
-

Process

There is no causal sequence in these activities so they can be implemented at the same time or in the manner planned by the initiator of the action.

Time frame

The activities are implemented during the entire planning period.

Evaluation

Evaluation of the implementation of measure is done by local authority.

Performance is measured by using indicators such as:

- savings in fuel consumption
 - reducing emissions
 - increase in the number of users of bicycles and walking.
-

Sources of funding

Possible sources of funding are:

- Local authorities
 - Donations
 - EU Delegation, UNDP
-

Risks

Preparing website dedicated to the use of bicycles

There is no risk related to the implementation of these activities, there is only a question of sustainability.

The campaign for the use of bicycles "We bike!"

The campaign for the use of bicycles proposes bicycle rental as one of the themes of the promotional campaign. As a bike rental project depends on many factors, such as financing and licensing, there is a medium to high risk that the coordination of these two projects will not be achieved. However, this risk will not affect the overall implementation of the project nor the overall goals.

European Mobility Week

The participation of the project in the European Mobility Week requires the full participation and approval of the cities and the relevant structures. Therefore, this activity is characterized as high risk, in the event that local authorities and decision-makers do not support the activity. However, it is assumed that it will be attractive for the city government, since it does not require particular political decisions, but rather the organisation of open events. The assessment is that the risk is moderate to high, with no implications for the overall implementation of the project.

Safe routes to school and "pedibus"

This activity is based on a significant change of attitude in society on an established mode of safe arrival to school. Parents and teachers have over the years developed the notion that the children are safest in the cars of their parents, which is applied on a daily basis when they bring their children to school. Therefore, the consensus of parents for the need to change habits and allow children to go on foot or by bicycle to school will be a difficult task, threatened by various risks. The biggest risk, which may have an impact on the overall success of the project, is the lack of interest in the commitment of parents and teachers to participate in the programme and the participation of children in the programme.

Workshops for children "Bicycle laboratories"

The risks are similar, if not the same, as described above: lack of motivation of parents to allow children to participate in cycling laboratories.

Eco-driving

Practice shows that the course participants are usually reluctant to accept innovations.

Therefore, the risk in the implementation of these activities is more related to sustainability than training.

Project benefits

Educational programs or promotional campaigns will have a direct impact on the level of public awareness, the mentality of people and their perception of accessibility, sustainable mobility etc. Expected benefits from organisation of the European mobility week are:

- better understanding of the needs of cyclists on our streets and roads
- an important step in starting a national cycling strategy
- good marketing campaign for our cyclists.

Measure no. 3

Introduction of integrated public bus transport for the area of Boka Bay and Cetinje

Estimated budget:

Development of individual studies:
30,000–50,000 EUR

Development of individual projects:
15,000–25,000 EUR

Implementation: will be defined in studies and projects

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor and Old Royal Capital Cetinje

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Ministry of Sustainable Development and Tourism



Source: https://wikipedia/commons/thumb/d/df/Public_transport_collage.jpg/798px-Public_transport_collage.jpg

Description of measure

In order to provide attractive and user *friendly* services, a better coordination of public transport in the region is necessary, as well as integration of the system that will attract more passengers. The development of an integrated public transport system can offer a variety of public transport services for the entire project area.

The modalities of integration of public transport must be examined and analysed through the development of a comprehensive study for the public transport in the area. The integrated system of public transport of the area should enable an integrated bus transport service and the integration of other forms of public transport such as maritime public transport, ferry services, taxis, walking and bicycles, school bus services etc. Each of these services will be analysed within this study. It should be emphasized that it is necessary to also take into account in the study projects of adaptation of the public transport system for disabled persons and persons with reduced mobility, such as the elderly, pregnant women, mothers with children and other vulnerable users. This primarily refers to a variety of vehicles with disability access and the removal of physical barriers at bus stops and public transport terminals, the adaptation of infrastructure and the introduction of information systems for the blind and visually and hearing impaired.

As the coordination of activities related to public transport is currently the responsibility of the Municipalities (local authorities), it is recommended that prior to the development of the study for the integrated public transport, each Municipality develops a separate public transport study for its individual area. Considering that the Municipality of Kotor just finished drafting such a document, it is necessary that other Municipalities start elaborating individual public transport studies, with a particular emphasis on the integration of schedules/timetables and coordinated services, providing also an integrated tariff system for all public transport (bus, boat).

It is important to note that the time frame for developing these studies should be coordinated throughout the area, which means that all other studies should be carried out at the same time or in a close time frame. As the Municipality of Kotor already finished these activities, there's a recommendation to other municipalities to start drafting the studies in the coming year. In order to implement these measures, it is necessary to harmonize the work of local authorities and relevant departments at the Ministry of Transport and Maritime Affairs related to the issue of intercity passenger transportation.

Process

I phase

- Study of urban and suburban passenger transport in the municipality of Tivat
- Study of urban and suburban passenger transport in the municipality of Herceg Novi
- Study of urban and suburban transport of passengers on the territory of Old Royal Capital Cetinje
- Study of urban and suburban transport of passengers within the municipality of Kotor - completed

II phase

- Study of integrated public transport for the entire area

III phase

- Projects of adaptation of infrastructure to all categories of users (ramp positions, removal of physical barriers, etc.)
- Study for adapting vehicles for people with disabilities and other vulnerable groups¹

IV phase

- Implementation
-

Time frame

I phase – 1 year (2016–2017)

II phase – 6 months (2017)

III phase – 1 year (2017–2018)

IV phase – 3 years (2017–2020)

Evaluation

Evaluation of the measure implementation is done by the local authorities and the competent department of the Ministry of Transport and Maritime Affairs for intercity passenger transportation issues.

Performance is measured by using indicators such as:

- reduction of carbon dioxide emissions caused by shift from using cars to using public transport (reducing the number of passenger-kilometres and passenger-hours)
 - reduction or increase in the number of bus passengers between municipalities
 - level of satisfaction with the service of different user categories.
-

¹ This measure must comply with the measure no. 5

Sources of funding

Development of the above mentioned projects will enable the analysis of the possibilities, justification, cost effectiveness, risks, modes of financing and the total cost of implementation of this measure.

Possible sources of funding are:

- budgets of the local authorities – self-financing or co-financing model with international donors dealing with sustainable development
- public-private partnerships
- donations and grants, various development agencies.

Risks

- Lack of financial sources
- Lack of cooperation between Municipalities
- The inability to establish a basis for this measure at a national level

Project benefits

The development of an integrated public transport system will contribute to providing integrated and better interconnected public transport services for the entire Boka Bay region, thus increasing the demand. The new integrated system refers to the integration of the bus network, in terms of schedules and connections, introduction of tickets and tariffs, as well as the integration of infrastructure. The final services to be provided will be comparable with the use of private cars and will affect the modal shift to public transport. Specific benefits include:

For public transport users (short-term benefits):

- More attractive public transport services
- Reduced travel time
- Savings in time and cost

For the public transport operators/competent authorities (medium and long-term benefits):

- Higher incomes
- Cost-effectiveness (reduction of parallel services)

For the community as a whole (medium and long-term benefits):

- Less pollution
- Reducing GHG emissions/ negative impacts to the environment
- Reducing the impact on public health

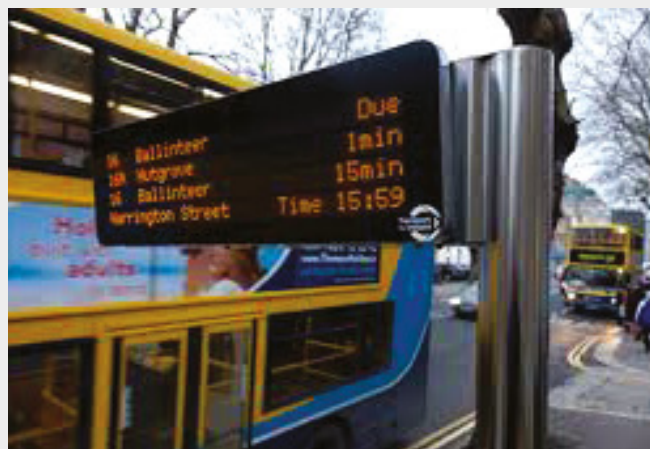
Measure no. 4**Introduction of Passenger Information System at bus stops, parking areas etc.****Estimated budget:**

Development of individual projects:
around 8,000 EUR

Implementation: depends on the size of the city and the complexity of the system in the range from €10,000 to €20,000

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor and Old Royal Capital Cetinje

Other involved stakeholders: parking services of the municipalities, bus terminals and other entities



Source: <http://sociable.co/technology/dublin-bus-begins-roll-out-of-real-time-passenger-information-system>

Description of measure

The implementation of this measure should include the improvement of the quality of services at bus stops, terminals and parking lots. The objective is to provide real time information to users and generate savings in travel time. In this way, the quality of these public services increases, which should encourage users of private cars to shift to public transport and generally provide a higher level of transport service.

This measure includes the set-up of information panels at bus stops and terminals, thus providing information about the bus arrivals in real time. The introduction of e-ticketing in the public transport system and parking (if not already there) is anticipated, as well as the provision of information on the number of free parking spaces etc. It can be assumed that these information systems will significantly improve the quality of public transport and parking systems and attract more users.

Process**II phase**

- Project of introduction of passenger information system at bus stops and terminals, and parking areas
- Project of expansion of e-ticketing services to all bus stations and transport service providers in the area
- Project of introduction of information systems for the blind and visually impaired and hearing impaired at bus stops and terminals

III phase

- The procurement process for equipment, organisation and installation of the system (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Implementation – installation of information boards (panels), providing hardware and software platforms, system commissioning, testing and calibration

Time frame

I phase – 9 months (2016)

II phase – 6 months (2016–2017)

III phase – 1 year (2017–2018)

Evaluation

Evaluation of the implementation of measure is done by the local authorities, i.e. the relevant public utilities. Performance is measured using indicators such as:

- Reduction of the total travel time of bus passengers (faster service level, shorter stay at bus stops and terminals, etc.)
 - Reduction of the total travel time of passenger cars (reducing the time required to find a free parking space), thereby reducing GHG emissions
 - Level of satisfaction with the service of different user categories.
-

Sources of funding

Possible sources of funding are:

- budgets of local authorities – self-financing or co-financing model with international donors dealing with sustainable development
 - public-private partnerships
 - donations and grants.
-

Risks

- Lack of financial sources
 - Lack of initiative of local authorities to modernise the city's transportation subsystem services
-

Project benefits

The introduction of a passenger information system at bus stops and terminals will enhance the public transport services and thus attract more users, reducing the need to use private vehicles. Specific benefits are summarized as follows:

For public transport users (short-term benefits):

- More attractive public transport services
- Reduced travel and waiting time
- Savings in time and money

For the public transport operators/competent authorities (medium and long-term benefits):

- Increased user satisfaction
- Higher incomes
- More efficient fleet management

For the community as a whole (medium and long-term benefits):

- Less pollution
 - Reducing GHG emissions/negative impact to the environment
 - Reducing the impact on public health
-

Measure no. 5

Provision of the maritime public passenger transport line for the bay: four regional lines that connect Herceg Novi, Kotor, Tivat and Budva as well as local lines within each Municipality

Estimated budget:

Development of individual projects:
around 15,000 EUR

Boats and equipment for docks: – 4 mil. EUR

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor and Budva

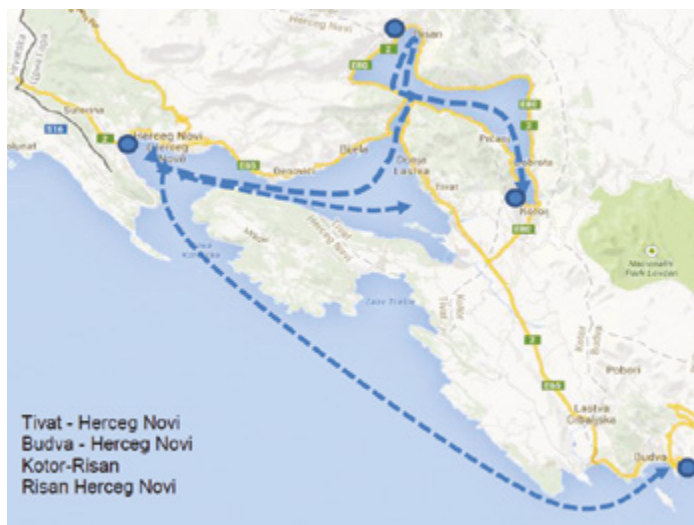
Other involved stakeholders: Ministry of Transport and Maritime Affairs, other entities (companies, transporters)



Source: <http://www.centralindustrygroup.com/projects/hydropower11/7?catid=291>

Description of measure

It is proposed to develop an integrated multi-modal transport network, where new maritime transport services will have its share. A maritime service can operate in the wider area of the Boka Bay region, where new lines of public transportation are proposed for the following routes : 3 regional lines connecting Herceg Novi, Kotor and Tivat and local lines in each Municipality.



The first proposed regional line is Tivat-Herceg Novi, which would serve as a maritime connection of Herceg Novi to the airport in Tivat. The proposed lines will serve the connections Kotor-Risan, Risan-Herceg Novi, Budva-Herceg Novi.

Based on the assumed average sailing speed of 15 knots, the travel time of the proposed lines is estimated as follows²:

Proposal of maritime transport lines in the Region

No. of line	Line	Type of line	Length (km)	Travel time	Type of vessel/ capacity (number of seats)	The number of vessel on the line in one direction	Total ships on the line	The period of operation
1	Budva – Herceg Novi	Circular	38	70 min	Ro/Pax motor	1	6	The entire year
2	Kotor – Risan	Circular	25	50 min	Pax/motor	1	4	The entire year
3	Risan – Herceg Novi	Circular	21	40 min	Ro/Pax / motor	1	4	The entire year
4	Aerodrom Tivat – Tivat – Herceg Novi	Circular	17	35 min	Ro/Pax motor	1	4	The entire year

*Ro/Pax – passenger and freight ferry

*Pax passenger ferry

For the purpose of comparison, the trip by private car at an average speed of 50 km/h from Budva to Herceg Novi is about 80 minutes, that is, about 10% longer than the ferry line. Clearly, these travel time savings may not be completely accurate, unless the real road traffic conditions and components of travel time by boat are not taken into account. However, these figures give a basic picture of the advantages of the maritime public transport.

The definition of schedules and the size and type of vessels to operate the service throughout the year and during the summer season is the subject of a separate study.

Boka Bay has extremely favorable natural characteristics for the operation of maritime public transport. Due to its position, sailing is possible throughout the year. For this reason, it is suggested to introduce in this area maritime public transport also at local level.

The feasibility study for the establishment of a sustainable maritime public transport by solar powered catamarans in the Boka Bay (Expedition & Blue Coach, Kotor, 2015) contains a detailed analysis of the required capacities and the possible line routes in the Bay, based on which the proposal of local maritime public transport lines is given.

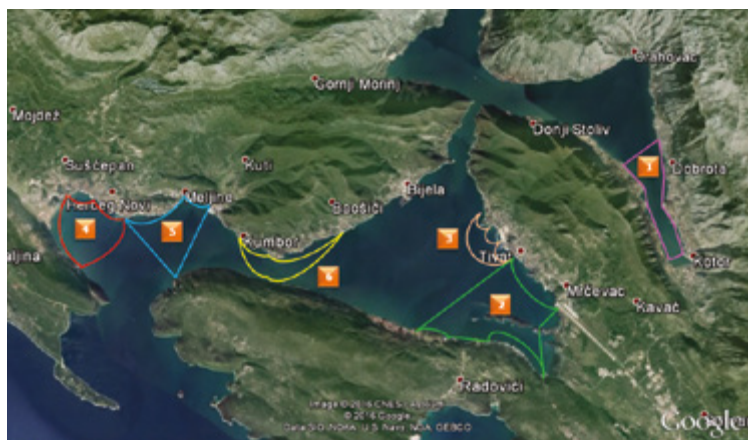
The development of local maritime public transport services can contribute to reducing road congestion and improving the overall service of the road network, from both a technical and ecological point of view.

Based on the analysis of travel time, it is proposed that transport on the lines is carried out with departures in both directions in order to reduce waiting time at the docks and increase the level of transport service. This refers especially to the tourist season, when the number of passengers increases.

No. of line	Line	Type of line	Length (km)	Travel time	Type of vessel/ capacity (number of seats)	The number of vessel on the line in one direction	Total ships on the line	The period of operation
1	Kotor- Risan Bay	Circular	10,07	60 min	9,5 m electric*	1	2	The entire year
2	Tivat Bay	Circular	14,61	130 min	9,5 m electric *	1	2	The entire year
3	Tivat town	Circular	5,17	30 min	9,5 m electric*	1	2	The entire year
4	Herceg Novi – Njivice	Circular	4,83	20 min	15 m electric*	1	2	The entire year
5	Herceg Novi – Rose	Circular	6,03	25 min	15 m electric*	1	2	The entire year
6	Herceg Novi – Pristan	Circular	6,69	30 min	15 m electric*	1	2	May – October

*Electric vessels can operate during the season May - October, in the second period, motor boats/vessels operate.

The Plan proposes that the first pilot line of local character should be the line in Kotor-Risan Bay. The initiative for this line already exists in Kotor and, currently, its initiation is in process. This line should serve as a pilot project for the introduction of other lines. The way of operation and the introduction of other lines in order to achieve a better performance of the entire system of lines should be modified based on good and bad experiences in the operation of the Kotor line.



Proposal of local maritime transport lines

If there is a possibility, this network of maritime public transport lines should be formalised through the elaboration in SPSPCZ, which would create the legal basis for the development of this form of public transport in the area.

Process

I phase

- Updating the feasibility study for the establishment of a sustainable maritime public transport in the Boka Bay in accordance with the Study of integration of public transport in the area
- Project of equipping stations (passenger ports) with information boards, toll points, safety barriers, waiting rooms, etc.
- Project of introduction of information systems at docks for the blind and visually impaired and hearing impaired

II phase

- The process of procurement of equipment, organisation and establishment of the system (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder) for the equipping of the stop/station
- The process of public procurement of vessels (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder) for equipping the stop/station

III phase

- Implementation – operation of the system

Time frame

I phase – 6 months (2016)

II phase – 6 months (2016–2017)

III phase – 3 year (2017–2020)

Evaluation

Evaluation of the implementation of measures is done by the local authorities. Performance is measured using indicators such as:

- number of passengers
 - reduction of GHG emissions
 - level of satisfaction with the service of various user categories.
-

Sources of funding

Possible sources of funding are:

- public-private partnerships
 - donations and grants
 - credit lines.
-

Risks

- Lack of financial sources
 - Incomplete legal framework for the establishment of inter-municipal lines
-

Project benefits

The development of the public maritime transport system will contribute to the provision of a better connected public transport system for the entire Boka Bay region, increasing, thus, demand. The new system will be competitive against the use of private cars and will increase the modal shift to public transport. Specific benefits are summarized as follows:

For public transport users (short-term benefits):

- More attractive public transport services
- Reduced travel time
- Savings in time and money

For the community as a whole (medium and long-term benefits):

- Less pollution
 - Reducing GHG emissions/negative impacts on the environment
 - Reducing the impact on public health
-

Measure no. 6**Construction of parking spaces near bus stations and introduction of *Park and Ride* system****Estimated budget:**

Development of the study: 30,000–50,000 EUR

Development of individual projects: 15,000–25,000 EUR

Implementation: it will be defined in studies and projects

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor and Cetinje

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Ministry of Sustainable Development and Tourism



Source: <http://lambs.org.uk/stem/wp-content/uploads/park-and-ride-brighton.jpg>

Description of measure

In order to increase the attractiveness of non-motorised transportation options, promote interoperability and provide the necessary incentives for using public transport, it is proposed to construct parking spaces near public transport stations - *Park and Ride* facilities. The main aim is to reduce congestion by providing incentives for the use of public transport and non-motorised transport options and thus reduce carbon emissions. A number of the cities in the examined Region, already included saw this measure within existing planning documents and recognised the importance of this type of support for public transport as one of the potential sustainable transport options. The implementation of this measure involves the coordination of the various traffic-transportation systems - an integrated public transport system in the area and the *Park and Ride* system.

The modalities for the development of the *Park and Ride* system must be tested and analysed through the development of individual studies for the establishment of the P+R system in the cities of the region and through the development of a comprehensive study that would provide the uniform solutions for the P+R system policy in terms of attracting users, its integration within the public transport, through capacity planning, timetables, their alignment with the P+R system, creating conditions for a unified billing system and providing user friendly services, defining the types of tickets and their tariffs, etc.

The P+R system should be integrated into the system of public transportation in the area. Therefore, it is necessary to take the following steps:

1. Prepare the strategy of the *Park and Ride* system, which will specify the role of the P+R within the public transport network and the entire road network and set clear priorities for future investment, financing and billing.
2. Take steps for the development and management of the P+R system at selected locations to extend the catchment area for public transport
3. Develop a P+R system, using the following guidelines:
 - P+R is a system that needs to be planned as an integrated part of the public transport network, whose application extends the basic offer of public transport services
 - Locations for the P+R system should be planned at bus terminals, but also at locations where there is a strong need for such systems due to the lack of parking space and the need to promote sustainable modes of transport. This activity should be carried out by applying the strategy for the development of an integrated urban

public transport network, in accordance with the urban and spatial constraints of the local environment and the capacity of the transport network.

- According to the current planning documents, the locations where the construction of the Park and Ride parking in Herceg Novi is planned are: zone from Meljine to Savina, zone at the planned bus station in Igalo and zone in Sutorina, south from the existing highway to the Church Preobrazenja. For the other cities of the Region, the current planning regulations do not provide the precise locations for the system, but only recognize it as a possible solution to the parking problem. As noted in the above, P+R systems should be planned in the vicinity of the existing bus terminals, and at the entrance/exit from the city in accordance with local spatial capabilities. Also, it is possible to adapt and include in this system the existing parking lots in the centre, through a unified billing system, a common information platform, providing thus adequate alternative options for transportation (bicycle - bike share, ecological taxis, electric train, etc.).
- It is necessary to define the number and capacity of individual P+R systems at the town level in accordance with their needs.
- A billing system should be developed at regional level and aligned with the billing system of an integrated public transport and existing billing systems for parking in the towns of the region, with the aim to provide user *friendly* services and motivate users to use the P+R system.

It is important to note that the time frame for the development of these studies should be adjusted with the development of the study for an integrated public transport in the region. Also, in order to implement the measure it is necessary to harmonise the work of local authorities and relevant departments at the Ministry of Transport and Maritime for the intercity passenger transportation issues, as well as the competent institutions for urban planning and municipal companies responsible for dealing with stationary traffic and parking in the towns of the examined region.

Process

I phase

- Study for the establishment of the P+R system in the Boka Bay and the Old Royal Capital Cetinje (develop in accordance with the study for an integrated public transport for the entire area i.e. the construction of P+R system to be included in this study)

II phase

- Individual projects of construction of the P+R system for each town in the region, with emphasis on the design of the infrastructure and information systems according to the principles of universal design i.e. Adaptation to all categories of users.

III phase

- Implementation of projects
-

Time frame

I phase – 1 year (2016–2017)

II phase – 1 year (2017–2018)

III phase – 2 years (2018–2019)

Sources of funding

The development of the above mentioned projects will enable the analyses of the possibilities, justification, cost effectiveness, risks, and modes of financing and the total cost of implementation of this measure.

Possible sources of funding are:

- budgets of the local authorities – self-financing or co-financing model with international donors dealing with sustainable development
 - public-private partnerships
-

Risks

- Lack of financial sources
-

Project benefits

The development of parking spaces near bus stations and the introduction of *park and ride* facilities will have numerous benefits such as:

- Reduced use of private vehicles
 - Significantly lower emissions
 - Reduced impact on public health
 - Reduced travel times for the public transport users
 - Improved travel comfort for the public transport users
 - Reduced traffic congestion
 - Reduced parking demand at the city centres
 - Improved accessibility to the city centres
 - Reduced ad hoc parking problems
-

Measure no. 7

Development of lake waterway public transport on Skadar Lake

Estimated budget: around 2,500,000 EUR

Beneficiaries: The Old Royal Capital of Cetinje

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Ministry of Sustainable Development and Tourism



Source: http://media.novi.navodi.com/2014/11/na-vodi_skadarsko-jezero.jpg

Description of measure

There is a potential for the development of waterway (lake) traffic and the establishment of a public passenger transport service within the Old Royal Capital Cetinje, which would be of particular importance for the development of the tourism in this area. In this sense, it would be necessary to activate transportation lines from Skadar Lake, and construct and reconstruct docks for the increased number of smaller vessels.

The inclusion of this mode of traffic through the activation of the line Skadar lake - river Bojana - Adriatic sea, is considered to be extremely important, not only from a tourist point of view, since it would directly involve this area in the Mediterranean flows of nautical tourism, but also for other economic aspects.

The Construction of the road Rijeka Crnojevica-Dodosi-Golubovci (connection with Adriatic highway) may be an additional stimulus to the development of the area, through the form of transit tourism, which could promote lake traffic.

The development of nautical tourism has as prerequisite the provision of a large number of docks. The following existing docks will provide the key facilities for lake traffic: Plavnica, Crnojevica, Virpazar, Lipovik, Murici, Krnjice and Ckla, which is necessary to reconstruct for the larger vessels and equip with the required services.

Since the Skadar Lake is the National Park and a nature reserve, it is proposed that water transport is carried out by electric powered vessels. In addition to the line that connects the Skadar Lake to the Adriatic Sea via the Bojana River, it is proposed to introduce a line that will connect the above-mentioned docks and operate throughout the year, weather conditions permitted, as well as two seasonal lines that will operate from May - October.

The seasonal cruise line Rijeka Crnojevica - Dodosi - Vranjina - Rijeka Crnojevica is proposed as a pilot line that would operate in the period from May to October and enable visits to tourist/historical sites in the northwestern part of Skadar Lake.



Locations of the docks

No. of line	Line	Type of line	Length (km)	Travel time	Type of vessel/ capacity (number of seats)	The number of vessel on the line in one direction	Period of operation
1	River Bojana, system Port Milena – Channel (south from the Saline) – river Bojana – Skadar Lake	Linear	55	180 min	15 m motor/50	2	May – October
2	Rijeka Crnojevica – Lipovik – Plavnica – Virpazar – Krnjice – Murici – Ckla	Linear	50	200 min	9 m electric/15	2	The entire year
3	Rijeka Crnojevica – Dodosi – Vranjina – Rijeka Crnojevica	Circular	42	180 min	15 m electric/50	2	May – October
4	Virpazar – Grmozur – Beska – Moracnik – Vranjina – Lesendro – Virpazar	Circular	40	180 min	15 m electric/50	2	May – October

Process

I phase

- Feasibility study for the establishment of sustainable lake public transport on Skadar Lake
- Project of equipping stations (passenger docks) with information boards, toll points, safety barriers, waiting rooms etc.
- Project of introduction of information systems at docks for the blind and visually impaired and hearing impaired

II phase

- The process of procurement of equipment, organisation and establishment of the system (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder) for the equipping of the stop/station
- The process of public procurement of vessels (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder) for equipping the stop/station

III phase

- Implementation – operation

Time frame

I phase – 6 months (2016)

II phase – 12 months (2017–2018)

III phase – 3 years (2016–2020)

Sources of funding

Possible sources of funding are:

- budgets of the local authorities – self-financing or co-financing model with international donors dealing with sustainable development
- donations and grants
- credit lines

Evaluation

The evaluation is measured by the increase in tourist demand for this destination and the number of tourists per year.

Risks

- Lack of financial sources

Project benefits

The development of the public waterway (lake) transport system will contribute to providing better public transport services, increasing, thus, demand and attracting more tourists.

The specific benefits are summarized as follows:

For the public transport users (short term benefits):

- More attractive public transport services

For the community as a whole (medium and long term benefits):

- Less congestion
- Reduced emissions / better for the environment
- Reduced impacts on public health
- Increased economic viability

Measure no. 8

Development of bicycle lanes

Estimated budget:

Development of individual projects:
around 10,000 EUR

Implementation: will be defined in project documentation

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor and Old Royal Capital of Cetinje

Other involved stakeholderse: other entities of local authorities, NGO



Source: <http://www.fastcoexist.com/3031392/the-case-for-protected-bike-lanes>

Description of measure

This measure is a prerequisite for the development and promotion of the use of bicycles as a means of transport. Poly-SUMP actions/measures envisage the improvement of the cycling network in the cities of the Region, as well as in long-distance routes, in order to connect the Region, and primarily three cities in the Bay. The current plans for the cities of the Region include concrete actions and projects aimed at the development of cycling infrastructure; however, it is necessary to extend this measure to the level of the Region as a whole and establish network connectivity for bicycle traffic. These are the general and specific objectives to be achieved through the implementation of the measure:

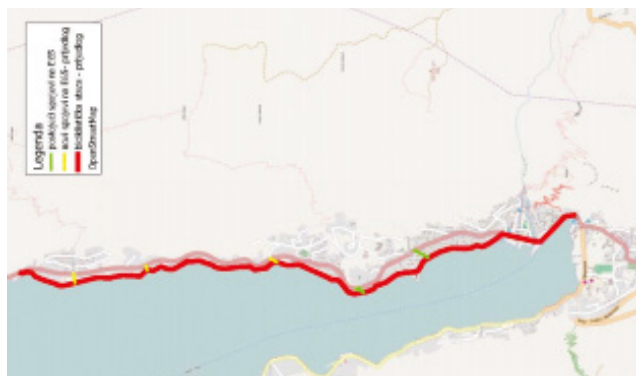
- creation of infrastructural and other conditions for a higher share of bicycle traffic in the overall modal distribution, taking into account the climatic conditions, overloaded road network and positive environmental and health aspects of the use of this means of transport
- increase the safety of cyclists
- better integration of the area with regard to this aspect.

In this sense, it is proposed that every city of the region marks its traffic areas (lanes) intended for cyclists and construct the missing parts that would make up a cycle route (or network). Also, parking for bicycles next to certain public facilities should be provided (schools, health centres, municipalities). This would contribute to a shift from the use of private vehicles to the use of bicycles, which is one of the main objectives of the SUMP. Within a given planning period, a proposal is presented to improve cycling networks across towns.

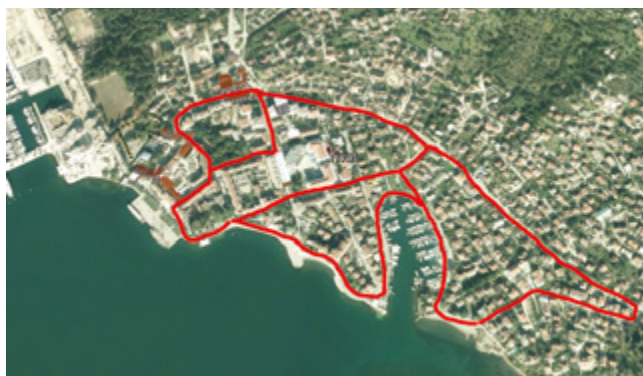
Kotor

Inaccessible terrain in the area of Kotor is hindering the development not only of bicycle traffic but also pedestrian roads that tourists and locals can use to perform daily activities. In the current situation, it is not possible to provide quality solutions to improve bicycle traffic, until other infrastructure measures have been implemented, such as a bypass around Kotor, which would relieve the town centre from motor traffic.

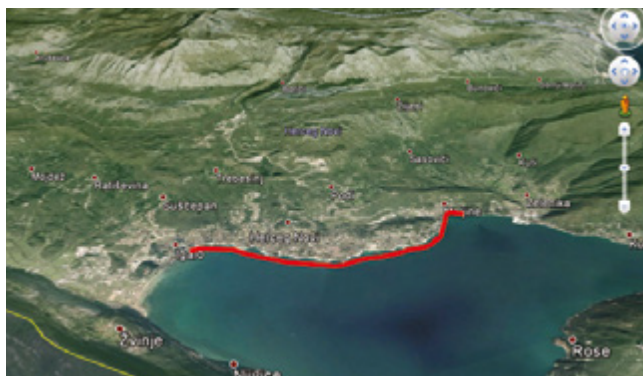
Currently, the only possible solution through Kotor is the proposed marking of cycle routes within the existing road network that goes along the coast parallel to the Adriatic coastal road from Dobrota to the entrance into the town of Kotor, where it joins the main coastal road, and continues to the exit from the Old Town to Skaljari. The proposed cycle route is depicted in the Figure below.



Bicycle lane through Kotor – proposal



Bicycle lane through Tivat – proposal



Bicycle lane through Herceg Novi – proposal



Bicycle lanes through Cetinje – proposal

Tivat

There is no space provided on the streets for bicycle traffic, except for bicycle paths in four streets in the centre of Tivat, which were recently marked within the project Bike sharing Tivat.

The previous Plan (GUP Tivat I) planned the reconstruction of the Adriatic highway and the construction of cycle lanes on both sides of its width of 1.75 m. Hence, this plan also proposes it as a measure. This lane should continue along the road that serves the school facilities, passes through the park to the waterfront, where there is no traffic for motor vehicles. The marking of cycle lanes is also proposed in the street system as shown in the following figure (streets: Kalimanjska - 21 November - Luke Tomonovica - Istarska - Arsenalska).

Herceg Novi

The specificity of Herceg Novi is a promenade that follows the coast, of total length of about 6 km from Igalo to Meljine. Infrastructure of the promenade should be modernised, both in terms of materials, and urban equipment that needs to be replaced or installed.

The special markings for the bicycle path should be placed on the promenade along the coast. The reconstruction of the coastal road should be done on the section from Meljine over Zelenika to Kumbor, and also include the marking of cycling and walking lanes.

Cetinje

Bicycle traffic, as a mode of transport is not developed, and there is no adequate infrastructure. The adopted planning regulations propose the development of this form of transport with emphasis on the development of cycle tourism and the use of the potential of bicycle traffic mainly for tourism purposes.

Due to the favourable conditions for the use of bicycles, the marking of bicycle lanes is proposed within the city street network in order to promote the bicycle as a mode of transport also for the daily activities of the residents of Cetinje, not just tourists. In this regard, the figure below presents the proposed bicycle paths. Paths should be marked on the following streets: Mojkovacka - New street (no name, near the Stadium Lovcen) - Grahovska - J. Tomasevica - Vojvode Boza - Nikca of Rovina - right side of the Boulevard (Old Obod) - left side of the Boulevard - Lovcen-

ska (to start) - Lovcenska - Boulevard - Nikca of Rovina - Baja Pivljanina - J. Tomasevic - Novice Cerovica - Stampar Makarije- Vuka Micunovica - Ivana Crnojevica.

Process

I phase

- Projects of construction and marking cycle paths in Kotor
- Projects of construction and marking cycle paths in Herceg Novi
- Projects of construction and marking cycle paths in Tivat
- Projects of construction and marking cycle paths in Cetinje

II phase

- The process of procurement for the construction and equipment for marking (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Construction

Time frame

I phase – 6 months (2016)

II phase – 6 months (2016–2017)

III phase – 1 year (2017–2018)

Evaluation

Evaluation of the implementation of the measure is done by local authorities. Performance is measured by indicators such as:

- level of satisfaction with the service of different user categories.

Sources of funding

Possible sources of funding are:

- budgets of the local authorities
- donations and grants

Risks

- Lack of financial sources

Project benefits

The development of cycle lanes within the city centres and along the Boka Bay promenade will have numerous benefits for the community, including:

- Increased use of bicycles / increased demand
- Increased levels of road safety for bicycle users
- Increased comfort levels for bicycle users in traffic
- Reduced use of private vehicles
- Significant lower emissions
- Reduced impact on public health
- Reduced traffic congestion

Measure no. 9

Promotion of bike tourism – realisation of EuroVelo Route 8

Estimated budget:

Development of the study:
around 40,000 EUR

Development of projecta:
around 100,000 EUR

Construction: depends on the adopted route

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat and Old Royal Capital Cetinje

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Environment protection Agency of Montenegro – EPA Montenegro and NGO, NTO of Montenegro



Source: <http://www.eurovelo8.com/countries/montenegro/imageMap>

Description of measure

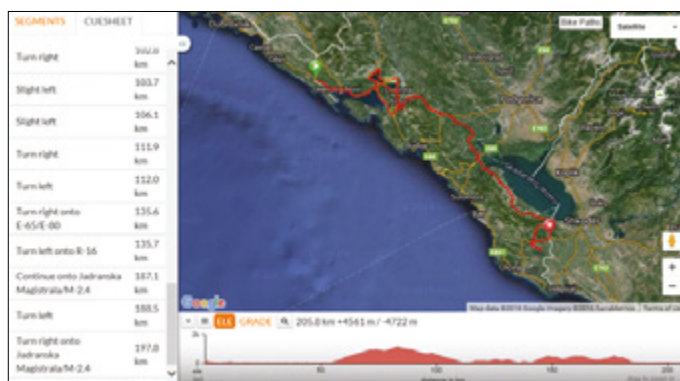
The EuroVelo network passes through the region examined through the Mediterranean route no. 8. EuroVelo is a network of 14 long distance cycling routes connecting the European continent. The routes can be used by cycle tourists, as well as locals. The Mediterranean route Euro Velo 8 passes through 11 countries, and its total length is 5888km.

Considering that at the FSW workshop there were proposals from the cycling organisation to review the route, a specific project is proposed that should examine the change of the route through Montenegro and the Boka Bay, in order to attract a larger number of users and promote Bike tourism. Increasing the attractiveness of the route and attracting more people (tourists and locals) may be important with regard to increasing the tourist offer of the Region, but also for the local population that could use this route in daily travel.

Since the official change of the Eurovelo 8 route through the European EuroVelo project requires a certain amount of time (about 3 years) and certain funds to convene the commission for the evaluation of proposals to change the route, it is proposed that as a first step, this route is recognised in SPSPCZ, not as EuroVelo 8, but as a national bicycle route.

Based on consultations with the cycling organisation Biciklo.me, the proposal of the national route through Montenegro is shown in the figure below. The route through the Boka Bay from Sutorina to Kotor extends around the Bay to Tivat and from Tivat again turns to Kotor and follows the old road Cetinje-Kotor to Cetinje and Lovcen. For the inland part of the route there is a proposal to go, instead through Podgorica, from Cetinje over Krusevice, along the Skadar Lake to Donji Murici and to continue to Vladimir and to the border with Albania.

If SPSPCZ adopts this new route, the next step should be to carry out a study and project documentation for its implementation and, in the case that there is an application to amend EuroVelo8 route on this part, it is necessary to prepare the documentation in accordance with EuroVelo guidance on the route development process (Guidance on the route development process, Brussels, 2011). This guide provides recommendations on the method of construction of lanes/trails, their marking, the type of material/layer that is recommended for bicycle trails in a certain environment, etc.



Proposal of the national cycling route through Montenegro

Process

I phase

- Development of the study documentation with the analysis of the possibilities of changing the route in order to increase its attractiveness

II phase

- Development of projects of EuroVelo 8 bicycle routes through the region

III phase

- Construction of the parts of the route through the examined region

Time frame

I phase – 6 months (2016)

II phase – 12 months (2017–2018)

III phase – 2 years (2018–2020)

Evaluation

Evaluation of the implementation of the measure is done by the local authorities and authorities in charge of cooperation with the project EuroVelo8. Success is measured by the degree of implementation of parts of the route for a certain period.

Sources of funding

Possible sources of funding are:

- Ministry of Transport and Maritime Affairs
- co-financing of the proposed measure from EU funds

Risks

- Lack of financial sources

Project benefits

Apart from the obvious environmental benefits, investing in bicycle tourism and developing the Eurovelo Route 8 through Montenegro will have various other benefits for the region, especially in terms of economic effects. More specifically, the development of the Eurovelo Route 8 is expected to attract more tourists who will, through direct spending, support local economy. Based on a recent study undertaken on behalf of the EC with regard to the Eurovelo Network ("The European Cycle Route network – EUROVELO", Directorate-General for Internal Policies, Transport and Tourism, 2012), the estimated annual volumes and direct revenues of the Eurovelo Network are summarised in the following table:

	Volume	Direct revenues (€)
Overnight cycle trips	14,50 million	6,38 milliard
Day trips/excursions	45,54 million	0,70 milliard
Total	60,04 million	7,08 milliard

Source: "The European Cycle Route network – EUROVELO", Directorate-General for Internal Policies, Transport and Tourism, 2012

Measure no. 10

Development of pedestrian zones and construction of Promenade Lunge Mare

Estimated budget:

Construction:

Lunge mare Tivat: 180,000 EUR and for Krasici according to the preliminary design

Lunge mare Kotor: 185,000 EUR

Lunge mare Herceg Novi: 200,000 EUR

Underpass Kotor : around 1 mil. EUR

Other measures: depending on the type of intervention

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat and Old Royal Capital of Cetinje

Other involved stakeholders: Ministry of Sustainable Development and Tourism, PE for Coastal Zone Management



Source: Mijic Architects, Lungomare Rimini

Description of measure

Spatial urban plans of municipalities in the Region include corridors and walkways intended for pedestrians. Part of the proposed measures aims at improving the existing infrastructure (sidewalks, pedestrian zones, etc.), and also the construction of modern and attractive urban spaces that affect the visual identity of the city and the Region. Also, projects for marking and placing tourist signs on walkways are planned for implementation, in pedestrian zones and other pedestrian links.

Promenada „Lunge mare“

Having in mind the character (of the open sea and the Boka Bay, natural landscape and built environment) and use of space in the coastal area, and with the aim of establishing a recognised potential, highlighting the diversity, i.e. character of each micro-location of the Montenegrin coast, interventions are planned with regard to the formation, development and use of paths by the sea, the so-called Lunge mare.

The paths along the coast can be planned in areas of different purposes:

- public beaches
- urban waterfront
- parts of the coast adapted for walking and cyclists such as grassy areas and woods
- Coast of Kotor-Risan Bay
- settlement structures
- tourist facilities and complexes
- sports facilities etc.

Forming a network of this type of transport infrastructure increases the efficiency and the service level of the transport system, reducing the negative impact of traffic on other settlement functions and the environment through increased security and the provision of optimal conditions for the development of tourism and other activities.

The minimum width of the path Lunge Mare is 1.8 m. Its final length should cover the entire coast of the Bay from Sutorina to Krasici.

The path Lunge mare is planned along the coast of the Bay of Tivat from Lepetani to Solila and from Solila to Krasici and along the bay Traste. For the planning period (5 years), the following is proposed :

- Modernisation and equipping of the existing promenade from Donja Lastva to Porto Montenegro, along a total length of 1.9 km
- Construction of the promenade from the marina Tivat to marina Bonici, along a total length of 1.4 km
- Construction of Lunge Mare in Krasici, equipping promenade with facilities defined by the Preliminary Design Lunge mare.

On the territory of the Municipality of Kotor the marking of/construction of Lunge Mare is proposed on the route of the proposed bicycle route within the alignment of the road that goes along the coast parallel to the Adriatic coastal road from Dobrota to the entrance of the town of Kotor, where it connects with the Adriatic main road, along a total length of about 3, 5 km.

Interventions on the formation, arrangement and use of paths along the coast from Igalo to Meljine (about 6km) should be carried out in Herceg Novi, in order to construct the missing parts of the path from Zelenika and Kumbor, along a total length of 2.5 km.

Along the "Lunge Mare" it is necessary to build rest areas and viewing platforms for visitors to take a break, with shade providing greenery, and canopies and seats constructed from natural materials (wood, stone, etc.).

Other pedestrian links

The system of planned pedestrian links in the region consists of sidewalks along the existing and newly planned facilities, paved large areas in front of large commercial or residential-commercial facilities, and car-pedestrian roads.

In the area of the municipality of Tivat, the construction of a cycling/walking path of 1.75m width on both sides is planned within the reconstruction of the Adriatic main road. It is planned to continue along the road, which serves the school facilities, passes through the park to the waterfront, where the traffic for motor vehicles is not allowed.

The establishment of a network of scenic and hiking trails is planned in the Municipality of Herceg Novi, depending on the area and attraction of the landscape for pedestrians. The recommended width of the new trail is 2.5 m. A special study on specific locations should review the possibilities for realising parts of the hiking trails in some areas.

At Cetinje, in addition to existing trails, new trails can be implemented within the road network, if there are spatial possibilities, or at the stabilised shoulder (if there are no spatial possibilities) or as independent. The minimum width of the trail is 1.8 m. The new trails do not always have to be physically constructed, but can be marked on the existing alignment of regional and municipal roads, where there is no heavy traffic and regulated by traffic signs. A special study on specific locations should consider the possibilities for realising parts of the hiking trails in some areas.

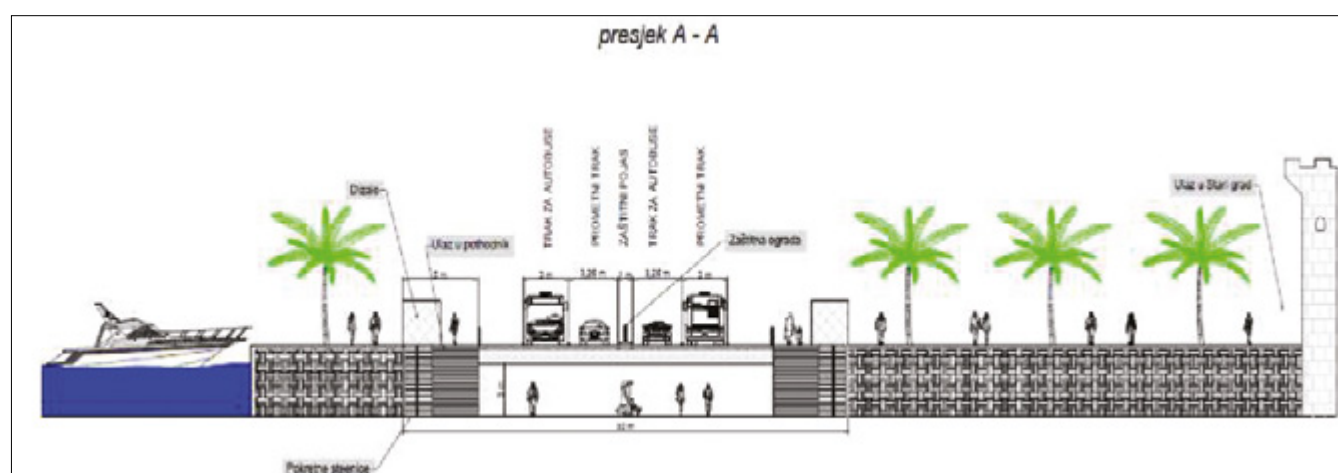
For Kotor, the development of a project of pedestrian, bicycle traffic and transport of disabled persons is planned, as well as the construction of the underpass next to the Port Authority. The construction of the underground (underwater) passage for pedestrians, would allow a constant flow of motor traffic and would reduce the conflict between pedestrian flows and the flow of vehicles. Specific projects should resolve the exact location of the underpass. Possible locations for the underpass for pedestrians are shown in the figure below. Such solution

ons would result in a significant increase of traffic capacity even on the Adriatic main road through the city centre, which would largely alleviate congestion during peak hours.



Possible positions of the pedestrian underpass

The conceptual design of the underpass cross-section is shown in the second figure. In addition to the denivelation/levelling of pedestrian flows, a proposal for interventions all along the road in front of the Old Town is provided. Since a large number of pedestrians dislike descending and climbing again the stairs for crossing the street, in addition to conventional stairs, escalators and elevators will be provided for descending into the underground passage/underpass. To further increase the attractiveness of the underpass, aspace is provided within for attractive facilities such as shops, souvenir shops, tourist info point, etc. In addition to the underpass, this solution includes:



Conceptual design of pedestrian underpass - a cross-section

- The construction of the roundabout (or traffic light crossing) near the Port Authority
- Physically separate directions of the part of the road in front of the entrance into the Old Town
- The formation of a physical barrier in the central island (to prevent crossing the road and not using the underpass)
- Drop off expansion for stopping and turning of buses and taxis.

Closing of the town's central area for motor traffic

In every city of the region, there are already systems of streets where motor vehicle traffic is prohibited. They are mainly in the city centres, parts representing monuments of cultural heritage, as well as along the sea belt.

An analysis of the characteristics of the towns' street network led to the conclusion that the introduction of a wider zone of prohibition of motor vehicles, would create further problems to the movement of vehicles within the territory of the towns and the region and, more, specifically to the supply of the central zone. Therefore, the extension of pedestrian zones in the form of a complete and permanent prohibition of the movement of vehicles is not proposed.

The closure of certain parts of town for motor traffic could be carried out during the tourist season, in certain periods during the day and during certain events. This should certainly be the subject of an analysis of traffic flows depending on the proposed locations.

Process

II phase

- Projects of reconstruction of the existing parts and projects of construction of missing parts of Lunge Mare
- Projects of adaptation of the transport infrastructure for people with reduced mobility and people with disabilities

II phase

- The process of public procurement of contractors (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Execution of works on the network
-

Time frame

I phase – 6 months (2016) II phase – 3–6 months (2016–2017) III phase – 12 months (2017)

Evaluation

Evaluation of the implementation of the measure is done by the local authority. Performance is measured using indicators such as:

- reduction of GHG emissions
 - noise reduction
 - savings in time.
-

Sources of funding

Possible sources of funding are:

- Local authorities and partners (donations, Government of Montenegro etc.)
 - Tourism organisation of Montenegro.
-

Risks

- Lack of financial sources
-

Project benefits

The development of pedestrian zones and the construction of the Promenade Lunge Mare will have a direct impact on the local community and a wide range of benefits, including:

- Discouragement / Reduced use of private vehicles and other motorised vehicles
- Significant lower emissions
- Reduced impact on public health
- Fewer road traffic accidents
- Increased levels of pedestrian safety
- Increased rates of walking and cycling

Other benefits include increased levels of economic viability within the pedestrianized zones.

Measure no. 11

Introduction of *bike sharing*

Estimated budget:

For the location study and research:
around 5,000–10,000 EUR per each town

For implementation:
around 100,000–120,000 EUR per each town

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat and Old Royal Capital Cetinje

Other involved stakeholders: Ministry of Sustainable Development and Tourism, local authorities, NTO, private companies



Source: <http://www.vijesti.me/vijesti/uskoro-opet-iznajmljivanje-bicikla-na-sest-punktova-u-tivtu>

Description of measure

The adopted measures also include the introduction of bike sharing as a solution for the public transport system, i.e. introduction of a public system for bike rental for all four examined cities. This would contribute to the additional promotion of this mode of transport and will enrich the tourist offer. Tivat already has a bike sharing system which consists of 6 operational stations and a total of 67 bikes (Figure 11). It is necessary to restore and expand this system through the purchase of new bicycles and the innovation of the entire system.

Following the same principle, the system should be established in all cities. The system works on the principle of renting bikes on stations using special electronic cards/tickets, which are sold at specially designated places.

Users can buy a prepaid user ticket for the amount of 3 euros, which can be refilled with 5 euros credit. The first half hour of cycling is free for the citizens, and the next 30-60 minutes of bike use will be charged 30 cents.

The tariff for bike rental for a period of 60 to 90 minutes is 50 cents, and over 90 minutes, the cost is 1 euro.

For tourists, one-day tickets are foreseen for the price of 5 euros, weekend packages, which will cost 8, and a weekly pass costing 30 euros, provided that the maximum driving is four hours. The system should function daily from 7 to 23 h, and users who have rented a bicycle on one can return the bike to any other station, where there are free ramps.

In Tivat, there were certain problems in the functioning of the system, such as the theft of bicycles, untimely maintenance and repair of bicycles in operation, one station out of use (northern entrance to Porto Montenegro), which require a detailed analysis and examination of the causes of dysfunction.

In discussions with the authorities in Tivat, the inability to control the use and lack of funds for maintenance has been highlighted as the main problem. On the other hand, users of the system state that the price is relatively high.

It is, therefore, necessary before the introduction of these systems in other cities to conduct an analysis of real demand for this type of public transport, a promotional campaign in order to promote the bicycle as a form of public transport and motivate users, especially private car users, to use bikes for primary purpose journeys (go to work and going to school). In this regard, the amount of the daily rate (8 hours) should be considered.

Also, due to the pricing of the bike rental that should satisfy both citizens and operators, a survey of the citizens' attitudes should be conducted on the amount they would be willing to pay for this type of service.

Within the study for the location, the following locations in the cities should be examined:

1. Kotor proposes setting up five stations: Kotor (park), Plagenti, Sv. Matija, Kamp and Pjerovici.
2. For Herceg Novi, it is proposed to introduce of 8 stations: the Institute Dr Simo Milosevic - Igalo, Igalo Park, Kantula, Topla, Yachting club, Luka Skver, Hotel Plaza and Hotel Perla.
3. For Cetinje, four stations are proposed: Museum of King Nikola, French Embassy, Lovcenska and Divizija.

This measure has a local character, but the need for the introduction of this service should be examined as well as the possibility of establishing bike sharing at the regional level.

If it turns out that there is a strong need for this service, in the current circumstances and legal framework, it could be implemented at national level through the following modalities:

Through the project of the National Tourism Organisation of Montenegro, which would establish and manage the system at the level of the region or

By registering an agency modelled after or within the existing rent-a-car companies that would provide the bike sharing service in the region (and national).

It should be noted that local and regional management levels of this service might not be unified, considering the existing territorial management competences, so at this stage, it should be carried out independently. An essential prerequisite for the integration of a bike sharing service at local and regional level is the establishment and legalisation of inter-municipal cooperation in this matter, as well as the construction of the necessary infrastructure works which would enable the integration of the region for the use of bicycles.

Process

I phase

- Study for the introduction of bike sharing system in cities of the region (location study and tariffs, the study of willingness to pay)
- Study for the introduction of regional bike sharing
- Procurement of equipment and bicycles

II phase

- Implementation of the system

Time frame

I phase – 18 months (2016–2017)

II phase – 1 year (2017–2018)

Evaluation

Evaluation of the implementation of the measure is done by local authorities.

Performance is measured using indicators such as:

- number of bike rentals per day
- number of users per one bicycle
- revenues from renting.

Sources of funding

Possible sources of funding are:

- National Tourism Organisation of Montenegro
- Local authorities
- Co-financing from EU funds.

Risks

- Lack of financial sources

Project benefits

The development of *bike sharing* schemes within the city centres will have numerous benefits for the community, including:

- Increased use of bicycles / increased demand
- Reduced use of private vehicles
- Significantly lower emissions
- Reduced impact on public health
- Reduced traffic congestion

Measure no. 12**Development of mountain bike networks and construction of mountain bike centres (bed and bike)****Estimated budget:**

Development of individual studies around 10,000 EUR

Development of individual projects of equipping/construction: around 15,000 EUR

Construction: facilities up to 200 m2 net area (without accommodation facilities) around € 255,000 per facility

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat and Old Royal Capital Cetinje

Other involved stakeholders: National tourism Organisation and local tourism organisations, local authorities



Source: <http://www.savannahhousefingerlakes.com/files>

Description of the measure:

The National Tourism Organisation of Montenegro for several years develops the bed and bike project (www.bedandbike.me). As part of this service, in addition to detailed information on bicycle routes, the provision of accommodation for cyclists is also offered.

Within the planning area, there are only 4 accommodation facilities in the bed and bike system, 2 in Tivat, 1 in Kotor and 1 in Herceg Novi. In Cetinje, there are no such facilities.

The development of a cycling network in the area (measures a and b) will promote sustainability and at the same time attract more tourists.



Coastal-Mountain Transversal Orjen – Lovcen – Rumija / Source: Mountaineering Association of Montenegro

In order to fully benefit from the potential of the examined route, it is proposed to develop the condition study of CMT, in terms of the degree of mobility/passability, activity (level of demands for certain mountain activities), level of maintenance, available capacities (hostels, shelters, resorts etc.), signalling, estimates on the efficiency of the host tracks, as well as the necessary investments for the development and regular maintenance of the transversal.

In order to complete the tourist offer, in addition to hotel accommodation, the construction of bicycle centres should be included, which will provide a range of complementary services, such as bicycle parking, bicycle rental, showers, tourist information and technical support.

The construction/adaptation of such a centre should be planned for each of the 4 cities of the region, as well as the additional hotel offer with more facilities that could accommodate the cyclists. Besides this, the construction of centres in Ivanova Korita, Bajice and Rijeka Crnojevica on Skadar Lake is proposed, as well as on other places that are on the route of the coastal-mountain transversal. These centres should provide the following services:

- | | |
|---|------------------------------------|
| • Parking of bicycles | • Free Wi-Fi |
| • Bike rental | • Equipped shared kitchen |
| • Servicing of bicycles and cycling equipment | • Room for reading, relaxation, TV |
| • Renting or selling cycling equipment (spare parts, helmets, sportswear etc.) | • Storage for luggage |
| • Accommodation for cyclists or reservation services and the provision of accommodation in other facilities | • Bathrooms |
| • Reception 24 h | • Renting of towels |
| • Free use of computers | • Laundry service |
| | • Cash machine. |

Process

I phase

- Study for the analysis of potential locations for cycling centres in the region
- Development of study on condition of the CMT
- Projects of construction and equipping centres

II phase

- Construction of facilities
- Reconstruction of CMT

Time frame

I phase – 9 months (2016–2017)

II phase – 2 years (2017–2019)

Evaluation

Evaluation of the implementation of the measure is done by local authorities.

Performance is measured using indicators such as:

- realisation of construction of facilities
 - number of users of the centres
-

Sources of funding

Possible sources of funding are:

- Tourism Organisation of Montenegro
 - Local authorities
 - Co-financing of the proposed measure from EU funds.
-

Risks

- Lack of financial sources
-

Project benefits

Apart from the obvious environmental benefits, investing in bicycle tourism and developing mountain bike networks and mountain bike centres will have various other benefits for the region, especially in terms of economic effects. More specifically, the development of such networks and facilities is expected to attract more tourists who will, through direct spending, support the local economy.

Measure no. 13

The renewal of the bus fleet and the introduction of energy efficient vehicles

Estimated budget:

Development of individual studies: around 30,000 EUR

Implementation: depending on the type of vehicle

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor and Old Royal Capital of Cetinje

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Environmental Protection Agency of Montenegro and other entities (companies)



Source: <http://thecityfix.com/files/2013/07/>

Description of measure

Supporting the shift to new technologies and cleaner fuels is one of the main strategies by which decision makers promote sustainability and the reduction of the impact of the carbon dioxide emissions. At the local level, prices and management programmes can encourage consumers to use vehicles with low carbon emissions or vehicles with low fuel consumption. Low carbon emission buses can play an important role in the overall urban transport system. At the same time, it is important to increase the fuel efficiency of existing buses and private vehicles.

The renewal of the bus fleet and the introduction of energy efficient vehicles to the system will greatly influence the carbon footprint of the cities. Having in mind that the increase of the use of public transport is the goal to be achieved, it is necessary to renew the bus fleet with energy efficient vehicles (for example EURO IV motors)¹. Bus services could also be provided using electric minibuses and/or natural gas powered vehicles.

Within the special study document for each city individually and/or for the entire region, the following should be defined:

Posebним studijskim dokumentom za svaki grad pojedinačno i/ili za cjelokupno područje treba definisati:

- Phased replacement of the existing fleet
- Criteria for the selection of vehicles (type of fuel, the capacity of the vehicle, type of maintenance, savings in emission and adaptation of vehicles to all categories of users, etc.)
- Appropriate types of low-carbon buses depending on the area of implementation (urban centres, municipal areas, regional links).

Even though a specific study should provide a concrete answer to the question of what type of bus to choose, the prices of different types of total costs for certain types of buses are provided herein for information purposes. It should be noted that these prices are indicative, and vary depending on the manufacturer and additional bus equipment.

In recent years, in Europe, the trend is to use CNG buses and hybrid vehicles, while the use of electric buses has been realised only in the last five years.

¹ This measure is connected to the measure 8, which defines establishment of the Integrated public transport for the region

The advantages of using CNG buses instead of diesel fuel are:

- Low emissions
- Lower noise and vibration levels
- CNG has a significantly lower price compared to diesel
- Large reserves of natural gas in relation to oil.

Type of bus (length 12 m)	Cost (€)
Diesel EEV	150,000
CNG – gas	210,000
Diesel-Hybrid EEV	280,000
Battery bus (night charge)	400,000
Battery bus (charging when necessary)	500,000



Source: http://www.bus.man.eu/man/media/content_medien/images/global_corporate_website/man_kann_1/die_zukunft_mitgestalten/erdgasroundup/GoingforGas_800x600_width_298.jpg

The disadvantages are the following:

- Higher cost of vehicles
- The high cost of infrastructure
- Additional costs for attests/certificates for equipment
- Smaller capacity vehicles.

MAN NG243-LPG 2002 CNG Gas

Length: 12 m
Number of seats: 31
Motor: 238 k.s. (174.94 kW)



Source: <http://www.volvobuses.com/en-gb/our-offering.html>

VOLVO 7700 Hybrid

Length: 12 m
Number of seats: 95
Diesel motor: Volvo D5E
Electric drive of total power: 160 KS, obrt. moment 800 Nm
Diesel motor power: 220 KS, moment 800 Nm
Battery: Li-ion

The **advantages** of using hybrid buses are the following:

- Lower level of emissions
- Lower global warming CO₂
- Lower local emissions of CO, NO_x, PM
- Lower consumption of diesel fuel
- Good performances/acceleration
- Low noise level

Disadvantages are:

- Increased weight of vehicle
- Higher cost of vehicles
- Limited battery life
- Specific maintenance
- Training
- Precautions, High Voltage



ZEUS – električni autobus

Length: 5,9 m

Number of seats: 23

Battery Li-ion 58 kWh

Autonomy 120 km

Source: <https://mytransportblog.files.wordpress.com/2013/10/45795-bredamenarini-bus-zeuselectric2011.jpg>

Advantages:

- No emissions
- Good performance/acceleration
- Low noise level

Disadvantages:

- Higher cost of vehicles
- High cost of infrastructure
- Additional costs for attests/certificates for equipment
- Smaller capacity of vehicles
- Limited battery life
- Specific maintenance
- Training
- Precautions, High Voltage

Process

I phase

- Feasibility Study for the replacement of the bus fleet with more energy efficient vehicles (for each city individually and/or for the entire area)

II phase

- The process of public procurement of vehicles (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Implementation – replacement of vehicles according to plan

Time frame

I phase – 6 months (2016)

II phase – 1 year (2016–2017)

III phase – 3 years (2017–2020)

Evaluation

Evaluation of the implementation of measure conducted by the local authority and the competent department of the Ministry of Transport and Maritime Affairs for issues related to intercity passenger transportation.

Performance is measured using indicators such as:

- reduction of carbon dioxide emissions caused by switching to energy-efficient vehicles
 - level of satisfaction with the service of different user categories.
-

Sources of funding

The elaboration of the above mentioned Feasibility Study enables the analysis of the possible risks, financing and the total cost of implementation of this measure.

Possible sources of funding are:

- private-public partnership
 - donations and grants
 - budgets of local authorities – self-financing or co-financing model with international donors dealing with sustainable development.
-

Risks

- Lack of financial sources
 - Lack of initiative from service providers
-

Project benefits

The use of energy efficient buses in the public bus transport system offers a wide range of benefits including:

- Significantly lower emissions
 - Reduced noise pollution
 - Reduced impacts on public health
 - Increased efficiency in fuel consumption (hybrid electric buses vs. diesel conventional buses)
 - Reduced operational and maintenance costs
 - Improved ride comfort – providing better public transport services.
-

Measure no. 14

Energy-efficient solutions for freight transport and communal/utility services

Estimated budget:

For study of freight transport: around 8,000–15,000 EUR per each town

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat and Old Royal Capital Cetinje

Other involved stakeholders: Public Utility Companies or private companies



Source: <http://www.adriamoveit.org/>

Description of measure

Being an integral part of sustainable transport planning, optimising city logistics techniques will contribute to reduced costs and reduced environmental pollution for the examined area. Promoting sustainable city freight logistics requires a combination of actions, such as efficient interfaces between long-haul transport and short-distance distribution to the final destination of the goods, efficient planning of the routes, as well as smaller and more efficient and cleaner vehicles.

Due to the mostly unfavourable development of the street network of the cities in the region, and the large unevenness of the annual traffic load with a high share of commercial freight vehicles reaching a peak during the summer tourist season, local authorities come against significant difficulties with regard to managing freight logistics in the urban centres. This problem is particularly acute within the walls of the old historical cores.

Therefore, access to freight supply vehicles (waste removal etc.) is generally limited during the day and there are restrictions for freight vehicles in accordance with the limits of capacity on the secondary road networks.

To solve the freight delivery issue and encourage the development of sustainable forms of transport, it is proposed to introduce electric vehicles for delivery. This practice already exists for the delivery of luggage and transport of passengers in Kotor, Porto Montenegro and Slovenska plaza in Budva.

The use of these vehicles should be also planned for the freight traffic operation in the central city zone and for the operation of other types of municipal/utility services (waste disposal, as well as vehicles for municipal/utility services - water supply, electricity, etc.). The use of electric vehicles would allow for a higher quality delivery by extending the period of delivery during the day, given that their dimensions are smaller, and do not cause congestion or emit harmful gases. Because of their size, they can access areas which conventional freight vehicles cannot.

The specific number of vehicles and the manner and mode of municipal transport of all types (supply, waste disposal, public utilities vehicles, etc.) should be defined in a separate study for each city.

Two examples of electric vehicles for delivery are presented, as possible solutions for municipal/utility transport in urban centres.

New vehicles can be used as means of transport to certain tourist sites, instead of buses or taxis. This would contribute to the attractiveness of the tourist offer and greatly reduce emissions, especially at locations where the aim is to minimize the pollution of natural resources. As a pilot project, it is proposed to introduce these types of vehicles for the transport from Cetinje - Lipska cave.



Source: <http://www.italcar.com/en/product/italcar-attiva-44-48v>

TECHNICAL DATA	
Motor:	5,5 KW, 48V Sevcon
No. of seats:	4 + box
Max. speed:	33 km/h
Pneumatics:	10 x 8.5 -10"
Autonomy:	do 80 km
Length:	3,5 m
Width:	1,18 m
Height:	1,95 m
Trailer load:	100 kg
Turning radius:	3m
Batteries:	8x6v – mod. US battery 2200 230Ah
Manufacturer:	Italcar s.r.l.
Cost	around 12.000 EUR



Source: <https://www.alke.com/>

TECHNICAL DATA	
Motor:	12 KW, 72V Curtis
No. of seats:	2 + box
Max. speed:	63 km/h
Pneumatics:	195/70 R15 R
Autonomy:	from 80 km to 100 km
Length:	3,85 m
Width:	1,42 m
Height:	2,05 m
Trailer load:	do 1.000 kg
Turning radius:	3 m
Batteries:	8.7 kWh lead-acid – Exite
Manufacturer:	Alke s.r.l
Cost	around 25.000 EUR

Lipska cave – a speleological and tourist attraction, is very important for tourism in the capital. The Lipska cave operates as a public-private partnership, and its operation is managed by a private company. The existing transport service from Lipska cave to the Old Royal Capital Cetinje is inadequate, and it is proposed to purchase smaller electric vehicles which would connect with the Green corner, located at the bus station, as part of the touristic offer. Royal Capital should agree and specify the role in this public-private partnership.

The Commission recommended that the Royal Capital should prepare the concept of this initiative, with clearly defined roles of the Royal Capital and the private partner, and also to define specific activities, schedule and budget in accordance with the public invitation. Therefore, this initiative represents a pilot project of Measure no. 14 within the Poly-SUMP.

Process

I phase

- A study of municipal/utility traffic including the introduction of electric vehicles in each city

II phase

- The process of public procurement of vehicles (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

Implementation – replacement of vehicles according to the plan

Time frame

I phase – 6 months (2016–2017)

II phase – 9 months (2017–2018)

III phase – 12 months (2017–2018)

Evaluation

Evaluation is conducted by the local authorities.

Performance is measured using indicators such as:

- noise reduction in cities
 - reduction of emissions
 - better service of freight transport
-

Sources of funding

Possible sources of funding are:

- local authorities
 - private-public partnerships
 - donations.
-

Risks

- Lack of financial sources
-

Project benefits

The use of energy efficient vehicles for freight transport offer a wide range of benefits including:

- Significantly lower emissions
- Reduced noise pollution
- Reduced impacts on public health
- Increased efficiency in fuel consumption
- Reduced operational and maintenance costs.

Measure no. 15

The introduction of energy-efficient vessels for the ferry Kamenari-Lepetane

Estimated budget:

Development of the study: around 30,000 EUR

Implementation: depending on the type of vehicle

Beneficiaries: Municipalities of Herceg Novi, Tivat, Kotor

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Ministry of Sustainable Development and Tourism, Environmental Protection Agency of Montenegro and other entities



Source: www.siemens.com

Description of measure

Supporting the transition to new technologies and cleaner fuels is one of the main strategies by which decision makers promote sustainability and reduce the impact of carbon emissions. At the local level, prices and management programs can encourage the use of means of transport with low emissions or vehicles with low fuel consumption. The introduction of energy-efficient vessels would greatly affect the emission of carbon dioxide. Bearing in mind that the aim is to increase the use of public transport, it is necessary to plan for more energy efficient vessels.

The main maritime link in the region is a ferry service from Kamenari to Lepetane. The Ferryboats of SC "Pomorski saobraćaj" connect the two shores in the Boka Bay in the region of straits Verige with 6 ferryboats. Regular traffic is carried out on the link between the two locations inside the Bay, Kamenari on the side of Herceg Novi and the border with Croatia and Lepetani on the side of Tivat and Budva. On this line, there is a need for the replacement of conventional vessels currently used with new energy-efficient ferries, which will have a significant impact on carbon dioxide emissions in the region of Boka Bay. A special study should define:

- phased replacement of the existing fleet
- criteria for selecting vessels (type of fuel, the capacity of the vessel, the type of maintenance, the savings in emission, reduction of the noise level, suitability of the vessel to all categories of users, etc.).

Process

I phase

- Feasibility Study for the replacement of existing vessels with more energy efficient vessels on the ferry line Kamenari - Lepetane
- Project of equipping the station (passenger ports/docks) with information boards, toll points, safety barriers, waiting rooms, etc.
- Project for the introduction of information systems at the docks for the blind and visually and hearing impaired

II phase

- The process of public procurement of vehicles (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Implementation
-

Time frame

I phase – 6 months (2016)

II phase – 1 year (2016–2017)

III phase – 3 years (2017–2020)

Evaluation

Evaluation of the implementation of the measure conducted by local authorities and competent department within the Ministry of Transport and Maritime Affairs for inter-city passenger transport issues.

Performance is measured using indicators such as:

- reduction of carbon dioxide emissions caused by switching to energy-efficient vehicles
 - noise reduction by switching to energy-efficient vessels
 - level of satisfaction with the service of different user categories.
-

Sources of funding

Development of the above mentioned feasibility study will enable the analysis of the possibilities, risks, financing and the total cost of implementing this measure.

Possible sources of funding are:

- public-private partnerships
 - donations and grants
 - budget of local authorities - self-financing or co-financing model with international donors dealing with sustainable development.
-

Risks

- Lack of financial sources
-

Project benefits

The use of energy efficient buses for the bus public transport system offer a wide range of benefits including:

- Significantly lower emissions
 - Reduced noise pollution
 - Reduced impacts on public health
 - Increased efficiency in fuel consumption
 - Reduced operational and maintenance costs.
-

Measure no. 16

Construction of cable car Kotor – Cetinje

Estimated budget for the investment:
around 46,3 million EUR

Beneficiaries: Municipalities of Kotor and Old Royal Capital Cetinje

Other involved stakeholders:
Ministry of Transport and Maritime Affairs,
Ministry of Sustainable Development and
Tourism, Environmental Protection Agency
of Montenegro and other entities



Source: <http://portalanalitika.me/storage/2015/07/31/thumbs/>

Description of measure

This measure refers to the construction of an approximately 15 km long cable car connecting the cities of Kotor and Cetinje. The cable car in a modern and attractive way connects the Boka Bay, with all its cultural and historical values, with the National Park (NP) Lovcen, Njegos Mausoleum and the Montenegrin Old Royal capital.

The project proposes the construction of a 15-kilometer long cable car with gondolas, which will, during the 43-minute journey, enable passengers to enjoy the bay on the coast, a drive to Mount Lovcen through the most beautiful parts of Montenegro, with a unique view of Boka Bay and the Adriatic Sea and a visit to the cultural, spiritual and historical centre of Montenegro, the Old Royal Capital Cetinje.

The cable car project proposes four stations, two origin/destination - in Cetinje and Kotor - and two intermediate stops - Kuk and Ivanova korita. According to the plan, the cable car should have six to ten seats, gondolas with removable straps, while the capacity of passenger transport would be around 1000/hr. The average price of a return ticket would be 20 to 30 euros, depending on the section/destination the passenger chooses.

The updated feasibility study for the construction of the cable car Kotor - Cetinje was completed in June 2013.

It should be noted that UNDP prepared a study on the use of energy efficient technology systems, so the results of this particular study should be used within this project. It can be assumed that for this project, UNESCO will request the impact assessment on cultural heritage, i.e. the HIA (Heritage Impact Assessment) study, which represents a potential barrier to the implementation of this measure.

Process

I phase

- Preparation of project documentation (Main project) for the construction of the cable car Kotor – Cetinje.
- Preparation of UNESCO HIA (Heritage Impact Assessment) studies.

II phase

- The process of procurement of equipment and funds, organisation and establishment of the traffic and transport system (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

Implementation – construction of the necessary infrastructure, installation, testing and commissioning/operation of the system

Time frame

I phase – 9 months (2016)

II phase – 12 months (2016–2017)

III phase – 2 years (2017–2019)

Evaluation

Evaluation of the implementation of the measure is conducted by the local authorities and relevant state institutions.

The success of the implementation of this action can be measured by indicators such as:

- total travel time reduction between the examined cities
 - emission reductions (using smaller passenger cars and bus transport in the project area)
 - level of satisfaction with the service of different categories of users
 - increasing the attractiveness of the area (increasing the number of tourists).
-

Sources of funding

Possible sources of funding are:

- state budget
- public- private partnerships
- donation and grants.

The cable car Kotor - Lovcen - Cetinje project, which will be implemented through the model of public-private partnership, more precisely through concessions, is worth a total of 47 million euros, of which 36.7 million is allocated for the construction of the cable car, 9.7 million for the construction of stations and intermediate stops, and the remaining for the process of expropriation and other costs.

Risks

- Lack of financial sources.
 - Unfavourable decision of UNESCO regarding the protection of cultural heritage.
-

Project benefits

The construction of the cable car will enable an alternative low carbon option for connecting the two cultural and historical centres of Montenegro - Kotor and the Old Royal Capital Cetinje. Despite the short distance between the centres under study, the existing road connections do not provide the quality of service that would make these two towns more accessible. The terrain configuration certainly has a significant influence on the limited opportunities for a better road network connection. The construction of the cable car, therefore, is one of the attractive sustainable opportunities for linking the two towns, which would create conditions for faster and environmentally better traffic connections of towns and increase tourism in the region.

Measure no. 17

Modernisation of technical characteristics of the existing transport infrastructure

Estimated budget:

For project documentation: from 5,000 to 20,000 EUR per project, depending on the volume and complexity

Investment: Tivat – 25 mil. EUR

Beneficiaries: Municipalities of Kotor, Cetinje, Herceg Novi, Tivat

Other involved stakeholders:
Ministry of Sustainable Development and Tourism



Source: https://www.reddit.com/r/MapPorn/comments/1zjwjtj/road_deaths_in_europe_per_million_inhabitants

Description of measure

This measure is related to the improvement of the existing road network in order to improve the traffic conditions and safety levels, reducing at the same time emissions and noise.

Besides the road network, maintenance of the existing traffic areas, such as sidewalks, parking lots, walkways etc, is also considered important.

The maintenance programme for the road network is developed by the local authorities and it is mainly dependable on the available budget and the urgency for each intervention. Any intervention on the network, in addition to the proposed modernisation, should include the reconstruction of the street fronts in accordance with the "Regulation on detailed conditions and methods of adjusting facilities for access and movement of persons with reduced mobility and persons with disabilities" (Ministry of Sustainable Development and Tourism, October 2013).

Process

I phase

- Modernisation of the existing road network (for each municipality)
- Interventions on the road network infrastructure related to people with reduced mobility and people with disabilities

II phase

- Execution of works on the network

Time frame

I phase – 6-12 months (2016–2017)

II phase – 3 years (2017–2019)

Evaluation

The evaluation of the implementation of the proposed measure is conducted by the local authorities.

The performance is measured using indicators, such as:

- Improved traffic conditions, reduced congestion, travel time savings.
- Reduced emissions.

Sources of funding

Possible sources of funding are:

- Local authorities.

Project benefits

Rehabilitating and modernising the existing road transport infrastructure will contribute in relieving congestion problems and bottlenecks within the Boka Bay city centres and improve road safety levels. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, as well as reduced environmental impact.

Measure no. 18

Construction of the Adriatic – Ionian Highway along the coastal area of Montenegro

Estimated budget:

Construction: around 1 billion EUR

Beneficiaries: Municipalities of Kotor, Herceg Novi, Tivat, Budva, Petrovac, Bar, Ulcinj, Podgorica, Old Royal Capital Cetinje

Other involved stakeholders:

Ministry of Transport and Maritime Affairs,
Ministry of Sustainable Development and Tourism



Source: <http://portalanalitika.me/clanak/218944/projekti-evo-kuda-ide-trasa-brze-saobracajnice-duz-primorja&psig>

Description of measure

The main driver for the development of the Montenegrin coastal area will be the construction of the Adriatic – Ionian Highway that extends along the route: Debeli brijeg (border with Croatia) - Herceg Novi - crossing over the Boka Bay - Tivat - Budva - Bar - Ulcinj - border with Albania.

The Adriatic - Ionian Highway at national level will represent a traffic artery that will link individual centres, while at international level it will provide inter-regional and international transport links between Montenegro and the neighbouring countries of Bosnia and Herzegovina, Croatia and Albania. This route will contribute to significantly greater integration of the Montenegrin coastal area, and its connection to the regional and European road network.

The Adriatic – Ionian Highway will allow for balanced regional development and access to regional urban centres.

The Adriatic – Ionian Highway along the Montenegrin coastal area, besides the shift of local traffic flows, would enable for modern, integrated and cost-effective road traffic flows for both passengers and freight, and it would also provide improved links for tourism, shifting the existing traffic flows from the coastal towns to the bypasses. Furthermore, the new Highway will have a significant positive impact on environmental protection.

Although this measure does not fall directly under sustainable urban mobility measures, its effect on improving traffic flows in the area and reducing pollution from traffic is certainly a positive and measurable benefit.

Besides the highway as a whole, the bypass around Herceg Novi – which is part of the Adriatic-Ionian highway, has special significance for the area. The bypass near Herceg Novi is 8 km (from the border crossing with the Croatia (Debeli Brijeg) towards Meljine/Petijeveći). This will contribute to improving the traffic congestion issues and bottlenecks and also improving the safety levels of the road. The total construction cost for the bypass amounts to 52.8 million EUR. It is noted that the Pre-feasibility study is completed.

The total construction costs of the Adriatic-Ionian Highway will be defined by the feasibility study, as well as the preliminary and final design.

Process

I phase

- Development of Pre-feasibility and Feasibility studies with Preliminary and Main project
- Obtain approval for projects from all relevant authorities

II phase

- Public procurement for selecting the contractor (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Construction of the highway

IV phase

- Commissioning for operation
-

Time frame

The time frame cannot be defined within this plan, as this measure is subject to planning processes at national level.

Evaluation

The performance is measured using indicators, such as:

- Carbon dioxide emissions caused by traffic in urban areas of the region
 - Emission level of nitrogen dioxide on certain locations
 - Minor, serious and fatal traffic accidents.
-

Sources of funding

Possible sources of funding are:

- Ministry of Transport and Maritime Affairs
 - Credit lines.
-

Risks

- Lack of financial sources
-

Project benefits

The new road will contribute to relieving congestion issues and bottlenecks in the urban centres of Boka Bay and improve road safety levels. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, distance savings, reduced environmental impact, and shift of traffic from the densely populated urban zone along the new main road.

Measure no. 19

Construction of the road Cetinje – Niksic

Estimated project value:

Implementation: will be defined in project documentation

Construction: around 1 million EUR

Beneficiaries: Old Royal Capital Cetinje and Municipality of Niksic

Other involved stakeholders:
Ministry of Transport and Maritime Affairs,
Other entities



Source: <http://www.gov.me/img/1168940967.JPG>

Description of measure

The road section Cetinje - Niksic (planned mark Mn.1) extends over the area of the Old Royal Capital Cetinje and is included in the Spatial Plan of Montenegro. The intersection of the Adriatic-Ionian highway and the main road Cetinje - Niksic is planned in the area of Cevo, the interchange "Cevo". The planned main road Cetinje - Niksic is also a bypass around Cetinje.



The construction of the road Cetinje - Cevo - Niksic began 20 years ago, however, after the removal of debris in a length of about 3 km from Crna Greda to Cevo, the works were suspended.

The alignment of the Cetinje - Niksic road section (Mn.1) will be from Cevo to Niksic along the route of the existing regional road R 15. The alignment of the main road from Cetinje to Cevo will be at the east and northeast from Cetinje, then over Resna to Cevo. Zero chainage of the planned main road is the intersection with the main road M 2.3 Cetinje - Podgorica in the zone Crna Greda, at approximately 800 meters east of the main intersection to enter Cetinje.

Process

I phase

- Preparation of project documentation for the construction of the main road Cetinje - Niksic

II phase

- Public procurement (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Implementation – Construction of the planned infrastructure and installation of planned traffic signalisation and equipment
-

Time frame

I phase – 12 months (2016)

II phase – 12 months (2017)

III phase – 3 years (2017–2020)

Evaluation

The evaluation of measure implementation is undertaken by the local authorities and relevant state institutions.

The success of the implementation of this action can be measured by indicators, such as:

- Reducing travel time
 - The level of satisfaction for different user categories.
-

Sources of funding

Possible sources of funding are:

- National institutions' funds.
-

Risks

- Lack of financial sources
-

Project benefits

The new road will contribute in relieving congestion problems and bottlenecks and improve road safety levels. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, distance savings, reduced environmental impact.

Measure no. 20

Tivat Bypass

Estimated budget:

Development of the Main project and Feasibility Study: approximately 200,000 EUR

Construction: Approximately 5,5 mil. EUR

Beneficiaries: Municipality of Tivat

Other involved stakeholders:

Ministry of Transport and Maritime Affairs,
Municipalities of Kotor, Herceg Novi, Budva,
Old Royal Capital Cetinje



Source: <http://portalanalitika.me/clanak/218944/projekti-evo-kuda-ide->

Description of measure

The construction of the Tivat bypass, which is included in this Plan, will contribute to reducing traffic congestion on the local road network and also improving the related environmental effects, as well as increasing safety levels for all road users. The alignment of the bypass is planned from Gradosnice to Lepetani (Opatovo), with a length of 7.5 km.

The Tivat Bypass will contribute to shifting transit traffic from the centre of Tivat, which faces many congestion issues, especially during the touristic season.

Process

I phase

- Preparation of project documentation
- Obtaining approval of projects from all relevant authorities

II phase

- Public procurement for selecting the contractor (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Construction of the bypass

IV phase

- Commissioning of the infrastructure

Time frame

I phase – 12 months (2016)

II phase – 9 months (2017–2018)

III phase – 2 years (2018–2020)

IV phase – 2020.

Evaluation

The evaluation of the measure implementation is undertaken by the local authorities.

The performance is measured using indicators, such as:

- Savings in travel time
 - Reduction of GHG emissions in the centre of Tivat.
-

Sources of funding

Possible sources of funding are:

- Local authorities
 - Ministry of Transport and Maritime Affairs
 - Credit lines.
-

Risks

- Lack of financial sources
-

Project benefits

The new road will contribute in relieving congestion problems and bottlenecks within the city centres of Boka Bay and improve road safety levels. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, distance savings, reduced environmental impact, and shift of traffic from the densely populated urban zone along the new main road.

Measure no. 21

Construction of Kotor Bypass

Estimated value of the investment:
approximately 30 million EUR

Development of project: approximately
40.000 EUR

Implementation: will be defined within the
project documentation

Beneficiaries: Municipality of Kotor

Other involved stakeholders:
Ministry of Transport and Maritime Affairs



Source: <http://www.buildmagazin.com/index2.aspx>

Description of measure

The construction of the Kotor bypass, which is included in this plan, will contribute to reducing traffic congestion on the local road network, preserving the historic center of the city and also reducing the negative environmental traffic impacts. Valid planning documents of the Municipality of Kotor define the implementation process for this measure.

Based on the analysis of the current situation of the transport system in Kotor, it is evident that, the most significant issue of the town is traffic congestion on the Adriatic Highway's road section that passes through the urban center. According to the available data on traffic flows on this particular section, during the summer months, the average traffic is about 1300 vehicles in peak hour, while at other times during the day traffic flows are of similar intensity. High volume flows result in constant traffic congestion and delays at both entrances to Kotor.

This situation has a negative environmental impact due to significant emissions. In addition, noise pollution is very high.

As a long-term solution to this problem, it is proposed that traffic be restricted or partially restricted in front of the old city centre (during peak periods within the year and the day, for some or all vehicle categories). Since the existing road is the only existing link to Kotor, it is necessary to provide an alternative route i.e. the bypass. Keeping in mind that Kotor is located on a difficult terrain with specific characteristics (a few meters from the sea the height of the terrain is significantly increasing, and at 1,000 meters from the coast altitude the terrain is more than 500 m), all solutions proposed and reviewed so far include the construction of tunnels.

It is noted that the construction of this road should not in any way compromise the significant cultural heritage of the town of Kotor, which represents a significant spatial constraint in terms of identifying the alignment of the bypass. In this regard, before the adoption of the optimal solution, it is necessary to develop the UNESCO HIA (Heritage Impact Assessment) study.

According to the available planning documentation there are several proposed solutions for the construction of the Kotor bypass, which are at different levels of development. One of the proposed conceptual designs is the construction of the bypass along the section from Skaljari to Plagente (Figure 1 - Solution 1). According to this design, the length of the bypass is approximately 8.5 kilometres and consists of two viaducts and two tunnels. The estimated cost amounts to approximately 30 million.



Figure 1: Proposal of the Kotor bypass– Solution1 (left) and Solution 2 (right)

As an alternative to the proposed bypass, a shorter bypass is proposed (Figure 1 - Solution 2), with significantly lower implementation cost. The proposed bypass will be approximately 1,300 meters long and will include two tunnels and a viaduct. Focal points of the bypass would be the two circular intersections. The bypass construction would enable for restricting traffic in the Kotor city centre, offering a pedestrian zone or traffic calming zone. Within this zone, traffic would be allowed only for vehicles with special permission. On the edge of the zone adequate parking spaces for the residents of the city, visitors and tourists should be provided.

The possibility of developing a tunnel connection should also be considered, i.e. the construction of the underwater tunnel that would enable the connection of the city entrance and exit (Figure 2). The figure shows two alternative conceptual designs (with different lengths of tunnel connections) which shifts traffic flows through the city centre. This solution would significantly contribute to the elimination of the potentially negative impacts of the previously presented preliminary variants on the cultural heritage of Kotor.



Figure 2: Proposal of the Kotor bypass– variants for construction of the underwater tunnel

Process

I phase

- Completion of project documentation for the Kotor bypass (development of existing and new conceptual variant solutions, determining the criteria for selection of solutions - solutions evaluation, selection of the optimal solution for the bypass around Kotor, further elaboration of the chosen solutions in accordance with the legislation and the regulations)
- UNESCO HIA (Heritage Impact Assessment) study

II phase

- Public Procurement (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Implementation – construction of the planned infrastructure and installation of the traffic signalisation and equipment

Time frame

I phase – 9 months (2016)

II phase – 12 months (2016–2017)

III phase – 3 years (2017–2020)

Evaluation

The evaluation of the implementation of this measure will be undertaken by the Transport Directorate of Montenegro.

The performance can be measured using indicators, such as:

- Savings in travel time
 - Reduction of traffic congestions in the central city area
 - Reduction of GHG emissions and noise level
 - The level of satisfaction for different user categories.
-

Sources of funding

Possible sources of funding are:

- State budget
 - Budget of local authorities.
-

Risks

- Lack of financial sources
 - Protection of cultural heritage - position of the Ministry of Culture
 - UNESCO
-

Project benefits

The new road will contribute in relieving congestion problems and bottlenecks within the Kotor city centre and improve road safety levels. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, distance savings, reduced environmental impact, and shift of traffic from the densely populated urban zone along the new main road.

Measure no. 22

Construction of municipal/local roads in Herceg Novi

Estimated budget:

Construction: 20 mil. EUR

Beneficiaries: : Municipality of Herceg Novi

Other involved stakeholders:

Public Works Directorate, Montenegro



Source: <http://www.vijesti.me/vijesti/herceg-novi-završena-sanacija-klizišta-na-podima>

Description of measure

The development of the municipal and local roads in Herceg Novi are considered of great importance for economic development of the region.

The plan envisages the construction of new local roads that will improve traffic conditions and safety, thus reducing carbon emissions.

The regional transport connections of the city centre of Herceg Novi are relatively good, as opposed to the internal (local) connections, especially interconnections of villages in the northern part of the municipality, where the transport links are not available or go through are the city centre of Herceg Novi.

The entire road network within the Municipality of Herceg Novi, is currently in need of rehabilitation and reconstruction, in order to provide a good basis for developing a modern road network, which will contribute to the revitalisation of the area.

br.puta	deonika puta	dužina (km)
O1	Sutorina-Meljine	8,1
O2	Kumbor-Baošići-Bijela	8,5
O3	Sutorina-Njivice-granica RH	3,9
O4	Sutorina-Zvinje-Kobila	8,2
O5	Igalo-Misevići-Sutorina	4,1
O6	Sutorina-Prijevor-Malta	5,4
O7	Prijevor-Rustovo-Sutorina	1,9
O8	Mokrine-Javor-Jentova lazina (Sitnica)	9,8
O9	Mokrine-Prijevor	4,8
O10	Zvirne-Sušćepan-Kovači-Kuk	6,7
O11	H.Novi (autob. stanica)-Topla-Matkovići	2,3
O12	Matkovići-Trebesnj-Sušćepan	3,9
O13	Ratiševina (Sv. Trojica)-Miševići	1,2
O14	H.Novi (Kanli kula) Sušići-Modra ploča	1,3
O15	Modra ploča-Podi-Sasovići-Krusevice-Tripovina	15,0
O16	Sasovići-Kuti	5,6
O17	Kameno-Mandići-Šćepan Do-Ubli	16,6
O18	Kameno-Obradovići-Žiljebi	5,5
O19	Grablje-Kamenska ravan	2,3
O20	Šćepan Do-Sekulove glavice (dalje Crkvice)	5,9
O21	Dizdarev Do-Krusevice-Vrbanj-Sitnica	15,0
O22	Krusevice-Poljice	4,9
O23	Vrbanj-Ortjen sedlo (dalje Crkvice)	10,3
O24	Klinec-Zabrđe-Lokvice	5,8
O25	Klinec-Obosnik-Gradine	6,0
O26	Rose-Mrkovi-Babunci	5,9
O27	Radovanići-Mirišta (Arza, Žanjica)	5,5
O28	Radovanići-Dobra luka	4,1
O29	Brguli-Merdari-Kosmač	2,3
O30	Perja-Begovići-Mališevac	4,4
O31	Perja-Veslo (Zlatna luka)	4,3
Ukupno (km):		189,5

The plan envisages the construction of 39 km of local roads, which together with the existing 159 km of roads sums up to approximately 190 km. All municipal roads should be constructed based on the existing legislation and technical standards.

The rehabilitation and modernisation for all existing municipal roads is considered necessary for all roads, with the exception of municipal roads that pass through existing villages/built areas that restrict the road width.

The Municipality of Herceg Novi and the Public Works Directorate of Montenegro have already commenced activities for the implementation of this measure, by launching tenders for the modernisation of local roads in 7 local communities: Prijevor, Igalo, Topla, Poda, Mokrine, Krusevice, and Zelenika.

The modernization of local roads in the remaining 14 local communities should be carried out, according to the plan and programme of the Municipality of Herceg Novi.

Process

I phase

- Development of the prioritisation plan for the modernisation of local roads in the municipality of Herceg Novi

II phase

- Public procurement for selection of contractor (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Construction
-

Time frame

I phase – 3–6 months (2016)

II phase – 6 months (2016–2017)

III phase – 3 years (2017–2020)

Evaluation

The performance can be measured using indicators, such as:

- GHG emissions and noise level originating from traffic in urban areas
 - Minor, serious and fatal traffic accidents.
-

Sources of funding

Possible sources of funding are:

- Local authorities budget – self-financing and co-financing model with international donors dealing with sustainable development
 - Donations and grants.
-

Risks

- Lack of financial sources
-

Project benefits

The new local roads will contribute in relieving congestion problems and bottlenecks within the Herceg Novi city centre and improve road safety levels. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, distance savings, reduced environmental impact, and shift of traffic from the densely populated urban zone.

Measure no. 23

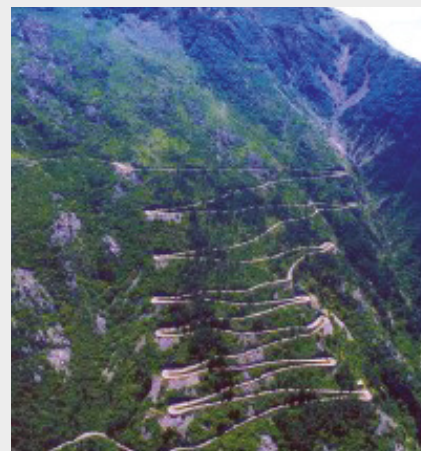
Reconstruction of the road Kotor-Njegusi-Cetinje

Estimated value of the project:

around 15 mil. EUR

Beneficiaries: Municipalities of Kotor and the Old Royal Capital Cetinje

Other involved stakeholders: Ministry of Transport and Maritime Affairs, Ministry of Sustainable Development and Tourism and other entities



Source: <http://www.cetinje-mojgrad.org/wp-content/uploads/2009/11/kotorske-serpentine-205x300.jpg>

Description of measure

The regional road R-1 Cetinje-Njegusi-Kotor is considered significant for the Njegusi area as it is an important touristic destination. Route R-1 is the oldest modern road in Montenegro, connecting villages in the southwestern part of the country, and is currently characterised by partially satisfactory technical characteristics. Its length is 43 km. Furthermore, the 25 famous Lovcen serpentine are located along the road section Krstac - Trojica - Kotor (22.2 km). The longitudinal slopes are up to 7%. The regional road R-1 is characterised by small width (4-5 meters), which causes frequent traffic delays due to bottlenecks created by overtaking vehicles.

This route has a great historical and cultural significance for Montenegro:

- Cetinje - Njegusi - Krstac is the first road that Montenegro built (from 1879 to 1881)
- On the section Krstac - Kotor the first road tunnel in Montenegro was constructed
- On the road Cetinje-Njegusi-Kotor the first regular traffic for vehicles in Montenegro – carriage (1881) was introduced. This road for more than 30 years represented the only connection of Cetinje with the Bay of Kotor.

Based on the above, this measure can be considered as very important for this area, on many levels (cultural, historical, traffic and transport, touristic, etc.). The reconstruction of the old regional road R-1 from Trojice through Njegusi to Cetinje will improve the technical characteristics of the road by:

- increasing the radius of curvature
- continuous expansion of roadway
- improving the quality of road surface on the entire section
- improvement of traffic signs and equipment etc.

The modernisation of the technical standards, traffic signalisation and equipment will allow for increasing the touristic attractiveness of the area, improving the connection between Kotor and Cetinje, as well as improving the overall level of the transport system service.

Process

I phase

- Development of project documentation for the reconstruction of the road Kotor-Njegusi-Cetinje



II phase

- Public procurement (preparation of tender documentation, implementation of tender procedure, selection of the winning bidder)

III phase

- Implementation – construction of planned infrastructure and installation of planned traffic signalisation and equipment

Time frame

I phase – 12 months (2016)

II phase – 12 months (2017)

III phase – 3 years (2018–2020)

Evaluation

The evaluation of the measure implementation will be undertaken by the local authorities and relevant state institutions.

The success of the implementation of this action can be measured using indicators, such as:

- Reduced travel times
- The level of satisfaction for different user categories
- Increased attractiveness of the area (increasing number of tourists).

Sources of funding

Possible sources of funding are:

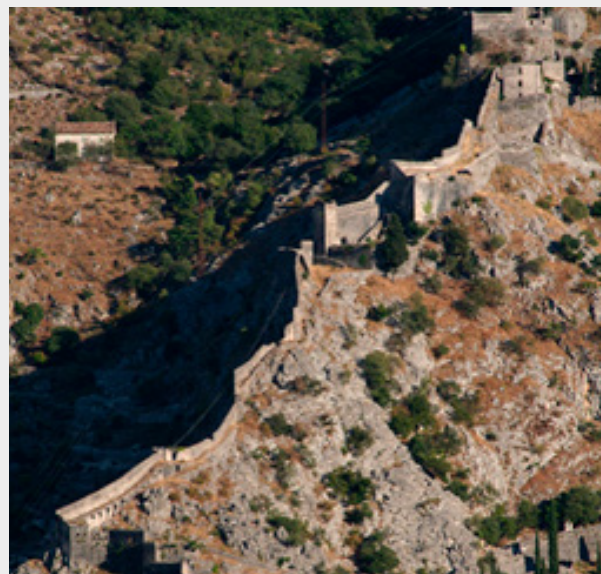
- Local authorities budget
 - State institutions budget
-

Risks

- Lack of financial sources
-

Project benefits

The new road will contribute in relieving congestion problems and bottlenecks, improve road safety levels and provide better interconnection. Other expected benefits include savings in travel time and in vehicle operating costs for all vehicle types, distance savings, reduced environmental impact.

Measure no. 24**Reconstruction of the old Austro-Hungarian roads/ Revival of cultural monuments in the hinterland****Estimated budget:****Development of study:** approximately 30,000 EUR**Development of individual projects:** Approximately 10,000 EUR**Implementation:** will be defined in studies and projects**Beneficiaries:** Municipalities of Tivat, Herceg Novi and Kotor**Other involved stakeholders:** Ministry of Sustainable Development and Tourism, Ministry of Transport and Maritime Affairs, Ministry of Culture, National Tourism Organisation and other entitiesSource: <http://www.travelpostmonthly.com/image006small.jpg>**Description of measure**

The Austro-Hungarian fortress and other auxiliary facilities were built in the Boka Bay and its hinterland from the fourth decade of the 19th century until the beginning of World War II. They represent the forgotten part of the architectural heritage and are mostly unrecognised monuments. These architectural ventures are a prime example of a construction harmonised with the natural environment. Cultural monuments in the hinterland represent a true revelation for tourists and hikers, and their access roads consist of very attractive hiking tracks. Their multiple value has not been properly recognised, with the exception of a few cases (Herceg Novi used a part of its architectural heritage by revitalising Forta mare, Kanli kula). The greatest value of these monuments around the Boka Bay area is their origin and the fact that most of them are still in a fairly good condition. Therefore, the fortresses in Boka have an outstanding potential for tourism. Unfortunately, the old access roads are usually in poor condition, which is one of the main obstacles for exploiting the touristic potential of these monuments.

The proposed measure mainly refers to improving and enhancing the existing network of the old Austro-Hungarian roads and thus making accessible these cultural and historical monuments. It is noted that given the large number of monuments scattered around the area, it is necessary to prioritise the locations according to the local plans, with the ultimate aim of reviving the cultural and historical heritage and increasing the attractiveness of the entire area. It is also found necessary to engage a qualified consultant for the analysis of certain sites of cultural heritage monuments in the hinterland (fortresses, churches, old roads, old military facilities etc.).

Modernizacijom odgovarajućih tehničkih elemenata infrastrukture, saobraćajne signalizacije i opreme stvorili bi se uslovi za povećanje turističke atraktivnosti ovog područja, bolju povezanost Kotora i Cetinja, kao i poboljšanje ukupnog nivoa usluge transportnog sistema.

Process**I phase**

- Preparation of a study for reviving cultural monuments in the hinterland and the reconstruction of the old Austro-Hungarian roads

II phase

- Development of individual projects for the reconstruction of old roads

III phase

- Preparation of tender documentation, implementation of tender procedure, selection of the winning bidder

IV phase

- Implementation – reconstruction and adaptation of the existing infrastructure according to the adopted project documentation

Time frame

I phase – 12 months (2016)

II phase – 6 months (2017)

III phase – 6 months (2017–2018)

IV phase – 3 years (2018–2020)

Evaluation

The evaluation of the implementation of this measure will be undertaken by local authorities and the relevant state institution.

The performance of implementation of this action can be measured by indicators, such as :

- Increasing the attractiveness of the area – increase in the number of tourists.

Sources of funding

Possible sources of funding are:

- State institutions budget
- Local authorities budget
- Donations.

Risks

- Lack of financial sources
- Protection of cultural heritage

Project benefits

Apart from the obvious environmental benefits, investing in developing the old Austro-Hungarian roads will have various other benefits for the region, especially in terms of economic effects. More specifically, the development of the network is expected to attract more tourists who will, through direct spending, support local economy.

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