


# STATE OF THE ART OF CLIMATE CHANGE ADAPTATION AND MITIGATION IN BELGRADE (SERBIA)

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## Introduction

This report is one of the first outcomes of Project TeRRIFICA that helps identify the state of the art of climate change adaptation and mitigation in Belgrade (Serbia) as one of six pilot regions. It contributes to achieving the following objectives:

- to create a comprehensive overview on the state of the art of climate change adaptation research and innovation strategies, tangible climate change adaptation examples and communication strategies and methods at different levels of complexity,
- to create an overview and corresponding information and exchange structures between science, civil society and local government,
- to highlight areas that TeRRIFICA can address and improve,
- to identify useful content for TeRRIFICA from recent and current projects about climate action and climate change,
- to reflect on climate change adaptation ideas and strengths and weaknesses (co-creation),
- to define and adapt supporting innovative outreach and dialogue actions and formats for general public, education, policy makers and the virtual platform, ready for implementation in partner institutions and collaborating organisations,
- to develop common methodologies and recommendations of implementation for Pilots with special focus on social innovation corresponding to SDGs.

Recognition of the current state in the field of climate change adaptation and mitigation activities undertaken by academia and education, local government, civil society and business in each pilot region is helpful to select the relevant case studies for the purpose of accomplishing next TeRRIFICA tasks aimed at enhancement of climate actions as well as strengthening stakeholders engagement and co-creation.

### Abbreviations:

NGOs – non - governmental organizations

CSOs – civil society organizations

SDGs – sustainable development goals

CSR – corporate social responsibility

RRI – responsible research and innovation

SMEs – small and medium enterprises

## Glossary – key definitions

**Climate change** refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity (IPCC).

**Climate change adaptation** means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise. Examples of adaptation measures include: using scarce water resources more efficiently; considering fresh air corridors in urban planning to improve the air quality in cities; and setting aside land corridors to help species migrate. Adaptation strategies are needed at all levels of administration: at the local, regional, national, EU and also the international level. Due to the varying severity and nature of climate impacts between regions in Europe, most adaptation initiatives will be taken at the regional or local levels. The ability to cope and adapt also differs across populations, economic sectors and regions within Europe (Description of Actions).

**Climate change mitigation** refers to a wide scope of efforts to reduce or even prevent the emission of greenhouse gases. These efforts range from changing consumer behaviour to boosting the efficiency of out-dated equipment to the use of newest technologies and renewable energies. Planning a new city can be a means of mitigation as well as the replacement of an old furnace. This means that mitigation often involves fundamental changes in the way individuals and societies as a whole produce and use energy (Description of Actions).

### Responsible Research & Innovations (RRI) - building blocks:

- **public engagement** - in Responsible Research and Innovation is about co-creating the future with citizens and civil society organisations, and also bringing on board the widest possible diversity of actors that would not normally interact with each other, on matters of science and technology.
- **open access** - the global shift towards making research findings available free of charge for readers, so-called 'Open access', has been a core strategy in the European Commission to improve knowledge circulation and thus innovation. It is illustrated in particular by the general principle for open access to scientific publications in Horizon 2020 and the pilot for research data.
- **gender equality** - in Horizon 2020 Gender is a cross-cutting issue and is mainstreamed in each of the different parts of the Work Programme, ensuring a more integrated approach to research and innovation.
- **ethics** - For all activities funded by the European Union, ethics is an integral part of research from beginning to end, and ethical compliance is seen as pivotal to achieve real research excellence.
- **science education** - Building capacities and developing innovative ways of connecting science to society is a priority under Horizon 2020. This will help to make science more attractive to young people, increase society's appetite for innovation, and open up further research and innovation activities (European Commission).

**Co-creation:**

Collaborative development of new value (concepts, solutions, products and services) together with experts and/or stakeholders (such as customers, suppliers etc.). Co-creation is a form of collaborative innovation: ideas are shared and improved together, rather than kept to oneself. It is closely connected to – and mentioned alongside – two other buzz-words: “opensource” and “mass-customisation” (<http://fronteer.amsterdam/what-is-co-creation/>).

**A case study is understood as an example of current actions allowing for identification both good and bad practice in climate change adaptation and mitigation. It is related mainly to a pilot region. A case study is focused on a co-creation process.**

## Identification of the state of the art of climate change adaptation and mitigation

### GENERAL CHARACTERISTICS OF THE PILOT REGION

<b>1. Name of the region, its location and a short description</b>
<p>City of Belgrade, the capital of the Republic of Serbia, will be pilot region for Center for the Promotion of Science. Belgrade is located at the confluence of the Sava and Danube rivers. Belgrade is the largest city of Serbia, the third largest city in Southeastern Europe, after Istanbul and Athens, and among the largest in Danubian Europe. It covers 3.6% of the territory of Serbia, and 24% of the country's population lives in the city. Belgrade is the central economic hub of Serbia, and the capital of Serbian culture, education and science. This project encompasses the territory of the city of Belgrade administrative territory of the City of Belgrade. The administrative territory of the City of Belgrade covers an area of 323,496 ha and is divided for administrative purposes into 17 municipalities (Čukarica, Voždovac, Vračar, Novi Beograd, Palilula, Rakovica, Savski Venac, Stari Grad, Zemun, Zvezdara, Barajevo, Grocka, Lazarevac, Obrenovac, Mladenovac, Sopot, Surčin) In May 2014, exceptionally heavy rains fell on Serbia which caused high intensity flash floods leading to the total destruction of houses, bridges and sections of roads and widespread flooding of both urban area, particularly in Obrenovac, one of Belgrade municipalities.</p> <p>On the other hand, from the whole Serbia, from the whole territory of the Republic of Serbia, Belgrade had the highest increase of mean annual temperatures due to the urban heat island effect: 0.20°C/decade in the period 1949–2009.</p> <p>The General Urban Plan of the Belgrade Administrative Territory:</p> <p><a href="http://sllistbeograd.rs/pdf/2016/11-2016.pdf#view=Fit&amp;page=1">http://sllistbeograd.rs/pdf/2016/11-2016.pdf#view=Fit&amp;page=1</a></p> <p>Official website: <a href="http://www.beograd.rs/en/discover-belgrade/201004-facts-about-belgrade/">http://www.beograd.rs/en/discover-belgrade/201004-facts-about-belgrade/</a></p>
<b>2. Strategies/agendas/reports developed by the local government</b> <i>(please provide max. 3 cases using the criteria below for each example)</i>
<b>Title: Development Strategy of the City of Belgrade</b> (Official Gazette of the City of Belgrade No 47/17 and 55/17)
<b>Timeframe:</b> From 2018 to 2021

<p><b>Main challenges and goals regarding climate change identified:</b> STRATEGIC GOAL 6. is defined as A sustainable, sustainable and renewable city PRIORITY 1. In this strategic goals is Protection and improvement of the quality of environmental factors and MEASURE 2. is defined as: Implement measures to adapt to climate change and resilience of the city</p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b></p>
<p><b>Main actions aimed at climate change adaptation:</b> Two activities in Action plan is defined: 1. Implementation of the Climate Change Adaptation Plan for the City of Belgrade 2. Mapping of climate parameters and identification of the increase in the risk of climate change for the city of Belgrade</p>
<p><b>Main actions aimed at climate change mitigation:</b> MEASURE 1. Reducing emissions of gases from energy and industrial plants and transport, four activities in Action plan is defined:  <ul style="list-style-type: none"> <li>● 1. Realization of the reduction of air pollution emissions from TPP "Nikola Tesla" A and B</li> <li>● 2. Replacement of fossil fuels in the supply of heating plants and boiler rooms</li> <li>● 3. Introducing and increasing the share of rail public transport with the modernization of the fleet</li> </ul>           Increase in the number of users in the central district heating system</p>
<p><b>Are the guidelines for the operationalization of activities related to the climate change provided? If yes, please describe them.</b> Considering that the Climate Change Adaptation Action Plan and Vulnerability Assessment has been prepared for Belgrade, the Strategy states: "Realization of tasks and activities foreseen by the "Climate Change Adaptation Action Plan and Vulnerability Assessment" Reduced greenhouse gas emissions</p>
<p><b>Indicate the SDGs relevant for the region:</b> SDG6, SDG11, SDG13, SDG15, SDG17</p>
<p><b>Is there a need for cooperation between different groups of stakeholders articulated/described?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO</p>
<p><b>If YES, mark the appropriate stakeholder groups and describe them</b></p>
<p><input type="checkbox"/> local government <input type="checkbox"/> civil society <input type="checkbox"/> academia &amp; education <input type="checkbox"/> business</p>
<p><b>Short description of stakeholders:</b></p>

<p><b>Describe the forms of cooperation between stakeholder groups or the ways of their involvement in climate actions (e.g. public meetings, local workshops, focus groups) (maximum 3000 characters including spaces):</b></p> <p><b>Development Strategy of the City of Belgrade</b> (Official Gazette of the City of Belgrade No 47/17 and 55/17) determines the basic vision of the development of the city of Belgrade, capital of Serbia, which includes: the rise of the city of Belgrade to the level of high rank among the metropolitan cities and capitals of Central, East and Southeast Europe, according to the criteria of a sustainable economy and advanced technology, greater territorial cohesion of the city, a higher level of accessibility, fixed polycentrism and decentralization and developed urban identity. The future development of the city of Belgrade will respect two basic principles. The first principle is the introduction of environmental awareness or ideas about the necessity of a sustainable nature and environment as a precondition for development. The second principle is to strengthen the identity of the city of Belgrade and its distinctive geographical and cultural programs as a precondition for a higher level of attractiveness for its citizens, business people, investors and guests</p>
<p><b>Web link to the document:</b> <a href="http://www.beograd.rs/images/file/8482b593767213b8926a3fc6988eca50_1021365819.pdf">http://www.beograd.rs/images/file/8482b593767213b8926a3fc6988eca50_1021365819.pdf</a></p>
<p><b>Strategies/agendas/reports developed by the local government / No. 2</b> <b>Title: Climate Change Adaptation Action Plan and Vulnerability Assessment</b></p>
<p><b>Timeframe: 2015</b></p>
<p>Main challenges and goals regarding climate change identified: Lack of systematic planning in response to climate change impact will lead to increased costs for adaptation measures. Anticipatory strategies and plans including climate change projections must be continuously developed to ensure the adaptation of urban structures to mitigate the impact of a changing climate on the urban living environment. In full awareness of these facts, the City of Belgrade developed this Climate Change Adaptation Action Plan and Vulnerability Assessment within the regional project “Climate Change Adaptation in the Western Balkans” implemented by the German International Cooperation Agency (Deutsche Gesellschaft für Internationale Zusammenarbeit – GIZ). „Climate Change Adaptation Action Plan and Vulnerability Assessment“ is published in the official Gazette of the City of Belgrade, No. 65/15 issued on October 26, 2015.</p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b> In Climate Change Adaptation Action Plan and Vulnerability Assessment, 23 measures have been defined, with detailed description, characteristic locations, responsible institutions responsible for implementing the measure, timely implementation and priority.</p>



Main actions aimed at climate change adaptation:

The action plan includes a list of measures and activities that will be undertaken to adapt to climate change, including responsibilities, time frame, i.e. description of short-term measures and activities (until 2017); medium-term measures and activities (until 2020); long-term measures and activities (until 2025) and prioritization of measures.

[http://www.beograd.rs/images/data/c83d368b72364ac6c9f9740f9cda05ed\\_6180\\_150278.pdf](http://www.beograd.rs/images/data/c83d368b72364ac6c9f9740f9cda05ed_6180_150278.pdf)

Based on the results of the Vulnerability Assessment, the working group explored adaptation options (4th phase), determined the need for action and selected measures (5th phase) to develop an Adaptation Action Plan for the city of Belgrade. The Action Plan contains measures and actions to adapt to climate change, including descriptions of each measure, potential locations, responsibilities, additional specifications (criteria like additional benefits or negative external effects), as well as prioritization of measures (based on specific criteria).

The application of the multi-criteria decision analysis method, which involves the use of four criteria for defining priorities in the implementation of adaptation measures, has revealed:

- Protection from flooding and
- Green infrastructure

are the two highest priority measures for the City of Belgrade. Next in order are high priority measures in different areas:

- establishment and improvement of early warning systems,
- dissemination of information and awareness raising, as well as other institutional and organizational measures,
- urban planning for flood protection,
- construction of retention basins, drainage, saving and reuse of water, establishment and rehabilitation of green areas and streets

Main actions aimed at climate change mitigation:

Climate Change Adaptation Action Plan and Vulnerability Assessment focuses on adaptation measures, but some of the planned measures can also be considered as adaptation measures and mitigation measures at the same time (for example: Type of measure (14): Planning the development of new urban structures must be aimed at forming a compact settlement structure with optimum access functions (trade, services, recreation, etc.) in the vicinity of residential areas, which directly aims to reduce transport needs, and thus emissions of greenhouse gases or Type of measure (16): Building design: Heat adapted design Control indoor air temperature in response to the changing exterior climatic conditions, through improved insulation of buildings, passive cooling, e.g. assisted natural ventilation of buildings,



<p>design of reflecting surfaces, design of semi-permeable pavement materials on roads or large parking, using bright colours on all surfaces, etc.</p>
<p><b>Are the guidelines for the operationalization of activities related to the climate change provided? If yes, please describe them.</b></p> <p>Climate Change Adaptation Action Plan and Vulnerability Assessment</p> <p>Climate change adaptation measures for the City of Belgrade are listed in the document including the explanation of measures, relevant locations, institutions responsible for the implementation, priority level for the implementation, and the time frame. Relevant locations for the implementation of the envisaged measures were determined by the Working Group, based on the estimated vulnerability to the effects of climate change and the overall risk. Implementing institutions are determined on the basis of the existing organization of the City Administration of Belgrade, and the responsibilities that each institution within the organization has. The level of priority for implementation is determined on the basis of four criteria:</p> <ul style="list-style-type: none"> <li>• the expected overall effects of the measures taken, which includes positive effects, and the problems to be solved and/or the consequences to be remedied by the measures foreseen;</li> <li>• the urgency of taking measures;</li> <li>• the expected social effects of the adopted measures, which evaluates the confidence and trust of citizens, which should also lead to better interaction and cooperation between citizens and institutions in critical situations but also in the prevention;</li> <li>• the coverage of the administrative territory of Belgrade.</li> </ul>
<p><b>Indicate the SDGs relevant for the region:</b></p> <p>SDG6, SDG11, SDG13, SDG15, SDG17</p>
<p><b>Is there a need for cooperation between different groups of stakeholders articulated/described?</b></p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO</p>
<p><b>If YES, mark the appropriate stakeholder groups and describe them</b></p> <p>The Working Group, who realized the whole project and who proposed the document was composed of representatives of the city administration, the city public enterprises, relevant institutions, representatives of civil society, representative of Belgrade University and experts. The document is the result of multisectoral WG. The whole process was transparent and the citizens and the interested public had the opportunity to comment and participate.</p>
<p><input type="checkbox"/> local government <input type="checkbox"/> civil society <input type="checkbox"/> academia &amp; education <input type="checkbox"/> business</p> <p><b>Short description of stakeholders:</b></p> <p>On page 45 Annex 1: List of participants in the drafting process. The members of the working groups and the institutions they represent were given</p>

**Describe the forms of cooperation between stakeholder groups or the ways of their involvement in climate actions (e.g. public meetings, local workshops, focus groups) (maximum 3000 characters including spaces):**

The entire drafting process related to the Action Plan was implemented in a multi-departmental manner, having included active participation of all relevant departments of the City Administration of Belgrade, with the support of international and national consultants. During the drafting process, 4 workshops were organized (1. at the very beginning, understanding of the project and the significance of climate change, 2. in the process of identifying extreme events in the past and vulnerability assessment, 3. regional exchange of experiences with countries and cities from the region and 4 for the purposes of defining the adaptation measures).

Draft Action Plan was uploaded on the City of Belgrade official web page so as to enable collection of as many useful suggestions as possible. These comments were later integrated in the document

The project was publicly presented, a publications were produced and distributed. A survey of results was made known about the impact of climate change on the city of Belgrade.

**Web link to the document:**

[http://www.beograd.rs/images/data/c83d368b72364ac6c9f9740f9cda05ed\\_6180150278.pdf](http://www.beograd.rs/images/data/c83d368b72364ac6c9f9740f9cda05ed_6180150278.pdf)

### **3. Main stakeholders in the region (quadruple helix model)**

**a) Local government** (indicate local/regional institutions and their main tasks referring to environmental protection and climate change adaptation & mitigation)

#### **BELGRADE, SERBIA**

**1. Ministry of Environmental Protection** performs state administration tasks related to: basics of environmental protection, protection of waters, protection of air, protection of the ozone layer, climate change etc.

The Ministry of Environmental Protection and United Nations Development Program UNDP, with the support of the Global Environment Facility, are implementing the “**Climate Smart Urban Development Challenge**” (CSUD) project. The project is inviting local government, public and private companies, civil society organizations, research, and academic institutions, and individuals to jointly come up with innovative ideas for decreasing the emission of greenhouse gases (GHG) and to fight climate change. The project aims to create climate resilient local communities throughout Serbia.

**2. Agency for Environmental Protection (SEPA)** is a part of the Ministry of Environmental Protection that performs professional actions considering information about the environment, monitoring, managing the national laboratory etc. (Development, coordination and management of the national information system for environmental protection (monitoring of the state of environmental

factors through environmental indicators, the registry of pollutants, etc. Considering climate change Agency for Environmental Protection in the field of air quality are the following competencies:

- Performs state monitoring of air quality including the implementation of prescribed and harmonized programs for the control of air quality
- Manages information system for air quality in the Republic of Serbia etc
- and working on GHG inventory)

3. **Secretariat for Environmental Protection** is a part of the City of Belgrade administration. Secretariat is responsible for: Continuous monitoring of the situation in the environment (systematic monitoring of air quality, monitoring of river-water quality , water quality, monitoring of pollution levels in land, measurement of noise pollution and ionising and non-ionising radiation); Protection of the natural environment, preservation, utilization and development; **EIA** - Environmental Impact Assessment; **SEA** - Strategic Impact Assessment; **IPPS** - integrated pollution prevention and control - issuing approval and work permits for specific installations; Issues integrated licenses for waste and hazardous chemicals management; Waste and chemical management etc.

4. **The Ministry of Mining and Energy** performs state administration affairs related to: energy; energy policy and energy development planning in the area of electricity, natural gas, oil and oil derivatives; energy balance of the Republic of Serbia; rational use of energy and energy efficiency; renewable energy sources; environmental protection and climate change in the field of energy;

The Division for Sustainable Development and Climate Change in the energy sector carries out tasks related to: developing strategies and plans for environmental protection in the field of energy for sustainable development; application and monitoring of the application of environmental protection measures in the energy sector, especially from the aspect of reducing the impact of the energy sector on climate change etc.

5. **The Ministry of Agriculture, Forestry and Water Management** performs state administration tasks related to: the strategy and policy of development of agriculture and food industry; structural policy and land policy in agriculture; measures of incentives for the improvement of agricultural production; protection and use of agricultural land etc. Republic Directorate for Water is a part of the Ministry of agriculture, forestry and water management. It works on water management policies, multipurpose use of water, water supply, with the exception of water distribution, water protection, implementation of water protection measures and planned rationalization of water consumption.

6. **Ministry of Education, Science and Technological Development** funds several scientific multidisciplinary projects with the idea of finding innovative solutions for adaptation and mitigation to climate change.

**7. Permanent conference of cities and municipalities (SCTM)** presents a community of cities and municipalities. Their mission is to represent local governments and support their development through joint actions of members.

With the project **“Support to local governments in Serbia on the road to EU accession: improving the quality of services, stakeholder dialogue and local administration efficiency”** the organization focuses on environmental protection, improvement of the work climate on a local level and prevention and managing emergency situations on a local level

**8. Republic Hydrometeorological Institute of Serbia (RHMZ)**, in accordance with its competence in the field of monitoring and research of climate and climate change, and international cooperation in this field, worked on National reports on climate change.

<http://www.hidmet.gov.rs/latin/ipcc/index.php>

#### **9. Belgrade Waterworks and Sewerage**

The company performs water collection, treatment and distribution, as follows: raw water collection, tapping, delivery, purification and treatment, water distribution, raw water and drinking water quality control, and exploitation maintenance of water supplying system facilities and devices; discharge of waste and stormwater by sewer network, sewer network maintenance.

In Climate Change Adaptation Action Plan and Vulnerability Assessment, for measures No. 8, 10 and 11 this company was identified as one of implementing agencies.

<https://www.bvk.rs/home/>

#### **10. Belgrade Urban Planning Bureau, PE**

The main activity of the Bureau is elaboration of statutory plans of various levels, covering: development plans for the territory of Belgrade, land servicing plans of particular parts of the town territory – base-line plans and urban designs (most often reconstruction of already built environments, stabilization and legalization, plans of special and specific purposes, development plans of transport and community infrastructure etc.). The major portion of the work of the Bureau goes for elaboration of urban-technical requirements for construction of individual buildings, technical studies and research, urban analyses, location analyses and opinions per individual applications.

[http://urbel.com/en\\_GB/delatnosti/](http://urbel.com/en_GB/delatnosti/)

In Climate Change Adaptation Action Plan and Vulnerability Assessment, for measures No. 1 and 2 this company was identified as one of implementing agencies.

### **11. Public Utility Company “Beogradske elektrane” (District Heating Plants of Belgrade)**

The company performs:

Production and distribution of heat energy for heating and supply of Domestic Hot Water

Transformation of electrical energy for EDB/EMS

Construction and maintenance of heating and gas facilities

Distribution of natural gas in the municipality of Mladenovac

Implementation of District Heating Action Plan (connection conditions, approvals of designs and construction works, acceptance of buildings)

Providing information about failures and planned disconnections (for the Domestic Hot Water disconnections are anticipated, all other are considered as breakdowns).

<http://www.beoelektrane.rs/>

This company has a significant role in the field of climate change for the city of Belgrade in the area of mitigation regarding the scope of work

### **12. Secretariat for Transport**

The Secretariat for Transport is responsible for the following activities:

- establishing an efficient system of transport safety by increasing the safety level of all traffic participants;

- technical traffic regulation on municipal roads and streets in the neighbourhood by determining traffic regimes thus enabling safer traffic with better flow under regular conditions (directing transit, cycling and pedestrian traffic, speed limiting for all or certain categories of vehicles, determining parking and car stopping space, determining roads and streets intended for public transport, etc.) as well as under the conditions of temporary occupation (works, events, promotional activities, supplies, etc.);

- establishing and developing a traffic and geographic information system (GIS) and its exchange with other authorities and legal entities;

- implementation and development of the urban mobility system, champagne from the field of traffic; establishing and developing an efficient system of the city logistics;

- providing the conditions for performing utilities activities related to maintaining and using public parking spaces; etc

<http://www.bgsaobracaj.rs/>

In Climate Change Adaptation Action Plan and Vulnerability Assessment, for measures No. 18 this Secretariat was identified as one of implementing agencies.

### **13. Belgrade Public Transport Company**

The main activity of Public utility company Belgrade transport "Beograd" is the transport of passengers in urban and suburban traffic. In addition to this, the company performs the following activities: advertisements; renting vehicles (city buses, tourist buses, trams, towing trucks); transportation of persons with special needs; technical inspection of the vehicle etc.

[www.gsp.rs/](http://www.gsp.rs/)

One of the main sources of air pollution in Belgrade is traffic. Over 800 buses are in urban transport. According to some calculations, 1 diesel bus in city transport annually consumes 40,000 liters of diesel and produces 100t CO<sub>2</sub>! This company has been identified as one of the major polluters responsible for the emission of greenhouse gas emissions. As one of the measures in the urban transport system, 5 electric buses were introduced (July 2016). The activity was realized with the funds of the Budget Fund for Environmental Protection.

#### **14. Belgrade City Parks**

"Zelenilo-Beograd", is a Public Utility Company that performs activities for the organization and maintenance of public green spaces, maintenance of public sanitary facilities, associated production and repairs of park, sports and other equipment, flower production, ornamental plants and filling of seedlings in park forests .

In addition to the aforementioned utility activities, the company also performs activities that are in the function of communal activities: arranging new parks, green and recreational areas, in a smaller extent, trade in flowers, fruit material, seeds, plant protection products, etc., the development of planned, investment and technical documentation for the arrangement and reconstruction of existing parks, green and recreational areas.

<https://www.zelenilo.rs/>

In Climate Change Adaptation Action Plan and Vulnerability Assessment, for measures No. 1,2,3,4 and 5 this company was identified as one of implementing agencies.

#### **15. Belgrade Public Health Institute**

The City Public Health Institute is a public health, health promotion and expert methodological health institution established by the Republic of Serbia for the level of the city of Belgrade, which, in accordance with the law, performs social, medical, hygienic, ecological, epidemiological and microbiological activities.

At the same time, it ensures the implementation, monitoring and implementation of the public health policy of the Republic of Serbia on its territory.

Institute deals with the identification, monitoring, reduction and elimination of risk factors related to behavior and the environment with an assessment of their impact on human health.

[www.zdravlje.org.rs/](http://www.zdravlje.org.rs/)

This company has a significant role in the field of climate change for the city of Belgrade in the area of Awareness raising and behaviour change, connecting public health with climate change, regarding the scope of work.

#### **CROATIA:**

**1. Croatian Meteorological and Hydrological Service (DHMZ)** is a government body in Croatia. It supports the economic and sustainable development of Croatia and assists in the protection of lives, goods and the environment by providing information on the following: weather, climate, hydrological and ecological phenomena and climate extremes with the aim of mitigating their effects. They worked on numerous projects like:

- **DriDanube - Drought Risk in the Danube region** tries to increase the capacity of the Danube region to manage drought related risks. The project aims at helping all stakeholders involved in drought management to improve the drought emergency response and prepare better for the next drought.
- **A pan-European framework for strengthening Critical Infrastructure resilience to climate change (EU-CIRCLE)** is a project that is funded by Horizon2020 EU's new research and innovation programme, with an aim to assess the resilience of interconnected and interdependent critical infrastructures to climate change.

**2. The Environmental Protection and Energy Efficiency Fund (EPEEF)** is the central point for collecting and investing extra budgetary resources in the programmes and projects of environmental and nature protection, energy efficiency and the use of renewable energy sources. The activities of the Fund comprise the tasks related to financing of the preparation, implementation and development of programmes and projects and similar tasks in the field of conservation, sustainable use, protection and improvement of the environment, and in the field of energy efficiency and the use of renewable energy sources.

**3. The Ministry of Environmental Protection and Energetics** works on meeting the requirements for sustainable development and activities related to the protection and preservation of the environment and nature in accordance with the sustainable development policy of the Republic of Croatia, tasks related to water management, and administrative and other activities in the field of energy.

**4. The Climate Policy Directorate (GU CLIMA)** is headed by the European Commission in dealing with climate change at the EU and international level. The Directorate works on designing and implementation of climate policies and



strategies with a leading role in international climate negotiations, applying of the EU Emissions Trading System (EU ETS), controlling national emissions from EU Member States and encouraging the introduction of technologies with low levels of carbon emissions and adaptation measures.

**5. Administrative Department for Physical Planning, Civil Engineering and Environmental Protection**, County of Primorje and Gorski Kotar, is providing key institutional, formal and legal framework in adopting and fostering novel climate regulations, adaptation measures and EU recommendations and directives implementation and acceptance. It is based in the (university) city of Rijeka where CPN has established strong partnership and active relations with multiple local actors.

[www.pgz.hr/EN](http://www.pgz.hr/EN)

#### **MONTENEGRO:**

**1. The Ministry of Sustainable Development and Tourism** has a department dedicated to climate change, climate adaptation and mitigation. The department worked on national reports on climate change, as well as the project “**Climate Change adaptation through Flood Risk Management in the Western Balkans (CCA WB II)**”.

The Ministry has its own website on climate change with information about climate change adaptation and mitigation available for the public.

**2. The Ministry of Science** is strongly supporting sustainable development, UN's SDGs framework and innovative, collaborative and multidisciplinary climate actions. Through the process of proposing, preparing and formally adopting the Smart Specialisation Strategy (S3), it emphasises and integrates sustainability, green and circular economy, and local resources as key elements of national R&I development and related, targeted domains / areas.

<http://www.mna.gov.me/en/ministry?alphabet=lat>

**3. The Environment Protection Agency of Montenegro** carries out expert and related administrative tasks in the field of environmental protection, like : Environmental monitoring, give out permits, performs analysis, makes reports etc. The Agency cooperates with international bodies and organizations of other countries dealing with environmental protection, in particular with the European Environment Agency, the International Atomic Energy Agency, and participates in professional networks within the European Union, as well as with similar agencies in other countries.

The Agency works on numerous projects like yearly and monthly reports on air quality and the state of the environment.

**4. The Department of Hydrometeorology and Seismology** is a state institution that performs monitoring the changes and conditions in the atmosphere and hydrosphere.

The Environment Department consists of two organizational units: the Chemistry Center and the Department of Biology, which expertly cover the media of air, water and soil. Programmatically and methodologically, the Sector relies on appropriate programs of the World Meteorological Organization (SMO) and participates in them at the local level.

#### **BOSNIA AND HERZEGOVINA:**

**1. Ministry of Physical Planning, Construction and Ecology** carries out state administration affairs related to improvement of work in spatial planning, construction and ecology through preparation and work in the Commissions for drafting and proposing laws and other regulations from the line of jurisdiction.

The project **Strategy of adaptation to climate change and low gas emission** was performed together with the **Ministry of the Environment and Tourism**.

**2. The Ministry of Scientific and Technological development, Higher Education and Information Society** provides a legal and administrative framework for the scientific and research work in the Republika Srpska entity of the Bosnia and Herzegovina.

<http://www.vladars.net/eng/vlada/ministries/MST/aboutministry/Pages/default.aspx>

**3. Federal Ministry of Education and Science** provides a legal and administrative framework for the scientific and research work in the Federation of Bosnia and Herzegovina entity of the Bosnia and Herzegovina.

<http://www.fmon.gov.ba/>

#### **ROMANIA**

**1. The Romanian Ministry of Environment** promotes a unitary and coherent environmental policy having as objectives and main investment priorities:

- the integration of environmental requirements in sectoral strategies,
- monitoring and reducing climate change risks,
- flood risk management and prevention of disasters associated with drought,
- protection of biodiversity,
- water sources protection and rehabilitation,
- integrated waste management,
- coastal infrastructure rehabilitation of the Romanian coastline,
- environmental and economic reconstruction of the Danube Delta,
- raising public awareness, strengthening cooperation with environmental NGOs.

The domains covered by the Ministry are: water, water scarcity and drought, climate change, waste, biodiversity, conservation and protection of natural areas, noise, industrial pollution control, sustainable development, forest management, meteorology and hydrogeology.

The ministry worked on the project “**MOSYM - Modernisation of a system of measurement, storage, transmission and dissemination of hydrological data to decision makers at various levels**” that intended to test and demonstrate the effectiveness of a computerised system able to collect, transmit and process the information related to flood risks and effects, compared with conventional methods. The system would consist in: - automatic measurement (sampling) stations for water levels; - dedicated transmission lines and; - software to calculate and assess the flood risks and effects. The central and local authorities were expected to make use of this computerised tool for physical planning and for more effective emergency actions in the case of floods. The area most affected by floods were chosen to implement the system: Mures, Arges and Siret River Basins.

## **HUNGARY**

**1. Ministry of Rural Development** is a central governing body for environment and nature protection and water affairs. The Ministry carries out the special fields’ sectoral, expert management and regulatory tasks in the areas of environment and nature protection, water management and meteorology. The Ministry’s responsibilities include policy development, tasks connected to governmental work and the continuation of the ever far-reaching international collaboration. The Ministry’s field institutions – environmental and water authorities, national park managements – attend to the first degree tasks of the authorities. Environment and nature protection second degree tasks of the authorities are carried out by the National Environment and Water Authority.

**2. The National Institute for Environment (NeKI)** is a government background institution supporting the work of the Ministry of Rural Development in the fields of water management, environment and nature conservation. In the field of integrated water management planning, the institute is coordinating the development and maintenance of the River Basin Management Plans in Hungary, according to the requirements of the EU Water Framework Directive. These tasks include hydrographical, water quality and ecological monitoring, water resources and water use data collection and data management. In connection with water utilities we are coordinating nation-wide activities like the protection of vulnerable groundwater resources, the drinking water quality improvement programme (as required by the EU Drinking Water Directive), and the development projects of wastewater collection and treatment (as required by the EU Urban Wastewater Treatment Directive). Moreover it is also completing the mandatory reporting tasks towards the various EU organizations. With regard to environmental analysis and strategy, we are assisting the Ministry of Rural Development in the preparatory tasks of

developing new legislation related to the various environmental elements and issues, such as air pollution, noise, waste management, environmental remediation, emission control, climate change etc. In the field of regulation and impact assessment, the Institute providing expert advice to the government regarding the expected impacts of envisaged legislation alternatives to various stakeholder groups in the society and economy, supporting the initial steps of high level policy making and regulation planning.

## **ALBANIA**

**1. The Ministry of Tourism and Environment** is a department of the Albanian Government in charge of regulation concerning the environment, the sustainable use of natural resources, promotion of renewable resources, protection of nature and biodiversity, sustainable development and management of forestry and pastures, and the quality monitoring of water resources.

**2. The National Environment Agency (NEA)** is a legal, public and budgetary institution under the Minister of Environment. Its main duties and responsibilities are related to monitoring the state of environment throughout the country based on the main environmental indicators and components in: air, waters, soil, forests and biodiversity. NEA is also the national institution in charge with the building up and managing the National Environmental Information System and National Forest Inventory.

The Agency works on the project Climate change adaptation in the Western Balkans (2012-2018) through which 9 Hydro-meteorological stations have been purchased and installed in the Albanian part of the Drin Basin to enable early flood warning in the Drin-Buna catchment area.

**b) Civil society** (population; voter turnout in the last elections related to the pilot region; number of NGOs and CSOs; indicate NGOs/CSOs acting for the environment and/or climate change adaptation and mitigation)

## **BELGRADE, SERBIA**

The population of the city of Belgrade is 1,37 million citizens as of 2016.

In the last presidential elections in Serbia in 2017. the voter turnout in Belgrade was 56,49%.

In Serbia there are 15,600 registered NGOs/CSOs.

**1. Belgrade Open School (BOS)** is a nonprofit educational civil organization. BOS's department "Energy, climate and environment" contributes to the responsible

environmental policy based on public participation in decision-making and the partnership between civil society and public institutions.

BOS had several environmental projects performed through involving the public:

- The project "**CO-SEED: Civil society acts for environmentally sound socio-economic development**" has a goal to improve the management of natural resources. It tries to introduce a sustainable way of using natural resources with better law-making, a transparent process of decision-making that involves active groups of civil organizations. The members of the project consortium are WWF from Turkey, Green Home form Montenegro, INCA form Albania, Serbian collective for protection and studying birds, Dinarica collective from Bosnia and Herzegovina, and advisory help was given by WWF Adria from Croatia.

- The project "**Involving civil organizations in the process of climate change adaptation in local communities in Serbia**" is a project that worked on improving the importance of civil organizations in climate change adaptation. The goals were improving 30 civil organization and their capacity for climate change adaptation, Introducing the organizations with the goals, suggesting partnerships of local actors, initiating networking processes between civil organizations in the field of climate change. The project was aimed at civil organizations in the field of climate change adaptation that have the capacity to be involved in the process of decision making and can enhance the process of climate change adaptation in their local communities.

2. **RES foundation** engages, facilitates and empowers efficient networks of relationships among key stakeholders in order to provide public goods and services for resilience. Res focuses on Stakeholder coordination, Climate change, Energy poverty, Decarbonizing development, Circular economy, Public goods advocacy, Renewable energy, Energy efficiency in Serbia, Western Balkans and Southeast Europe.

RES foundation executed a number of projects regarding climate change:

- The project "**Monitoring the climate policy of the Republic of Serbia: Quality of Climate – Can we do more?**" focused on supporting low-carbon development in Serbia and encouraging and informing public discussion on climate change and energy policy. The RES foundation also targeted and mobilized stakeholder groups to participate in the process of National Climate Change Strategy formulation. During this project the RES foundation partnered with Standing Conference Of Towns and Municipalities and Serbian Chamber Of Commerce. The project communicates with the Ministry of Agriculture and the Environment of the Republic of Serbia which coordinates the strategy formulation process.

- The objective of the project "**Climate Friendly Energy Future of Serbia**" is to inform national energy and climate planning processes in general, and process of National Climate Change Strategy in particular on decarbonization options for

Serbian energy sector, through engagement with the academia and energy professionals.

Inclusive stakeholders' consultation process led by RES foundation facilitated collection of academia and energy professionals' attitudes, visions and knowledge.

- The project "**Climate Friendly Energy Future of Serbia II**" is advancing cleaner air and a healthy climate to the benefit of the public. The project aims to support the process of National Climate Change Strategy making.

3. **Coalition 27** is a platform that allows for civil organizations to participate in the process of adopting standards and values of EU in the field of environmental protection in Serbia. Members of the coalition are involved in the process of making regulations and they participate in public events where they consider the most important items in the field of environmental protection. Its members are: Belgrade Open School, CEKOR, Center for improving the environment, GM Optimists, Young researchers of Serbia and WWF.

Their vision is a preservation of the environment, low carbon economy, efficient and fair use of natural resources in Serbia.

Coalition 27 follows and contributes to the process of adjustment and using the policies and regulations in Serbia with the EU laws considering the environment and climate change.

It encourages the involvement of the public in the negotiation process with the EU and suggests different solutions which will contribute to the improvement of the environment and life quality.

4. **The Ambassadors of sustainable development** are a non-profit organization working on the development, popularization and the promotion of scientific research in the field of sustainable development, environmental protection and education.

- The project "**Development of ENV.net in Western Balkans and Turkey: improving the influence of the people on the process of reforming the environmental sector as support for getting closer to joining the EU**" (Short "**ENV.net project**") is oriented at raising awareness of different civil organizations and the people for improving their impact on the reforming process of the environmental sector. ENV.net is made up of seven partner organizations from the EU, Western Balkans and Turkey.

- "**Eco-Schools**" is the largest global sustainable schools programme. The programme's greatest achievement is arguably the fact that it produces generations. In Belgrade there are 12 Eco-Schools Supported by the Ministry of education, science and technological development. Patron of the international program Eco-School in Serbia is the Ministry of health.

- "**The Blue Flag**" project for beaches, marinas and boats is an international program for protecting rivers, lakes, coastal areas and seas. The Blue Flag

programme is the aim of connecting the public with their surroundings and encouraging them to learn more about their environment.

- **“Parliamentarism and Environmental Protection”** is a project that was organized due to the desire to discuss the participation of citizens, students, parents, relevant institutions and institutions in democratic processes of importance for environmental protection.

5. The mission of **the Arhus center** is putting the Aarhus convention to action. A The main items of Aarhus convention are:

1. Availability of information about the environment to everyone
2. The right to participate in the decision making about the environment
3. The right for legal protection if the first two items are not respected

6. **Supernatural** is an environmental and social entrepreneurship CSO based in Belgrade. As one of the leading CSOs in environmental protection in Serbia, Supernatural is a member of United Nations Global Compact, Danube Competence center and partner of WWF, Ministry of environmental protection of Republic of Serbia, City of Belgrade, and other renowned institutions. Supernatural CSO main projects are: **Supernatural Park and Supernatural Festival**.

7. **WWF** is a worldwide organisation that works on protecting biodiversity and lowering the carbon footprint.

- The project **“Climate Forum”** was started as a part of a regional project **“Forum of southeast Europe on climate change adaptation”**. The project will involve civil organizations from Serbia, Croatia, Macedonia and Montenegro which will work on adapting to climate change and solving different problems connected to climate of southeastern Europe.

8. **Center for the environment** is an NGO dedicated to protecting and improving the environment, fighting for sustainable development and including the public in decision making in the field of environmental protection. The Center for the environment works together with the Arhus center on implementing the Arhus convention on the territory of the Balkan countries. The center has a number of projects on the subject of climate change, energetics and the Arhus convention active in different countries like Serbia, Montenegro and Bosnia and Herzegovina.

- The projects **“Stop the dirty energy, because the future is renewable”** and **“Policies of sustainable energy in southeastern Europe”** work on improvements in the field of Energetics and Climate change;

- The project **“The centers for informing and involving the public in the field of environment”** works on implementing the Arhus convention and making the information available for the public.



9. **One Degree Serbia** is an NGO that works in the field of environmental protection, specifically on climate change mitigation. Its goals are:

- Actively involving Serbia in global activities of mitigating the climate changes that have negative a negative impact on the quality of life;
- Transforming the non efficient and ecologically irresponsible economy to a low carbon economy;
- The use of measures for mitigation of irreversible climate changes on a national level and making resilient communities which can survive the changed climate;

Projects:

- The project “**Forests and Climate**” aims at developing a method for evaluating areas for afforestation in altered climatic conditions.
- The project “**Alternative INDC**” is implemented by the organisations Young Researchers of Serbia and One Degree Serbia. The main goal of this project is to create an ambitious, fair and transparent alternative Intended Nationally Determined Contributions (INDC) for the Republic of Serbia.
- The project **development of Innovative Business Models for Solar Energy** that introduces a new business model for improving the renewable energy market in Serbia, in particular the solar power market. The pilot model will be promoted by constructing a pilot solar power plant (installed capacity of 100 kW) based on a model that enables the plant to operate without government subsidies. Different business models will be considered for promotion of solar energy market: selling electrical energy on the marker, use of solar energy for supplying of irrigation system, use of solar energy for the local community needs. It also promotes the establishment of the Climate Change Training Center to train the interested parties on the use of renewable energy sources and their advantages.

10. **The right for water** is a network that gathers organizations and individuals united to fight for access to water. The organization involves citizens and local communities in the process of decision making about water resources, and fights against the privatization of water and water resources. The organization advocates changing of constitution which would guarantee sustainable supplying of households with high quality drinking water in a nonprofit way.

11. **Center for the promotion of the environment** is a civil organization with the goal of influencing, encouraging and assisting the protection of natural heritage and ensuring a fair distribution of natural resources through the application of postulate for sustainable development and green values. The center works on numerous projects like:

- **Green fest** - International Green Culture Festival is an inclusive manifestation dedicated to ecology and environmental protection, which through the educational,

artistic and activist programs and products stimulates the culture of life in accordance with the "green" values

- **BG Map** is an innovative multimedia bilingual platform of urban and protected natural sites of Belgrade.
- **The Climate Forum** is part of the South East Europe Network for Adaptation to Climate Change, which brings together over 80 civil society organizations from Macedonia, Croatia, Montenegro and Serbia.

12. **Ulice za bicikliste** is an independent organization committed to improving biking conditions and increasing the visibility of cyclists in highly-trafficked areas of Belgrade.

Ulice za bicikliste was created on the basis of the monthly **Critical Mass events**. The activities take place locally, based on the interests and engagement of the community.

The goals of the organization Ulice za bicikliste include changing the mindset of the citizens of Belgrade. However, developing a pedestrian and bike-friendly infrastructure will require a great change in the minds of local authorities.

The organization wants to change the city's development policy to achieve Belgrade for people, not for cars, pedestrianized squares, bicycle paths, lanes and parking lots, city centre without polluting traffic, better public transport and public bicycles as a public transport subsystem, etc.

13. **The National Electric Vehicle Association** is an NGO seated in Belgrade with branches in Novi Sad, Kragujevac and Niš. The Association promotes the development, sale and use of electric, hybrid, fuel cell, light e-vehicles and autonomous vehicles in Serbia, as well as the construction of a supporting infrastructure, with a view to protecting the environment, stimulating and improving energy efficiency and increasing traffic safety.

The project **E-Mobility Cloud Center** aims to develop a cloud application/ open connection network, the e-Mobility Cloud Center, which will contain information about the exact location of e-vehicles charging stations in Serbia that use renewable energy sources -RES (green chargers). In this way, through iOS, Android and web apps, the software would serve as a "trip planner". The information shared would also include the distance and navigation instructions to the nearest charger, characteristics of the charger and its plugs, working hours, booking possibilities, payment methods and other useful data. Moreover, three additional electrical chargers will be installed (each of 22 kW), which will be 100% clean green energy based on RES.

**CROATIA:**

**1. Nobilis** is a non-governmental and non-profit organization, working on environmental issues and institutional development of NGOs in Northern Croatia. Nobilis is one of the most active environmental NGOs in Croatia. Main activities are environmental education and raising awareness for various target and age groups, sustainable development and eco-tourism in the region, and publishing. They worked on numerous projects like **The Open Doors Program**, through which they conduct educational workshops, lectures etc.

**2. The Green action** wants to contribute to the improvement of environmental protection system at the local, national and global level by encouraging changes through campaigns, non-violent direct action, projects, public participation in decision-making, etc. The aim of their work is to protect the environment and nature, and encourage the development towards a low-carbon society while being guided by the principles of social justice and systemic change.

**3. DOOR** is a civil society organization of experts devoted to the promotion of sustainable energy development. The organization worked on numerous projects with goals ranging from climate change mitigation, encouraging citizens' participation in sustainable energy policy-making, improving education about renewable energy sources and alleviating energy poverty.

**4. Eko Kvarner** is a unique NGO in Croatia (and elsewhere across South-East Europe) which acts as a multi-level platform on the island of Krk, and nearby islands and mainland. It serves as a meeting point of local people, research community and international activists. Its work is focused on sustainable development and environment protection, and it includes different missions, actions and approach, including strong public campaigns, active protests and political engagement on local level.

<http://www.ekokvarner.hr/index.php>

**5. Croatian Climate Change Panel** is an "ad hoc" organised group of experts, initially gathered in 2014 with a goal to assist national authorities in their preparations for the summit in Paris in 2015 (The 2015 United Nations Climate Change Conference). It consists of around 30 diverse experts who are having at least once in a month consultation meetings, either in the capital city (Zagreb) or on the Krk island .

**6. Zero waste shop "Spajza"** is a zero-waste, all natural and eco friendly store, first of its kind in Rijeka, offering only local (national) products, quality food and no-plastic accessories. It also provides valuable assistance, networking and educational

support for its colleagues, customers and producers, while participating in several local projects on sustainability and clean production.

<https://www.facebook.com/spajzarijeka/>

#### **BOSNIA AND HERZEGOVINA:**

**1. The Center for Ecology and Energy Tuzla** is a non-governmental organization that encourages sustainable development in the field of environmental protection, utilizing a combination of educational and practical work with cooperation at all levels of society and investment in the people's resources.

- The project "**Air Monitoring in Tuzla**" was organized to achieve clearer and timelier information about air quality for the citizens. Five air quality monitoring stations were installed all around the city of Tuzla. Citizens of Tuzla receive information about air quality once a month through the media.

- The project "**With the local community for cleaner water sources**" had a goal of the to protect Modrac Lake through a combination of education over environmental issues for the local inhabitants and their own active participation in eco-activities for the area.

- The project "**Natural-Filter Wastewater Treatment in Tuzla Canton**" was firstly executed to raise awareness about wastewater and water conservation. Specifically the project set out to present a real-life example of an eco-friendlier alternative for how water can be treated without traditional, environmentally-unfriendly chemical methods.

**2. New Wave Youth Club** is an NGO that organized the first Eco Centre in Bosnia and Herzegovina, with the aim of reintroducing griffon vultures to their natural habitats.

**3. Eco Action** is a non-governmental organization based in Sarajevo. The goals of the organization are environmental care and education through training programs and conferences in the field of preservation and protection of the environment.

**4. Association for research and protection of biodiversity** is a citizen initiative from Banja Luka. This is an NGO that works on ecology and biological research, improving the environment, education people and involving people in decision making in the field of environmental protection.

**5. Aarhus Center Sarajevo** supports and promotes the implementation of the Aarhus Convention in the City of Sarajevo and indirectly in Bosnia and Herzegovina.

**HUNGARY:**

**1. ENERGIAKLUB** is an NGO that works on energy efficiency, renewable resources, climate protection, conventional energy resources and energy policy. The projects are executed in collaboration with numerous European institutions.

**ALBANIA:**

**1. The Institute of Nature Conservation in Albania (INCA)** is a Non-Governmental and non-profitable organization (NGO), it's main goal is to facilitate and help the professional capacity building through training and participatory approach, safeguard of environment, conservation of the natural environment treasures and rural development in the country, protection of flora and fauna, the assessment of biodiversity, the management of protected areas, river basin management, raising awareness of the public and policy and decision makers, and undertaking conservation measures when possible and appropriate to protect species and their critical habitats.

**2. The Institute for Environmental Policy (IEP)** is a non-governmental, non-profit environmental organization founded in November 2008. IEP is dedicated to enhancing environmental sustainability in Albania through policies, projects, programs, awareness raising, development and dissemination.

IEP was founded by a group of young experts committed to bringing about positive change after years of environmental degradation and negligence in Albania. IEP members are highly motivated and have the required experience and education to influence the Albanian society towards enhancing environmental protection and sustainable living

<http://iep-al.org/>

**MONTENEGRO:**

**1. Green home Montenegro** is a non-governmental, non-profit and non-political organization. The organization is dedicated to environmental protection and

environmental improvements that foster a sustainable future and lead to social and economical improvements in the communities at national level. Green home Montenegro executed numerous projects concerning climate change like “**Month of climate change**” and “**Climate change, the role of the civil society and local organisations**”.

**c) a) Academia & Education** (number of students; indicate the most important research institutions/universities & basic directions of their research referring to climate change adaptation and mitigation; number of pupils from primary and secondary schools; indicate institutions promoting science or being involved in science communication)

**BELGRADE, SERBIA**

Academia

1. **The Faculty of Forestry, Belgrade University**, as an accredited scientific-research organizations, actively participates in the implementation of a number of domestic and international projects. In the area of climate change.

The Faculty has two national projects:

- Research on climate change and its impact on the environment – impact monitoring, adaptation and mitigation. The goals of the project are:

1. Development of the Regional Earth Modeling System (REMS)
2. Development of a new model for controlling the environment and preventing the spread of invasive species and tropical diseases;
3. Determining the impact of climate change on the soil and the quality of the yield of fruit;
4. Using renewable energy sources to reduce CO2 emissions;
5. Measuring the impact of climate change on the frequency of drought and flooding
6. Developing an action plan in the case of torrential floods;
7. Determining the effect of ornamental and invasive plants on climate change in cities;

- Research on the socio-economic aspects of risks due to climate change in forest areas

2. **Faculty of Architecture, Belgrade University** is the biggest higher education institution for architecture and urban studies in the Western Balkans Region. The studies structure consists of several studies programmes at different academic levels:

Undergraduate studies, Master (graduate) studies, Single-cycle-5-year studies programme integrating Undergraduate and Master studies in a single cycle, Specialist study and Doctoral studies.

Scientific studies are focused on two main areas of study: architecture and urbanism, including numerous specific areas, such as: the study of architecture, technology and management in architecture, bioclimatic and environmental architecture, structural systems, history and theory of architecture, the study and preservation of the built heritage. The main research field in artistic studies is architectural and urban design.

The Faculty of Architecture, Belgrade University, offers education considering climate change and the environment through workshops, elective courses, studio projects, and lectures with following topics:

- Understanding climate change and its effects on urban planning and architectural design
- Innovative methodological approach that include topic of climate change
- Energy efficient and climate resilient buildings
- Adapting the urban areas to climate change
- The new models of inhabitation for the people affected by the floods and heat island
- Resilient cities and urban disaster risk management
- Localization of sustainable (urban) development goals
- Integrative approach to urban development – integration of sustainable development goals
- in planning, design, regulation, and implementation.

The Faculty of Architecture is involved as a holder and partner of several National research projects.

One of these projects, launched in 2011 entitled “**Studying climate change and its impact on the environment: impacts, adaptation and mitigation**”, researches the impacts of climate change on the urban environment. It is a widely-established collaboration between several dozen state scientific institutions financed by the Ministry of Education and Science of the Republic of Serbia in the framework of integrated and interdisciplinary research for the period 2011-2019.

A number of conferences, exhibitions and guest lectures were organized at the Faculty, and in cooperation with leading universities in Europe, and worldwide spread-out further enhance the research and teaching-learning process.



3. **Institute for Meteorology, Faculty of Physics, Belgrade University**, is working on climate scenarios, as well as analysing financial and technical needs for education and raising awareness.

4. **Institute for Biological Research, Belgrade University** has a number of projects concerning environmental protection.

- The project “**Evaluation of ecophysiological and genetic plant diversity in forest ecosystems**” contributes to a better understanding of the plants' adaptive potential to survive in adverse environmental conditions.

- The Research team of the Department of Hydroecology and Water Protection works on developing new methods of tracking and assessing changes in environmental quality. The team members and their activities contribute to the implementation of the EU Water Framework Directive in Serbia, Balkan and the Danube River Basin.

5. **The Institute for multidisciplinary research, Belgrade University** has a dedicated department for the environment.

- The project “**European Network for Environmental Citizenship**” is a project that the department for biology and the protection of land water, is a part of. The main goal of the project was improving the scientific cooperation in the field of raising awareness about the environment. The focus will be on different levels of formal and informal education which could lead to raising awareness about ecological citizenship.

- Green technologies development projects: biofuel and photobioreactor

- The project LIQUID3 stands for a brand new biotechnological solution for air purification and CO<sub>2</sub> emission reduction in urban areas (at the source of emissions). The concept combines the technology of large photo-bioreactor systems that are used in the processing of industrial exhaust fumes (such systems do not fit into urban environments given their size and design), with compact models of photo-bioreactors that are used for commercial production of microalgae biomass and specific products, in this way combining the energy sector with agriculture. Photo-bioreactors are systems for cultivation of microalgae – photosynthetic organisms showing 10–50× higher CO<sub>2</sub> fixation efficiency compared to terrestrial plants. The capacity of LIQUID3 with a footprint of only 3 m<sup>2</sup> for CO<sub>2</sub> fixation is equivalent to 400 m<sup>2</sup> of lawns, resulting in more efficient use of public land. Financial viability of LIQUID3 is based on the production of microalgae biomass, which is used as fertilizer for public parks and for biodiesel production. Attractive LIQUID3 design will help to promote public awareness on the importance of innovative technologies and renewable energy sources for the sustainability of urban communities. This would be a pioneering venture in Serbia, given that it can create a momentum for microalgae production in commercial purposes.

6. **Institute for nuclear sciences Vinca, Belgrade University**, is the most prominent multidisciplinary research institute in the Republic of Serbia. Research at the Institute covers the following areas: physics, chemistry, biology, power engineering and technology, radiation and environmental protection, production of radiopharmaceuticals, accelerator science, and nanoscience.

- The project **“CITI-SENSE”** involved citizens in assessments of air and environmental quality to empower them to participate in environmental governance. The people were targeted in nine cities - Barcelona, Belgrade, Edinburgh, Haifa, Ljubljana, Ostrava, Oslo, Vienna and Vitoria. CITI-SENSE has been working for and with people to share objective and subjective information about air quality, and acoustic and thermal comfort.

7. **The institute for water management “Jaroslav Cherni”** works on providing a scientific base and expert solutions for better management of waters as a way of improving health and the environment.

- The project **“Danube Floodplain - Reducing the flood risk through floodplain restoration along the Danube River and tributaries”** works on updating the floodplain areas inventory and their ranking. The project is supported by Interreg - Danube Transnational Programme.

8. **BioSense Institute, Novi Sad University**, cross-fertilizes two sectors in Serbia: ICT and agriculture. Multidisciplinary research is performed in the fields of micro and nanoelectronics, communications, signal processing, remote sensing, big data, robotics and biosystems, with a common goal to support the development of sustainable agriculture.

- The project **Biosensing technology and global system for long-term research and integrated management of ecosystems** is an interdisciplinary research extends to the entire territory of Serbia through the development of more highly instrumented sites for monitoring natural (terrestrial and aquatic) and anthropogenically altered (agricultural, forest, urban) ecosystems.

9. **The institute Mihajlo Pupin** is founded on scientific and expert knowledge in a wide array of fields like: electronics, information technology, telecommunication, robotics etc.

- The project **“Robotics of service to the Agriculture”**, developed a system that is optimal for land, water and energy management that replaces the use of fossil fuels with renewable energy sources, and contributes to the reduction of GHG emissions. This approach allows the farmer to produce healthier food, because the additives for soil are used only as much as the land needs.

- The project **Development of Innovative solutions in the Area of Smart Land Management in Agriculture** is performed in partnership with **Institute of Agricultural Economics, Belgrade** and **Agricultural holding Nikola Loncar Municipal**

**Assembly of Stara Pazova** . The project promotes a multidisciplinary approach to smart and economically sustainable farming by applying an innovative technical solution that replaces the use of fossil fuels with renewable energy (solar energy and wind power). On a pilot agricultural holding of 10 hectares, the project will introduce a remote control system for the optimal management of natural resources (energy, soil, water). Therefore, the long- term GHG reduction impact is significant. The project will also organize workshops for all entrepreneurs who are interested in introducing this innovative system into their agricultural holdings.

The institute executed a few projects considering the environment:

- VIEW system for surveillance and management of the Belgrade water system;
- VIEW system for protection against floods and early alerts on the river Drina and Prvonek dam;
- Managing the “Smart” buildings - specialized use of the VIEW systems for optimizing the use of electricity.

**10. The Institute of Forestry, Belgrade University**, executes basic, applied and development research in the field of forestry and environmental protection and improvement.

The institute has a number of projects contributing to sustainable development and environmental protection like:

1. Monitoring and Assessment of air pollution impacts and its effects on forest ecosystems in The Republic of Serbia - Forest condition monitoring;
2. Development and the possibility of applying adaptive measures in order to strengthen the resistance of natural ecosystems to climate change in national parks and other protected natural resources;
3. Revitalization of Topčider river by biological systems for purification of polluted waters;
4. Morphological anatomical and physiological changes on woody species in Belgrade parks as an indicator of the state of the environment.

**11. Institute for nature conservation of Vojvodina province** works in the field of Environmental protection and conservation of nature. It performs collecting and processing data on nature and natural values, monitoring of the condition and assessment of the preservation of nature and degree of vulnerability of geoscientists, wild species and their habitats, habitat types, ecosystems, ecologically significant areas, protected areas, ecological corridors, ecological networks and areas, developing protection studies to determine the values of areas proposed for the protection and management of those areas etc.

The institute together with Sava Parks Network is working on a project called “**Freedom for Sava**”. It is planned to conduct feasibility studies of the rehabilitation projects of the Sava River and its floodplain. In some parts, the river has been altered to human activities, and return to the natural state would mean the return of valuable habitats, and therefore a better flood defense. This would also lead to improved quality and lower risk of loss of drinking water.

**12. Futura Institute** is a scientific research institute working on basic, developmental and applied research and consulting.

The research is used for getting practical and useful information that will make an impact on everyday lives.

The Institute includes specialised centers:

- CORR (Center for sustainable rural development);
- CERM (Center for bioremediation);
- CEB (Center for ecological safety);
- CER (Center for resource economy);
- CIE (Center for integrative ecology);

The institute worked on projects like “**Rational using and bioremediation of soil by breeding plants for industrial processing**” and “**Studying climate changes and their impact on the environment - tracking the changes, adaptation and mitigation**”

**13. The Institute of Physics Belgrade**, a National Institute of the Republic of Serbia, is a research institution dedicated to the study of physics and related disciplines.

The project “**Biosensing of the technology and the global system for continuous research and integrated management of the ecosystem**” creates a basis for understanding the Ecosystem as well as a precondition for progress in areas of the environment and human health, ecology, agriculture, forestry. The interdisciplinary approach to research enables the development of expert decision support systems and integrated ecosystem management.

The project “**Active biomonitoring of air pollution in urban environments using moss**” detects pollution levels in urban canyons, tunnels, intersections and airports. The monitoring is performed by placing moss bags, in different places around the city. Mosses absorb water and nutrients from the atmosphere, which makes it perfect, cheap for air pollution monitoring.

**14. The Institute for Chemistry, Technology and Metallurgy - Center for Ecology and Technology (CETE)** is a scientific research, development and consulting organization unit of the Scientific Institution of the Institute of Chemistry, Technology and Metallurgy. The Analytical-Ecological Laboratory (AEL) is specialized in laboratory research and testing.

Ecological Laboratory - for water testing (drinking water, mineralized and demineralized water, water as a working fluid, water for recreation-pools,

groundwater, surface and wastewater), which is authorized by the Ministry of Agriculture and Environmental Protection of the Republic of Serbia;

**15. The Institute for Philosophy and Social Theory of the University in Belgrade** is engaged in systematic and long term research in the fields of philosophy and social theory.

The project “**Ethics and Environmental Politics: Institutions, Techniques and Norms in the Challenge of Changing the Natural Environment**” is a part of the projects “**Studying Climate Change and Its Influence on the Environment: Impacts, Adaptation and Mitigation**”. From the perspective of moral philosophy, it will be explored the intergenerational justice concept implies only taking into account the preferences of future and present people, or the status of universality also.

**16. Geographical Institute “Jovan Cvijić” of the Serbian Academy of Science and Art** was founded within the framework of the Serbian Academy of Sciences (Serbian Academy of Sciences and Arts). The Institute realises its fundamental interest within its sphere of work through basic, applied and developmental scientific research in the following areas: physical geography; geography of population and settlements; social geography; regional geography and cartography.

The Institute developed a guide for teachers called “**How to protect yourself for natural disasters**”. The goal of this guide is to ensure that the education for reduction of disaster risk is based on principles that are interdisciplinary and integrative.

**17. The Institute of Architecture and Urban & Spatial Planning of Serbia (IAUS)**

The Institute has been established with the aim to deal with research and educational work, as well as work on comprehensive projects in the field of architecture and urban planning combined with research in the field of sustainable development, environmental protection and improvement.

## **HUNGARY**

**1. University of Szeged** is a higher education institution, offering education on all levels including Bachelor, Master, Doctoral programmes, higher education specializations, advanced specific trainings, providing quality health care, basic and applied research, research & development, fine arts and music. The university works on a project **Urban-Prex** in cooperation with The University of Novi Sad, The City of Novi sad and The City of Szeged. The project focuses on predicting and preventing floods induced by rain in the border territories of Hungary and Serbia.

Education

1. **The Faculty of Technology and Metallurgy** offers Environmental Engineering studies at the undergraduate, master's and doctoral level. Studies in this program are aimed at supplying the necessary knowledge in monitoring the quality of the environment. In addition, through a series of courses students acquire knowledge in pollution control and reduction, by applying diversified technologies in the areas of air pollution control, water purification, waste water treatment and soil remediation.

Basic academic studies - Environmental protection engineering – 20 students per generation

Master studies - Environmental protection engineering – 40 students per generation

2. **Faculty of Biology** offers education in ecology and environmental protection on all three levels of studies. It combines specialised classes in environmental protection with a broad education in general and molecular biology, chemistry, physics and pedology. Although the majority of classes are theoretical and classroom based it offers field trips, on all three levels of studies. This helps integrate the theoretical knowledge with practical knowledge, making everything come together and broadening the education in these fields.

Basic academic studies - Ecology 40 students per generation

Master studies - Ecology 80 students per generation

3. **Futura - Faculty of applied ecology** educates and trains experts in the field of integrated protection, control, restoration and preservation of the environment. The key is the integration and functional connection of different cognitive disciplines in the field of environmental protection.

Basic academic studies - Environmental protection and Economy of the environment - 80 students per generation

Master studies - Resource management, Applied ecodesign, Risk management, Economy of the environment and climate change – 25 students per generation

4. **Faculty of Geography** introduces the students with the significance of climate change for nature and social activities through a climate change class. The students are thought about the anthropogenic impact on the climate.

Basic academic studies - Geospatial basics of the environment - 50 students per generation

5. **Faculty of Forestry** deals with water management, agricultural and forestry organizations, organizations dealing with the protection of water and soil resources and natural resources. The Department of ecological engineering for soil and water resources protection provides a study program that has a goal to train candidates for the solving of complex problems related to soil and water.

Basic academic studies - Ecological engineering in soil and water resource protection – 60 students per generation

6. **Faculty of agriculture** offers a multidisciplinary education program. The first part of the study is called Applied Ecology, it helps give the students a good foundation for acquiring a broad knowledge in the field of ecology. The second part of the studies is called Economics and management of the environment. It's goal is to give the student a better understanding of natural resources. The third part of the studies teaches the students about protecting those natural resources, soil, water and biodiversity.

Basic academic studies – Environmental protection and Agro ecology – 50 students per generation

Master studies - Environmental protection in agriculture - 32

7. **Faculty of chemistry** offers courses within "Environmental Chemistry" study program of undergraduate academic studies and master studies. The primary goal of the master study program is to educate experts with special competencies and a high level of fundamental and applied knowledge in the field of environmental chemistry.

Basic academic studies - Chemistry of the environment - 12 student per generation

Master studies - Chemistry of the environment - 8 students per generation

The project **Innovative renewable Biomaterials and Biopolymer Composites Based on Microbial Exopolysaccharides and Waste from Wood processing, Paper and Agricultural Industries** is performed in partnership with The Institute of Chemistry, Technology and Metallurgy, Belgrade. The project introduces new materials, such as production of innovative biopolymer composites based on microbial exopolysaccharides and waste from wood processing, paper and agricultural industries, which could potentially replace some of the commercial plastics (fossil fuel derived plastics) in different areas of use. The main characteristic of the microbial exopolysaccharides is the aerobic decomposition to carbon dioxide and water: this is a great advantage over polylactate, and it reduces the GHG emissions. Such production of environmentally friendly products will lead to additional environmental and economic benefits.

8. **Faculty of Mining and Geology** offers education of engineers competent for performing professional jobs in the area of environmental protection, control of pollution impact on environment; planning, choosing and implementing of certain environmental protection technologies; geo-mechanical examination and selection of location for waste depositing, storing, and disposal; problem-solving connected to the problems of waste water purification; quality monitoring – environmental monitoring for prevention of pollution etc.

Basic academic studies - Environmental Engineering - 40 students per generation

Master studies - Environmental Engineering – 10 students per generation

**institutions promoting science or being involved in science communication**



**1. Center for the promotion of Science** - government institution in charge of the promotion and popularization of science, that through its program activities, such as workshops for children, and lectures for the general public, tackles climate change issues.

**2. Fenomen** - privately owned science promoting center, that organises workshops for kids on environmental protection and climate change topics.

#### **MONTENEGRO:**

**1. The faculty of natural sciences** has a developed scientific-research activity, which is realized through the projects of the Sector for Science of the Ministry of Education of Montenegro, international scientific projects and individual activity. Teachers and associates of the faculty are the authors of a significant number of works in prestigious international scientific journals. The faculty offers post graduate studies in Ecology and Environmental protection.

**2. Faculty of Metallurgy and Technology** offers a program called Applied studies of environmental protection. Upon completion of the study, the student will be able to:

Know the processes in nature in order to protect water, air and soil and technological processes as sources of environmental pollution, define the control of emissions of industrial waste streams and wastewater treatment plants (water, waste gas and wastes, analyze the causes of global warming of the atmosphere, the destruction of the ozone layer and the appearance of acid rain etc.

**3. The institute for marine biology** is part of the first Center for Excellence in Montenegro, and it works on analyzing and monitoring the aquatic ecosystems. They worked on projects like "The impact of climate change on the composition of marine communities in the coastal area of the southern Adriatic".

#### **BOSNIA AND HERZEGOVINA**

**1. Institute for protection and ecology of Republic of Srpska** is carrying out scientific and professional work in the area of environmental protection, occupational health and safety, chemical management and energy efficiency for the needs of the Government of the Republic of Srpska and local self-government units, natural persons, in an effort to penetrate to the legislator, investors and builder with new solutions that lead to energy efficiency.

#### **CROATIA**

**1. The faculty of civil engineering, architecture and geodesy, University of Split** offers courses on Bachelor, Master and Doctoral studies related to climate change. The IASON project that they are part of, has the ultimate goal to establish a

permanent and sustainable Network of scientific and non-scientific institutions, stakeholders and private sector enterprises belonging in the EU and third countries located in two significant areas: The Mediterranean and the Black Sea regions. The main focal points of the project will be the usage and application of Earth Observation (EO) in the following topics:

- climate change
- resource efficiency
- raw materials management

2. **The Faculty of Civil Engineering, University of Rijeka**, organizes and conducts university studies and scientific and high professional work in the scientific field of civil engineering. It promotes the civil engineering profession and works on raising awareness about its significance for sustainable development within the wider community by simultaneously promoting academic principles and values and contributing to the development of the city, region and Croatia.

[http://iuri.uniri.hr/const\\_edu/faculty-of-civil-engineering/](http://iuri.uniri.hr/const_edu/faculty-of-civil-engineering/)

3. **Faculty of Science University of Zagreb** is composed of an academic staff that is actively involved in research carried out at high international standards. They are supported by postgraduates and research personnel from seven departments. They work across the whole spectrum of scientific activities ranging from basic to applied research and many have been recognized internationally for their contributions to research and development.

The Faculty works on a project “**Climate change and variability in Croatia – from global impacts to local green solutions (CroClimGoGreen)**” that will be dealing with local and global effects on urban climate and urban heat island (UHI) mitigation. Urban climate characteristics will be analyzed in current and future (warmer) climate conditions. Impact of changes in city infrastructure on UHI will be estimated, as well as efficiency of certain climate change mitigation measures, i.e. green and blue infrastructure mitigation measures. Climate variability and climate change in Croatia will be analyzed in the context of climate of Europe influenced by global and regional processes.

## **ALBANIA**

1. **The Mediterranean University of Albania** represents a unique effort in the Albanian educational field. It was established as a Non-Profit Organization. Since its foundation, the Mediterranean University of Albania has determined its primary goal to educate the students with a new spirit which is so necessary for the progress of the individual and society at the same time. As a result of continuous

transformations in society, the University has detected its priority to educate students for more sustainable social policies, democratic political systems and integrity in policy making in function of the well-being and dignity of any individual.

<http://umsh.edu.al/>

**2.** The Institute of GeoSciences, Energy, Water and Environment is a national research unit that operates under the umbrella of the Polytechnic University of Tirana.

The institute worked on the **Disaster Risk Mitigation and Adaptation Project (AI-DRMAP)** (2009- 2013), funded by the World Bank. Through this project 40 automatic meteorological stations have been added to the National Meteorological Network.

The institute performed the project **ADRIARadNet**. A weather radar to predict extreme weather in the Western Lowland areas of the Republic of Albania and the Adriatic Sea has been installed through “ADRIATIC integrated RADAR-based and web-oriented information processing system NETWORK to support hydro-meteorological monitoring and civil protection decision”, 2013- 2015.

#### **ROMANIA**

**1. Politehnica University of Timisoara** has a strong expertise in Climate change and water management, and offers various courses on different level of studies regarding this topic.

#### **BOSNIA AND HERZEGOVINA**

**1. Faculty of Ecology, University of Banja Luka,** has a Bachelor program called “Environmental protection” that offers education in the field of Engineering of Environmental Protection.

#### **HUNGARY**

**1. Department of Meteorology, Eötvös Loránd University** proposes climate change scenarios.

**d) Business** (SMEs and large enterprises (number, employment in SMEs and large enterprises, (%) of total employment in a given region); Regional Smart Specializations (RIS3); general overview of the different industrial sectors which can be found in the region; indicate enterprises actively involved in climate change adaptation and mitigation actions and define the field of their activity)

#### **BELGRADE, SERBIA**

**Regional Smart Specializations (RIS3):** N/A

## COMPANIES WITH A STRONG CSR STRATEGY

1. **Coca-Cola HBC Serbia** is one of the biggest bottling factories in the world. The company works on protecting the environment and improving sustainability with a thorough CSR strategy.

Sustainability goals are:

- Reducing water usage
- Reducing the carbon footprint
- Supporting the community

The company reduces the impact it's activities have on the environment through:

- reduction of used water and energy and generated waste
- reduction of greenhouse gas emissions (GHG)
- packaging optimization, increased return and recycling of packaging,
- reduction of waste that is deposited at the landfill
- responsible supply

2. **Comtrade** company launched an internal initiative for environmental protection "**Life is Green**" with the aim to set up and apply Environmental Management System (EMS) according to ISO 14001 standard.

The main goals are:

- Reduction of waste and improvement of recycling rate
- Promotion of energy and resource conservation
- Purchasing and development of environmental friendly products and materials
- Improvement of employees awareness

3. **Telekom Srbija**, as a socially responsible company, contributing to raising public awareness about the need to use renewable energy sources by installing public solar chargers for mobile devices and to demonstrate that solar energy can be used on a daily basis to replenish the batteries of mobile devices, and in the future, for other useful purposes.

4. **Philip Morris** is an international tobacco manufacturing company. It continuously strives to promote sustainable natural resources and reduce the impact of its business activities on the environment. The area of waste management has been recognized as particularly important for the improvement of this process, as in the company's regular production activities generate various types of non-hazardous and hazardous waste. Philip Morris ensures the rational use of natural resources, materials and energy, encourages reuse and recycling of products in order to reduce environmental pollution.

5. **Holcim** is an international company that produces cement. In Serbia it's involvement in the local community is based on a thorough analysis of the needs of all stakeholders as well as the community as a whole. One of these needs is the protection of the environment. Holcim has implemented a project to install the

Automatic Air Quality Measurement Station. The automatic measuring station is equipped with the most modern automatic analyzers used in the world. In real time, the air quality is measured at 24 hours. Every 10 minutes, the station collects key parameters on air quality. The measurement data are sent to the Agency for Environmental Protection of the Republic of Serbia via GPRS technology.

**6. Atlantic group** is one of the leading food companies in the region. The project “**Green Team**” was formed, which with the slogan "Follow me" promotes the company's activities on environmental protection, contributes to raising awareness of the importance of this topic.

**7. The Serbian Chamber of Commerce (SCC)** is a law defined organization of business entities. SCC represents the interests and attitudes of its members by participating in the creation of laws and other regulations important for the business community; promotes economic cooperation with foreign countries; provides information-analytical support to the economy; it encourages export activity and the involvement of domestic companies in international supplier chains. Through the linking of the economy and science, the application of new technologies and knowledge in modern business and production is encouraged. SCC is in charge of **Climate-KIC** project for Serbia, which represents European knowledge and innovation community, working towards a prosperous, inclusive, climate-resilient society founded on a circular, zero-carbon economy.

**8. Resalta** is one of the leading providers of energy services in the region. Resalta helped countless companies and public institutions lower their energy costs, improve their energy efficiency and reduce their carbon footprints. Resalta also develops large scale renewable energy projects. The goal is to increase renewables in the energy mix of each country they operate in.

**9. INTEGRA** produces innovative and environmentally responsible active houses. It is healthy, energy-independent and efficient, sustainable and made of natural materials. Integra enables individuals, families and communities to actively participate in the process of adaptation to climate change, living in harmony with the natural environment and with the sustainable emission of carbon-based components.

**10. Ekostar Pak** is a business company that operates in accordance with the principle of sustainable development, with the basic goal of reducing the amount of packaging waste in the environment, preserving natural resources and establishing an optimal system of packaging and packaging waste management. By the Ministry of Environmental Protection of the Republic of Serbia, Ekostar Pak is authorized to, as the Operator of the Packaging Waste Management System, organize the collection and recycling of packaging waste on behalf of business entities.

**11. InnoEnergy Hub Serbia** is a project by Startit and the InnoEnergy Initiative and it was created to strengthen and connect the local community in areas such as energy, cleantech and smart cities. This project works on enhancing the local startup community with activities for startups, students, as well as larger companies, corporations and scientific institutes. InnoEnergy operates on three lines:

- Education: master scholarship for students of technical faculties
- Startups: acceleration, investment programs
- Innovation projects: assistance to major scientific projects in the commercialization of products through the creation of a consortium of several regional companies and institutes

**12. Strawberry energy** is developing solar powered urban furniture for smart and sustainable cities. The unique project founded by young entrepreneurs, students of the Belgrade University, is an excellent combination of the idea of using renewable energy sources and modern technologies with the core business of Telekom Srbija. The products they offer are:

- Smart bench - Solar-powered Smart Bench that has an advanced set of sensors for monitoring Environmental factors, Gases and Particulate matter. It is a 100% standalone system that works 24/7, under all weather conditions;
- Smart strawberry tree - an artificial solar-powered tree that offers wifi, phone charging and a sitting space open for public use.

**13. Basna Ltd. Cacak** is a company that produces fuel for heating like coal, briquettes and biocoal. It works on a project **Production of Renewable Energy and Simultaneous CO<sub>2</sub> - Sequestration From The Atmosphere Due to Biochar Production and Application**. The project presents a new technical solution to reduce CO<sub>2</sub> in the atmosphere and generate energy from biomass by producing biochar with the use of the pyrolysis process of wood and wood residue. The biochar will be used in an innovative way for animal feed and as a soil supplement, thus contributing to the combined reduction of methane production from manure.

**14. Jugo - Impex E.E.R. Ltd.** is a company from Niš that works on the turnover of non-ferrous metals. In partnership with the **“Zero Waste Serbia” Waste Management Association** the company works on a project **Polyurethane Foams - End of Waste**. The project contributes to the efforts of promoting the circular economy thus directly reducing the release of one of the most powerful greenhouse gases into the atmosphere. In the first phase, separation of approximately 10 t of Freon will lead to 16m525 t of CO<sub>2</sub> eq emission reduction per year. moreover, polyurethane foam which is left after the Freon is separated will be converted into a new product which shall become an absorbent that collects oily liquids such as gasoline and petrol, in case of their uncontrolled leaking into the environment (hence preventing unintentional burning of fossil fuel and related GHG emissions).

**15. Eso Tron Ltd. Rumenka** works on collection edible waste oil and processing of non-hazardous organic wastes, as well as the purchase of vegetable oils and by-products from oil production. The project **Less Garbage, More Happiness and Wellbeing for All** proposes an innovative business model to improve the existing practice of organic and inorganic waste separation, including new methods of organic waste treatment (for waste oils). It also introduces a new biobooster-based processing technology which will have several by-products (such as energy, hot water, fertilizer), instead of only one. The project has a high potential to reduce GHG emissions (up to 55.000 t of CO<sub>2</sub> during the lifecycle of the project) that would otherwise be generated from disposal of such organic waste to landfills.

**16. Telefon Inzinjering Ltd.** is an innovative company with the greatest experience in the field of renewable energy in Southeast Europe. It works in the field of energy management. The project **Solar Portable Accumulator** provides an innovative technical solution for off-grid energy supply, combining the use of renewable energy sources, the increase in energy efficiency, and the GHG emission reduction. The mobile solar panels aim to replace the diesel-powered generators and can be used at remote and inaccessible locations, as well as during emergency interventions, at various outdoor manifestations, for irrigation, illumination and signalization, or in summer houses and cottages. The mobile solar generator is placed in a car trailer with a lid, which creates a stable unit safe for usage and transportation.

**17. Meter & Control** provides state-of-the-art hardware and software solutions for smart energy management in industrial and residential environments. The project **Smart Energy Infrastructure for Public Lighting and Parking in Cities** promotes the new technical solutions for increasing energy efficiency in public lighting, remote heating and public parking sectors. Smart Lighting infrastructure for cities and municipalities is an innovative category of products, which consists of the system of smart sensors, public lights, decentralized control units and a centralized monitoring control and data acquisition (SCADA) as well as related new hardware and software platform and communication channels, smart meters ready to support new Smart Grid and Smart City integration and technologies. Total potential for GHG emission reduction in Serbia is 0.835 million tons of CO<sub>2</sub> equivalent per year.

**18. Sanicula Ltd.** is a privately owned company with core activity in the production of medicinal herbs and essential oils. The project **Innovative Approach to the Production of Pellets from Medicinal Herbs** introduces the concept of a circular economy into the process of producing essential oils from medicinal herbs. During the distillation of medicinal herbs, remaining waste is cooked, partially dried and therefore presents good raw material for further processing, in order to obtain ecological fuel - pellets. By pelleting biomass produced as the by-product during the distillation of medicinal herbs would completely eliminate waste as a category in this production. The final product - the pellet will be used again in the distillation process instead of currently used fuel. The remaining pellets unused in the distillation



process will be offered on the free market. Estimated emission reduction is 15,000 T CO2 equivalent during the period of 20 years.

**19. Bioenergy Point Ltd./ GreenEnergy Point Ltd.** is registered for business operations in the area of renewable energy sources. The project **New Approach in the Production of Heat and Electricity From Wood Biomass** aims at introducing a new approach and implementation of innovative technology in the production of combined heat and power by combustion of wood biomass. Heat energy will be used in the process of pellet production, with parallel electricity generation that will be sold to EPS at affordable prices. The project also introduces a new business model of cooperation with partners, associations, suppliers of raw materials, local agricultural holdings and local self-government. The plant will use biomass near the collection site, which will result in lower transportation costs and reduction of GHG emissions compared to a collection from distant parts of Serbia. A part of wood biomass will be obtained by extracting waste wood that endangers the work of Hydro-Power Plant “Djerdap”.

## **CROATIA**

**1. Jadran-galenski laboratorij (JGL)** is the largest private pharmaceutical company in Croatia. Among corporate responsibility agenda, several goals could be identified: reduction of the effects on the environment, the raising of the awareness of diversity and inclusion, operational responsibility and support for the highest ethical standards throughout the process of manufacturing its products – from research and development to sales. The company emphasises the importance of investing into local community from the very beginning.

<https://www.jgl.hr/en/about-us/jgl-in-the-community/social-responsibility>

## **ROMANIA**

## **ALBANIA**

## **MONTENEGRO**

## **HUNGARY**

**The Association of Environmental Enterprises** is a professional body, organisation for public benefit that acts in line with the principles of environmental protection. The association organises more conferences and workshops a year to spread professional information. The main objective of the KSZGYSZ Working Groups is to shape and express professional views on new or modified pieces of environmental legislation.

**4. Short summary of a pilot region** (most important climate challenges indicated by the local/regional strategy or scientific regional agendas, culture of innovation, institutional framework of the regional innovation system; existing exchange structures between stakeholders; any other relevant information and additional comments)

#### **Climate Change / Serbia**

Since the ratification and application of the UNFCCC and the Kyoto Protocol, considerable efforts have been made in establishing legal, institutional and policy frameworks aiming to fulfil the commitments outlined under the Convention and the Protocol. While the first set of environmental laws designed to combat climate change was adopted in 2004, considerable progress has been achieved with the beginning of the process of European Union (EU) accession and the harmonization of national legislation with that of the EU.

The Initial National Communication (INC) of the Republic of Serbia, as an important national strategic document, was adopted and published in 2010, and highlighted a number of issues recognising the energy sector as the main contributor to GHG emissions in Serbia and likely the sector with the greatest potential for mitigation.

#### **First National Communication of the Republic of Serbia under the UNFCCC**

[http://www.klimatskepromene.rs/wp-content/uploads/2017/04/Prvi-izvestaj\\_srp\\_web1.pdf](http://www.klimatskepromene.rs/wp-content/uploads/2017/04/Prvi-izvestaj_srp_web1.pdf)

#### **First Biennial Update Report for the Republic of Serbia**

The Republic of Serbia submitted its 1<sup>st</sup> BUR in February 2016.

[http://www.klimatskepromene.rs/wp-content/uploads/2017/04/E-version\\_FBUR-engleski-2016-1.pdf](http://www.klimatskepromene.rs/wp-content/uploads/2017/04/E-version_FBUR-engleski-2016-1.pdf)

Second National Communication of the Republic of Serbia under the UNFCCC

[http://www.klimatskepromene.rs/wp-content/uploads/2017/12/SNC-Eng\\_Serbia.pdf](http://www.klimatskepromene.rs/wp-content/uploads/2017/12/SNC-Eng_Serbia.pdf)

Third National Communication of the Republic of Serbia under the UNFCCC -in progress

Serbia's First National adaptation plan

<http://www.klimatskepromene.rs/wp-content/uploads/2017/04/NAP-UNDP-2015.pdf> Communication strategy for climate change

This strategy was developed by the OSCE for the Ministry For Environmental Protection.

<http://www.klimatskepromene.rs/wp-content/uploads/2017/12/Strategija-komunukacije.pdf>

### The Law on Climate Change

The National Program for the Adoption of the Acquis Communautaire (NPAA) and the Government's Program of Work foresees the obligation to enact the Law on Climate Change in the second quarter of 2018. In the process of preparation of this law regulating the field of climate change, the Ministry of Environmental Protection conducted a public debate on the Draft Law on Climate Change and the accompanying explanation, and according to the program:

<http://www.ni.rs/wp-content/uploads/Nacrt-zakona-o-klimatskim-promenama.pdf>

### **Belgrade - Climate Change Adaptation Action Plan and Vulnerability Assessment**

Extreme weather events frequently affected Belgrade in the past and caused serious and sometimes disastrous consequences. Heat waves in the summer seriously affected the entire administrative territory of Belgrade. The droughts were somewhat less frequent and intense compared to heat waves, but also had consequences for the entire administrative territory of Belgrade.

However, the intensity and severity of floods rose. The most vulnerable parts of Belgrade are the flood prone areas near the Sava River. On the administrative territory of Belgrade there are about 160 small torrential streams, which pose a threat of flooding to populated areas, with short-term but highly dangerous effects. The current vulnerabilities of specific receptors to extreme weather events in Belgrade have been assessed by combining their sensitivity/exposure (depending on different types of extreme events) and their respective capacity to adapt.

An analysis of observed changes was undertaken for the Initial Communication of Serbia under the United Nations Framework Convention on Climate Change. Conclusions for the area of Belgrade use this data. Climate change projections made using the climate model of the ORIENTGATE project (<http://www.orientgateproject.org/>) for the time periods 2021–2050 and 2071–2100 in comparison to the reference period 1971–2000 (Đurđević and Kržić, 2014). The modelling uses the RCP8.5 scenario.

*(Background on the projections: - Downscaling run over Serbia, from 1971 to 2000 – reference period run from 2011 to 2100 – RCP 8.5 scenario; the RCP 8.5 scenario (Representative Concentration Pathways - RCPs), at ~8 km resolution, corresponds to the pathway with the highest greenhouse gas emissions and was chosen in the ORIENTGATE project because there is no observable declining tendency for greenhouse gas emissions currently.*

*- Integration was done using the Non-hydrostatic Multi-scale Model (NMMB), which is a regional model. The model was developed at –the National Oceanic and*

*Atmospheric Administration/National Centres for Environmental Prediction – USA (NOAA/NCEP), and CMCC-CM (www.cmcc.it) global climate model results were used for boundary condition.)*

### **Temperature**

The observed impacts and vulnerabilities in spring and summer will be reinforced due to expected rising air temperatures and increasing number of hot days. The average air temperatures in winter are expected to increase. Cold extremes are therefore less probable. A balancing effect can be expected.

### **Precipitation**

There is no substantial difference in the general precipitation trends between the time periods 2021–2050 and 2071–2100, except for summer precipitation trends. At the end of the 21st century, fewer precipitations, higher air temperatures and consequently higher evaporation rates could cause longer and more frequent droughts in the summer. No decisive change in the average autumn and winter rainfall is expected for both future periods. However, in autumn, rising temperatures, more evapo-transpiration and a longer vegetation period could result in more droughts. Although no changes are expected in the number of days with heavy precipitation, a more extreme regime with increasing intensity of rain is expected. Heavy precipitation events are more pronounced in spring and summer than in autumn and winter (as shown in the analysis of former extreme weather events).

### **Winds and storms**

An increasing tendency during summer can lead to reinforcing current vulnerabilities, i.e., to trends that intensify the existing situation. –For example, summers are becoming warmer, –which may result in increasing current sensitivity in the future. On the other hand, no substantial changes are expected during winter.

### **Expected future changes in weather conditions in Belgrade**

#### **Spring and summer:**

- **Heat waves – reinforcing:** the average air temperature in summer will increase. Additionally, heat waves are expected to happen more often and last longer in future.
- **Rain intensity on days with heavy precipitation – reinforcing:** increasing rain intensity is expected.
- **Storms – reinforcing:** an increasing tendency is expected, could lead to reinforcing current vulnerabilities during summer.

#### **Autumn and winter:**

- **Extreme cold – balancing:** the average air temperature in winter will increase. Cold extremes are therefore expected to be less probable.

The changing climate conditions lead to an increasing number of risks but also offer opportunities. The assessment of future risks and opportunities was based on the

results of the vulnerability assessment, and the projected climate change impacts, described in the previous chapter.

The future risks were evaluated for different weather sensitivities of each receptor (heat wave, extreme cold, drought, heavy precipitation/floods and storm), and were ranked as very high, high, medium and low.

Climate change adaptation measures for the City of Belgrade are listed in the document Climate Change Adaptation Action Plan and Vulnerability Assessment, including the explanation of measures, relevant locations, institutions responsible for the implementation, priority level for the implementation, and the time frame. The application of the multi-criteria decision analysis method, which involves the use of four criteria for defining priorities in the implementation of adaptation measures, has revealed that protection from flooding and green infrastructure are the two highest priority measures for the City of Belgrade.

Next in order are high priority measures in different areas:

- establishment and improvement of early warning systems, dissemination of information and awareness raising, as well as other institutional and organizational measures,
- urban planning for flood protection,
- construction of retention basins, drainage, saving and reuse of water,
- establishment and rehabilitation of green areas and streets.

There is a long list of measures, set out in the document Climate Change Adaptation Action Plan and Vulnerability Assessment, that the City of Belgrade recognized as necessary to ensure full adaptation to evident climate changes. Although some of them have lower priority than those mentioned above, decision makers in Belgrade have an imperative to use a large number of measures, because one does not exclude the other. The multi sectoral approach to the relevant institutions and other participants is necessary to achieve the full effects. Adequate funding must be raised from various sources, because once the damage is done future generations of Belgraders may bear the burden.

<http://inovacije.klimatskepromene.rs/en/home/>

<http://inovacije.klimatskepromene.rs/en/open-data-challenge/>



**PROJECTS AIMED AT CLIMATE CHANGE ADAPTATION AND MITIGATION**

**1. Projects aimed at climate change adaptation and mitigation implemented by academia & education (research public or private scientific bodies, universities, schools, extracurricular education organizations).**

**Title:**

Implementation of DRR concepts into school curricula

**Source of funding and the budget:**

/

**Timeframe:**

2008-2019

**Main challenges and goals regarding climate change identified:**

Increase society resilience on natural disasters

**Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):**

**SDGs indicators**

- 1300 geography teachers trained for DRR
- DRR concepts implemented in plans for education and curricula (in formal education)
- DRR concepts included into official textbooks
- Publication of handbook for teacher „How to protect ourselves from natural disasters“ (in cooperation with Primary School Teachers' Association of the Republic of Serbia (PSTARS) and UNICEF)



**Main research tasks or actions aimed at climate change adaptation:**

- teach and learn about spatial and temporal distribution of natural disasters in Serbia
- identify natural disasters-prone areas

**Main research tasks or actions aimed at climate change mitigation:**

- teach how to properly react before, during and after potential disaster,
- know whom to contact in case of emergency situation
- raise awareness on experts consulting

**Does the project promote RRI? If yes, please briefly describe (*maximum 100 words*)**

Yes. Research work aiming to increase the society resilience is a responsible research. DRR concepts implementation reflects the proactive attitude considering natural disasters. In order to achieve this goal, it is necessary to learn about mechanisms, regime and place of origin of natural disasters. Also it is important to learn how to properly react before, during and after potential disaster.

**Please indicate the institution/s responsible for the implementation and its/their main tasks**

Institutions: Primary and secondary schools

Tasks: to teach about natural disasters through the curricula of school subjects World around us, Nature and Society and Geography

**Please tick the type of stakeholders involved and shortly describe them**

local government  civil society  academia & education  business

Short description of stakeholders:

**Geographical institute “Jovan Cvijić” SASA** – scientific research organization. On the basis of the research results of its researchers, the Strategy on natural disasters education was created. Through two programs 1300 geography teachers were trained, enabling them to teach about natural disasters proactively.

**Institute for improvement of education / Center for curricula and textbooks development** – Institution which creates education plans and curricula

**Ministry of education, science and technological development** – Institution which initiate and enact education plans and curricula

**Primary and secondary schools**

**Shortly describe the forms and tools of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):**

Center for curricula and textbooks development has, during the establishing of the commission for education plans and curricula, engaged researchers from the Geographical Institute “Jovan Cvijić” SASA who created the Strategy on natural disasters education. Ministry asked the Institute for the improvement of education to make new suggestions for education plans and curricula. By enacting the plans and curricula for subjects World around us, Nature and Society and Geography, the formal education on natural disasters was established in Serbia. From 2018/19 pupils in first and second educational cycle learn about natural disasters, which is defined in outcomes in curricula of mentioned subjects.

**Indicate the SDGs relevant for the project:**

Goal 4, Goal 11, Goal 13, Goal 17, C200304, C200305, C130301, C130302.

**Web link to the project:**

/

**2. Projects aimed at climate change adaptation and mitigation implemented by academia & education (research public or private scientific bodies, universities, schools, extracurricular education organisations)**

*(please provide max. 3 cases using the template below)*

<p><b>Title:</b> Monitoring, forecasting and development of online public early warning system for extreme precipitations and pluvial floods in urban areas in the Hungarian-Serbian cross-border region (URBAN-PREX)</p>
<p><b>Source of funding and the budget:</b> The project is co-financed by the European Union through the Interreg-IPA CBC Hungary-Serbia Programme with 638,171.39 €, and the total amount of the project is 750,789.99 €.</p>
<p><b>Timeframe:</b> 1 November 2017 - 31 October 2019</p>
<p><b>Main challenges and goals regarding climate change identified:</b> Climate change is expected to increase the frequency and intensity of precipitation and pluvial flood occurrences in urban areas of Central Europe. Thus, the proposed project presents an outstanding opportunity to develop and implement an innovative monitoring, forecasting and online public early warning system for extreme precipitation and pluvial floods in urban areas of the Hungarian-Serbian Cross-border region. Through the project, two dense monitoring precipitation networks will be installed in the most-populous cities of the Programme area: Novi Sad (Serbia) and Szeged (Hungary).</p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b> The Programme helps the development of a stable and cooperating region and the overall quality of life in the border region. It enables economic collaboration of organizations from the two countries, nurtures the common identity, and cultural and historical heritage of the border region, and contributes to its environmental sustainability and safety.</p>
<p>Main research tasks or actions aimed at climate change adaptation:  Projects main objective is development of monitoring, forecasting and public early warning system for extreme precipitations and pluvial floods in urban areas of the Hungarian-Serbian Cross-border region. Measured and forecasted data will be freely available for inhabitants and authorities.</p>
<p>Main research tasks or actions aimed at climate change mitigation:</p>
<p><b>Does the project promote RRI? If yes, please briefly describe (maximum 100 words)</b></p>

**Please indicate the institution/s responsible for the implementation and its/their main tasks**

- The University of Novi Sad, Faculty of Sciences works on managing of project implementation and communication with partners and JS. Writing of expert study and development of precipitation monitoring network in Novi Sad. Performing quality checks of network and data processing system. Definition of urban pluvial threshold for Novi Sad. Visualization of forecast results and development of online interface and project mobile application. Preparation of project materials, final publication, conferences and workshops and promotion activities. Creation of expert study related with the determination of influence of urban structure on extreme precipitation and pluvial flood occurrences. Definition of urban pluvial flood thresholds for different city urban areas. Management of measured precipitation data. Preparation of project materials and publications. Organization of seminar and workshop. Activities related with media and promotion the project.
- University of Szeged, Department of Climatology and Landscape Ecology works on the determination of representative sites for the precipitation stations and development of the monitoring network in Szeged. Development of the precipitation and pluvial floods forecast and early warning systems. Collection and management of measured and forecasted data. Visualization of temporal and spatial patterns of data. Organization of conferences and workshops. Working on water treatment strategy for Szeged and project final publication.
- Municipality of Szeged (MOS) defines the urban pluvial thresholds in different city districts in Szeged in cooperation with other partners. Provides sensor sites, electricity and Internet connection for sensors. Provides a site for testing green infrastructure water management solutions in order to decrease urban flooding events. Promotion activities of the project by organizing workshops. Working on project final publication.
- Municipality of Novi Sad, PUC Water and Sewage Utility Novi Sad, works on expert study and determination of urban flood threshold in different districts of Novi Sad in cooperation with other partners. Activities related with the determination of station sites and providing necessary electricity for sensors functioning. Organization of workshops and media activities. Working on data management and project final publication.

**Please tick the type of stakeholders involved and shortly describe them**

local government  civil society  academia & education  business

**Short description of stakeholders:**

- The University of Novi Sad is one of the largest educational and research centers in Central Europe. It belongs to the group of comprehensive universities, which are characterized by providing nearly all fields of science and higher education. The University of Novi Sad offers around 400 accredited study programs at the level of Bachelor, Master, Specialist and Doctoral studies, carried out at its Faculties and within its Centers for Interdisciplinary and Multidisciplinary Studies. The University of

Novi Sad has a well-developed research infrastructure and great potential for innovation.

- City of Novi Sad - Local government
- City of Szeged - Local government
- University of Szeged is a higher education institution, offering education on all levels including Bachelor, Master, Doctoral programmes, higher education specializations, advanced specific trainings, providing quality health care, basic and applied research, research & development, fine arts and music. The mission and purpose of the University of Szeged is to cultivate science and internationally competitive research work and to advance its research university nature. Its research and creative work that is realized as part of national and international research programmes comprises basic and applied research, creative arts, product and service development.

**Shortly describe the forms and tools of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):**

**Indicate the SDGs relevant for the project:**

SDG3, SDG11, SDG13, SDG17

**Web link to the project:**

<http://www.urban-prex.org/index.php?p=1&s=0&l=0&h=1&r=1>

**2. Projects aimed at climate change adaptation and mitigation implemented by academia & education (research public or private scientific bodies, universities, schools, extracurricular education organisations)**

*(please provide max. 3 cases using the template below)*

**Title:**

New Housing Models for People Threatened by Floods

**Source of funding and the budget:**

There were no funds allocated for the project.

The activities that appeared after the project were individually funded by Coca Cola and Reconstruction Women's Fund

**Timeframe:**

18<sup>th</sup> May 2014 - 2015

**Main challenges and goals regarding climate change identified:**

Challenges:

- Promoting expert involvement before, during and after the floods
- Promoting strategic thinking about housing (planning and design of new housing settlements, temporary housing, adaptation of facilities to accommodate vulnerable people, remediation of affected buildings, etc.)

Goals:

- Encourage active participation of architects (students as future professionals) in helping people in need
- Dissemination of knowledge and opening of a multidisciplinary theoretical discourse as a starting point for developing a methodology in the process of reconstruction of areas threatened by natural disasters
- Raising awareness of the importance of cooperation between different professions
- Promoting research and development of alternative solutions (projects) for people threatened by floods
- Demonstrating the possibility of students' contribution to the restoration of flooded areas

**Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):**

SDG indicators:

13.1 Strengthen resilience and adaptive capacity to climate- related hazards and natural disasters in all countries

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Direct results:

- Organization of expert meeting / Improving education and awareness-raising on climate change mitigation, adaptation, impact reduction and early warning

- Joint action and the contribution of students of different study levels, plus the enthusiasm and dedication of more than 200 young architects and urban planners motivated by simple humanity
- Three exhibitions and an online publication

Other equally important results:

- Inclusion of these topics in the Faculty of Architecture curricula and the opportunity given to the student initiators to participate in the teaching of master projects on the Integrated Urbanism Master Program in the following year.

In addition to these results, it is important to emphasize all the indirect results that derived from the initiative, such as:

- Establishing an NGO group comprised of people who originally met and worked in one of the workshops (Tim8 – which built two houses for Roma people, published book Models of temporary housing - From concept to realization on the example of Roma settlement, won prestigious awards and had chance to moderate children workshop Models of temporary housing, where kids had chance to design houses and form families which would live there.

It is worth mentioning that today, five years after the initiative, five of the initial six initiators are enrolled in PhD studies and employed as teaching assistants at Faculty of Architecture, University of Belgrade. Three of them are involved at the Project of Ministry of Education, Science and Technological Development of the Republic of Serbia under Grant TR 36035 Spatial, Environmental, Energy and Social Aspects of Development of Settlements and Climate Change.

Main research tasks or actions aimed at climate change adaptation:

- Organization of Expert meeting - a one-day event during which lectures were held by professors from five different faculties, representatives of relevant institutions responsible for acting in the event of natural disasters such as Jaroslav Černi Institute for Water Management, the Statistical Office and a GDi GISDATA company. Experts held fifteen lectures on the causes of stream floods and landslides, water management, introducing the concept of “living with floods”, EU funding, construction of new buildings, damage assessment, reconstruction of damaged facilities, planning in time of climate change, the use of GIS in risk management, the importance of work actions etc. Expert meeting was covered by the media while the live stream was provided by the Computer Center of the University of Belgrade. Expert meeting was intended to serve for the dissemination of knowledge and opening of a multidisciplinary theoretical discourse as a starting point for developing a methodology in the process of reconstruction of areas threatened by natural disasters (Bugarski, et al. 2016).

- The three-day workshops were organized by twenty mentors, professors, assistants and associates of the Faculty of Architecture, who suggested different aspects of the problem of housing related to the natural disasters. More than 130



students of various levels of study participated in the workshops designing projects of temporary and permanent housing units, planning scenarios for housing in situations of emergency and researching ways to implement these projects and provide funding resources. The students' approaches to the problem of housing in an emergency situation were based on prefabrication, use of local materials, the possibility of improvement according to the citizens' financial possibilities, and an examination of the minimum and optimum standards of housing in order to achieve a certain degree of quality of life (Bugarski, et al. 2016).

- Design of the publication - Over a period of ten days, students prepared posters and designed publication containing all of the projects from the workshops. Publication is presented on the digital publishing platform Issuu, which made it available to different groups of users from various regions threatened by the floods - Serbia, Bosnia and Herzegovina and Croatia (Issuu 2014). Official statistics showed that most of the people who read it were from those areas.

- Exhibition at the 23<sup>rd</sup> Urban Planners Exhibition – aiming to present the results to the professional community dealing with urban planning and design. Initiative received an honorable mention at the 23rd Urban Planners Exhibition (Salon urbanizma 2014).

- Exhibition at the 37th Salon of Architecture with the discussion – aiming to present the results to the professional community dealing with architecture and to open up discussion of professors and students about the results and possible further action during times of natural disaster. Initiative gained a Special recommendation and support of the council of the 37th Salon of Architecture for Affirmative Action in Architecture for the year of 2014 (Salon arhitekture 2015). Exhibition contained a around 250 single posters corresponding to the book content.

- Exhibition to the local community of Obrenovac – held in the Sports and Cultural Center of Obrenovac. Even though the opening night was not broadly visited, during the two weeks of exhibition, primary schools had organized visits to see the exhibition which came as an idea from the manager of Sports and Cultural Center of Obrenovac. In that way, ideas for the active participation and dealing with housing for people threatened by the floods was presented to the youngest audience.

It is very important to emphasize that all the exhibitions were realized by minimal costs, financed and prepared by authors with the great support of hosting institutions.

- In May 2014, Coca Cola System, within a campaign Days of Danube, launched idea to construct educational eco park which could present new meeting place for citizens of affected areas. In cooperation with Ministry of Agriculture and Environmental Protection of the Republic of Serbia and Faculty of Architecture, University of Belgrade and World Wildlife Fund (WWF) the student workshop was launched and held at the Faculty of Architecture. 10 students who previously participated in the Initiative designed 3 conceptual design projects while combination of two selected works was chosen to be built in 2015. Eco Park was designed as a small ecosystem of the river bank zone which should serve as a space for enjoyment and relaxation aiming to create a place for education of end users about vegetation and general ambience of the river bank. During design and construction phase, students consulted experts for static, horticulture and done project according to the playground standards. But, as it commonly happens in Serbia, due to financial

difficulties and administration problems, only first phase was built without prospect that second phase with vegetation will be built soon. By this means, playground almost lost its educational dimension, which was one of the most vital parts of authors concept.

Main research tasks or actions aimed at climate change mitigation:

- Organization of Expert meeting - a one-day event during which lectures were held by professors from five different faculties, representatives of relevant institutions responsible for acting in the event of natural disasters such as Jaroslav Černi Institute for Water Management, the Statistical Office and a GDi GISDATA company. Experts held fifteen lectures on the causes of stream floods and landslides, water management, introducing the concept of “living with floods”, EU funding, construction of new buildings, damage assessment, reconstruction of damaged facilities, planning in time of climate change, the use of GIS in risk management, the importance of work actions etc. Expert meeting was covered by the media while the live stream was provided by the Computer Center of the University of Belgrade. Expert meeting was intended to serve for the dissemination of knowledge and opening of a multidisciplinary theoretical discourse as a starting point for developing a methodology in the process of reconstruction of areas threatened by natural disasters (Bugarski, et al. 2016).
- The three-day workshops were organized by twenty mentors, professors, assistants and associates of the Faculty of Architecture, who suggested different aspects of the problem of housing related to the natural disasters. More than 130 students of various levels of study participated in the workshops designing projects of temporary and permanent housing units, planning scenarios for housing in situations of emergency and researching ways to implement these projects and provide funding resources. The students’ approaches to the problem of housing in an emergency situation were based on prefabrication, use of local materials, the possibility of improvement according to the citizens’ financial possibilities, and an examination of the minimum and optimum standards of housing in order to achieve a certain degree of quality of life (Bugarski, et al. 2016).
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**Does the project promote RRI? If yes, please briefly describe (*maximum 100 words*)**

Public engagement – Initiative brought the wide diversity of actors: from diverse professional audience in an open and free expert meeting that was broadcasted online and all interested scholars, to experts and the interested public in exhibitions to pupils that went to visit the Exhibition in Obrenovac.

Open access – All the research findings and designs were made available and free of charge for readers to improve knowledge circulation and thus innovation through ISSUU platform. Official statistics showed that most of the people who read it were from the surrounding areas that were flooded as well. For a period of six months, publication was visited more than 2300 times.

Science education – All of the actions were focused on building capacities and developing innovative ways of connecting science to young people. All the solutions that were suggested from students and their mentors promoted innovation when dealing with problems of housing Models for People Threatened by Floods.

**Please indicate the institution/s responsible for the implementation and its/their main tasks**

Over the six months period, more than eighty (80) actors from public, private and civil sector took active participation in the different activities (diagram 2): Students (37), professors and teaching associates (22), consultants (11), GO Obrenovac representatives

(16), the private sector (1) and the civil sector (&gt; 1). Throughout the project, the participation of different actors in the methodologically formed steps had a significant influence and shaped the work of students.

After the initial organization of students through social media, the initiative was presented at the teaching staff meeting at the Faculty of Architecture, University of Belgrade, where Working group of the Faculty of Architecture, University of Belgrade, comprised of professors and students was formed aiming to ensure the effectiveness within the initiative.

Members of the Working group from Faculty of Architecture University of Belgrade: assistant professor mr Budimir Sudimac: coordinator, full time professor Rajko Korica, full time professor dr Branislav Žegarac, full time professor dr Nenad Šekularac, assistant professor dr Ksenija Lalović, assistant professor architect Igor Rajković, assistant professor architect Nebojša Fotirić.

Workshop mentors: associate professor dr Ružica Božović Stamenović, full time professor dr Miodrag Nestorović, Jelena Milošević - PhD candidate, Predrag Nestorović - PhD candidate, associate professor arh. Aleksandru Vuja, teaching assistant arh. Vesna Mila Čolić Damjanović, associate professor arh. Milan Đurić, teaching assistant landscape architect Aleksandar Bobić, teaching assistant architect Srđan Marlović, teaching assistant mr Milena Kordić, teaching assistant mr Tatjana Stratimirović, doc. Nataša Ćuković Ignjatović, Nikola Macut - student DAS, assistant professor architect Igor Rajković, assistant professor architect Nebojša Fotirić, teaching assistant architect Pavle Stamenović, assistant professor dr Danijela Milovanović Rodić, assistant professor dr Ksenija Lalović, teaching assistant architect Ivan Simić. Consultants: dr Ksenija Petovar, Anđelija Cvetić, Dubravka Velat, Maja Nikolić

Students Authors: Jelisaveta Arsenović, Sara Bastoni, Emilija Bjelić, Jovana Grilihes, Kristina Azarić, Ninoslav Janković, Milica Marinković, Jelena Đokić, Katarina Pantić, Anđelka Ilić, Bojan Vasiljević, Bojan Rončević, Ana Dušmanović, Mihailo Sladoje, Tijana Savić, Jelena Stanković, Stefan Milićević, Maja Kopta, Miona Zdravković, Sanja Berić, Stefan Nešić, Nikola Arsić, Jelena Kojić, Jovana Laketić, Milan Ostojić, Uroš Vuković, Borko Marković, Petar Veselinović, Ana Obradović, Mihajlo Petković, Sara Španović, Kristina Petković, Ana Popović, Nikola Tucović, Jelena Peljević, Anđelka Marković, Miloš Mitrović, Tamara Mihić, Ana Paunović, Anđela Nikolić, Tijana Kostić, Katarina Dekić, Iris Puzović, Sanja Đurđević, Maja Morošan, Marko Ilić, Janja Franeta, Aleksandar Stanković, Tamara Mašić, Sara Petrović, Milica Radeč, Nevena Balalić, Tašana Šukilović, Marijana Petrović, Ana Rasulić, Ana Zorić, Bojana Jerković, Ivana Jevremović, Nađa Radojčić, Dušan Nikolić, Bojana Čanković, Neda Džombić, Anđelija Sandić, Iva Babović, Isidora Babović, Sara Miladinović, Hristina Stojanović, Luka Kitanović, Ivana Marjanović, Aleksandra Lekić, Luka Jovićević, Marijana Miljković,

Jelena Grozdanić, Slobodan Jevtić, Nastasja Buđevac, Sonja Brdar, Milica Dukić, Jovana Zorić, Ivan Radonjić, Marija Pavlović, Stefan Bolić, Aleksandra Đorđević, Aleksandra Kračunović, Tamara Tahov, Milena Stojković, Marija Blešić, Blagica Petrićević, Iva Teodora Vuković, Nevena Lukić, Ivona Pajić, Nevena Lukić, Jelena Radosavljević, Jovana Bugarski, Mima Pešić, Andrej Josifovski

\*Students initiators: Bugarski, J., Đorđević, A., Dušmanović, A., Radosavljević, J., Zorić, A.; Josifovski, A.

**Please tick the type of stakeholders involved and shortly describe them**

local government  civil society  academia & education  business

**Short description of stakeholders:**

Faculty of Architecture: Students were initiators while Working group of professors and students was formed aiming to ensure the effectiveness within the initiative. Faculty of Architecture provided and expert support and spatial and human resources during the initiative.

Five different Faculties of the University of Belgrade took active participation in the expert meeting (Faculty of Forestry, Faculty of Geology, Faculty of Civil Engineering, Faculty of Technology and Metallurgy and Faculty of Architecture). Their expertise was crucial for developing knowledge grounds for the workshops.

Two public institutions were invited to take an active part in expert meeting as well in order to explain to students applied methodologies for research and that are practiced during the floods (Institute for Water Resources Jaroslav Cerni, National Bureau of Statistics).

One private company dealing with the use of GIS in risk management was also invited to explain how GIS has been used during 2014 floods and which possibilities and limitations do exist in Serbian practice (GDi GISDATA).

Initiative was supported by the Ministry of construction, transport and infrastructure, and was even opened by the Deputy Prime Minister and Minister of construction, transport and infrastructure.

**Shortly describe the forms and tools of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):**

In order to quickly create a network of students, we chose Facebook as an initial platform for the mutual exchange of information, good practices, ideas and suggestions for future activities under the Initiative. In a couple of days, we collected the data base of 470 students who were interested in contributing to the initiative from whom 20 were affected by the

floods. We asked for students to point out if they have a practical experience, willingness to work on the field and driving license. After that initial organization, the initiative was presented at the teaching staff meeting at the Faculty of Architecture, University of Belgrade, where Working group of the Faculty of Architecture, University of Belgrade, comprised of professors and students was formed aiming to ensure the effectiveness within the initiative. The official letter to the Ministry of construction, transport and Infrastructure was sent containing information about the initiative and expressing the willingness and preparedness of 470 people to actively help in rehabilitation and recovery of the affected area. After the initial meeting of the Working group, research about important topics and most relevant experts was conducted and the agenda of the important topics was created. This agenda contained a potential list of experts. Afterwards, the working group invited those experts or the institution where they work to take active participation. They were asked to contribute by giving the lecture in their field of expertise and thus contribute in establishing multidisciplinary approach in disaster situations, and by doing that contribute to our further field of action in helping those who need it most. They have been invited by official letter sent from the Faculty of Architecture describing that initiative came from students which was as such supported by the Faculty. All of the invited institutions or individuals accepted to hold a lecture, and one of the lecturers even asked to join the Workshops as well. Exhibition in Obrenovac was initiated by a member of working group and student initiator who lives in Obrenovac. In that time, since it was almost one year after the floods, the cooperation between Faculty of Architecture and University of Belgrade, Municipality of Obrenovac and GIZ has already been established. During the workshop, student initiators organized the meeting with the representatives of the Sports and Cultural Center of Obrenovac. It was promoted on local television and local radio station, while representatives of the Municipality of Obrenovac were invited in person during the workshop. Since most of the authors live in Belgrade, they left a book for the comments and impressions for visitors. Before the end of the exhibition, the book was stolen so we didn't get any feedback from the local community.



The main results that can be highlighted are the establishment of the cooperation between two faculties, the establishment of cooperation between faculties and Municipality of Obrenovac with the support of the GIZ / AMBERO project, as well as creating a multidisciplinary platform for working on recommendations and proposals for risk management projects. The joint work of the two faculties resulted in the formation of a thesis, the proposal of master projects as well as the creation of two publications and a catalog of student works. In addition to the mentioned results, the local media (Television Mag, 2015a; Television Mag, 2015b) and renowned daily newspapers (POLITIKA, 2015) reported on the workshops and final presentations of the works, held in Obrenovac, while the news on the individual steps was published on the web sites partner in the project (Faculty of Architecture, 2015a; Faculty of Architecture, 2015b; GO Obrenovac, 2015; GO Obrenovac, 2015; AMBERO ICON, 2015). Media coverage testifies to the relevance and significance of the resilient cities topic for research in a contemporary context.

**Indicate the SDGs relevant for the project:**

13. Take urgent action to combat climate change and its impacts  
13.3. Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

**Web link to the project:**

<http://www.arh.bg.ac.rs/2014/06/25/odrzan-strucni-skup-novi-modeli-stanovanja-za-ugrozene-u-poplavama/?pismo=lat>  
<http://www.arh.bg.ac.rs/2014/06/11/radionice-novi-modeli-stanovanja-za-ugrozene-u-poplavama/>



**1. Projects aimed at climate change adaptation and mitigation implemented by business (Corporate Social Responsibility, CSR strategies might be useful)**  
*(please provide max. 3 cases using the template below)*

<p><b>Enterprise Name:</b> Coca Cola HBC Group</p>
<p><b>Sector of activity:</b> Beverage company</p>
<p><b>Size and number of employees:</b> 1000 employees</p>
<p><b>Source of funding and the budget:</b> 1.101.746.000 RSD Private funds for the investment in the Local Community</p>
<p><b>Timeframe:</b> Danube Day - Ongoing since 2004</p>
<p><b>Title of the project:</b> Danube Day</p>
<p><b>Main challenges and goals regarding climate change identified:</b></p> <p><u>CSR Strategy of the company:</u></p> <p>Challenges:</p> <ul style="list-style-type: none"> <li>● reduction of water, energy and generated waste</li> <li>● reduction of greenhouse gas emissions (GHG)</li> <li>● packaging optimization, increased return and recycling of packaging,</li> <li>● reduction of waste that is deposited at the landfill</li> <li>● responsible supply</li> </ul> <p>Goals:</p> <ul style="list-style-type: none"> <li>● use 40 percent of total energy from renewable and clean sources</li> <li>● recycle at least 40 percent of the total packaging in the market on average</li> <li>● use recycled PET packaging and / or PET packaging from renewable material for 20 <ul style="list-style-type: none"> <li>● percentage of total PET packaging</li> <li>● reduce packaging by 25 percent per liter of produced beverage</li> <li>● Certify over 95% of the key ingredients of agro-food origin in</li> <li>● in accordance with the principles of sustainable agriculture of the Coca-Cola system</li> </ul> </li> </ul> <p><u>Danube Day project:</u></p> <p>Challenges:</p> <ul style="list-style-type: none"> <li>● Improving water quality</li> <li>● Promoting sustainable development</li> </ul> <p>Goals:</p> <ul style="list-style-type: none"> <li>● Raising awareness about the environment and sustainable development</li> </ul>

- Cleaning the river bank
- Promoting rational use of water resources

**Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):**

CSR Strategy of the company:

- The reduction is the water consumption of 2.1 billion liters in the past two years
- Reduction of the global carbon footprint the products by 1.07 tons over the past five years through investing in energy efficient low-carbon technologies
- 7.4 million euros invested - or 1.3 percent before taxation - in support of community welfare, environmental and water management and youth development, in partnership with over 200 non-governmental organizations organization in 2017.
- 98.2% of waste is recycled
- the share of recycled materials in production is 8,65%
- 2007-2017. reduced use of water by 52.2% per liter of produced beverages
- invested over 41 million dinars and nearly 700 volunteer hours in community development

Danube Day project:

- The water quality of the river Danube increases in Serbia. The water that enters Serbia is classified as 3rd category, and the water that exits Serbia is classified as 2nd category.

**Main actions aimed at climate change adaptation:**

CSR Strategy of the company:

Water resource management:

- Coca-Cola HBC Group committed to reduce water consumption per liter of produced drinks by 30%, from 2010-2020. In Coca-Cola HBC Serbia, consumption water per liter of produced drinks in the period from 2007 to 2017 decreased by 52%.
- The water used in production: protecting the water sources that supply the plants, reducing the amount of water that is used in the production of beverages, and treat 100% of the waste water to a level that supports life under water
- Investing in water conservation projects in the community for renewing the water by using innovative sustainable technologies and raising awareness about responsible water use.
- During 2017, a number of actions were implemented to reduce the consumption of water and chemicals in production process, and the most important among them are:
  1. reusing the last wash water at Juice
  2. change the type of tape on the line of non-returnable glass packaging
  3. reconstruction of the condensate system
  4. changing the way of lubrication on the line of returnable glass packaging
  5. reuse of water after rinsing the carbon filter
  6. using treated water from a buffer instead of softened.

Danube Day project:

**Main actions aimed at climate change mitigation:**

CSR Strategy of the company:

- Carbon Disclosure Project - The Coca-Cola HBC Group has committed to reducing the carbon footprint between 2010 and 2020 in grams per liter of produced beverage by 50% (from direct business - scope ) and by 25% (from direct and indirect business).
- All materials used in production are direct, or present in the final product.
- The largest amount of energy in the business of Coca Cola HBC is derived in the following segments
  - business: bottling plants, rolling stock and refrigeration equipment. Key actions implemented in 2017, to reduce energy consumption in the production process are:
    1. Daily optimization of heating on a biological filter in the wastewater treatment zone
    2. Regular annual inspection of the pipeline, electricity and insulation

3. Highly effective exterior lighting
4. Optimizing the distribution of electricity
5. Strict control of temperature in the heating system of production, offices and warehouse

- Managing indirect effects - Significant contribution to sustainability in this aspect of the business is realized by increasing the energy efficiency of existing and new equipment - new models of refrigeration devices that were introduced thanks to the company's global collaboration and its suppliers are more efficient up to 63 percent compared to those used in 2004. In addition, Coca-Cola HBC Group is working to eliminate hydrofluorocarbons (HFC) compounds, as well as gases with the greenhouse effect that is widely used in household refrigeration appliances and business facilities. During 2016, a total of 1310 refrigerators were purchased from which are all HFC-free, while 944 refrigerators are equipped with an energy management system.

- Emission - Objectives of sustainability by 2020 Coca-Cola HBC Group has committed itself to reducing the intensity of direct carbon emissions by 50 percent, as well as the reduction of carbon emissions in the value chain by 25 percent. Prevention program atmospheric pollution and gas emissions are defined as regular ones action and emission monitoring plan. Accredited laboratories regularly monitor the emissions of gases from the boiler room, they regularly control the installations for carbon dioxide and the natural gas line. In the equipment and refrigeration plants, filling stations are used ecologically similar refrigerated media (freons). Devices used freon (refrigerators, POM appliances, air conditioners, refrigerators, husky machines) serviced by authorized repairers, and regularly monitored by quantities freona in installations, while unregulated equipment is controlled destroys. When purchasing new refrigeration equipment, it is conducted considering the energy efficiency of new devices, as well as the type the refrigerant used by the equipment. Coca-Cola HBC Serbia has no emissions of harmful gases ozone layer, and when it comes to other important ones emissions in the air, they are generated only from the factory in Zemun, while Vlasinka does not use other types of energy except electric and no emissions.

- The most significant impacts on the environment arising from internal and external transport of our products, represent fuel consumption and gas emissions. Both parameters, as well as passed mileage, are monitored for all vehicles of the Coca-Cola HBC Serbia fleet, which consists of light passenger vehicles (excluding trucks, which are owned by another company). Since 2008, the installation of liquefied petroleum gas has started in vehicles that are in ownership of the company, and all new vehicles being purchased are immediately installed devices for liquid petroleum gas.

- Sustainable packaging is crucial for our culture of sustainability and way of thinking. We reduce the impact of our packaging on the environment by respecting our 3R principle (Reduce, Reuse, Recycle). The Plant Bottle - This innovative bottle is made according to the contemporary "PlantBottle™" technology. Ethanol, derived from sugar cane from Brazil, is the ingredient of Plant Bottle, which represents the

first generation of biofuels accepted around the world due to its ecological effect. Plant bottle is after chemical and physical properties identical to conventional PET packaging, but up to 30% of raw materials necessary for the production of PET granulates is obtained from materials of plant origin that have less influence on global warming and lower energy output. By comparing the new Plant PET packaging with old PET packaging, in terms of performance, there are no changes in the aspects of the process conversion of PET granulates, process of bottling conversion, charging process, recycling possibilities packaging, quality and production.

- The most important actions that are being pursued with the aim of reducing total waste, as well as reduction of packaging waste on the market, which at the same time contribute to reducing the carbon footprint of our company, are the actions of facilitating and optimizing the packaging. An important action is increasing the content of recycled material in the packaging in order to reduce the impact that the packaging has on the environment. So far in the Belgrade bottling plant 22.9 percent of recycled glass was used in glass bottles, 26 percent of recycled plastic was used in plastic bottles, and 65 percent of recycled aluminum was used in cans. Given that glass and metal recycling is already well established, the main focus is on increasing recycled materials in PET bottles.

Danube Day project:

**Please indicate the institution/s responsible for the implementation and its/their main tasks**

Danube Day project:

- NALED - National Alliance for Local Economic Development
- WWF - World Wildlife Fund
- Ministry of Agriculture, Forestry and Water Management - Republic Directorate for Waters
- Sekopak
- FUTURA - Faculty of applied ecology
- The City Municipality of Zemun
- Association Young Researchers of Serbia
- Aarhus Center
- NBS - National Bank of Serbia
- Institute for Water Management "Jaroslav Černi"

**Please tick the type of stakeholders involved and shortly describe them**

local government  civil society  academia & education  business

**Short description of stakeholders:**

- NALED - The National Alliance for Local Economic Development is an independent, non-profit and non-partisan association of companies, municipalities and civil society organizations that are working jointly to create better living and working conditions in Serbia. Since its establishment in 2006, NALED has grown into the largest private-public association that gathers more than 300 members, while the network of partners consists of over 100 state institutions and international organizations.
- WWF is a worldwide organisation that works on protecting biodiversity, lowering the carbon footprint. It relies on the power and professionalism of the worldwide network so they can establish new partnerships that integrate field work, key elements in law-making, promoting and strategically arranging the private sector. The main focus is on species and habitats that are of great value, including huge areas like the Arctic, animals and plants of value for their
- Ministry of Agriculture, Forestry and Water Management - Republic Directorate for Waters works on water management policies, multipurpose use of water, water supply, with the exception of water distribution, water protection, implementation of water protection measures and planned rationalization of water consumption, regulation of water regimes, monitoring and maintaining the regime of waters that make and cross the border of the Republic of Serbia, inspection supervision in the field of water management and performs other tasks in this field.
- The City Municipality of Zemun
- Association Young Researchers of Serbia are a unique, non-profit, non-governmental, non-partisan organization, which involves young people voluntarily in order to achieve common interests, ideas and goals. Our vision is to be the driving force for all who aim to make our planet a more peaceful, healthier and more just place. Young researchers of Serbia work with young people based on the following goals: raising awareness about the need to protect and preserve the environment as the original value, in the context of sustainable development, timely education and development of life habits in accordance with healthy nature
- Aarhus Center is putting the Aarhus convention to action. It was established in November of 2015. As a part of Young explorers of Serbia, supported by the Ministry of agriculture and environmental protection and the OEBS mission in Serbia. The main items of Aarhus convention are:
  1. Availability of information about the environment to everyone
  2. The right to participate in the decision making about the environment
  3. The right for legal protection if the above mentioned is not respected (mislim da ne moze ovako da se kaze, ali mi ne pada na pamet bolji nacin)
- NBS - National Bank of Serbia
- Institute for Water Management "Jaroslav Černi" works on providing a scientific base and expert solutions for better management of waters as a way of raising general prosperity, health and improving the environment. Their mission is providing an adequate way of water management. The institute is a leading organisation in Serbia and the region in the field of water management. It is also involved in activities like energetics and environmental protection.

- Sekopak is a market leader and together with its partners contributes to raising awareness among all citizens about the importance of reducing the amount of waste that each individual makes. It is a member of the European organization Pro Europe and are the holder of the prestigious symbol Green Point for the Republic of Serbia. Sekopak has been taking the largest amount of used packaging in Serbia which collected and handed over over 60,000 tons of packaging waste for recycling since 2010.
- FUTURA - Faculty of applied ecology educates and trains experts in the field of integrated protection, control, restoration and preservation of the environment, based on the synthesis of the geology and biology, physical-chemical, technological, informational, law and economic aspects and dimensions of the environment. The key is the integration and functional connection of different cognitive disciplines in the field of environmental protection, especially with regard to the manner and quality of life (which is one of the main goals of each education). The need for experts in the field of environmental protection in modern society, science and technology are obvious and indisputable: in the context of complexity and duplication of the spectrum and the total pollution load of the environment, and the need for more versatile and complete knowledge about far-reaching changes in the core of a new ecological paradigm (Environmental Science), which has a conceptual systematicity and integrity in the approach and strategy to protect and preserve the environment.

**Shortly describe the forms of cooperation between the partners involved in the implementation and the tools used for communication with the society (*maximum 3000 characters including spaces*):**

The United Nations Global Compact (UNGC) is a global voluntary initiative involving representatives of companies, academic institutions, civil societies, cities and trade unions who devoted their actions to respecting ten universal principles from human rights, labor rights, environmental protection and the fight against corruption. Coca-Cola HBC Serbia actively participates in the local network developed by the Global Compact in Serbia and helps to make the principles these networks come to life in the business community and among partners from other sectors.

Our approach includes:

- Implementation of the 10 principles of the UNGC in business and corporate strategy
- Promote 10 principles in the supply chain
- Encouraging the development of a local network
- Providing support to the global UNGC platform
- Contribution to broader UN development goals
- Transparent reporting in accordance with the requirements of the UNGC

Members of the Global Compact have an obligation to report annually on progress in



implementing the ten principles of socially responsible business. Global agreement and GRI are complementary initiatives, whose long-term cooperation is based on the Memorandum of Understanding signed in 2013, since the reports were made in accordance with GRI guidelines are fully accepted as Progress Reports in relation to the UNGC.

**Indicate the SDGs relevant for the project:**

CSR strategy of the company:

- Good Health and Well - Being
- Gender equality
- Clean Water and Sanitation
- Affordable and Clean Energy
- Decent Work and Economic Growth
- Reduced Inequalities
- Responsible Consumption and Production
- Climate Action
- Partnership for the Goal

Danube Day:

- Clean Water and Sanitation
- Partnership for the Goal

**Web links to a project or to CSR strategy:**

<https://rs.coca-colahellenic.com/rs/>

<http://zemun.rs/dan-dunava-2018/>

<https://odgovornoposlovanje.rs/csr/zivotna-sredina/case-coca-cola>

<p><b>1. Projects aimed at climate change adaptation and mitigation implemented by local government</b> <i>(please provide max. 3 cases using the template below)</i></p>
<p><b>Title:</b> The program “Shut down the heating plants in schools and kindergarten in Belgrade”</p>
<p><b>Source of funding and the budget:</b> City budget (Secretariat for Environmental protection) more than 2.000.000,00 €</p>
<p><b>Timeframe:</b> start at 2012 - continuous</p>
<p><b>Main challenges and goals regarding climate change identified:</b> First aim is improving air quality in this object and made safe surrounding</p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b></p>
<p><b>Main actions aimed at climate change adaptation:</b> <b>Reduction of air pollution</b> Implement measures to reduce emissions of pollutants originating from heating plants</p>
<p><b>Main actions aimed at climate change mitigation:</b> Rationalize energy consumption in the public sector</p>
<p><b>Please indicate the institution/s responsible for the implementation and its/their main tasks</b></p> <ul style="list-style-type: none"> <li>● Secretariat for Environmental protection/ finances and coordinates, promotion</li> <li>● Secretariat for Education and Children’s Welfare/participates in the selection of objects</li> <li>● Belgrade schools/coordinates and participates in implementation, promotion</li> <li>● Belgrade kindergarten/coordinates and participates in implementation, promotion/</li> <li>● PU District Heating Plants of Belgrade/performs works</li> </ul>
<p><b>Please tick the type of stakeholders involved and shortly describe them</b></p>
<p><input checked="" type="checkbox"/> local government <input type="checkbox"/> civil society <input checked="" type="checkbox"/> academia &amp; education <input type="checkbox"/> business</p> <p><b>Short description of stakeholders:</b> Local government finance this program, Public utility company performed works and school go to do promotion.</p>

<p><b>Shortly describe the forms of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):</b></p> <p>In 2012, the Secretariat for Environmental Protection started a program <b>Shutting down boiler rooms</b> in Belgrade schools and kindergartens. It has been developing permanently since then. Priority is given to facilities that use ecologically unacceptable fuels and negatively affect the environment and are targeted to the most vulnerable population. In some cases, these facilities are prohibited to work in order to reduce emissions of harmful substances into the air. Significantly improved air quality, ie reduction in the number of sources of air pollution. School representatives identify the problem, contact the local authorities. The representatives of both secretariats select the facility and the work is performed by a public company. Together they work on promotion.</p> <p>Objectives:</p> <ul style="list-style-type: none"> <li>-Reducing CO2 emissions</li> <li>-Increasing EE in a residential area in order to reduce energy consumption for heating</li> </ul> <p>Shutting down the boiler rooms that use fuel oil and coal in public buildings (schools, kindergartens, hospitals etc.) Through this program, 17 objects have been connected in period 2012-2019.-This program continues and should be expanded</p>
<p><b>Indicate the SDGs relevant for the project:</b></p> <p>SDG 11, SDG 12, SDG 13, SDG 15</p>
<p><b>Web link to the project:</b></p> <p><a href="http://www.beograd.rs/lat/gradska-vlast/1743697-/">http://www.beograd.rs/lat/gradska-vlast/1743697-/</a> <a href="http://www.beograd.rs/lat/gradska-vlast/2036-sekretarijat-za-zastitu-zivotne-sredine-3/">http://www.beograd.rs/lat/gradska-vlast/2036-sekretarijat-za-zastitu-zivotne-sredine 3/</a></p>
<p><b>Title:</b></p> <p><b>Introduction one of public transport routes with electric buses</b></p>
<p><b>Source of funding and the budget:</b></p> <p>City budget (Secretariat for Environmental protection) 2.500.000, €</p>
<p><b>Timeframe:</b></p> <p>2015-2016</p>
<p><b>Main challenges and goals regarding climate change identified:</b></p> <p>First aim is improving air quality in city</p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b></p>
<p><b>Main actions aimed at climate change adaptation:</b></p> <p>Reduction of GHG emissions, reduction noise</p>

<p><b>Main actions aimed at climate change mitigation:</b> Reduction of GHG emission</p>
<p><b>Please indicate the institution/s responsible for the implementation and its/their main tasks</b></p>
<p><b>Please tick the type of stakeholders involved and shortly describe them</b></p>
<p><input checked="" type="checkbox"/> local government <input type="checkbox"/> civil society <input type="checkbox"/> academia &amp; education <input type="checkbox"/> business</p> <p><b>Short description of stakeholders:</b></p> <ul style="list-style-type: none"> <li>● Secretariat for Environmental protection/ finances and coordinates, promotion</li> <li>● Urban Public Transport Enterprise "Beograd"/uses buses for public transport</li> </ul>
<p><b>Shortly describe the forms of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):</b></p> <p>"City Transport Company" Belgrade, is the bearer of public transport in Belgrade and one of the largest public transport companies in South East Europe. Everyday in the operation are: 609 buses, 150 trams and 94 trolleybuses and 5 bus electrically powered. From 1 st September 2016, introduced a new line of EKO 1 where operate buses exclusively on electric power. In this way, Belgrade is included in the map of cities in Europe and the world that have begun using electric buses as a long-term strategy for using this concept of drives, which will be the main alternative to diesel-powered buses. The choice of the electric bus concept came after several years of activity in monitoring the development and application of these buses in many cities in Europe and the world, as well as successful cooperation with many bus manufacturers. Specificity of using electrically powered buses can be seen in terms of: lines on which they work, vehicle concept, charging systems, maintenance, safety, exploitation indicators and environmental suitability.</p> <p>One of the main reasons for introducing E.buseva the line EKO 1 are the <b>environmental effects compared to diesel buses</b>. This relates primarily to: smaller level of noise, compared to a diesel bus lower by 13 d (A) /5/ "O" emission of harmful gases. Comparison of the emissions of harmful gases of one E.bus and diesel buses on the line ECO 1 for annual mileage 60 000 km, consumption 44 L/100 km</p>
<p><b>Indicate the SDGs relevant for the project:</b> SDG 7, SDG 9, SDG 11, SDG 12, SDG 13, SDG 15</p>
<p><b>Web link to the project:</b></p>

<p><a href="https://balkangreenenergynews.com/belgrade-gets-public-transport-line-with-electric-buses/">https://balkangreenenergynews.com/belgrade-gets-public-transport-line-with-electric-buses/</a></p> <p><a href="http://livinginbelgrade.com/electric-buses-for-belgrade/">http://livinginbelgrade.com/electric-buses-for-belgrade/</a></p> <p><a href="http://www.maintenanceforum.net/cp2018/papers/119-127%20S_Misanovic.pdf">http://www.maintenanceforum.net/cp2018/papers/119-127%20S_Misanovic.pdf</a></p>
<p><b>Title:</b> Revitalization of Topciderka river by biological systems for purification of polluted waters</p>
<p><b>Source of funding and the budget:</b> City budget (Secretariat for Environmental protection) 131.813.5 €</p>
<p><b>Timeframe:</b> 2014-2016</p>
<p><b>Main challenges and goals regarding climate change identified:</b></p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b></p>
<p><b>Main actions aimed at climate change adaptation:</b> Water saving and reuse</p>
<p><b>Main actions aimed at climate change mitigation:</b></p>
<p><b>Please indicate the institution/s responsible for the implementation and its/their main tasks</b></p>
<p><b>Please tick the type of stakeholders involved and shortly describe them</b></p> <p><input checked="" type="checkbox"/> local government <input type="checkbox"/> civil society <input checked="" type="checkbox"/> academia &amp; education <input type="checkbox"/> business</p>
<p><b>Short description of stakeholders:</b></p>
<p><b>Shortly describe the forms of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):</b> The main objective of the Project is to offer environmentally friendly, efficient and economically viable solution for the treatment and rehabilitation of polluted urban river flows. A pilot biological system for the treatment of polluted water was set up on the shore of the river Topciderka within the nursery of the State Enterprise for forest management "Srbijasume" Belgrade, FE "Belgrade" Belgrade in accordance with the fulfilment of the main objective. A biological system for the revitalization of Topciderka river has characteristics a temporary facility and it is set for the purpose</p>

of research in order to find suitable models of biological systems that would be used for water purification of other rivers, canals, ponds and lakes in the future. It is designed as a modified rhizofiltration system, which consists of a pump for the collecting of water from the river, an enclosed tank, four open rectangular cells in which floating islands with different vegetation are stored, an open rectangular cell with algae and recirculation pump

The results obtained by determining the efficiency of biological system with floating islands in treating polluted water showed that effluent into the biological system was classified as water with poor (Class V) and moderate (Class III) ecological status and that tested water at the outlet of biological system was characterised as water with excellent ecological status (Class I) based on the content of most of pollutants, which are the parameters for assessing the ecological status of waters

**Indicate the SDGs relevant for the project:**

SDG 6, SDG 9, SDG 11, SDG 12, SDG 13, SDG 14

**Web link to the project:**

[http://www.beograd.rs/images/data/98e470b6829e9ce1a59ff91b9a926ad2\\_1251546056.pdf](http://www.beograd.rs/images/data/98e470b6829e9ce1a59ff91b9a926ad2_1251546056.pdf)

<p><b>1. Projects aimed at climate change adaptation and mitigation implemented by civil society (NGOs, CSOs)</b> <i>(please provide max. 3 cases using the template below)</i></p>
<p><b>Title:</b> Local actors for clean energy and air – LA4CEA</p>
<p><b>Source of funding and the budget:</b> European Climate Foundation, 25000 EUR</p>
<p><b>Timeframe:</b> October 2018 – September 2019</p>
<p><b>Main challenges and goals regarding climate change identified:</b></p> <p>Main challenge is heavy reliance on coal as a main resource for energy production Goal is to contribute to successful and just energy transition of coal dependent regions</p>
<p><b>Main indicators (of product/result/impact) applied (MoRRI indicators/SDGs indicators):</b></p> <p>7.1.2 Proportion of population with primary reliance on clean fuels and technology 11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)</p>
<p><b>Main actions aimed at climate change adaptation:</b> /</p>
<p><b>Main actions aimed at climate change mitigation:</b></p> <ul style="list-style-type: none"> <li>● Engaging citizens in advocacy initiative aimed at local authorities, advocating for clean energy and air;</li> <li>● Development of civic air quality monitoring network;</li> <li>● Engaging trade unions in a discussion on just energy transition;</li> <li>● Development of policy documents analyzing the issues of air pollution and public health, future of coal jobs and the role of trade unions in just energy transition</li> </ul>
<p><b>Please indicate the institution/s responsible for the implementation and its/their main tasks:</b> Belgrade Open School</p>
<p><b>Please tick the type of stakeholders involved and shortly describe them</b></p> <ul style="list-style-type: none"> <li>● Citizens: They are engaged in the project through establishing the network for civic monitoring of air quality. Furthermore, citizens engaged in the monitoring network, who show interest in public advocacy initiatives and activism, will take part in training activities, with the aim of strengthening capacities for local community organizing and developing an advocacy plan for their local community;</li> <li>● Trade unions: Trade unions representatives are engaged in the project through organization of a consultative process, through which they will be introduced with the concept of just energy transition, the future of jobs in coal-reliant communities, as well as with case studies on the role of trade unions in just energy transition in other countries.</li> </ul>
<p><input type="checkbox"/> local government <input checked="" type="checkbox"/> civil society <input type="checkbox"/> academia &amp; education <input type="checkbox"/> business</p>



**Short description of stakeholders:**

Citizens engaged in the project come from the municipality of Lazarevac, which is a coal-reliant region, with coal mine and thermal power plant situated in their community. Their local economy is reliant on the mine and the power plant, however they suffer major environmental consequences following the work of the plant and the mine, namely: poor quality of air, soil and water. Citizens from central municipalities of Belgrade are also engaged in the project. The network for civic monitoring of air quality is initiated because proper real-time data on air quality is missing. Representatives of trade unions are employees in public enterprises in the coal industry, who show interest in learning more about the topic of just energy transition, how can fulfillment of commitments of Serbia (towards the EU and the UNFCCC, regarding energy production and GHG reduction) affect their jobs, and what they can do in order to put this issue on the agenda of both their trade unions and other relevant stakeholders.

**Shortly describe the forms and tools of cooperation between the partners involved in the implementation and the tools used for communication with the society (maximum 3000 characters including spaces):**

Forms of cooperation are consultative meetings and workshops primarily. The outputs of the project are communicated to the public through the website of BOS, its social media accounts, as well as the luftaden.info platform, on which the data on air quality gathered through the civic network for air monitoring, is visible.

**Indicate the SDGs relevant for the project:** sustainable cities, climate action, affordable and clean energy, partnership for the goals

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all  
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable  
Goal 13. Take urgent action to combat climate change and its impacts

**Web link to the project:**

<http://www.bos.rs/ekz-eng/ongoing-projects/1067/2019/01/16/local-actors-for-clean-energy-and-air.html>

**Short summary of chosen projects(parts 1-4)**

The project **Implementation of DRR concepts into school curricula** works on societies society resilience on natural disasters. Main research tasks or actions aimed at climate change adaptation are informing the school teachers and defining hazardous areas. Main research tasks or actions aimed at climate change mitigation are teach the people how to properly react before, during and after potential disaster, how know whom to contact in case of emergency situation and raising awareness on experts consulting. The project includes civil society and the academia.

The project **Monitoring, forecasting and development of online public early warning system for extreme precipitations and pluvial floods in urban areas in the Hungarian-Serbian cross-border region (URBAN-PREX)** is co-financed by the European Union through the Interreg-IPA CBC Hungary-Serbia Programme. This project presents an opportunity to develop and implement an innovative monitoring, forecasting and online public early warning system for extreme precipitation and pluvial floods in urban areas of the Hungarian-Serbian Cross-border region. Main research tasks or actions aimed at climate change adaptation is the development of monitoring, forecasting and public early warning system. The leading institution is The University of Novi Sad which works in partnership with the Local government of the City of Novi Sad and the City of Szeged, as well as The University of Szeged.

The project **New Housing Models for People Threatened by Floods** works on solving the problems brought by floods by involving experts, raising awareness and active participation. It involved six different Faculties of the University of Belgrade, Two public institutions, One private company dealing with the use of GIS in risk management and the Ministry of construction, transport and infrastructure. The main results that can be highlighted are the establishment of the cooperation was creating a multidisciplinary platform for working on recommendations and proposals for risk management projects.

The project **Danube Day** was organized and funded by a company - Coca Cola HBC Group. It works on Improving water quality, Promoting sustainable development, Raising awareness about the environment and sustainable development, Cleaning the river bank, Promoting rational use of water resources. The project includes stakeholders for all the groups in the quadruple-helix model: NALED - National Alliance for Local Economic Development, WWF - World Wildlife Fund, Ministry of Agriculture, Forestry and Water Management - Republic Directorate for Waters, Sekopak, FUTURA - Faculty of applied ecology , The City Municipality of Zemun, Association Young Researchers of Serbia, Aarhus Center , NBS - National Bank of Serbia, Institute for Water Management "Jaroslav Černi". The form of cooperation includes Implementation of the 10 principles of the UNGC in business and corporate strategy, Promoting 10 principles in the supply chain, Encouraging the development of a local network, Providing support to the global UNGC platform, Contribution to broader UN development goals, Transparent reporting in accordance with the requirements of the UNGC.

**The program "Shut down the heating plants in schools and kindergarten in Belgrade"** is funded by The Secretariat for Environmental protection and it works on improving the air quality. Main actions aimed at climate change adaptation are reducing air pollutants. Main actions aimed at climate change mitigation are rationalization of energy consumption in the public sector. The stakeholders involved are local government that finance this program and a public utility company performed works and school go to do promotion. The main form of cooperation between the stakeholders in this project is working on promotion for reducing CO2 emissions and reducing energy consumption for heating.

The project **Introduction: one of public transport routes with electric buses** is financed by The Secretariat for Environmental protection which aims at improving air quality in cities. Main actions aimed at climate change adaptation and mitigation are Reducing GHG emission and noise reduction. The project includes The Secretariat for Environmental protection/ finances and coordinates, promotion, The Urban Public Transport Enterprise "Beograd"/uses buses for public transport. The stakeholders involved in this project cooperated on introducing The electric busses into Belgrade's public transport.

The project **Revitalization of Topciderka river by biological systems for purification of polluted waters** is financed by The Secretariat for Environmental protection aims at climate change adaptation by saving water resources. It involves local governments in the project that work together to rehabilitate urban river flows.

**Local actors for clean energy and air – LA4CEA** is a project funded by European Climate Foundation working on energy transition in coal dependent regions. Main action aimed at mitigating climate change are engaging the citizens, developing monitoring networks, engaging trade unions and developing policy documents. The primary forms of cooperation are consultative meetings and workshops for different civil groups. Sustainable development goals that they are trying to achieve are sustainable cities, climate action, affordable and clean energy, partnership for the goals.