

## PROJECT FICHE FOR INVESTMENT MEASURE

<b>Municipality</b>	<b>Sliven</b>
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### 1. Name of the investment measure

**Transformation of a pedestrian street into a green corridor between two city parks in a residential city area**

### 2. Summary – general short description of the measure

The main threat to the city of Sliven, to which the effort for climate change adaptation is directed, is the urban environment warming – i.e. heat island effect.

The aim of the measure is to reduce the negative impacts of this threat on people, infrastructure and urban environment applying specific adaptation measures. The creation of a blue-green infrastructure, through shading and cooling of a public space, provides for a set of actions, which should make the place a preferred pedestrian route connecting the central city part with several neighborhoods, passing through two big parks.

### 3. Object and place

The object of the intervention is a 280 m long street, which represents a natural link between two big parks - City Garden and Yunak Park, representing an unimproved open space. The location is on Nikola Furnadzhiev Str., "Ruski" neighborhood, Sliven city. It is a part of a pedestrian route connecting the central city part with several neighborhoods: "Ruski" "Novo Selo - South," "Balgarka", "Blue Stones" and "Druzhba".

In the selection of the place of the intervention, account was taken of its relation to an increase in the urban temperatures – i.e. heat island effect. The place possesses all of the following characteristics: sealed area, open space without vegetation, high temperatures during the summer period.

Another similar place in the city is an unimproved area on Radoy Ralin Str. near the roundabout on Tzar Simeon Blvd. to a skateboard playground.

### 4. Activities

The measure is a blue-green solution for improvement and greening. The technology is shading with vegetation and cooling of a public space. The following activities are envisioned:

- Soil unsealing - tile removal to increase green space and soil absorption;





- Shading by planting specialized non-invasive vegetation, which is resistant to climate changes in an urban environment - appropriate tree species with a spacious crown and climbing plants located on appropriate infrastructure (pergolas of suitable material);
- Grassing of the specified areas, including planting of ornamental plants;
- Separation of recreational areas covered with climbing vegetation;
- Construction of an irrigation system linked to a future water pipeline from a borehole in Yunak Park (until then water from W&S will be used);
- Installation of an electronic board recording air temperature and time;
- Installation of taps for use by people and animals;
- Building a water element - fountain.
- Replacement of concrete paving, with a garden path under maximum reduction of the concrete area. Placing of new tiles.

Annual fund allocation within the plans and budgets of Sliven Municipality will be envisioned for the maintenance of the planted vegetation.

### 5. Threat, with regard to which adaptation is performed

The threat addressed by the measure is the warming in an urban environment – heat island effect. The pedestrian zone is located in a low-rise development neighborhood passing through unimproved territory with no vegetation. Monitoring the dynamics of the average monthly temperatures in Sliven city in the months of June, July, August and September for the last 10 years covering the period from 2012 to 2021, a gradual increase in the temperatures until 2015 is observed, followed by a sharp rise in the following years (2019, 2020 and 2021). For 2019, 2020 and 2021 the temperatures exceed the base limit of 30°C for more than three days (heat waves according to the Ministry of Health), and their number reaches 28 days out of total 31 calendar days in August 2020. The highest temperature (38.6°C) is reported on 29.08.2021.

The summer heats in the city can prove to be exhausting for the human organism. The most vulnerable with regard to sunstroke are the adults over 60 years of age and the children, as well as the people suffering from cardiovascular diseases and obesity. As of 31 December 2021, their total number is 52,167, which represents a relatively large share of the risk group.

### 6. Used experience from Norway and/or the Report on good practices:

The site visit in Norway: familiarization with the blue-green infrastructure in Bergen: the visit of the Bryggen rain garden and the intensive green roof in Bara Eiendom, which is under construction.

Report on international experience and best practices for climate change adaptation, which are suitable for the Bulgarian cities: e.g. Gasteiz Avenue in Spain and Trnava in Slovakia.

### 7. Innovation:

The innovation is expressed in the combination of activities that essentially represents a new blue-green solution - implemented on a small area (in this case ensuring continuity of a much bigger green area), which includes greening and water-cooling activities and the transformation of an open unimproved area into a green pedestrian corridor between two parks and between several densely populated neighborhoods. Technology of the measure





implementation - soil unsealing and shading with non-invasive vegetation species, water cooling, installation of information board indicating temperature and time, availability of accessible drinking water for both humans and animals.

#### 8. Indicative budget of the project idea:

**Preliminary design preparation** – Art. 20, para.4, it. 3 of the Public Procurement Act (PPA), direct awarding. Amount: **BGN 10,000.**

**Construction supervision** – Art. 20, para 3, it. 1(b) of PPA - open procedure, Art. 20, para 2, it. 2 of PPA - Public competition, Art. 20, para 4, it. 3 of PPA – bids’ collection with a call; Amount: **BGN 6,500.**

**Engineering implementation** – Art. 20, para 2, it. 1 of PPA, public competition; Amount: **BGN 377,638.33.**

The amounts are formed according to contracts of Sliven Municipality for implementation of similar activities.

#### 9. Project readiness:

Non-availability of design readiness. At this stage, consultations with the Deputy Mayor “Spatial Development and Construction” (SDC) and with the experts from the Municipal Infrastructure Directorate, the landscape architect and the chief architect of Sliven municipality have been carried out concerning the project idea applicability on the territory of the central city part to the object of the intervention.

#### 10. Procurement mode:

For the engineering implementation – procedure under PPA (Art. 20, Para. 2, it. 1) – Public competition

#### 11. Compliance with the municipal policies – plans, strategies:

Compliance with the Integrated Development Plan of Sliven city under Priority 3: Balanced, sustainable and smart development of the urban environment and the environmental infrastructure.

Compliance with the objectives of the Environmental Protection Program 2021-2028 regarding the protection and restoration of the main environmental components, which sets out the specific measures and approaches for the sustainable environmental development based on the existing situation and the expected development of the economy and the infrastructure of the municipality.

#### 12. Synergic effect and link to other implemented or planned projects in the urban area:

There are no implemented similar projects.

#### 13. Results from the consultative meeting

Date and venue of the meeting: 29.06.2022, 3:00 p.m., May Hall of Sliven Municipality  
Participants - 41: Kamen Kostov – Deputy Mayor, Chief Architect, heads of departments and experts in municipal administrations, representatives of the Vocational High School of Civil Engineering and Geodesy (VHSCEG), the project expert team from the municipality, the NTEF team.





All participants were very active. The following opinions were expressed:

Comment of the Chief Architect of Sliven Municipality: The subject is important and topical. Climate change affects us as well. Actually, the greening in the cities is insufficient. Asphalt, concrete and buildings prevail. People need to be aware of the existence of a problem. Legislative initiatives are required. The idea is an appropriate solution to start with.

Comment of Landscape Architect Emiliya Kyuchukova: Expected results: the idea is very good. Indeed, the place is quite suitable and will help the establishment of a green link between two big parks. It would be good to continue its implication on other sites within the city, as well as to create gardens on the places of the removed illegal garages.

Comment of the Chief Architect: The gardens alone do not provide a solution. The problem that still remains is related to the parking of the automobiles. It is more probable to establish parking spaces with shading.

Comment of the Landscape Architect Emiliya Kyuchukova: It is necessary to build irrigation systems. Conflict between the trees and the underground communications should be avoided. Monitoring should also be envisaged after implementation of the repair activities.

Comment of Eng. Milko Haralampiev – Municipal Infrastructure Directorate: The planting of trees should be coordinated with the underground communications. Depending on the vegetation species, pruning of the surface roots should be envisaged, since they are lifting the sidewalk pavements. There are very cumbersome procedures related to the construction of bored wells. The permits, issued by the Basin Directorate, arrive after two years. The boreholes close to the rivers are more appropriate, but problems exist during the summer months when the water is reduced.

Comments on: Everything related to public property, greening of roofs, light colors of the roofs.

Comment: Newly planted vegetation will take into consideration the underground communications.

Comment: Hristo Kotov - Deputy Director VHSCEG: The subject of environmental protection and climate change should be addressed at school. The school is the starting point using sessions by interests.

Comment: During implementation of the intervention - will sidewalks remain and cars continue to travel? Proposal for electric mobility and charging infrastructure with parking spaces. Greened parking lots. How is the irrigation problem solved?

Comment: Eng. Bakardzhiev explained the current situation of the selected site for the intervention and what activities would be carried out under the project.

Comment: Eng. Kaneva, Quality Management Systems (QMS) Department: Disaster Threat Reduction Program has been prepared. Prevention is important. The heat island effect exists not only in the city but also in other settlements. In Sliven Municipality there are 24 landslides – surveyed by Geozashtita. Reinforcements are performed. The places of street floods must be identified and the tree species replaced.

Summary: The proposals and the comments have been written down on a flipchart and will be considered during the implementation of the innovative intervention.

#### 14. Anything else, specific for this measure:

Additional benefits: effect from mitigating the impact on the climate changes (mitigation);  
Other ecological benefits: increasing the green areas and biodiversity in an urban environment;  
Social benefits – creation of a favorable environment for the passing through this territory through its practical inclusion into a spacious and large green area.





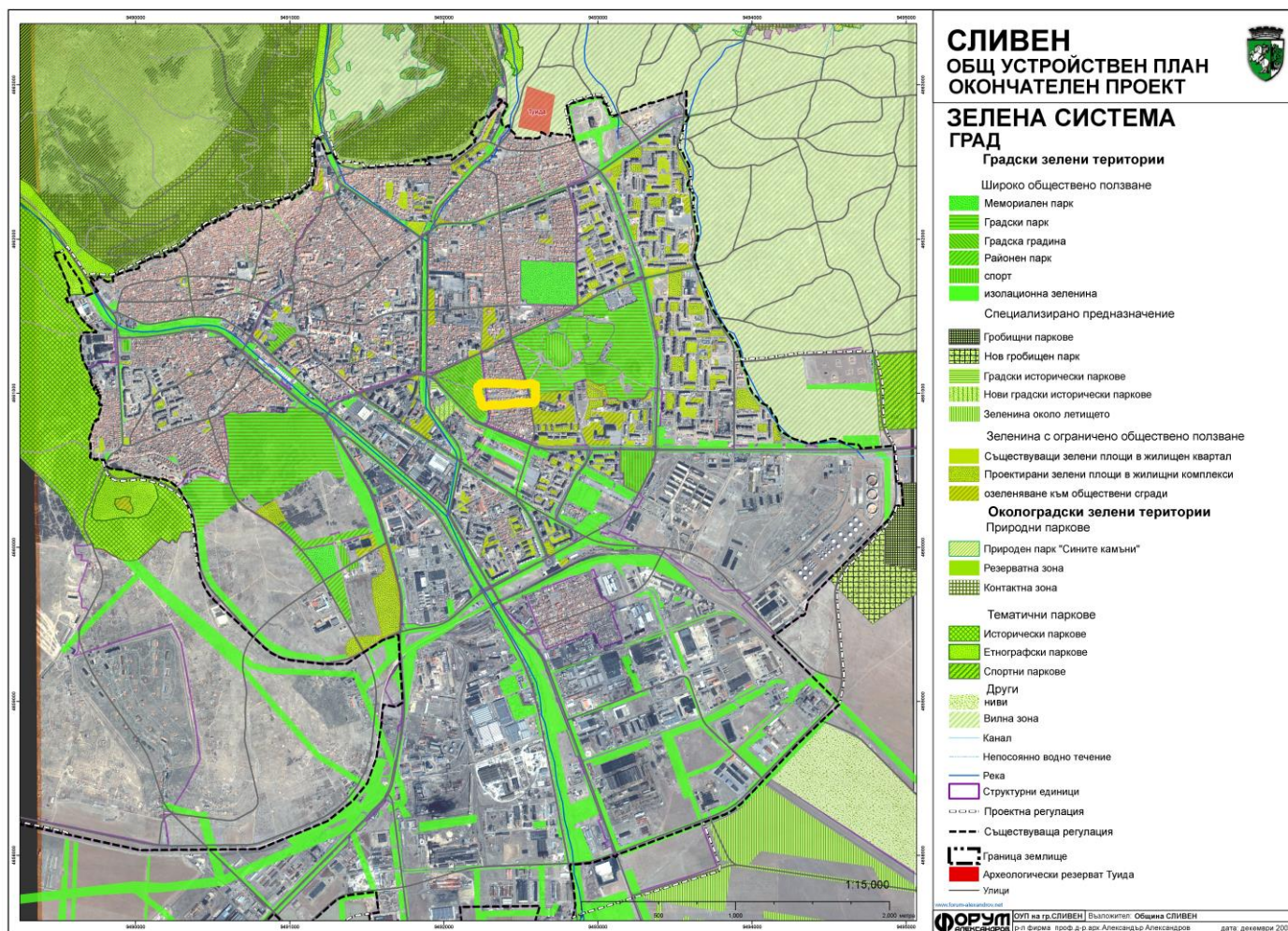
The envisioned public awareness measures will contribute to the sustainability of the measures and to the expansion of the activities in the future.





**Pictures of the object of intervention, obtained from Google Earth prior to measure implementation.**





Master plan of Sliven Municipality with marked in yellow place of the innovative intervention

