CONFERENCE “IMPLEMENTATION OF INNOVATIVE MEASURES FOR CLIMATE CHANGE MITIGATION AND ARAPTATION IN THE MUNICIPALITIES IN BULGARIA”

1 NOVEMBER 2022, SOFIA

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The team

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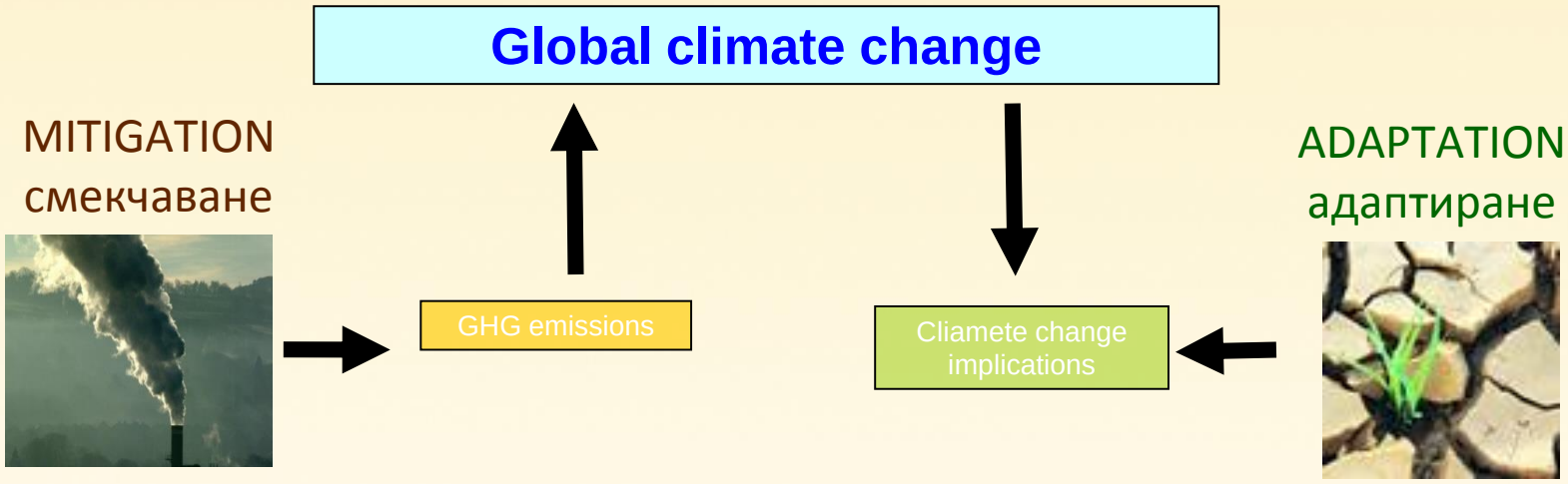


TO: Limit the heating & the other changes in the climate system

HOW: Reduce the sources / strengthen the carbon sinks / absorbed GHG

TO: Reduce the vulnerability and improve the sustainability against the impact of the climate changes

HOW: Управляваме промените - т.е., всички действия, които помагат за намаляване на вредните въздействия

PESTEL analysis was carried out for the selection of the investment measure. The analysis covers the most characteristic threats for Plovdiv Municipality, namely the 'hot island effect' and the urban infrastructure flooding as a result of intensive rainfalls. Political, economic, social/cultural, technological, environmental, legal and other environmental circumstances are considered. All climate analyses show a sustained but smooth trend of temperature increase. For the people of Plovdiv, this is not news. For many years, the sense of comfort for the municipality has been that at very high temperatures. We all know the rules - how to protect ourselves. Temperature reduction solutions should be a long-term strategy that cannot be solved by a single investment project. There's no way one intervention can completely change this trend.

Flooding of urban infrastructure as a result of heavy rainfalls has been identified as a risk in Cycle Two of the River Basin Management Plan. Addressing the longstanding problem related to improving the access and spatial connectivity in urban environments is a lasting solution to the challenge. Therefore, Plovdiv Municipality decided to implement a set of activities that will contribute to the sustainable solution of this problem.

The steps so far

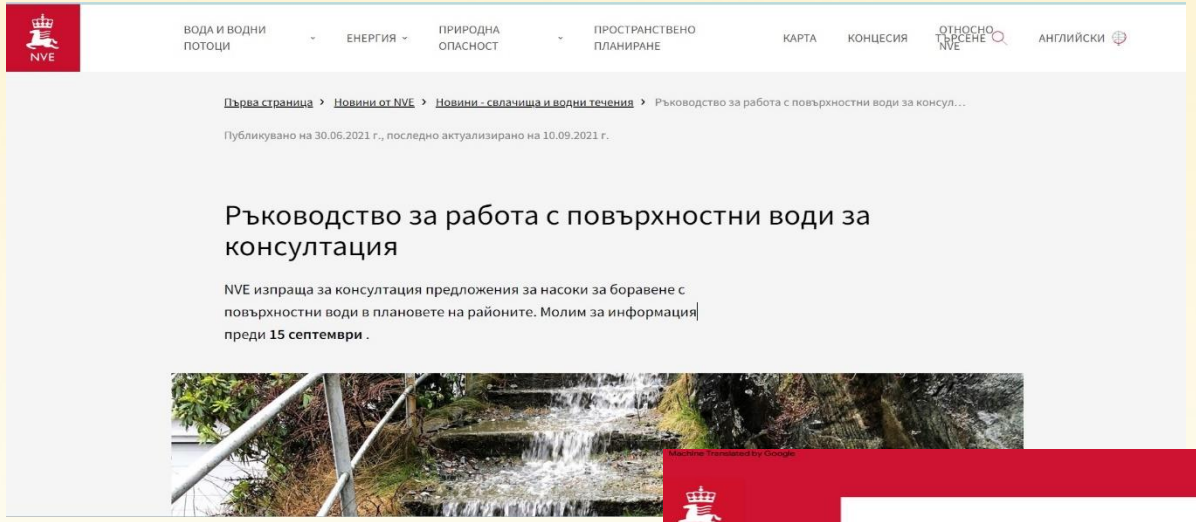
The extended team participated in an exchange of experience - 1 (one) study visit - a three-day training, during which a report on international experience and best practices was provided by KS, under Action 2 “Enhancing capacity for planning, monitoring and implementation of climate change mitigation and adaptation measures”.

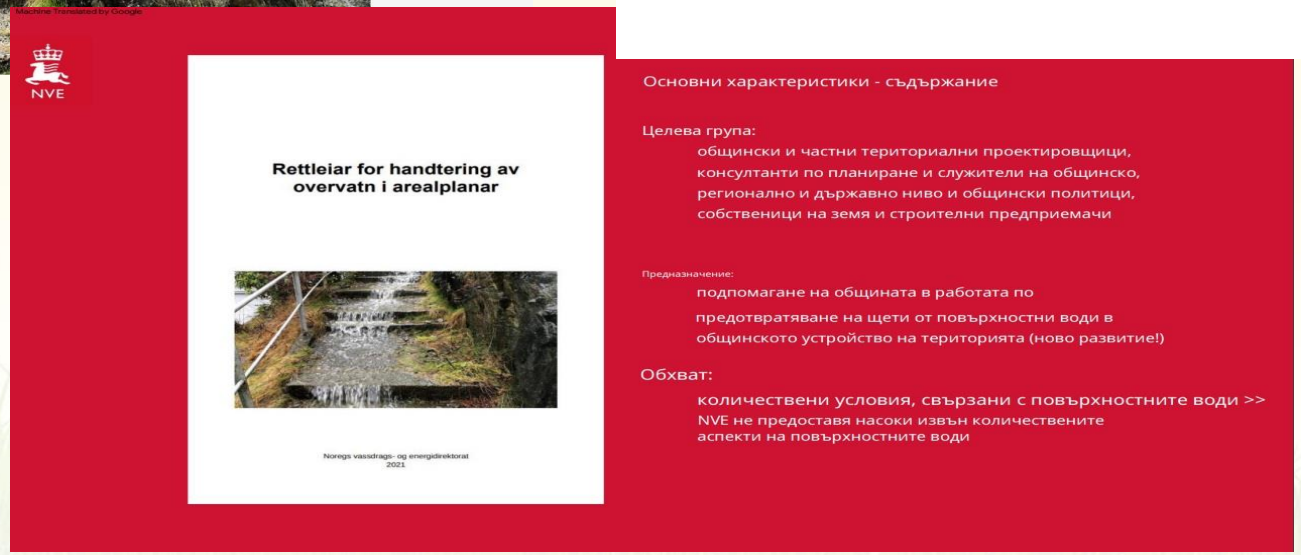
Stormwater management strategies were presented in Bergen. A trip to explore the blue-green infrastructure in Bergen was accomplished. There was a site visit to Myndemyren and a presentation of an urban development project and to Håstainer Park, where we learned about the environmental benefits of opening a river stream in a recreation area. On the second day of the training, a crossing of Voss was carried out, during which we were informed about the flood in October 2014 and its consequences for the land use planning in Voss. We visited a garden where fruit trees were grown. The land owner told us about the vulnerability with regard to erosion resulting from flooding and landslides in Lærdal.

The steps so far

Of key importance for the selection of an infrastructure measure in Plovdiv Municipality was the presentation at the Norwegian Research Centre for Sustainable Climate Change Adaptation (Noradapt) and the role of the Norwegian Water Resources and Energy Directorate (NWE) in relation to prevention of floods, landslides and wastewater management. The focus of the presentation in view of identifying a future potential for Plovdiv municipality is the development of land use planning and wastewater management. The topic is covered in the Report on international experience and best practices for adaptation to climate change which are relevant to the Bulgarian cities (Part 6 “Urban Flooding” with provided example: Strategic planning and practical measures for stormwater management in Oslo).

The steps so far





The steps so far

Three working meetings with the other partner municipalities have been held. Sharing personal impressions, both from the visits and from the presented experience, is an important first step towards active work with the NTEF and the authors of the methodology.

The most valuable aspect of this project is the training of the teams to prepare their own analysis of municipal documents and strategies. A real challenge is to prepare an analysis and risk assessment for the territory of Plovdiv Municipality. The discussion of each document in front of all expert communities is beneficial for professional implementation. The expert fiche is ready. The summary information covers all aspects and steps for the implementation of the investment measure.

1. The threats from the climate change

Climate change studies show that both due to the natural cyclicality of the nature processes and as a result of the anthropogenic influence, through increased greenhouse gases, the climate change is also a factor for the increase of the risk of flooding. The results are visible to all - higher values of the intensive rainfalls, more days in the year with short-term rainfall above critical thresholds, etc.

Plovdiv municipality falls within an area of significant potential risk of flooding (RSPRF) with code BG3 APSFR MA 05. During the second cycle, a new type of flooding was identified: fluvial, pluvial, pluvial-urban (Plovdiv city).

To identify the new threat, the insufficient diameter of the urban sewage system, designed and built in the 1930s and 1940s, has also played a role. The same is of a mixed type and does not meet the increasing modern needs and workload. The existing sewerage system was dimensioned using dimensioning parameters - 220 l/s/ha for a 3-year period of overloading. Currently, the rainfall intensity in the area is 314 l/s/ha. Therefore, even with moderately heavy rainfall, the city's sewers are full and work under pressure, flooding underpasses, identified as critical parts of the road infrastructure.

2. Object and location

Underpass under railroad Plovdiv-Karlovo / Koprivshtitza Blvd./Maritza Blvd. - South

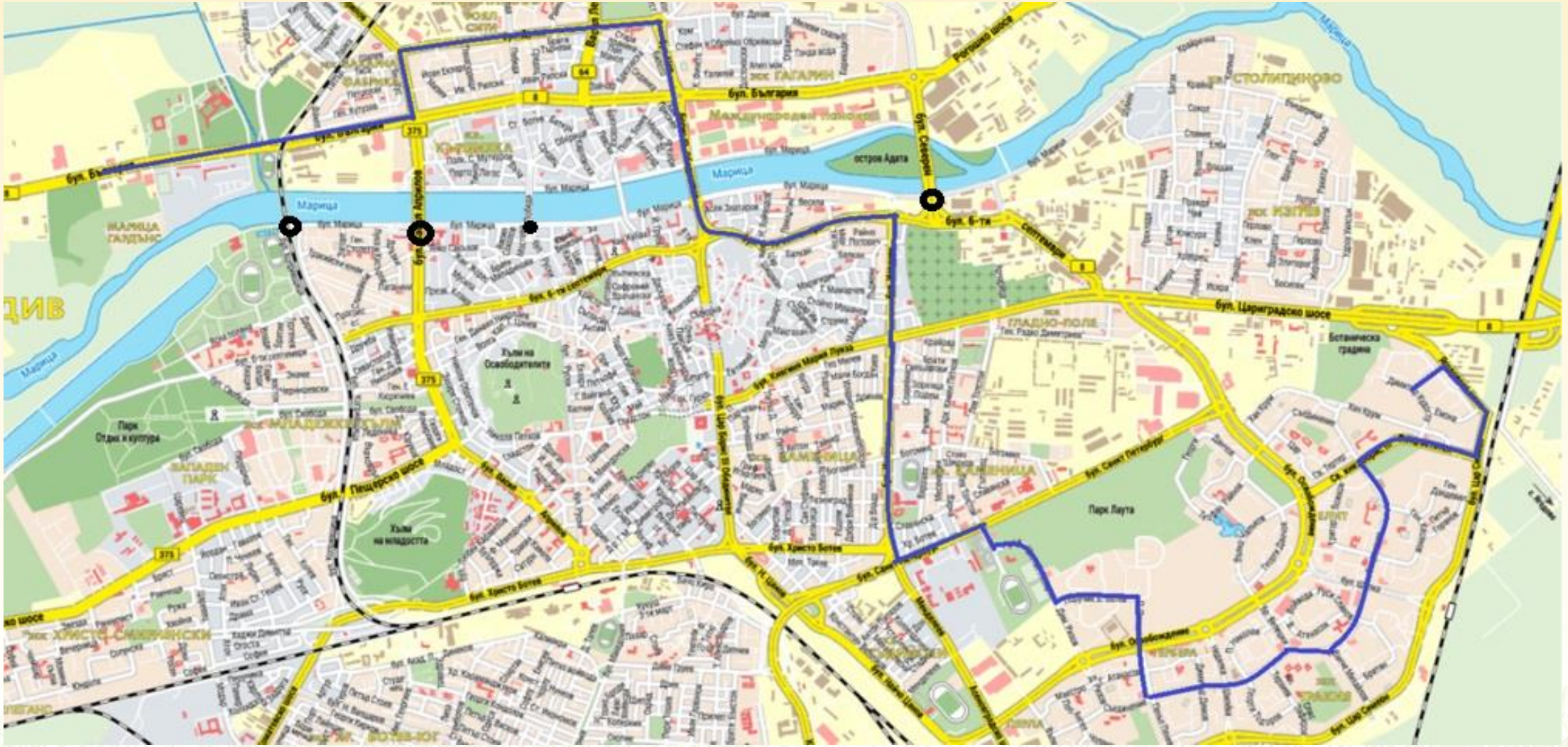
Underpass under V. Aprilov Blvd., Maritza Blvd. - South;

Underpass under Ruski Blvd., Maritza Blvd. – South

Underpass under Adata Bridge, 'Maritza Blvd. – South

3. What shall we do

Rain drainage of dammed critical sections of the road infrastructure as a result of heavy rainfall through the construction of rainwater dischargers


Марица
бул. България
бул. Съединение
бул. Цариградско шосе
бул. Пещерско шосе
бул. Христо Ботев
Хълм на Освободителите
Хълм на младостта
Парк Отдих и култура
Западен парк
Парк Лаута
остров Адата
Ботаническа градина
ГЛАДНО ПОЛЕ
ЖК СТОЛИПИНОВО
ЖК ИЗГРЕВ
ЖК ГАГАРИН
ЖК ХРИСТО СМИРНЕНСКИ
ЖК ВОТЕВ-ЮГ

Investment measure

Activities

- Design of the structural and technological solution of a rainwater discharger with transverse profiles.
- Awarding the drawing up of documents pursuant to Chapter IV of the EPA and the WA.

The rainwater drainage, through the construction of a stormwater discharger is defined by:

- the lowest point of the underpass from the south/north regulation line of the road lane with the relevant elevation, where the existing rain grids are located.
- Protection of tree species in the green area along the dyke of Maritza river and in the riverbed itself.
- Conflict-free crossing with the existing water conduit Ø 600 in the green area along the ditch.

-The hydraulic capacity of the three-grid street outlet may be approximatively determined on the basis of the hydraulic conductivity of a single 500/500 mm street outlet, which has been established in the hydraulic laboratory of the UACE and is 19,5 l/s at a water level of 22 mm above the cast iron grid. In the absence of hydraulic resistance from a waste bin and discharger Ø 150 mm and upon availability of 200 mm water layer under the cast iron grid, the hydraulic capacity of one grid can be estimated to be approximately 70-80 l/s.

In this connection, a three-grid street drain is suitable for a water collection facility.

- Design of urban element with artistic value and provision of possibility for taking pictures (selfie), capturing the surrounding environment, including a QR code with data on climate change challenges and on the project.

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Investment measure

BENEFITS

According to the Regional Master Plan for Water Supply and Sewerage of the Separated Territory of W&S EOOD – Plovdiv, collectors I and IV are in the worst condition. In the event of a heavy rainfall, the latter works under pressure and floods the neighboring buildings and streets. In 2003, the collector was jammed 35 times, flooding the road, intersections and basements of the neighboring buildings. This problem affects about 100,000 people. Therefore, the proposed investment measure covers neuralgic sections of the road infrastructure, which form water catchments as a result of heavy rainfalls. These are the underpasses under bridge structures, connecting the southern and northern parts of the city.

- Rainwater drainage will have actual long-term benefits for the society.
- Implementation of the envisaged investment measure will ensure the normal movement of private motor vehicles and buses of the public urban transport, which is a contribution to the needs of the local residents.
- The quantification of the natural and social costs and benefits allows the assessment of not only the importance of the individual projects but also of the overall activity of the municipality for providing comfort to the population.
- Education and public awareness shall encourage the implementation of projects with significant environmental and social benefits in terms of adapting the urban environments to the climate change.
- The good stormwater management creates a good social environment – the people want not just to exist but to prosper. The good transport connections and the personal satisfaction are the things that make social life meaningful, which is the aim of the implementation of the investment measure in the project fiche.
- The possibility for implementing the activities envisioned in the investment measure in the Draft fiche are supplementary to the activities under the LIFE program with acronym BULADAPTECOS. The activities of both project proposals are targeted towards a common solution in synergy with the implementation of measures for climate change adaptation and prevention and management of climate change related risks: floods, in this number for raising the awareness, civil protection and building on local system for management of disasters, infrastructure with ecosystem approaches.

MONITORING

For the progress of the investment project implementation indicators have been set, which will be traced by deliberately designed information system, which will visualize information from the sensors and the video surveillance in the Mobility Center.

- Levellers and rainwater level sensors will be installed in the newly built rainwater dischargers;

Information on the number of times a water column passes through the stormwater discharge will be indicated in the data base;

Visualization of the data from the sensors and the video surveillance will be displayed at the Mobility Center of Plovdiv Municipality and if necessary, at other places.

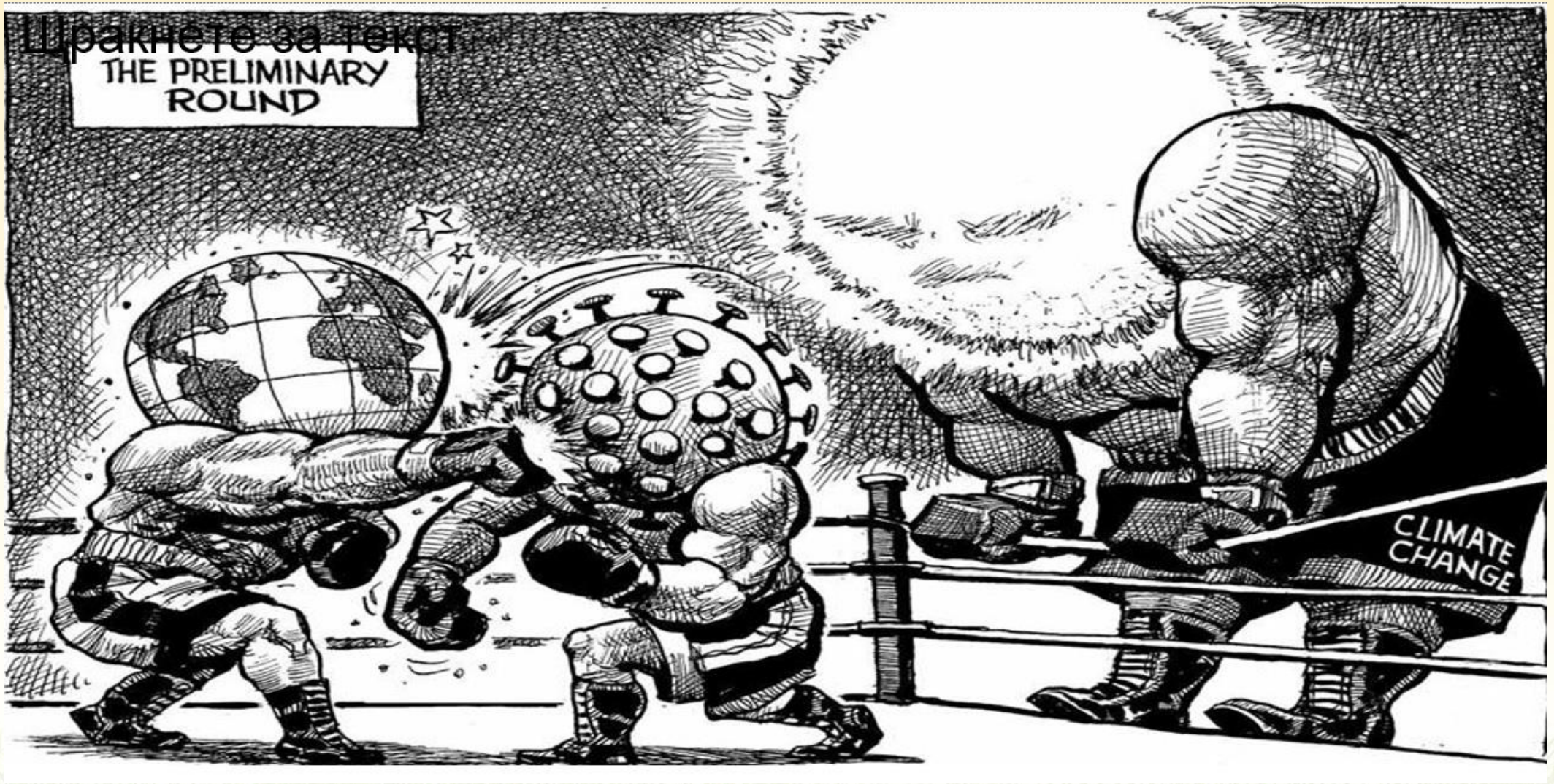
It is also planned to install video surveillance of the passenger flow at the identified neuralgic sites.

This activity will support the maintenance process of the new infrastructure.

The measures can be replicated in other parts of the city, with a transport hub set up with overpasses and underpasses in the northern part of Plovdiv, which form water catchments as a result of heavy rainfalls, such as:

- Underpass under the Gerdzhika Bridge, Maritsa Blvd. - North;
- Underpass under the Pedestrian bridge, Maritza Blvd. - North.

“We need a new way of thinking to solve the problems we've created because of the old way of thinking"


Щракнете за текст
THE PRELIMINARY ROUND
CLIMATE CHANGE

Thank you

Waiting for questions and comments