EU Support for Climate Action in IPA II Beneficiaries

TRATOLOW - Transition towards the low emissions and climate-resilient economy in the Western Balkans and Turkey

Regional workshop on "Urban adaptation, resilience and SECAP adaptation component" – focusing on the climate risks heat and pluvial flood in urban areas and its surrounding

February 22nd 2022, Istanbul

Miljenko Sedlar
North-West Croatia Regional Energy and Climate Agency ZAGREB case

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Key requirements in SECAP development

Focus on adaptation/resilience

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- Preparing the ground for implementation
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SECAP – way to go beyond?

- Key document that show how to reach **mitigation targets** and a roadmap for **resilience** build-up
- Not mandatory, but shows commitment of the cities and regions
- Examples of usage as ex-ante conditionalities for co-funding

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SECAP – just another document?

First Sustainable Energy and Climate Action Plan in Croatia by the City of Zagreb

- NO!
- Shouldn’t be regarded as a fixed and rigid document
- Climate changes, we learn new facts, exchange practices
- Should be regularly updated and revised – for example, City of Zagreb SECAP was developed in 2019. and is currently in the process of revision
- It is approved by the City council/Assembly – awareness raising!

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1. Preparing the ground for adaptation
2. Assessing climate change risks and vulnerabilities
3. Identifying adaptation options
4. Assessing and selecting adaptation options
5. Implementing adaptation
6. Monitoring and evaluating adaptation

Steps needed to develop and implement adaptation strategies!

Urban Adaptation Support Tool
Covenant of Mayors for Climate & Energy EUROPE

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Essentials

- Obtaining political support! (City councils on board!)
- Colleting initial information (analysis, historical data, other relevant strategic data…)
- Setting up the process
  - Governance model (who internally, who externally)
  - Resources (human, technical)
  - Funding – there will be need for expert support, data, analysis
- Stakeholders
  - Identification
  - Engagement
  - Reccomended to use the pentahelix approach (local governance, businesses and industry, academia, NGO sector, general public)
- Increase awareness (extremely important!)

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This excersise is very technical, but communication with stakeholders is crucial!

You need to:

- Recognize past and present climate impacts (a lot of baseline data will be needed)!
- Understand the climate projections and future impacts
- Identify vulnerable sectors (not all of them are equally vulnerable, stakeholders communication is important)
- Conduct risk and vulnerability assessment (there is a guiding template on CoM web)
- Identify main adaptation concerns and defining objectives
- Assessing climate change risks and vulnerabilities

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Adaptation – the baseline!

- Climate change Risk and Vulnerabilities Assessment (RVA)
- Identifies the most relevant climate hazards and vulnerabilities affecting the city, region or lower level
- Adaptation measures planned accordingly

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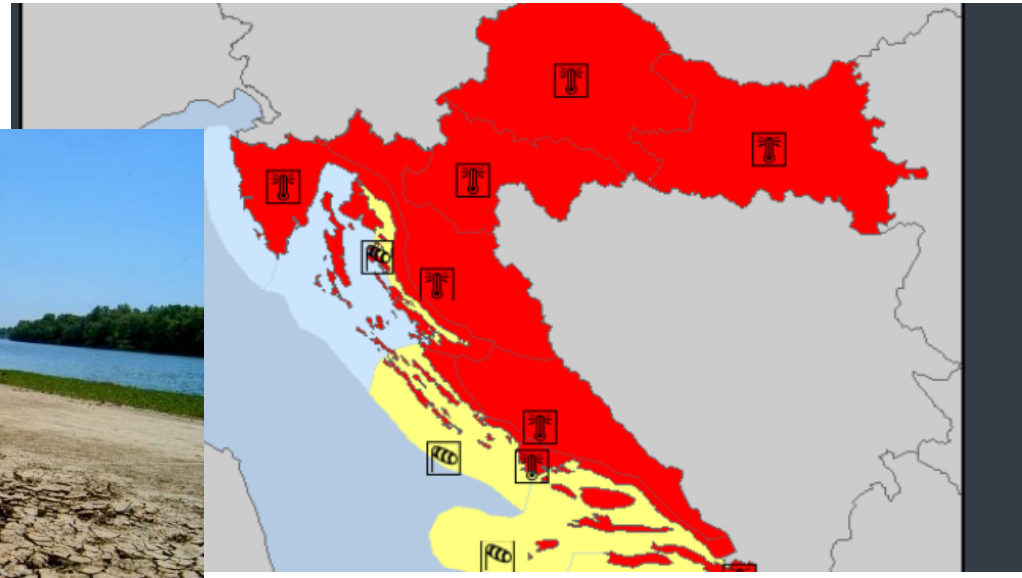
Adaptation – the baseline – sectors concerned!

- Should include actions in sectors/areas which are most likely to be **vulnerable to climate change**
- **Typicaly:**
  - Buildings
  - Transport
  - Energy
  - Water
  - Waste
  - Land use planning
  - Environment and biodiversity
  - Agriculture and forestry
  - Health
  - Civil protection
  - Tourism



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Assessing climate change risks and vulnerabilities

Lessons learned!

Baseline research and analysis are crucial, as well as expert support in risk modelling!

	Current risks	Anticipated risks		
Climate parameter	**Current risk level**	**Intensity change**	**Change in occurence**	**Time period**
Extreme heat	High	Increase	Increase	Current risk
Extreme cold	**High**	**Increase**	**Increase**	Current risk
Urban flooding	**Low**	Increase	Increase	**Long term**
Drought	High	Increase	Increase	Current risk
Storms	High	Increase	Increase	Current risk
Land movement	High	Increase	Increase	Current risk
Fire of open space	Low	Increase	No change	Current risk

Extreme heat – good assessment, yet to general

Extreme cold – poor assesment

Urban floding – some wrong assumptions

Adaptation measures planned – in scope ok, in terms of urgency and size improvements are needed!

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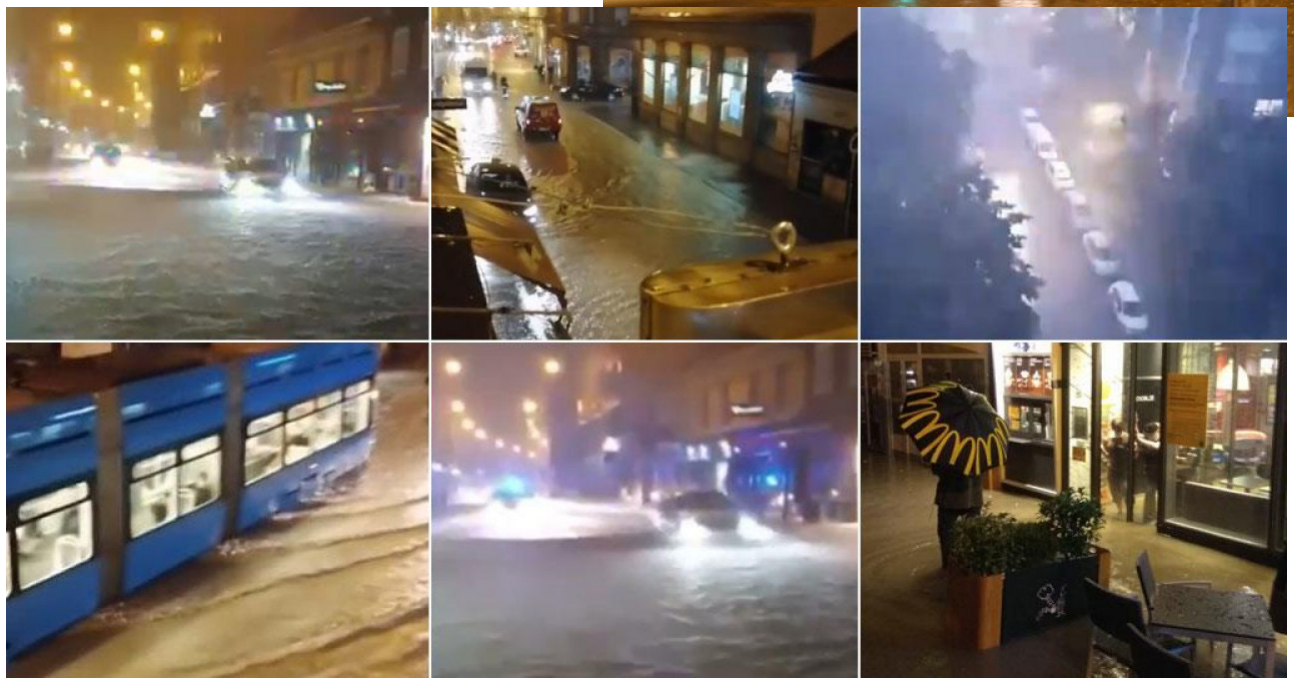
Assessing climate change risks and vulnerabilities

Reflection on risk assessment in 2018!

July 2020, Zagreb



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Reflection on risk assessment in 2018! Urban flooding!

Key facts:

1. Drainage system capacity is insufficient. Built in 18th and 19th century. Uncontrolled urbanization has put to much pressure on it! It is usually designed based on:

a) Max expected rainfall in certain time period (changed)
b) Frequency of occurrence (changed)
c) Size of the urban area (growing)
d) number of inhabitants (growing)
e) obsolete piping in many parts of the City

2. Combined storm water and fecal drainage system

Same system absorbs rain water, fecal waters and waters from the Sljeme mountain in the vicinity of the City

a) Systems neet to be separated
b) Rain water from roofs directed to green surfaces or harvested (need to increase green surfaces area, green roofs, natural retentions…)

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Reflection on risk assessment in 2018! Urban flooding!

Key facts:

3. Huge precipitation in short time period.

a) **80 mm** of rain in couple of hours
b) **This kind of events will be more often and with even higer numbers!**

City of Rijeka
22/23 September 2022
360 mm in 24 hours!

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Zagreb case – baseline related to urban heat!

Increase of medium heat impact related to urbanization and climate change (diff between 1961. – 1990. and 1991. – 2020.

Key facts:

1. Impact of heat is significant (average daily temperatures, increase of min and max temperatures, rise of heat indexes…)
2. Urban heat increase is a combination of global climate change and rate of urbanization
3. Buildings inhabited by vulnerable groups are concentrated in densly built areas of the city, thus more exposed to the heat
4. Urban heat island is present on the level of the city, but some areas are more critical

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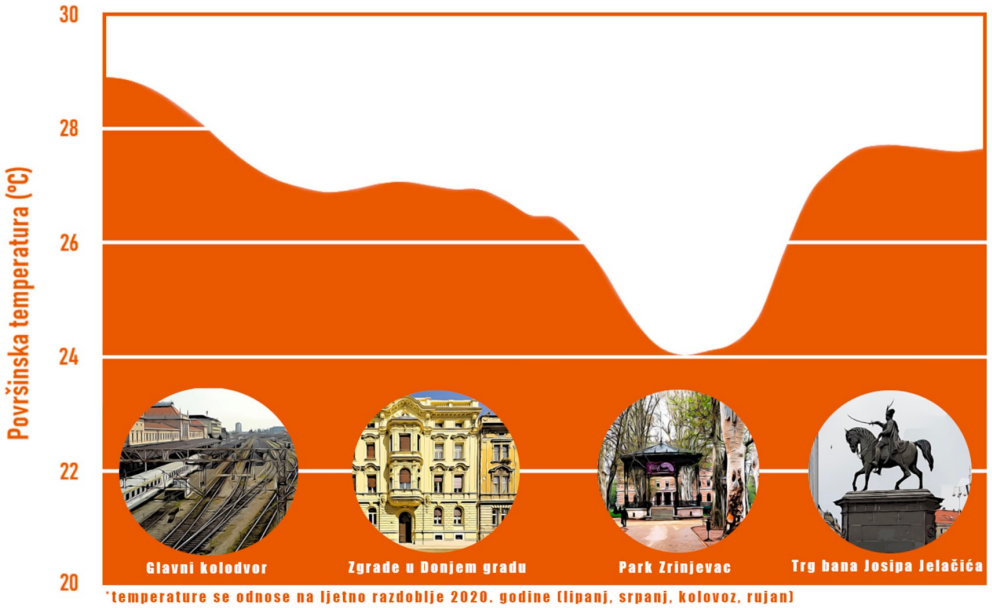
Assessing climate change risks and vulnerabilities

Urban heat assessment!

Assessment was far to general – more detailed assessment needs to be performed!

Detailed heat pressure analysis was performed!



- Heat pressure is not equaly distributed
- Temperature parameter is mostly dependant on atmosferic/climate influence but local conditions can modify them
- Synergistic effect of those parameters can cause amplification, for example heat vawes
- Heat pressure in the City is extreme

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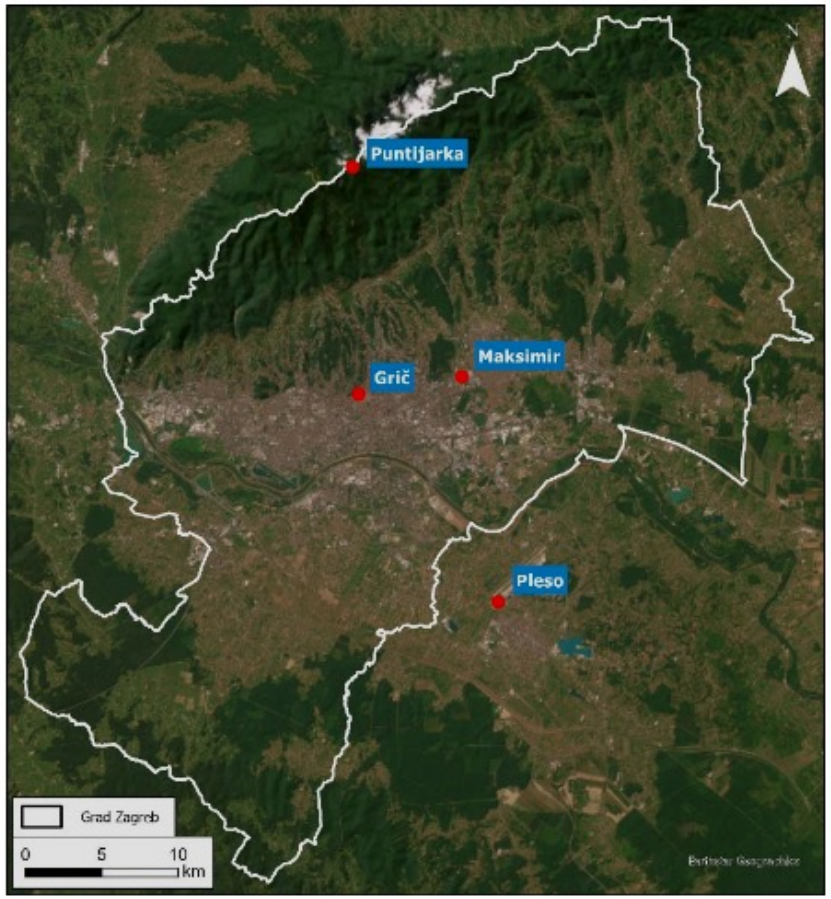
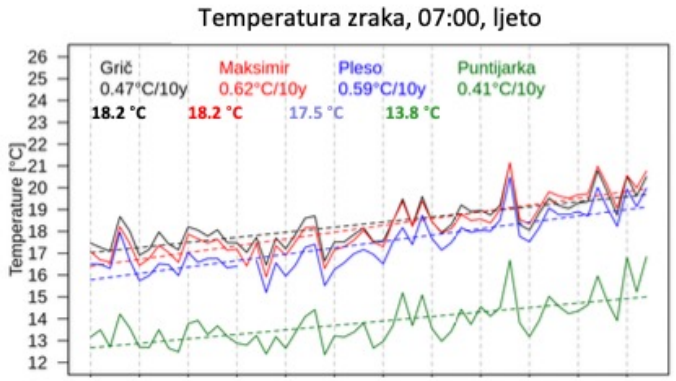
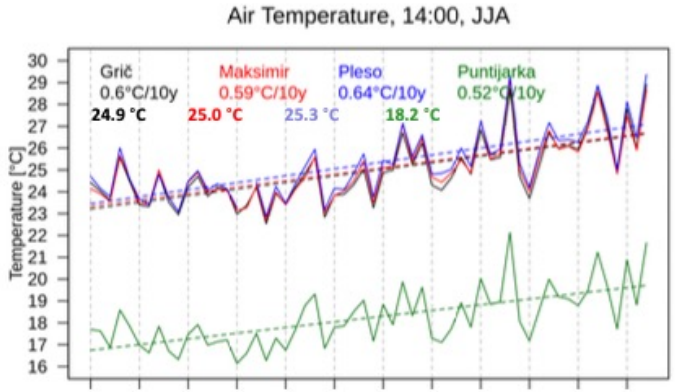
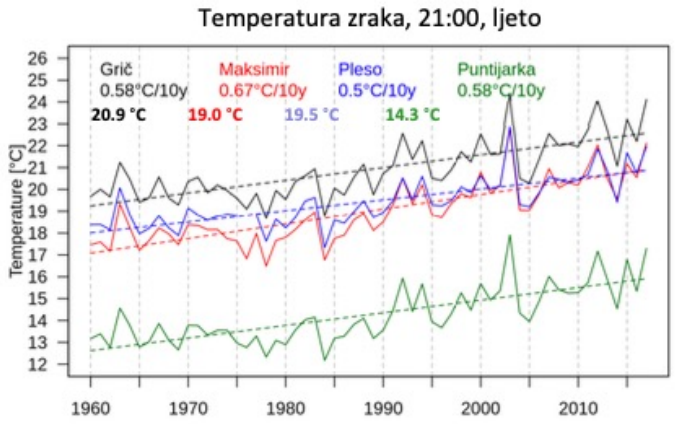
Assessing climate change risks and vulnerabilities



Slika 3.1: Grad Zagreb i položaj meteoroloških postaja







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Assessing climate change risks and vulnerabilities

City is warmig up!

All four main metorological weather stations are showing increase of temperature and reclasification of climate classes!

- Grič, Maksimir and Pleso weather stations – from moist moderate warm climate with warm summers (Cfb) to moist moderate climate with hot summers (Cfa) (due to increase of average daily temp in July above 22C)
- Puntijarka weather station – from moist snow-forrest climate (Dfb) to moderatly warm climate (Cfb) – due to inrease of monthly average temp of coldest month Januray, that no longer goes below -3C

- **What really happened**
  - Mountain area now has the climate City used to have
  - City climate is now more simmilar to the climate of the mediterannean cities

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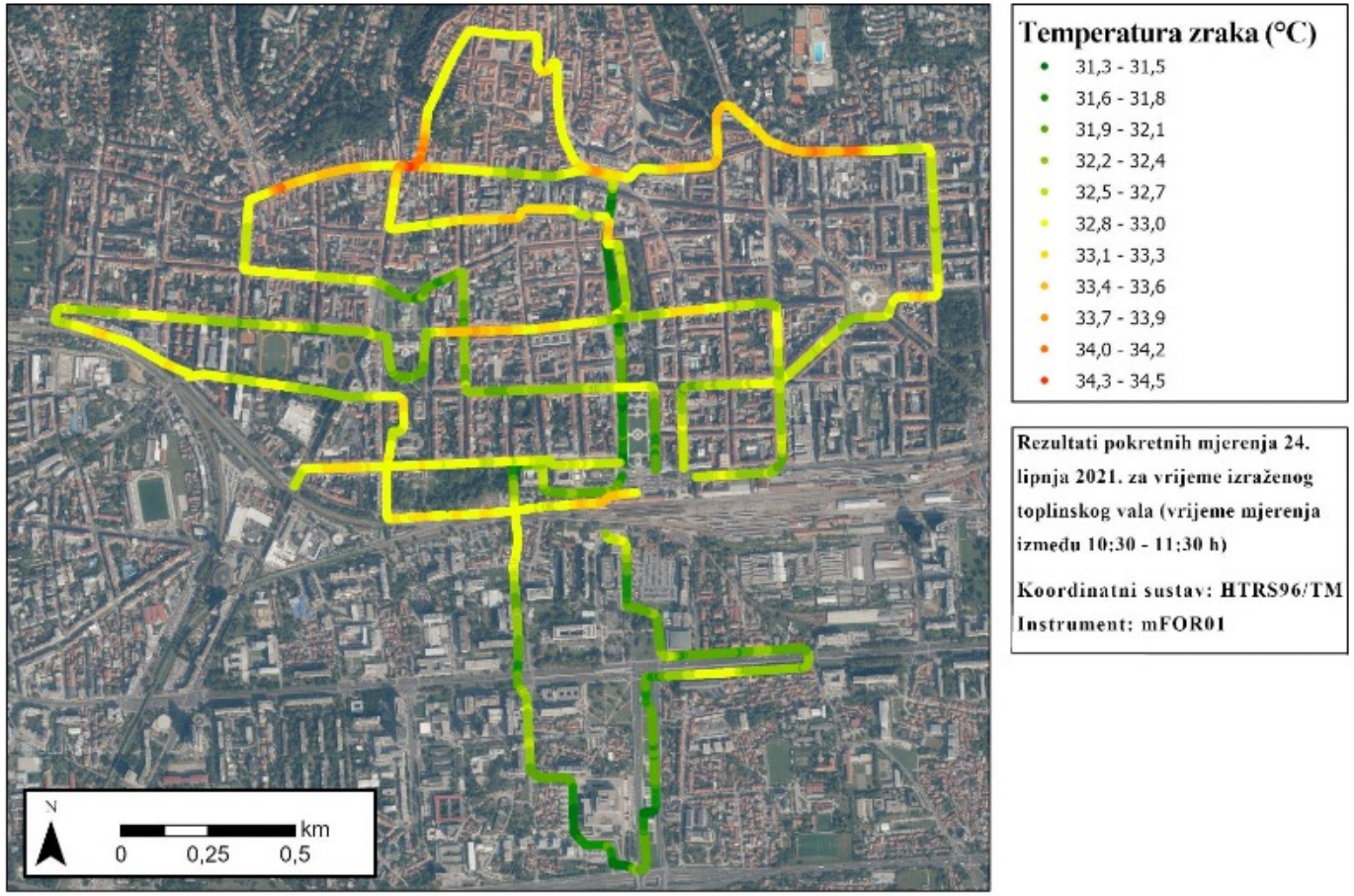
Spatial distribution of heat!

For more detailed analysis more dense measurement are needed!
GPS connected thermometers with data loggers!



Slika 3.5. Rezultati prvih pokretnih mjerenja temperature zraka u Zagrebu 24. lipnja 2021. godine

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Identifying adaptation options

Key elements

- Based on solid data, analysis and expert support
- RVA assessment is a crucial tool
- Some measures can be city wide in planning and execution
- Other measures are more place based – focus on narrow scope
- Stakeholders engagement is very important!
- Clear identification of roles and responsibilities, ownership is absolutely crucial
- (co)funding options have to be (even broadly) identified
- Monitoring needs to be envisaged and setup!

Title of the measure
Responsible for execution
Partners in execution
Other involved parties
Timeframe
Cost assessment
Funding options
Summary
Monitoring

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Identifying adaptation options

Adaptation measure - Urban heat	Primary sector
Maping of bulidings to determine the potential to implement green infrastrucutre	Built environment/buildings
Application of green roofs and facades on the buildings owned by the City	Built environment/buildings
Airconditioned public transport vehicles as a standard	Transport
Installment of canopies that provide sun and heat protection on public transport stations	Trasnport/public health
Integration of the concept of green infrastructure in the processes of strategic and spatial planning	Urban planning/spatial development
Analysis of urban heat island effect mitigation using the green infrastructure	Urban planning/spatial development/health
Concrete green infratructure projects on critical spots and monitoring of effects	Built environment
Urban farming surfaces increase	Agriculture/spatial planning
Implementation of the heat protection protocol	Public health

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Identifying adaptation options

Adaptation measure – Urban and pluvial flooding	Primary sector
Analysis and application plan for Integral rain water drainage/usage	Water and waste water
Options analysis for waste water recycling for reuse and for rain collection	Water and waste water
Sava river riverbed restoration	Water and waste water/biodiversity
Identification of key infrastructure and vulnerable groups in threat of pluvial and urban flooding	Water and waste water/security/health
Integration of green infrastructure concept in the processes of spatial and strategic planning	Water and waste water/biodiversity,security
Concrete green and blue infrastructure projects on identified critical spots	Water and waste water/biodiversity

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Several crucial aspects

- Political support
- Motivated and expert staff
- Inter-departments cooperation
- Key stakeholders engaged and ownership identified
- Urban and spatial plans as enabling factors
- Abailability of funding, co-funding, budgeting
- Monitor, re-evaluate as you go, change if needed and implement

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