Green Agenda - Supporting Western Balkans in Adapting to Climate Change (WB Adapt)

Joint Action for Climate Resilience

Climate Change Adaptation in Transport - Studies

13.11.2025.

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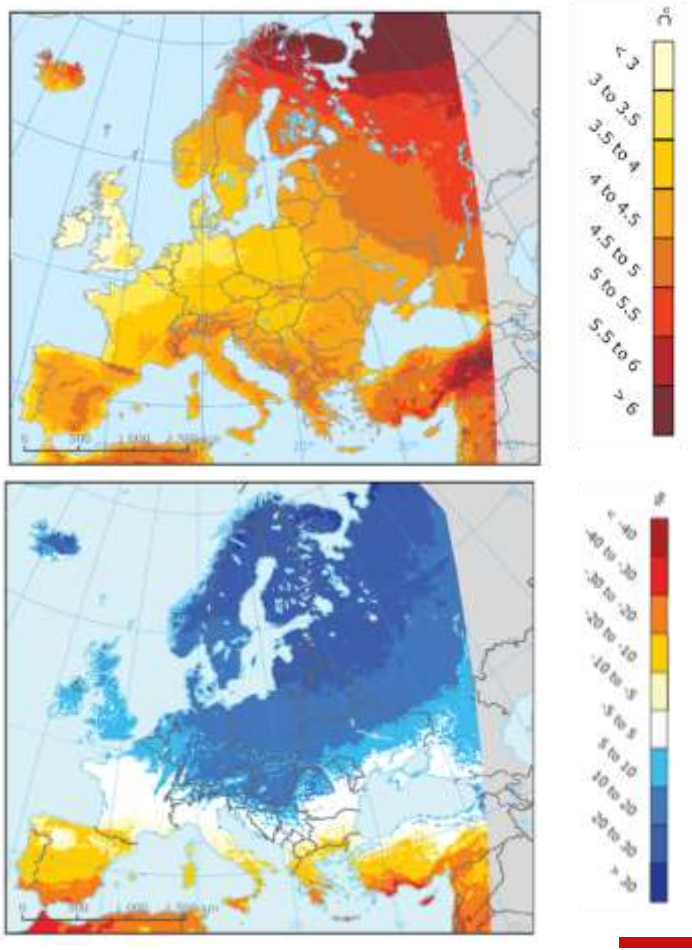
Background

- The **Western Balkans** countries are becoming a hostpot in Europe in terms of climate hazards, with growing risks to people, infrastructure, and economies.
- **Urgent adaptation** of infrastructure and planning is essential to reduce vulnerabilities and losses.
- The **climate risk assessment** for **urban mobility infrastructure** in Albania (Tirana, Shkodra) and Kosovo (Prishtina) will pilot resilient mobility and municipal investments.
- **Data-driven decision-making** will support climate-adaptive urban development.
- **Assessment of Urban Traffic Network Resilience in Sarajevo** will employ the same framework.



Main Tasks of Consultancy

Climate resilience study: Pristina, Tirana, Shkodra

- Analysis of climate-induced risks to key urban mobility infrastructure in the Municipalities of Tirana, Shkodra and Prishtina.
- Consultation process: 2 meetings and 3 workshops with the Municipalities to identify risks.
- Develop an action plan identifying climate-resilient urban mobility initiatives in the Municipalities of Tirana, Shkodra and Prishtina.

General Overview of Consultancy

Consortium AL and KOS: EUBridge and Tregerma

The consultancy aims to **assess climate-induced risks** to **urban mobility infrastructure** in Tirana, Shkodra and Prishtina, and **identify climate-resilient urban mobility measures**.

Duration: August 2025 – January 2026

Collaboratively Working with Municipal Staff from 3 Municipalities

Hazards and Mobility Components

Hazard / Mobility Component	Urban Heat Islands (UHIs)	Extreme Heat and Heatwaves	Heavy Rainfall & Urban Flooding	Extreme Cold, Ice & Storms	Landslides & Soil Erosion	Riverine & Coastal Flooding
Walking and Cycling	Streets without shade become difficult to use during peak hours; cycling declines sharply. Prolonged heat exposure increases fatigue and heat stress among users.	Reduced comfort and safety; high risk of dehydration and heat-related illnesses. Dust and poor air quality reduce walkability and discourage cycling.	Sidewalks and cycling paths become impassable; puddles and slippery surfaces increase accident risks.	Icy or snow-covered paths create unsafe conditions; wind and falling debris discourage walking and cycling.	Walking and cycling unsafe in hillside or peri-urban areas due to unstable slopes or erosion.	Pedestrian access to riverside and low-lying areas blocked; prolonged flooding restricts active mobility.
Public Transport	Unsheltered stops become unsafe; vehicles idle longer in heat; older fleets consume more fuel and emit more pollutants.	Vehicle overheating and reduced cooling efficiency; passenger discomfort at unsheltered stops; more frequent breakdowns.	Bus and tram routes disrupted; vehicles stalled or damaged by flooded sections; power systems affected.	Bus and tram services suspended due to ice and snow; delays from blocked routes; reduced reliability and passenger confidence.	Routes through upland areas disrupted; buses unable to operate where roads are blocked by debris.	Entire routes submerged or rerouted; prolonged service suspensions and reduced accessibility to key hubs.
Road Infrastructure	Concentrated wear on asphalt surfaces in heat hotspots; deformation of pavements and expansion joints.	Asphalt softening, rutting, and cracking due to drying soils; accelerated surface degradation.	Drainage overwhelmed; road washouts, potholes, and underpass flooding; weakened foundations.	Roads blocked by debris or fallen trees; ice formation leads to cracking and surface damage; increased maintenance needs.	Roads near slopes blocked or destroyed; erosion weakens road edges and foundations; costly reconstruction required.	Bridges and arterial roads damaged by prolonged inundation; saltwater intrusion accelerates corrosion.
Urban Logistics & Freight	Refrigerated transport costs rise; delivery reliability declines; higher energy use.	Increased refrigeration costs and emissions; reduced vehicle performance; congestion worsens from slower traffic in heat.	Delivery delays from flooded roads; storage areas at risk; supply chain disruptions.	Freight vehicles delayed or rerouted due to storms, snow, or icy surfaces; higher accident risks.	Freight and goods transport interrupted on upland routes; landslides block corridors, delaying deliveries.	Freight corridors and storage areas in low-lying zones submerged; long detours increase costs.
Parking & Traffic Management	Asphalted parking areas act as heat zones, raising local air temperatures; parking sensors and systems overheat.	Higher cooling costs in vehicles; driver fatigue; congestion worsens in high temperatures.	Parking areas flooded; diversions increase congestion; damage to electronic systems.	Ice and snow reduce parking availability and maneuverability; accidents increase; equipment failures possible.	Road closures increase parking pressure on safe routes; slope instability near parking facilities causes safety risks.	Strategic parking and traffic management hubs in low-lying zones rendered unusable; prolonged recovery needed.
Vulnerable users and accessibility	Disproportionate impacts on elderly, children, and people with disabilities who are more sensitive to high temperatures and poor air quality. Heat exacerbates health risks and reduces mobility	Exposure to prolonged heat poses serious health threats such as dehydration, heat exhaustion, and cardiovascular stress. Lack of shaded waiting areas and cooling	Flooded sidewalks, bus stops, and crossings limit accessibility for persons with reduced mobility, wheelchair users, and those escorting children. Increased risk of	Icy surfaces and strong winds increase the likelihood of slips and falls. Mobility for users with disabilities becomes severely restricted; access to essential services is reduced.	Erosion or small landslides in hilly areas obstruct safe routes for vulnerable users. Access to healthcare, schools, or workplaces may be interrupted, particularly where no alternative	Flooding of low-lying residential areas disrupts access to essential services and public transport. Vulnerable populations may face prolonged displacement or isolation due to inaccessible or unsafe

Workflow Diagram

Stakeholder Mapping

Legal and Policy Review

City Profiles

- Risk Assessment Score Boards
- Risk Assessment Focus Areas Maps
- Risk Assessment City-wide Maps

Risk Assessment Methodology

Hazards

- Urban Heat Island Effect
- Extreme Heat and Heatwaves
- Heavy Rainfall and Urban Flooding
- Extreme Cold and Storms
- Landslides and Soil Erosion
- Riverine and Coastal Flooding
- Extreme Storms and Winds

Exposure

- Walking and Cycling
- Public Transport
- Private Vehicle Use and Traffic
- Road Infrastructure
- Urban Logistics and Freight
- Parking and Traffic Management
- Vulnerable Users and Accessibility

Vulnerability

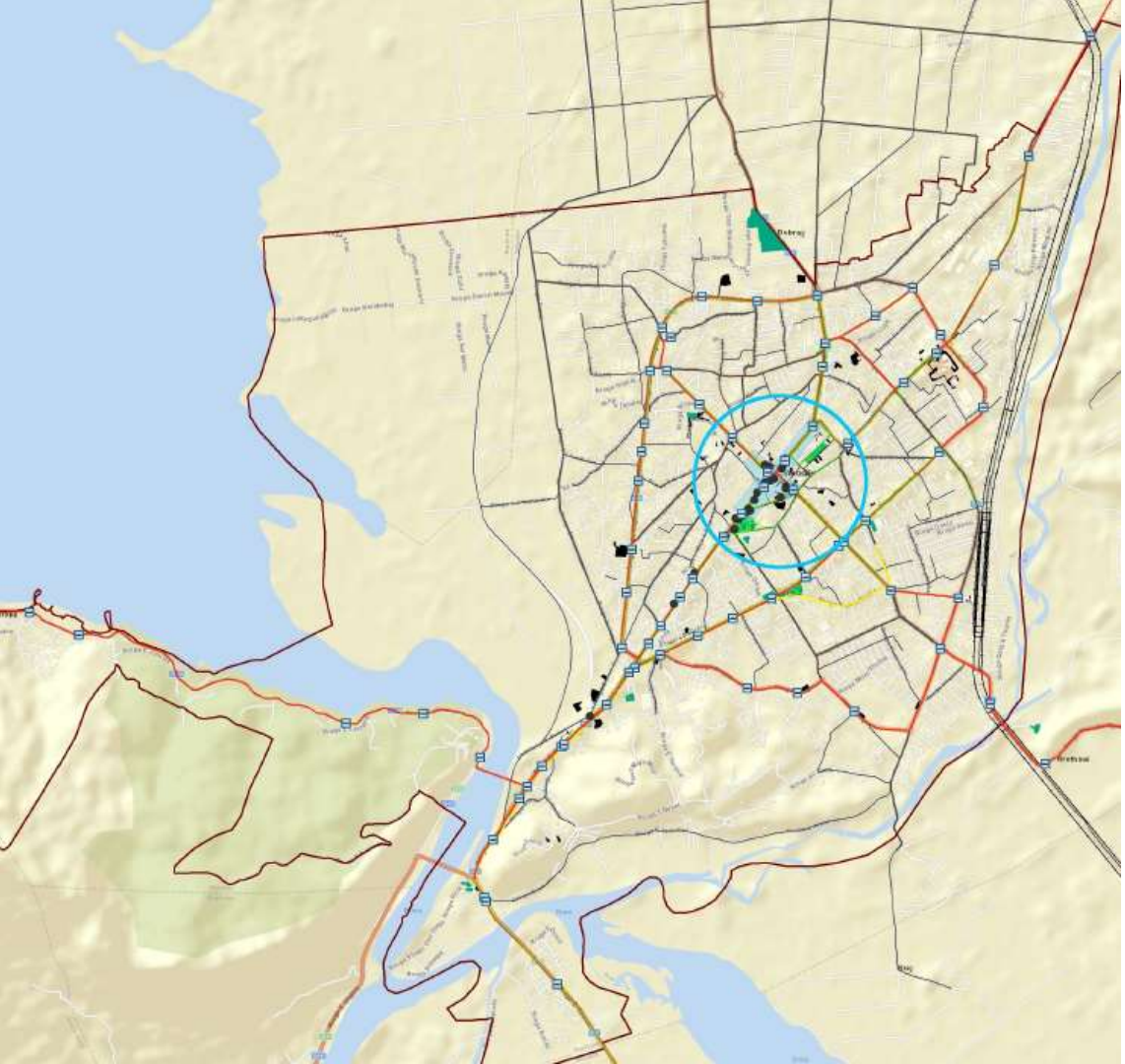
- Vulnerability Adaptation Action Plan, Municipality of Tirana
- Strategic Environmental Assessment, Municipalities of Tirana, Shkodra, Prishtina

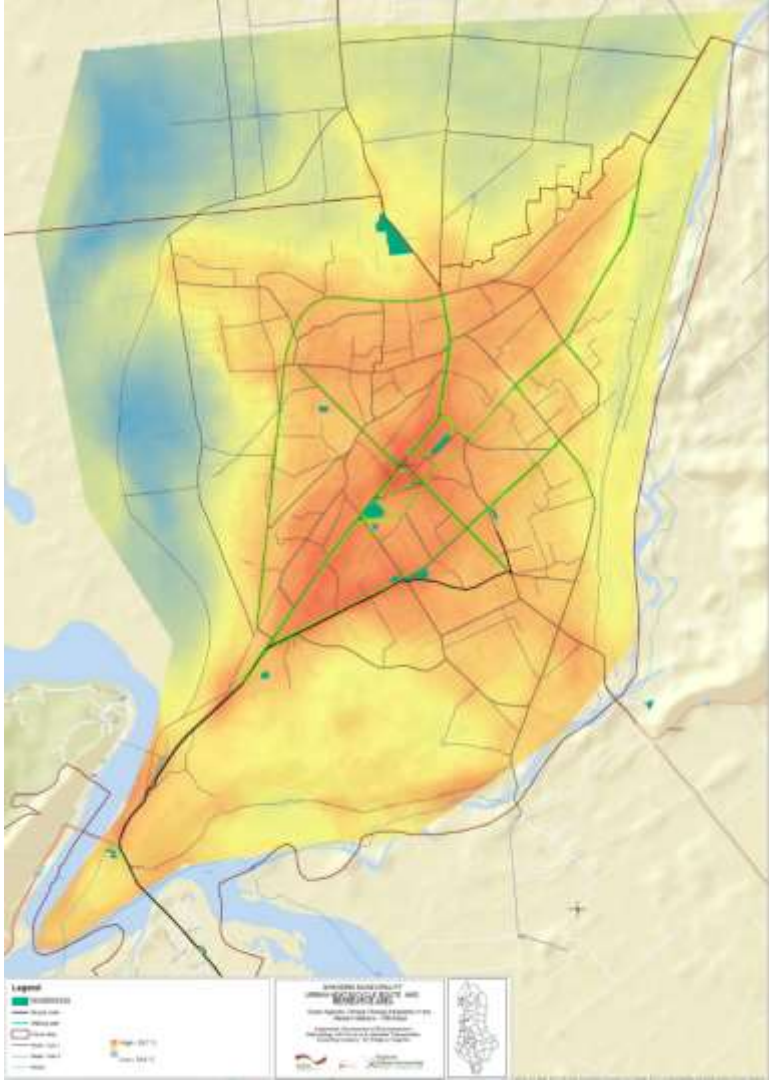
Action Plan

Project fiches drafted in cooperation with each Municipality (bilateral meetings and workshop), including timelines, actors, and rough estimates.

Prioritizing small to medium level interventions in each municipality

Approach is transferrable to other cities




Legend

Key Benefits of Regional Approach

- Intermunicipal cooperation on shared challenges
- Exchange of knowledge and best practices
- Harmonized urban transport planning **regional approach in SUMP**
- Identification of shared gaps and priorities
- Development of joint project proposals – NALAS training
- Opportunity for high-level engagemer
- Increased access to large-scale infrastructure financing (e.g. KfW or

Assessment of Urban Traffic Network Resilience – A Case Study of the City of Sarajevo

Global Initiative on Disaster Risk Management and WB Adapt

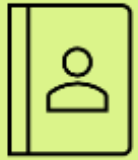
- The study will cover five urban municipalities: Stari Grad, Centar, Novo Sarajevo, Novi Grad, and Ilidža - in total of 130 km of urban roads.
- **Comprehensive Risk Management - giz approach**

GI:DRM
Global Initiative on Disaster Risk Management

Goal

To **analyse the resilience of Sarajevo’s urban traffic network** to extraordinary circumstances arising from both climate change impacts (such as floods, snow, fires, and extreme heat) and other natural or human-made hazards, and to **develop proposals for strengthening infrastructure** and advancing comprehensive risk management — ensuring that disaster risk reduction and climate change adaptation are systematically embedded into urban mobility planning.

ESTABLISHMENT	Working group - supported by external expertise
ASSESSMENT	- Identification of high-risk zones - Mapping of critical nodes - Evaluation of the network's sensitivity to various hazard types - Analysis of social vulnerability in areas with limited access or mobility
STRATEGIC RECOMMENDATIONS	- Resilience indicators - Targeted climate adaptation measures.
CONTRIBUTIONS	- NALAS DRR Tool - integrating Sarajevo's municipalities into the existing map - Contribution to the SUMP Sarajevo II generation / climate resilience measures
DISSEMINATION/ REPLICATION	Regional exchanges, NALAS, CIVINET, Transport Community



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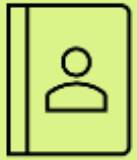

STRATEGIC RECOMMENDATIONS

- Resilience indicators
- Targeted climate adaptation measures.

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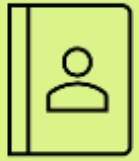
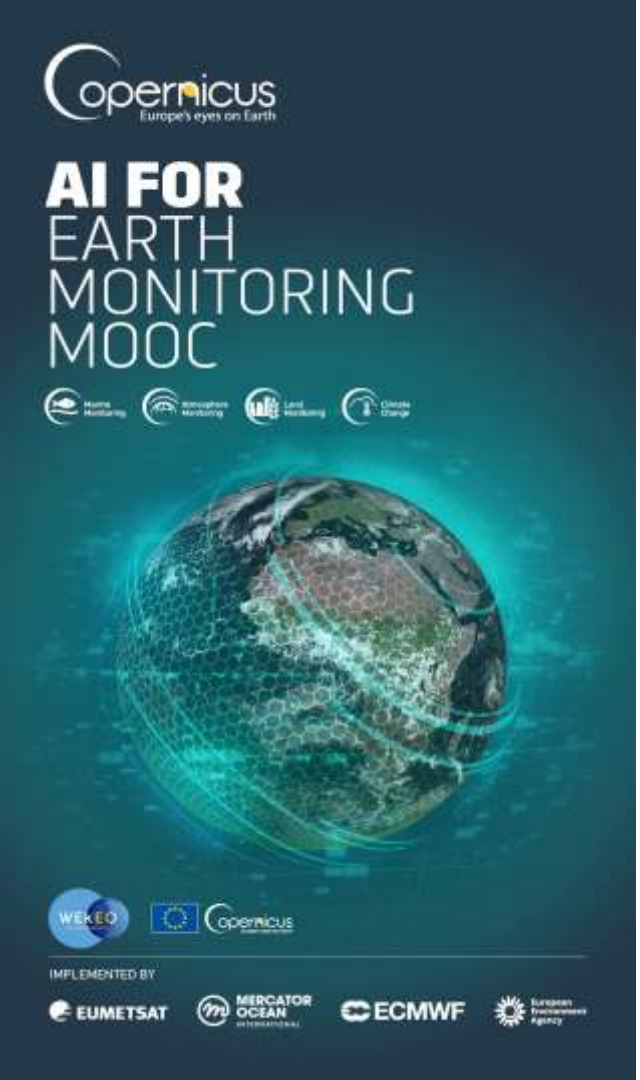
giz

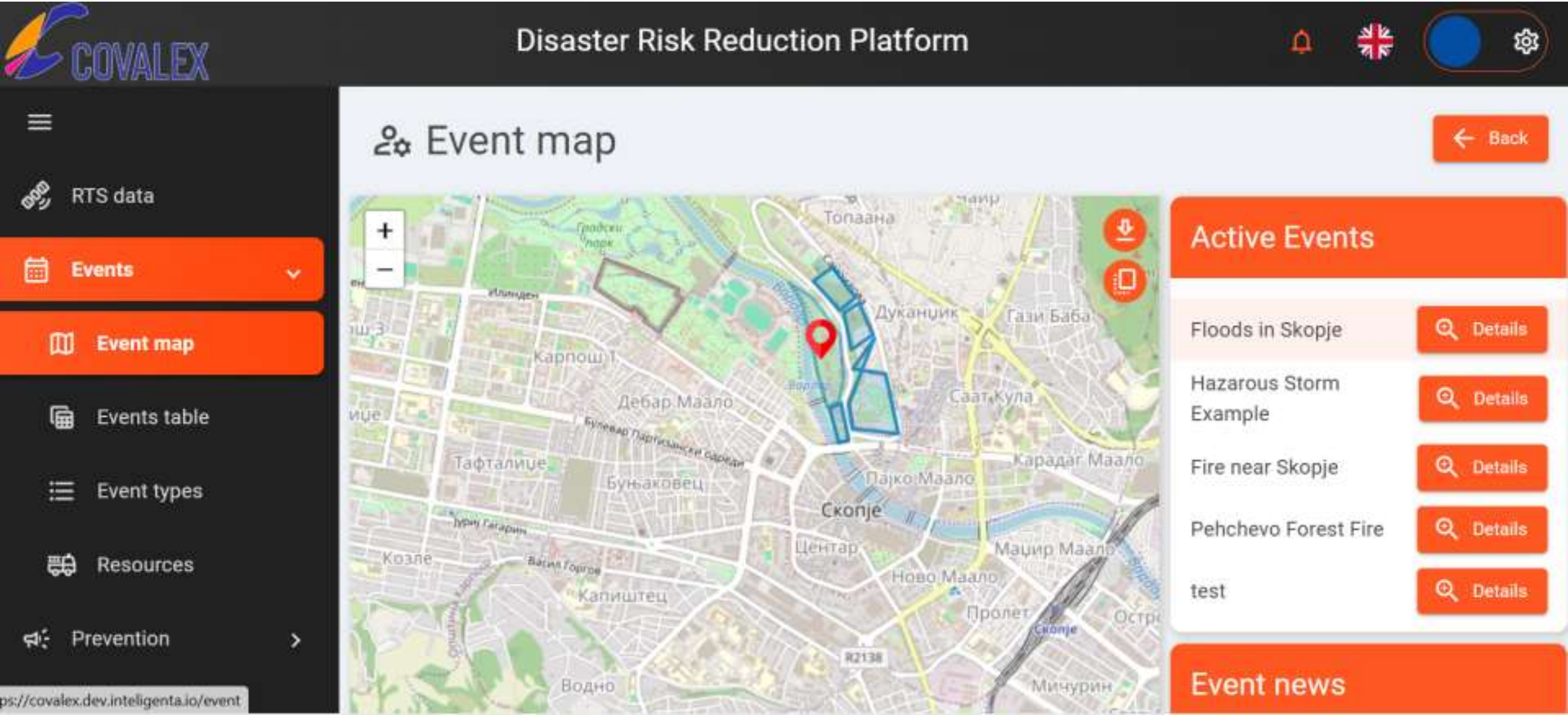


DISSEMINATION/ REPLICATION

Regional exchanges, NALAS, CIVINET, Transport Community



Copernicus - Earth observation data through satellites and ground-based networks. Information on climate, air quality, land, oceans, water, and natural disasters such as floods and fires. The data are used for environmental monitoring, urban planning, agriculture, risk management, and **supports decision-makers in climate policies**.


COVALEX
Disaster Risk Reduction Platform
Event map
Back
RTS data
Events
Event map
Events table
Event types
Resources
Prevention
Active Events
Floods in Skopje
Details
Hazarous Storm Example
Details
Fire near Skopje
Details
Pehchevo Forest Fire
Details
test
Details
Event news
Топаана
Дуканџик
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Дебар Маало
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Thank you!
Questions?

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