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# Prioritising Climate Adaptation Measures in Troskotovice, Czech Republic

## Evaluating Road Uses, Readiness, and Environmental Value Data for Effective Decision-Making

***The Municipality of Troskotovice is leading climate adaptation using a targeted approach to protect its roads. Combining data allows ranking and prioritising roads more effectively, strengthening climate resilience. This innovative, data-driven approach shows how small communities can make a change with limited resources, offering a practical, scalable solution for other rural regions to adopt.***

***Key Learnings***

- **Effective Prioritisation Techniques:** Integrating road usage and environmental impact with climate hazard data enables the systematic assessment and prioritisation of climate adaptation measures. This data enhances the accuracy and effectiveness of adaptation planning.
- **Decision-Making Tools:** The development and application of transparent tools for decision-making that can be adapted to different contexts and needs are essential for effective climate change adaptation.
- **Transferability:** The replicability of climate adaptation strategies is crucial for fostering viable models for broader implementation. The governance approach used in Troskotovice has proven adaptable for other municipalities in the South Moravian Region, with its effectiveness confirmed through successful testing by regional decision-makers.

## About the region

Troskotovice is a small village located in the South Moravian Region of the Czech Republic, known for its agricultural landscape and proximity to the Austrian border. With a population of around 600 residents, it is a rural area characterized by its vineyards and historical sites. However, Troskotovice faces increasing challenges due to climate change, including extreme heat, heavy precipitation, and storms.

### Climate Hazards

Extreme Temperatures, Droughts, Water Scarcity,

Flooding, Storms

### Sector

Urban, Disaster Risk Reduction

### Key system

Critical Infrastructure


## Climate Threats

Troskotovice experiences more frequent extreme weather events, including prolonged periods of drought and intense heatwaves, which have increased the risk of water scarcity and put pressure on local agriculture. Yet, the village also experiences episodes of heavy rainfall and powerful storms, leading to flash floods that damage infrastructure and erode the fertile topsoil crucial for farming. The combination of these hazards has created a challenging environment for both the natural ecosystems and the human communities dependent on them. The ongoing changes in Troskotovice's climate highlight the urgent need to prioritise roads for climate adaptation measures to ensure the functionality of critical infrastructure, including road projects, bio corridors, and swales.

## An Iterative Process for Developing the Prioritisation Approach

This pilot project, funded by the Covenant of Mayors – Europe, Policy Support Facility, prioritises climate adaptation measures in Troskotovice, Czech Republic. Although the town has a "Plan of Common Facilities" for land use and ecological stability, no clear guidance exists for prioritising climate adaptation actions. A prioritisation approach was developed through meetings, site visits, and workshops, assessing climate hazards and measuring utility, readiness, and environmental value to address this. This approach is intended to guide adaptation measures both locally and across the South Moravian Region.

During the first workshop, the invited stakeholders included Troskotovice's council members and representatives from the Land Office. Here, the project team revised, refined and vetted the initial prioritisation approach (indicators, metrics, scores, and weights) together with stakeholders. During the second workshop, the project team tested the prioritisation approach for its ability to transfer to other regions with mayors and decision-makers from the South Moravian Region.

*Figure 1: First workshop with the stakeholders in Troskotovice municipality. Image Credit: Sandra Fatorić, Dita Tesarova, Policy Support Facility Experts, Covenant of Mayors Europe.*

## Applying the Prioritisation Approach

The prioritisation approach combines data on social and environmental values with climate change risks identified for Troskotovice, such as drought, wind erosion, water erosion, and water runoff. This helps to compare and prioritise adaptation strategies targeting roads systematically. An expert team reviews each indicator and its related metrics and scores and determines their importance. For more information on the descriptions of the approach's components, Figure 2 provides an overview.

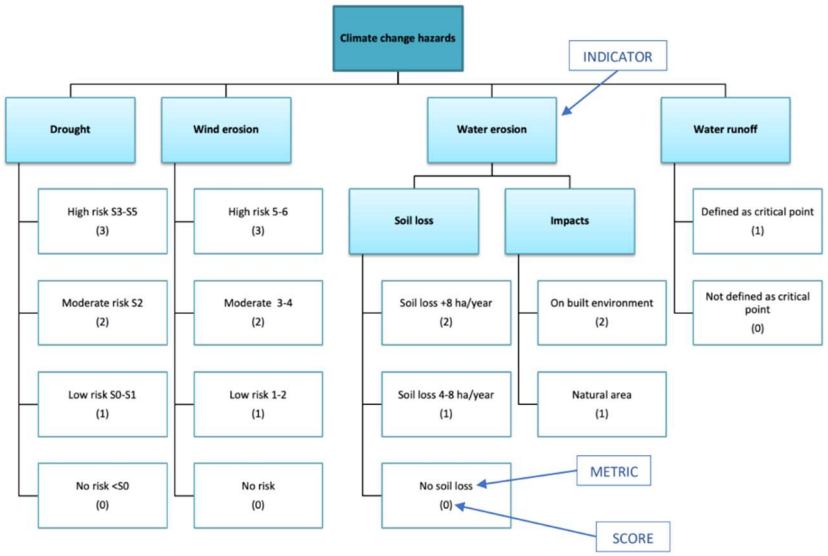



*Figure 2: Diagram of climate change hazards with its indicators (In blue boxes) and associated metrics with scores (in white boxes). Image Credit: Sandra Fatorić, Dita Tesarova, Policy Support Facility Experts, Covenant of Mayors Europe.*

The approach is then organised into an Excel file with six spreadsheets that can be used to assess, compare, and rank the selected roads quantitatively.

## Elements of Uses, Readiness and Environmental Values

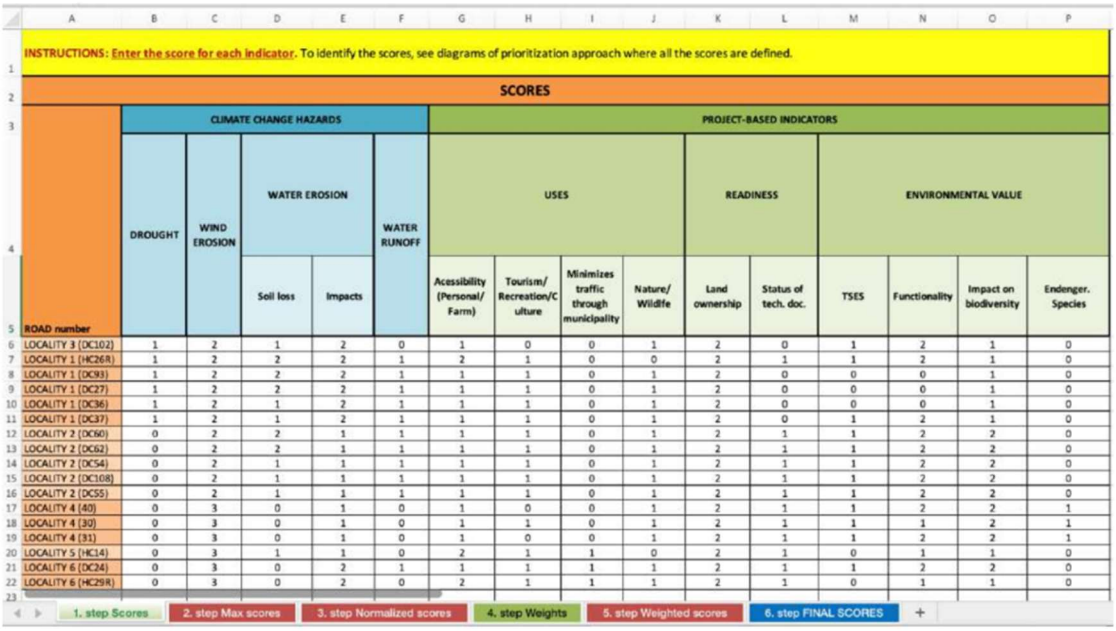
The assessment considers:

1. **Uses**: The importance of current road uses for accessibility, tourism, traffic reduction, and wildlife.
2. **Readiness of Measures**: Factors like land ownership and technical documentation status.
3. **Environmental Values**: Ecological stability, endangered species, and the road's impact on biodiversity.

Similar to climate change hazards, each measure is given a numerical score. The calculation involves assigning the weights to each indicator and their relationship. These scores are normalised to a scale between 0 and 1 to represent the relative importance of each factor and their connections to climate change hazards, road uses, readiness, and environmental values. In essence, the weights reflect the significance of each measure based on its relationships to these elements and its overall impact.

## Pilot Application of the Approach

For the approach's pilot test, a group of 16 roads within the municipality of Troskotovice was selected. The team entered scores for each indicator and then reviewed them to validate the approach. An example from this pilot test is included in Figure 3.



INSTRUCTIONS: Enter the score for each indicator. To identify the scores, see diagrams of prioritization approach where all the scores are defined.

SCORES

| ROAD number | CLIMATE CHANGE HAZARDS | | | | | PROJECT-BASED INDICATORS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DROUGHT | WIND EROSION | WATER EROSION | | WATER RUNOFF | USES | | | | READINESS | | ENVIRONMENTAL VALUE | | | |
| | | | Soil loss | Impacts | | Acessibility (Personal/ Farm) | Tourism/ Recreation/C ulture | Minimizes traffic through municipality | Nature/ Wildlfe | Land ownership | Status of tech. doc. | TSES | Functionality | Impact on biodiversity | Endenger. Species |
| LOCALITY 3 (DC102) | 1 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 2 | 1 | 0 |
| LOCALITY 1 (HC26R) | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 2 | 1 | 1 | 2 | 1 | 0 |
| LOCALITY 1 (DC93) | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 |
| LOCALITY 1 (DC27) | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 |
| LOCALITY 1 (DC36) | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 |
| LOCALITY 1 (DC37) | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 1 | 0 |
| LOCALITY 2 (DC60) | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 0 |
| LOCALITY 2 (DC62) | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 0 |
| LOCALITY 2 (DC54) | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 0 |
| LOCALITY 2 (DC108) | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 0 |
| LOCALITY 2 (DC55) | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 0 |
| LOCALITY 4 (40) | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 1 |
| LOCALITY 4 (30) | 0 | 3 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| LOCALITY 4 (31) | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 1 |
| LOCALITY 5 (HC14) | 0 | 3 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 |
| LOCALITY 6 (DC24) | 0 | 3 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 0 |
| LOCALITY 6 (HC29R) | 0 | 3 | 0 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 1 | 0 |

1. step Scores | 2. step Max scores | 3. step Normalized scores | 4. step Weights | 5. step Weighted scores | 6. step FINAL SCORES

*Figure 3: Example of the pilot test of the prioritization approach using 16 roads in the Municipality of Troskotovice. Image Credit: Sandra Fatorić, Dita Tesarova, Policy Support Facility Experts, Covenant of Mayors Europe.*

## Transferability of the Prioritisation Approach

The transferability of this structured, data-driven methodology is significant, empowering small municipalities to make impactful decisions despite limited resources. This scalable model can inspire

similar regions to adopt customized strategies for infrastructure resilience, especially under financial or technical constraints. Municipalities across Europe can adapt the prioritization approach to address climate change risks to their road infrastructure, tailoring it to their specific needs. Regional decision-makers have tested the effectiveness of the approach and have confirmed its applicability, demonstrating that even small communities can implement solutions that resonate with their unique challenges.

## Direct Benefits and Next Steps

The prioritisation approach can stand alone as a transparent tool for assisting road decision-making processes. Therefore, decision-makers can apply only uses, readiness, and environmental values or, when combined with climate change hazards, rank and prioritise roads for their adaptation potential.

After their evaluation and prioritisation, the next step towards implementing the measure is the search for suitable funding sources and the technical elaboration of their concrete form-design work. Based on these steps, authorities can adapt individual sites.

## Summary

The Troskotovice example illustrates how even small communities can take proactive, systematic steps in climate adaptation. The prioritisation approach enables decision-makers to distinguish between climate hazards while assessing the significance of road uses, readiness and environmental values. This approach can function independently as a transparent decision-making tool based on these criteria or be integrated with climate change hazard assessments to rank and prioritise roads for adaptation initiatives effectively. Additionally, it serves as a replicable model for other regions, particularly those with rural or limited resources, to prioritise climate actions effectively.

## Further Information

- Covenant of Majors for Climate & Energy Europe. Prioritising Climate Adaptation Measures Troskotovice, Czech Republic. Available at https://eu-mayors.ec.europa.eu/sites/default/files/2024-01/Troskotovice%2C%20Czech%20Republic_PSF%20Case%20Study.pdf

## Contact

Covenant of Mayors Europe Office.

Email: info@eumayors.eu

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