CARPIVIA: Integrated assessment of vulnerability to climate change and ecosystem-based adaptation measures

Jaroslav Slobodnik

CARPIVIA Project - Background

- *Duration*: January 2011 - June 2013
- Funded by European Commission (DG ENV) under preparatory action "**Climate of the Carpathian Basin**", approved by European Parliament
- Focus on:
  - *Benefit national and regional authorities of the Carpathian Region*
  - *Support policy proposals in line with Commission* ***White Paper on Adapting to Climate Change****, National or Regional adaptation strategies, or a* ***Danube Climate Adaptation Strategy***

Where to go?

CARPIVIA Project - Objectives

- To gather information on **vulnerability** of environmental resources to climate change in the Carpathian region, and on that basis identify and assess potential **adaptation measures**, focusing on **adaptive water management** and **ecosystem based approaches**
- To **identify knowledge gaps** to be filled in by additional field research or **case studies** (executed by a parallel project contract)
- To contribute to on-going national or transboundary adaptation strategies or related policy processes, and the EU Knowledge Base on Climate Vulnerability and Adaptation (i.a. **EU Adaptation Clearinghouse**)

CARPIVIA – Vulnerability of what to what?

Vulnerability of:

- Water resources
- Ecosystems [classified at different levels of detail]
- Ecosystem based production systems, services and sectors (agriculture, forestry, energy, tourism, navigation)
- Human health

To:

- Increasing drought tendency
- Increasing frequency of heat waves
- Increasing frequency of both winter floods&torrential flood events
- Other man-made pressures *(relative to climate change)*

Scales/boundaries of the assessment

Suggested solution:

- Differentiate in involvement and output
- Combination of geographical boundaries:
  - Present climate data for larger area, including Pannonian plain etc.
  - **Use study area of Carpathian Convention** to focus at vulnerability of different ecosystems
  - Discuss adaptation option for a number of reference areas (e.g. **target river basins**)
  - Consider all countries as mentioned in ToR for policy and actor involvement

CARPIVIA Project – Actions & Results

- **Report** with integrated assessment of vulnerability & adaptation measures, incl. cost-benefit analysis and policy recommendations
- **Web-supported database** with information on vulnerability of water resources, ecosystems and ecosystem based production systems, and on ecosystem based adaptation measures
- **Data inventory** and information gap analysis
- **Stakeholder consultation**
- Analysis based on available data and information; information harmonised to enable **comparison across regions and sectors**

CARPIVIA Project

Contact:

- *www.carpivia.eu*
- *Alterra, Wageningen University and Research Centre*
- *Eddy Moors, Saskia Werners: saskia.werners@wur.nl*

Discussion questions:

- *What do you expect from an information system on vulnerability to climate change and ecosystem based adaptation measures for the Carpathian region?*
- *How can it support national and transboundary policy initiatives, like a Tisza Adaptation Strategy?*

Thank you for your attention

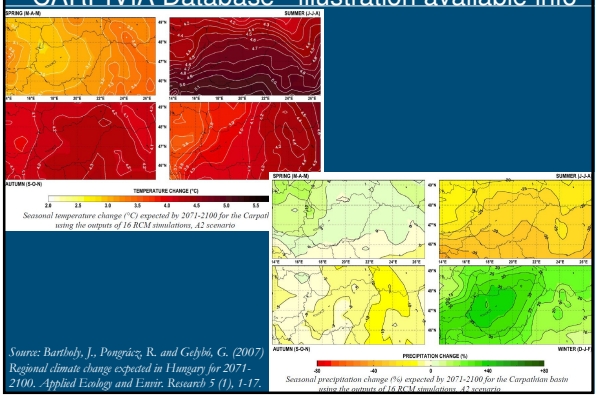
Team members

Extras

CARPIVIA Project – selected key impacts

- Seasonal shift in water resource (surface water, groundwater, air humidity), e.g. earlier spring peak discharge, flash floods, drought
- Increase water temperature
- Incidence of water and food-borne diseases
- Species migration and habitat fragmentation
- Changes species composition, e.g.: in foothills beech advantage over conifer, decline Norway spruce in lower mountain forest, expansion of xerothermic shrub vegetation, loss of high grasslands
- Changes in forest and agricultural productivity, e.g. agriculture can move to higher altitude, extension growth season
- Changes snow cover, ski season shorter and more uncertain

CARPIVIA Database - illustration available info



Seasonal temperature change (°C) expected by 2071-2100 for the Carpati using the outputs of 16 RCM simulations, A2 scenario

Seasonal precipitation change (%) expected by 2071-2100 for the Carpathian basin using the outputs of 16 RCM simulations, A2 scenario

Source: Bartholy, J., Pongrácz, R. and Gelybó, G. (2007) Regional climate change expected in Hungary for 2071-2100. Applied Ecology and Envir. Research 5 (1), 1-17.

Scales/boundaries of the assessment

- Terms of reference: Spatial area of interest for the project includes the Carpathian Mountain Chain (including the Transylvanian Depression), the Carpathian Basin (i.e. the Pannonian Depression), and adjacent areas, necessary to study climate change vulnerability and adaptation of the area

- Countries: Bulgaria, Czech Republic, Croatia, Hungary, Moldova, Poland, Romania, Serbia, Slovakia, Ukraine