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Resilience to flood disasters through adapted spatial planning and land use management

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Summary

Settlements and agricultural land in mountainous regions are at risk of flooding due to soil sealing, changes in runoff conditions and frequent heavy rainfall events that affect the natural water balance. Achieving resilience to flood disasters poses major challenges for catchment areas in the Alpine regions. In order to harmonise the needs of society in terms of regional and local environmental conditions, preventive spatial measures are increasingly required as part of an effective flood risk management. This includes a mix of grey, blue and green infrastructure, that is coordinated with those affected to ensure resilience to natural disasters. The implementation of the EU Water Framework Directive also demands greater consideration of ecological measures. The results of the INTERREG Danube Region project CAMARO-D provide important insights into how these planning processes and measures in catchment areas and on site can be implemented with the involvement of social and economic interests. Scientific findings and practical expertise, combined with public participation in land use management beyond local boundaries, improve resilience to flood disasters.

Objectives

- **Set the frame – steer and manage**
  Improved land use management in endangered areas that extend beyond the municipal boundaries
- **Promote positive impacts – harmonise and improve**
  Sharing good practice
- **Explain to society – accept and apply**
  Coordination and harmonisation of land use activities

Methods & Results

- Transnational approach, GAP Analysis
- Identification of good practice for 3 water clusters, pilot actions
- Guidance for Sustainable Land Use Planning (GUIDR)
- Schematic representation of the decision-making processes in water management

Figure 1: Measurement of surface runoff at five differently steep meadows and forest plots in the Upper Styrian Enns Valley. Source: https://www.bfw.gv.at/die-regenmacher-im-ennstal/

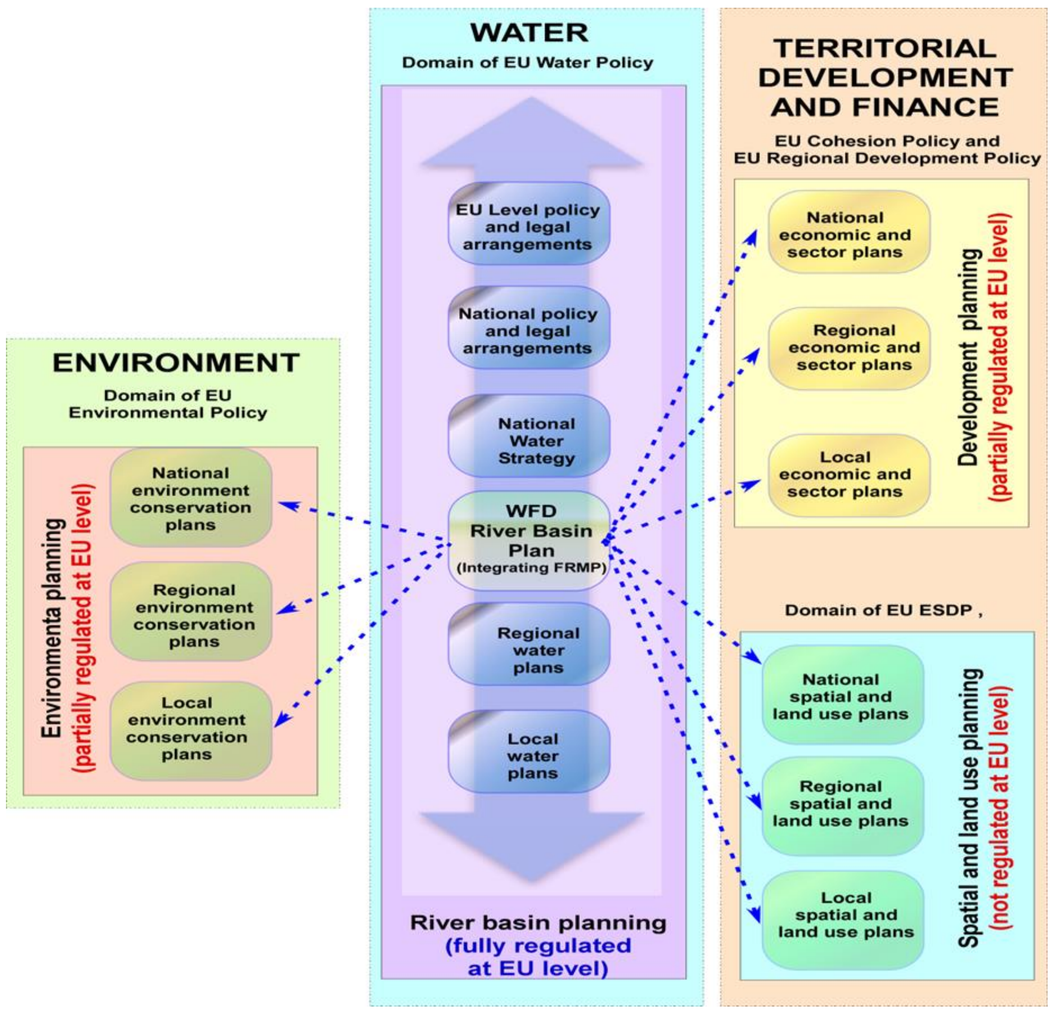

Figure 2: Overall framework for integration of land use planning into transnational water policy and planning. Source: CAMARO-D, 2019

Example

Pilot Action Cluster 2: Estimation and evaluation of surface runoff as a basis for spatial planning decisions

Question: What is the impact of the type and intensity of land use on the infiltration of rainwater into the soil?

Selected recommendations for practical application

Cluster 1 Groundwater resources: Restrictions for drinking water quality in agricultural land, management of mountain grasslands for groundwater protection

Cluster 2 Torrents, small rivers: Practical guide to spatial planning in catchments and river stretches (cross-community), site-specific re-cultivation and restauration in high zones, control of invasive plant species

Cluster 3 Rivers: Adapted agriculture for optimal surface water and soil protection under climate change, adaptation of crops or conversion of arable land into grassland to reduce soil erosion

All 3 Clusters: Awareness raising activities

Outlook

The CAMARO-D project demonstrates the potential for positive change through collaborative and integrated approaches. Resilience to flood disasters in mountainous regions can be increased through forward-looking spatial planning across municipal boundaries with preventive open spaces against flooding, site-adapted land use management and the consideration of expenditure for long-term maintenance and water management measures.

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