

Jan Evangelista Purkyně University in Ústí nad Labem

Faculty of Environment

Study material

WATER AND LANDSCAPE

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MINISTRY OF EDUCATION,  
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## **Objectives**

The objective of the course is to deep students' knowledge in the area water and landscape from the perspective of economics and other social sciences. The objective is to present the comprehensive nature of the system and its components in the area of water management and floods (drinking water supply, wastewater management, water erosion, nature-based measures, drought and floods). It will introduce relationships between outputs of natural and social sciences for formulating environmental policy objectives with an emphasis on landscape restoration (open and built-up areas). With a specific link to catchment areas, an emphasis will be placed on handling upstream-downstream problems. The subject will include a special focus on more advanced method (e.g., institutional analysis, key stakeholder analysis, costbenefit analysis, cost effectiveness analysis, game theory, experiment, regulatory impact assessment, etc.) used for looking into selected aspects.

The above methods will be applied to identification of optimum solutions and suitable settings of regulatory requirements, including possible implementation of various instruments for implementation of measures on private land (taxes, subsidies, ecosystem service payments, etc.).

## **Study topics**

1. Comprehensiveness of water management systems in conjunction with landscape and other components.
2. Challenges and threats (drought, floods, pollution).
3. Adaptation and mitigation capacities in urban and country settings from a social science point of view.
4. Effects of ownership (contracting authority) on functioning in this area.
5. Introduction to water-related methodology: institutional analysis, key stakeholder analysis, cost-benefit analysis, cost effectiveness analysis, game theory, experiments, etc.
6. Identification of preferences of various key stakeholders. How to include them in decision-making.
7. Communication: how to communicate measures to general public.
8. Problem-solving on a larger scale: upstream/downstream and effects of private ownership.
9. Examples of valuation of various ecosystem service types in water management (provisioning/regulating/cultural ecosystem services).

## Study literature

### Mandatory literature

HARTMANN, T., SLAVÍKOVÁ, L., MCCARTHY, S. (eds.) 2019. Nature-Based Flood Risk Management on Private Land. Springer, Cham. ISBN: 978-3-030-23841-4

SÝKOROVÁ, M. a kol. 2021. VODA VE MĚSTĚ Metodika pro hospodaření s dešťovou vodou ve vazbě na zelenou infrastrukturu. Praha: České vysoké učení technické, 204 str.

SLAVÍKOVÁ, L., VEJCHODSKÁ, E., SLAVÍK, J., VOJÁČEK, O., LOUDA, J. 2012. Ekonomie životního prostředí – teorie a politika. Praha: Alfa nakladatelství, 287 p. ISBN 978-80-87197-45-5

THALER, T., HARTMANN, T. 2016. Justice and flood risk management: reflecting on different approaches to distribute and allocate flood risk management in Europe. *Natural Hazards* 83(1):129–147

MACHAC, J., HARTMANN, T., JILKOVA, J. 2018. Negotiating land for flood risk management : upstream-downstream in the light of economic game theory. *Journal of Flood Risk Management*. <https://doi.org/10.1111/jfr3.12317>

COLLENTINE, D., FUTTER, M. N. 2016, Realising the potential of natural water retention measures in catchment flood management. *Journal of Flood Risk Management*. <https://doi.org/10.1111/jfr3.12269>

BUBECK, P., BOTZEN, W. J. W., AERTS, J. C. J. H. 2012. A review of risk perceptions and other factors that influence flood mitigation behavior. *Risk Analysis*, 32(9), 1481–1495.

RAŠKA, P. 2015. Flood risk perception in Central-Eastern European membersstates of the EU: A review. *Natural Hazards*, 79(3), 2163–2179.

### Recommended literature

MACHÁČ, J., BRABEC, J., & VOJÁČEK, O. 2020. Development and Implementation of the Concept of Disproportionate Costs in Water Management in Central Europe in the Light of the EU WFD. *Water Alternatives*, 13(3),

SLAVÍKOVÁ, L. a kol. 2015: Metodika k aplikaci výjimek z důvodu nákladové nepřiměřenosti opatření k dosahování dobrého stavu vodních útvarů. VÚV T. G. M. ISBN 978-80-87402-42-9.

MACHÁČ, J., DUBOVÁ, L., LOUDA, J., HEKRLE, M., ZAŇKOVÁ, L., BRABEC, J. 2019. Metodika pro ekonomické hodnocení zelené a modré infrastruktury v lidských sídlech. Ústí nad Labem: Institut pro ekonomickou a ekologickou politiku (IEEP).