



# 3rd ESP EUROPE CONFERENCE

Tartu, Estonia

Ecosystem Services Science,  
Policy and Practice in the  
face of Global Changes

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# Social-Ecohydrology for Sustainable Cities and Societies

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**ATENAS**





# LODZ CITY DEMO SITE

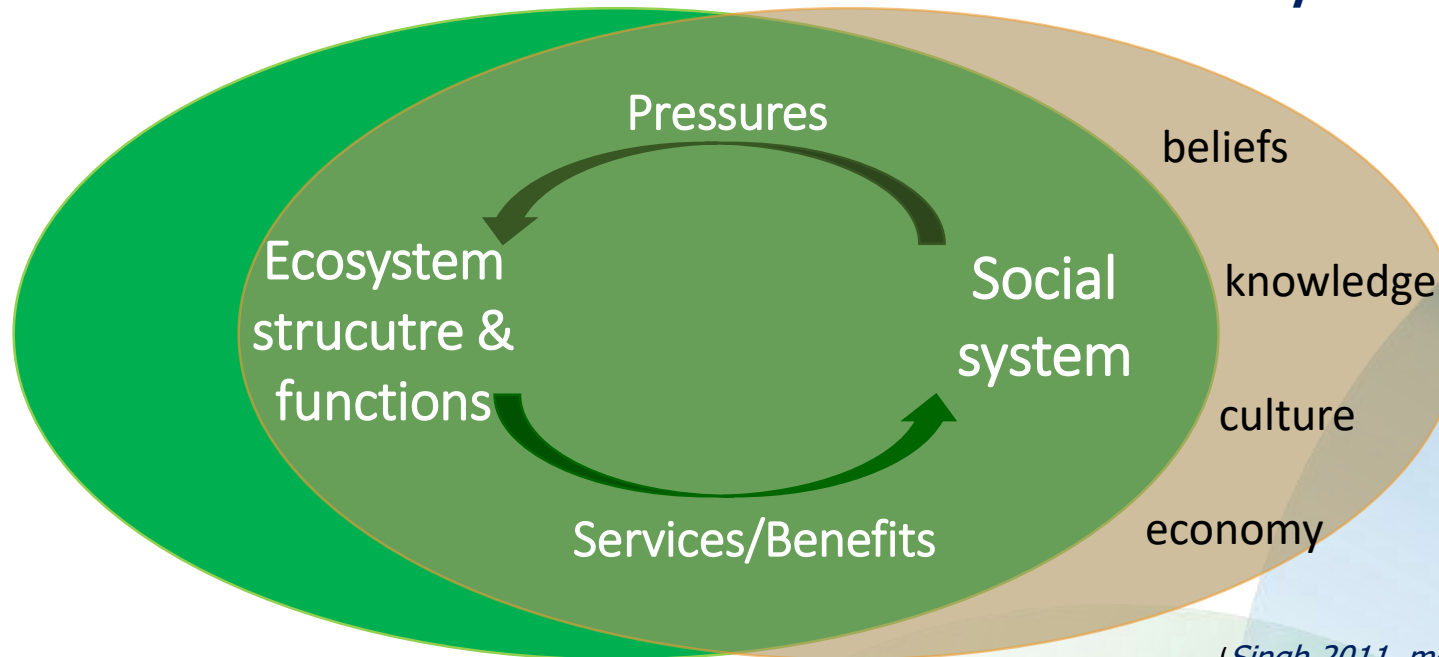
## The upper Lodka River





## Natural sphere

## Social sphere



*(Singh 2011, modified)*

The structure and functions of ecosystems determine its ability to provide goods and services. The social system, through the use of these services, puts pressure on the environment, altering landscape structure and ecosystem functioning. Consequently, this affects the quality and availability of benefits. Landscape use is determined by several factors related to economy, culture, knowledge and beliefs. Pressures affect all of the landscape elements.

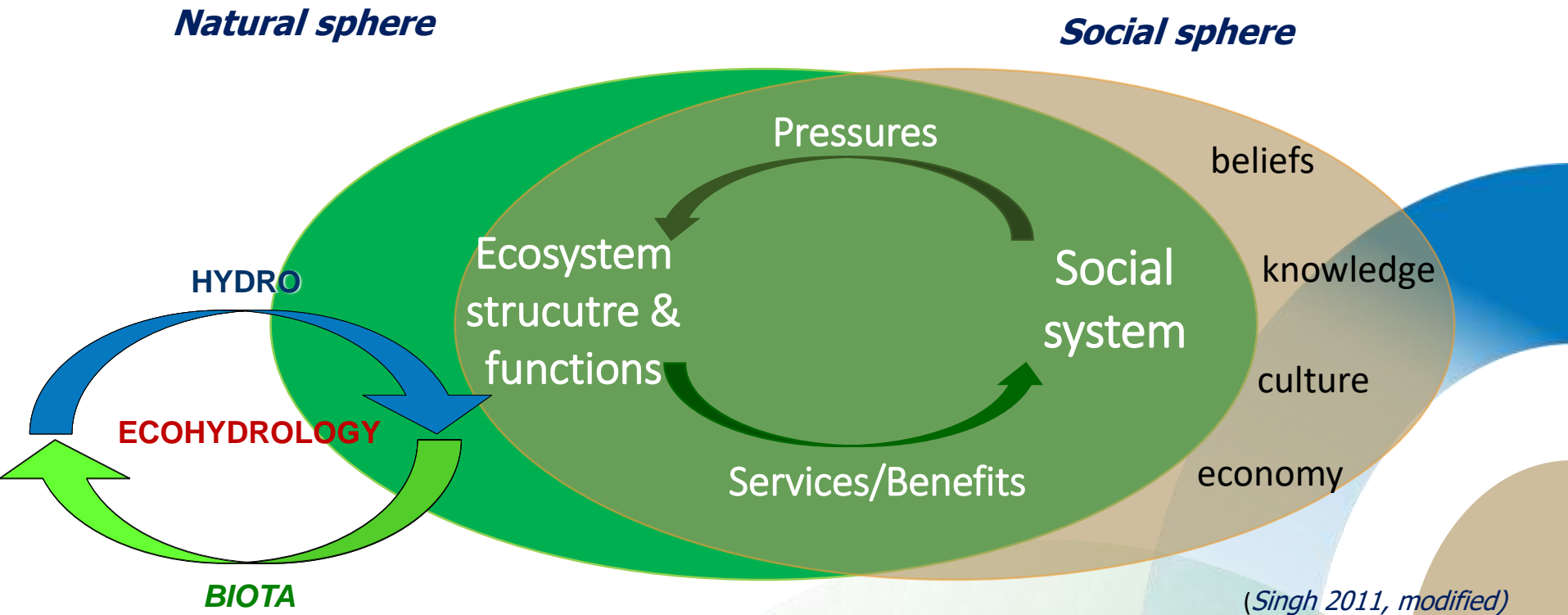


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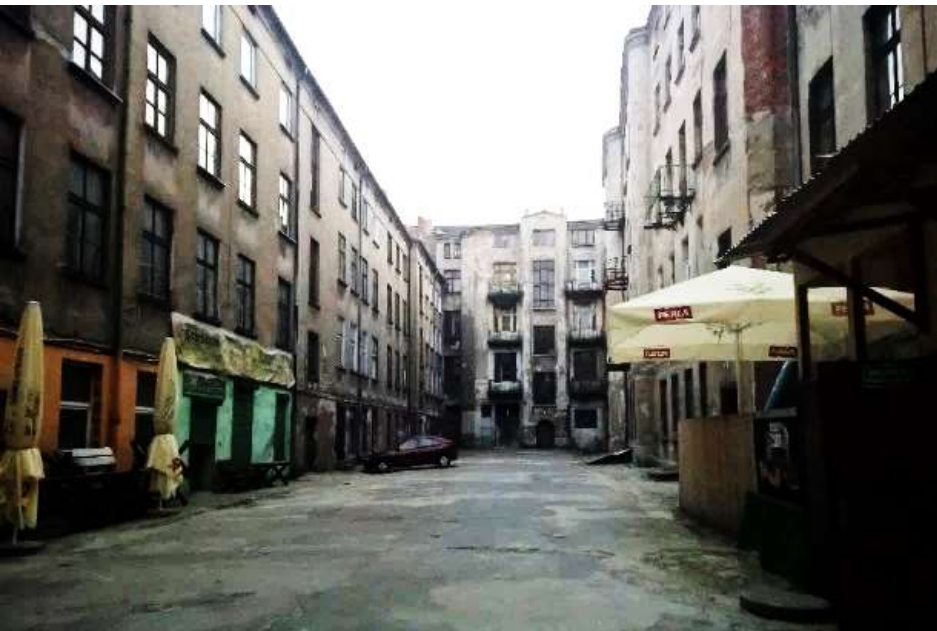


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Contemporary urban ecology emphasises the role of nature in maintaining urban sustainability due to its adaptive capacity and the range of regulating services it provides. At the core of regulating services is the mutual regulation between biotic and hydrological processes. These feedback, defined by ecohydrology (Zalewski et al. 1997; Zalewski 2011) have become recognized by the UNESCO International Hydrological Programme (UNESCO/IHP) as a potential tool for environmental management in cities of the future (Zalewski et al., 2003; Krauze and Wagner, 2007; Krauze and Wagner, 2019). The interaction between biota and hydrology is realized by enabling or implementing blue-green infrastructure.



## BACKYARDS

- ❖ participatory design of backyards by residents of tenement houses
- ❖ workshops with elements of deliberation
- ❖ discussion about citizen backyard
- ❖ design of dream backyard



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## CITIZENS NEEDS & OPINIONS

- ❖ selection of useful / functional elements:
  - ✓ children (people with children) - playgrounds
  - ✓ adults with cars - parking lots
- ❖ aesthetics - cleanliness / order
- ❖ introduction of greenery mainly after paying people's attention

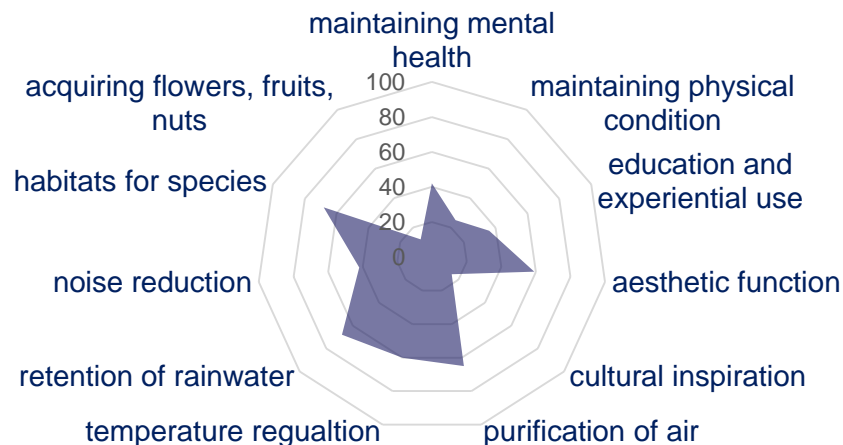
## DESIRED BGI SOLUTIONS:

- ❖ green walls; flowerpots or flowerbeds; lawn fragments; coniferous shrubs; occasional trees (no fruit trees)
- ❖ partially permeable surfaces
- ❖ no NBS for water retention
- ❖ car park - must be preserved (unless place on the street)





## Structured interview with users - INFORMAL GREEN SPACES



- ❖ identification of urban ecosystem services
- ❖ identification of desired changes in a given place and factors affecting the possibility of using a given area



urban green areas outside of formal green areas intended for recreation and rest of residents

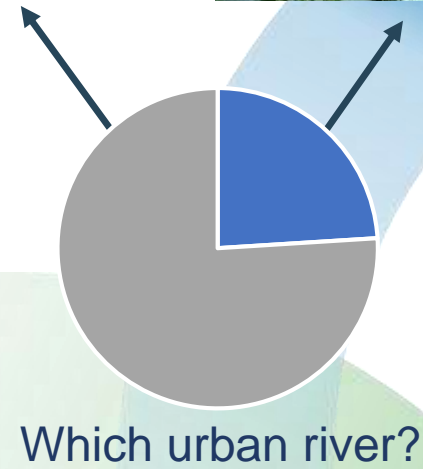
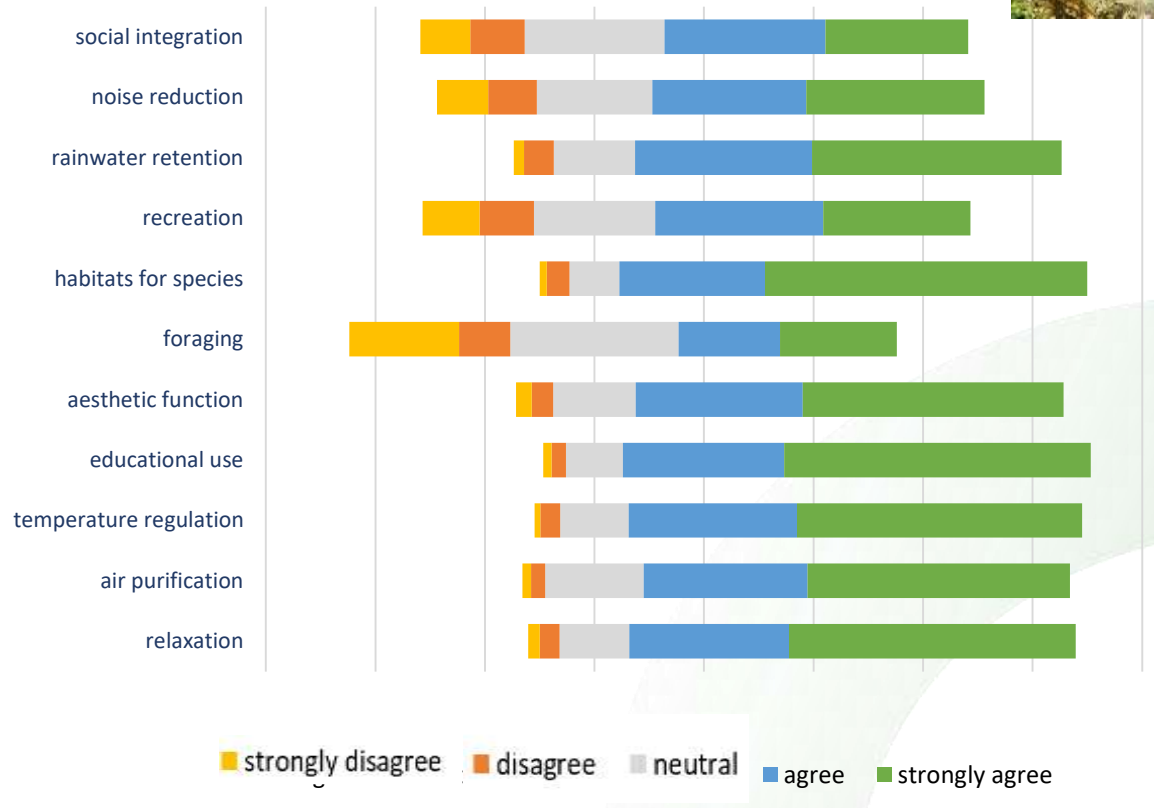
<b>functionality</b>	street furniture (benches)	47%
	playground	14%
	walking paths	10%
	recreational facilities for sports and games	9%
<b>orderliness</b>	mowing the herbaceous vegetation (grass, herbs)	42%
	pruning trees	29%
	cleaning up the area	14%
<b>greening measures</b>	flowerbed	25%
	tree planting	23%
	lawn	4%



## QUESTIONNAIRES WITH CITIZENS – Blue-green infrastructure

### AIMS

- ❖ Blue-green infrastructure preferences
- ❖ Ecosystem Services evaluations
- ❖ Water in the city



What kind of benefits do you think natural river in city can have?

## GREENRY MANAGEMNET - recognized problems

- ❖ neglected for years,
- ❖ shrinking or low budgets for greening activities
- ❖ resource that could be freely exploited for new investments: buildings, roads and utilities networks,
- ❖ lack of money to maintain the investment in greenery
- ❖ imprecise regulations
- ❖ the lack of respect for nature as an integral part of the urban living space
- ❖ scattered and unclear competences



## *Cooperation with city officials, leaders and activists: workshop & meetings*

We want to create a platform for collaboration and communication for all people interested in creating blue-green infrastructure in the city, learning from each other, capitalizing on the potential and knowledge of communities, activists, institutions and companies.

Questions: How can we support each other? How do we change our collective approach to greenery and water in the city? How to realize the vision we created together in 2009: "Łódź uses water wisely"?







**ATENAS**

