

## **Sustaining urban ecosystem services: The multiple benefits of green and blue infrastructure.**

*Organizer and chair:*

*Veronika Gezik*

CETIP, Institute for Forest Ecology, Slovak Academy of Sciences, Slovakia

In Europe, more than two thirds of the population is living in cities. Residents of densely populated urban areas are already experiencing the negative effects of climate change – prolonged periods of droughts, extreme weather events and increased risks of floods. Urban structures and materials that are being used exacerbate negative these negative effects and result in local phenomena like for example urban heat islands. On an international level, the EU countries are encouraged to implement national adaptation strategies for climate change, putting emphasis on nature-based solutions for adaptation. Nature based adaptations or ecosystem-based approaches to adaptation benefit urban populations in multiple ways while mitigating the adverse effects of climate change. These are represented by the provision of different green and blue areas, called green/blue infrastructure. Examples of these areas are parks, city forests, green roofs, green walls, rain gardens, etc. The forthcoming European Society for Ecological Economics (ESEE) Conference has considered climate change as one of its themes of interest. Whereas mitigation of climate change has become key concepts in sustainability sciences, much remain unclear in the overcoming problems of incorporation ecosystem services in urban settings. In number of European cities urban green and blue infrastructure are not managed to their full potential to mitigating climate change. In particular urban ecosystem services as public or common goods face the traditional social dilemma of individual versus collective interests often generating conflicts, overuse, and resource depletion. The vulnerability of urban systems thus rapidly increases due to the multilevel factor; in particular while ecosystem services are local, distant users operate across the governance scale and with diverse interpersonal and social interest, often ignoring the sustainability and carrying capacity of urban ecosystems. The submitted session aims to demonstrate the value of green and blue infrastructure in the adaptation of urban areas to climate change. We argue that incorporating green and blue infrastructure design into the planning and policy spheres contributes to the functioning and resilience of the city and provides the adaptability to respond to locally contextualized challenges, such as overheating, flooding, air pollution, health and wellbeing as well as biodiversity loss. To achieve the above-mentioned objective the presented session will explore the potential of encompassing both the science of green and blue infrastructure and codeveloping methods for incorporating a strategic approach to implementation of green and blue infrastructure by planners and developers and addresses a gap in current knowledge and begins to address barriers to green infrastructure implementation. By combining scientific with policy learning and defined urban environmental targets with community needs, our aim is to demonstrate how naturebased solutions to building resilience and adaptive governance can be strategically incorporated within cities through green infrastructure. Moreover this session offers a platform for practical exercise - playground of experimental tools to model how changing variables of ecosystem services effect decision-making. We intent to invite conference participants to participate on role board game designed to simulate collective actions under controlled conditions. Board games are interactive agent based models that allow participants, coming from the most contrasting social backgrounds, to understand challenges and opportunities of decision making processes at different scales, multiple actors and interests. The board game concerns green infrastructure development and

improvement in semi-public and public spaces. Communication, ecological dynamics of resources, local norms, power and influence are key variables of the game. The game stimulates agents for collective action to implement global climate change objectives at local level via implementing common pool resource regime in semipublic and public green areas. In particular how green infrastructure mitigates climate regulation and enhances ecosystem services and contributes to CO<sub>2</sub> reduction at city level.