# BOOK OF ABSTRACTS

This Book of Abstracts provides a comprehensive overview of the session content and is structured into three main sections:

**I. Session Description –** an introduction to each session, including its objectives and expected outputs
**II. Session Program –** a detailed schedule for each session, including speakers and timing
**III. List of Abstracts –** a complete compilation of all accepted abstracts

## I. SESSION DESCRIPTION

ID: T14h

### Urban Ecosystem Services for Age-friendly Cities

### Hosts:

| | Name | Organisation | E-mail |
|---|---|---|---|
| **Host (s):** | Marcin Spyra | Martin Luther University Halle-Wittenberg | marcin.spyra@geo.uni-halle.de |
| **Co-host(s):** | Luis Inostroza | Mendel University in Brno | luis.inostroza@mendelu.cz |
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### Abstract:

Cities worldwide are facing the twin challenges of demographic ageing and growing pressures on land use. The decline and neglect of urban open spaces further reduce opportunities for health, recreation, and social interaction, especially for older residents, who are considered among the most vulnerable subjects to different urban issues. Urban ecosystem services provide powerful pathways to address these challenges. Regulating services such as cooling, air purification, and noise reduction can improve health conditions of vulnerable populations. Cultural services—accessible green areas, community gardens, and recreational landscapes—support mental well-being, social cohesion and active lifestyles. Provisioning services, including urban food production, can enhance food security and autonomy among ageing communities.

This session will examine the role of ecosystem services science in developing and implementing urban adaptation strategies that foster age-friendly and resilient cities. The session welcomes innovative research, planning tools, and practical case studies from diverse contexts that make use of ecosystem services science to support age-friendly cities and neighbourhoods for elderly people and other vulnerable social groups. By bringing together researchers, urban planners, practitioners, and policymakers, the session aims to advance dialogue on how to integrate ecosystem services into the planning and governance of age-friendly urban environments that respond effectively to the needs of different age groups worldwide.

### Goals and objectives of the session:

- Explore how urban ecosystem services can support adaptation strategies for age-friendly societies, contributing to a people- and nature-positive future (Challenge 2).
- Showcase innovative case studies, methods, and tools from different urban contexts that demonstrate how ecosystem services enhance urban resilience under demographic and land-use pressures (Challenge 3).
- Discuss approaches for ensuring equity, justice, and inclusivity in the planning and governance of urban open spaces, with a focus on meeting the needs of older residents (Challenge 4).
- Foster dialogue among researchers, urban planners, practitioners, and policymakers on integrating ecosystem services into strategies for age-friendly, inclusive, and resilient cities.

### Planned output / Deliverables:

A synthesis paper.

## Related to ESP Working Group:

TWG 14 – Application of ES in Planning & Management

## II. SESSION PROGRAM

**Room:** **A1**
**Date of session:** **Wednesday 20, May 2026**
**Time of session:** **15:00 – 16:30**

### Timetable speakers:

| Time | First name | Surname | Organization | Title of presentation |
|---|---|---|---|---|
| 15:00-15:05 | | | | Introduction to the session |
| 15:05-15:20 | Sebastian | Scheuer | Humboldt-Universität zu Berlin | Finding Relief: Exploring cool spaces demand and supply from elderly citizens' perspective to cope with urban heat stress |
| 15:20-15:35 | Martin | Bárta | University of Ostrava | Topography-Sensitive Accessibility to Essential Service Centres for Older Adults |
| 15:35-15:50 | Deborah | Schaudt | Martin-Luther University Halle-Wittenberg | Planning of Age Friendly Neighbourhoods: Insights from Prefabricated Housing Estates in Halle-Neustadt, Germany and Replication in Ostrava Poruba, Czech Republic |
| 15:50-16:05 | Mateusz | Mikołajów | Opole University of Technology | Urban green infrastructure as a provider of ecosystem services in modernist housing estates: residents' perceptions from an age-friendly perspective |
| 16:05-16:20 | Yuxin | Pu | Vrije Universiteit Brussel | Active Use of Urban Green Spaces and Heat-Related Discomforts Among Older Adults in Brussels |
| 16:20-16:30 | | | | Wrap-up of the session |

## III. ABSTRACTS

*The first author is the presenting author unless indicated otherwise*

### 1. Finding Relief: Exploring cool spaces demand and supply from elderly citizens' perspective to cope with urban heat stress

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Climate change puts exacerbating burdens on both ecosystems and societies, and cities in particular are spaces of compound vulnerabilities and risks. Urban heat stress is considered one of the biggest challenges today, with Europe being among the fastest warming regions globally. This is alarming as Europe is also among the fastest ageing continents composing a unique case in which demographic and climate change produce specific challenges to adaptation of cities.

Globally, people above 65 years of age are the fastest-growing population segment. Increased morbidity and mortality from exposure to heat render older people particularly vulnerable to heat stress, resulting in an increasing demand for heat

adaptation action. Heat adaptation planning often considers the implementation of green-blue infrastructure to provide cooling ecosystem services, and accordingly, heat-health action plans promote behavioural changes to cope with heat, including visiting green spaces as places of cooling. However, it is particularly the elderly population that faces challenges potentially limiting their capacity to cope with heat, e.g., due to reduced mobility. Consequently, the interface of ageing and heat adaption calls for specific analytical lenses that support the optimization of access to and the delivery of ecosystem services from the perspective of the elderly.

Therefore, using the city of Berlin, Germany, first, supported by scoping heat-health action planning, we identify coping strategies, associated cooling supply, and demand for cooling. Then, using geospatial modelling and multimodal network analysis grounded in accessibility analysis, we assess opportunities and potential challenges and barriers to meet cooling demand from the perspective of older people. In so doing, we uncover potential gaps of access to heat adaption and thereby, identify areas of age-related limited resilience. The replicable and AI-supported design of this study will inform further adaptation action and planning for age-friendly cities from a heat resilience perspective.

*Keywords:* ageing, urban heat, cooling, heat adaptation, urban resilience

## 2. Topography-Sensitive Accessibility to Essential Service Centres for Older Adults

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Access to essential service centres is a key benefit of the urban environment supporting independence, daily functioning, and social participation among older adults. This benefit aligns primarily with cultural urban ecosystem services, as it reflects how the urban system enables everyday mobility in later life. This study assesses pedestrian accessibility to essential service centres—including healthcare facilities, pharmacies, grocery stores, and community services—for residents aged 65 and over, focusing on the combined effects of walking distance and topography.
A network-based accessibility framework integrating horizontal and vertical movement costs is applied. Horizontal accessibility is measured as walking distance along the pedestrian network. Vertical accessibility incorporates elevation differences between origins and destinations, expressed through cumulative ascent and average slope along the shortest paths. This approach captures mobility burden related to physical effort, which is particularly relevant for older adults.
Ostrava (Czech Republic) serves as a case study due to its heterogeneous urban structure and variable relief. Population data for residents aged 65+ are derived from the 2021 Population Census (city districts) and spatially refined using Urban Atlas to delimit urbanised areas. Pedestrian network data are obtained from OpenStreetMap.
The resulting accessibility patterns reveal spatial inequalities, identifying neighbourhoods where distance and terrain jointly reduce effective access to essential services. The approach supports evidence-based planning of age-friendly cities and is transferable to other urban contexts with complex topography

*Keywords:* UES; ageing; accessibility; topography; GIS

## 3. Planning of Age Friendly Neighbourhoods: Insights from Prefabricated Housing Estates in Halle-Neustadt, Germany and Replication in Ostrava Poruba, Czech Republic

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Post-socialist prefabricated estates, such as Halle-Neustadt (Germany) and Ostrava-Poruba (Czech Republic), face urgent challenges due to demographic aging and depopulation. While originally designed for communal use, their Urban Open Spaces (UOS) often lack the age-specific placemaking and Urban Ecosystem Services (UES)—such as natural shading and heat island mitigation—necessary to support the well-being and mobility of older residents.

This study employs an innovative Virtual Reality (VR) experiment to examine how residents aged 65+ perceive comparable

UOS sites. Using 360° videos, participants explore four distinct UOS per city, representing varying levels of biodiversity and function. Evaluations utilize a mixed-methods approach based on an adapted WHO-Age-Friendly Cities framework, focusing on five key categories: safety, orientation, comfort, social experience, and accessibility.

The research underscores the necessity of embedding regulating ecosystem services into age-friendly planning of UOS to enhance environmental comfort and long-term quality of life. By utilizing 360 degree videos of real UOS and VR glasses, the study establishes an inclusive, low-barrier planning framework that captures the design preferences of older adults without the logistical constraints of physical site visits. Furthermore, the dual-city approach provides insights into how historical and socio-economic contexts influence the perceived age-friendliness of similar urban typologies.

Ultimately, this pilot study highlights the critical need for the maintenance and strategic transformation of UOS in prefabricated housing estates. The findings offer a scalable framework for urban planners to foster social integration and resilience in shrinking or transforming prefabricating housing estates.

*Keywords:* Urban Ecosystem Services (UES), Urban Open Spaces (UOS), Age-friendly cities, Participatory planning, Post-socialist housing estates, 360 degree videos, Virtual reality

## 4. Urban green infrastructure as a provider of ecosystem services in modernist housing estates: residents' perceptions from an age-friendly perspective

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Modernist housing estates constitute a significant part of the urban fabric of many European cities and are increasingly inhabited by ageing populations. Although these estates were initially designed with extensive open spaces, ongoing transformations often reduce the quantity and quality of green infrastructure, potentially limiting its benefits for older residents. At the same time, urban green infrastructure is widely recognized as a key provider of ecosystem services that support human health, well-being, and social interaction—factors that are particularly important in the context of age-friendly cities.
This study presents the results of a questionnaire survey conducted among residents of selected modernist housing estates in Opole, Poland. The study examines how residents perceive the role of green infrastructure as a provider of ecosystem services, with a particular focus on the needs of older adults and the everyday use of green spaces. The survey examines patterns of green space use, perceived accessibility, and barriers, as well as the impact of green infrastructure on quality of life, encompassing physical comfort, psychological well-being, social relations, and perceived safety. Special attention is given to differences between age groups, with a focus on residents aged 60 and above.
Preliminary findings suggest that green infrastructure in modernist housing estates provides a diverse range of cultural and ecosystem services that residents, particularly older adults, highly value. At the same time, perceived deficits related to accessibility, maintenance, and spatial organisation limit the full use of these benefits. The results underscore the significance of everyday, proximate green spaces in fostering age-friendly urban environments.
By providing empirical, resident-based evidence, this study contributes to the understanding of how ecosystem services are experienced at the neighborhood scale and offers insights relevant for urban planning and management strategies aimed at enhancing age-friendly cities under demographic change.

*Keywords:* urban green infrastructure, ecosystem services, age-friendly cities, modernist housing estates, residents' perceptions

## 5. Active Use of Urban Green Spaces and Heat-Related Discomforts Among Older Adults in Brussels

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Extreme summer heat, intensified by climate change, poses serious risks to human health, with older adults particularly affected due to age-related physiological decline and chronic health conditions. Urban green spaces (UGS) are increasingly recognized as key nature-based solutions for mitigating urban heat islands and providing restorative outdoor environments. While empirical studies have linked exposure and access to UGS mostly at neighborhood level, such as residential greenness or proximity to public green spaces, to improved well-being among older adults, it remains understudied whether active use of UGS provides similar or stronger benefits especially during hot periods.
This study addresses this gap by examining the relationship between older adults' self-reported health, specifically heat-related physical and mental discomforts, and their UGS usage patterns on hot days. To this end, we developed a survey targeting residents aged 65 and above in the Brussels-Capital Region. The survey investigates the occurrence of five physical and four mental heat-related discomforts, UGS usage patterns on normal and hot days, and relevant socio-economic conditions.
Preliminary analyses are expected to identify which temperature-related discomforts are most frequently experienced by older adults, and to assess whether their UGS usage patterns on hot days - such as visit frequency, duration, companionship and activity type - are associated with lower levels of discomfort. These findings will contribute to understanding how active engagement with UGS may enhance heat resilience among ageing urban populations and underscore the role of UGS in promoting healthy ageing under intensifying climate stress.

*Keywords:* urban green spaces, age-friendly city, environmental gerontology, urban heat, climate adaptation