BOOK OF ABSTRACT

I. SESSION DESCRIPTION

ID: B10a

Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Hosts:

	Title	Name	Organisation
Host:	Dr.	FrancescBaró	Institute of Environmental Science and Technology (ICTA-UAB)
Co-host(s):		Johannes Langemeyer, Edyta Łaszkiewicz	
Others involved:		Magdalena Biernacka Jakub Kronenberg	University of Lodz

Abstract:

"There has been considerable progress in quantifying, valuing, and mapping ecosystem services. Yet, there is a risk that these methods are applied without consideration of equality and social justice." (The Antwerp Declaration, launched at the European ESP Conference, September 2016)

The ecosystem service concept is mainstreaming and has been rapidly taken up by urban policy-makers striving for green, resilient and sustainable cities. In particular, it has been related to the creation of green infrastructure and (more recently) nature-based solutions. However, considerations of equity and justice – i.e. which social groups gain most benefits, who gains fewer benefits, and who may even lose as a result of urban greening – remain widely marginal in the rapid expansion of urban ecosystem service assessments.

This is especially critical as the purpose of ecosystem service assessments is thereby quickly changing from mere 'awareness raising' about nature's values towards 'priority setting' and

informing decisions in urban planning. Lack of a comprehensive approach to articulation of values, procedural inclusion and distributional effects will likely cause unjust planning outcomes.

This session aims to theoretically and practically advance the notion of justice in urban ecosystem service assessments. We will discuss frameworks, methods and tools focussing on different dimensions of justice, including interactional justice considering an integrated valuation of ecosystem services, procedural justice in ecosystem service-based planning, retributive justice considering ecosystem service stewardship, and distributional justice of the provision of urban ecosystem services (and disservices).

The session is hosted by researchers from the Barcelona Lab for Urban Environmental Justice and Sustainability (BCNUEJ, www.bcnuej.org) at ICTA-UAB and from the Faculty of Economics and Sociology at University of Lodz, Poland, both partners in the EU-BiodivERsA project ENABLE (http://projectenable.eu/).

Goals and objectives of the session:

As stated above, the session's main goal is to explore frameworks, methods and tools to integrate notions of justice into urban ecosystem service research and practice. This session will serve as a follow-up of session T6 held in the last ESP World Conference (China, 2017) with a focus on the urban European context. Some of the questions that will be discussed during the session include:

- How can UES-based justice analyses support urban planning and policy?
- What actions related to urban green infrastructure can support environmental equity?
- What are the potential drivers of environmental (in)justice in cities?

Planned output / Deliverables:

This session is meant to foster a community of researchers who are addressing justice in (urban) ecosystem services research. It is thereby aiming to contribute to a new ESP working group on topics of justice, equity and conflict in ecosystem service research.

Related to ESP Working Group/National Network:

Biome Working Groups: 10 - Urban systems.

II. SESSION PROGRAM

Date of session: Wednesday, 17 October 2018
Time of session: 8:45 – 13:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
8:45–9:00	Francesc Edyta	Baró Łaszkiewicz	ICTA-UAB Univ. of Lodz	Session introduction PART I: Conceptual frameworks and stakeholder perspectives
9:00–9:15	Johannes	Langemeyer	ICTA-UAB	Weaving notions of equity and justice into urban ecosystem service research and practice
9:15–9:30	Magdalena	Biernacka	Univ. of Lodz	Urban green space availability, accessibility and attractiveness and the delivery of ecosystem services
9:30–9:45	Stefania	Benetti	Sapienza University of Rome	An environmental justice approach to socio-cultural values of ecosystem services: the case study of Circeo National Park, Italy
9:45–10:00	Leena	Kopperoinen	Finnish Environment Institute SYKE	Environmental justice related to blue urbanism – how practitioners and experts frame the perspectives of citizens with regard to procedural and distributive environmental justice
10:00–10:15	Francesc Edyta	Baró Łaszkiewicz	ICTA-UAB Univ. of Lodz	Wrap-up ; Q/A
10:15–10:45	–	–	–	Coffee break
10:45–11:00	Johannes	Langemeyer	ICTA-UAB	Session introduction PART II:Methodological approaches

Time	First name	Surname	Organization	Title of presentation
	Magadalena	Biernacka	Univ. of Lodz	and applications
11:00-11:15	Francesc	Baró	ICTA-UAB	Street trees benefits: assessing socio-spatial inequalities in Barcelona
11:15-11:30	Edyta	Łaszkiewicz	Univ. of Lodz	A cross-city comparison of age-related disparities in availability of urban green spaces – multifaceted picture of environmental justice
11:30-11:45	Jörg	Priess	Helmholtz Centre for Environmental Research – UFZ	Mapping ecosystem services on brownfields in Leipzig: use pattern, valuation and motives of users contribute to ongoing 2030 urban sustainability planning
11:45-12:00	Marta	Suárez	University of the Basque Country (UPV/EHU)	Mapping outdoor recreation opportunities to inform the design of more inclusive and just green spaces: A case study in Greater Oslo, Norway
12:00-12:15	Pablo	Herreros Cantis	Wageningen University and Research	Distributional Justice of Urban Environmental Quality: Assessing the Mismatches in Supply and Demand of Ecosystem Services in New York City
12:15-13:00	Johannes Magadalena	Langemeyer Biernacka	ICTA-UAB Univ. of Lodz	Final Wrap-up – Q/A

III. ABSTRACTS

The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.

1. *Type of submission:* ***Invited speaker abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Street trees benefits: assessing socio-spatial inequalities in Barcelona

First author: Francesc Baró
Other author(s): Amalia Calderón, Johannes Langemeyer
Affiliation, Country: ICTA-UAB, Spain

Street trees represent an important element of urban green infrastructure, especially in compact cities where available land for the creation of new green space is often very limited. Street trees can contribute to make cities more resilient, sustainable and healthy through the local provision of ecosystem services such as air purification, micro-climate regulation, runoff mitigation and carbon sequestration. Some studies have analyzed the spatial distribution of street trees in cities from an environmental justice perspective, but very few have explicitly considered the associated ecosystem services inequalities.This research quantified the aforementioned regulating ecosystem services provided by a complete inventory of street trees of Barcelona, Spain (more than 200,000 specimens), using i-Tree Eco models' biophysical estimations. Results were stratified at the neighborhood (n=73) and census tract (n=1068) level in order to detect associations with four demographic variables indicating social vulnerability (household income level, immigrants from the Global South, residents under 14 or over 65 years, residents with primary education or lower).Statistical analyses show more pronounced ecosystem services deficits in different neighborhoods and tracts with a higher proportion of vulnerable groups, including the old town of Barcelona. Moreover, some of these areas also have a lack of other green infrastructure elements, such as parks or gardens. However, planting new street trees in these neighborhoods might face technical and ecological barriers due to their urban forms, generally characterized by narrow and high street canyons.

Keywords: street trees, environmental justice, urban ecosystem services, socio-spatial inequalities, green infrastructure

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2. *Type of submission:* ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

An environmental justice approach to socio-cultural values of ecosystem services: the case study of Circeo National Park, Italy

First author: Stefania Benetti

Affiliation, Country: Sapienza University of Rome, MEMOTEF Department, Italy

Recent work on Ecosystem Services (ES) has focused on ecological and economic values, leaving a gap regarding analyses of multiple socio-cultural values. The ES literature has been criticized for adopting a homogenous approach to communities and failing to consider social diversity and power structures influencing access to benefits and participation in the management of ES. Additionally, environmental justice (EJ) frameworks have rarely been applied to ES discourse. This research inquires the extent to which EJ and ES approaches can complement one another by exploring dimensions of EJ associated with ES, i.e. distribution of socio-cultural values as costs, benefits and risks of ES; recognition of multiple values associated with ES; and governance procedures which through which decisions are made about ES. Using a case study of a national park in Italy, which includes two cities within its bounds (Circeo [CNP]), and applying a mixed-methods approach composed of literature review, qualitative interviews, focus groups and semi-structured questionnaires, I map, evaluate and compare socio-cultural values of different groups of stakeholders to identify potential conflicts and injustices related to the management of the park, as well as the inclusion/exclusion of stakeholders in decision-making processes. The aim is to assess the extent to which different stakeholders' socio-cultural values are reflected in the management of the park and therefore reflect on potential drivers of this, including conflicts among agricultural, hydrogeological and tourism resources and tension between local and national governance frameworks. In doing so, this research contributes to current debates on integrated ES valuation in the dialogue between actors (interactional justice) and participation (or exclusion) in decision-making processes (procedural justice).

Keywords: Ecosystem Services, Socio-cultural values, Environmental Justice, Environmental Management, Stakeholder Perception

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3. *Type of submission:* ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Urban green space availability, accessibility and attractiveness and the delivery of ecosystem services

First author: Magdalena Biernacka, Jakub Kronenberg
Affiliation, Country: University of Lodz, Poland

The main goal of this article is to analyse how different barriers (often related to the institutional context) preventing urban green space provision restrict access to ecosystem services delivered by UGS to different groups of users. We also investigate the importance of the different levels of UGS provision – availability, accessibility and attractiveness – in the context of ES delivery. Our analysis involves three case studies in Lodz, Poland: removal of trees in private properties following the liberalization of the nature conservation act (availability), replacement of allotment gardens with a city beach (accessibility), and the organization of entertainment events in the forest (attractiveness). The analysed barriers include governmental failures and insufficient social support for the existence of certain UGS, changes in spatial planning and activities discouraging other users. Our analysis shows that access to UGS is not always equal to the delivery of ES and that different ES are affected differently at the three levels of UGS provision. Also, those who suffer from the loss of access to ES are often not involved in making the relevant UGS provision decisions. All of these issues add new aspects to the current debates related to political ecology, environmental justice and ES trade-offs.

Keywords: barriers; urban ecosystem services; institutions; residents' preferences; urban green space provision

4. *Type of submission:* ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Distributional Justice of Urban Environmental Quality: Assessing the Mismatches in Supply and Demand of Ecosystem Services in New York City

First author: Pablo Herreros Cantis
Other author(s): Timon McPhearson, Dolf de Groot
Affiliation, Country: Wageningen University and Research, Netherlands

New York City (NYC) is the most densely populated city in the U.S. with a long history of environmental injustice in terms of accessibility to environmental quality. To analyze this issue, we assess supply and demand for ecosystem services (ES) to understand where and whose ES needs are being met (or not) by current ES supply. In the urban context, ES play a key role in improving the urban environment in terms of livability, health and climate change adaptation. Consequently, several cities aim at improving the provision of ES through urban green infrastructure. ES assessments tend to focus on the supply of ES (Burkhard et al. 2014). However, the demand of ES is usually assumed, regardless of its importance since it much more explicitly adds the human dimension. In this paper, demand is understood as "The amount of a service required or desired by society" (Villamagna et al., 2013, p115) and depends both on demographic and biophysical factors. ES analyzed are air purification, local temperature regulation and storm-water absorption. These ES cannot be transported, requiring a local supply-demand spatial relationship.Considering the spatial relationship required by regulating ES, making sure new investments are distributed equitably across social groups is a matter of distributional justice. The assessment involved a citywide analysis at a high spatial resolution for all of NYC. First, supply and demand of the three ES analyzed were assessed and mapped through a process-based modeling approach. Then, supply-demand mismatches were compared with the spatial distribution of different socioeconomic groups, primarily income and race/ethnicity.Preliminary results show that Southern Bronx, Southern Manhattan, and Northwest Brooklyn present the lowest supply, while Staten Island and Eastern Queens show higher values but also lower demand. The case of Lower Manhattan is interesting, since a negative supply-demand mismatch takes place in an area with high income and a predominantly white population. However, results show that correlations between the distribution of income and racial groups with supply values might be taking place.

Keywords: Urban Ecosystem Services, Environmental Justice, Ecosystem Services Mapping

5. *Type of submission:* ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Environmental justice related to blue urbanism – how practitioners and experts frame the perspectives of citizens with regard to procedural and distributive environmental justice

First author: Leena Kopperoinen, Timo Assmuth

Affiliation, Country: Finnish Environment Institute SYKE, Finland

Water is a key element in environmental justice, regarding the physical and biological as well as the societal aspects of its use. It has particular importance in urban environments which have often grown near water bodies and require access to water to thrive. In many studies of ecosystem services, water has been treated almost purely as a physical substance (e.g. de Groot et al. 2010) or from a biophysical and technical angle (Gómez-Baggethun and Barton 2013). Yet, 'blue space' is a highly coveted urban amenity, prompting studies of valuation (Sander and Zhao 2015) and preferences (Hayden et al. 2015) which begs the question of who are the beneficiaries of these values. In the growing literature on environmental justice aspects of urban green space, the particular importance of water has not been addressed very often, especially from a social and political point of view.Empirical studies on environmental justice in relation to blue infrastructure have analyzed citizen perceptions (e.g. Brown and Kyttä 2014). When opinions of experts on urban water have been analyzed, the focus has been on their own perceptions about equitable access to blue infrastructure, with only some studies of how they identify perspectives of other groups (e.g. Scholz et al. 2013). There is thus a gap in the analysis of expert perceptions of needs from the point of view of citizens. Also the methodologies for eliciting recognitions and opinions of experts identifying themselves with citizen groups are only emerging. We set out to fill this gap by a 'role chair' method to identify and characterize lay groups' needs, obstacles and opportunities. Specifically, our goal was to understand how experts frame and take into account the perspectives of various groups of citizens with regard to procedural and distributive environmental justice in Helsinki Metropolitan Area, Finland (Assmuth et al. 2017).

Keywords: Environmental justice; Urban; Blue-green infrastructure; Recognition; Expert opinion

6. *Type of submission:* ***Invited speaker abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Weaving notions of equity and justice into urban ecosystem service research and practice

First author: Johannes Langemeyer, Panagiota Kotsila

Other author(s): Ximena Giraldo Malca

Affiliation, Country: Universitat Autònoma de Barcelona (UAB), Institute of Environmental Science and Technology (ICTA), Hospital del Mar Medical Research Institute (IMIM), Spain

Notions of justice and equity remain widely marginal to the rapidly developing research on urban ecosystem services. Yet, enhanced considerations of justice and equity seem critically important at a time when the ecosystem service approach is gaining ever stronger momentum in the global urban policy agenda and in influencing local decision-making and planning. Notwithstanding, its ecological and economic legacy, there were important recent advances in the ecosystem service literature that support a stronger integration of equity and justice. With this study we aim at advancing the conceptual and practical integration of justice dimensions in urban ecosystem service assessments. We examine the theoretical legacy of ecosystem services to understand the lack of integration of justice and equity within this concept. We further introduce a conceptual framework that places the urban ecosystem service generation within its socio-political context and links it to recognition, procedural and distributional justice. We exemplify the application of this conceptual framework through the analysis of the urban renewal project Pg. de Sant Joan in Barcelona (Europe). Our study results highlight the need to understand recognition justice (plural values) and procedural justice (participation and power-relationships) as the foundation for distributional justice (trade-offs in ecosystem service benefits and detriments). Especially the procedural dimension of justice, including power relationships in stakeholder representation, remains underdeveloped in ES research and practice. The study of associations between ES preferences and demographic characteristics of the beneficiaries of Pg. de Sant Joan showed significant differences in preferences for ES for different occupation status and different age groups. We further suggest that distributional effects are not necessarily spatially and temporally immediate and highlight the need to consider trade-offs of ecosystem services and disservices within the wider socio-political dynamics, considering broader temporal and spatial scales.

Keywords: Ecosystem Services, Justice, Equity, Urban Renewal, Plural values

7. Type of submission: ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

A cross-city comparison of age-related disparities in availability of urban green spaces – multifaceted picture of environmental justice

First author: Edyta Łaszkiewicz

Affiliation, Country: University of Lodz, Poland

The environmental justice literature addresses mostly inequalities in the availability of urban green spaces regarding economic status, race or ethnic background. Other inhabitants' features, such as age, are less frequently subject of a wider discussion, and – if at all – they are analysed as part of a long list of variables illustrating green space disparities (in the case of multidimensional evaluations of environmental justice). Nevertheless, green space inequalities regarding age are important as a standalone issue because they are universally relevant, even in countries where societies are less diverse in terms of race or ethnic background or even economic status. Moreover, green space inequalities regarding age amplify other social disparities and affect a broad spectrum of problems, including "nature-deficit disorders" among children or limited possibilities of social contacts among the elderly. Those who suffer mostly due to the limited access to benefits provided by urban green spaces are children/young people and the elderly – people who have special demand for green spaces close to where they live. The purpose of the study is to explore spatio-temporal disparities in the availability of urban green spaces among age groups for five cities in Europe (Barcelona, Halle, Lodz, Oslo, Stockholm) and one in the United States (New York). To achieve our goal we compared these cities using different spatial measures of green space availability, calculated for 2006 and 2012 and for each of them verified the existence of age-related disparities. The results are discussed in the context of environmental justice.

Keywords: Urban green spaces, children, the elderly, environmental justice, geographical information system.

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8. *Type of submission:* ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Mapping ecosystem services on brownfields in Leipzig: use pattern, valuation and motives of users contribute to ongoing 2030 urban sustainability planning

First author: Joerg A. Priess

Other author(s): Catharina Pueffel,Dagmar Haase

Affiliation, Country: Helmholtz Centre for Environmental Research – UFZ, Germany

Green urban brownfields are a particular type of urban green space and contribute to the quality of life by providing a variety of ecosystem services (ES). The objectives of this study were to mapped the actual use of ES and the perception of disservices (EDS), and second, to assess the personal valuation and motives of users in relation to site and vicinity characteristics of the brownfields. We assessed major spatial and neighborhood characteristics of the studied brownfields. To map ES use, we applied the smartphone application MapNat either jointly with ES users (> 200 users), or we mapped the ES uses of people in the units of observation (>300 users). Results suggest that brownfields play a particular role in the set of urban green spaces, providing characteristic ES such as opportunities to recreate relax and retreat, partly differing from or complementing ES in formal urban green spaces. We identified spatial use patterns depending on local characteristics and personal preferences. For example, less accessible sites were relatively high valued and often used for dog-walking. Vice versa, better accessible sites were rather visited for unconventional stays and 'hang-outs'. The patterns of use identified in this study are of interest for management and planning of public green spaces, especially as conversion pressures on brownfields are increasing in growing cities, and planners require solid information to demonstrate the use of ES to justify the creation or persistence of urban green spaces e.g. as contributions to the ongoing "2030 sustainable city" process.

Keywords: Cultural ecosystem services; ecosystem disservices; green space; mapping ecosystem service use; urban brownfields

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9. *Type of submission:* ***Abstract***

B. Biome Working Group sessions:B10a Just green cities – Adding dimensions of justice to urban ecosystem service assessments

Mapping outdoor recreation opportunities to inform the design of more inclusive and just green spaces: A case study in Greater Oslo, Norway

First author: Marta Suárez

Other author(s): David N. Barton, Zofie Cimburova, Erik Gómez-Baggethun, Miren Onaindia

Affiliation, Country: UNESCO Chair in Sustainable Development and Environmental Education, University of the Basque Country (UPV/EHU), Spain

Ecosystem services (ES) mapping is gaining interest as a decision-support tool for landscape and urban planning. Various methodologies to assess and map urban and peri-urban ES have been developed, but they rarely consider dimensions of equity and justice. Using Greater Oslo, Norway, as a case study, the objective of this paper is to assess nature-based outdoor recreation opportunities with a focus on green areas' accessibility for different social groups. First, we use data from an online population survey to characterize social groups by gender, nationality, age, educational level and income and classify them along their outdoor recreation preferences. Second, we assess availability and attractiveness of green areas and map their relative compatibility with the preferences of different social groups. Third, we map physical accessibility based on population density and path and road network analysis. We also include physical and psychological barriers to access, based on public/private property, building morphology and presence of leisure facilities. Finally, we cross the accessibility map with census tract level data to evaluate relative access across user groups. We obtain three maps for each social group: i) an availability and attractiveness map showing the capacity of green areas to provide outdoor recreation opportunities; an ii) accessibility map; and iii) a map of relative access. These maps indicate different access opportunities to outdoor recreation across social groups. The proposed methodology is a valuable tool for landscape and urban planning in the light of justice to design of more accessible, equitable and inclusive green space networks in urban and peri-urban areas.

Keywords: urban ecosystem services, outdoor recreation, justice, spatial modelling