



## BOOK OF ABSTRACTS

### 1. SESSION DESCRIPTION

ID: T6

#### Title of session:

Green Justice – Considering equity, conflicts and disservices in ecosystem service research and practice

#### Hosts:

	Title	Name	Organisation	E-mail
Host:		Johannes Langemeyer	Inst of Env Sc and Techn.(ICTA), Univ. Aut. de Barcelona (UAB)	johannes.langemeyer@uab.cat
Host:		Joachim H. Spangenberg	Helmholtz Centre for Environment Research UFZ & Sustainable Europe Research Institute, SERI Germany	<a href="mailto:Joachim.Spangenberg@ufz.de">Joachim.Spangenberg@ufz.de</a> joachim.spangenberg@seri.de
Co-host		Francesc Baró	Inst of Env Sc and Techn.(ICTA), Univ. Aut. de Barcelona (UAB)	francesc.baro@uab.cat

#### Session description:

“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 in the ES EU Conference, September 2016) This session consist of two parts, “Equity and Justice” in the morning and “Disservices and conflicts” in the afternoon.

**1st part: Equity and Justice (Johannes Langemeyer; Francesc Baró)**

The ecosystem service approach is gaining ever stronger momentum in influencing the global policy agenda. Yet, notions of justice and equity remain widely marginal to the rapidly developing research on ecosystem services and its operationalization in policy and planning. Neglecting justice and equity, at a time when the ecosystem service approach is gaining societal and policy influence, may lead to unjust policies, and bares the risk to undermine the wider societal acceptance of the ecosystem service approach on the long-run.

This session aims at showing pathways to weave considerations of equity and social justice into ecosystem service research and practice. We will discuss frameworks, methods and tools across three dimensions of equity and justice: (1) Distributional equity and (in)justice related to the access to ecosystem services (and disservices); (2) Integrated valuation of ecosystem services and interactional justice considering different (distressed) societal groups; and (3) Participatory justice in policy-making, planning and (adaptive) management of ecosystem services.

The session is hosted by researchers from the Barcelona Lab for Urban Environmental Justice and Sustainability (BCNUEJ, [www.bcnuej.org](http://www.bcnuej.org)) and will put special (but not exclusive) emphasis on green infrastructure and nature-based solutions in urban and peri-urban contexts.

This session invites conceptual and methodological contributions as well as case studies advancing the integration of equity and social justice into ecosystem service research and practice. It will include voluntary contributions as well as invited speakers.



## **2nd part: Disservices and Conflicts (Joachim H. Spangenberg)**

The focus of ecosystem service research has been so far on (positive) services, although the issue of disservices has gained prominence in the last couple of years. However, how solutions can be found in the (frequent) case of co-production of services and disservices, accruing to different social groups, has rarely been analysed.

### **Goals and objectives of the session:**

**1st part:** This session's main goal is to explore frameworks, methods and tools to integrate notions of equity and social justice into urban ecosystem service research and practice, considering (1) distributional equity and (in)justice, (2) integrated valuation and interactional justice; and (3) participatory justice.

**2nd part:** The purpose of this proposed session is to collect reports about such conflicts, the way they have been managed, the solutions found and the mechanisms to achieve them, and the main obstacles encountered.

### **Planned output / Deliverables:**

**1st part:** This session is meant to create a community of researchers who are focussing on notions of equity and justice in (urban) ecosystem services research. It might lead into a new ESP working group or sub-group. We are further exploring possibilities to allow this session to lead into a special issue in a scientific journal.

**2nd part:** The output could be a joint paper identifying the risks and how to manage them, including caveats regarding frequent obstacles. Together with the stories collected this might be part of a special issue in one of the ESP associated journals, and subsequently lead to the establishment of a



community of researchers who are planning to emphasise these aspects in their research and applied work..

The synthesis could also serve as input to different Thematic Groups (e.g. 6, 8, 10, 14, 18) which are all exposed to the problem to some degree without it being their core theme.

## Related to ESP Working Group or National Network:

[TWG 6 – Integrated valuation of ES](#)

### 2. SESSION PROGRAM

**Date of session:** 14 December 2017

**Time of session:** Part 1: 10:30–12:30; Part 2: 14:00–16:00

### Timetable speakers

1st part: Equity and Justice				
Time	First name	Name	Organization	Title of presentation
10:30	Chair		Introduction / Key questions (Session part 1)	
10:40	Ximena	Giraldo Malca	ICTA / UAB	Can top-down planning guarantee an equal distribution of ecosystem services? An urban case study from Barcelona, Spain

# ESP 9

## WORLD CONFERENCE

● Shenzhen, China ● 11-15 Dec 2017

### Ecosystem Services for Eco-civilization

Restoring connections between people & landscapes through nature-based solutions

### 1st part: Equity and Justice

Time	First name	Name	Organization	Title of presentation
10:55	Leena	Kopperoinen	Finnish Environment Institute SYKE	Gamification as a means to enhance procedural justice in spatial planning
11:15	Jesse	Gourevitch	Gund Institute for Environment, University of Vermont, Burlington, VT, U.S.A.	Spatial targeting of forest restoration and floodplain reconnection that equitably distributes flood mitigation benefits
11:35	Blal Adem	Esmail	University of Trento	Prioritising urban restoration interventions through multicriteria assessment of ecosystem services

# ESP 9

## WORLD CONFERENCE

● Shenzhen, China ● 11-15 Dec 2017

### Ecosystem Services for Eco-civilization

Restoring connections between people & landscapes through nature-based solutions

### 1st part: Equity and Justice

Time	First name	Name	Organization	Title of presentation
11:55	Amélie	Robert	CITERES Research laboratory (CNRS / Tours University, France), RURALITES Research laboratory (Poitiers University, France)	Urban agrosystems in Ouagadougou (Burkina Faso): are there only (positive) ecosystem services?
12:15	all		Panel discussion / joint conclusions / next steps	

### 2st part: Disservices and Conflicts

Time	First name	Name	Organization	Title of presentation
14:00	Chair		Introduction to the session (part 2), key questions and options for follow- up	

# ESP 9

## WORLD CONFERENCE

● Shenzhen, China ● 11-15 Dec 2017

### Ecosystem Services for Eco-civilization

Restoring connections between people & landscapes through nature-based solutions

## 2st part: Disservices and Conflicts

Time	First name	Name	Organization	Title of presentation
14:10	Silvie	Campagne	Irstea, UR RECOVER, Aix-en-Provence, France	Encompassing good and bad effects of nature: disservices assessment and correlations with ecosystem services
14:35	Alexander	Rincón Ruiz	National University of Colombia, Colombia	Ecosystem services for the analysis of environmental conflicts and the challenges of inclusion
15:00	Ksenija	Hanacek	Autonomous University of Barcelona, Catalonia	What Types of Environmental Conflicts Emerge from the Impact of Land Use Management Changes on Cultural Agroecosystem Services?



2st part: Disservices and Conflicts				
Time	First name	Name	Organization	Title of presentation
15:25	Shannon	Herd-Hoare	Rhodes University, Grahamstown, South Africa	The relative role of ecosystem services and ecosystem disservices in rural livelihoods in the Eastern Cape province, South Africa
15:50	all		Discussion on joint conclusions and next steps	

### 3. ABSTRACTS

#### Part 1

*Type of submission: Abstract*

T. Thematic Working Group sessions: T6 Green Justice – Considering equity, conflicts and disservices in ecosystem service research and practice

**Prioritising urban restoration interventions through multicriteria assessment of ecosystem**



## services

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In this case–study research, we aim at identifying priorities for the redevelopment of brownfield sites in an urban context, considering a distributional equity perspective. First, we identify possible redevelopment scenarios by simulating different types of greening interventions in brownfield sites using a Geographical Information System (GIS). Second, we modelled the spatial distribution of ecosystem services provided by these redevelopment scenarios. The following ecosystem services were considered: cooling capacity, air filtration, water storage, habitat provision, noise reduction and recreation opportunities. State–of–the–art GIS modelling tools were used for the different services. Third, we quantified the beneficiaries of these services, and characterise their needs in terms of access to ES, exposure to hazards (e.g., air



pollution and heatwave), and vulnerability (considering for example socio-economic status and age group). Fourthly, all the information was combined using spatial multicriteria analysis to identify the types and location of interventions that provide the highest benefits to citizens, considering different perspectives (ie assigning different priorities to different types of benefits). The results helped to answer questions such as: which interventions promote highest level of distributional equity? Which level of performance of the new green areas is required to increase the wellbeing of the surrounding inhabitants? In which area the same investment is expected to obtain the biggest gain? Finally, applications of the results in the context of spatial planning are discussed.

*Keywords:* brownfields, equity, urban ecosystem services, multicriteria analysis



*Type of submission: Abstract*

**T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice**

## **Can top-down planning guarantee an equal distribution of ecosystem services? An urban case study from Barcelona, Spain**

*Author(s):* Ximena Giraldo Malca, Johannes Langemeyer

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The creation of green infrastructure (GI) is driven by the argument to multiply benefits to people through the provision of ecosystem services. By linking environmental justice and ecosystem service frameworks, this study addresses the capacity of top-down GI planning to reach



an equal inter and intra generational distribution of benefits and detriments.

As a case study we addressed the green renewal of Passeig de Sant Joan, a green corridor that constitutes an important cornerstone in Barcelona's (Spain) regional GI strategy. Specifically, our study examined: (a) the consideration of objectives and quality of stakeholder engagement in the planning phase, (b) the enhancement of perceived benefits ES after the implementation, and (c) the distribution of benefits. Results were derived from semi-structured interviews with urban planners (n=7), a survey among 100 users of the renewed green corridor and observations of socio-economic changes after the GI implementation.

Results confirm the GI planning to have followed a (typical) top-down approach, where stakeholder participation was mainly based on on-site commercials and reduced to decision approval. Nevertheless, an improvement of ES delivery has been stated by a vast majority of users, particularly for ES with direct utility value in-situ, such as attraction of tourists, aesthetic pleasing and shading. Accordingly, neighbours – among them especially elders – were assumed to benefit the most from the new GI.



However, results question the sustainability of ES benefits. On the one hand side, because low improvements (compared to other studies in Barcelona) were stated for ES with a wider geographical reach and those related to future benefits and resilience building, including storm water run-off, air pollution reduction, biodiversity protection and environmental education. On the other hand, changing food offers, commercialization of leisure activities and enhanced property prices indicate the green corridor to trigger a creeping gentrification process, which especially affects low income and elderly people.

Our study confirms the general assumption that GI enhances ES. However, we conclude that top-down planning might not be able to capture the full range of stakeholder objectives needed to enable the wider potential of ES (beyond utility and in-situ values). Furthermore, in our case study, planning lacked addressing long-term benefits and detriments, this lowers urban resilience building and reduces the intergenerational equity of benefit distribution.



*Keywords:* ecosystem services, environmental justice, green infrastructure planning, stakeholder engagement, intergenerational equity



*Type of submission: Abstract*

**T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice**

## **Spatial targeting of forest restoration and floodplain reconnection that equitably distributes flood mitigation benefits**

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Ecosystem services (ES) are increasingly considered in targeting investments in conservation and green infrastructure. To equitably distribute ES benefits from ecosystem protection and restoration, it is critical to understand how beneficiaries with different preferences and social vulnerability will be affected by potential



changes in ecological processes. By ignoring the diversity among ES beneficiaries, current approaches to conservation planning may exacerbate inequality within communities. Here, we develop an approach to optimize investments in green infrastructure that support social equity. To demonstrate this approach, we identify spatially-explicit forest restoration and floodplain reconnection scenarios to mitigate property damages from flooding in three watersheds in the northeastern region of the United States. We target high-priority areas for restoration using an integrated flood damage-cost model and dynamic genetic algorithm, accounting for social vulnerability of households exposed to flooding and budgetary constraints. Under all restoration scenarios the benefits of flood mitigation exceed the costs of restoration, demonstrating the cost-effectiveness of these investments in green infrastructure. Comparing high-priority restoration areas under varied weights for equitable outcomes, we find that scenarios with greater aversion to inequality shift the benefits of flood mitigation from higher to lower income households, particularly those who live in mobile homes. Our work offers a novel framework to implement conservation strategies that accounts for



heterogeneity among ES beneficiaries and equity in the distribution of benefits.

*Keywords:* equity, flood mitigation, green infrastructure, spatial optimization, hydraulic modeling



*Type of submission: Abstract*

**T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice**

## **Gamification as a means to enhance procedural justice in spatial planning**

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Integration of perspectives of environmental justice, biodiversity and ecosystem services into regional planning requires refining methods and practices for knowledge exchange between planners, researchers and citizens. Since its origins in the 1980, research on environmental justice has largely focused on the inequitable distribution of pollution, or other environmental or health hazards, among ethnic minorities or low-income residents (Agyeman, et al., 2003; Agyeman, 2005). Another



important aspect of environmental justice relates to political participation and recognition of disadvantaged groups, emphasizing a need to focus research also on the decision-making and participatory processes producing the inequitable consequences (Boone et al., 2009; Paloniemi et al., 2015; Schlosberg, 2007). Active participation by different stakeholder groups can help to make relevant — and often contested — contextual knowledge, values, and perspectives become more visible in planning (Giller et al., 2008). Inclusive knowledge generation processes can also incorporate local knowledge and place-based expertise on biodiversity, ecosystem services and distribution of their benefits (Turnhout et al. 2012), and thus improve the quality and societal acceptance of decisions.

Even though the interaction between the planners and the public has remarkably increased and diversified during the last decades, the impacts of citizen participation are less visible, indicating a need to develop planning methods and practices further in order to increase the effectiveness of participation (Lehtomäki & Paloniemi, 2017). We wanted to develop and test innovative means to elaborate and fine-tune practices for citizen participation as part of regional



scale planning. Gamification was selected as such a new means to involve stakeholders and citizens in a more inspired, innovative and motivated way in the regional planning. In the presentation, gamification as a method as well as its application in a real-life case study of developing a regional plan in the Kymenlaakso Region in Finland will be discussed.

*Keywords:* gamification, regional planning, environmental justice, procedural justice



*Type of submission: Abstract*

T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice

## **Urban agrosystems in Ouagadougou (Burkina Faso): are there only (positive) ecosystem services?**

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Like many African cities, Ouagadougou is having a great increase of its cultivated area. More generally, urban agrosystems are now highlighted worldwide, at least in scientific community. In this connection, urban nature,



whatever its form is, is praised, because it contributes to the life quality in city and offers many ecosystem services (air quality improvement, recreational activities, etc.). These services are associated more particularly to urban agrosystems, adding provisioning services. We are questioning some of these services in the framework of an interdisciplinary research conducted in Ouagadougou. Our first results confirm that, in this city, agrosystems offer provisioning and cultural services, not only to gardeners. Market gardening, the main agriculture in Ouagadougou, supplies city markets with fruits and vegetables up to 90%. The cultivated areas also prove to be life places, where the people cultivate, harvest but also sell, buy, talk together, even pray and eat. We can argue that some of these services come from facilities (prayer places, restaurants) but the same idea can be given for recreational activities in urban parks. Beyond and despite these confirmations, our research shows that, in Ouagadougou, like in other African cities, urban agrosystems are not accepted by all; they are even condemned by authorities, who highlight the negative sides. And indeed, urban agriculture also has disservices, linked to the way it is practiced. In Ouagadougou, agriculture faces two difficulties: the soil poverty and the



water rarity. Gardeners use the nearby resources, all the more they receive no support from authorities. They then use spent waters to irrigate their plots and waste to fertilize soil. But consequently, the products coming from these agrosystems present public health risks. Some efforts have to be made to reduce these disservices and increase services, in order that these agrosystems fully contribute to poverty alleviation and, in the same way, to the life quality in Ouagadougou.

*Keywords:* urban agrosystems, market gardening, provisioning services, cultural services, disservices, interdisciplinary research, Ouagadougou, poverty alleviation



## **Part 2**

*Type of submission: Abstract*

**T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice**

### **Encompassing good and bad effects of nature : disservices assessment and correlations with ecosystem services**

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The concept of ecosystem disservices (EDS) has emerged more recently and is the subject of far fewer and more limited studies than ecosystem services (ES). The notion of EDS encompasses a wide range of other notions and varied in time with several definitions. We can distinct EDS coming



from ecological processes and/or functions, EDS as a “negative provision” of ES and EDS resulting from the ecosystem’s management. Also depending on the point of view of individual or societal groups, the scale and the temporality, the same ecosystem functions impacts can be considered as ES or EDS. We define EDS as the negative impacts of ecological processes and functions on social well-being, distinguishing them from negative externalities that are carried by human activities. The present study is based on an ES and an EDS assessment using stakeholders scoring carried out in the Scarpe–Escaut regional park (France) and resulting in ES and EDS capacity matrices. We observed that mean scores associated with the EDS are lower than those for ES. Although ecosystem disservices are recognised, they are considered to be less important than the benefits both in quantity (scores) but also in variety (number of disservices) as 6 EDS have been identified as important by stakeholders for 25 ES evaluated. Among EDS, those that are linked to human health are better recognized, since they concern everyone, than those which have economic or ecological impacts that are mainly identified by the actors linked to the impacted sectors. Although EDS are rather well identified, the



stakeholders are less confident in assessing their importance. We point out significant correlation between EDS and ES, notably those resulting from similar ecosystem processes. With these results, we conclude that better consideration of EDS is important for achieving a more objective appreciation of ecosystems impacts on humans, but also help to improve the perception of positive services.

*Keywords:* ecosystem services, ecosystem disservices, capacity matrix, expert judgments, France



*Type of submission: Abstract*

T. Thematic Working Group sessions: T6 Green Justice –  
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research and practice

## **What types of environmental conflicts emerge from the impact of land use management changes on cultural agroecosystem services?**

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As an outcome of interactions and interdependencies with people, agroecosystems provide cultural ecosystem services (CES), such as traditional knowledge and ceremonies related to cultivation. Today however, agroecosystems undergo land-use and management changes (LUMC), such as intensive agriculture or



urbanisation. They represent one of the major causes of ecosystem services degradation. When changes in the environment occur, cultural systems also change. Along with these trends, environmental conflicts emerge between stakeholders with differing interests in land areas. Still, CES in agroecosystems is a topic that is often omitted, and implications for environmental justice have rarely been explored in the ecosystems services framework.

To that end, this paper presents a systematic review of CES that agroecosystems provide, shows their variegated interconnections through network analysis, and analyses the interrelation between LUMC, CES and environmental conflicts.

After a careful selection, we included 159 peer-reviewed articles, with empirical data from 81 countries. Through consistent coding, we identified 19 main land use and land management (LULM) categories taking place in agriculture. Agricultural intensification, water and land pollution and related degradation being the main ones. Twenty categories of CES identified, suggest the rich variety of CES involved in agroecosystems. Their interrelations through network analysis were confirmed, with heritage as a core



element.

We further identified 12 types of causes, 15 types of outcomes, and 10 types responses to conflicts related to the transformations in land use and CES. Finally, we analysed the interrelation between LUMC, CES and environmental conflicts. From the results obtained we show what impacts that LUMC types have on specific CES category, and what are the causes, outcomes of, and responses to the environmental conflicts that emerge. A comprehensive map of what the literature has unveiled so far in relation to the effects of major LUMC in agriculture on CES and related conflicts are presented.

*Keywords:* agroecosystems, cultural ecosystem services, land-use management changes, environmental conflicts



*Type of submission: Abstract*

**T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice**

## **The relative role of ecosystem services and ecosystem disservices in rural livelihoods in the Eastern Cape province, South Africa**

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Since the publication of the Millennium Ecosystem Assessment report there has been a surge of research on various aspects of ecosystem services (ES). While ES are essential to human wellbeing, the literature has overlooked that some ecosystem goods and services also undermine human wellbeing. These are known as Ecosystem Disservices (EDS). This study counters this imbalance in research, specifically in the context of rural livelihoods



where rural people are frequently dependent on local ES but often ill-equipped to manage EDS. The objectives of this study, conducted in three rural villages along a gradient of habitat diversity in the Eastern Cape, South Africa, were to identify a range of ES and EDS, determine their perceived contributions to or effects on respondents' wellbeing, and identify modifications in livelihood strategies in response to EDS. Research was carried out using participatory learning and action techniques, including focus group discussions, ranking, trendline exercises and household surveys. The economic contribution of ES and the economic cost or loss caused by EDS was calculated to express the role of ES and EDS in rural livelihoods in a common unit. Findings indicate that participants harnessed the beneficial contributions that ES such as, such as Non-Timber Forest Products, livestock, crops and marine wildlife, made to their livelihoods. Furthermore, residents actively managed the negative effects of EDS, such as ticks and associated livestock diseases, unpalatable grass species, birds of prey, monkeys, and an invasive woody species *Lantana camara*, which caused significant financial loss and undermined livelihoods to varying degrees. Based on these findings, we



propose that a comprehensive framework which systematically contextualises both the positive and negative effects of ecosystems is needed to grasp the full picture of how local people conceive and engage with nature to facilitate an understanding of the resulting practices and processes.

*Keywords:* ecosystem services, ecosystem disservices, human wellbeing, rural livelihoods, integrated framework



*Type of submission: Abstract*

**T. Thematic Working Group sessions: T6 Green Justice –  
Considering equity, conflicts and disservices in ecosystem service  
research and practice**

## **Ecosystem services for the analysis of environmental conflicts and the challenges of inclusion**

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Concepts such as ecosystem services (ES) (Groot et al. 2002; Costanza et al. 1997) and environmental conflicts (EC) (Martinez–Alier 2009; Sikor et al. 2014) are not usually used together in either scientific research nor in policy making. Very recent but scant attempts to link ES and environmental justice to analyze EC have been made, such as the work by Ernston et al. (2013) which addressed how the generation and distribution of ES in green urban areas



of Stockholm and Cape Town is mediated by social practices of different stakeholders and the work of Sikor et al. 2014 who introduces the idea of “injustice” associated to ecosystems services. Considering the complex, conflictive, heterogeneous and dynamic context of today’s world, and particularly in Colombia, these concepts (ES and EC) should complement each other both in scientific and political discussions, in this article we identified how both approaches can win each other. Land management associated to the idea of ES is concerned with the existence of EC, and the central idea is not necessarily to solve these conflicts but to manage them and prevent future conflicts, in this context the framework of environmental justice will be very useful. When using the concept of ES as a metaphor (Barnaud & Antona 2014) to explain how the relationship that exists between society and the environment is the bases for human wellbeing, we also need to understand that this concept also covers the different trade-offs associated to the services provided by ecosystems and definitely the challenge of inclusion in Colombia.

*Keywords:* environmental conflicts, inclusion, ecosystem services, Colombia