

BOOK OF ABSTRACTS

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I. SESSION DESCRIPTION

ID: T14

Integrating Nature-based solutions in spatial planning for tackling climate change and biodiversity loss in Latin American urban and peri-urban contexts

Format: Hybrid

Hosts

	Name	Organisation	E-mail
Host	Daniel Alejandro Rozas Vasquez	Universidad Catolica de Temuco	drozas@uct.cl
Co-Hosts	Jarumi Kato Huerta	University of Trento	jarumi.katohuerta@unitn.it
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Abstract

Nature-based solutions (NbS) have been defined by the IUCN as actions to protect, manage and restore natural or modified ecosystems to address societal challenges effectively and adaptively while benefitting people and nature. These solutions are increasingly mainstreamed in policies, plans and strategies at multiple levels in urban areas. They represent a cost-effective way to tackle climate change while also addressing biodiversity loss as two critical challenges for societies. To exemplify, and according to the latest Synthesis Report by the IPCC (2023), the current climate crisis generates devastating impacts that affect the poorest and most vulnerable populations globally and produce massive species extinction and irreversible biodiversity loss on ecosystems on which human societies depend. Latin American urban and peri-urban contexts are projected regions where the effects and impacts of climate change will be more intense, mainly due to the conditions of poverty and inequality that exacerbate the expected impacts. Moreover, the region is one of the richest in biological diversity. Still, the effects of climate change threaten to increase the pressure on natural resources, directly affecting biodiversity and their potential to provide a range of ecosystem services, such as regulation of Greenhouse gas emissions and protection against extreme weather events. Moreover, these effects indirectly erode economic progress and further increase social vulnerabilities. Spatial planning is a key decision-making process that defines a territory's development and the spatial allocation of land uses and natural resources. Integrating NbS into spatial planning and its instruments and tools at multiple scales is fundamental to ensuring the systematic implementation of NbS in urban and peri-

urban areas. To support the mainstreaming and institutionalising of NbS into spatial planning, transformations at multiple levels are needed through restructuring, path-shifting, innovative and multiscale changes. Restructuring changes concern a reorganisation of planning procedures, instruments and regulations. Pathshifting changes involve adopting a pluralistic (i.e., use of different sources of knowledge), adaptive (i.e., enable learning), and proactive approach (e.g., through the implementation of the mitigation hierarchy) to integrate intrinsic, instrumental and relational values attached to nature, and ultimately better inform planning decisions. Innovative changes aim to incorporate new knowledge, policies and technologies, such as those derived from grassroots initiatives, to ensure, for instance, that offsetting actions lead to Not Net Loss goals. Multiscale changes seek to empower minorities and involve multiple actors and sectors while strengthening coordination across spatial planning scales, such as mitigation hierarchy requirements and goals and accounting for climate adaptation needs at different temporal scales. There is a current information gap on how NbS and/or related strategies and practices are or could be integrated into spatial planning processes and instruments to address the aforementioned concerns in Latin American contexts. Specifically, there is a poor understanding of the precise changes required to facilitate the integration of NbS in spatial planning in these contexts.

Goals & Objectives

The session is structured in two parts that will take a full day (based on the number of abstracts received): The first is a hybrid and standard session with presentation slots. The aim is to explore how NbS are or could be mainstreamed and institutionalised in spatial planning for tackling climate change adaptation and biodiversity loss in Latin American urban and peri-urban contexts. To this purpose, we welcome abstracts that describe both theoretical/methodological contributions and empirical applications on the topic, including novel frameworks and methods that can be applied or adapted to Latin American contexts, as well as case study applications. As such, this session invites submissions from a wide range of actors, including planning practitioners, researchers and members or representatives of societal organisations. In the second part, an interactive discussion forum will be organised around a set of questions dedicated to the presenters and the audience. Here, the aim is to collectively analyse how the four perspectives of spatial planning change (i.e., restructuring, path-shifting, innovation and multiscale) emerge from each contribution of the session, what specificities characterise Latin American contexts and experiences, and what challenges for implementing NbS in real-life spatial planning instruments still exist.

Planned Output

The outputs and insights of the interactive discussion forum will be the basis for a co-authored comparative/perspective paper reflecting on the changes undergoing or needed in spatial planning to integrate NbS for tackling climate change and biodiversity loss in Latin American urban contexts. Drafting a policy brief will also be considered based on the

discussions. Detailed contents and possible dissemination methods will be agreed upon during the session's second part.

Session Format

We propose one session divided into two formats: abstract presentations and discussion forums. Based on the number of abstracts received, we foresee that the session could last the full day

Acceptance of voluntary contributions

Yes, I allow any abstract to be submitted to my session for review.

Relation to ESP Working Groups or National Networks

Thematic Working Groups: TWG 14 – Application of ES in Planning & Management

II. SESSION PROGRAMME

Date of session: Wednesday, 8 November

Time of session: 11:00 – 12:30

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
11:00	Masoumeh	Mirsafa	Politecnico di Milano	Mapping Urban NBS Practices across Latin America for Climate Change Adaptation
11:10	Jochen	Hack	Leibniz Universität Hannover(LUH)	Advances in the application of Nature-based Solutions for urban water management in Latin America
11:20	Pedro	Bonacic	Patagua	Corredor verde en Puerto Varas, Chile. Conectando la infraestructura verde y azul a la planificación urbana.
11:30	Agata	Cieszewska	Warsaw University of Life Sciences, Institute of Environmental Engineering	Will serious games convince residents to take action to adapt to climate change?

Time	First name	Surname	Organization	Title of presentation
11:40	Jarumi	Kato Huerta	University of Trento	Enhancing Transdisciplinary Knowledge Co-production for Effective Uptake of ES-Evidence: Insights from the SELINA Project
11:50	M. Susana	Orta Ortiz	University of Trento	Analyzing the transformative potential of spatial planning to implement urban nature-based solutions for biodiversity conservation and ecosystem service provision
12:00	All	speakers		

III. ABSTRACTS

1. *Type of submission:* Abstract / Resumen

T. Thematic Working Group sessions / Sesiones del Grupo de trabajo Temáticas T14 – Integrating Nature-based solutions in spatial planning for tackling climate change and biodiversity loss in Latin American urban and peri-urban contexts

Will serious games convince residents to take action to adapt to climate change?

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Serious games are now a fairly common tool used in spatial planning and design decisions. They allow participants to estimate the importance of pro-adaptation measures that can be introduced in the city. The CoAdapt project proposed the design of such a game, which would help motivate residents of neighborhoods to take such measures in their immediate

surroundings – residential areas. To this end, residents in a workshop-run game choose NbS that can change their environment and at the same time improve living conditions in their residential neighborhood. The game so called 'climatic neighborhood' is implemented in both board game and computer game versions, and the field of the game is neighborhood of players. In total, the game proposes the possibility of use of 40 NbS. For each pro-adaptation solution, the environmental, social and economic benefits it will bring to the residents of the housing development were estimated. Important here is the element of co-creation of new land use such as to improve environmental conditions including rainwater retention and improved thermal conditions on the one hand, and to motivate residents to take such actions on the other. The game was tested in 6 housing developments in Warsaw. As a consequence of the game, residents implement selected NbS in their housing estates.

Keywords: serious game, nature based solutions, neighborhood, cocreation, adaptation to the climate change

2. *Type of submission:* Abstract / Resumen

T. Thematic Working Group sessions / Sesiones del Grupo de trabajo Temáticas T14 – Integrating Nature-based solutions in spatial planning for tackling climate change and biodiversity loss in Latin American urban and peri-urban contexts

Analyzing the transformative potential of spatial planning to implement urban nature-based solutions for biodiversity conservation and ecosystem service provision

First author(s): M. Susana Orta-Ortiz

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Deep and systemic changes are required in spatial planning to integrate nature-based solutions (NbS) that can benefit societies' adaptation to climate change, urban biodiversity and ecosystem services (ES) supply. These radical forms of change across the multiple elements constituting spatial planning systems are known as transformative changes. The EU Horizon Europe BioValue project aims to unpack this concept and provide scientists and practitioners with insights to operationalize it and move forward a biodiversity-inclusive spatial planning. We illustrate a conceptual framework that was developed to understand the transformative potential of spatial planning with respect to the governance of ecosystem services and the implementation of nature-based solutions. This potential is characterized in terms of four features: restructuring, path-shifting, innovative, and multiscale. Afterwards, we present the preliminary results of testing the framework in different spatial planning systems. The testing has been conducted through a content analysis of a sample of planning documents for different cities in Europe. These results highlight current planning practices holding a transformative potential, such as for example the development of an integrated participatory system supported by innovative engagement approaches, the integration of the information baseline with comprehensive ES assessments, and the promotion of measures to prevent, or mitigate, environmental impacts. They also shed light on some barriers and bottlenecks that hinder changes with high transformative potential. These include the limited use of the mitigation hierarchy to inform planning strategies and actions and the poor uptake of knowledge from innovative grassroots initiatives supported by civil society and the scientific community. Finally, we discuss how the proposed framework can be applied in Latin American contexts and support transformative changes in spatial planning.

Keywords: transformative change, nature-based solutions, spatial planning, biodiversity preservation

3. *Type of submission:* Abstract / Resumen

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Advances in the application of Nature-based Solutions for urban water management in Latin America

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The study of nature-based Solutions (NbS) as strategies to promote sustainable development has been concentrated in the Global North. In the case of Latin America (LATAM), their adoption has been slow-paced. Nonetheless, these strategies are gaining momentum as a response to the impacts of rapid urbanization, which include abrupt changes in land use and the exacerbated loss of green areas. This is alarming since more than 50% of global biodiversity is contained in this region and the development of some cities is occurring in areas with high species richness and endemism. Hence, there is a growing interest in the integration of NbS as strategies for sustainable urban planning, where the protection of biodiversity and the promotion of ecosystem services are pillars for the construction of resilient cities. Thereupon, the importance of building a shared knowledge base to identify and assess the enabling factors and barriers to their wider uptake.

In this study, we systematically analyzed ten examples of NbS adoption in LATAM, selected with the aid of an extensive literature review and an expert panel composed of academics and practitioners, offering a robust analysis of the advances in the promotion and implementation of these infrastructures in eight different countries. Due to the multifunctional and multi-scale nature of NbS, a methodology was developed to conceptualize the necessary transformative processes in five different dimensions: i) enabling environment, ii) institutional component, iii) management instruments, iv) implementation/operation, and v) monitoring/evaluation. Results show limited progress in funding provision and monitoring/evaluation; however, there has been noticeable improvement in management instruments and implementation/operation in almost all cases. Political will and leadership have been key factors in such progress. This analysis and

documentation serve to fill information gaps on how NbS could be integrated into urban planning by understanding the changes and instruments required for their promotion and implementation in the region.

Keywords: Nature-based Solutions, Green Infrastructure, Latin America, urban planning, dimensions of transformation

4. *Type of submission:* Abstract / Resumen

T. Thematic Working Group sessions / Sesiones del Grupo de trabajo Temáticas T14 – Integrating Nature-based solutions in spatial planning for tackling climate change and biodiversity loss in Latin American urban and peri-urban contexts

Corredor verde en Puerto Varas, Chile. Conectando la infraestructura verde y azul a la planificación urbana.

First author(s): Pedro Bonacic Vera

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Puerto Varas es una ciudad del sur de Chile que experimenta un acelerado crecimiento urbano, lo que ha resultado en la impermeabilización de grandes superficies de suelo y en la pérdida de espacios naturales al interior de la ciudad. Esto supone una disminución en la capacidad de adaptación y resiliencia climática frente al aumento de los eventos meteorológicos extremos y la pérdida de biodiversidad urbana. Con el objetivo de promover y poner en valor la infraestructura ecológica en Puerto Varas, Patagua está impulsando la iniciativa Verdeazul, siendo uno de sus ejes la creación de un corredor verde bajo los principios del diseño urbano sensible al agua. Con ello, se apunta a integrar y consolidar una red interconectada de áreas verdes públicas y naturales en la ciudad mediante la implementación de soluciones basadas en la naturaleza, y contemplando la gestión local de aguas lluvias en algunos tramos. El proyecto sigue una metodología iterativa de cinco pasos: diagnóstico, planificación, implementación, evaluación, y –transversalmente– generación de alianzas estratégicas. Mediante este proceso se ha avanzado en el reconocimiento de áreas verdes y remanentes de naturaleza urbana, y en la identificación de tramos con potencial de conformar el corredor. Junto a la Municipalidad de Puerto Varas, se ha trabajado en la conceptualización del proyecto, integrando el corredor verde a la planificación urbana y definiendo su trazado en función de los objetivos de la ciudad. Asimismo, el municipio ha facilitado la articulación de actores privados y de la sociedad civil en la implementación, permitiendo que a la fecha se haya implementado un kilómetro del corredor. Se proyecta que el corredor verde constituya la espina dorsal de la infraestructura verdeazul de Puerto

Varas, permitiendo la integración de la naturaleza a la planificación urbana para la construcción de ciudades mejor adaptadas y resilientes al cambio climático.

Keywords: Soluciones basadas en la naturaleza, Diseño urbano sensible al agua, Infraestructura verde, Planificación territorial, Cambio climático.

5. *Type of submission:* Abstract / Resumen

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Enhancing Transdisciplinary Knowledge Co-production for Effective Uptake of ES-Evidence: Insights from the SELINA Project

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The adoption of transdisciplinary approaches has gained recognition as an effective means to bridge the gap between scientific knowledge and societal needs. By engaging diverse stakeholders, including researchers, practitioners, policymakers, and local communities, transdisciplinary knowledge co-production facilitates the integration of multiple perspectives and fosters collaborative problem-solving. This approach can potentially overcome disciplinary boundaries and generate context-specific ES evidence, leading to more informed decision-making processes.

This presentation proposes a framework that offers a comprehensive understanding of how transdisciplinary knowledge co-production can be implemented to maximise the uptake of ES evidence. First, we will outline the fundamental principles that underpin this approach, emphasising the importance of active stakeholder engagement, participatory methodologies, and the co-design of research agendas between science and policy.

Second, drawing on the SELINA project experience, we will showcase the structure of seven Demonstration Projects currently applying the transdisciplinary framework in different European policy-making contexts. We will then identify transferable insights that can be adapted and applied in Latin American contexts, considering the current and future challenges related to biodiversity conservation and climate change in urban environments.

The results of this work aim to contribute to the growing body of knowledge on transdisciplinary approaches and their impact in enhancing the dialogue and uptake of ES scientific evidence for NbS implementation. Moreover, we will emphasise the need for cross-sectoral collaboration to address complex sustainability challenges. The insights shared will

also be valuable for researchers, policymakers, and practitioners seeking innovative approaches to enhance urban climate adaptation and biodiversity conservation in Latin America.

Keywords: Transdisciplinary knowledge co-production, ecosystem services evidence, urban biodiversity conservation, climate change, SELINA project

6. *Type of submission:* Abstract / Resumen

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Mapping Urban NBS Practices across Latin America for Climate Change Adaptation

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Nature-based Solutions (NBS) are recognized as key actions for achieving sustainable and resilient development. They are being implemented in a variety of fields, such as urban planning, and offer a wide range of social, environmental, and economic benefits. While there has been a significant increase in the number of NBS practices in recent years, there remains a notable imbalance, with a bias towards the Global North. Yet, it is acknowledged that the Global South is likely to suffer the most from the increasing impacts of climate change. To address this gap, this paper aims to explore the state of the art of NBS implementation in Latin America through the identification and analysis of key case studies. It also seeks to identify potential pathways to mainstream the integration of NBS into urban planning processes, with the goal of achieving sustainable and resilient urban development in Latin America. The case studies are selected by conducting extensive desk research and gathering data from a web-based survey. Using a qualitative research method, the paper focuses on 12 NBS practices of varying scales in Latin American countries and applies thematic coding techniques to analyse the gathered data from multiple case studies. The research findings provide insights into the current state of NBS practices in Latin America, including the most commonly employed trends and practiced NBS typologies in the region. In conclusion, the paper provides recommendations to guide future initiatives aimed at promoting NBS for climate change adaptation in Latin American countries.

Keywords: Nature-based solutions, Climate change adaptation, urban planning, Latin America