

BOOK OF ABSTRACTS



Session 6 : Socio-ecological Justice in scaling Nature-based Solutions

symposium

BACK TO THE PROGRAM

This Book of Abstracts provides a comprehensive overview of the session content and is structured into two main sections:
I. Session Description: an introduction to the session
II. List of Abstracts - Orals & Posters: a complete compilation of all selected contributions showcasing relevant and impactful research related to the session theme

I. SESSION DESCRIPTION

Hosts:

	Name	Organization
Host	Sara Maestre Andrés	Institute of Environmental Science and Technology, Universitat Autònoma de Barcelona
Co-hosts	David Camacho Caballero	Institute of Environmental Science and Technology, Universitat Autònoma de Barcelona
	Johannes Langemeyer	Institute of Environmental Science and Technology, Universitat Autònoma de Barcelona
	Marije Schaafsma	Vrije Universiteit Amsterdam
	Mario Torralba	Vrije Universiteit Amsterdam
	McKenna Davis	Ecologic Institute

Description:

Wednesday, 4 November 2026 | **1:30 PM - 3:30 PM** | Aubépine 6+7

Nature-based Solutions (NbS) will have to be implemented at large scales across diverse social and ecological contexts and be supported by multiple institutions to achieve major sustainability objectives, including biodiversity conservation, climate change adaptation and the improvement of human well-being. Concerns over justice in NbS have been raised as they may generate or intensify already existing socio-ecological inequalities, perpetuate the lack of recognition and involvement of vulnerable stakeholders and promote speculative development. Such risks are likely to be amplified when scaling NbS across places. In this context, key knowledge gaps remain around how to enact and evaluate justice in NbS scaling processes. We assume that NbS delivery at a wider scale can only generate just outcomes and lasting transformative change if the scaling approach towards geographical expansion is embedded in the political, organisational and cultural context.

Such a scaling approach must include:

1. Scaling up to higher policy level changes in laws, policies, or norms to foster institutional change for NbS;
2. (Re-) allocating necessary resources and means (e.g. incentives, funding) to support NbS implementation and impact (scaling down);
3. Ensuring organisations have the structure, and capacity to deliver effective NbS and foster collaborative governance (scaling in);
4. Achieving transformative change in social-ecological relations, practices, norms, beliefs and values and reflexive learning (scaling deep).

In this session, we aim to discuss and produce new knowledge on justice implications of scaling NbS.
We welcome contributions that explore questions like:

1. What are the mechanisms through which scaling NbS creates socio-ecological (in)justice?
2. In what ways do perceptions of justice change in the course of different NbS scaling interventions?
3. Which governance arrangements support justice principles when scaling NbS?



II. LIST OF ABSTRACTS - ORALS

01. A typology of (in)justices when scaling NbS in coastal areas in France

Speakers: Joana Guerrin[1], Bétina Boutroue[3] and Stephane Ghiotti[4]
Authors: Joana Guerrin[1], Marie Fournier[2], Bétina Boutroue[3], Stephane Ghiotti[4], Laura Michel[5] and Aubrée Louarn[1]
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The integration of environmental justice issues remains underexplored within NbS literature (Bauer 2023) and should urgently be more considered (Kaufmann 2021), in particular in France (Coolsaet 2024, Deldrève 2014). Public policies urge the mainstream of NbS as a solution to the climate and biodiversity crisis (Guerrin 2024). In coastal areas, they promote NbS to address erosion and marine flooding, exacerbated by climate change. Restoring ecosystems such as dunes and mangroves enables them to fulfill their protective function as natural barriers against storms and buffer zones that help absorb and mitigate flooding caused by storm surges and coastal inundation.

These policy solutions produce overlooked unjust situations, regarding distributive (access limitation, unfair share of costs and benefits); procedural (under-represented stakeholders in participative arenas); of recognition (grounding decision over dominating values and beliefs) or epistemic (considering specific science and knowledge) justice. Little literature is tackling justice in relation to scaling issues.

Yet, scaling NbS is unanimously called for by public policies in coastal areas regarding sea-level rise and erosion. In this paper, we intend to bring together empirical insights from different contexts in France in order to propose a typology of situations of (in)injustice (distributive, procedural, recognition, epistemic) regarding different scaling strategies of Nature-based Solutions in coastal areas (scaling up; down; in; deep).

The paper will use empirical insights from different research settings to open a dialogue between the French western Mediterranean coast (the Aigues-Mortes gulf and west of the Camargue delta) and the French Atlantic coast (Ile d'Yeu). It will also enable a new dialogue on justice and scaling between different Living Labs under SOLU-BIOD program (Medcoast, Ponant, Amwi). This paper will open new avenues to think about justice and NbS scaling mechanisms in coastal areas.

Keywords: *Justice* *France* *Coast* *Scaling* *Atlantic* *Mediterranee*

02. Assessing the Multilevel Governance of Transboundary Nature-based Solution projects across the Amazon Basin

Speaker: Martha Robles Ustariz[1]
Authors: Martha Robles Ustariz[1], Liliana Lizarazo Rodríguez[1] and Afnan Agramont Akiyama[2]
Affiliations: [1]Brussels School of Governance (BSoG)- Vrije Universiteit Brussel (VUB) – Belgium
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From policy documents to regional projects, NbS are increasingly recognised and institutionalised as legitimate measures to address environmental and societal challenges. Our paper examines the Amazon Basin Project (ABP), the first regional instrument within the Amazon Cooperation Treaty Organisation (ACTO) framework to explicitly categorise four interventions, out of sixteen, as NbS.
Literature has recognised that NbS are as much "people-based" as they are "nature-based" (Palomo et al.,2021; Ruddat et al.,2026). From this perspective, participatory governance processes are fundamental for fair NbS. How multi-level governance is structure to allow, or not, substantive community participation and rights-based standards in contexts where NbS are scaled up through regional instruments becomes therefore essential. The ABP, within the ACTO framework, is a fitting scenario to address this question.

With the goal of assessing whether the NbS category in the ABP reflects a substantive participatory approach, we combine a comparative legal analysis of the international and constitutional framework of the nine Amazon countries with a content analysis of ACTO policy documentation, and apply the IUCN Global Standard for NbS to all ABP interventions.

Three preliminary findings emerge. First, the technical and institutional foundation of the ABP positioned state agencies and expert bodies as primary knowledge producers for problem identification and strategic line design. Second, the four formally categorised NbS are natural infrastructure climate adaptation measures, while the interventions with deepest community governance dimensions are outside the NbS category. Third, the fragmented constitutional landscape can generate structural asymmetries: participatory governance becomes contingent on which side of national border a community happens to live, rather than being structurally guaranteed.
These findings suggest that scaling NbS, specially in transboundary socio-ecological ecosystems like the Amazon Basin, require rights-based participation as a design requirement starting from the constitutive level, not left to the implementation discretion or national constitutional variation.

Keywords: *Nature-based Solutions* *Participatory* *Governance* *Amazon*

03. Cities thinking like a forest

Speaker: Luc De Droogh[1]
Authors: Luc De Droogh[1], Julie Callebaut[2] and Sander Jacob[2]
Affiliations: [1]Hogeschool Gent – Belgium
[2]Research Institute for Nature and Forest – Belgium

Nature Fabric Planning (NFP), the Flemish case in the Fair Nature researchproject of the Biodiversa+Call 2024 is a new and experimental governance instrument and methodology that aims to weave people-inclusive nature into the lives of urban neighbourhoods. NFP differs in many ways from classical conservation-or-development-based governance methods. It starts from a place-based knowledge and suggests a way of scaling out that connects local initiatives, local knowledge, and nature practices with urban development and a broader nature policy.

INBO and eCO-CITY are closely involved in this initiative on 2 levels. Locally we follow one of the cases in depth (Bloemekenswijk in Ghent, a densely populated, low income neighbourhood with almost no nature). A thick description of the neighbourhood (based on interviews, participative observation mapping, ...) documents the local perspective. On the regional level, we are involved through interviews, participative observations during the NFP-case meetings and reflexive observation.

Based on recent evaluation meetings at both levels, some relevant insights can be shared for the broader NBS discussion:

1. NFP is a unique instrument, it is developed at the central level – top down – but works from a bottom up, community perspective, not connecting citizens to a certain policy, but connecting policy to a local initiative.
2. NFP does not start from an opposition between nature and humanity, but starts from the concept of human-inclusive nature – nature as it is found in urbanized areas – not the pristine nature favoured by dominant conservationist thinking.
3. NFP is also a way to relate the 3 classic dimensions of justice in socio-ecological thinking from a unified and transformative perspective through the concept of parity of participation (Nancy Fraser).

Keywords: *Scaling and justice* *Governance and scaling*

04. Developing an Evaluation Framework for Just and Equitable Nature-based Solutions in Urban Areas

Speakers: Dora Almassy[1] and Estibaliz Sanz
Authors: Dora Almassy[1], Estibaliz Sanz, Mehmet Ayvaz, Lotte De Jong and Jaione Ortiz De Zarate
Affiliation: [1]Middle East Technical University [Ankara] – Turkey

As climate change impacts intensify in cities, Nature-based Solutions (NbS) are increasingly promoted as critical measures for climate adaptation. Beyond their effectiveness in reducing climate-related impacts, growing attention has been paid to whether NbS are designed and implemented in socially just, inclusive, and equitable ways. While the concept of just climate resilience has gained increasing importance in academic and policy debates, comprehensive evaluation approaches that consider multiple dimensions of just urban climate resilience remain underdeveloped. In particular, there is limited consensus on the key components and criteria for assessing whether NbS, as urban climate adaptation actions, are both equitable and effective.
This study addresses this gap by identifying and validating the key components and criteria for evaluating NbS as instruments of just climate adaptation in urban areas. The development process drew on a systematic review of approximately 250 scientific publications, was complemented by an analysis of relevant policy documents and was validated through feedback from practitioners and prospective users of the framework in pilot cities. The analysis demonstrated a high degree of consistency across academic, policy, and stakeholder perspectives: while most criteria corresponded directly or indirectly with those identified in the literature review, the policy analysis and stakeholder feedback also revealed emerging components and additional criteria.
As a result, the study identified a comprehensive set of components and criteria for the proposed evaluation framework, comprising 12 components and 50 criteria for assessing just and equitable NBS as climate adaptation actions in urban areas. The proposed framework offers a practical contribution to the operationalisation of just climate resilience by providing a systematic basis for evaluating the equity and effectiveness of NbS as urban climate adaptation actions.

Keywords: *Just climate action* *Equitable and inclusive climate adaptation* *Just climate resilience* *Just and equitable Nature-based Solutions*

05. Gardens in the Concrete Jungle: an Action Case Exploring Just Scaling Pathways for Community Gardens in Budapest

Speakers and authors: Karmen Czett and Gergő Berta
Affiliation: Environmental Social Science Research Group (ESSRG) – Hungary

As community gardens gain recognition as urban Nature-based Solutions (NbS), understanding their justice implications becomes increasingly important, particularly when such initiatives are expanded, replicated, or adopted more widely. FairNature is a European research project that explores how NbS can be scaled in ways that are not only effective in tackling environmental and social challenges but also fair and just. In the Hungarian action case, we look at community gardens in the 8th district of Budapest – a highly urbanised neighbourhood, where access to green space is limited and uneven.
In the 8th district, important achievements in procedural justice are already demonstrated, including participatory budgeting and planning that provide residents with opportunities to influence local environmental initiatives. However, significant challenges still remain. From a distributional justice perspective, community gardens may contribute to green gentrification. Participation is often dominated by relatively privileged social groups, raising questions about who benefits from and who is excluded from these initiatives. Recognition justice presents further challenges: certain types of community gardens continue to be primarily organised around human-centred food production, while community-building and more-than-human concerns remain in the background.

Methodologically, the research explores how participatory approaches, including affordance mapping, participatory planning, and arts-based interventions can support more just NbS governance. These methods not only reveal diverse experiences and values associated with community gardens but also create opportunities for reflecting on justice during planning and implementation processes.
We examine opportunities for scaling up through policy mechanisms that protect and institutionalise community gardens, scaling out through the creation of new gardens across the district, and scaling deep through shifts in values, practices, and human–human as well as human–non-human relationships. By linking participatory methods, justice dimensions, and scaling pathways, this research explores potential ways to create socio-ecologically just urban NbS.

Keywords: *Environmental justice* *Scaling* *Community gardens* *Participatory methods*

06. Scaling NbS, Shifting Burdens? Farmer Preferences for Just Land Transformation Approaches in Denmark and the Netherlands

Speakers: Alexandra Krendelsberger[1], Marije Schaafsma[1] and Mette Termansen[2]
Authors: Alexandra Krendelsberger[1], Marije Schaafsma[1], Mette Termansen[2], Kahsay Haile Zemo[2] and Ina Lehmann[1]
Affiliations: [1]Vrije Universiteit Amsterdam [Amsterdam] – Netherlands
[2]Institute of Food and Resource Economics [Copenhagen] – Denmark

Intensive agricultural production - particularly livestock farming - is a major driver of greenhouse gas and nitrogen emissions in Europe. In response, nature protection regulations are increasingly compelling large-scale polluters to transition toward more sustainable practices or exit farming altogether. Realizing the environmental benefits of such transitions requires implementation at scale, yet scaling processes risk generating or exacerbating socioecological injustices, particularly for farmers whose livelihoods, identities and land rights are directly affected.

This contribution presents two comparative case studies - Denmark and the Netherlands - that examine justice implications of large-scale land transformation policies.

- In Denmark, the focus is on collective nature restoration schemes that incentivize farmers to restore ecosystems and biodiversity in agricultural landscapes. The key challenges for scheme design relate to how the schemes can promote larger scale nature restoration projects which cuts across multiple landholdings.
- In the Netherlands, the focus is on land use planning reforms that convert agricultural land into nature-inclusive housing areas. Using discrete choice experiments with agricultural landowners in both countries, we elicit farmer preferences over policy design options that embed distributive, procedural and recognition justice dimensions.

This approach allows us to reveal which justice trade-offs become most salient to landowners as NbS transitions are pursued at wider scales, and how preferences diverge across farmer typologies and governance contexts. Our findings contribute to understanding the mechanisms through which NbS scaling creates socio-ecological (in)justice, and which governance arrangements can better align scaling ambitions with just outcomes for affected communities.

07. Scaling transformative change in multifunctional landscapes

Speaker: Mario Torralba
Authors: Mario Torralba and Bernadette Van Heel
Affiliation: Vrije Universiteit Amsterdam – Netherlands

Nature-based Solutions (NbS) are increasingly advanced as pathways to address intertwined biodiversity and food system challenges. These NbS are often materialized within independent local experiences of mixed success, with often an untapped potential for upscaling. However, scaling NbS across diverse contexts raises critical concerns about socioecological justice, particularly when existing governance structures reproduce inequalities. In this study we examine how transformative change in food systems can be scaled across diverse contexts while addressing justice explicitly.
Drawing on an expert solution scanning workshop synthesizing insights from 20 case studies of multifunctional protected landscapes worldwide, we analyse how alternative configurations of human–nature relationships, governance arrangements, and social-ecological practices can be scaled through three interrelated pathways: scaling deep, scaling up, and scaling out.

Our findings identify three key structural barriers to just scaling:

1. Rural marginalisation and abandonment, which undermine livelihoods and erode local knowledge systems;
2. Dominant economic paradigms that prioritise growth over biodiversity, food security, and relational values;
3. Entrenched power asymmetries that limit inclusive decision-making and equitable resource distribution. At the same time, enabling structures emerge through cross-scale alliances, supportive policy frameworks, and institutional arrangements that legitimise local practices and knowledge.

We argue that just NbS scaling requires transforming governance structures to redistribute power, reconfigure valuation systems, and embed inclusive participation. Without such structural change, efforts to replicate practices risk reinforcing existing injustices. By identifying mechanisms through which scaling processes shape justice outcomes, this paper contributes to advancing governance approaches for equitable and transformative NbS implementation.

Keywords: *Socio-ecological justice* *Governance structures* *Food systems* *Multifunctional protected areas*

II. LIST OF ABSTRACTS - POSTERS

01. Climate Justice Criteria for Nature-Based Solutions in Latin America: A Multi-Criteria Framework from La Araucanía, Chile

Speaker: Felipe Jorquera[1]
Authors: Felipe Jorquera[1], Carolina Rojas[1] and Daniel Rozas[2]
Affiliations: [1]Pontificia Universidad Católica de Chile = Pontifical Catholic University of Chile – Chile
[2]Universidad Católica de Temuco – Chile

Nature-based Solutions (NbS) are increasingly promoted for urban climate adaptation in Latin America. However, their implementation often relies on techno-ecological paradigms that overlook socio-territorial inequalities. A critical gap persists in operationalizing Climate Justice (CJ) to evaluate whether NbS equitably distribute benefits, recognize local knowledge, and enable effective participation, particularly in vulnerable Global South contexts.
This research employs a sequential mixed-methods approach. First, a PRISMA-guided systematic review of 217 articles (2000–2025) and a structured expert consultation (n≈40) defined key CJ criteria across four dimensions (distributive, recognition, procedural, capabilities). Second, a spatial assessment was conducted in Padre Las Casas, La Araucanía (Chile) (a multicausal vulnerability hotspot with a 31.3% indigenous population). The study integrated a Territorial Vulnerability Index (IVT) with bio-physical ecosystem modeling (InVEST) and pedestrian network analysis. The literature review reveals that 71% of Latin American NbS studies address CJ only implicitly, with a severe lack of indigenous recognition as co-designers. Spatially, the La Araucanía case study exposes a critical mismatch: despite green areas increasing from 1.24 to 5.71 m²/capita over two decades, fragmentation and soil sealing nullified urban cooling capacity (median = 0.13). An inverse correlation between vulnerability and ecosystem services (r = -0.16) highlights the consolidation of "environmental deserts." Highly vulnerable populations in foundational neighborhoods require more than double the walking time (7.22 vs. 3.38 minutes) to access NbS compared to low-vulnerability sectors. Traditional area-based metrics perpetuate distributive injustice. To address this, we propose a multi-criteria spatial indicator to guide "urban acupuncture" (targeted, decentralized blue-green micro-interventions) that operationalize climate justice in highly segregated cities.

Keywords: *Climate Justice* *Nature-based Solutions* *Global South* *Spatial Mismatch* *Urban Acupuncture* *Latin America* *Socio-ecological vulnerability*