Incorporating Culturally Inclusive Water Urban Design (CIWUD) in Governance and Co-creation – European and Australian Perspectives

Intégrer la Conception Urbaine de l'Eau Culturellement Inclusive (CIWUD) dans la Gouvernance et la Co-création – Perspectives Européennes et Australiennes

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RÉSUMÉ

La gestion du paysage urbain échoue souvent en raison de la diversité des perceptions et des besoins des communautés. Pour y remédier, les décideurs politiques doivent concilier ces différences pour une gouvernance équitable, notamment dans la planification des solutions fondées sur la nature (SFN) pour la biodiversité urbaine. Notre recherche se concentre sur la compréhension des valeurs humaines, des perceptions et des comportements pertinents pour la conception et la mise en œuvre des SFN dans les écosystèmes urbains, en particulier autour de deux rivières urbaines à Belgrade (Serbie) et Sydney (Australie). En utilisant des enquêtes communautaires, de la cartographie comportementale et des entretiens avec des responsables locaux, nous avons constaté que les usagers privilégient les valeurs naturalistes, humanistes et utilitaires dans les espaces verts. Bien que les systèmes de SFN répondent à certaines valeurs comme l'importance écologique, ils manquent d'intégration avec les espaces récréatifs et culturels. Les gouvernements locaux expriment leur intérêt à adapter les SFN aux besoins des communautés, mais manquent d'expertise et d'engagement communautaire. Pour optimiser le développement des SFN, les considérations socioculturelles et les valeurs communautaires doivent être intégrées, en équilibrant la biodiversité avec les besoins de la communauté. La gouvernance peut exploiter les écarts entre les croyances et les comportements des usagers pour optimiser les actions de gestion.

ABSTRACT

Urban landscape management often fails due to diverse community perceptions and needs. To address this, policymakers must reconcile these differences for equitable governance, especially in planning nature-based solutions (NBS) for urban biodiversity. Our research focuses on understanding human values, perceptions, and behavior relevant for NBS design and implementation, in urban ecosystems, particularly around two urban rivers in Belgrade (Serbia) and Sydney (Australia). Using community surveys, behavioral mapping, and interviews with local officials, we found that users prioritize naturalistic, humanistic, and utilitarian values in green spaces. While NBS systems address some values like ecological significance, they lack integration with recreational and cultural spaces. Local governments express interest in adapting NBS to community needs but lack expertise and community engagement. To optimize NBS development, socio-cultural considerations and community values must be integrated, balancing biodiversity with community needs. Governance can leverage gaps between user beliefs and behavior to optimize management actions.

KEYWORDS

Co-design, Community engagement, Nature-based solutions, Sociocultural values, Urban biodiversity

1 INTRODUCTION

The integration of waterways into urban spaces encompasses various forms, often featuring green corridors with walking trails, bushlands, ponds, and parks. Nature-based solutions (NBS) are constructed features focusing on stormwater management, such as raingardens and wetlands, which not only protect urban green spaces and rivers but also provide multiple benefits to the public. Incorporating NBS into urban areas enhances quality of life, environmental services (e.g., flood risk reduction, wildlife support, pollution removal), and cultural benefits like recreation and heritage preservation (Demuzere et al., 2014). While previous studies have demonstrated public support for sustainable development projects and NBS adoption (Dou et al., 2022), diverse stakeholders in urban space management hold varying preferences (i.e., values) regarding ecological, cultural, and socio-economic aspects (Naserisafavi et al., 2022). Critical gaps remain in understanding how public usage patterns and relationships with urban waterways should inform NBS functionality priorities (Spahr et al., 2021). Moreover, the disconnect in communication between urban decision-makers and communities continues to hinder effective co-design processes. To address these challenges, our research analyzes responses from urban river users to assess multiple ecosystem services, including stormwater management and broader landscape planning, alongside perspectives from river managers and designers. Through engagement with communities of practice in Australian and Serbian contexts, our study aims to inform culturally inclusive NBS designs and collaborative management processes that better reflect diverse community values in urban landscapes.

2 METHODS

Australian case study focuses on HV Evatt Memorial Park, and Riverwood Community Park situated in the south-west Sydney, Australia. Both parks are situated adjacent to a large Georges River, and designed primarily for community leisure. However they both have major urban water NBS features, where Evatt Park has a wetland and a biofiltration system collecting runoff from nearby residential areas (including sports fields), while Riverwood has a large wetland connected with stormwater drainage network collecting runoff from mixed land use. Both areas are demographically diverse with a mix of Aboriginal and Torres Strait Islander people, European, and Asian immigrants. Further to case study data, we have ran industry and practitioners workshops to collect professional knowledge, along with interviews with local water managers.

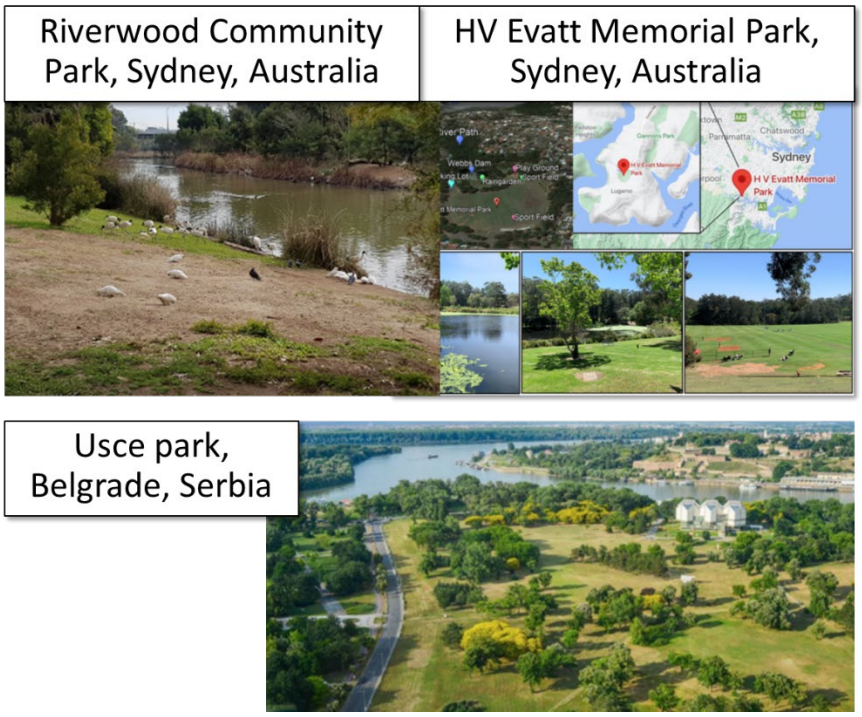

Figure 1. Australian and Serbian case studies

Serbian case study focuses on Zemunski kej Park, situated next to the river Danube. The Park section covers approximately 4 hectares, on the eastern side is just next to the Danube quay and is predominantly a grassy area with a few patches of trees, surrounded by residential buildings and a major boulevard. The community is diverse, with the dominant age group 65+ (35%), medium income (60%), mostly without mobility problems. The Park includes many amenities, but lacks proper shading, which is why most of the time during summer months it is not used throughout the day, but only in the early morning hours and in the evening. The list of interventions that includes NBS was co-created with the community includes a raingarden, green roof and green walls, to improve urban water management, especially in preserving water for irrigation of the Park and improving the quality of the man-made channel.

To assess community preferences at the study sites extensive field observations, literature review, and interviews with experts were conducted prior to the survey design. This was followed by structured survey with each section providing respondents with the opportunity to express their perceptions in different ways. We conducted behavioural mapping of the site to map performed activities and link with survey answers.

3 RESULTS

The research indicates that urban residents highly value waterways and their surrounding natural environments for social interactions and leisure activities. Effective river governance involves aligning institutional policies and management decisions with these human values, including integrated development of nature-based solutions (NBS) that reflect community priorities. Encouraging users' sense of responsibility and stewardship post-construction is crucial. The concept of culturally inclusive water urban design (CIWUD) emphasizes integrating NBS with socio-cultural considerations (Coyne et al., 2020). The gap between belief and behavior may not significantly impact decision-making if management actions prioritize social priorities. While the water literacy of local communities seems high, overall, urban waterway managers are finding it difficult to co-create with local public, and there is observable lack of communication and understanding between stakeholders. Additionally, there are institutional barriers (mostly legislative) that prevent wider education and promotion of NBS assets. Lack of funding has also been reported as one of the main barriers that prevents co-creation process (lack of manpower and time). These findings offer valuable insights to help decision-makers plan NBS and landscape management strategies for urban waterways in line with community expectations.

Figure 2. NBS socio-cultural functions based on community in Australian case study (left) and Serbian case study (right)

Emerging artificial intelligence (AI) technologies present new opportunities for urban NBS planning by addressing the traditional tension between human-centric and eco-centric design approaches (Prodanovic et al., 2024). While human-centric NBS design typically prioritizes convenience, financial sustainability, and amenity enhancement, eco-centric approaches focus on spatial connectivity of blue-green spaces, species richness, and habitat creation. AI-centric urban planning could potentially reconcile these competing priorities by enabling more integrated analysis of complex ecological and social data, though its practical application in collaborative NBS planning remains in early stages. Integrating AI tools into participatory design processes may help bridge the communication gap between technical decision-makers and communities by providing more accessible visualizations of biodiversity outcomes and ecosystem service trade-offs. However, such technological approaches must be carefully balanced with the culturally inclusive, community-driven values central to effective CIWUD implementation.

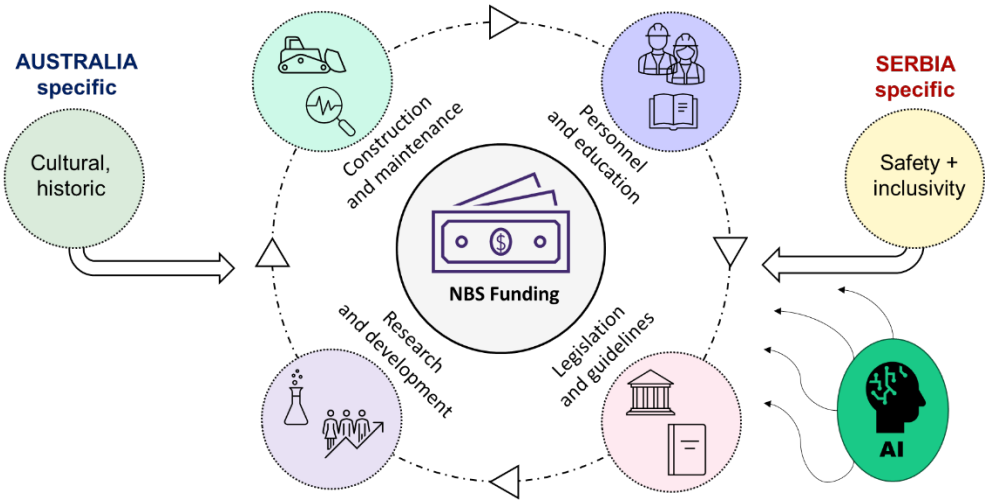

Figure 3. Central Themes and Issues in Australia and Serbia

4 CONCLUSIONS

In urban environments where decision-making centers around people, embracing the array of their preferences and incorporating their socio-cultural perspectives ensures that spaces are tailored to suit individuals' requirements, rather than expecting people to conform to urban conditions. This fosters a sense of connection to the place, ownership, and active community involvement, thereby enhancing community bonds and fostering trust in decision-making processes. In addition, emergence of AI has provided an opportunity for more inclusive and objective design. Consequently, it promotes social cohesion and contributes to the long-term sustainability of NBS.

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