Research Paper

Strategies and tools for just collaborative planning of nature-based solutions

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Abstract

The concept of nature-based solutions (NBS) has gained increasingly importance as a means to make major contributions towards more liveable, sustainable and climate-resilient cities. At the same time, there is an increased call for fairer and more inclusive collaborative planning processes to ensure environmental justice. Yet, knowledge on how collaborative planning processes of NBS intersect with environmental justice is still scarce, scattered and one-sided, while in practice lack of resources, time, convictions, and skills further hamper making these processes constructive and long-lasting. With this contribution, we aim to bring knowledge on just collaborative NBS planning and design processes together, in particular in relation to procedural and recognition justice. As part of a larger qualitative systematic review, 117 articles were analysed on ways to improve procedural and recognition justice of NBS planning processes. Based on the review, we compiled seven main strategies with supporting tool examples to guide designing NBS planning processes in a fairer and just fashion: Involve a broad spectrum of stakeholders, Assessing multiple benefits for multiple people; Be sensitive to local context; Encourage knowledge exchange; Empower people; Be open and transparent; and Plan an adaptive and flexible process.

Keywords

Recognition justice, procedural justice, participation, collaboration, inclusive planning, green infrastructure

1. Introduction

Nature-based solutions (NBS) have increasingly gained importance as a means to develop our cities greener and with that more liveable, healthier and climate-resilient (European Environment Agency., 2021). The concept of NBS is considered an umbrella term for different concepts, such as green infrastructure, ecosystem-based approach and ecosystem services. The IUCN describe NBS as “actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (Cohen-Shacham *et al.*, 2016). According to the IUCN (2020), these actions should be based on inclusive, transparent and empowering governance processes .More recently, NBS or related concepts received criticism, due to their contribution to green gentrification, which often leads to displacement of underprivileged groups (Wolch, Byrne and Newell, 2014). Minorities and communities of low income have proportionally less access to urban green spaces, which affects their health and wellbeing (Meenar, Heckert and Adlakha, 2022). With

climate change, social inequality will worsen, as vulnerable communities often live in areas more prone to be more frequently and severely impacted, while having less capacity to deal with the effects (Diffenbaugh and Burke, 2019). Green and open space planning should aim to reduce social inequality by keeping different users in mind and enhance stakeholder participation. Yet, a study by Cousins (2021) shows that environmental justice is only marginally considered in NBS research and practice.

The topic of environmental justice has steadily gained momentum over the past two decades (Kabisch and Haase, 2014). Over the years, several approaches and frameworks to address justice issues have been developed, yet the most frequently referred to approach distinguished three core components of environmental justice, namely distributional, procedural and recognition justice (Anguelovski *et al.*, 2020). Distributional justice poses the question "who gets what' (Gantioler, 2019) and is concerned with issues regarding equal access and quality of open spaces (e.g., Kabisch and Haase, 2014; Kotsila *et al.*, 2020) or their benefits (e.g., Ambrey *et al.*, 2017), or the unequal exposure to climate hazards (e.g., Brulle and Pellow, 2006). Gantioler (2019) distils procedural justice to the question 'who gets asked' in decision- and policy-making processes. Planning processes are often shaped by power imbalances in which the "usual suspects" with the resources and skills to participate dominate the process, while disadvantaged groups often lack the time, energy or capacity to effectively contribute (Gantioler *et al.*, 2022). Recognition justice is about 'who gets asked and considered how' (Gantioler *et al.*, 2022). It is about acknowledging and including different cultures, perceptions, values and needs in NBS planning practices (Langemeyer and Connolly, 2020) regardless of people's ethnicity, gender, sexuality, age or level of education (Gantioler *et al.*, 2022).

Zuniga-Teran *et al.* (2021) define procedural and recognition justice as the underlying causes for distributional justice. Yet, procedural and in particular recognition justice have been addressed to a lesser extent than distributional justice in relation to NBS (Calderón-Argelich *et al.*, 2021). Participation, engaging citizens, equity and social fairness have long been acknowledged as important for successful collaborative planning (Dobbin and Lubell, 2021). However, justice is not often deployed as a starting point for NBS planning, and more often revolves around city greening as a means of accumulating human and economic capital (Anguelovski *et al.*, 2020). Knowledge on how NBS planning processes intersect with environmental justice is still scarce, scattered and one-sided, while in practice lack of awareness, understanding, conviction, and skills further hamper making these processes constructive and long-lasting (Dobbin and Lubell, 2021). With this contribution, we aim to bring knowledge on just collaborative NBS planning processes together to find strategies and tools to improve procedural and recognition justice for practitioners and researchers.

2. Methods and materials

Within the framework of the EU-funded JUSTNature project, an qualitative review was conducted to answer the question: "how can the co-governance of NBS be improved to reach just, low-carbon cities?" This study is based on a specific part of this review, which looks into collaborative planning processes for just, low-carbon cities. The overall review is based on Guidelines for Systematic Reviews in Environmental Management set out by Collaboration for Environmental Evidence (2013) and further supported by protocols of ROSES (RepOrting standards for Systematic Evidence Syntheses). First, articles deemed relevant to answer the main question were collected in a test list. Based on these articles, a search string was developed, tested and adjusted until the outcomes included approx. 50% of the articles in the test list. For the testing of the search string as well as the systematic search the databases of Web of Science and SCOPUS were applied. Through applying an optimization technique, known as "elbow/knee detection", on the search results, we established the year 2001 as the threshold for our review. In total 10.238 articles

(excluding duplicated) were screened for literature type, language, availability and quality. Subsequently, the articles were tagged if deemed relevant for one of the research foci (e.g., actors, actor interactions, collaborative planning processes). 397 articles were tagged for the topic of collaborative planning processes. An additional 10 articles were added as hand search. Screening the full text of these 407 articles resulted in 117 articles for the final review. This final selection was then analysed for strategies, instruments and tools to support just collaborative planning and design of nature-based solutions.

3. Results

3.1 Involve a broad spectrum of stakeholders

Planners need to involve a broad spectrum of stakeholders regardless of age, gender, ethnicity, socio-economic status or religion (Toxopeus *et al.*, 2020; Chu and Cannon, 2021). This includes influencers, beneficiaries, and those who will be affected (van der Jagt *et al.*, 2019). Special attention needs to be paid to minority, vulnerable and underrepresented groups (Fisher, Blackstock and Irvine, 2021), including nonhumans species and ecosystems (Gantioler *et al.*, 2022). These different stakeholder groups are often not homogenous and neither are their needs and values (Day, 2010).

Analysis of socio-spatial inequalities regarding distributional or climate injustice can support the recognition of vulnerable groups (Tozer *et al.*, 2020). This data could be included in a stakeholder analysis, while further identifying different underrepresented groups (see for a good example JUSTNature D4.1). Prado (2020) proposes to include the "unusual suspects" by comparing the participant list with a list of stakeholders affected by the environmental issues. To tackle our blind spots, a diverse team should conduct such analyses. Public interest groups could further identify and support underrepresented groups (Janse and Konijnendijk, 2007).

Stakeholders should be to invited to play an active role throughout all planning phases early on in the process (Hawxwell *et al.*, 2019). Especially co-creation activities seem to foster long-term investment and a sense of ownership (Arlati *et al.*, 2021). According to Wilker *et al*. (2016), action-oriented activities (e.g. urban gardening) are particular helpful in engaging "hard-to-reach groups". Children and youth could be involved through education activities, co-design of playgrounds, or work-play happenings (Janse and Konijnendijk, 2007). Yet, even when all stakeholder are recognised, it is likely that only "a subset of stakeholders" will participate (Sayer *et al.*, 2013). A regular assessment on inclusion can help to ensure that "all voices have equal weight and validity" in the process, even of those who are present or are cannot represent themselves (van der Jagt *et al.*, 2019) or when stakeholder composition changes over time.

3.2 Assessing multiple benefits for multiple people

Recognition of the multiplicity of perceptions, values and preferences is the "first step" towards more participatory planning (Ferreira *et al.*, 2020), while ignoring them could block or remove current usages from open spaces due to dismissed notions on customs, safety, religions and nature perceptions (Toxopeus *et al.*, 2020). Moreover, the different synergies and trade-offs between these perceptions, values and preferences need to be assessed (Hansen *et al.*, 2019). The plurality of the task requires the application of multiple methods for data collection (van der Jagt *et al.*, 2017) and multiple approaches to understand the various ways of valuing NBS (Pineda-Pinto, Frantzeskaki and Nygaard, 2022).

Questionnaires and surveys "are reproducible, comparable, and easy to implement for the collection of citizens' perceptions, preferences, and viewpoints" (Hawxwell *et al.*, 2019). Public participation geographic information systems (PPGIS) (Rall, Hansen and Pauleit, 2019) and Volunteered Geographic Information (VGI*)* (Ferreira *et al.*, 2020) can be effective in mapping ecosystem services as well as stakeholders'

knowledge and preferences in both online or offline formats. Mapping ecosystem services in relation to the needs of stakeholders make the results more relevant for them (Olsson *et al.*, 2020).

Yet, stakeholders often have other concerns besides ecosystem services (Olsson *et al.*, 2020) and nature has value on its own (Randrup *et al.*, 2020). Hence, NBS should be assessed not only for their technical and functional performance, but also for their different values for society and nature (Tozer *et al.*, 2020; Mok *et al.*, 2021). "Scientific criteria and quantifiable indicators" allow to include "long-term sustainability goals, which support" giving voice to "future generations and non-human nature" (Toxopeus *et al.*, 2020). The above shows that NBS planning calls for multidisciplinary teams in which planners work alongside professionals in health, natural and social sciences (De Haas, Hassink and Stuiver, 2021).

3.3. Be sensitive to local context

Understanding the historical, cultural and social context plays an important role in addressing justice, as it can support collaboration (Wamsler *et al.*, 2021), identification of potential barriers (Kabisch, Frantzeskaki and Hansen, 2022), and conflict reduction (Mok *et al.*, 2021). Addressing procedural justice should go beyond identifying individual stakeholders and consider the interrelations between stakeholders. We need to understand what procedural justice means in each specific context (Ruano-Chamorro, Gurney and Cinner, 2021), to build collaborative planning processes "from the ground up, by looking for democratic practices, trends and potentials embedded in existing institutions and to consider which […] democratic institutional designs" fit better to the given social context (Buizer and Van Herzele, 2012). "Being physically present" makes this easier, as it allows direct daily contact with local actors and better insight into local actor interactions (Arlati *et al.*, 2021).

Local conditions are not be taken for granted, but critically assessed, as they may already impede social inequality, which can lead to continuous or even marginalisation and exclusion (Hammelman, 2019). Carmichael and McDonough (2018) described how the historical narrative and lack of experience of trees in a Detroit neighbourhood hindered tree planting as inhabitants did not know which benefits of trees provide. This example indicates the importance of "local and everyday manifestations of injustice and justice" and their effect on the "lives of people in disadvantaged urban neighbourhoods" (Milbourne, 2012). Collaboration with local communities is necessary to acquire local knowledge and experiences – or understanding the lack thereof – to ensure fitting long-term NBS solutions (Djalali *et al.*, 2019). Butt *et al.* (2021) indicated that place attachment played a major role in the engagement of residents. Due to this potential, place attachment and community identity should be considered in planning processes (Anguelovski, 2013). Place-based mutual learning activities, such as joint field trips and expos of local experiences (van Lierop and Stockinger, 2019), in which participants experience the place together and local actors tell their own stories are recommended (Frantzeskaki and Rok, 2018).

3.4 Encourage knowledge exchange

Knowledge exchange through transdisciplinary dialogue allows for a broader understanding of NBS, its values and benefits (Tozer *et al.*, 2020), but also an increased understanding among participants for each other's point of view (Randrup *et al.*, 2020) and ultimately more "equitable outcomes" (van Riper *et al.*, 2016). Knowledge is essential for participation; a lack thereof might mean a reduced capacity or confidence to participate (Butt *et al.*, 2021). Planners can build actors' capacity on how to bring in their knowledge and experience in participatory processes. Local, scientific, technical and traditional knowledge are brought in the planning process (Cohen-Shacham *et al.*, 2019), which each can be interpreted through different knowledge perceptions on knowledge (Morgan, Osborne and Mackey, 2022). Scientific and expert knowledge and related knowledge perceptions often dominate and prioritised above other knowledge types (Prado, 2020). Knowledge management can help to avoid scientific biases and balance different

knowledge with various perceptions, values and preferences (Kumar *et al.*, 2020; Mok *et al.*, 2021; Kabisch, Frantzeskaki and Hansen, 2022), and ensure that knowledge and information is available and comprehensible for all participants (Sayer *et al.*, 2013).

Planners could play an essential role in raising awareness and educating local actors as knowledge brokers (Frantzeskaki, 2019). Hawxwell *et al.* (2019) suggest to develop "summaries, checklists and guidelines" for policies "to better communicate these and present them in an easy-to-understand way". Visualisations can facilitate information exchange (Ferreira *et al.*, 2020), if they are understandable, well explained, realistic, and have the right level of detail (van Lierop and Hildebrandt, 2022). E-tools and social media increasingly receive attention due to their potential facilitate interaction, and enhance social learning (Ferreira *et al.*, 2020).

Frantzeskaki and Rok (2018) propose transdisciplinary spaces for engagement and learning in which different stakeholder collectively explore contemporary conditions, co-create knowledge, develop new solutions, and assess operation and impact of these new solutions on justice considerations. Such spaces benefit from being linked to other processes and networks (van der Jagt *et al.*, 2019). Other formats for knowledge exchange are: master classes (van Lierop and Stockinger, 2019), "'Sounding board' groups, public workshops, thinking days with the public, 'future managers meeting local connoisseurs', thinking days with experts, public hearings, conferences, and formation of advisory group" (Janse and Konijnendijk, 2007).

3.5. Empower people

People should be giving a voice in creating their own sustainable environment (Kato and Geneletti, 2022). Attendance only is not enough (Barletti *et al.*, 2020), higher levels of participation should be reached, at least the level of 'delegated power' (Sarabi *et al.*, 2022). Such higher levels require "new modes of facilitation" (Sarabi *et al.*, 2022), such as community-based landscape planning (Liu and Opdam, 2014) and methods such as focus groups, co-design or co-management activities, workshops (Ferreira *et al.*, 2020). Empowering people requires moving away from "the narrow focus" on citizen involvement and including a more diverse group of actors in "a broader range of partnerships" and networks (Buijs *et al.*, 2019).

It is crucial to recognise power asymmetries and their influence (Mok *et al.*, 2021). This means identifying differences in perspectives between actors with much and little power (Olsson *et al.*, 2020), but also who interprets results and makes decisions (Hammelman, 2019). The "critical companion" posture allows "facilitators to deal with power inequalities during participative processes" by making the underlying assumptions and objectives explicit to all participants (Ruano-Chamorro, Gurney and Cinner, 2021). Kato and Geneletti (2022) propose to give vulnerable communities "a leading role", while Arlati *et al.* (2021) give citizens central stage at a kick-off event" to present their perspectives. Those actors, who cannot or do not want to participate, can be give representation through associations, coalitions or informal networks (Day, 2010; Butt *et al.*, 2021). Funding for childcare or transportation costs can motivate vulnerable groups to participate (Prado, 2020). Digital technologies, such as teleconferences, surveys, public comment apps (Prado, 2020), can help to mobilise people through remote participation (Ferreira *et al.*, 2020).

Planners "need to be open to communicate, listen and to handover the leadership of projects to citizens, civil society groups and other urban actors" (Frantzeskaki, 2019), "especially those traditionally in weaker positions of power" (e.g. migrants, women) (Barletti *et al.*, 2020). Local actors need to be seen "as partners in finding solutions rather than project beneficiaries" (Barletti *et al.*, 2020). Yet, often shared decision-making is avoided out of fear for conflicts and delays (Mahmoud and Morello, 2021). In such cases, we might need "to negotiate an agreement with the agency or client at a high enough level about what power is to be afforded to the public" (Syme, 2017).

3.6. Be open and transparent

Fernandes, Guiomar and Gil (2019) mark out three steps to an open and transparent collaborative process early on. First, consensus on the common objectives and tasks needs to be build, which includes explaining the process and its terms and conditions of the process as well as making the expectations and concerns of each actor clear (Pauleit *et al.*, 2019). Resulting objectives could be turned into criteria for the process (Van Cauwenbergh *et al.*, 2022). Secondly, each partner's contributions and responsibilities to reach the defined objectives need to be agreed on (Fernandes, Guiomar and Gil, 2019) and affirmed through for example, collaboration agreements or action plans (van Lierop and Stockinger, 2019). Such documents support accountability by making those responsible answerable (Ruano-Chamorro, Gurney and Cinner, 2021). The third step is to develop a shared vision for the future (Fernandes, Guiomar and Gil, 2019).

Planning processes need to be open and accessible for all (Frantzeskaki and Rok, 2018). Easy-to-approach coordinators and regular meetings increase the participation opportunities (van der Jagt *et al.*, 2017; Prado, 2020). Actors need to be able to enter a neutral process, in which they are treated honestly, unbiased and equally without favouritism (Ruano-Chamorro, Gurney and Cinner, 2021). Yet, also actors need to be open to participation (Pauleit *et al.*, 2019). This becomes easier, when actors know those with whom they interact personally and are able to communicate directly (Hawxwell *et al.*, 2019). Coordinators, furthermore, should be transparent regarding the "place meanings" they hold, as this can initiate discussion and build trust (van Riper *et al.*, 2016).

Effective communication and negotiation is key for successful collaboration (Van Cauwenbergh *et al.*, 2022). During all process stages, simple and easy-to-understand language should be used, while addressing people in their own language helps to include minority groups (Ugolini *et al.*, 2018). Deliberative practices can support developing a "common language", as it brings actors together to create and share knowledge by challenging existing ideas and reformulating problems to come up with innovative solutions (Buizer and Van Herzele, 2012). This sometimes includes "[h]ard conversations, […] asking and answering challenging questions, and expressing honest disagreements" (Emerson, Nabatchi and Balogh, 2011). Good moderation and mediation could help actors to steer across participatory processes and solve possible conflicts (Mok *et al.*, 2021).

3.7 Plan an adaptive and flexible process

Adaptive and reflexive approaches are put forward to deal with uncertainties, surprises and changes such as dynamic actor constellations and changing perspectives, interests and values of various actors (Pauleit *et al.*, 2019). These approaches incorporate iterative cyclical processes and continual learning arrangements with multiple feedback loops (Sayer *et al.*, 2013; Barletti *et al.*, 2020). Through reflection, new knowledge, understandings, and preferences can be acquired, on which in turn decisions can be re-evaluated and if needed reversed (Ruano-Chamorro, Gurney and Cinner, 2021). These approaches allow to adjust practices, projects and actions based on new insights, while new instruments and tools can be tested for their effectiveness (Hawxwell *et al.*, 2019; Mahmoud and Morello, 2021).

Buijs *et al.* (2019) consider adaptive and reflexive approaches relevant to bring formal long-term objectives with local community-based actions together. Simple short-term and intermediate interventions that nevertheless support long-term goals can help to show quick results and keep people involved in longer processes (Sayer *et al.*, 2013). In this sense, experiments are ideal, as they allow testing of new ideas and locally attuning of practices, while they facilitate actors to develop new knowledge and skills (Gerlak *et al.*, 2021). Experiments can be with new formats for public engagement, local associations, or innovative tools and instruments such as exemption from certain codes and regulations, or open space development and management such as temporary land-use conversions (Hawxwell *et al.*, 2019).

Results and experiences from local communities in participating in experiments and other inteventions should be included into continuous cycles of collective reflection and learning with local actors (Mahmoud and Morello, 2021) as this supports their long-term participation (Wilker, Rusche and Rymsa-Fitschen, 2016). Implementing adaptive reflexive approaches starts with acknowledging and being open about uncertainties (Morgan, Osborne and Mackey, 2022), and a willingness to listen, learn and transform processes and practices based on outcomes (Sayer *et al.*, 2013). By allowing time in these processes, people's capacity can be built to participate in decision-making processes, while over time trust between participants and a sense of ownership is established (Barletti *et al.*, 2020).

4. Discussion and conclusion

Based on our review, we distinguished seven strategies to support recognition and procedural justice in planning processes:

- Involve a broad spectrum of stakeholders
- Assessing multiple benefits for multiple people
- Be sensitive to local context
- Encourage knowledge exchange
- Empower people
- Be open and transparent
- Plan an adaptive and flexible process

These strategies are not lined according to importance, but rather from a focus on recognition to procedural justice. Nevertheless, each strategy addresses recognition as well as procedural justice, as these two components are closely linked and seem to support each other. The recognition of the different perceptions, values and preferences is a first step to more participation, or as Schlosberg (2004 in; Dobbin and Lubell, 2021) states: "if you are not recognised, you do not participate". Participation by different actors in planning processes allows also more diversity of perceptions, values and preferences, as each actor brings in their own experiences and knowledge, which can further expand the horizon and include people, who are otherwise not recognised.

The review included articles on NBS or related concepts, planning processes and/or justice, which provided rich material on the main strategies. Yet, due to the primary focus on scientific articles, information was often less prescriptive. The more practical information on guidance, process steps and tools came mostly from empirical studies and guidance material added through the hand search. Inclusion of other guidance material or project results could have provided more practical information. Our aim was, however, not to be comprehensive, but to bring knowledge on the improvement on recognition and procedural justice in planning together in order provide first guiding directions for planners.

Throughout the reviewing and writing, it became clear that the strategies are intricately related to each other and influence each another often more positively than negatively. This holds especially true for some methods and tools, such as workshops and PPGIS, which can support several strategies. One cannot and should not select specific strategies, but critically consider all of them, how they can be applied to a specific situation, and select the most suitable tools.

Although the main strategies refer to how we can better design and improve planning processes to be just, fair and inclusive, the tactics and tools also refer to how we as planner, as participant, can support the

processes through the way we behave and interact with others (Frantzeskaki, 2019). We, therefore, call for critical self-reflection on our role as planners in these planning processes. Do we as planners have the skills to participate in, facilitate and coordinate multi-stakeholder process? Moreover, we need to reflect on which attitudes, biases and blind spots we bring with us into these processes (Wilker, Rusche and Rymsa-Fitschen, 2016). Perhaps it is time for us to open up, and listen and give voice to others.

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