

Results

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The development of a *Gender, Inclusion and Diversity Framework* for inclusive Nature-based Solutions in cities

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Abstract

Evidence consistently shows that the benefits Nature-based Solutions generate are determined by several individual characteristics such as gender, age, sexuality, ethnicity and disability. As a result, Nature-based Solutions can perpetuate existing inequalities and even create new inequalities partly because diverse minority and marginalized people are underrepresented in the process of designing and implementing Nature-based Solutions. Therefore, some Nature-based Solutions scholars have highlighted the necessity to actively involve diverse minority and marginalized groups into the co-creation processes of Nature-based Solutions and to investigate who benefits from the Nature-based Solution and why. Within the GoGreenRoutes H2020 project a transdisciplinary gender, inclusion and diversity panel was established in order to map existing challenges within the consortium. Concordantly, relevant scientific resources and policy documents were identified. Both were blended during consensus meetings in order to develop a common understanding leading to a theoretical gender, inclusion and diversity framework. This framework consists of five domains: (1) gender equality; (2) LGBTQI + rights; (3) social, cultural and ethnic background; (4) people with disabilities; (5) integration of refugees and immigrants; and (6) intergenerational perspectives. Further, the framework was operationalized through the development of a checklist for researchers and practitioners.

Introduction

Nature-based Solutions (NbS) involve enhancing and working with nature to address various societal challenges such as biodiversity loss and climate change (Bauduceau et al., 2015). NbS include, but are not limited to the incorporation of green and blue infrastructure in urban and rural areas (Seddon et al., 2020). Recently, NbS have been embraced within diverse urban contexts as a pathway for improving the environmental conditions, climate-resilience and overall health of urban communities. Therefore, they are often approached as technical, interventions that will deliver equity and justice goals (Wijsman and Berbes-Blazquez, 2022). Evidence, however, consistently shows that the added value NbS generate is highly differentiated and stratified by geography, ethnic groups and socio-economic status (Curran and Hamilton, 2012; Pearsall, 2012; Anguelovski et al., 2018; Kabisch, 2019). Working-class and minority populations typically bear the brunt of this inequality. Such groups more frequently have housing opportunities in areas with fewer, and lower quality, urban green and blue spaces when compared to upper class populations. Moreover, higher income groups are historically privileged when it comes to access to, and control over urban green and blue spaces (Wolch et al., 2005; Heynen et al., 2006; Landry and Chakraborty, 2009; Park and Pellow, 2011).

Thus, the impacts of NbS are not so straightforward. Ever increasing evidence demonstrates that NbS can perpetuate inequalities and potentially give rise to new forms of exclusion since the process of designing and implementing NbS is embedded within the broader societal context (Tozer et al., 2020). NbS are a product of local social structures and can include underlying inequality and injustice based on gender, class, sexuality, age, ability and ethnicity. Moreover, NbS often occur in public spaces and their design and implementation are shaped by complex power relations. As a result, NbS are inherently political and must be tackled accordingly (Wijsman and Berbes-Blazquez, 2022). Hence, acknowledgement of such necessities deeper

inquiry into the design and implementation of NbS to address the perpetuation of unanticipated injustices and inequitable power structures.

The above mentioned inequalities are not merely coincidental. On the contrary, they can be seen as symptoms of oppressive political, economic, and institutional forces at all levels of socio-ecological systems (Bronfenbrenner, 1977; Fornili, 2022). Oppression is defined as “*discrimination backed up by systemic or structural power*” and involves biased information, stereotyping, prejudice and discrimination (McGibbon, 2021). Hence, critical consciousness should be raised among these marginalized and oppressed populations (Freire, 1978; Jemal, 2018). Critical consciousness involves awareness among marginalized populations about their marginalized status as well as liberating action against forces that limit or promote opportunities for certain groups (Freire, 1978; Jemal, 2018). Participatory approaches could be a pathway through which to achieve critical consciousness (Abma et al., 2019). However, participatory approaches in NbS have often failed in terms of inclusion, degree of democracy achieved and accessibility (Fainstein, 2011; Certoma et al., 2015). Therefore, it is fundamental to establish a new comprehensive approach to ensure that adequate levels of inclusion are achieved and pave the way for transformative change. Designers and implementers of NbS must ask themselves the following questions: why are NbS being implemented? By, for and with whom are NbS implemented? Who does the monitoring and how? Who reaps the benefits of NbS? These questions are essential if NbS are to work towards and not against justice.

This paper proposes an integrated theoretical framework for incorporating an intersectional understanding of gender, inclusion, and diversity (GID) into the design of future NbS, operationalizing the framework with a checklist that supports enhanced GID considerations in the full cycle of NbS creation. As the need for social, cultural and gender equity and inclusiveness has been defined as one of the nine Network for Ecohealth and One Health updated competencies for One Health (Wallace et al., 2015; Garnier et al., 2022; Laing et al., 2023), this framework is rooted in an overall One Health approach that aims to link and understand social and ecological determinants of health through a transdisciplinary approach (Keune et al., 2017, 2018). Hence, both academic – from several disciplines – and non-academic partners were involved in the creation of the proposed framework. For the development of this framework, we particularly focused on the context of European urban areas.

Methods

General approach

Putting GID on the agenda: creating the panel

Within the Horizon 2020 GoGreenRoutes (GGR) consortium a GID panel was established. GGR is a transdisciplinary consortium of 40 organizations aiming at implementing NbS in six European cities: Burgas (Bulgaria), Lahti (Finland), Limerick (Ireland), Tallinn (Estonia), Umeå (Sweden) and Versailles (France). The GID panel is a transdisciplinary panel consisting of GGR consortium partners possessing professional experience and commitment to the broader concept of diversity. The panel emerged spontaneously among a number of individuals across consortium partners and aimed to put GID on the agenda within the consortium’s activities in the partner cities. Therefore, the purpose of the GID panel was to actively develop a strategy

to integrate diverse perspectives into the co-creation and co-evaluation processes of NbS employed by the cities partnering with the consortium. Panel participants mapped existing challenges and shortcomings within the consortium. Subsequently, relevant resources were identified, including both scientific resources and policy documents related to inclusion of minority and marginalized people. Results from the mapping process within the consortium were blended with the identified resources to develop this common theoretical framework. This framework is based on scientific literature, policy documents and consensus meetings among panel members. The development of a common framework was functional to ensure a shared understanding of the justice concept and how it applies within the context of the GGR project (Wijsman and Berbes-Blazquez, 2022).

Putting GID on the agenda: challenges met

Once a common understanding of GID and the related challenges within the context of GGR was achieved, decisions were made on how to operationalize the framework in order to have a real-life impact. Several approaches were suggested, however the GID panel faced financial and structural limitations that restricted its actions.

Operationalizing the GID framework: development of a GID-checklist

As a result of consensus meetings, and taking in to account the aforementioned restrictions, a GID-checklist was developed in order to operationalize and test the applicability of the framework. Checklists are common tools to guide researchers and practitioners when completing and reporting tasks (Winters et al., 2009) in several fields – for example, Raman et al. (2016). These tools have the potential to improve safety and quality while reducing costs (Winters et al., 2009), ensure all items relevant to the research task are addressed, and increase transparency (Busetto et al., 2020). The GGR approach understands the checklist as a tool for researchers and practitioners to apply when developing their tasks to ensure that gender, inclusion and diversity have thoroughly been taken into consideration.

The initial checklist was tested through a pilot workshop with NbS experts in November 2022 during a GGR consortium meeting in Barcelona. Next, based on the data obtained from the pilot workshop, practical recommendations for implementation of each item were added to the checklist during four consensus meetings with the GID panel. To further refine the checklist a feedback workshop targeting transdisciplinary NbS experts was organized in February 2023 (Figure 1).

Gender, inclusion and diversity framework

Conceptually NbS differ from other urban greening practices such as ecological infrastructure or ecosystem services because addressing social goals are considered a key aspect instead of concomitant as Wijsman and Berbes-Blazquez (2022) pointed out. However, NbS too often rely heavily on a trickle-down perspective that results in minimal benefits for those most vulnerable and can even exacerbate inequalities for disenfranchised communities (Cole et al., 2017). Therefore, critical scholars have raised concerns around the distribution of these social co-benefits (Anguelovski et al., 2018; Wijsman and Berbes-Blazquez, 2022). When applying strategies towards climate change mitigation, such as NbS, it is important to understand the dimensions of normativity and justice, beyond pure scientific, techno-managerial, or financial issues (Gardiner, 2011; Shue, 2014). Climate change is interlinked



Figure 1. In person workshop with NbS experts organized in Maynooth, Ireland (February 2023).

with ethics and equity because it impacts people differently, unevenly, and disproportionately (Shue, 2014; Gaillard et al., 2017; Sultana, 2022). Social inequalities tend to co-exist with harmful environmental conditions and disproportional suffering from possible effects of climate change, resulting in greater subsequent inequality and a limited ability to cope and recover (Islam and Winkel, 2017; Barboza et al., 2023). Hence, a climate justice approach is essential because such an approach focuses on who benefits, who is harmed, in what ways privileges and losses are conferred, as well as where and why. Thus, it is also essential to recognize that climate change involves a common but differentiated responsibility. The aforementioned understanding necessitates justice to be a central entry point for this GID framework.

For justice to be central in NbS, it must be integrated intentionally in the design and implementation process. Furthermore, NbS development must be sensitive to the community in which it is enacted, forming explicit pathways to justice that counter and rectify implicit injustice (Sultana, 2022). Therefore, within the context of this framework, six domains including disadvantaged populations within a European context have been identified by the GID panel, that require specific attention: (1) gender equality; (2) LGBTQI+ rights; (3) social, cultural and ethnic background; (4) people with disabilities; (5) integration of refugees and immigrants; (6) intergenerational perspectives. Although these domains are presented as distinct categories here, individuals can be affected by more than one domain or can be confronted with more than one justice issue (e.g., immigrant woman identifying as lesbian). Hence, intersectionality is a key component of the framework (Figure 2).

As mentioned above, the use and planning of public spaces is inherently political because the use of and the interactions in public spheres are resulting from an underlying set of social practices and social structures including the power dynamics at the core of social injustices (Wijsman and Berbes-Blazquez, 2022). This theoretical framework developed in the context of GGR focusses on ways in which diverse minority and marginalized groups might be underrepresented in participatory processes as a result of a compromised use of public space – for example non-binary individuals might disguise their non-binary identity when navigating through public spheres and/or limit their interactions

in the public sphere due to local contextual factors such as transphobic violence or general hostile environments. Below, the five domains identified in this theoretical framework are addressed. A rationale on how minority or marginalized status linked to these domains might negatively impact the use of public spheres and the participation in participatory processes by individuals affiliated to these domains, is provided.

NbS and gender equality

Organizations such as the International Institute for Sustainable Development assert that NbS are powerful tools for women's empowerment towards climate adaptation (Women Deliver, 2021). Women experience the urban environment differently from men, with variations in daily routines and roles. Furthermore, feelings of safety influence green space usage (Borelli et al., 2021; UN Habitat, 2008). It is important that NbS projects curate intentional gender equity and not simply gender diverse participation, this in order to be gender transformative with the ultimate aim to change the underlying root causes of gender inequalities (IGWG, 2017). This requires women and gender diverse individuals to be engaged in decision-making roles to account for gender specific outcomes (Bremer et al., 2021). Spontaneous empowerment will not occur, but rather empowerment within NbS can be cultivated utilizing protocols and tools that are sensitive to gendered perspectives from the outset. This potentially offers a strategy to track and measure the project outputs and gender representation over time, working towards targeted metrics.

NbS and LGBTQI+ rights

Individuals identifying as LGBTQI+ face significant legal and societal challenges in EU countries and around the globe, often including criminalization and medicalization. As such, LGBTQI+ individuals are in marginalized positions from a social, legal and physical perspective (Whitley and Bowers, 2023). Moreover, structural inequalities like poverty and stigma (e.g., transphobia) are also prevalent and might limit their active participation in participatory processes (Moazen-Zadeh et al., 2019). Furthermore, climate change is expected to exacerbate the inequalities faced by LGBTQI+ people (Dietz and Whitley, 2018; Cappelli et al., 2021). Nonetheless, LGBTQI+ people have largely been excluded from

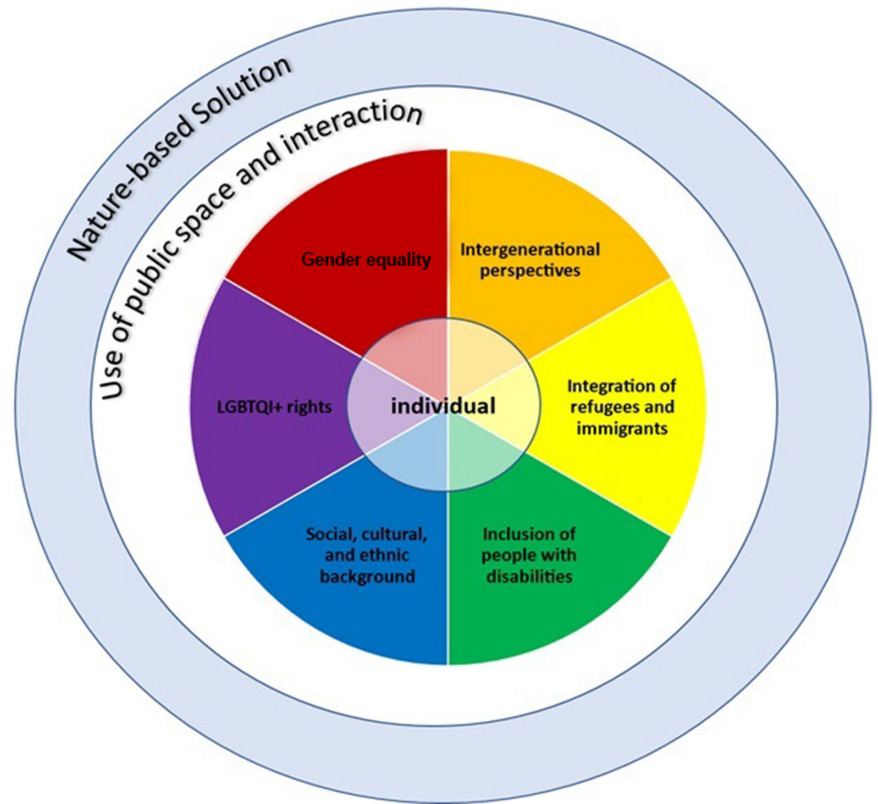


Figure 2. The Gender, Inclusion and Diversity framework as developed within the GoGreenRoutes project applies a climate justice perspective while addressing how the nexus of gender equality, age, LGBTQI+ rights, social; cultural and ethnic background, inclusion of people with disabilities and, displaced populations and immigrants impacts the use of public spaces and interactions and considers the possible consequences for participating in participatory processes towards NbS development and Implementation.

conversations and policy responses with climate mitigating potentials such as NbS, reflecting heteronormative and cisnormative practices (Gaillard et al., 2017). Moreover, the United Nations expresses the need to advance and prioritize LGBTQI+ health in all policies and research strategies (United Nations, 2015).

NbS and social, cultural and ethnic background

Apart from the fact that investments in greening initiatives such as NbS often overlaps with wealthy areas of the cities (Dai, 2011; Wen et al., 2013; Borelli et al., 2021), it is important to acknowledge that even if NbS are planned in areas where people occupying lower social positions (also) reside, there are two additional risks: a) participation might be skewed in favor of people occupying higher social positions (Dalton, 2017), and b) a process of gentrification might occur. Green gentrification is a complex issue that can lead to displacement and alienation of socio-economic vulnerable residents (Borelli et al., 2021; Sax et al., 2022). Participatory processes should integrate different actors from the public sector in order to minimize the risk of gentrification. Moreover, people that occupy higher social positions often possess what Bourdieu has called “symbolic capital”, that is, a form of capital that is not recognized as such. For example, prestige can operate as symbolic capital because it means nothing in itself, but rather depends on crowds believing that certain people hold this attribute (Webb et al., 2002). We argue that in the context of participatory processes this could result in specific groups dominating the narrative and, ultimately, the NbS reflecting the needs of those groups. When considering cultural and ethnic backgrounds the fear of experiencing racism and feelings of unsafety can lead to the exclusion of some groups (Borelli et al., 2021). Moreover, diverse spaces need to be provided to meet the needs of diverse communities.

NbS and people with disabilities

People with disabilities are negatively impacted by a range of factors relating to attitudes and the environment that affect their access to NbS. This includes barriers relating to a lack of awareness surrounding persons with disabilities, access to participating and leading NbS, and discriminatory attitudes or lack of consideration for this group (Martin and Hossain, 2022). Additional barriers are also related to inaccessibility of infrastructure, information, equipment and training (Martin and Hossain, 2022). Also, at an institutional level, lack of consideration for including persons with disabilities in the creation of programs negatively impacts people with disabilities’ access to NbS. In addition, lack of thought toward their unique needs, through insufficient participation as well as discriminatory policies negatively impact this population’s access to NbS (Martin and Hossain, 2022). The four main factors which compound these barriers are 1) lack of inclusion of the capabilities and needs of this population especially within laws, mandates and funding, 2) lack of data on persons with disabilities especially relating to NbS and climate change, 3) lack of meaningful consultation and engagement with persons with disabilities (NIRAS, 2021; Jodoin et al., 2022; Martin and Hossain, 2022), 4) lack of additional funding and resources to increase outreach, activities and accommodations for disability inclusion (Grant, 2022).

NbS and integration of refugees and immigrants

Immigrants and refugees in Europe generally live in densely populated areas with less access to green spaces (Sekulova and Anguelovski, 2017). Research shows that immigrants living in these urban areas have less access to green areas and parks in comparison to nonimmigrants (Kabisch et al., 2017). These limitations can have significant long term impacts on immigrant communities through health, loss of culture and social integration

to their new community (Gentin et al., 2019). Integration policies on an European level emphasize the health of immigrant communities and suggest that NbS can help bridge the gap on these impacts (Gentin et al., 2019).

NbS and intergenerational perspectives

Youth. Involving youth in the decision-making process of developing NbS is important as this builds a sense of empowerment to make changes and decisions in their communities. This has been shown to be beneficial in combating external pressures of climate change through involvement in NbS and fighting for the future they want (MacKinnon et al., 2019). Young people see the world from their own unique perspective and have their own wants and needs related to play (Dushkova and Haase, 2020). NbS can have a positive impact on the current and future health of this population. It has been shown that children are more vulnerable to the health impacts of living in urban environments, especially during their developmental years (Kabisch et al., 2017). This because activity within green spaces improves the mental health and social well-being of young people during challenging times of their lives (MacKinnon et al., 2019).

Elderly. The elderly population interacts with NbS and environments differently than others. It is shown that they are more sensitive to heat/cold, subject to loss of cognitive functions and reflexes, higher rate of urinary incontinence, cardiovascular and respiratory issues, as well as feelings of insecurity in public places (Higuera et al., 2021). Thus, it is important to offer the aging population a seat at the table to share their experiences and give them a sense of ownership over their community. Urban green space has been proven to improve mood, reduce stress, prevent cardiovascular disease, and decrease risk factors associated with air pollution or urban heat (Kabisch et al., 2017). Those are all important factors to an aging population. Also, green space provides an opportunity for physical activity and social interaction both of which can have a positive impact on overall health and well-being (Kabisch et al., 2017). This is particularly important for isolated aging populations. Thus, it is important to ensure that these groups have an opportunity for their voices to be heard and needs to be met, to provide them with equal opportunities and access to NbS.

Checklist

The checklist was co-created by transdisciplinary experts keeping in mind the concrete moments of interaction between municipalities and citizens for co-designing and co-implementing NbS. It includes three main aspects namely, (1) when preparing for activities engaging with the public, (2) when communicating with the public and, (3) when reflecting on engagement with the public. These are interrelated parts given that there should be proactive communication in advance of public invitation to engage in activities as well as post activity communication and reflection. Therefore, it is important that these parts are seen as interlinked and should be considered in relation to interactions with the public by the municipalities. The aim of the checklist is to ensure the fundamental elements for inclusivity are taken into account when communicating with the public or engaging them in any activities. The checklist is published as supplementary material.

Recommendations for further application of the framework

This framework provides some theoretical understanding of how the participation of diverse minority and marginalized groups might be compromised. However, it often remains unclear how groups experience different barriers and how far the full width of this impact extends. It is therefore essential to investigate the lived experiences of these groups in order to gain insights into how historically rooted injustices can be eradicated and rectified. The authors acknowledge that the framework was created considering the dynamics of European urban settlements and also suggest that further research is needed to explore how the proposed framework could be adapted for further applications in more rural environments and other regions.

Moreover, little is known on the level of inclusion NbS achieve during both planning and implementation processes as Wijsman and Berbes-Blazquez (2022) has previously stated. This framework demonstrates in a theoretical sense the necessity of assessing the level of inclusion throughout the entire NbS lifecycle as there are empirical arguments to contest that NbS will, by default, deliver on equity and justice goals (Wijsman and Berbes-Blazquez, 2022). In addition, there are normative arguments to urge the NbS community to make explicit who was involved throughout the NbS lifecycle and at which level of participation (Biermann and Kalfagianni, 2020; Cousins, 2021; Wijsman and Berbes-Blazquez, 2022). The checklist as developed in the context of GGR can aid in making these factors explicit, however further research should seek to implement and refine this checklist in different contexts, as well as thoroughly evaluate its impact on the participation of marginalized and minority people.

Supplementary material. The supplementary material for this article can be found at <https://doi.org/10.1017/one.2023.14>.

Data availability statement. The authors confirm that the data supporting the findings of this study are available within the article.

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Author contributions. BD coordinated the development of the framework and wrote the original draft of the manuscript. EPB and HK critically reviewed the manuscript and finetuned the framework. EVR coordinated the panel meetings. KP, EMC, AMB, SU, KR, MJFOF, AD, and JG contributed to the framework based on their expertise. All authors contributed to the development of the checklist.

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