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Urban Greening Plans: A Potential Device towards a Sustainable and Co-Produced Future

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Abstract: Within the last few years, there has been increasing attention towards climate change and strategies enabling climate neutrality and biodiversity development. Green spaces are one of the main elements in achieving these ambitious goals. Their role has become increasingly relevant in facing climate change, especially considering that Europe aims to be the first continent to be climate-neutral by 2050. In doing so, recently, the European Commission adopted different regulations with a specific focus on the role of green spaces, introducing strategies and activities for sustainable development. The article investigates the role of green spaces in urban planning, considering three main perspectives in dealing with them: (i) the nature of their property, (ii) their ecological nature, and (iii) their social and public nature. After describing green spaces as crucial for contemporary urban development, this article will introduce a potential planning tool enabling the combination of the three different 'natures': the Urban Greening Plan. The article presents the two case studies of Barcelona and Paris, which have already adopted this instrument. The article highlights the potential of Urban Greening Plans to restore nature and biodiversity while engaging different stakeholders in co-creation processes for more sustainable development. It also critically introduces a variety of open questions that require further investigations and analyses.

Keywords: climate change; urban greening plans; participatory processes

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1. The Contemporary Climate Challenges and the European Regulations

Contemporary cities face substantial urban challenges. Some of them are becoming increasingly urgent in political and planning agendas. These include climate change and global warming. There has been a trend towards new regulations and policies to cope with these emergent phenomena in recent years. Recent studies report that 2015–2022 has been the warmest period since post-industrialisation [1]. Considering the European context, between 2011 and 2020, the temperature increased by around one degree compared to previous periods [2]. This condition is decisive, as the Paris Agreement (2015) established that governments need to limit the average increasing temperature below 2 degrees, setting the threshold to a 1.5-degree increase compared to the pre-industrialisation era.

On this note, the European Union is seriously acknowledging the role of policies and strategies to support action capable of limiting the adverse effects of climate change. Specifically, various regulations were issued, mainly oriented towards effective strategies to reach climate neutrality by 2050 and to have a massive impact by 2030 [3]. Urbanisation processes have resulted in the "loss, degradation and fragmentation of natural habitats", exacerbating environmental effects (e.g., heat islands, water, air, noise and light pollution) and the potential adaptability of species [4] (p. 1). To reverse these effects and many others that are bound to human activities, the EU conceived the European Green Deal (EGD) [5], adopted by the European Commission in 2019, an ambitious strategy to reduce greenhouse gases and sustain biodiversity and nature restoration that aims at transforming "[. . .] the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where

economic growth is decoupled from resource use" [5] (p. 2). The strategy involves the public and private spheres, intending to foster sustainable development by reconsidering the environmental aspects that any legislation may imply and by issuing new legislation and policies (i.e., focussing on circular economy, urban renovation and regeneration of public and private buildings). The EGD introduces biodiversity and ecosystem restoration among its key goals, explicitly referring to the positive effects they could have in helping regulate climate change. Potential devices for climate adaptation are the so-called Nature-Based Solutions (NBS) and their integration into public and private policies [5]. In 2020, as a follow-up to the EGD, the European Commission promoted the 'Biodiversity Strategy' for 2030. This strategy outlines guidelines and actions to prevent ecosystem collapse and biodiversity loss that, between 1997 and 2011, has been estimated to cost EUR 3.5–18.5 trillion per year in ecosystem services owing to land-cover change (especially from rural to urban areas) and an estimated EUR 5.5–10.5 trillion per year from land degradation worldwide ([6]; compared to [7]). Urban areas are among the key targets, aiming at integrating greening and the adoption of NBS into urban planning practices. The strategy identifies the fundamental role of cities in developing Urban Greening Plans (UGPs) as ambitious devices that can actively enhance green spaces, driving urban development towards climate neutrality and sustainability. These plans aim to include biodiversity-enhancing NBS (e.g., urban forests, parks, trees, and other urban green devices) to improve biodiversity and reduce climate impacts in cities. From this perspective, UGPs can narrow down EU guidelines and strategies, outlining the importance of green spaces and green infrastructures within cities in general [8]. Moreover, these plans should further help (i) to improve connections between green spaces, (ii) to eliminate the use of pesticides, and (iii) to limit excessive mowing of urban green spaces and other harmful biodiversity practices. Such plans should also mobilise policy, regulatory, and financial tools [6]. From a policy integration point of view, UGPs are suitable instruments to reduce city climate impacts. The EU Adaptation Strategy outlines the importance of NBS, including Urban Green Infrastructure (UGI) in cities [9]. Urban Greening Plans can help scale up NBS to UGI, addressing climate change, biodiversity issues, and co-benefits to other urban challenges and goals, such as air pollution, environmentally friendly housing, social inclusion, and sustainable mobility. More recently (2024), the Nature Restoration Law was approved by the European Parliament, which aims to set the goal to increase and restore urban green spaces by 2050 to at least 5% of the total areas of cities and towns [10].

Considering these ambitious goals, the risk of dealing with different perspectives on the role of nature and with a variety of interests is substantial. Indeed, nature includes both ecological and socio-economic components that can frequently diverge. The tension between the two components can become challenging, and it is crucial to harmonise them. On the one hand, 'nature-for-nature' policies are oriented towards preserving the environment and nature, with specific limitations to humans' actions; on the other hand, 'nature-for-society' policies consider nature a component of the urban environment that serves human well-being. The two policy orientations are intertwined but frequently misaligned, leading to contrasts, particularly when moving from high-level principles to actual implementation [11]. The principles embedded in European policies bound to climate neutrality/adaptation and sustainability, as well as their high-level objectives, are often agreeable but challenging to implement due to trade-offs, diverging interests, and political agendas, as well as disparities and heterogeneity of the contexts where policies are implemented (e.g., availability of economic and social resources; capacities; culture; institutional frameworks). The challenge for UGPs is to combine and harmonise the two visions, considering nature as a structural component that needs to be preserved and enhanced and as a tool to support strategies towards more sustainable and liveable urban environments.

In general terms, UGPs are conceived very differently, and their nature is also under discussion. This article introduces an interpretation of UGPs, discussing some essential roles and features of urban green spaces. The article will consider the abovementioned

tensions between contrasting visions and analyse cases to draw lessons from practice. In particular, it aims to give a specific direction towards the development of UGPs, considering the diverging perspectives and their potential integration. The research is in its initial phase, and based on the literature review that this article presents and two case studies, it aims to discuss and disentangle some emergent questions. In particular, Section 2 will explore the role of urban green spaces, with specific reference to their nature, both (i) as ecological and environmental elements contributing to sustainable urban development and (ii) as public spaces with specific goals and outcomes to grant. This section will explore the opportunity to extend the 'greening' concept to a broader phenomenon, including other essential components (e.g., biodiversity, community), enabling a systemic approach towards planning 'for nature' and 'with nature'. Section 3 describes two UGP case studies (Barcelona and Paris), discussing how UGPs might be an opportunity to balance theoretical models—based on EU regulations—and their practical implementation, addressing UGPs' nature as site-specific processes. Section 4 will combine the key questions discussed in Section 2 (e.g., ownership rights and civic engagement) and discuss potential strategies and approaches to enhance the urban environment and climate resilience (Section 5).

2. The Role of Green Spaces: Property Rights, Climate Neutrality, and Civic Participation

It is crucial to highlight the role of green spaces as a fundamental tool to pursue more sustainable and inclusive urban development. This section investigates the nature of green spaces, exploring three different perspectives on their nature: (i) the property rights' nature, (ii) the ecological nature, and (iii) the communitarian nature. The first viewpoint is related to the nature of green spaces from an institutional point of view, specifically regarding property rights. The second perspective is related to climate change and neutrality, considering green spaces and NBS as devices capable of enhancing biodiversity and reducing progressive urbanisation and land-taken development. The third viewpoint concerns the role of green spaces as a potential tool for boosting citizen participation and civic engagement. The capacity to include all these perspectives in urban planning is essential for inclusive and responsible urban development, which stands at the basis of UGPs.

In the logic of a sustainable future, the role of UGPs might become increasingly fundamental for climate neutrality policies and interventions. As described by ICLEI [8], UGPs are process-oriented tools aiming to include green spaces in planning practices systematically. The role of UGPs as a catalyst to systematise green components with their specific objectives highlights the complexity of reconnecting the different perspectives. Implementing green spaces and greening practices foresees an explicit development that does not solely include ecological purposes but, more generally, also considers the collective improvement and enhancement of urban ecosystem services (on this note, [12]).

2.1. Green Spaces and Property Rights

Taking into consideration recent discussions about the benefits (marketable and non-marketable) of green spaces [13] or considering the role green spaces have in readjusting social justice [14], it is clear that we can define green spaces as—strictly speaking—'public goods'. This section delves into the nature of being 'public', considering that UGPs and other interventions for green spaces are part of the public domain's responsibilities.

This research will consider only the 'public' category of green spaces, meant as green spaces unrestricted in physical terms (*stricto sensu*), that have a specific function (the special public), and that might be run by an individual or a group of individuals (privately run) (in this regard, see [15]). In general, democratic accountability is in the public hand, which means the public sector is responsible for green space management and enhancement. This leads to the question of property rights, the accelerating erosion (and sometimes abandonment) of green spaces in cities, and a progressive withdrawal of the public sector [16]. Land use changes and urban development pose significant challenges to green space supply, considering them a scarce resource with management requirements. From a property rights regime perspective, this situation is undesirable as individuals pay taxes to obtain services

and provision of facilities from governments, as well as the protection of their property rights [17]. From a societal point of view, planning is granting specific enforcement of the collective interest, allocating particular areas for collective interests. However, in this light, ensuring and enforcing these collective property rights is crucial, as densification and the provision of private green spaces might favour the creation of green 'club goods', increasing the risk of exclusion [18]. The provision of green spaces is part of this system, which means that the priority is to enforce property rights or change them, enabling (or not) more opportunities and actions for collective purposes ([19], compared to [18]). It is essential to understand the main factors leading to environmentally friendly behaviour [20] to support social ties and individuals' dynamics towards more inclusive ecosystem services. These are commonly oriented to enhance the institutional organisation and convey more environmentally sustainable practices. Following this discussion, green space's property rights face crucial tension between public regulation, which has to grant a certain amount of available and well-functioning land to serve collective interests, and private sectors that are using their property rights, which might threaten public goods, in particular green ones, such as the natural environment. Considering the lack of robust settings of public governments compared to private companies [21] and the pathological derailing of governments in pursuing public policies without considering complexity [22], together with the theory of the collective action problem [23,24], participatory processes and co-design might allow for innovation. On this line, UGPs draw their design on green spaces, including the role of people, towards a more inclusive and collective way to consider them.

2.2. Green Spaces, Nature-Based Solutions, and Climate Change

It is essential to highlight green spaces' role, considering their capacity to enhance biodiversity and handle climate change. Traditionally, green spaces have been considered as part of urban planning practices, jointly implemented with other urban components and issues (e.g., they were frequently associated with urban infrastructure; urban facilities, see [25]; health and well-being, see [26]; biodiversity and ecology). The role of green spaces as a structural component *per se* begins to emerge alongside Green Infrastructure (GI) and Urban Ecosystem Services (UESs), which address urban environmental and ecosystem challenges towards sustainable development [27]. In the last 20 years, the role of green spaces has become increasingly central, acquiring progressive importance as an essential component to tackle urban development issues (e.g., climate resilience policies and community engagement strategies).

In this regard, the European Parliament recently issued the new 'Nature Restoration Law'. The context is similar to those already discussed within the EGD and the 'Biodiversity Strategy'. At the same time, the urgency of this new regulation is a direct consequence of a recent report by the Intergovernmental Panel on Climate Change (IPCC) [28], highlighting a brief and rapidly closing window to secure a liveable future.

In particular, green spaces have recently started to be associated with social, economic, and environmental good [29], which makes their role crucial for more sustainable and resilient development. For this reason, the introduction of NBS (which happened in the second half of the 2010s, see [30]) as a greening tool to enhance sustainable urban development has become increasingly important. In particular, the literature and recent practices have highlighted the heterogeneity and adaptability of NBS, which are linked with the variety of goals they perform [31]. It has to be noted that 'green spaces' and NBS are similar components of the more generic discourse on biodiversity, green infrastructures, and ecosystem services towards climate change adaptation [32]. While 'Urban Greening' entails a people-oriented approach, emphasising the role nature has for society, the concept of 'nature-based solution' is still in an emerging phase, considering broader strategies and actions and emphasising solution-oriented and practical applications [27].

2.3. Green Spaces and Civic Engagement

The concept of NBS as a potential device for supporting sustainable and more ecologic development is strictly intertwined with greening interventions and civic participation in supporting a 'just transition' (as mentioned in [5]). Considering green spaces and their role in cities, it is crucial to acknowledge their social function. As discussed in Section 2.1, public authorities are frequently the owners and the primary managers of green spaces. However, public inertia and lack of funds have left green spaces needing more adequate management. This situation leads to potential inequalities based on maintenance and distribution matters [33,34]. Such context allows for an emerging interest in citizens' contributions [35]. Citizen participation is also a trend related to after-crisis conditions. Here, traditional planning demonstrates all the gaps and limitations, providing spaces for new forms of testing and managing spaces (in this regard, see [36]).

The practice of 'place-keeping' [35], similar to those of temporary uses for buildings, became increasingly structured, starting to consider green spaces a fundamental urban component for two main reasons: (i) possibility to adopt co-creation practices for sustainable development, (ii) inclusion and just city. In particular, the role of civic engagement in pursuing local and environmental changes and implementing urban green spaces has become increasingly important, especially considering the experimentation of co-design and co-production practices for sustainable urban development [37].

First, people's environmental awareness and willingness to actively contribute to urban regeneration processes enhancing social and environmental well-being has rapidly increased [20]. It is also related to the importance of co-creation and citizen participation within governance processes, which lead to better policy decision-making processes and more political support [38,39]. In general, these initiatives have to be supported by robust institutions, which lead processes and citizens' behaviour and perception of urban green spaces [20]. Moreover, the role of green spaces is frequently associated with the health and quality of life spheres, which relate to the phenomenon of green space co-production, aiming at generating more socially and environmentally sustainable outcomes in urban settings [40].

Second, the inclusion or exclusion from green spaces is related to social and environmental justice [33,41,42], as green spaces are frequently considered non-neutral devices if just cities and equality are considered. This situation leads to considering part of civil society as either included or excluded from certain kinds of interventions and opportunities. Being included or not means that citizens can (or cannot) actively participate in environmentally driven experiments [34]. In this case, the aim is to consider green spaces, as well as NBS, as a potential device for more just and sustainable cities, which might be enhanced by the active participation of citizens in public governance processes.

3. Urban Greening Plans: Experiences towards Co-Creation

What is crucial is to understand that the role of urban green is evolving and that the role of local administrations is becoming progressively fundamental. As highlighted in Section 2.1, public administrations are those figures that own land and green spaces and, on the other hand, are also the first actors involved in planning development and decision-making processes. Their role is crucial as they are 'closest to the implementation of actions' and 'they are equipped with the pertinent mandates and regulatory powers to put land management regulation and development control in place' [8] (p. 2). For this reason, the EU Biodiversity Strategy (2020) called for cities with over 20,000 inhabitants to develop UGPs by the end of 2021, seeking to systematically bring biodiversity back to cities and restore nature within the urban ecosystem. In particular, UGPs aim to sustain a just transition relying on co-creation within a structured long-term framework. It is important that this instrument does not stand alone but is supported and integrated with other planning tools and practices.

There are different cases of UGP implementation across Europe, especially related to the use of NBS [43], but this article will focus on two exemplary cases from Barcelona

and Paris. The two cases generally address similar urban greening issues, bound to local and sovra-local levels. However, the role of UGPs in these two cities has been considered differently from a conceptual point of view. It is also important to mention that these two cities are part of the EU-funded project UGPplus, and their approaches serve as a basis for the other three cities involved in the project and as background for developing a general planning scheme for nature restoration.

Both cities foresee including green development and management into what can be called—from an institutional point of view [23]—'operational rules' in urban planning processes. However, their reasoning and rationale depend specifically on their contexts.

On the one hand, Barcelona is struggling with water shortage, and consequent water consumption management is needed to irrigate green spaces. In this light, UGPs and NBS might help optimise water resources, introducing and favouring the planting of green species that are not highly water-demanding [44] (p. 9). On the other hand, Paris's willingness to introduce more green areas within the urban fabric is related to the post-pandemic situation, in which the role of green spaces and proximity acquired significant interest. The Paris '15-minute city' concept aims at incorporating green spaces and green infrastructures to improve the quality of the community [45].

Both cities have adopted UGPs (or, according to a more recent and broader perspective, Urban Nature Plans) and are willing to strengthen their effectiveness towards more inclusive and participatory processes. Both cities consider green spaces and NBS fundamental for contemporary urban development for three main reasons. First, they acknowledged the role of public administration in supporting local inclusive plans with long-term strategy implementation. Second, they embrace the EU challenge to achieve climate neutrality by 2030, with specific spotlights on biodiversity and NBS. Third, the latest initiatives on greening are particularly focused on enhancing decision-making processes and policy design to involve citizens and other key stakeholders in planning practices.

3.1. Barcelona, Spain

The city of Barcelona has long sought to integrate and make biodiversity more mainstream in the urban planning sphere. With a population of more than 1.6 million people, it is an extremely dense area, with an average of 16,325 inhabitants/sq km [46]. Barcelona is facing urgent climatic challenges such as water management and provision and heat islands (caused by solar radiation, anthropogenic activities, and urban transportation). Furthermore, due to its morphological characteristics, Barcelona and its metropolitan area are among the most urbanised areas in Europe. For this reason, the green areas are far below the European average, with 17.1% of publicly accessible green spaces, compared to the EU average of 41.2% ([41,47]; compared to [48]). The lack of open green spaces is related to its history, in particular the 'Plan Cerdà', which was supposed to be a sustainable development and ended up with densification, drastically decreasing green spaces from 30% to 0.6% [49]. To overcome this situation, the latest Superblocks Programme promoted by the Barcelona government in 2013–2018 identified 120 road intersections to be converted into more liveable and green areas. This project aims to transform and adapt the city of Barcelona to sustain its climate neutrality strategy, touching multiple aspects of urban living [50]. Beyond nature restoration and climate neutrality, the Plan for Barcelona and its "Superblocks Urban Districts Regeneration" [51] includes very important keywords, such as social justice, heritage, and economic development. These urban greening strategies are not just actions for increasing the quantity of green spaces: Barcelona tries to use them as a powerful device for inclusive and sustainable development. The ambition is to include the implementation of Superblocks into ordinary city land use policies, addressing climate adaptation and sustainable development [50]. These initiatives gradually become widespread in different Barcelona districts (and also become an example of best practices across Mediterranean areas, see [50]), with many pilot projects activated from 2014 that served as frameworks for the experimentation of advanced planning processes and activi-

ties (e.g., in 2016 Barcelona opened up a public debate and experimented the co-design of six Superblocks [52,53]).

The idea of Superblocks is included in the 2024 Urban Mobility Plan [54] and the Barcelona Nature Plan 2030 [48], which are based, respectively, on developing 62 lines of action with over 300 interventions, with the aim of 81.5% of all journeys in Barcelona being made via foot, bike, or public transportation [54,55]. The Barcelona Nature Plan 2030 results from the evaluation and evolution of the previous Barcelona Green Infrastructure and Biodiversity Plan (2013–2020). What is relevant in this plan is the attention to UGPs, with specific reference to the three aforementioned aspects: (i) planning with and for the citizens to create more just and co-designed cities, (ii) adoption of an experiential knowledge and learning by doing approach (with pilot projects); and (iii) focus on different governance levels. The Barcelona Nature Plan 2030 aims to develop knowledge, enjoyment, and care of species while facilitating and promoting citizen engagement in its conservation, development, and restoration. This plan, along with Barcelona's Climate Emergency Declaration [56], results from a long-term participatory reflexive learning process, envisioning the city's development towards the year 2050.

The Urban Greening Plans adopted in Barcelona are proving very fruitful as the municipality is experimenting innovative ways of approaching urban greening and sustainable urban development, combining ecological social and political perspectives and objectives.

3.2. Paris, France

Similarly to Barcelona, Paris is a very dense city. With a population of more than 2.2 million people, Paris is slightly bigger than Barcelona in terms of territorial surface (105.4 square kilometres, compared to the 101.3 of Barcelona). Although the level of public green spaces mentioned for the city of Barcelona is inadequate, the one in Paris is similar, if not less, standing below the European average, counting all green infrastructures (the EU average of all green infrastructure is 42%, compared to 26% of Paris) [57,58].

Acknowledging the national greenery situation, the city of Paris has started to consider and implement very ambitious objectives to make its territory greener. This strategy began to be shaped by the Hidalgo administration in 2014, and it was part of his political campaign in 2020, with the project *Paris en Commun* [59]. Although the *Paris en Commun* focused on mobility policies (with specific actions on limiting polluting vehicles in favour of more pedestrian and environmentally friendly streets), this programme was re-interpreted and relaunched after COVID, introducing the concept of the '15-minute-city' and promoting mixed-use and functional mixes to increase and enhance citizens' well-being and lifestyles. For this purpose, the city is willing to increase green spaces up to 100 hectares, which means developing an average of an additional 20% of Urban Greening activities and projects by 2026 (including green spaces, urban agriculture, and planted trees). Despite its density, up to 34% of the Parisian territory is made of vegetation. Indeed, in 2022, the city was awarded two important International Association of Horticultural Producers (AIPH) rewards: one in biodiversity and the other in the Social Cohesion category. These recognitions are thanks to Oasis Schoolyard's project (2018), with which the city of Paris was able to transform 72 schoolyards seeking to renew and dynamize the existing schoolyards, designing appropriate green spaces for children [60]. To support and enhance this ambitious development, the city adopted a *Plan Arbre* in 2021 [61], aiming at planting 170,000 trees in line with the existing species. The measures that have been implemented specifically regard 23 different actions, which find their application within the other adopted plans. This project, as mentioned, shares some essential pillars with Urban Greening Plans, such as ecological and environmental sustainability and development, social cohesion and community engagement, and economic development and city branding [61].

Throughout the last twenty years, Paris has implemented different policies to achieve resilient and sustainable development (e.g., [61,62]). Currently (2024), Paris is updating and renewing its local plans with a minor, but clear-cut, label, including the label 'bioclimatic' to its ordinary name 'urban plan' [63]. The aim of these new plans is to foster sustainable

development through biodiversity preservation and the implementation of nature-based solutions set in the Biodiversity Plan of Paris 2018–2024 [62]. This general plan considers the role of biodiversity as related to the idea that nature is a common good to be preserved, and it serves as a fundamental capital to be enhanced. From this perspective, the Biodiversity Plan [62] identifies three principal *axes.* The first considers including biodiversity challenges not only in urban planning regulations but also within the political sphere. The second identifies the role of the community in biodiversity, as well as the role of institutions in designing a general framework. The third considers the role of biodiversity as a tool for a just city, thinking of the city as a green asset. These three axes are strictly aligned with the idea of UGPs as devices towards co-designed and sustainable cities, as well as biodiversity as an essential urban component. All the experiments taking place in Paris are supported by the idea of the '15-minute city' [64], with a specific focus on traffic reduction in favour of slow mobility, pedestrians and bicycles. In this framework, UGPs are considered a structural device enabling green areas and their specific features within urban planning istruments and practices.

3.3. UGPs as Tools Encompassing Multiple Processes and Projects

The two cases described herein highlight the importance of Urban Greening and, more in general, Urban Nature Plans. On this note, they have common traits as well as peculiar features responding to local needs. The two contexts, despite their morphological and territorial differences, share similar goals in performing more adaptable and sustainable development towards climate-neutrality. The willingness to make the city greener is clearly stated, and UGPs are seen as a fundamental component in planning practices. Furthermore, both cities highlight how, despite their name, 'Urban Greening Plans' aim to introduce a broader and more structural attention to nature, where 'green' is an essential, but not the only, element. Indeed, the implementation of UGPs in Barcelona encompasses a wide deployment of NBS, able to restore nature and biodiversity as a whole. In Paris, as well, the concept of '15-minute city' embraces environmental aspects and activities that are not directly related to 'greening', but to a broader idea of sustainable urban development. This interpretation of UGPs has been mirrored at the European level, where the name of these plans as limited to 'greening' was questioned. Recently (April 2024), the term 'Urban Greening Plans' was changed in favour of 'Urban Nature Plans', conveying the idea of a broader array of objectives and interventions connected to 'nature', not limited to 'greening' [65].

At the same time, the two cities are considering UGPs in diverse ways. The city of Barcelona is considering UGPs as spotted activities and interventions, which rely on the same general strategy (e.g., Urban Mobility Plan or Superblocks). In this context, UGPs vary based on the contextual settings and local needs. On the contrary, the 'green implementation' in the city of Paris encompasses different interventions in a single and comprehensive plan (i.e., Biodiversity Plan). The two different approaches depend on the institutional frameworks and the planning systems, which are (i) decentralised and more focused on flexible local plans able to enhance places' specificity, as in Barcelona [66], and (ii) more centralised and binding, as in the case of Paris [67].

4. New Challenges and Systemic Development

The two case studies highlight that the adoption of NBS, the development of UGPs and other planning issues and instruments are intertwined. All these elements need to be considered as structurally fundamental for sustainable urban development. As already mentioned, thee three abovementioned perspectives (see Section 2) challenge the legitimacy of the interventions. On the one hand, the premises behind the Green Deal, the Biodiversity Strategy and the Nature Restoration Law foresee an integrated development of 'nature-for-nature' and 'nature-for-society' policies. On the other hand, their combination in urban planning practices might face ambiguities and uncertainty at local- and higher-level governance. Finding a balance between the two is frequently difficult: citizens and nature

might co-exist with different degrees of interventions and actions that depend on urban development regulations and citizens' behaviour. Including greening plans in traditional urban planning regulations is already a good practice. However, how these plans are integrated and conceived to cope with climate change and biodiversity restoration is not yet well defined, and their implementation is still critical. Moreover, the Barcelona and Paris experiences point out the potential risk of having different instruments that need to be integrated with the existing planning regulations. Indeed, the two cases highlight three substantial issues that might emerge while planning green spaces: the (i) limits of the traditional and mainstream planning regulations; (ii) the need of integrating participation and co-design in urban planning practices; and (iii) the need to manage the inclusion of stakeholders as action-oriented actors.

First of all, green areas, together with blue infrastructure, are natural elements that can enhance the territory both from a well-being and health point of view and from an ecological and biodiversity perspective [26]. This new perspective is not systematically and structurally integrated into planning practices, especially considering traditional planning regulations. Green space development is not systematically included in one specific plan in the two cases, especially in Barcelona. On the contrary, it relates to other urban planning tools (e.g., mobility plans, ad hoc policies), potentially compromising the outcome by overproducing guidelines and rules (see Sections 3.1 and 3.2). This shift towards a new and more integrated vision of the urban environment is incremental and slow. From this perspective, UGPs emerge as a good example of the importance of considering different essential elements for sustainable and just development. One of the main concerns is integrating systemic changes in planning practices, considering green spaces as a structural element defining urban development. This process of endorsement requires time and vision, which might cope with (i) public administrations' expertise and capacity building, (ii) the long-term impacts and externalities that green spaces might create, and, as a consequence, (iii) the ambitious goals defined by Agenda 2030 [3].

The first limitation leads to the second one, which considers the UGPs in Barcelona and Paris as being meant not only as 'green plans'. On this note, the term 'greening' might be misleading. On the one hand, it has an explicit focus on 'green spaces' and their enhancement; on the other hand, the label does not consider all the other components of nature and biodiversity [12,65]. This might lead to considering green areas and spaces as the sole element to foster biodiversity mainstream and nature restoration. Indeed, these plans convey long-term strategies and expand their influence on citizens' habits and participation, supporting the idea that green areas are also tools to support just cities and a just transition. UGPs have been promoted in the last few years (2021), specifically focussing on civic participation and citizen engagement [8]. However, the role of co-design and co-production in urban planning practices can be deeply influenced by the adopted participatory processes and their internal dynamics [68]. On the one hand, these experiences could benefit cities willing to support UGPs, which could learn from already existing experiences with a 'plus' in terms of experimentation, organisation, and technologies. On the other hand, as part of the common and public good, green space might fall within the collective action problem dilemma, leading to misbehaviour and a low degree of acceptance [23,24].

Considering co-design and co-production as fundamental for implementing UGPs, the third criticality is related to the role of citizens and other stakeholders, from a merely 'user' perspective to a more active and action-driven engagement [37–39]. In the long term, participatory strategies contribute to having more place-based and contextual solutions rather than mainstream policies. Civic participation leads to positive outcomes when all the participants share a common idea; more frequently, conflicts might happen for a variety of motivations [69] and need to be managed. The role of institutions is important from a formal point of view, as rules and organisations need to empower and orient green space property rights; from an informal point of view, social norms and bottom-up practices need to cooperate with formal rules to become part of everyday life, entering into the organisational and constitutional level [23]. Co-design and co-production of strategies, actions, and

activities is crucial and, to avoid repetition of rules, there is the need for a general framework enabling different actors to self-regulate themselves on greenery activities. Furthermore, considering UGPs as part of the urban planning activities, the heterogeneity of roles and interests has to be balanced to favour a just and sustainable development.

These three criticalities are crucial and call for a better integration of different perspectives and disciplines in urban planning matters. At the same time, traditional planning practices seem to be anchored to mainstream knowledge, approaches and tools, and their transformation is challenging.

5. Conclusions

Given the importance of UGPs, and their potential towards a better integration of nature and biodiversity in urban planning practices, the challenges described in Section 4 are at stake. There are still two crucial discussions that need to be disentangled: UGPs and their regulatory framework, and co-design and co-production activities.

As already mentioned, the development of UGPs is not only related to drafting a specific plan for green spaces. Considering UGPs as a solid backbone on which to align urban planning practices and regulations requires a strong integration with existing urban planning instruments, horizontal and multidisciplinary approaches, multi-level governance (among the different territorial agencies), and flexibility to adapt to specific contexts. It is essential to acknowledge that these plans, with ambitious goals and shared visions, are challenging to develop in practice, as the introduction and integration of new tools in traditional planning regulations and processes are way more complex than they are theoretically. These changes have to deal with two specific levels of intervention: one is institutional, and the other one is operational. Acting at both levels while drafting planning schemes and Greening/Nature Plans would be beneficial to design adaptable and flexible plans, together with more general guidelines.

Considering co-design and co-production from an institutional perspective might be beneficial in UGPs development. In fact, co-design and co-production of policies might create robust institutional settings, allowing for flexibility and consideration of site-specific requirements. Introducing more integrated ways of planning and considering civic participation and engagement as part of UGPs' implementation might lower the degree of potential conflicts while benefitting green space externalities. Furthermore, co-design and co-production might happen in different steps of UGPs' implementation, as well as in a variety of ways. This means that it is also important to define a framework able to design recommendations to organise participation, co-design and co-production in different situations and planning steps.

To conclude, UGPs should not be framed as a new planning tool in the list of local or regional planning regulations. On the contrary, UGPs should be considered a background structure for other planning regulations, not only because of the goal of having systemic integration of green infrastructures within urban areas but also for the possibility of exploiting their development to introduce innovative processes in urban planning practices, especially concerning institutional settings and performances, co-design and co-production.

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