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Research Paper

From government to governance? Investigating municipality-led steering in urban forestry: the case of the Amsterdamse Bos, The Netherlands

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HIGHLIGHTS

- In Amsterdam, the role of public authorities is still key in urban forestry.
- Municipality-led approaches promote coordination, discourse coherence and effectiveness.
- Land ownership and political influence are critical to achieve expected outcomes.
- Hierarchical systems contribute to intermunicipal power imbalance and misrecognition.

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ABSTRACT

Successfully establishing and managing urban forests require governance modes that create enabling environments for the provision of societal benefits. While recent scholarship has increasingly focused on how public institutions rely on collaborative governance arrangements to achieve desired outcomes, less attention has been paid to the dynamics under which municipalities retain power over their urban forests, particularly in times of growing austerity and increasing demands for inclusiveness. This explanatory study addresses this gap by analyzing municipality-led urban forest governance, with the aim of deepening understanding of actors involved, narratives, resource allocation, processes, and power distribution shaping hierarchical approaches in urban forestry. Adopting a qualitative research design, this research analyses the governance characterizing the case of the *Amsterdamse Bos*, a *peri*-urban woodland located on the southern edge of Amsterdam. Adopting the Policy Arrangement Approach as analytical lens, findings show that over time the Municipality of Amsterdam has maintained a hierarchical model, supported by consolidated land tenure, political commitment, and resource mobilization capacity. This has secured actors coordination, policy discourse coherence, and the achievement of socio-economic and environmental management objectives. At the same time, the concentration of decision-making authority has entrenched power asymmetries, constrained intermunicipal collaboration, and limited opportunities for inclusive participation, with less powerful actors confined to operational rather than strategic roles. The study highlights both the advantages and limitations of municipality-led urban forest governance, suggesting that while hierarchical arrangements can ensure continuity and coherence, more equitable outcomes require combining municipal steering with mechanisms for shared vision-building.

1. Introduction

The integration of trees into urban fabric has arisen over recent decades as a prominent nature-based solution for "re-naturing" cities and addressing multifaceted societal challenges. Urban forests – i.e. the network of all woodlands and trees and associated vegetation located in urban and *peri*-urban areas (Food and Agriculture Organization of United Nations, 2016) – are complex systems able to provide a wide-range of benefits to dependent communities. These include, among others, mitigation of heat island adverse effects (Nastran et al., 2019), carbon sequestration (Brack, 2002), provision of food, medicines and raw materials (Borelli et al. 2018), enhancement of mental and physical health (van den Bosch and Nieuwenhuijsen, 2017), and cities aesthetic amelioration (Price, 2003). Ensuring the delivery of these benefits and

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the long-term success of urban forestry initiatives significantly rely on the establishment of sound urban forest governance (UFG) arrangements. Effective UFG, which can take many forms, ranging from grassroots initiatives to governmental steering, generally entails formulating comprehensive policies, allocating adequate resources, and setting of inclusive and informed decision-making processes. These factors are usually recognized as critical for creating an enabling environment supporting the sustainable management of urban forests while addressing citizens' needs (Quaglia, 2024; Wirtz et al., 2021).

In urban forestry, governance is broadly described as all actors, rules, resources, and narratives influencing decision-making and final deliberations for delivering tree benefits (Lawrence et al., 2013; Tacconi, 2011). With cities worldwide affected by issues such as public budget cuts, ecosystems degradation, and inequalities, public institutions have increasingly engaged civil society and businesses in UFG to collaborate in place-making and place-keeping. These collaborative arrangements are commonly framed as mechanisms to share responsibilities across public and private actors, foster local support and trust through participation and volunteering, reduce maintenance costs, and pool resources to achieve common goals (Fors et al., 2020; Mattijssen et al., 2017; Sheppard et al., 2017). Yet, critical urban scholarship cautions that the shift from government to governance does not necessarily translate into more empowering modes of environmental stewardship. Studies on urban community gardens or greening initiatives shows that participatory arrangements may also function as mechanisms of responsibilization, whereby austerity-driven reforms shift maintenance responsibilities onto already resource-constrained residents and community groups (Coleman et al., 2023; Galati et al., 2023; McClintock, 2014). From this perspective, collaborative UFG may simultaneously function as a strategy for civic engagement and as an instrument of state withdrawal.

Despite the growing relevance of collaborative UFG in the last few decades – e.g. networked, mosaic, and polycentric modes (Buijs et al., 2024; Doucet et al., 2024; Malekpour et al., 2021; Ordóñez, 2019b) – often fostered by the transition from Keynesian urban policies to neoliberal approaches (Perkins, 2011), in many cases public institutions remain central to planning, designing, and maintaining urban forests (Young and McPherson, 2013). In the public sphere, responsibilities for urban forestry, both strategic and operational, are typically distributed across multiple institutions, departments, and administrative units operating at different levels of government. The extent of public sector involvement in urban forestry varies depending on contextual factors such as e.g. the urban planning system, the degree of subsidiarity, and prevailing socio-cultural and political traditions. However, as providers of public services, public institutions play a pivotal role in shaping and implementing the legal and regulatory frameworks that guide urban forest planning and management (Ordóñez et al., 2019a). The long-term and day-to-day decisions of elected officials and public managers are instrumental in introducing innovative policy and planning instruments, optimizing the provision of urban forest benefits, and ensuring sustainable urbanization in alignment with national and subnational sustainability objectives (Bassett et al., 2024; van der Jagt et al., 2023).

At the national level, these dynamics have been observed in various countries. In Turkey, for example, the General Directorate of Forestry approved a national regulation in 2006 that, for the first time, explicitly addressed urban forests. Although limited in its conceptualization, this regulation played a crucial role in promoting urban forestry practices nationwide (Atmiş, 2016). A similar trend emerged in the Republic of Korea, where national policies on sustainable forest management increasingly emphasized the social and recreational functions of forests. This shift in policy discourses facilitated the expansion of urban forestry initiatives to meet citizens' growing demand for high-quality green spaces (Park and Youn, 2013). Moreover, national governments can support urban forestry not only by establishing enabling institutional frameworks but also by providing dedicated funding, personnel, and technical expertise, as showed by studies conducted in the United States (Hauer and Johnson, 2008), Canada (Wirtz et al., 2021), and Europe (Konijnendijk, 2003).

At the local level, municipal governments oversee the management of trees and woodlands within public green spaces, although a substantial portion of urban forests is often located on private land (Pauleit et al., 2024; Daniel et al., 2016). This responsibility can be formalized through urban forest management plans at both citywide and site-specific scales, which influence a city's canopy cover and broader urban greening strategies. However, conflicts may arise when greening objectives clash with competing land-use priorities, such as e.g. densification policies and infrastructure expansion, as well as with divergent preferences among policymakers, developers, and local communities. In addition, urban greening may drive, or be a consequence, of gentrification processes generating socio-spatial inequalities (Cadaval et al., 2024; Quinton et al., 2024; Kirkpatrick et al., 2013).

From a governance perspective, city governments can establish municipality-led UFG arrangements to coordinate planning and management efforts. These arrangements can engage a diverse range of actors, including e.g. local associations, businesses, citizens, experts, and academics, in participative processes to address both municipal and community goals (Ambrose-Oji et al., 2017). While designed to enhance inclusivity and democratic engagement, the flexibility of these processes is context sensitive. Often, municipal departments retain primary decision-making authority, which may result in tokenistic participation (Scheuer et al., 2024) and reinforce hierarchical governance structures, exacerbating power imbalances (Pike et al., 2024). Moreover, municipalities can face other structural challenges when leading the steering of urban forestry initiatives, comprising coordination challenges among departments, absence of comprehensive plans and associated monitoring mechanisms, lack of adequate resources, and need to raise public awareness regarding urban tree benefits to encourage program implementation and community engagement (Pauleit et al., 2024; Ordóñez et al., 2019a).

In this context, while a growing body of literature has examined the shift towards collaborative UFG, less attention has been paid to how municipal-led approaches – particularly at the site scale – persist and are reconfigured in a governance landscape where governmental actors no longer hold a power monopoly over urban forestry (Konijnendijk, 2014). With scholars calling for a more comprehensive investigation of the evolving roles of governmental actors in UFG processes (Linke et al., 2022; Boulton et al., 2021), this study aims to move beyond a simplified dichotomy between hierarchical government and governance to explore and understand the conditions and dynamics under which municipalities nowadays continue to retain control of their own urban forests. Accordingly, the guiding research question is: How is municipality-led UFG configured and exercised at the site scale today, and what does this arrangement entail?

To answer research question, due to the relevance of empirical investigations in providing insights to cope with urban society issues, a single case study research approach was chosen to conduct an in-depth analysis of the governance of the *Amsterdamse Bos* (Amsterdam Forest) in Amsterdam, Netherlands. The novelty of this study lies both in investigating municipality-led UFG at site scale, while previous studies mostly focused on a national or city-region perspectives (Ordóñez et al., 2019a; van der Jagt; & Lawrence, 2019), and the exploration of a case study in the Netherlands that, to our knowledge, has been poorly studied in literature when it comes to gain a deeper understanding of hierarchical UFG.

This work is structured as follows. Section 2 introduces the *Amsterdamse Bos* as a case study and outlines the research methods employed, including the Policy Arrangement Approach. Section 3 presents the study's findings, followed by a discussion in Section 4, which situates the results within the existing literature. Finally, Section 5 provides concluding remarks.

2. Materials and methods

2.1. Setting the context

Amsterdam is the capital and largest city in the Netherlands with a population of over 931,000 inhabitants (Municipality of Amsterdam, 2024). It is globally renowned for its financial and advanced business services, creative- and service-oriented industries, and as a popular touristic destination. The city is also considered a frontrunner in urban sustainability due to the ground-breaking approaches and solutions developed in recent years to face multiple challenges such as growing population, urbanization pressure, and climate change (Wahlund and Hansen, 2022). In this perspective, the municipal government has recently started to acknowledge urban forests and green spaces as valuable economic assets and essential components for enhancing well-being, mitigating climate change, and providing socio-cultural benefits (Municipality of Amsterdam, 2017). Although Amsterdam's public green space coverage decreased by 1.9% between 2018 and 2023 – primarily due to population growth and densification policies – public green areas still cover 13% of the city's total surface, with trees accounting for more than 30% of that area (Municipality of Amsterdam, 2023).

To investigate municipality-led UFG in-depth, this study employs a single-case study research design (Flyvbjerg, 2006) centered on the *Amsterdamse Bos*, one of the most significant examples of urban forestry implemented in Europe in the twentieth century. Established in 1934, the case is a public *peri*-urban woodland located in the south-western edge of the city. It extends across the administrative boundaries of three municipalities – Amsterdam, Amstelveen, and Aalsmeer (Fig. 1) – which gives the case strategic relevance for the scope of this study.

Covering around 1,000 ha (initially 895 ha), the *Amsterdamse Bos* design is inspired by the *De Stijl Art Movement* (Jellicoe & Jellicoe, 1987) and combines aesthetics values with a strong emphasis on social engagement, integrating balanced proportions of woodlands, open spaces, and water bodies. The site includes a forested area of more than 200,000 trees of diverse species and several water bodies, including the *Nieuwe Meer*, the *Bosbaan*, the *Amstelveense Poel*, and the *Grote Vijver*, which support both ecological functions and a range of recreational and sporting activities. Moreover, it encompasses a variety of leisure, educational, and recreational facilities whose functioning involves municipal staff, business actors, and volunteers. Among these are the visitor centre *De Boswinkel*, which delivers environmental education and public outreach in collaboration with forest rangers; an open-air theatre staging seasonal cultural programming; the *Ridammerhoeve* goat farm, which combines dairy production, urban agriculture, and educational activities for children; and the *De Mirandabad* swimming pool complex. Complementary business activities such as e.g. restaurants, bikes rental, tree climbing, tennis courts are operated by entrepreneurs. An extensive network of pedestrian and cycling paths, playgrounds, and picnic areas further supports everyday recreational use. Architecturally distinctive bridges, many of which are designated as national monuments, also reflect the *Amsterdamse Bos*' character as a planned landscape. The

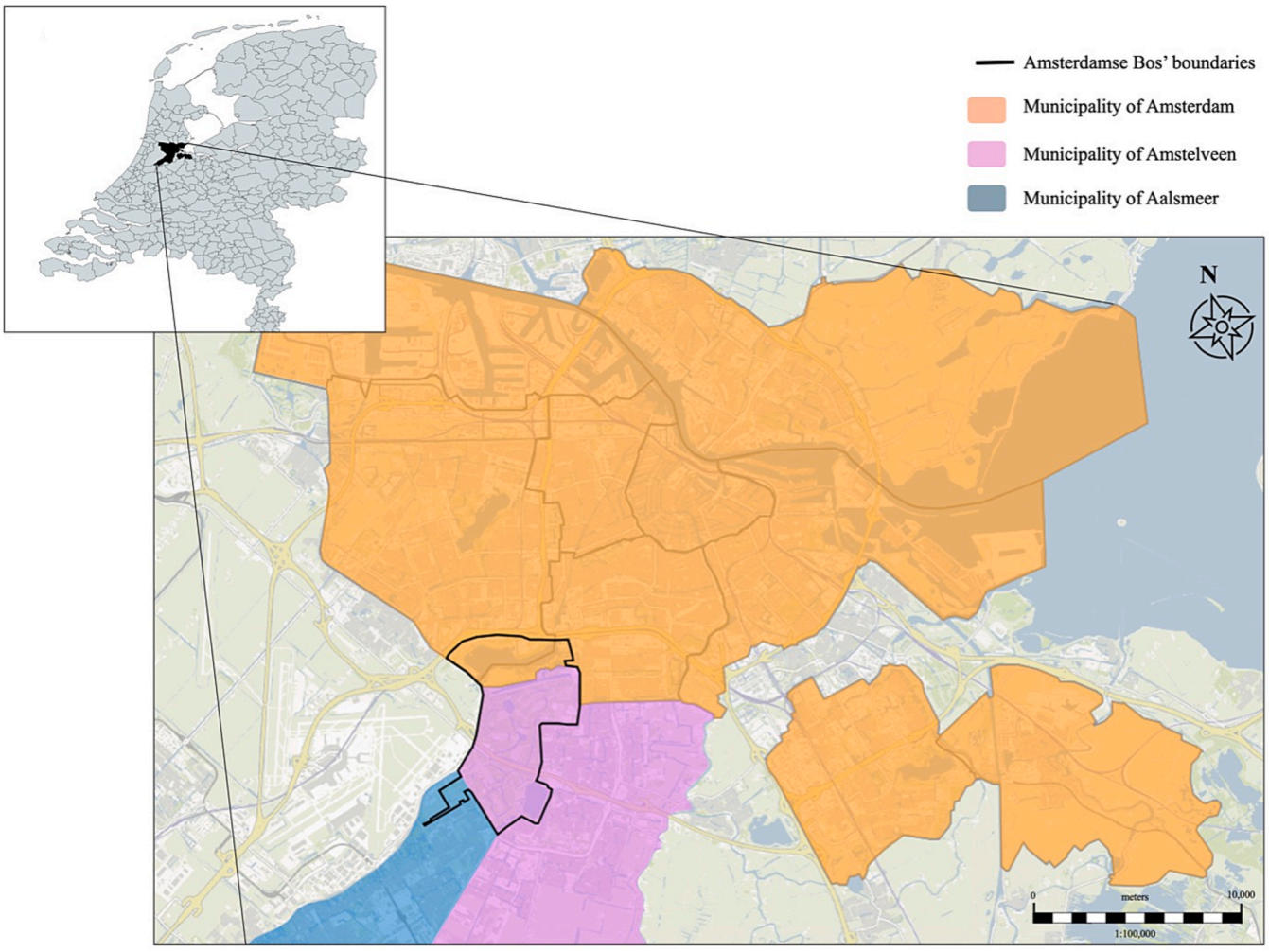

Fig. 1. Localization of the *Amsterdamse Bos* within the metropolitan context of Amsterdam ().
Source: authors elaboration on Municipality of Amsterdam's data, 2024

multipurpose nature of the woodland highlights its relevance at urban and metropolitan scales, which is evidenced by steadily rising visitor numbers from approximately 4.5 million annually in 1997 to over 6 million in 2012 (Municipality of Amsterdam, 2019a).

2.2. The policy arrangement approach

This study applies the Policy Arrangement Approach (PAA, van Tatenhove et al., 2000) as analytical framework to comprehensively investigate the municipality-led UFG of the *Amsterdamse Bos*. It is a well-established approach generally used to investigate policy or governance arrangements in the urban and environmental field (see e.g. Quinton et al., 2020; Aalbers et al., 2019). For this study, an action-oriented interpretation of the PAA (Aalbers and Pauleit, 2013) is employed to examine how actors both influence policy arrangements throughout the deployment of various means of action and, at the same time, their behaviour is shaped by these arrangements. As argued by Aalbers et al. (2019), these means of action – understood here as aspects of dynamic practices rather than of static arrangements – can be categorized into four types:

- *Actors and coalitions*: this dimension encompasses the individuals and/or public and private organizations actively involved in the decision-making and implementation of actions. It also considers the partnerships they form to exert influence over governance processes.
- *Discourses*: they reflect the diverse interests and values that shape policy and planning objectives and the management and maintenance of urban forests. This includes environmental, economic, and socio-cultural narratives that influence the visions and motivations of actors involved.
- *Rules of the game*: this refers to the formal and informal rules that govern interactions among actors and influence national or sub-national policies, plans, regulations, and programmes linked to urban forestry. Key variables in this dimension include land ownership, rights of access, and use.
- *Resources*: it focuses on the resources mobilized by actors to achieve desired outcomes. They may include financial resources (e.g. funding streams and revenues), information and data (e.g. local and technical knowledge), and human resources (e.g. staff and volunteers).

2.3. Data collection and analysis

Data collection was conducted adopting a qualitative research approach. Desk research was carried out to gather secondary data through the analysis and interpretation of several sources recognized as particularly valuable to investigate the *Amsterdamse Bos* governance: planning and policy documents, technical reports, scientific articles, and books. Moreover, primary data were collected through 11 semi-structured interviews, conducted between April 2020 and March 2025, with key informants involved in the governance and management of the *peri*-urban woodland or well informed about them (see Annex A). Interviews were conducted in English through different modalities (i.e. *vis-à-vis*, by phone, video-calls, and emails) and based on a list of questions (see Annex B) build on the base of the PAA dimensions.

Data were triangulated and analysed through a deductive coding process based on the PAA, with the aim of situating interviews and documents within its four analytical dimensions to ensure a comprehensive coverage of the most relevant issues related to the governance of the *Amsterdamse Bos*. Moreover, the analysis was iteratively revised through a combined deductive–inductive process. While the PAA dimensions continued to guide interpretation, the coding scheme was progressively adjusted to capture patterns, divergences, and relationships emerging from the data. This iterative refinement was essential to avoid a mechanical application of the framework and to ensure that the empirical material informed how the dimensions were interpreted and related to one another. In this way, the analysis remained theoretically grounded while retaining sensitivity to context-specific dynamics (Fife & Gossner, 2024).

2.4. Limitations

Concerning limitations, some scope boundaries must be acknowledged. Although the coding process was triangulated and iteratively refined, it necessarily entailed interpretative judgements, and the authors' positionality may have influenced the identification of patterns and relationships within the empirical material. Reflexivity was therefore not treated as a source of bias to be eliminated, but rather as an analytical resource that enhances to methodological rigour (Arts and Goverde, 2006).

Furthermore, the study is based on a single case study. The *Amsterdamse Bos* was selected due to its analytical depth and its relevance to the research question. However, its embeddedness within the specific Dutch institutional context, along with the fact that the site spans three municipalities, may limit the transferability of the findings. However, the theoretical insights generated should be interpreted as contributing to a deeper understanding of UFG dynamics (Flyvbjerg, 2006), while offering analytically informed propositions with potential relevance for comparable governance and policy arrangements.

3. Results

3.1. Actors and coalitions

Since the planning process started in the 1930 s, the governance of the *Amsterdamse Bos* has been characterized by a centralized approach in which the Municipality of Amsterdam emerges as the most powerful actor. Over the years, various municipal departments have contributed to the planning, design, and management of the *peri*-urban woodland, reflecting an interdepartmental coordination within the local administration. In the early phases, key responsibilities were held by the Town Planning section of the *Amsterdam Public Works Department* along with the *Utility Works and Horticulture section* (Tate, 2015). This configuration evolved in the 1990 s, when the *Directie Sport en Bos* (Directorate of Sport and Forest), operating within the Municipality's *Cluster Sociaal* (Social Cluster), was designated as the main authority responsible for both strategic and operational management. This directorate promotes sports and physical activity, contributing to broader policy objectives, including public health, well-being, recreation, and nature conservation by collaborating with other departments – i.e. Spatial Planning and Sustainability; Traffic and Public Space; City Works (Interviewee 1 and 2).

While the Municipality of Amsterdam maintains a strong steering role, as confirmed by Interviewee 4, "*the role of the Municipality in governing the Amsterdamse Bos is central, and it was further strengthened following the 2014 municipal reorganisation in Amsterdam, which reduced autonomy of the district councils and recentralised political and administrative authority*", it is integrated within a broader multi-level institutional framework. As illustrated in Fig. 3, actors at the national and sub-national levels – i.e. the *Ministerie van Infrastructuur en Waterstaat* (Ministry of Infrastructure and Water Management) and the *Provincie Noord-Holland* (Province of North Holland) – provide guidance to the Municipality of Amsterdam through land-use and environmental policies and plans such as, for instance, the *Natuurnetwerk Nederland* (NNN, Nature Network Netherlands) – i.e. the national ecological network of protected areas. However, these upper-tier institutions are not formally involved in decision-making concerning the woodland. Nevertheless, intergovernmental coordination occurs only in specific circumstances, particularly when projects of national relevance are at stake. For example, the widening of the A9 motorway, which intersects the woodland and constitutes a strategic infrastructure corridor linking central Netherlands with Schiphol Airport (see Fig. 2), required coordination with the national government. As explained by Interviewee 1

Fig. 2. Map of the Amsterdamse Bos (adapted from Heeren, 2021:254).

"*for the widening of the A9 we engage with the Ministry of Infrastructure and Water Management to adapt the woodland landscape to the project and compensate for the tree removal. However, eventually, the Municipality of Amsterdam retained ultimate decision-making authority and the capacity to negotiate key aspects of the project*".

A similar role is played by the *Hoogheemraadschap van Rijnland* (Rhineland Water Management Authority), which oversees water quality and dike infrastructure at the sub-national level. While this authority provides technical recommendations regarding the management of water bodies within and around the woodland as part of consultive participation processes. However, it holds no formal jurisdiction over the area. As with national and provincial authorities, its involvement therefore does not alter the central role of the Municipality of Amsterdam in defining final deliberations (Interviewees 1 and 2).

In addition to vertical institutional relations, the municipality-led arrangement is also shaped by horizontal interactions with the neighbouring municipalities of Amstelveen and, to a lesser extent Aalsmeer. This inter-municipal configuration reflects a structural feature of Dutch law, whereby public-law authority is territorially bounded and legally distinct from land ownership. Under the *Gemeentewet* (Municipalities Act) (Government of the Netherlands, 1992), municipalities exercise public-law competences within their territorial boundaries, while land ownership, regulated by the *Burgerlijk Wetboek* (Dutch Civil Code) Government of the Netherlands, 2023), does not confer regulatory powers outside municipal jurisdiction. Although the *Amsterdamse Bos* is owned and strategically managed by the Municipality of Amsterdam, the Municipality of Amstelveen exercises territorial public-law competences – e.g. zoning, permitting. Aalsmeer, instead, plays a marginal role. While a small portion of the woodland lies within its jurisdiction, it holds neither ownership nor a significant role in the arrangement. Its interests are represented indirectly through Amstelveen in inter-municipal processes with Amsterdam.

In recent years, however, the Municipality of Amstelveen has adopted a more proactive role. It participated for the first time in the

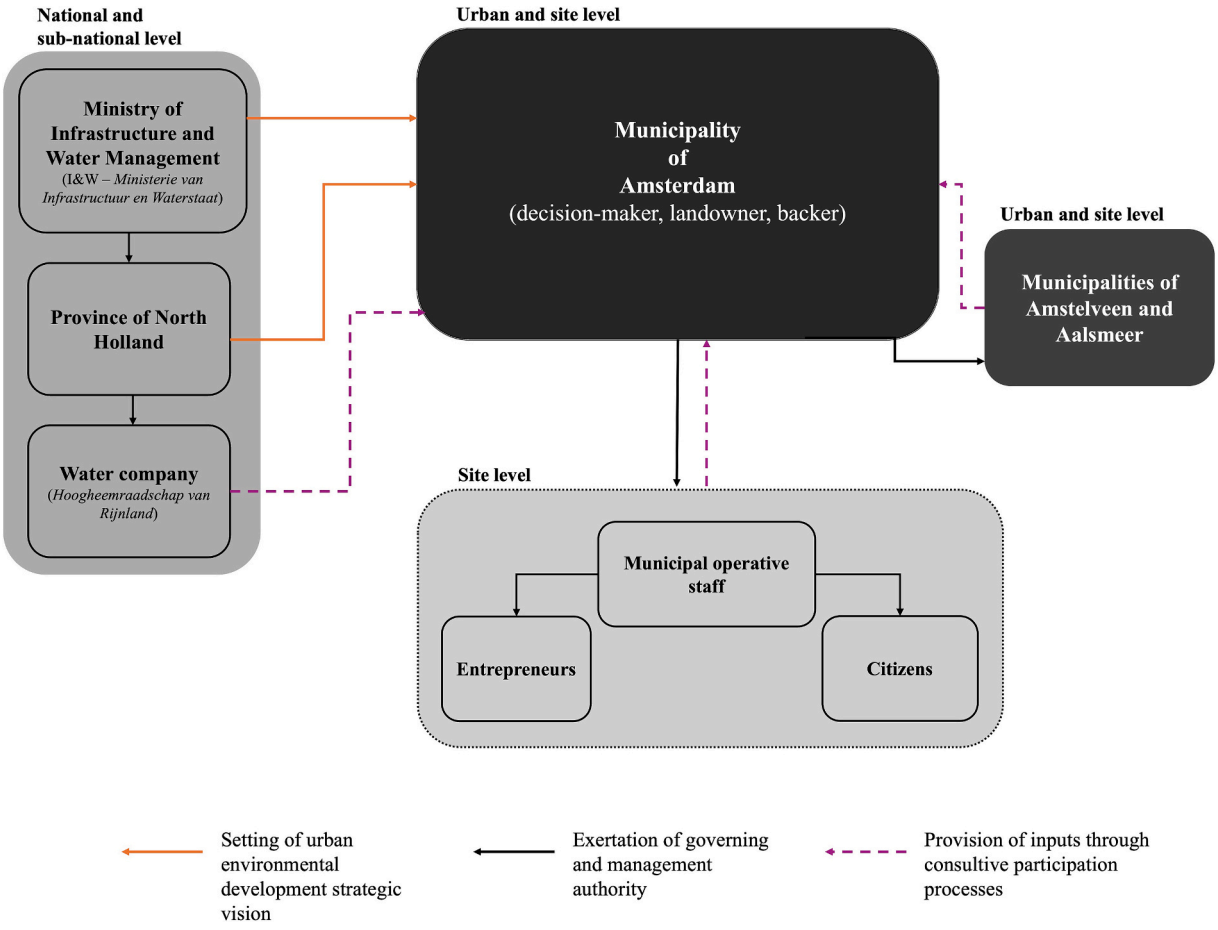

Fig. 3. Schematization of the *Amsterdamse Bos* municipality-led UFG.

preparation of the *Bosplan 2020–2030* (Forest Plan 2020–2030) (Municipality of Amsterdam, 2021a), the most recent site-level management strategy. However, as Interviewee 11 clarified *"Amstelveen agreed with that* [the Bosplan 2020–2030]*, but in the end it is an Amsterdam product"*. Although Amstelveen's role remained consultative, its involvement fostered inter-municipal collaboration but only on specific initiatives, such as e.g. event planning and the implementation of safety measures (Interviewee 11). Despite this increased engagement, no formalised inter-municipal coalition has been established to redistribute competences or financial commitments between Amsterdam and Amstelveen. Alternative UFG arrangements were explored, including the partial transfer of woodland ownership to Amstelveen, but these proposal did not materialize. According to Interviewee 11, one of the main obstacles to formalisation was the reluctance of the Province of North Holland to assume a more prominent role within the arrangement. As the proposed model envisaged provincial participation as structural component, both to ensure financial viability and to balance inter-municipal competences, its withdrawal significantly reduced the feasibility of the coalition agreement and limited the scope for Amstelveen's deeper institutional involvement.

Beyond the institutional sphere, several actors contribute to the daily functioning of the woodland. These include on-site entrepreneurs – e.g. managers of sports and recreational facilities and restaurateurs – along with residents and local associations. While their engagement in formal policymaking is generally limited to occasional consultations, their role is more tangible in the daily management of the area. They support activities such as maintenance (e.g. tree pruning, waste removal), community–oriented initiatives (e.g. excursions and educational programmes), and the provision of recreational services (Interviewees 1, 6, 9, 11). In doing so, they complement municipal capacities and contribute to revenue generation through mechanisms such as e.g. fees from on-site businesses, sponsorship agreements, and membership-based initiatives as those promoted by the association *Vrienden van het Amsterdamse Bos* (Friends of the Amsterdamse Bos) (Municipality of Amsterdam, 2021a).

3.2. Discourses

The discursive foundations behind the establishment of the *Amsterdamse Bos* can be traced back to the early 1900 s, when the Dutch botanist Jacob Thijsse started to advocate for the creation of new urban green spaces in Amsterdam. His efforts focused on enhancing citizens' quality of life, particularly for those from lower socio-economic background who faced poor housing conditions and associated health issues (Dupon & van der Werf, 2019). In line with this vision and inspired by British and German urban parks (e.g. *Hamburg Stadtpark*), the Municipality of Amsterdam in 1928 decided to proceed with the construction of the *Amsterdamse* Bos. This commitment was formalized in 1931 with the adoption of the *Boschplan* design plan (Municipality of Amsterdam, 2019b), which was driven by two main discourses: (i) addressing the scarcity of urban green spaces to strengthen connections between the city centre and its rural surroundings, and (ii) promoting leisure and recreational services for urban dwellers (Dupon & van der Werf, 2019; Tate, 2015). In parallel, also an economic discourse emerged in response to the 1930 s global financial crisis, which significantly affected both the city and the country. The construction of the *Amsterdamse Bos* became the largest unemployment scheme in the Netherlands, employing more than 20,000 workers between 1934 and 1940. This initiative not only alleviated economic hardship but also fostered a sense of belonging and identity among Amsterdam's residents (Heeren, 2021).

To operationalize above discourses, the Municipality of Amsterdam integrated the woodland into the city's urban planning system and policy domains from the beginning (see Fig. 4). It was incorporated into the 1935 *Algemeen Uitbreidingsplan* (AUP, Amsterdam's General Expansion Plan) (Municipality of Amsterdam, 2019c), which explicitly acknowledged the critical role of green spaces for public well-being and for counteracting the effects of rapid urbanization (Gerritsma, 2021). In more recent years, the *Structuurvisie Amsterdam 2040* (Amsterdam's Structural Vision 2040) (Municipality of Amsterdam, 2011b), the city's land-use plan, identified the *Amsterdamse Bos* as one of the city's "green wedges," emphasizing its multifunctional role in improving access to nature, promoting health and well-being, and providing recreational opportunities. Next, with the adoption of the *Omgevingsvisie Amsterdam 2050* (Amsterdam Environmental Vision 2050) (Municipality of Amsterdam, 2021b), a comprehensive policy document outlining the city's long-term spatial and environmental strategies, greater emphasis was placed on the forest's functions in climate adaptation and mitigation as well as biodiversity enhancement. This vision aligns with the *Groenvisie 2020–2050* (Green Vision 2020–2050) (Municipality of Amsterdam, 2020), a strategic environmental plan that underscores the role of urban forests in fostering climate resilience, biodiversity conservation, and recreational services. Within this framework, the *Amsterdamse Bos* is recognized as a mature forest of ecological significance, with management strategies emphasizing ecological principles to ensure its long-term sustainability.

Over time, discourses informing site-level management have also evolved, reflecting broader national and international nature conservation policy trends. The *Boschplan* of the 1930 s was rooted in phyto-sociological principles aiming to establish a semi-natural forest mimicking regional woodland ecosystems, rather than relying solely on silvicultural practices (Simson, 2005). A significant discursive shift occurred in the 1990 s with the adoption of the *Amsterdamse Bos Policy Plan* in 1994 (Municipality of Amsterdam, 1994), which embraced an ecological management approach. This plan prioritized the enhancement and protection of ecological values and connectivity, particularly through alignment with conservation frameworks such as *Natura 2000* and the NNN and reflected a wider European trend in nature-oriented management that gained momentum since the 1970 s and remained influential in the Netherlands until the 2010 s (Buijs et al., 2014).

Furthermore, with the adoption of the *Bosplan 2012–2016* (Municipality of Amsterdam, 2011a), the management approach perspective changed once again to balance the increasing social and recreational demands of urban residents with the protection of trees and associated vegetation. This approach was reaffirmed in the *Bosplan 2020–2030* (Municipality of Amsterdam, 2021a), which placed renewed greater emphasis on the relevance of reinforcing the climate adaptation and biodiversity restoration functions of the woodland within the metropolitan context, although the Municipality of Amstelveen, as argued by Interviewee 9, *"was primarily interested in prioritizing recreational and business activities, while giving less importance to nature and biodiversity conservation narratives"*.

3.3. Rules of the game

In the Netherlands, the forest sector falls under the responsibility of the *Ministerie van Landbouw, Visserij, Voedselzekerheid en Natuur* (Ministry of Agriculture, Fisheries, Food security and Nature) and is regulated by the 2024 *Omgevingswet* (Environment and Planning Act) (Rijksoverheid, 2024), which establishes an integrated framework for spatial planning, environmental protection, and sustainable development. While the national government sets overarching policy objectives, provinces are responsible for enacting environmental protection legislation and policies within their jurisdiction. Accordingly, provinces manage the NNN, which includes the *Amsterdamse Bos*, with the aim of protecting and enhancing biodiversity by connecting natural areas across the country. Within these ecological corridors, urban development is generally prohibited unless no feasible alternatives are available. Moreover, the *Gedragscode Soortenbescherming Bosbeheer* (Code of Conduct for Species Protection in Forest Management) (Vereniging van

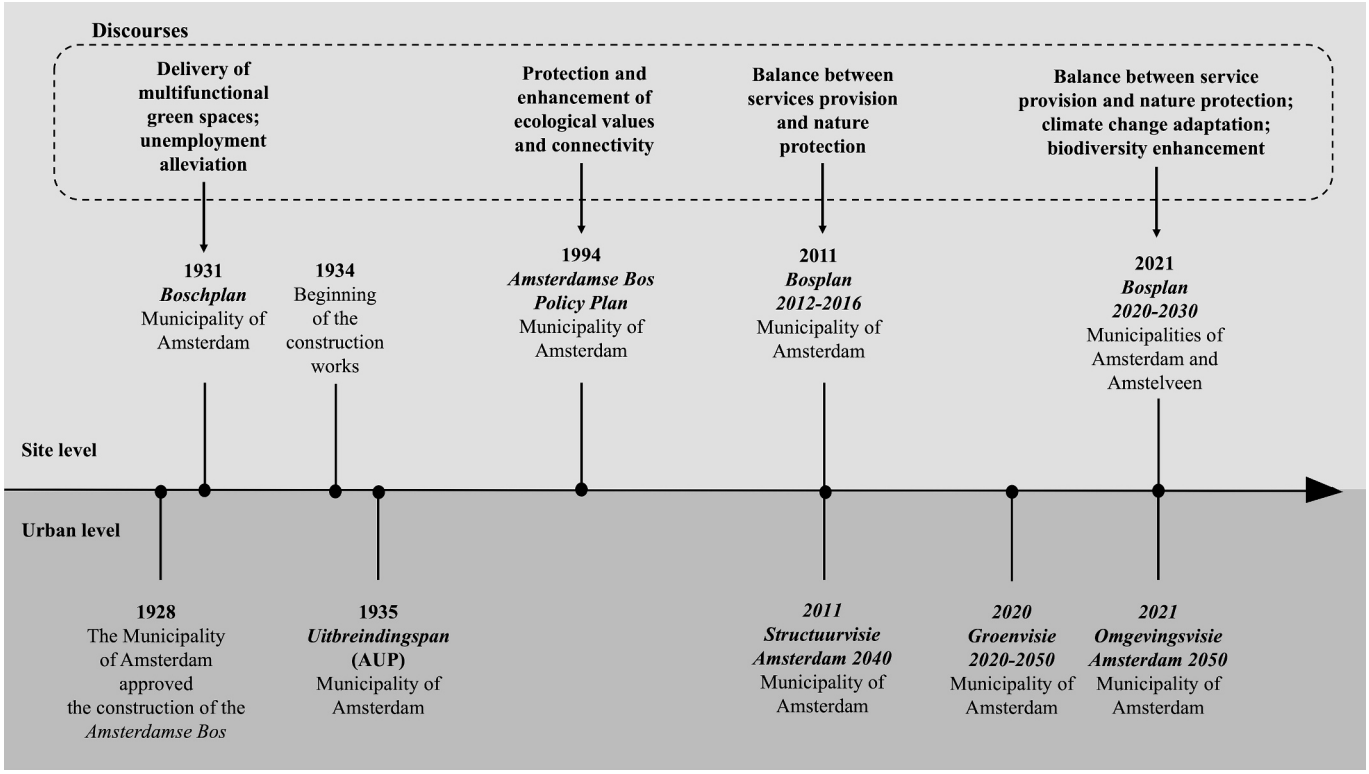

Fig. 4. Main plans and discourses shaping the establishment and management of the *Amsterdamse Bos*.

Bos- en Natuurterreineigenaren, 2022) guides sustainable forest management, including those in and around cities such as the *Amsterdamse Bos*.

Although national and provincial regulations establish the framework for forest conservation, the management of urban forests typically falls under the jurisdiction of local institutions. In the case of the *Amsterdamse Bos*, the area is steered and controlled by a set of policies and regulations designed to ensure socio-economic and environmental sustainability of the woodland, its integration within the multitiered institutional framework, and regulation of users' activities and behaviors. In this regard, the Municipality of Amsterdam, as legal owner, leads the governance of the *Amsterdamse Bos* in line with the discourses shaping the future city development (see Section 3.2), by drafting and implementing the forest's management plans – i.e. *Bosplan 2020–2030*, which provide guidance for municipal departments and other actors involved in the management.

The Municipality of Amsterdam also coordinates actors engagement through participatory consultive procedures such as workshops, public meetings, and roundtables, as well as digital tools (e.g. web-based surveys) (Interviewees 5, 7 and 11). Despite these procedures being in place, they are not formalized through legally binding site-specific norms but more embedded in practice, and some actors reported concerns in terms of inclusiveness. As underlined by Interviewee 5 *"as entrepreneurs working within the Amsterdamse Bos, we did not feel particularly engaged in the decision-making for the development of the new Bosplan. This was also noted by others who conduct business activities here"*. Similarly, representatives of the Municipality of Amstelveen reported tensions concerning the zoning of the woodland proposed by the Municipality of Amsterdam (Interviewee 2 and 3). As clarified by Interviewee 11: *"the Municipality of Amstelveen and its citizens were concerned about the risk of excessively restricting free movement over nature protection in relation to the different activities carried out by cyclists, hikers, and people walking dogs off-leash within the same areas"*. These dynamics highlight the challenges in participatory processes, where conservation objectives, recreational uses, and local economic activities require continuous negotiations.

Monitoring also constitutes an important component of rules. Under the *Wet Natuurbescherming* (Nature Conservation Act) (Government of the Netherlands., 2016), which entered into force in 2017 and was later integrated into the *Omgevingswet* in 2024, statutory responsibilities for ecological monitoring are assigned to the national government and the provinces. Municipalities are not directly responsible for this but must ensure compliance with nature protection requirements in spatial planning and land-use decisions. For the Municipality of Amsterdam, this implies assessing the status of its urban forests, including the *Amsterdamse Bos*. To fulfil this mandate, at the site level, monitoring is anchored in the 2011 *Monitoringsplan* (Monitoring Plan 2011), which is embedded in the *Bosplan 2020–2030* and identified as the core framework for the woodland monitoring, with provision of revision to align with the updated regulations (Municipality of Amsterdam, 2021a). In line with this, in 2025 the Municipality of Amsterdam commissioned the consultancy *Staro Natuur en Buitengebied* to implement an eight-year monitoring programme designed to generate data on biodiversity status and trends and to inform adaptive management (see Staro Natuur en Buitengebied, n.d.). Monitoring requirements are supported by the *Subsidiestelsel Natuur-en Landschap* (SNL, Subsidy System for Nature and Landscape) (BIJ12, 2026), a funding scheme introduced by the Province of North Holland that delivers financial incentives for stimulating the protection and management of natural areas through evidence-based data.

Complementing formal processes, experimental assessment tools have also been developed to evaluate the performance of the *Amsterdam Bos* and other major urban green areas. In this regard, the *Kwaliteits Toetsing Stadbossen Amsterdam* (KTSA, Quality Assessment Model) (Buiting, 2022), assesses urban forests on five strategic dimensions derived from the *Groenvisie 2020–2050* – i.e. biodiversity, climate regulation, carbon storage, soil quality, and recreation (Municipality of Amsterdam, 2020). Its application indicates high performance across all these domains, suggesting that the *Amsterdamse Bos* functions as a structurally mature and multifunctional socio-ecological system rather than a woodland optimized for a single management objective (Buiting, 2022).

Finally, the use and access of the woodland are regulated through a set of visitor rules and management norms, known as *Huisregels Amsterdamse Bos* (House Rules of the Amsterdamse Bos) (Municipality of Amsterdam, n.d.). These rules regulate daily activities across the woodland and include restrictions on e.g. events, dog walking, fire use, wildlife feeding, nudity, camping, and vehicle access, ensuring safety and conservation. Accessibility standards promote inclusive use, with facilities and services such as electric golf carts available for persons with disabilities. Forest rangers and municipal staff execute maintenance, enforcement, and educational tasks in accordance with these rules, providing feedback that can lead to adaptive management and refinement of policies.

3.4. Resources

The Municipality of Amsterdam holds primary responsibility for steering and managing the *Amsterdamse Bos*, encompassing financial management, revenue generation, staff coordination, and knowledge provision.

Concerning financial resources, in the beginning the Municipality of Amsterdam secured funding for the construction of the *peri*-urban woodland by leveraging a government-funded unemployment scheme. This strategic decision ensured the project's economic viability, even during the severe global crisis of the 1930 s. Currently, approximately 70–80% of the total budget comes from public funding, primarily allocated through the municipal budget of Amsterdam, while the Municipality of Amstelveen does not contribute on a structural basis (College van B&W Amstelveen, 2024). The remaining 20–30% of the budget is generated through own revenues, including e.g. concession fees from on-site commercial operators, parking fees, and charges related to sports, recreational, and cultural events hosted within the area (Interviewees 1, 9 and 11). In the last years, however, the *Amsterdamse Bos* has faced a structural financial deficit. As highlighted in the *Bosplan 2020–2030*, *"there is a structural deficit of €2.7 million for the management and maintenance"* (Municipality of Amsterdam, 2021a:51), which was further exacerbated due to the cancellation of numerous events during the COVID-19 pandemic. This has contributed to maintenance backlogs affecting historical bridges, paths, and other infrastructure (Interviewees 1, 9, and 11). Although the Municipality of Amsterdam has mobilised significant financial resources, amounting around €8-10 million, to address accumulated backlogs, a structural deficit of €4.9 million is projected for the period 2026–2030 (Municipality of Amsterdam, 2025; Amstelveens Nieuwsblad, 2024), indicating persistent financial pressure. As a result, the Municipality of Amsterdam continues to face several challenges, as noted by Interviewee 9, "*in recent years we have been able to limit budget issues, but we are still experiencing difficulties in mobilizing the resources required for the overall maintenance and implementation of our biodiversity goals"*.

Persistent financial constraints have over time intensified discussions on involving the Municipality of Amstelveen in sharing management costs through the creation of a formal inter-municipal coalition. These negotiations have at times generated tensions between the two public institutions (Interviewees 9, 10, and 11). As mentioned above, a notable example is the failed transfer of ownership of the southern section of the woodland – the area below the A9 motorway hosting most of the revenue-generating activities – to the Municipality of Amstelveen. The outcome was influenced both by the area's strategic economic significance, which the Municipality of Amsterdam was unwilling to relinquish, and by the latter's intention to prevent the management fragmentation of the *Amsterdamse Bos*, seen as crucial for balancing nature conservation and delivery of recreational services (College van

B&W Amstelveen, 2024; Interviewees 10 and 11).

In terms of human resources, approximately 75 employees are involved in managing the woodland, organized into four distinct teams: (i) strategy and development; (ii) management and maintenance; (iii) public relations and media; (iv) and general staff, overseeing administrative, financial, and human resources management. Key informants highlighted that staffing levels are insufficient, particularly at the strategic level, prompting reliance on volunteers, including disadvantaged individuals engaged in socio-economic inclusion programmes, to support maintenance, monitoring, and various services delivery. This approach has helped in reducing operational costs and, at the same time, fostering skills development and social integration for participants (Interviewees 5, 7 and 9).

Finally, technical knowledge is primarily provided by the *Amsterdamse Bos* staff, with additional input from other public bodies, such as e.g. the Rhineland Water Management Authority, or from external experts when required. Additionally, local knowledge is integrated through participatory consultive processes (Interviewees 7 and 10). Nonetheless, while decision-making formally involves multiple actors, the process is not entirely inclusive. Less powerful actors have limited capacity to shape final deliberations, which makes that their views and expertise are included to a limited extent in final deliberations (Interviewees 5 and 9). Moreover, as stressed by Interviewees 9,10 and 11, the aforementioned limited authority of the Municipalities of Amstelveen and is mainly due to their minimal financial contribution to the management of the woodland. As noted by Interviewee 9, *"if you do not pay, you do not have the right to determine final policy decisions"*. This asymmetry reinforces power imbalances, consolidating the Municipality of Amsterdam's dominant role in shaping strategic and operational decisions.

4. Discussion

This study sheds light on how a municipal government navigates urban forestry within an environmental governance landscape in which collaborative arrangements are increasingly relevant (Miao and Tan, 2025; Doucet et al., 2024; Buijs et al., 2019), and discusses the implications associated with a municipality-led UFG approach at site level.

The case of the *Amsterdamse Bos* illustrates how the Municipality of Amsterdam has maintained a hierarchical and centralized structure since the *peri*-urban woodland establishment in the 1930 s, combining land ownership, planning authority, and resource mobilization capacity. This long-standing and stable arrangement has significantly influenced decision-making processes, policy discourses, and the resulting management approach. A key feature of the hierarchical mode adopted is its capacity to foster both intra-institutional coordination across Amsterdam's municipal departments and inter-institutional alignment with provincial and national policy frameworks related to spatial planning, green infrastructure, and nature conservation. The central role played by the Municipality of Amsterdam, coupled with the institutionalization of the *Amsterdamse Bos* in the urban planning system and environmental policy domains since the beginning, has enabled the integration of cross-sectoral municipal objectives into clear, context-sensitive management strategies. This has helped to prevent sectoral fragmentation and ensure policy coherence with higher tiers of government, a factor generally associated with successful urban forest management (Konijnendijk et al., 2021; Wirtz et al., 2021). These dynamics appear particularly effective at the site level, indicating positive horizontal and vertical policy integration, although the engagement of the Municipality of Amstelveen remains comparatively limited.

Furthermore, assigning management responsibilities to a dedicated municipal unit – i.e. *Directie Sport en Bos* – has strengthened the Municipality of Amsterdam's leadership and enabled it to overcome the dispersion of mandates and knowledge across public bodies. Addressing such coordination challenges is critical, as their persistence can jeopardize coherent action and delay the implementation of urban greening policies (Bush, 2020). Evidence from other contexts underscores this point. van der Jagt; & Lawrence, 2019, analysing Scottish local authorities responsible for urban forestry, identify management fragmentation as a key barrier to knowledge exchange and to understanding tree benefits. Similarly, Jim (2002), investigating urban forestry in Hong Kong, shows how the lack of government departments coordination results in piecemeal interventions, policy-implementation gaps, and overlapping responsibilities.

While the concentration of decision-making power in the hands of a single dominant actor does not always guarantee alignment with community needs (Ambrose-Oji et al., 2017), it can foster the effective implementation of policy agendas when supported by secure land tenure, political commitment, and stable public funding (Endreny, 2018). In particular, land tenure consolidation under the Municipality of Amsterdam has proven decisive not only in shaping the woodland's physical and ecological structure, but also in anchoring the coherence of its long-term management vision. Indeed, by avoiding land tenure fragmentation among municipalities, Amsterdam has retained the institutional conditions necessary for implementing a comprehensive and adaptive management approach over the years. This has been further reinforced by a monitoring system that supports evidence-informed decision-making and has facilitated the integration in management strategies and practices of nature conservation values and priorities, in line with evolving international and national trends (Buijs and van Koppen, 2025), and increasing public demand for multipurpose green spaces. Thus, alignment with multifunctionality as a core principle of urban forestry (Konijnendijk et al., 2006) has positioned the *Amsterdamse Bos* as a key nature-based solution at the metropolitan scale. This is particularly evident in its contributions to climate regulation, ecological connectivity, biodiversity conservation, and socio-cultural services delivery (Buiting, 2022). These functions are recognised as factors enabling conditions for urban sustainability transitions (Branny et al., 2025), especially in contexts subject to strong urbanization and densification pressure as in the case of Amsterdam. In this perspective, the hierarchical approach adopted has proven effective in finding a balance between environmental and socio-economic priorities as outlined by the Municipality of Amsterdam within the site level management plans.

However, as argued by Yao et al. (2019) in their analysis of large-scale afforestation programmes in Beijing, governance capacity and authoritative steering can facilitate implementation effectiveness but simultaneously generating deficits in participation and legitimacy. These issues resonate also with the *Amsterdamse Bos* case, where decision-making processes remain characterized by limited inclusiveness. The Municipality of Amsterdam exercises a dominant role rooted in its institutional position, political influence, and control of critical resources, constraining the meaningful engagement of less powerful actors, particularly neighboring municipalities, and resulting in power asymmetries and forms of tokenistic participation (Simon, 2016). The municipality-led arrangement, therefore, structurally limits the negotiated and relational nature of equitable UFG, amplifying issues of equity and misrecognition (Pike et al., 2024). These asymmetries explain and perpetuate the relative marginalization of the Municipality of Amstelveen, creating a self-reinforcing logic that is difficult to break without deliberate institutional redesign. In this regard, the withdrawal of the Province of North Holland from the proposed inter-municipal arrangement further illustrates how the prospects for governance reconfiguration at the site scale are not only shaped by the dominant actor's willingness to share authority, but also by the disposition of higher-tier institutions whose participation may be structurally necessary to rebalance inter-municipal power relations. When such institutional enablers are absent, the path dependency of existing hierarchical arrangements tends to be reproduced rather than challenged. Furthermore, the structural financial deficit affecting the management of the *Amsterdamse Bos* has progressively shifted the approach from proactive to reactive, highlighting a structural vulnerability inherent to

municipality-led UFG. The long-term viability of hierarchical governance depends on sustained public funding and political commitment, which cannot always be guaranteed. In the absence of formalised cost-sharing arrangements with neighbouring municipalities, fiscal pressure falls almost entirely on a single institution. This dynamic, paradoxically, further entrenches Amsterdam's reluctance to redistribute governance authority, as financial control and decision-making power remain mutually reinforcing.

Participatory limitations emerge also through the nature of civil society engagement. While citizens voluntarily contribute to maintenance and service delivery, they remain excluded from strategic decision-making. The concept of *active citizenship* (Buijs et al., 2016), which presupposes fully inclusive participation in decision-making, is therefore not applicable here. It is more precise to characterise engagement in the *Amsterdamse Bos* as *co-production* – i.e. collaborative involvement in the implementation of services once priorities are established, by the Municipality of Amsterdam in this case – rather than *co-creation*, which would entail the inclusion of a wide range of actors' voices in shaping those priorities themselves (Hölscher et al., 2024; Torfing et al., 2019; Brandsen & Honingh, 2018). Extending civil society and private actors' engagement into knowledge and visions co-production could instead represent an approach towards more inclusive and equitable UFG (Adams et al., 2024).

In this vein, the *Amsterdamse Bos* case illustrates the dual nature of municipality-led UFG: centralized control has enabled policy coherence, strategic continuity, and integration of socio-economic and environmental objectives, it has also reinforced power asymmetries among the three municipalities and constrained the participation of civil society. This duality reflects a broader tension between institutional efficiency and democratic legitimacy that is unlikely to be resolved without deliberate structural intervention (Scharpf, 1999). From this perspective, the steering of the *Amsterdamse Bos* more closely resembles the concept of *government* – here understood as a top-down process through which *"an organization or a society steers itself"* (Rosenau & Durfee, 1995: 14) – than the broader notion of *governance*, which implies an actual reconfiguration of relational structures and power distribution among actors through collaborative and inclusive multi-actor decision-making (Konijnendijk, 2014). At the same time, the empirical evidence does not support a strict dichotomy. Instead, it points to a hybrid configuration in which hierarchical authority coexists with selective forms of multi-actor engagement, thereby calling for more nuanced conceptualisations that capable of capturing the complexity of contemporary urban environmental arrangements.

5. Conclusion

Applying the PAA to the case of the *Amsterdamse Bos* has provided valuable insights for better understanding the functioning and implications of municipality-led UFG arrangements. The findings show that hierarchical UFG can effectively ensure policy coherence, cross-sectoral integration, and long-term strategic continuity, particularly when land tenure, institutional capacity, and political commitment are firmly established. However, these strengths are accompanied by structural trade-offs. The concentration of planning and management authority, together with the control of key resources, tends to limit the inclusion of alternative perspectives, exacerbate power asymmetries among actors, and constrain participation predominantly implementation-oriented roles. As a result, effectiveness in policy delivery does not necessarily translate into inclusiveness, equity, or democratic legitimacy. These dynamics are further stabilized by the close coupling of financial and decision-making responsibilities, which reinforces path dependency and limits incentives for redistributing governance roles.

In this vein, considering the recognised role of collaborative governance in enhancing the societal benefits of urban nature-based solutions (Battisti et al., 2025; Frantzeskaki, 2019), inter-municipal arrangements may offer a viable pathway to rebalance responsibilities and alleviate financial pressures without undermining coordination capacity. Their effectiveness, however, remains contingent upon institutional willingness, the redistribution of resources, and the presence of enabling conditions for multi-level and cross-sectoral governance.

Future research should explore how diverse land tenure regimes, inter-municipal cooperation, and strategies for engaging less powerful actors influence the management, adaptability, and legitimacy of municipality-led UFG in different urban contexts. Comparative analyses across diverse planning and governance traditions would be particularly valuable in identifying the conditions under which hierarchical UFG modes can be combined with more inclusive and equitable arrangements.

CRediT authorship contribution statement

Stefano Quaglia: Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Carmen Aalbers:** Validation, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.landurbplan.2026.105671.

Data availability

The data that has been used is confidential.

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