How Do We Measure Participation?

Evaluating Public Participation in Urban Forestry Through a Literature Review

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Degree project • 15 credits
Swedish University of Agricultural Sciences, SLU
Department of Landscape Architecture, Planning and Management Programme/
Forest and Landscape
Alnarp, 2025

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Credits:	15
Level:	G2E first cycle
Course title:	Independent project in Landscape architecture
Course code:	EX1011
Programme/education:	Forest and Landscape
Course coordinating dept:	Department of Landscape Architecture, Planning and Management
Place of publication:	Alnarp
Year of publication:	2025
Cover picture:	“River Near City Buildings Under Cloudy Sky” by Nancy Bourque, licensed under CC0, https://www.pexels.com/photo/river-near-city-buildings-under-cloudy-sky-1209978/

Keywords: public participation, urban forestry, evaluation, indicators, effectiveness, literature review

Swedish University of Agricultural Sciences

Landscape Architecture

Abstract

Urban forestry is important for environmental and social reasons. Urban forestry helps reconnect humans with nature and public participation can assist in this. However, methods to evaluate the effectiveness of these participation processes are sparse. Therefore, this thesis set out to enhance the impact of public participation by examining how such processes can be evaluated in the context of urban forestry.

To guide the study, the following research question (RQ) has been formulated: What study designs, frameworks or indicators can be used to evaluate the effectiveness of public participation processes in urban forestry governance? This RQ is answered through 3 sub questions, regarding study designs, indicators and frameworks used to evaluate public participation. A literature review was conducted and the results are presented in flowcharts and common indicators of effective public participation processes. Key findings include that: there was no clear distinction between study designs in what was studied, no frameworks were consistently used. Six indicators of effective public participation processes and how to evaluate these are presented. These can be used in future research to apply in actual participation processes worldwide.

Keywords: public participation, urban forestry, evaluation, indicators, effectiveness, literature review

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Abbreviations

Abbreviation	*Description*
IAP2	International Association of Public Participation
NBS	Nature Based Solutions
NBT	Nature Based Thinking
PP	Public Participation
RQ	Research Question
SLU	Swedish University of Agricultural Sciences
SoP	Sense of Place

1. Introduction

Global challenges like climate change and air pollution affect the natural environment (Adedeji et al. 2014; Koop & Van Leeuwen 2017). These challenges can partly be ascribed to humans disconnecting from nature (Cumming et al. 2014; Dorninger et al. 2017). According to Elmqvist et al. (2021:2), through increasing urbanization, there is an "increasing physical and cognitive distance between resources and consumers". This long production chain has social and ecological externalities (Langemeyer et al. 2021), since it makes the connection between consumer and ecosystems vaguer. Because of this troubled connection, urban consumers tend to have a decreased awareness of environmental issues, and also care less about them, making them decreasingly willing to act (Cumming et al. 2014). Reconnecting urban citizens with nature is critical for both environmental sustainability and human wellbeing. This means making urban citizens aware of their reliance on nature.

Reconnection with nature through public participation is a viable option: Saunders (2003) argues that conservation psychology can be a means to understand how humans behave towards and care about nature. Place attachment is one of the topics within conservation psychology and might be a way to re-establish human's connection with nature. This is because place attachment is created through a person's experiences and interactions with their environment, and can be used to predict behaviour (Masterson et al. 2017). This was shown by Vorkinn and Riese (2001)and Marshall et al. (2012): place attachment might play a part in concern for the environment and preparedness to act for the environment. That is why creating more opportunities for urban citizens to interact with nature, and restoring their connection with nature in doing so, is important (Colding et al. 2020). Urban forestry, as defined by Randrup et al. (2005), is everything from urban woods, like plantations and orchards, to individual trees on the roadside. Urban forestry encompasses not only the vegetation itself but also the associated management, technical, design, policy, and planning processes (Randrup et al. 2005).

Involving citizens in the governance of urban forestry through public participation is a way to create the opportunity for interaction and reconnection with nature (Restall 2017). The benefits of public participation are quite known. Burton (2009) lists advantages of public participation, based on a framework developed by Richardson (1983). Relevant to this thesis is the benefit of better decision-making: a wider range of views, opinions and knowledge improves the decisions made and policies implemented based on these decisions. Not only this, Richardson (1983) also states the educational benefit of public participation:

actively participating civilians become more aware of the complex decision-making in public participation and the issues that it is trying to solve. This means that, in the case of urban forestry, participants could become more aware about the environmental and social issues that arise from a lack of green in urban areas.

These benefits cause public participation processes to be more and more prevalent in governance and management of urban forests, but what the exact outcomes of such interventions are is still poorly understood (Burton 2009; Kotus & Sowada 2017). Moreover, Burton calls for a more empirical way to evaluate public participation processes, instead of relying on the belief that public participation processes are beneficial. After all, every public participation process is different and it cannot be guaranteed that they all yield the same benefits. Therefore, a framework on how to assess public participation could increase the effectiveness of public participation processes worldwide. Currently, the knowledge gap on how to evaluate public participation is believed to prevent it from being more effective and applicable worldwide (Burton 2009). There is a call for a set of criteria to evaluate public participation processes (Rowe & Frewer 2000; Burton 2009). For example, Burton (2009) states the necessity of further research on this topic, especially suggesting to combine methods in the study of impact of public participation processes. Therefore, the purpose of this thesis is to enhance the impact of public participation by examining how such processes can be evaluated in the context of urban forestry.

Given the current lack of consistent methods for assessing participation outcomes, **this study aims to develop a set of guidelines for evaluating public participation processes.** To guide the study, the following Research Question (RQ) has been formulated:

What study designs, frameworks or indicators can be used to evaluate the effectiveness of public participation processes in urban forestry governance?

The RQ is divided into three sub questions:

- Is there a distinction in the focus or content of qualitative and quantitative study designs when evaluating public participation processes?

- What indicators of effective public participation processes can be identified based on the content and recommendations of the reviewed literature?

- What theoretical or conceptual frameworks are used in the literature to evaluate or guide public participation processes in urban forestry governance?

2. Theoretical framework

2.1 Public Participation

Public Participation (PP) is the involvement of the public in e.g. the management processes. This has also been denoted as a governance process (Jansson & Randrup 2020). In this case, in the governance of urban forestry. Public participation interventions can be conceptualized as a spectrum or continuum – as Arnouts et al. (2012) call it – from no participation to full control by the public. This conceptualisation of public participation was first described in 1969, with Arnstein's Ladder of citizens participation (Arnstein 1969). Arnstein uses a ladder with 8 rungs to show the different levels of public participation, from manipulation at the bottom rung to citizen control at the upper one (fig. 1). The ladder is subdivided into three categories: non-participation, tokenism and citizen power. The first category is clear: participants are not actually participating in any way, but just influenced by those in power. In the second category, tokenism, participants are informed and have a voice that is heard. But participants still have no power to assure their voice also gets converted into policy. In the last category, this changes. The three rungs that make up citizen power are partnership, delegated power and citizen control. The first is about the power to negotiate with those in power, and the latter two are about partial or complete power to make decisions.

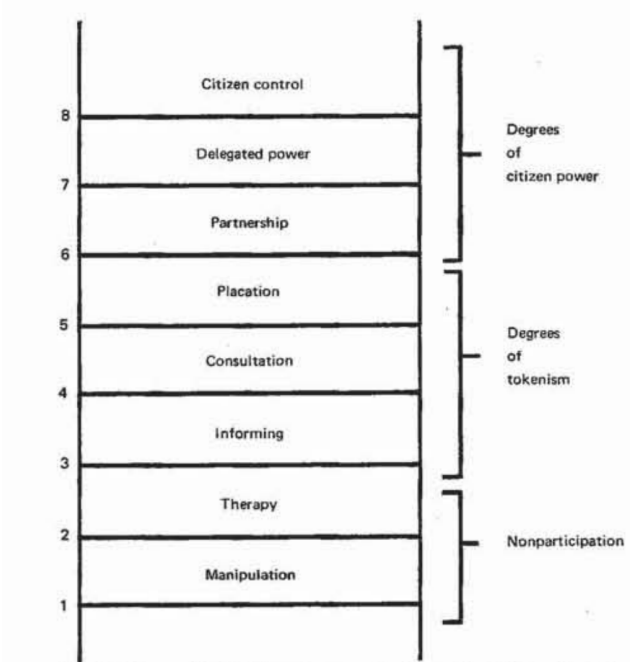

Figure 1. Eight Rungs on a Ladder of Citizen Participation. Note: a visualization of the different levels of public participation. Reprinted from "A ladder of citizens

Arnouts et al. (2012) uses a similar approach, but with governance divided into hierarchical governance, closed and open co-governance and self-governance. This is based on Kooiman (2003), who introduced hierarchical governance, co-governance and self-governance. Arnouts et al. (2012) split co-governance into two, arguing that there is a need for narrower definitions of co-governance, since there are many ways a government and citizens can collaborate within co-governance. They state this is demonstrated by Kooiman (2003), as he presents many different examples of co-governance. Hierarchical governance is the lowest amount of participation: there is no participation, decisions are made top-down and must be obeyed. Then, co-governance is divided into two: closed and open. The difference between the two is that closed co-governance is described as "restricted, structured and fixed", while open co-governance is "flexible and autonomous", highlighting the importance of a network and the presence of multiple different actors and stakeholders, working together with governmental institutions (2012:44) Then lastly, there is self-governance. This is the most autonomous version of governance and is characterized by non-governmental actors making their own decisions. They have the power to distribute means as they wish. This does not mean the governmental actors have no power, as they often still provide resources (Arnouts et al. 2012). This means a governmental actor can still intervene if needed, but will not do so unless set boundaries are crossed.

Arnstein's approach differs from Arnouts in the sense that Arnstein's ladder presents a clear hierarchy among participation approaches. It has been critiqued for portraying the different levels of participation processes as differences in power, making it seem as though the higher on the ladder, the better the participation process is (Tritter & McCallum 2006). In practice, each form of participation, from none to self-governance, has its use. As Tritter and McCallum (2006) argue, the ladder ignores differences in knowledge and expertise. While that is exactly what makes participation so useful. Arnouts' paper shows a horizontal (instead of vertical) relation between the types of participation. This is shown in the scale presented by Arnouts et al. (2012) (fig. 2). This horizontality shows that one type of participation is not better than the other, they are just different. This is more appropriate to evaluate a participation process, because a neutral view on the level of participation remains. That is why Arnouts' theory of public participation was used to assess what type of public participation were used in the screened studies.

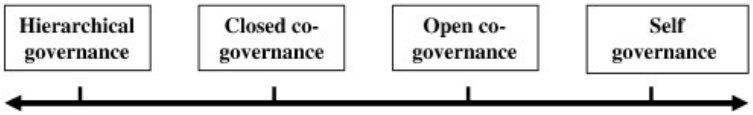

Figure 2. Different types of governance according to Arnouts et al. (2012). Reprinted from "Analysing governance modes and shifts — Governance arrangements in Dutch nature policy", Volume 16, Rikke Arnouts; Mariëlle van der Zouwen; Bas Arts, Page 45, Copyright 2012, with permission from Elsevier.

2.2 Nature Based Thinking

Nature Based Thinking (NBT) is a concept proposed by Randrup et al. (2020). It is meant to be an approach to understand and develop Nature Based Solutions (NBS), but differs from it in inclusivity. NBT recognises the intrinsic value of nature and allows for more inclusive ways of thinking about and relating to nature, considering intrinsic values of nature itself, cultural values and community values. Doing so, it distances itself from seeing nature as a source of solutions and allowing for nature to be naturalistic – or wild. NBT consists of three dimensions: the natural dimension, the organizational dimension and the community dimension. These dimensions form a triangle, with nexuses in between (fig. 3). There is a Community-Governance nexus, an Ecological-Governance nexus and a Community-Ecological nexus.

The Community-Governance nexus is especially relevant in this thesis and was used to assess the relation between the authority and other stakeholders in the studies. NBT highlights the importance of including local citizens in governance processes, so it's used to distinguish between local citizens and other members of the community. Furthermore, the governance dimension can also have different members. In this thesis, the governance dimension is determined by the organisers of public participation processes. This can be the local government (e.g. municipalities) or a higher government (e.g. national). Other organisers can also fill the governance dimension, such as NGO's.

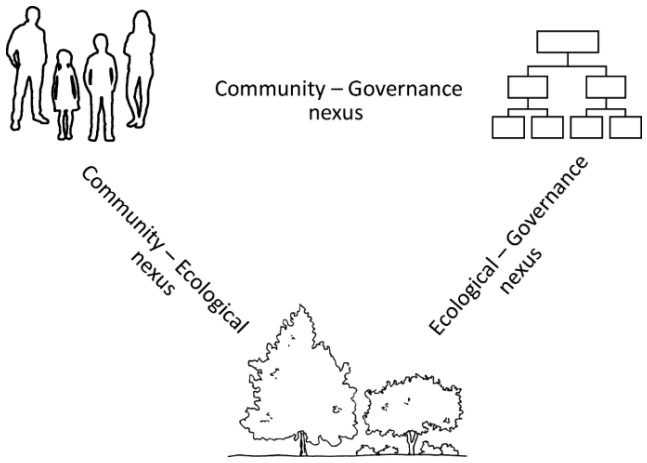

Figure 3. Three NBT dimensions and nexuses between them (Randrup et al. 2020). By Randrup, T.B., Buijs, A., Konijnendijk, C.C. et al., copyright under CC-BY 4.0. No changes were made, adapted from https://link.springer.com/article/10.1007/s11252-020-00964-w

2.3 Sense of place

Masterson et al. (2017:2) quotes Tuan (1977) to explain sense of place (SoP): "the meanings and attachment to a setting held by an individual or group". They argue that sense of place can be subdivided into two: place attachment and place meaning. Place attachment then can be divided into place dependence and place identity, although they are sometimes combined into one concept. Place dependence is the connection with a place and the ability of that place to satisfy important needs. Place identity is whether someone feels as though a place reflects who they are. Place meaning is what a place is to someone, which can be very objective and descriptive, or symbolic. Masterson et al. (2017) give examples of both: a descriptive place meaning can be warm or polluted, while a symbolic place meaning can be home or escape. They also mention a third way of interpreting place meaning, which is place character, in which the setting takes on a characteristic, for example a wilderness.

Sense of place will be used to analyse whether evaluations of public participation processes take into account the connection between the participants and the spaces they work in or with.

2.4 Effectiveness

The Oxford Dictionary (2025) defines effectiveness as the following:

> "the fact of producing the result that is wanted or intended; the fact of producing a successful result"

In public participation, effectiveness can have several meanings, as it can refer to process quality (inclusiveness, trust, transparency, etc.) or outcome quality (good decision-making, participant satisfaction, etc.). Burton (2009:265) mentions the distinction between "developmental benefits" and "instrumental benefits", with developmental benefits being about process quality and instrumental benefits regarding outcome quality. When it comes to evaluation effectiveness, it was found that most literature used process quality rather than outcome quality (Rowe & Frewer 2000). Some examples of the different types of effectiveness are shown in figure 4.

Often, effectiveness is not one measure. It is a combination of factors that, collectively, determine whether something is producing the intended result. A way to evaluate the effectiveness of a process is to elect indicators that are evident of a successful process (Rowe & Frewer 2000; Burton 2009). Effectiveness may differ, depending on who is judging. Organisers might frame effectiveness as a holistic, inclusive policy as a result of a participation process, while participants might frame effectiveness as a meaningful or educational experience. Recognizing the complexity of the definition of effectiveness, this thesis adopts both process quality as outcome quality as being effective.

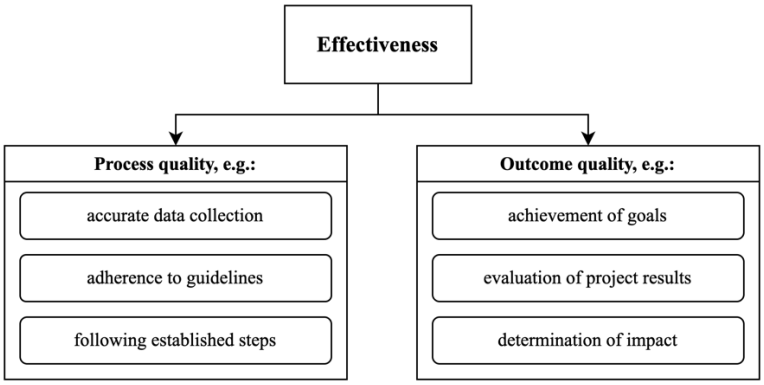

Figure 4. Conceptualisation of effectiveness with examples of process quality and outcome quality.

3. Methods

3.1 Literature search

To study the use of evaluation in public participation processes, a literature search was performed. Based on English literature in the database Scopus, the following query was used:
(stakeholder OR citizen OR user) AND (participation OR collaboration OR co-creation OR co-management) AND (evaluation OR assessment OR effectiveness) AND ("green space" OR park OR "nature-based solution" OR nbs) AND (governance OR planning OR management) AND (urban OR city).

This search was performed on 14/04/2025.

3.2 Literature screening

For the screening process, Rayyan was used for the detection of duplicates and to select relevant articles. This is online application designed to detect duplicates and streamline the literature screening process (Ouzzani et al. 2016).

The results from the query were screened for eligibility in two rounds:

First eligibility: In the first eligibility round, a screening of all 104 papers was performed, in random order, with inclusion based on judgement of highest potential relevance, as determined by title, abstract and keywords, with a maximum of roughly 30 articles, due to time restrictions. Relevant papers were those reporting on studies of any design, that studied public participation, that involved urban forestry, study of the entire participation process (e.g. not just stakeholder mapping) and that study the effectiveness of public participation.

Second eligibility: A full text eligibility check was conducted based on reporting of the methods and outcomes under study. Articles not reporting methods in sufficient detail to make a judgement, or using irrelevant outcomes were excluded and summarized in a table with reason for exclusion.

3.3 Data extraction

The data extracted were compiled into a table structured as follows:

Article metadata: Author, title, year of publication, journal, country/region, DOI.

Article contents: Study context, research question, study design, outcome measure, categories of participants: higher government; lower government; users; general citizens; businesses; nature, what framework of participation, what level of participation & SoP consideration.

3.4 Analysis

Each article's metadata and contents were analysed. Article's country of origin and year of publication were gathered to give insight in the origin of the articles analysed. The theoretical framework was used for analysing the articles contents.

Public Participation: What type of collaboration is evaluated? This is then placed on the public participation scale by Arnouts et al. (2012) (fig. 2) and rated 1-4, 1 being hierarchical governance and 4 being self-governance. It is also analysed what type of framework is used for this, if any.

Nature Based Thinking: Who are the involved stakeholders? Who takes the role of organization: higher or lower government? Who make up the community: users, general citizens and/or businesses? And is nature considered a stakeholder by itself?

Sense of place: Is sense of place considered? If so, to what extent? Sense of place can be directly mentioned as an evaluation criterion, not explicitly mentioned but used to some extent, or not at all. This is then rated on 1-3, with 1 being not mentioned and 4 being directly mentioned.

Both research papers and reviews are analysed. All are read fully, but data extraction and analysis only take place in certain parts of the papers. For research papers, the methodology is analysed to understand how public participation is evaluated in these studies. The discussion and conclusion are analysed for potential recommendations for further research and important indicators of effective participation processes. For reviews, the results and recommendations are analysed to find the most effective ways of evaluation and most important indicators for effective participation according to the articles considered.

4. Results

4.1 Screening results

This query yielded 116 initial articles, of which only articles published in 2010 or later were selected, which excluded 12 articles. A delimitation from 2010 – 2025 was used to indirectly test the knowledge gap on how to evaluate public participation, as described by Burton (2009).

Figure 5 shows the screening process. 104 articles were screened in the first eligibility round. 72 were excluded in the first screening. The reasons for exclusion are listed in table 1. Another 11 were excluded in the second eligibility round, which lead to a total of 83 articles being excluded, leaving 17 final articles to be analysed. A list of the analysed articles is found in Appendix 1.

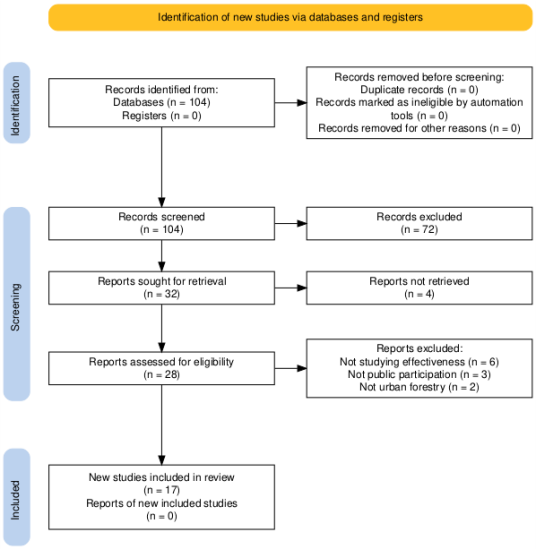

Figure 5. Diagram of article screening, using the PRISMA diagram by Haddaway et al. (2022).

Listed below are the reasons for exclusion with examples of why some results from the search query were excluded in either the first (table 1) or second (table 2) eligibility round:

Not studying public participation (24 excluded): articles showed up mainly because studying public participation was, for example, recommended in the abstract, but the article itself was not about public participation. These articles did not study public participation, but mainly broader topics like ways to make urban densification more sustainable. Part of their findings or recommendations then

were that public participation was beneficial, and thus it was not filtered out by the search query.

Not studying urban forests (25 excluded): Articles studied participation in something other than urban forests, for example about coastal nature reserves.

Not studying entire participation process (6 excluded): These articles studied specific methods or components of public participation, instead of evaluating public participation as a whole. An example of this is a study conducted on the use of virtual reality to survey residents. Such results were excluded to analyse the entire public participation process rather than segments of it.

Not studying effectiveness (28 excluded): These articles did not study the effectiveness of public participation, but for example about residents' perception of a certain park or intervention. Some other articles resulted from the search query because they discussed the potential or the benefits of public participation. However, they did not study the evaluation of public participation processes and were thus excluded.

Table 1. Reasons for exclusions and number of articles excluded in first eligibility round.

Reason for exclusion	Number of exclusions
Not studying public participation	21
Not studying urban forestry	23
Not studying entire public participation process	6
Not studying effectiveness of public participation	22
Total	*72*

Table 2. Reasons for exclusions and number of articles excluded in second eligibility round.

Reason for exclusion	Number of exclusions
Not studying public participation	3
Not studying urban forestry	2
Not studying effectiveness of public participation	6
Total	*11*

4.2 Data distribution

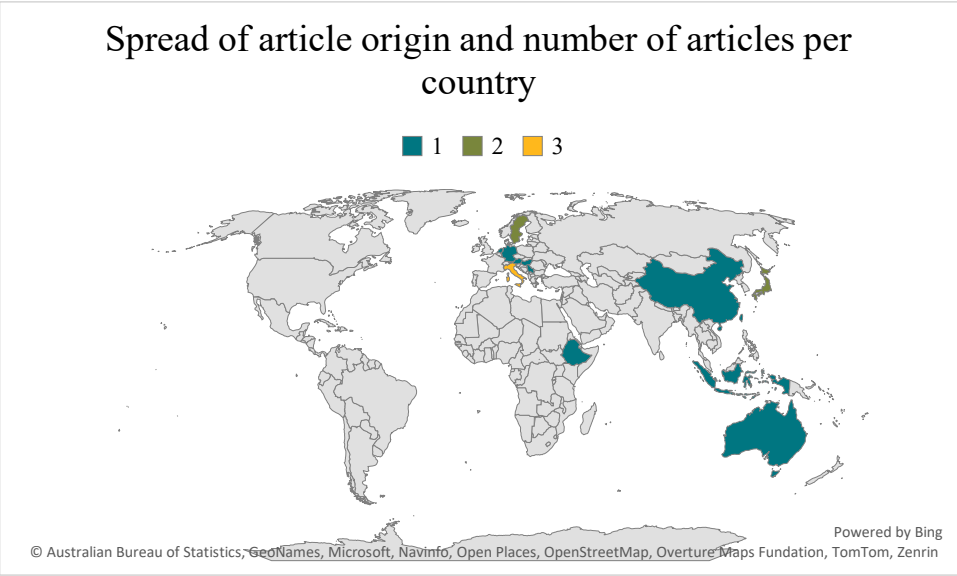

Figure 6. Number of articles published per country of origin, from final selected articles.

As can be seen in figure 6, the results from the search show a tendency towards the Global North. Developed countries in Europe produced the majority of the final selected articles. There is a noticeable lack of relevant literature found from North America

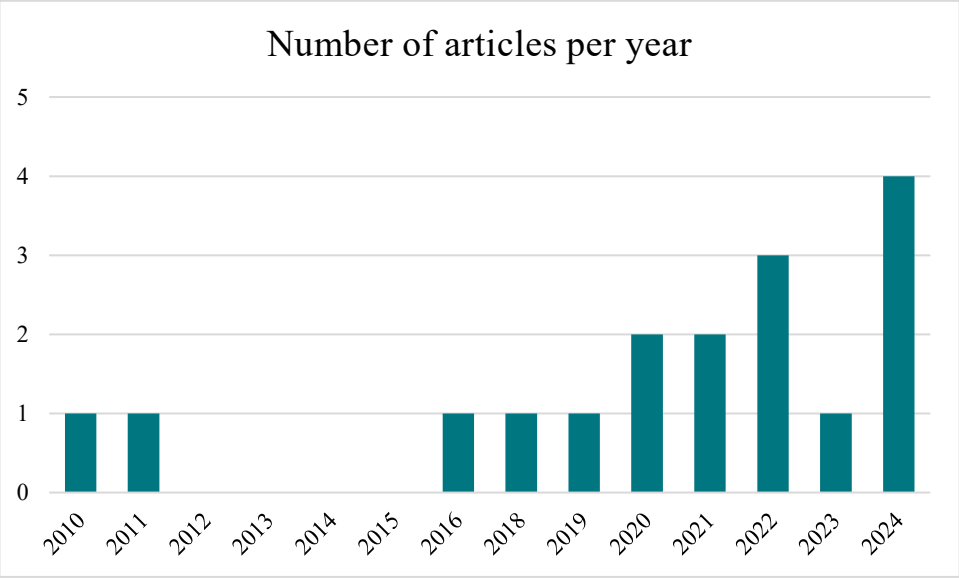

Figure 7. Number of articles per year of publication, from final selected articles.

In figure 7, the number of articles that have been published per year shows a possible increase in focus on the topic of evaluating public participation processes in the last 5 years. Also note the gap from 2012 to 2015

4.3 Analysis results

4.3.1 Study designs

Figures 8 through 11 show 16 studies instead of 17, because one of the 17 studies was a review that did not focus on one individual participation process. Thus, it cannot be analysed for who is the organizing party, community party or what governance type is used. However, it is still used for the determination for important indicators.

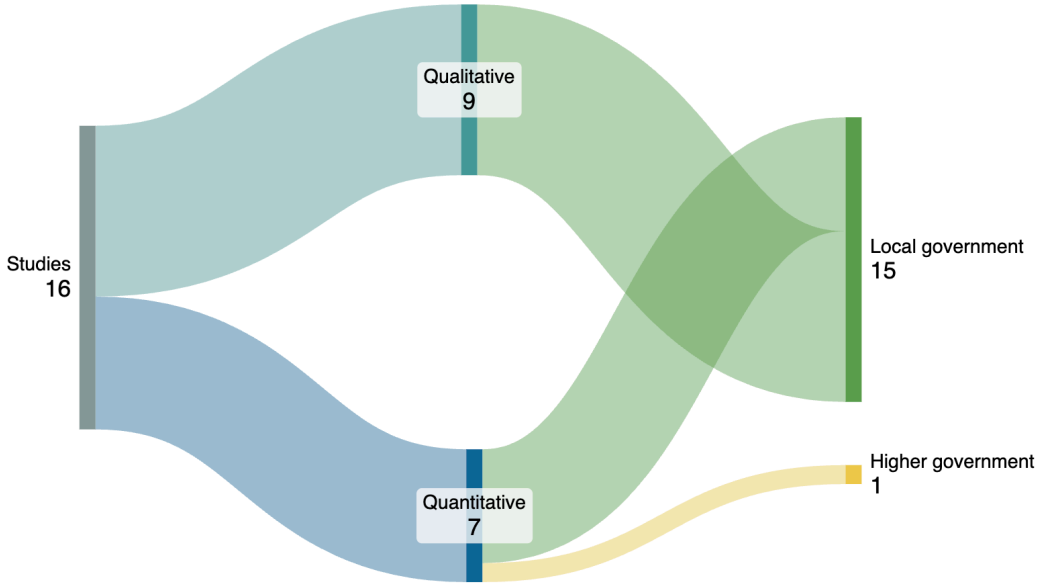

Figure 8. Distribution of study designs and type of organisers. Diagram created using SankeyMATIC.

Figure 8 shows the distribution of studies and the type of organisers per study suggests a strong preference for the lower government being the organiser in public participation processes in the analysed articles. It seems there is a clear distinction between higher governments and lower governments filling the role of the organizing party.

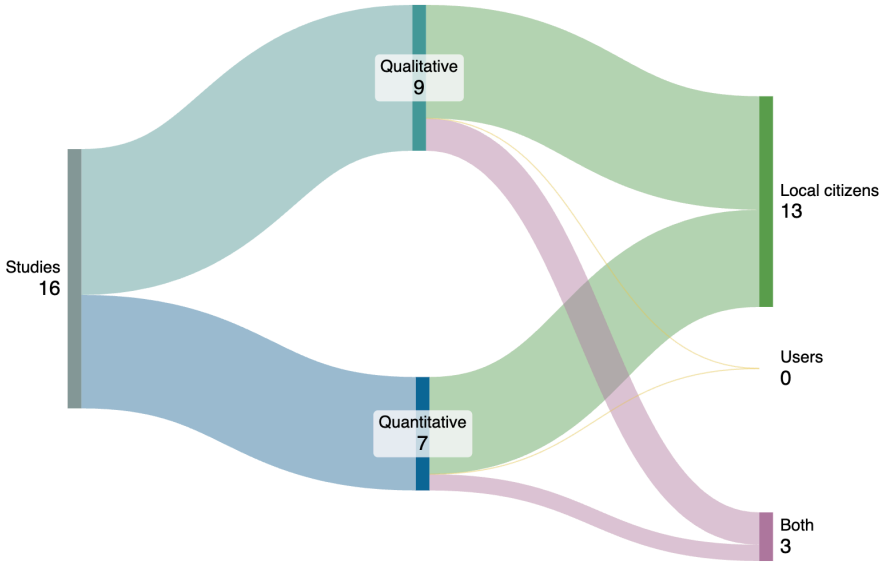

Figure 9. Distribution of study designs and types of communities. Diagram created using SankeyMATIC.

Figure 9 shows the distribution of studies and who makes up the community part of the public participation process suggests local citizens are favoured over users. The distinction here between users and local citizens is that local citizens are those who live in the vicinity but not necessarily make use of what is being managed or designed. Users, as the name suggests, are those who make use of the actual space.

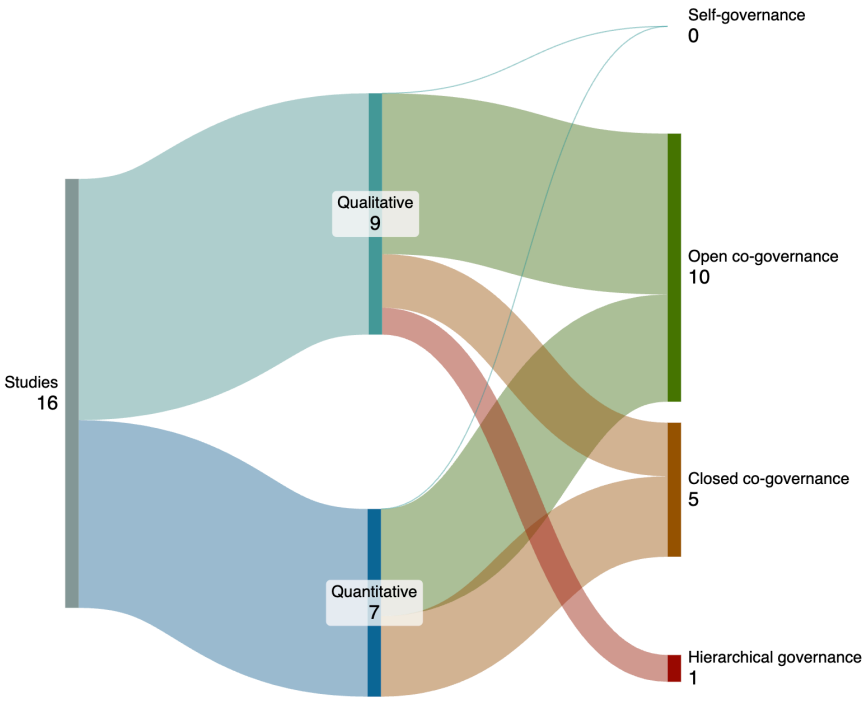

Figure 10. Distribution of study designs and type of governance. Diagram created using SankeyMATIC.

In figure 10, the distribution of studies and type of participation suggests open co-governance, the third type of participation according to Arnouts' scale, is most common. Closed co-governance is also represented, and one study's evaluation showed there was little to no co-governance, making it hierarchical. No studies have evaluated a self-governance process.

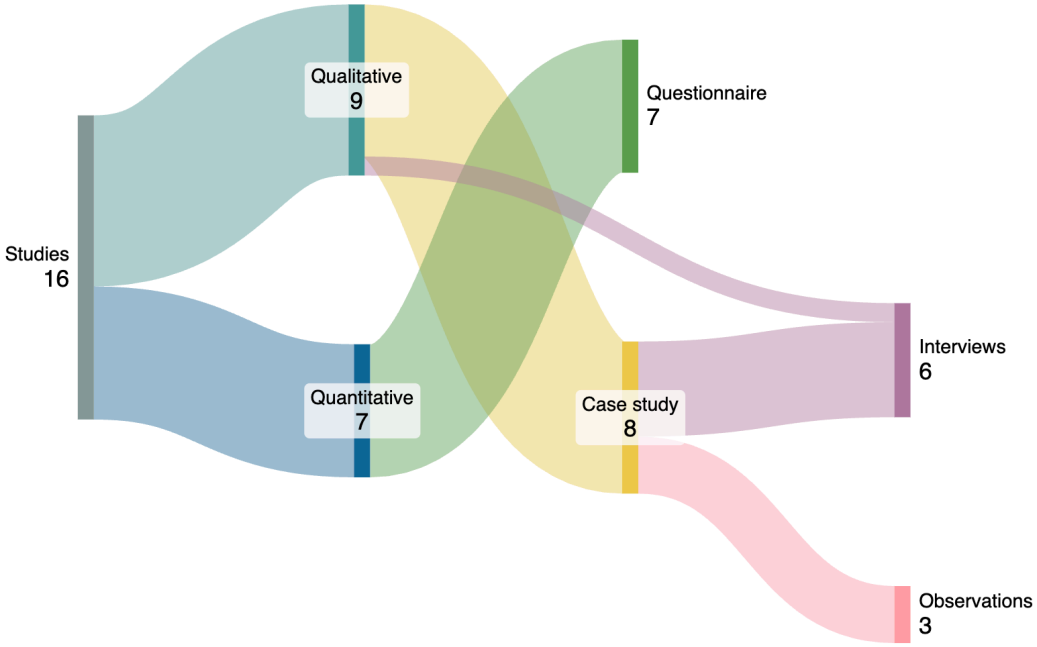

Figure 11. Distribution of study designs and method of measurement. Diagram created using SankeyMATIC.

The distribution in figure 11 shows that when evaluating public participation processes, qualitative studies prefer using case studies with mostly interviews as data source. Some case studies were observational. From the analysed studies, all quantitative designs used questionnaires. Often, they used Likert scales or similar to gather numerical data.

4.3.2 Indicators for effective participation processes.

From the analysis, 6 important indicators of public participation were identified. These are presented in table 3.

Table 3. Identified indicators of effective public participation.

Indicator	Number of mentions	Sources
Common and aligned goals for all parties involved.	11	Sturiale et al. 2023, Cilliers et al. 2011, Ugolini et al. 2018, Wang and Chan 2020, Wickenberg et al. 2022, Fors et al. 2021, Shu-Chun 2010, Putri Kamila and Kustiwan 2024, McEvoy et al. 2024, Pröbstl-Haider et al. 2024, Yamaki 2016
Effective communication	7	Sturiale et al. 2023, Cilliers et al. 2011, Ugolini et al. 2018, Mitić-Radulović and Lalović 2021, Wickenberg et al. 2022, Shu-Chun 2010, McEvoy et al. 2024
Having citizen representatives/key stakeholders	7	Zong et al. 2024, Nzimande and Fabula 2020, Ugolini et al. 2018, Mitić-Radulović and Lalović 2021, Wickenberg et al. 2022, Shu-Chun 2010, Putri Kamila and Kustiwan 2024
Learning while doing and flexibility	5	Cilliers et al. 2011, Rödl and Arlati 2022, Wickenberg et al. 2022, McEvoy et al. 2024, Yamaki 2016
Focussing on publicity and awareness	4	Sturiale et al. 2022, Sturiale et al 2023, Zong et al. 2024, Putri Kamila and Kustiwan 2024
Building relationships and mutual trust	3	Cilliers et al. 2011, Fors et al. 2021, Yamaki 2016

As table 3 shows, having aligned goals was mentioned in most analysed papers, while effective communication and having citizen representatives (These are key figures in the group of participants, that act as a link between the organisers and the participants. Another way for the citizens to be presented was to be part of a citizen organisation, in which case the organisation was the citizen representative) were also quite prevalent. In contrast, relational goals like building relationships

and showing proactivity from both sides were less represented. This suggests a potential gap between relational and strategic considerations in the evaluations of participation processes.

Some articles applied evaluation methods – such as participant surveys, interviews, or observational assessments – to examine process outcomes like inclusiveness, impact on decision-making, or long-term engagement. However, such evaluations were inconsistent across the literature. Therefore, this study identifies and synthesizes recurring indicators from the literature (e.g., shared goals, trust, learning) that can be used as a basis for evaluating public participation more systematically in future practice or research. These indicators are presented as questions for easier evaluation in table 4.

4.3.3 Frameworks for public participation

Five out of the 17 analysed studies used an explicit framework to conceptualize and/or evaluate the level of public participation. These frameworks varied in terms of structure, depth, and the extent to which they suggested indicators or evaluation methods. Below is a brief description of each:

CLEVER Cities Framework (used in two studies)

The CLEVER Cities framework is based on a collaborative governance model developed by Bradley et al. (2022). It focuses on the dynamic nature of governance relationships, describing a continuum from hierarchical to network-based systems. The framework highlights that components such as communication, stakeholder relationships, and information flows adapt over time. Key indicators of effective participation include stakeholder mapping, trust-building, and inclusive collaboration. One notable aspect is the use of community research, in which local community members are engaged in designing, collecting, and analysing data. This method empowers participants while producing richer, context-sensitive insights. However, the framework does not prescribe specific measurement tools for evaluation.

International Association for Public Participation (IAP2) Spectrum (used in two studies)

The IAP2 Spectrum is a widely recognized tool in participation practice. It categorizes public participation across five levels: inform, consult, involve, collaborate, and empower. Although the IAP2 also presents seven core values for effective public participation – such as transparency, inclusion, and meaningful influence – these are not presented as measurable indicators but rather guiding

principles. The IAP2 Spectrum itself is mainly descriptive, and no explicit evaluation methods or tools are recommended.

Arnstein's Ladder of Citizen Participation (used in one study)

Arnstein's Ladder, detailed in Section 2.1, conceptualizes participation as an eight-rung hierarchy ranging from manipulation to citizen control. Although foundational in participation theory, the ladder is inherently normative, ranking participation types from least to most desirable. Arnstein does not offer concrete indicators or evaluation methods but rather presents a critical framework to assess power dynamics within participatory processes.

Other Implicit Frameworks

Several studies that did not cite a formal framework still employed terminology such as informing, consulting, or collaborating. These often were like versions of Arnstein's ladder or the IAP2 spectrum but with fewer steps (usually around five). However, these approaches were typically descriptive rather than evaluative, and they did not include defined indicators or methods for assessing effectiveness.

Overall, the results show a lack of consistent use of robust evaluation frameworks. While some frameworks, like CLEVER Cities, suggest potential indicators or values, none of them were applied systematically across multiple studies.

4.3.4 Consideration of sense of place

SoP was only mentioned in 3 out of 17 papers. This suggests most studies do not consider SoP, place attachment or equivalents in the evaluation of public participation processes.

4.3.5 Considering nature as a stakeholder

There was no mention of nature as a separate stakeholder in any of the studies.

5. Discussion

5.1 Findings

This study had the following RQ: What study designs, frameworks or indicators can be used to evaluate public participation processes in urban forestry governance? Below, the different results are discussed in order of the sub questions presented in the introduction.

5.1.1 Study designs

There is no clear distinction between what qualitative and quantitative study designs research. Almost all articles studied a participation process involving local citizens and local government. Neither was a difference found in terms of the type of participation: generally, open co-governance was the most studied type of participation. Hierarchical governance was not studied much: it was only identified in one study, where the participation process failed. Lastly, different methods used did differ between study designs: qualitative study designs used interviews and observations, while quantitative studies exclusively used surveys. This makes sense, as surveys are much easier to use in quantitative studies, for example using Likert scales for answers.

The recommendation based on these results is that a study design evaluating public participation processes should involve both qualitative and quantitative elements. In the next paragraph and in table 4, it can be seen that some segments of participation are better studied qualitatively, while others are more suited for quantitative study.

5.1.2 Indicators

The results show that most studies identified process-related indicators of effective public participation, like having aligned goals, communicating effectively and being flexible. This shows a tendency to view effectiveness as process effectiveness, instead of outcome effectiveness. To assess the validity of the found indicators, they will be compared to what other literature on those specific topics have found.

The importance of aligned goals, the most mentioned indicator of effective public participation, is affirmed by Elmendorf & Luloff (2001). An understanding of differences among all parties decreases the chance of conflict, fosters mutual trust and creates a mutual vision. This mutual vision nicely aligns with what was found

by Cilliers et al. (2011), who studied a case of participation that failed to go beyond a informing level because of misaligned goals between participants and organisers. Furthermore, it is also important that goals align within parties, such as that the citizens have an agreed upon view of their goals (Wolf & Kruger 2010). Using key informant focus groups and interviews, it can be tested whether everyone's goals are aligned while also sparking discussion (Elmendorf & Luloff 2001). Using surveys, it can quickly and quantitatively be determined whether goals are aligned (Wolf & Kruger 2010).

Effective communication was determined by Jabbour & Balsillie (2003) and Elmendorf & Lulloff (2001) to be a very important indicator for effective public participation. Effective communication goes both ways (Elmendorf & Luloff 2001; Jabbour & Balsillie 2003) and makes sure decisions are made based on everyone's input. This improves decision-making, decreases conflict and empowers the participants, given them a sense of ownership (Elmendorf & Luloff 2001). Both qualitative interviews and quantitative surveys can be used to test this, as done by Jabbour & Balsillie (2003).

Having citizens representatives, or a similar way to find key individuals is also presented by Elmendorf (2001) as an indicator of effective public participation processes. Having good citizen representatives ensures that information is gathered representatively and is also a way to connect to the rest of community, as was shown by Nzimande & Fabula (2020).

Learning during the participation process was identified by Jabbour & Balsillie (2003) as not only helpful, but essential to the participation process. Especially collaborative learning, where participants are encouraged to learn with each other was important. This indicator also contributes to other indicators, namely effective communication and aligned goals. Collaborative learning is important for everyone involved, because it helps reveal other perspectives and promotes discussion. It was also found to decrease conflict and improve mutual trust between parties, contributing to yet another indicator identified in this thesis. Jabbour & Balsillie (2003) tested this using surveys and interviews with participants.

Publicity is "the business of attracting the attention of the public to something/somebody; the things that are done to attract attention" as defined by the Oxford Dictionary (2025). Publicity is important for three reasons: it holds parties accountable for what they do, it educates the public about ongoing issues and shows transparency by giving the public insight into the entire participation process (Raphael & Karpowitz 2013). This improves the legitimacy of the public participation process. Furthermore is the involvement of the media important to

increase the reach and potentially attract more participants (Putri Kamila & Kustiwan 2024; Zong et al. 2024). This could improve the inclusivity and representativeness of the public participation process (Putri Kamila & Kustiwan 2024; Zong et al. 2024). Social media could be a way of greatly improving the publicity of a certain project as its reach is unmatched compared to other forms of publicity, like newspapers (Rameli 2021).

Trust, both ways, is an important indicator and one that can disturb the entire participation process if it is not present. Trust is formed through building relationships between organisers and participants. It is one of the cornerstones and it is surprising that it was not mentioned in more articles. Trust helps participants trust each other (Siddiki & Goel 2017), increase the chance of reaching agreements (Leach & Sabatier 2005) and increase the chance of participants taking action to initiate new participation processes (Resh et al. 2014). Trust can be evaluated using surveys, giving a quantitative representation of how much all parties trust each other.

An indicator that was barely mentioned in the analysed articles is inclusivity. It was mentioned by Sturiale et al. (2023), but not by the other analysed articles. This is remarkable, as inclusivity – making sure that every citizen is represented and included in the participation process – is very important to effective public participation processes (Elmendorf & Luloff 2001; Baldessari et al. 2024). It makes sure citizens feel represented and empowered, and combat the creation and persistence of social and environmental inequities (Byrne & Anders 2024). Because of this importance, it is important that future research addresses this knowledge gap so it can be included in future evaluations.

Another unexplored indicator that did not result from the analysis was sense of place. Although SoP was hypothesised to increase with the level of participation (using Arnstein's ladder) by Ellery & Ellery (2019), it is possible that instead of being an indicator of effective public participation, it is a motivator for engaging in public participation in the first place (Manzo & Perkins 2006; Meetiyagoda Lakshika et al. 2023). In practice, this means that SoP is not per se developed through public participation and cannot not be said to be an indicator of effective public participation. Place attachment (paragraph 2.3) makes people care more for their surroundings (Masterson et al. 2017), and this care translates to being more willing to participate, thus making it a motivator. This would explain why SoP was mentioned by some papers (Shu-Chun 2010; Cilliers et al. 2011; Fors et al. 2021), but was never identified as an indicator of effective public participation. Therefore, SoP is not included in table 4.

Table 4 shows the identified indicators of effective public participation processes in urban forestry. This is a combination of indicators found in the analysis and what was found comparing these to existing literature. The indicators have been formulated as questions that can be posed, and suggested methods on how to evaluate this can be found in the right column. It shows that, if all these indicators are evaluated, a combination of methods is used. Both qualitative and quantitative methods, as suggested by Burton (2009), can and should be used to assess these indicators.

Table 4. Suggested ways of measuring indicators of effective public participation.

Indicator	Question(s)	Method
Aligned goals	Are all parties aware of the other parties' goals and have all agreed on a set goal? Has everyone agreed on the type of participation?	Interviews; surveys; focus groups
Effective communication	Do all parties communicate clearly, continuously and directly?	Participant surveys; interviews
Citizen representatives	Have citizens representatives been appointed or have citizens been united in a citizen association?	Observation; document analysis; survey
Learning by doing and flexibility	Are all parties willing to learn by doing and be flexible?	Interviews; observation; survey
Publicity and awareness	Are efforts taken to publicize the participation process, with the aim of increasing the public's awareness?	Document analysis; interviews
Building trust	Is there a mutual trust between all parties?	Survey
Inclusivity	Are efforts made to include harder-to-reach/minority groups? Are the participants representative of the local citizens?	Document analysis; survey; interviews

5.1.3 Frameworks

The results also show a lack of consistent use of certain frameworks to evaluate public participation, showing that after 2010 not much has changed in terms of a standardised way to evaluate. Although there is no obvious choice of framework, most of them used an approach similar to Arnstein's ladder of participation, where they distinguish between informing, consulting and delegating. No recommendations for the use of frameworks can be given based on the analysed articles. However, it is important to define what type of participation is being evaluated, according to Cilliers et al. (2011). A simple framework to use is Arnouts' scale that is presented in the theoretical framework.

5.2 Limitations

To make this literature review the appropriate size for a 15 ECTS Bachelor's thesis, a few compromises have been made in the selection of articles. Using Rayyan, after the first screening round, around 20 papers were selected, around 40 were excluded and around 40 were still undecided. These were undecided because I was unsure whether they were completely relevant to the topic. Because I had set a limit of roughly 30 papers to analyse (given the time limit), I chose to accept what were, in my opinion, the most relevant papers out of the 40 undecided ones until I reached my 30 papers. This was done without a proper methodology or clear inclusion criteria. After realizing this mistake, I went through all 72 excluded papers and reassessed. This resulted in one more included paper, bringing the total included ones to 31. It also resulted in a list of inclusion criteria, and how many papers were excluded because they did not meet these criteria. These clear inclusion criteria should have been formed beforehand, to make the selection process as objective as possible. It is likely that this lack of objectivity has influenced the results of this thesis in some way, since I can never be sure why exactly some papers were deemed relevant by me and others were not. It is also very possible that I missed some articles that should have been included according to the (later defined) inclusion criteria, but wasn't because I hit the 30-article threshold. In coordination with my supervisor, I have decided to not reassess all articles, for time's sake. I have learned from this mistake and will not make the same one in future research. While the initial screening was partly subjective, the final set of 17 papers was re-evaluated based on clearly defined inclusion criteria to ensure consistency.

Another limitation is that the search string used in Scopus did not feature the term Urban Forestry. This is an oversight that might have caused the query to exclude relevant articles that mentioned urban forestry specifically.

Another notable limitation are the gaps identified in the results, namely the absence of relevant articles from North America and the absence of relevant articles in the period between 2011 and 2016.
Firstly, the absence of analysed articles from North America could be caused by the use of different terminology, causing the search query to exclude articles that would have been relevant. Another explanation could be that a lot of relevant evaluations of public participation processes could be found in grey literature, like government publications, policy documents and informal communications. These are often harder or not all findable in a literature review (Adams et al. 2017). These types of grey literature are very practical examples of evaluations and could deliver valuable insights into trends in the evaluation of public participation processes. A lack thereof – and therefore a potential overrepresentation of just academic evaluations – may have influenced the results of this review. More extensive further research could attempt to close this emerged gap by also considering certain types of grey literature.
Secondly, the apparent lack of relevant articles between 2011 and 2016 could either be explained by a lack of research in general on this topic, or because relevant articles from that time were wrongfully excluded from this review. It could be worthwhile to investigate this further. This would be to determine whether research on evaluations of public participation processes has actually increased since roughly 2020, or whether there are also relevant articles from between 2011 and 2016.

5.3 Practical relevance

Municipal planners or anyone involved in the organisation or evaluation of public participation processes in urban forestry can use the indicators presented in table 4. It can be used for evaluation during or after the participation process, or as a guideline for important components when designing or initiating a participation process. These indicators alone are not sufficient to ensure an effective participation process, but they contribute and are quite up to date. I recommend, when organising a participation process, to take these indicators and iteratively check whether they are complied with. This should be done during the design process, during the implementation of it and afterwards (if the participation process is not cyclical). It can also be used for stakeholder feedback, for example drafting a survey based on the indicators from table 4 and distributing it among involved stakeholders. Doing both increases the validity of such evaluation, as both the organiser's and the participant's view is taken into account.

5.4 Academic relevance & future research

The gap identified by Burton (2009) in the introduction has partially been filled by this study. Most relevant is that these results can be used as a starting point for other studies – either more extensive literature reviews or practical studies. In the case of a more extensive literature review, including urban forestry in search terms and being more methodological about the selection of articles could yield better results. The fact that SoP was barely mentioned in the evaluation of participation processes, highlights an opportunity to research whether SoP is relevant to effective public participation processes or not. Either it was not researched much, or it was found not to be a relevant indicator of effective public participation. The indicators could also be researched individually, for example posing the question: How does trust-building influence long term engagement in public engagement?

When it comes to practical research, researchers could apply the proposed evaluation criteria in a real-world participation process to assess their practical utility and adaptability. This could be done in a long-term, mixed methods study, to identify whether the presented indicators are actually indicative of effective participation processes. A long-term practical study could also be performed to identify any more indicators that weren't found in this research, especially to identify more relational indicators (e.g. inclusiveness). The value of a longitudinal study in this case would be that a complete participation process, from beginning to end. It can then be analysed for important indicators per stage of the participation process. Thus, the focus can lie on both process-related indicators and outcome-related indicators, painting a more complete picture. This could yield a set of guidelines that is more comprehensible and thus easier to apply in practice.

5.5 Reflection on the Evaluation Landscape

Why does this gap in evaluation research even exist? Why is participation not evaluated more often? This problem is not new: barriers to evaluating public participation process were already described over 40 years ago by Rosener (1981). Rowe & Frewer (2004) list these barriers. Firstly, there the concept of public participation is complex and can have different meanings and definitions. Secondly, no widely accepted criteria are available of when public participation fails or succeeds. Thirdly, even if there were criteria, still methods to evaluate these are lacking. And lastly, these methods need reliable measurement tools, which are also lacking still.
Without comprehensive evaluation, it becomes difficult to identify the best practices, improve existing methods, and justify the benefits of public

participation (Baldwin & Twyford 2007). Therefore, the finding of this thesis hope to respond to this gap – and thus improving and justifying existing methods – by presenting both criteria and methods.

6. Conclusion

The purpose of this thesis was to enhance the impact of public participation by examining how such processes can be evaluated in the context of urban forestry, with the aim of developing a set of guidelines for evaluating public participation processes. To guide the study, the following RQ was formulated: what study designs, indicators or frameworks can be used to evaluate the effectiveness of public participation processes in urban forestry governance? This RQ was answered by finding the answer to the following sub-questions:

Is there a distinction in the focus or content of qualitative and quantitative study designs when evaluating public participation processes?
Study designs differ across studies. Based on what is studied, they may either be qualitative or quantitative. The use of interviews, surveys and observations were all used. No clear predominant study design or recommended study design arose from the analysis.

What indicators of effective public participation processes can be identified based on the content and recommendations of the reviewed literature?
Six indicators of effective public participation processes were found to be the following: aligned goals, effective communication, having citizen representatives, learning while doing, focussing on publicity and building relationships and trust. These indicators all align with the literature on this topic.
These indicators show a preference for process-related indicators of effective participation, while relational indicators and outcome-related indicators stay behind. For example, inclusiveness was barely mentioned while most indicators focus on effectively performing the participation, despite being emphasized in the broader literature on prerequisites of effective participation processes.

What theoretical or conceptual frameworks are used in the literature to evaluate or guide public participation processes in urban forestry governance?
Frameworks were sparsely used and differed among studies. This shows a lack of systematic ways to evaluate and conceptualize participation process. No clear predominant framework was identified, but participation was mostly framed as a scale with steps from manipulation to autonomy, much like Arnstein's ladder of participation.

It must be noted that the conclusions that can be made are somewhat restricted by the limitations identified in the discussion. Some methodological troubles and the restricted time have slightly constrained this study, but the overall results remain noteworthy.

The academic implications of this thesis are that the identified indicators can be tested in practical settings, to confirm and determine any indicators that are missing or need nuancing. The results can be used in a pilot study to perform a more thorough literature review. The pertaining research gap could also be filled using a longitudinal study design, aimed at determining both process-related and outcome-related indicators of effective public participation processes. The practical implications are that the identified indicators can be used to design and evaluate participation processes, for example by municipal planners and policy makers.

Establishing more robust evaluation practices could lead to more inclusive, transparent, and impactful urban forestry governance. Eventually this could contribute to more liveable cities, and decrease the drawbacks of living in cities, both for nature and mankind.

Use of Artificial Intelligence statement

The following AI programs were used for this thesis:

- ChatGPT
- Elicit

ChatGPT was used for discussing about and determining thesis topic and scope, getting feedback on structure of chapters and suggesting structures for paragraphs
ChatGPT was not used for any writing, analysis and reviewing of papers or making decisions.
Elicit was used to search relevant literature that was used in the introduction and discussion. Elicit was not used for the analysis and reviewing of papers.
Everything in this thesis was written by me and critically reflected on by me and peers. I, Finn Stuiver, am responsible for the content, quality and academic integrity of this thesis.

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Appendix 1

Below is a list of all analysed articles, in alphabetical order.

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