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A Decision Support Model for Assessing Co-Creation: The Bee Path Project

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Abstract

This article presents a decision support model (DSM) for assessing the quality of co-creation processes and critically reflects on its applicability in the context of climate change mitigation in urban settings. While cities have become pivotal in addressing climate change, often through co-creation, tools for evaluating urban climate-related co-creation initiatives remain scarce. Rather than advocating for a tool specifically designed for this context, the article seeks to offer a universal DSM developed through a systematic literature review and empirical case studies within the framework of the COGOV Horizon project. The DSM incorporates 19 attributes across three phases of co-creation: stakeholder identification and mobilisation, the act of co-creation, and its effects. The model is tested on the Bee Path initiative of the City of Ljubljana, a successful co-creation project aimed at fostering a bee-friendly urban environment and promoting self-sufficiency. The results confirm the DSM's applicability in assessing the success of co-creation in the context of climate change policies at the city level of governance. Moreover, this tool offers a foundation model for further integration with emerging technologies to enhance decision-making and guidance for public organisations. As such, the DSM serves as a practical tool enabling public organisations to critically reflect on their roles in co-creation initiatives, identify areas for improvement, and enhance their capacity as co-creators in future urban climate policies and beyond.

Keywords

climate change; co-creation; decision support model; Ljubljana; quality assessment

1. Introduction

Climate change is a pressing global challenge with severe consequences, yet it only gained formal international recognition in the 1990s (Rasiah et al., 2018). Key milestones include the 1992 Rio Earth Summit that led to the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and the annual Conference of the Parties (COP) meetings to monitor progress (Dormido et al., 2023; Rasiah et al., 2018), the 1997 Kyoto Protocol, and the Paris Agreement, which remain central to global climate governance. The Sustainable Development Goals (SDGs) have further integrated climate action into a broader development agenda, complemented by global initiatives such as Agenda 21, the Sendai Framework, and the Addis Ababa Action Agenda (Morton et al., 2019).

Cities have emerged as key actors in addressing climate challenges, largely due to the voluntary nature of national commitments under the Paris Agreement. The latter has shifted responsibility from reluctant national governments to local authorities, positioning them as leaders in providing structured climate responses (Hofstad et al., 2023). The European Union (EU), a global leader in climate policy, has reinforced this trend by setting ambitious targets through the 2019 European Green Deal (Dormido et al., 2023). The EU has positioned cities at the forefront of implementing its green agenda—most notably through its initiative to achieve 100 climate-neutral and smart cities by 2030 (European Commission, 2021). This is unsurprising, given that cities both contribute to and are directly affected by climate change. As such, they must secure an appropriate institutional infrastructure and take concrete action towards decarbonisation and adaptation to changing climatic conditions (Hofstad et al., 2022).

In this context, cities have often resorted to co-creation as the most suitable approach for addressing climate change and achieving carbon neutrality (Lund, 2018; Van Dis et al., 2023). While not all complex public problems are inherently "wicked" and may still be addressed through traditional policymaking approaches, scholars (e.g., Sørensen & Torfing, 2022) widely agree that climate change qualifies as a wicked problem due to its lack of clear-cut causes, predefined solutions, and the conflicting social and political interests shaping potential solutions. Co-creation emerges as the only way forward, as no single actor possesses the resources, knowledge, and skills required to comprehensively address climate challenges. Instead, climate change requires innovative solutions emerging from collaborative actions and synergies among elected politicians, public managers, researchers, businesses, civil society organisations, and citizens.

While co-creation has been integral to cities' strategies to address climate change, it has not been accompanied by a vibrant and critical academic discussion about mitigating the consequences of climate change (Sørensen & Torfing, 2022). This gap has resulted in a lack of research on the topic and a deficiency of tools for assessing and reflecting on co-creation efforts within this policy area. While some methodologies and guidelines in this specific context exist, they do not directly address the quality of co-creation processes. For instance, Hunter et al. (2022) relied on Blackstock et al.'s (2007) methodology for assessing the sustainability of participatory actions to evaluate co-creation efforts at a climate change academic conference aimed at bridging science and practice. Hofstad et al. (2022) examined the implementation of three ideal co-creation strategies—the "whole of government strategy"; the "externally focused stakeholder strategy"; and the "externally focused civil society strategy"—finding the latter to be the least developed at the city level.

Since leadership practices and effective institutional design are recognised as key factors for effective co-creation strategies in climate governance (Sørensen & Torfing, 2022), a list of leadership tasks has been

identified as preconditions for successful co-creation (Hofstad et al., 2023). While this list may serve as a checklist for evaluating specific co-creation initiatives, it is limited to the actions of leadership and does not encompass the entire co-creation process. In contrast, the Life Cycle Co-Creation Process of nature-based solutions for urban climate change adaptation (DeLosRíos-White et al., 2020) specifically focuses on the co-creation process by defining five stages—CoExplore, CoDesign, CoExperiment, CoImplement, and CoManagement—and offering tools for stakeholder engagement in each stage. However, while valuable for guiding implementation, this framework is not suitable for ex-post evaluations.

Unlike other policy areas where specific frameworks for the evaluation of co-creation initiatives exist—such as energy (Sillak et al., 2021) and health (Harris et al., 2019)—no evaluation instrument has been developed for assessing climate change-related co-creation in urban settings. This raises an important question: Do we need a specific, policy area-bound instrument for evaluating the quality of co-creation? Given the significant overlap of co-creation drivers and barriers across policy areas (Vrbek & Pluchinotta, 2021), we assume that a specialised tool is not needed. Instead, this article presents a universal decision support model (DSM) for assessing the quality of co-creation initiatives, developed within the context of the COGOV Horizon project. Because the model is not tailored to a specific policy area, our goal is to critically examine and test its relevance in the context of climate change-related co-creation initiatives in urban settings, using the case of the Bee Path co-creation initiative launched by the City of Ljubljana. Thus, we also aim to critically revisit the initial assumption that a universal model will suffice for this purpose.

To achieve this, our research was guided by the following research questions:

> RQ1: What are the drivers and barriers that affect the quality of co-creation?
>
> RQ2: How can this knowledge be used to design a multi-criteria DSM for assessing the quality of the co-creation process?
>
> RQ3: Is such a universal model suitable for assessing co-creation processes, specifically in the context of climate change policy at the city level?

The primary objective and originality of this article lie in its effort to bridge theory and practice by translating existing knowledge on co-creation drivers and barriers into a practical tool aimed at supporting public organisations in becoming more effective co-creators. To achieve this objective and answer the research questions, the article is structured as follows. The next section provides a theoretical discussion of the concept of co-creation, followed by an overview of the research methodology in Section 3. Section 4 outlines the multi-criteria DSM for assessing the quality of co-creation, detailing its criteria, structure, and operationalisation for end users. Section 5 presents the results of applying the model to the Bee Path project in the City of Ljubljana. Finally, Section 6 answers the research questions, discusses the study's contribution to the literature on co-creation, and offers suggestions for future research.

2. Co-Creation: A Theoretical Perspective

In the aftermath of the 2008 economic crisis, the failure of top-down approaches to mitigate the crisis's effects exacerbated public sector challenges, undermined citizens' well-being (Selloni, 2017), and deepened

the democratic deficit (Giannone, 2015). This led to a paradigmatic shift in how public administrations perceive their roles and citizens' expectations. On one hand, public administrations encountered austerity and new crises; on the other, they faced growing demands for high-quality public services (Steen et al., 2019). Consequently, the conventional approaches of traditional public administration (TPA) and new public management (NPM) were deemed insufficient to address contemporary challenges (Torfing & Triantafillou, 2013).

The shift to new public governance (NPG; Osborne, 2010) has pushed public administrations towards becoming "arenas of co-creation" (Torfing et al., 2019), promoting collaboration among relevant and affected public and private actors to address complex, wicked problems (Torfing, 2019). This shift challenges TPA assumptions, requiring new forms of power-sharing and partnerships based on equality (Ansell & Torfing, 2021). However, this transition is not straightforward, as TPA, NPM, and NPG often coexist in practice, with the dominant approach varying by context. While co-creation aligns with NPG, successful initiatives have also been observed within TPA- and NPM-driven settings (Van Gestel et al., 2023).

Despite its growing appeal as a "magic concept" (Torfing, Sørensen, & Breimo, 2023), co-creation suffers from conceptual stretching and ambiguity, particularly in distinguishing it from related concepts like co-production, co-design, and co-governance (Jukić et al., 2019). While often used interchangeably, co-creation and co-production differ fundamentally. Co-production focuses on service-level involvement (Ostrom, 1996; Steen et al., 2019), whereas co-creation is broader. W. H. Voorberg et al. (2015, p. 1348) differentiate them based on the role of citizens: In co-production, citizens are involved in service implementation, while in co-creation, they are equally involved in co-initiation or co-design. Torfing et al. (2019, p. 802) provide a framework for distinguishing the two by participants, public value creation, and innovation. Co-production involves collaboration between service providers and users for service delivery and incremental improvements, whereas co-creation brings together diverse participants to pursue transformative innovation. Hence, Torfing et al. (2019, p. 802) define co-creation as follows:

> A process through which two or more public and private actors attempt to solve a shared problem, challenge, or task through a constructive exchange of different kinds of knowledge, resources, competences, and ideas that enhance the production of public value in terms of visions, plans, policies, strategies, regulatory frameworks, or services, either through a continuous improvement of outputs or outcomes or through innovative step-changes that transform the understanding of the problem or task at hand and lead to new ways of solving it.

Co-creation is praised for its ability to mobilise diverse societal resources to generate public value and tackle complex, wicked problems beyond the reach of traditional policy tools (Cluley & Radnor, 2021; Livingstone, 2023; Touati & Maillet, 2018). At the service level, it promotes more efficient, user-centric services of higher quality and lower cost, enhancing user satisfaction (Bovaird et al., 2015; Osborne et al., 2016; W. H. Voorberg et al., 2015). Beyond services, co-creation fosters social cohesion, active citizenship, democratic legitimacy, and stronger ownership (Bryson et al., 2002; Caitana & Moniz, 2024; Fledderus et al., 2014; Indra et al., 2024; Osborne et al., 2016; Touati & Maillet, 2018; W. H. Voorberg et al., 2015).

However, co-creation also carries risks. If misapplied or manipulated, it can undermine public value (Virtanen & Jalonen, 2024) and produce biased solutions that favour privileged groups while marginalising others (Edelmann & Virkar, 2023; Torfing et al., 2019). Instead of enhancing legitimacy, it can erode it by shifting

policy responsibilities onto citizens, blurring accountability (Virtanen & Jalonen, 2024). Moreover, it can increase complexity and costs, requiring additional planning, management, and supervision. In Central and Eastern Europe (CEE), these risks are heightened due to interest group influence, stakeholder polarisation, and public sector reluctance (Indra et al., 2024; Vrbek & Kuiper, 2022). A key challenge across all contexts is tokenistic participation, where co-creation is used as a substitute rather than a complement to representative democracy (Cilliers et al., 2024).

These challenges highlight the need for a selective application of co-creation, which is not a one-size-fits-all solution and should not be used indiscriminately (Torfing, Sørensen, & Dečman, 2023). When effective policy solutions already exist, co-creation should not be pursued for its own sake (Hofstad et al., 2023). However, public organisations often struggle to determine when co-creation is the most suitable approach (Vrbek & Jukić, 2024). In addressing complex issues like climate change, the need for co-creation becomes more evident. As a quintessential wicked problem, climate change requires inclusive, innovative solutions due to its global scale, cross-sectoral impact, and unequal consequences (Sørensen et al., 2021). Urban residents, who are disproportionately affected (Fox et al., 2022), must be engaged as equal partners in shaping urban spaces. Some scholars, like Clavin et al. (2021), call for a more critical approach to co-creation in environmental policy, acknowledging conflicts and injustices rather than solely seeking consensus. Others, like Carpenter and Horvath (2022), advocate integrating art into urban planning to foster more creative and emotionally-engaging approaches.

Even when public organisations identify appropriate co-creation opportunities, significant challenges persist. Many lack the infrastructure and expertise needed for effective implementation while facing external pressures from international bodies (e.g., the OECD and the EU) and internal demands for collaborative innovations (Torfing, Sørensen, & Breimo, 2023). However, enthusiasm and implementation alone rarely ensure success—the quality of co-creation largely depends on the capacity of public servants to support the process (Engen et al., 2021; Magnussen & Rønning, 2021). To address capacity-related limitations in co-creation, Caitana and Moniz (2024) propose management tools to shift the mindset of urban planning actors in public institutions. Steen et al. (2019) highlight the need for researchers to engage with practice as partners rather than mere subjects of study. The goal of these efforts is to extend co-creation beyond isolated projects (Van Gestel et al., 2023) and integrate it as a standard policymaking approach.

Assuming that key decisions on the adoption and organisation of co-creation as a problem-solving approach typically rest with public organisations, this article examines the development of a tool to assess co-creation quality. Designed for public servants responsible for organising and coordinating the co-creation process, this tool provides a framework for critical reflection on their actions to achieve effective co-creation. Ultimately, it seeks to enable public organisations to derive valuable lessons and identify strategies to enhance their capacity as co-creators in future initiatives.

3. Methodological Framework

This article presents a model for assessing the quality of co-creation processes developed between 2019 and 2022 within the framework of the COGOV Horizon project and critically discusses its applicability in addressing climate challenges in urban environments. For this purpose, in 2024, the model was tested in a real-life situation—the Bee Path project of the City of Ljubljana.

This multi-criteria DSM relies on three key methodological pillars (see Figure 1):

- Content analysis of Web of Science (WoS) papers referring to co-creation;
- Seven case studies (vignettes) of promising organisations practising co-creation;
- Multi-criteria decision analysis (MCDA).

The first two methods provided empirical insights that shaped the content of the model, precisely the model attributes referring to specific aspects of co-creation necessary for ensuring process quality. The third method established the hierarchical structure within which these evidence-based findings were organised and operationalised for end users.

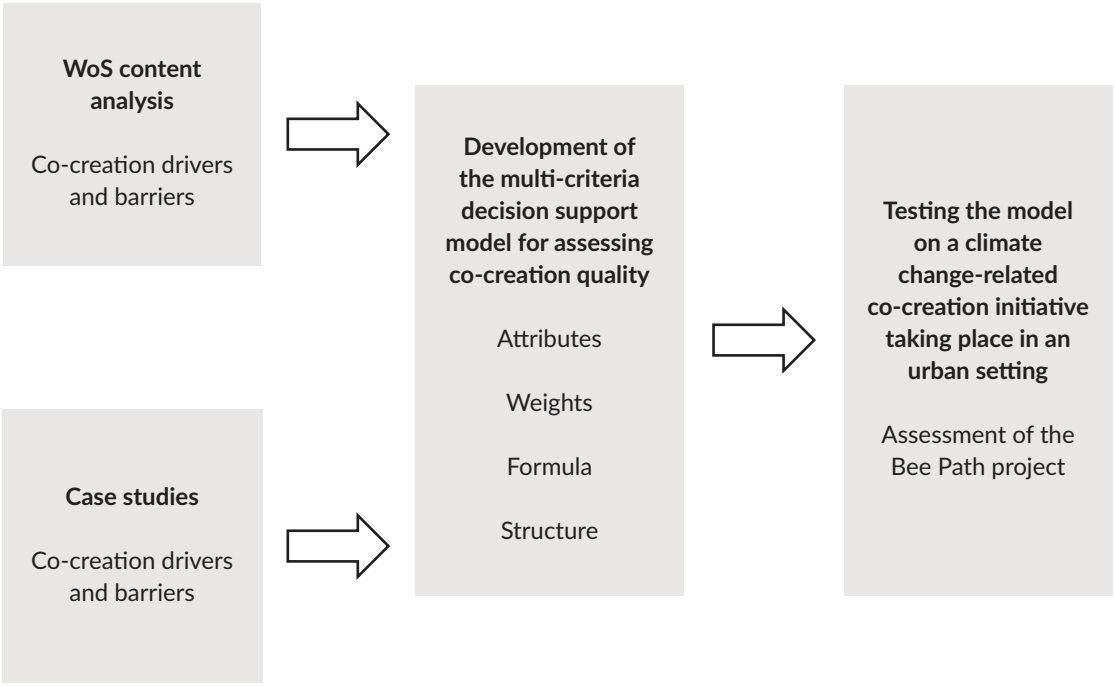

Figure 1. Methodological framework of the model development.

3.1. Systematic Literature Review

The systematic literature review was one of the methods used to define the substance of the model, specifically by identifying co-creation drivers and barriers, which served as the basis for the definition of the model attributes. We analysed 139 WoS papers, selected based on the following criteria:

- 10-year timespan (2009–2018);
- Keywords: "co-creation" or "co-production";
- Type: Article;
- WoS category: Public Administration;
- Language: English.

The search strategy was deliberately narrow, focusing only on the keywords "co-creation" and "co-production," which are often used interchangeably. While related concepts like "collaborative

governance" may offer relevant insights, our aim was to maintain conceptual clarity and avoid further conceptual stretching. This strategy yielded 155 scientific papers, providing a robust and relevant dataset for systematic analysis (see Figure 2), even without additional keywords. Following the data cleaning process (Figure 2), we identified co-creation drivers and barriers in 109 articles, which were then further analysed. More detailed information about the methodological aspects and conclusions of the systematic literature review can be found in COGOV Deliverables 7.1 and 7.3 (Jukić, Hržica, et al., 2022; Vrbek et al., 2022).

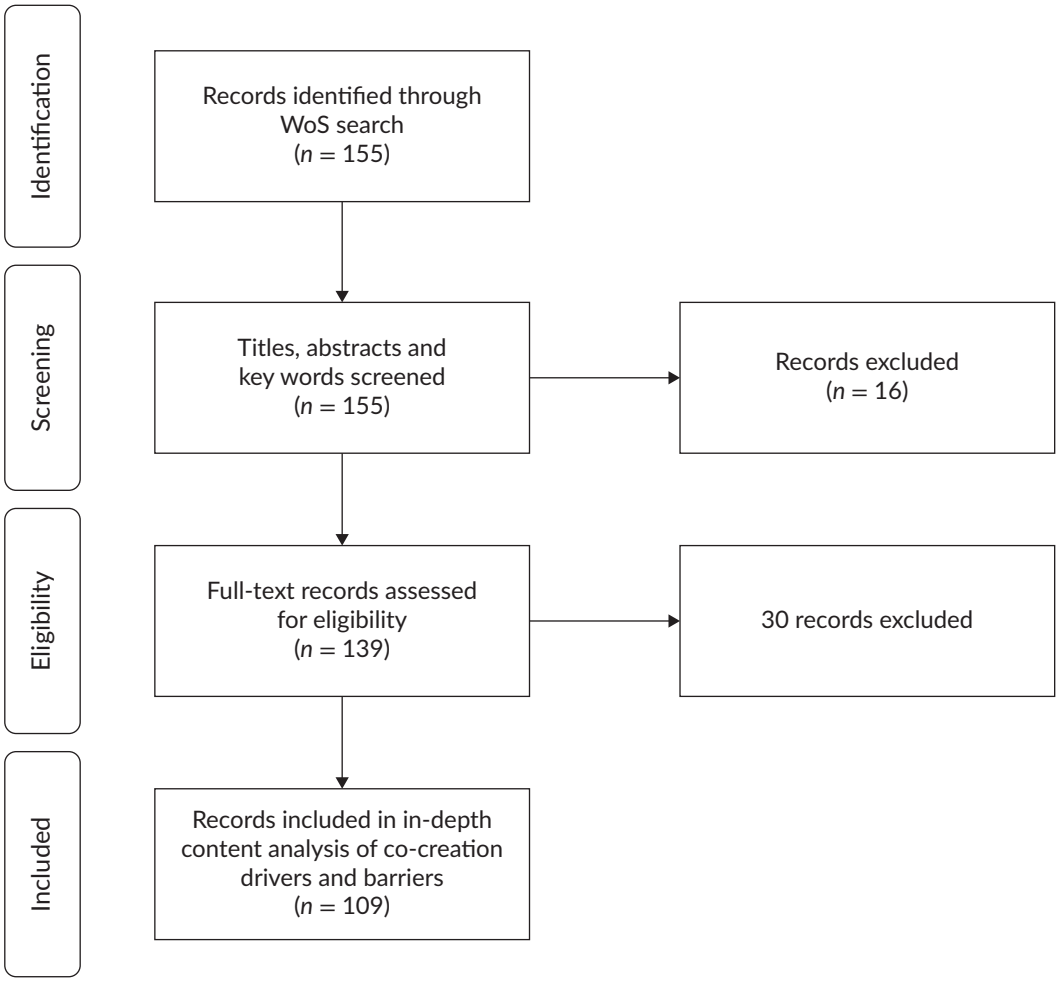

Figure 2. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram illustrating the steps of identifying relevant literature for further content analysis.

3.2. Case Studies

We validated and supplemented the findings of the systematic content analysis with co-creation drivers and barriers identified in seven case studies (see Table 1) conducted across six countries as part of Work Package 4 (WP4) of the COGOV project, specifically Task 2.1 (Torfing & Sørensen, 2022). The primary objective of WP4 was to conduct design experiments—beyond the scope of this article—by inviting project partners to nominate suitable cases at both local and central levels. Case selection followed key criteria shared across all participating organisations:

- Integration of co-creation principles into organisational strategies or vision;
- Availability of platforms (digital or physical) supporting co-creation efforts;
- Capacity for critical reflection on co-creation drivers and barriers based on experience.

The selected cases included public organisations at various governance levels and, crucially, with different levels of experience and maturity in co-creation—two in early stages, three in progress, and two relatively advanced (Torfing & Sørensen, 2022). This approach ensured that potential barriers were not overlooked due to differences in organisational maturity.

For the development of the model, we relied on internal case study reports that captured the experience of the seven public organisations. Additionally, for five of these case studies, we obtained supplementary information on specific co-creation experiences/initiatives undertaken by the organisations. These insights expanded and reinforced the list of attributes identified through the systematic literature review.

Table 1. Case studies.

Country	Project partner/Authors	Case study (Task 2.1 WP4)
France	Aix-Marseille University team	Vitrolles Municipality case
Croatia	City of Rijeka team	City of Rijeka case
UK	Cardiff University (authors: Martin Kitchener and Kim Dearing)	Torfaen County Borough Council's A Good Day initiative
UK	Northumbria University team	Newcastle City Council and Co-creation
The Netherlands	TIAS School for Business and Society (authors: Sanne Grotenbreg and Nicolette Van Gestel)	Strategic efforts of the Social Service Department of Drechtsteden to spur co-creation
Denmark	Roskilde University team	Gentofte Municipality case
Slovenia	University of Ljubljana (author: Mitja Dečman)	Ministry of Public Administration case

3.3. Multiple Criteria Decision Model

Traditional decision-making often focuses on a single objective, which may overlook the complexity of a problem. In contrast, MCDA considers multiple factors simultaneously, offering both structured solutions and a deeper understanding of the problem, preferences, and alternatives (Doumpos et al., 2019). Its primary advantage lies in breaking down complex decisions into smaller, manageable parts, enabling easier analysis and integration into a comprehensive solution (Svoboda & Lande, 2024). This method forms the foundation of our model, which consists of the following:

- Attributes (or criteria) representing the various dimensions of a successful co-creation process. Each attribute is linked to a factor that either supports or hinders co-creation. They were defined based on co-creation drivers and barriers identified in WP4 and an analysis of research papers from WoS.
- Each attribute has a range of possible values. In the model, these values are shown as "yes/no" answers to corresponding questions, which operationalise the DSM attributes.

- Attribute weights indicate the degree of their impact on the final score. Although DSMs typically presume a hierarchy of attributes, our model is simpler, consisting of attributes without preassigned weights. Instead, all model attributes are equally weighted and assessed directly by users.
- The formula provides the basis for quantifying the quality of a co-creation process.

3.4. Testing Site: The Bee Path Project

The decision to test the model on a co-creation initiative addressing climate challenges in the City of Ljubljana was based on several key considerations. The Slovenian administrative context mirrors that of the broader CEE region—a largely underexplored area in co-creation research (Vrbek & Kuiper, 2022). This selection helps counterbalance potential contextual biases of the existing literature, drawing predominantly on experiences from Western and Northern Europe (Jukić et al., 2019). Given the CEE region's inclination toward TPA, examining co-creation in this setting may reveal distinct factors that extend beyond well-documented general drivers and barriers (Indra et al., 2024).

The City of Ljubljana serves as an ideal case study for two reasons. First, it exemplifies a typical TPA administrative setting where co-creation has been successfully applied and structurally supported (Regal et al., 2024). Second, it prioritises the green agenda, earning the title of Europe's Green Capital in 2016. This combination offers a suitable environment for testing the co-creation tool in environmental policy, with potential insights applicable to the broader CEE region.

The Bee Path project was selected as the test initiative based on its following characteristics:

- Proven success in co-creation;
- Ongoing sustainability;
- Focus on climate change within an urban environment.

Recognizing the critical role of pollinators in urban ecosystems, the City of Ljubljana launched the Bee Path project in 2015 (URBACT, 2017). The initiative aimed to foster a bee-friendly urban environment and promote self-sufficiency through innovative co-creation activities. The project is notable for its comprehensive approach to raising ecological awareness and promoting urban sustainability by including the following (Strmšnik et al., 2022):

- A physical path connecting significant urban beekeeping sites;
- A network facilitating collaboration among stakeholders;
- An educational program to raise awareness and spread knowledge about urban beekeeping;
- An incubator for developing new products and services related to urban beekeeping;
- A movement engaging citizens and stakeholders in promoting high environmental awareness.

In 2017, the initiative earned the URBACT program award for good practice, underscoring its innovative approach. Following this recognition, the Bee Path project not only expanded its impact within Ljubljana (through new partnerships and enriched content) and other Slovenian cities (e.g., Maribor), but also served as a model to be replicated in other European cities (IPoP, 2021). This led to the formation of the Bee Path Cities network, the successor to the previous two URBACT networks, BeePathNet and BeePathNet Reloaded, operating from 2018 to 2022 (URBACT, 2024).

To understand the meaning and impact of co-creation in this case, we employed two data-gathering methods: qualitative analysis of project documentation, and a semi-structured interview with the Bee Path project coordinator Maruška Markovič (personal communication, 5 March 2024).

4. A Multi-Criteria DSM for the Assessment of the Quality of Co-Creation

4.1. Model Criteria

Based on the systematic literature review and case studies, we identified 19 attributes for the model. Due to their relatively high number and clear reference to a specific phase of the co-creation process, we grouped them into three categories (for more information see Vrbek et al., 2022):

- Identification and mobilisation of stakeholders: referring to the preparation phase before co-creation takes place;
- The co-creation process: capturing the act of co-creation itself;
- Effects of co-creation: referring to the post-co-creation phase.

This categorisation provides a logical framework and thus a clearer flow of thought for end users of the model while assessing the quality of specific co-creation initiatives. In the following subsections, we present the attributes within each category (Vrbek et al., 2022).

4.1.1. Attributes Referring to the Identification and Mobilisation of Stakeholders

4.1.1.1. Identification and Inclusion of all Affected and Relevant Stakeholders

For successful co-creation, it is crucial that a public organisation initially identifies all affected and relevant stakeholders (Bryson et al., 2002; Dečman, 2020; Grotenbreg & Van Gestel, 2020; Newcastle Team, 2020; Rijeka Team, 2020). This involves reaching out to both those who have an interest in solving a problem and those who have the power and authority to design, finance, implement, and consolidate the solution. The former implies, inter alia, the inclusion of "seldom heard" vulnerable groups (Aix Marseille Team, 2020; Pill & Bailey, 2012), which is crucial for ensuring diversity among stakeholders affected by the problem (Griffiths, 2015). Hence, for the successful fulfilment of this attribute, some authors (Bryson et al., 2002) suggest conducting a thorough stakeholder analysis at the onset of the co-creation process.

4.1.1.2. Information About the Process

Stakeholders must be publicly and clearly informed about the opportunity to participate in the co-creation process (Griffiths, 2015). For wider and more effective dissemination of this information—reaching different groups of stakeholders—public organisations should use various communication channels, including social and traditional media (Ostling, 2017).

4.1.1.3. Communication of Potential Benefits

Public organisations need to clearly communicate the potential benefits of the co-creation process for external stakeholders (Gebauer et al., 2014). This can be achieved by referencing previous successful

experiences of co-creation, i.e., by setting an example and thus inspiring participation in the present case of co-creation (Aix Marseille Team, 2020).

4.1.2. Attributes Referring to the Co-Creation Process Itself

4.1.2.1. Appointed Team Embedding the Idea of Horizontal, Distributive, and Integrative Leadership

Public organisations need to appoint a team responsible for the conduct of the co-creation process (Aix Marseille Team, 2020; Kitchener & Dearing, 2020; Rijeka Team, 2020). This team should be capable of managing the process, motivating stakeholders (and preventing opt-outs), and reconciling different views (Dečman, 2020). This presupposes a distributive, horizontal, and integrative leadership that facilitates collaboration and the involvement of staff (at all levels) in self-regulating teams, as well as inter-organisational and cross-sectorial interaction (Sørensen & Torfing, 2016, p. 132).

4.1.2.2. Clear Definition of Appropriate Roles

It is crucial that the roles and responsibilities of all participants in the process are clearly defined (Blume, 2016; Kekez, 2018; Newcastle Team, 2020; Steele, 2016; Williams, LePere-Schloop, et al., 2016). Their roles should be assigned in a way that enables them to contribute most effectively to the process (Rijeka Team, 2020). Specifically in public organisations, three key roles are particularly relevant for the success of the process:

- The sponsor: a higher-level figure who is less involved but provides authority, funding, or connections to move the change effort forward (Crosby & Bryson, 2010);
- The champion: a staff member who manages and organises the process on a daily basis (Crosby & Bryson, 2010);
- The facilitator: a person responsible for reconciling different needs and desires with the purpose of reaching a mutual agreement (Duijn et al., 2010; Howell & Wilkinson, 2016; Jones et al., 2016; Kane & Boulle, 2018; Mikusova Merickova et al., 2015; Oldfield, 2016; Rose, 2016; Sicilia et al., 2016).

4.1.2.3. Inclusion of External Stakeholders at an Early Stage

External stakeholders should be included at the beginning when the need for change is detected (Aix Marseille Team, 2020; Griffiths, 2015; McCabe, 2016), rather than at the end when a solution has already been defined and implemented—e.g., during the testing phase (Dečman, 2020).

4.1.2.4. Clear Explanation of the Framework

The framework within which the co-creation process takes place must be clearly explained to all participants (Williams, Kang, et al., 2016).

4.1.2.5. Channels of Communication

Digital technologies can be important tools for facilitating and enhancing co-creation with external stakeholders (Griffiths, 2015; Novani, 2016; Rijeka Team, 2020). However, while useful, digital tools have

limitations (Newcastle Team, 2020); therefore, it is advisable that in some cases they are complemented by face-to-face communication (Kitchener & Dearing, 2020; Newcastle Team, 2020; Pestoff, 2014). Combining traditional channels of communication with digital ones could be beneficial for better inclusion and contribution of stakeholders who are less familiar with the latter (Ostling, 2017).

4.1.2.6. Equal Access

The relationship among co-creators should be based on equality (Andersen et al., 2017; Burall & Hughes, 2016; Cho et al., 2016; Kane & Boulle, 2018; Lindsay et al., 2018b; Saha, 2012; Sicilia et al., 2016; Tu, 2016; Wiid & Mora-Avila, 2018). This means that all external stakeholders must be given a voice and an opportunity to be heard (Dečman, 2020). However, achieving equality is challenging, as participants often possess different levels of knowledge, skills, expertise, information, and power (Burall & Hughes, 2016; Hardyman et al., 2015; Pestoff, 2014; Wiewiora et al., 2016; Williams, Kang, et al., 2016). Therefore, public organisations must ensure that participants are supported—that they receive guidance and help when needed (Breit & Salomon, 2015).

4.1.2.7. Clear and Common Goal

The expectations and goals of the process must be clear to all participants (Fledderus et al., 2014). Thus, all co-creators need to be committed to working collaboratively towards a common goal—from the design to the implementation of the solution (Dečman, 2020; Durose & Richardson, 2016; Lam & Wang, 2014; Ostling, 2017; Rijeka Team, 2020). Simply, this means achieving a shared understanding of the goal of the process, so that all participants walk in the same direction (Tu, 2016). Moreover, endorsement of this common goal by a public entity's board (if applicable), or a clear reference to the objectives and activities delineated in the organisation's strategic documents, provides additional leverage to the process (Ferlie & Ongaro, 2015, Chapters 2 and 3).

4.1.2.8. Reconciliation of Different Views

The team leading the co-creation process should ensure that the different needs and desires of participants are successfully reconciled (Aix Marseille Team, 2020; Duijn et al., 2010; Howell & Wilkinson, 2016; Jones et al., 2016; Kane & Boulle, 2018; Mikusova Merickova et al., 2015; Oldfield, 2016; Rose, 2016; Sicilia et al., 2016). This, however, should not come at the price of silencing certain views at the expense of others—rather, it needs to be achieved through a compromise that will lead to a solution acceptable to all participants in the process.

4.1.2.9. Meaningful Data

The availability of meaningful data (Rutherfoord & Spurling, 2016) and the sharing of this information with participants are crucial for successful co-creation (Newcastle Team, 2020). Although this might represent a challenge when dealing with sensitive issues (Newcastle Team, 2020), it is important that any obstacles preventing data sharing among participants are duly overcome.

4.1.2.10. Easy and Clear Tasks

The tasks within the co-creation process should be simple and clearly divided among participants, targeting small successive changes (Aix Marseille Team, 2020; Alford & Yates, 2016; Fledderus et al., 2014). Also, they need to be meaningful and explicitly connected to larger change efforts, providing salience to those investing their time and effort (Isett & Miranda, 2015).

4.1.2.11. Sufficient Time

It is crucial that participants have sufficient time for deliberation and performance of their tasks (Burall & Hughes, 2016; Isett & Miranda, 2015). Participants need to stay up-to-date with various elements of the process (Kane & Boulle, 2018). This implies that each person's timeframe and limits are respected (Aix Marseille Team, 2020) and participants do not feel pressured to neglect their regular work because of the co-creation process (Newcastle Team, 2020).

4.1.2.12. Shared Ownership

Participants need to share ownership and responsibility for the results of the co-creation process that will be implemented in practice (Burall & Hughes, 2016; Durose & Richardson, 2016; Gebauer et al., 2014; Nemec et al., 2019; Roskilde Team, 2020).

4.1.3. Attributes Referring to the Effects of Co-Creation

4.1.3.1. Open-Mindedness

Co-creation requires self-aware, self-conscious, and open-minded participants able to step outside their own mental framework to make mutual readjustments based on their joint consideration of the problem (Burall & Hughes, 2016; Durose & Richardson, 2016; Kemp & Rotmans, 2009).

4.1.3.2. Change

Co-creation is successful when new understandings, insights, and ideas are developed, forming the basis of new solutions (Roskilde Team, 2020). The contribution of external stakeholders must be integrated into the design of the final solution (Dečman, 2020), often resulting in significant changes to existing institutional structures and processes (Williams, Kang, et al., 2016). Instead of supporting or legitimizing existing solutions (Lövbrand, 2011), co-creation should lead to unanticipated outcomes and new ways of working (Kitchener & Dearing, 2020).

4.1.3.3. Resources

Co-creation is an expensive process that requires human and financial resources for its implementation (Lövbrand, 2011; Rijeka Team, 2020; Roskilde Team, 2020). Therefore, public organisations should secure sufficient resources for the implementation of both the process itself and the result/solution agreed (Kitchener & Dearing, 2020; Lindsay et al., 2018a). Transparent use of resources is also crucial, as the process should not be discredited by suspicions or claims of alleged misuses (Williams, Kang, et al., 2016).

4.1.3.4. Clear Communication of Results

The input of external co-creators should be integrated into the final implemented solution (Rijeka Team, 2020). Hence, it is important that public organisations provide feedback on how external contributions were considered (Williams, Kang, et al., 2016). Participants need to see the impact of their involvement in the process (Newcastle Team, 2020). Therefore, public organisations must ensure that contributors understand their input was meaningful, even if their specific proposals were not (fully) included in the final solution (Griffiths, 2015).

4.2. The Structure of the DSM

After identifying the model attributes, we developed the DSM structure, which follows a hierarchical, tree-like format (see Figure 3) comprising two levels of attributes. The lower level includes 19 basic (i.e., subordinate) attributes, corresponding to those discussed earlier (Sections 4.1.1–4.1.3). These are grouped into three overarching parent attributes at the higher level, aligned with the three key categories—identification and mobilisation, the process, and effects (see Section 4.1). The hierarchical structure implies that each basic attribute directly influences its corresponding parent attribute (Bohanec, 2006, p. 104). Thus, any change in the value of a basic attribute automatically affects the associated parent attribute, thereby impacting the category's assessment score and the overall assessment of co-creation quality.

An example of a basic attribute is "Information about the process" (1.2). It is classified as basic because end users must enter a value for it—i.e., indicate whether participants were informed about the process. Based on the values provided by end users for all basic attributes, the model calculates the values for parent attributes at the first level. The corresponding parent attribute for our example is attribute 1, "Identification and mobilisation of stakeholders" (see Figure 3). Its value derives from the values of attributes 1.1, 1.2, and 1.3.

The highest attribute in the model represents the overall assessment of co-creation quality (top of Figure 3). It is derived from the values of all basic attributes, calculated using a formula that reflects the model's hierarchical structure (Vrbek et al., 2022):

$$\left(\left(\frac{\text{Number of answers implying "ready" (having value "1")}}{\text{3 (total number of attributes in category 1)}} \times \frac{\text{3 (total number of attributes in category 1)}}{\text{19 (total number of attributes or survey questions)}}\right) + \left(\frac{\text{Number of answers implying "ready" (having value "1")}}{\text{12 (total number of attributes in category 2)}} \times \frac{\text{12 (total number of attributes in category 2)}}{\text{19 (total number of attributes or survey questions)}}\right) + \left(\frac{\text{Number of answers implying "ready" (having value "1")}}{\text{4 (total number of attributes in category 3)}} \times \frac{\text{4 (total number of attributes in category 3)}}{\text{19 (total number of attributes or survey questions)}}\right)\right) \times 100 = \text{SCORE \%}$$

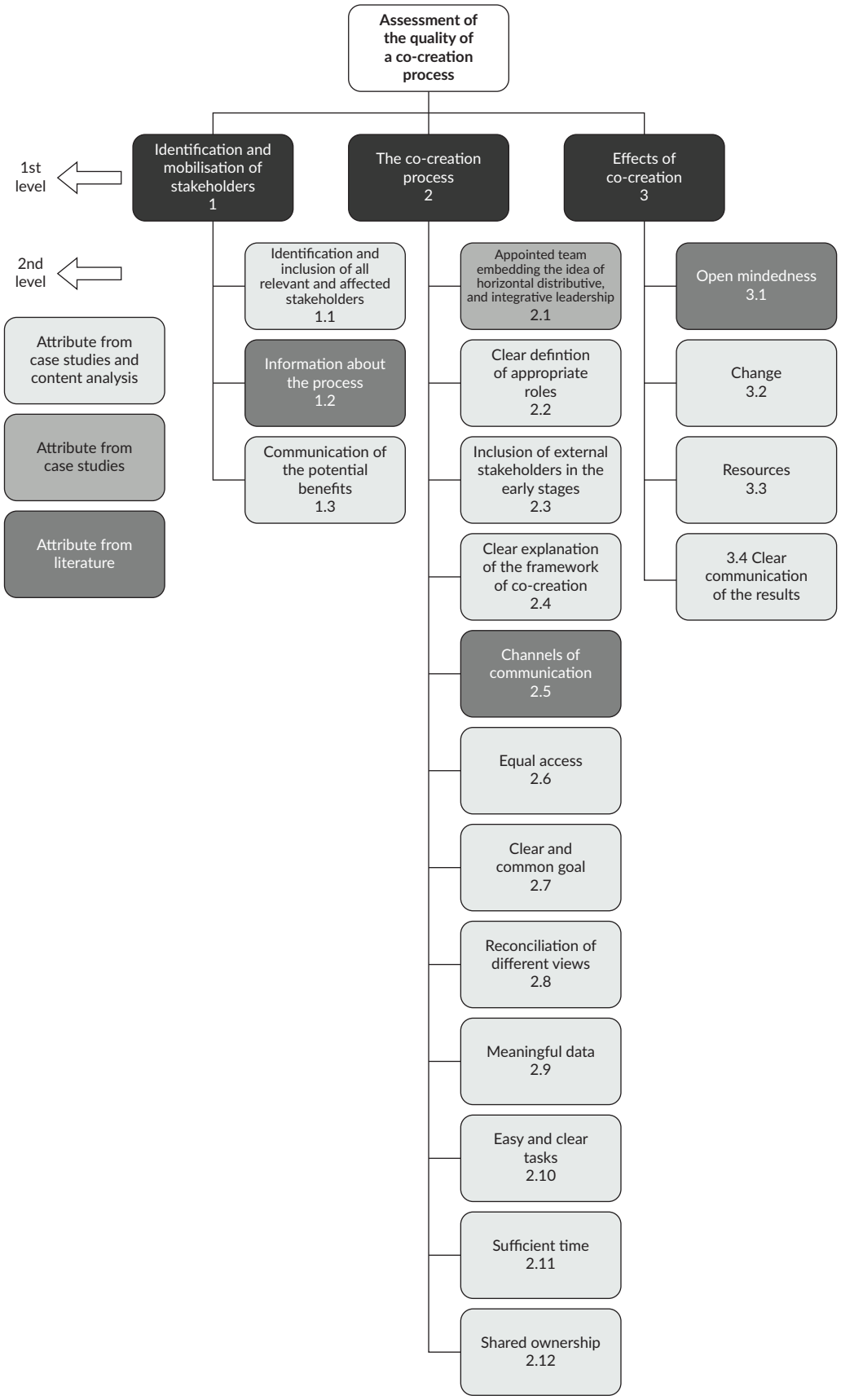

Figure 3. DSM for the assessment of the quality of co-creation processes. Source: Vrbek et al. (2022).

Our model is simplified by excluding preassigned weights, thus assuming equal importance for all attributes. This decision reflects the recognition that the impact of different attributes can vary significantly across national, policy sector, and governance contexts. By adopting this approach, we enhance the model's broader applicability, as it is impossible to establish universal weights applicable to all possible macro-, meso-, and micro-level contexts, intersecting with the specificities of policy areas and individual co-creation initiatives. Consequently, users are not constrained by predefined hierarchies of major or minor issues dictated by the model. Instead, the equal weighting approach ensures that all problematic aspects of their co-creation process are presented on an equal footing. This requires users to actively interpret the final score, which highlights identified challenges alongside recommendations for improvement, encouraging a critical assessment of their significance within their specific context (as demonstrated by the representative of the City of Ljubljana; see Section 5). Furthermore, by not assigning differential weights, the model remains highly adaptable and open to customisation, allowing users to define their own weights, whether at the organisational or policy sector level. This flexibility aligns with the core principles of DSMs, which are inherently modifiable, including users to adjust attributes and weights as needed. As such, this model serves as a foundational framework that can be further developed and refined based on the specific needs and objectives of public organisations.

4.3. Operationalisation of the Model for End Users

The model's internal structure and backstage processes remain invisible to end users, who interact therewith through a survey (see Figure 4). To assess the quality of the co-creation process, public servants coordinating it must answer all 19 survey questions, grouped into three sections corresponding to the model's attributes. Each question offers two response options: "Yes" (valued 1), indicating the condition for successful co-creation is met, and "No" (valued 0), indicating it is not. For attributes receiving a "No" response (valued 0), the model generates predefined textual interpretations, included in the final score to highlight areas where the organisation's performance is suboptimal.

To better illustrate the operationalisation of the model, we present a hypothetical assessment score from a user perspective (Figure 5). The textual explanation of the result is generated from the pre-prepared explanation of the "No" answers (valued 0), which in this particular case affect attributes 1.2 and 1.3 in the first phase of co-creation, "Identification and mobilisation of external stakeholders"; 2.3, 2.5, 2.8, 2.11, and 2.12 in the second phase, referring to the act of co-creation itself; and 3.1 and 3.2, undermining the effect of co-creation. With such a format, the model ensures a tailored and dynamic presentation of the score, depending on the values entered for the assessment of a specific co-creation initiative.

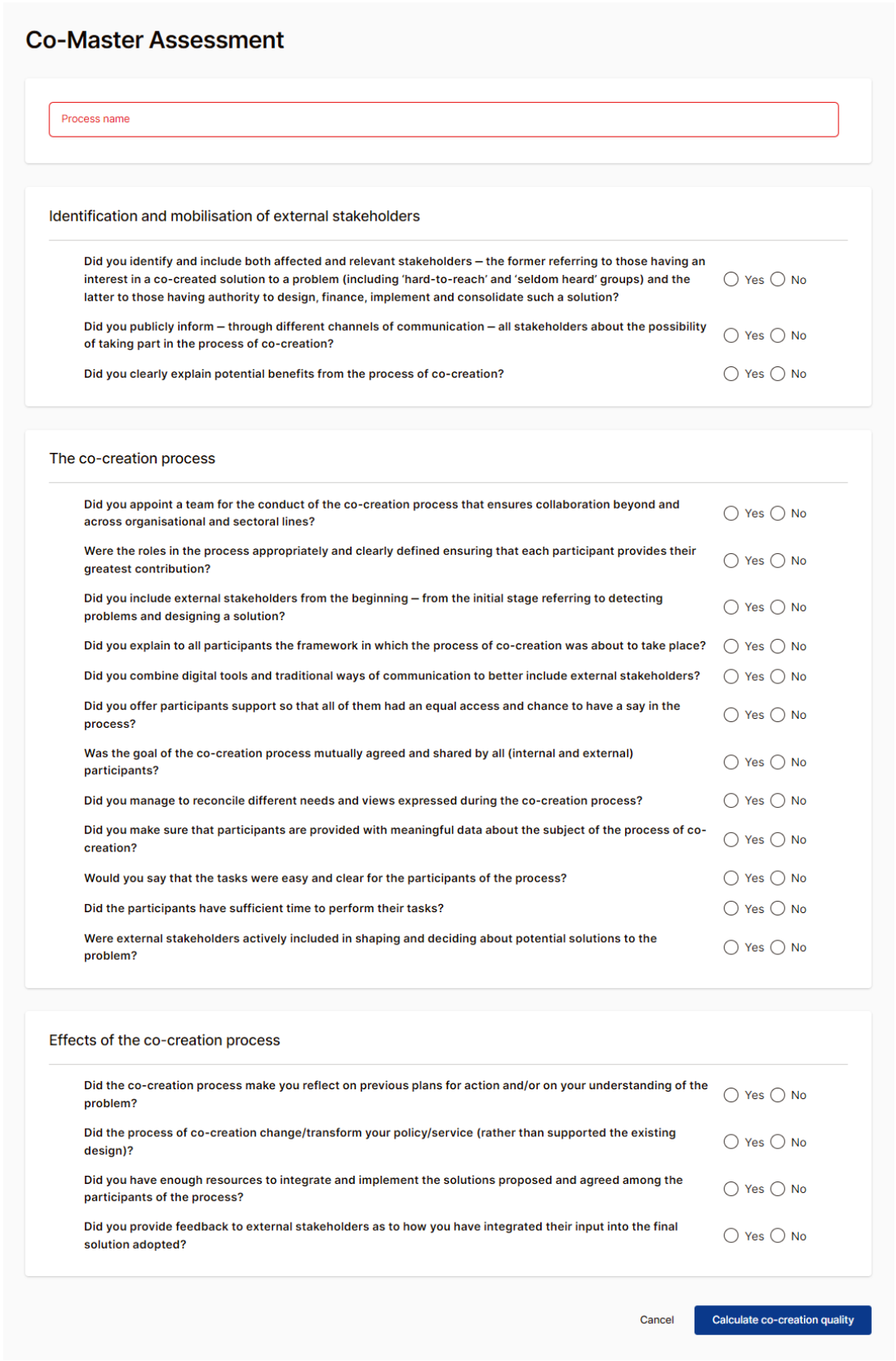

Figure 4. The model's user interface. Source: Vrbek et al. (2022).

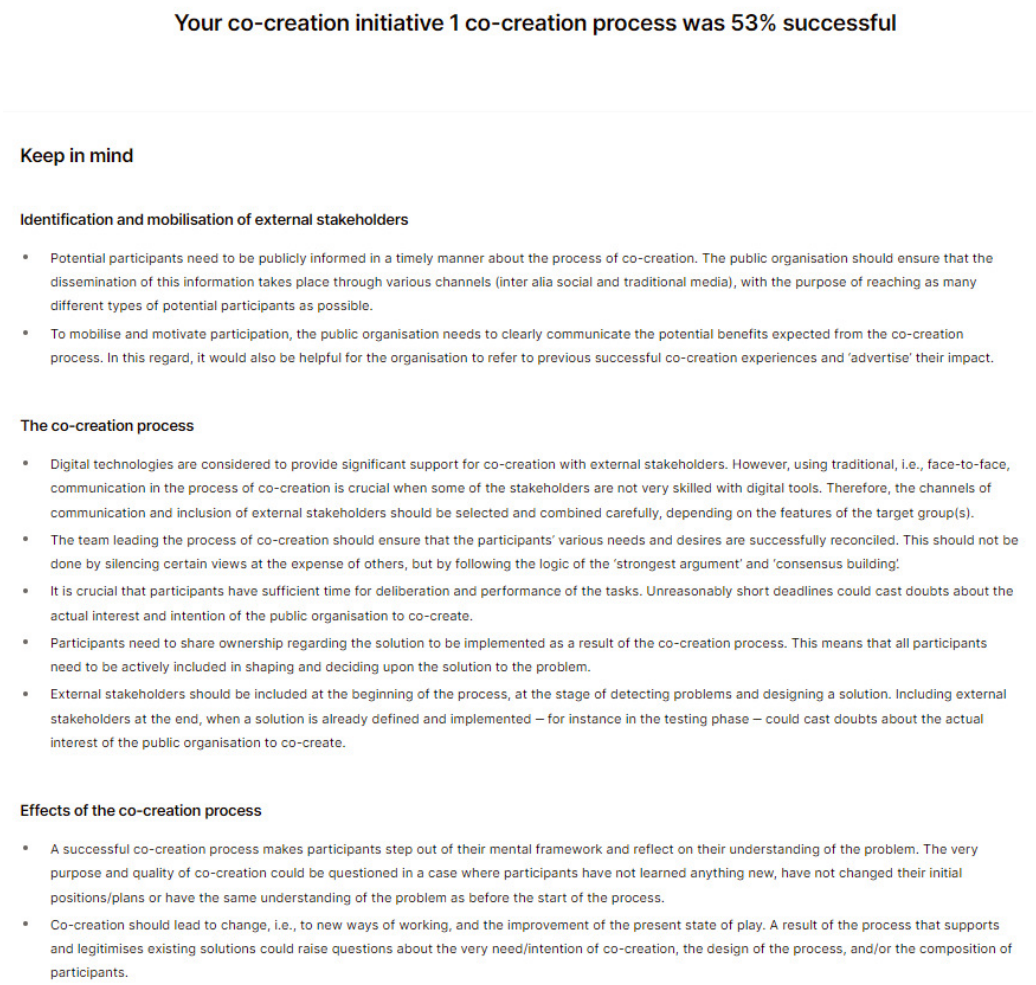

Figure 5. Hypothetical assessment of co-creation quality. Source: Vrbek et al. (2022).

5. Testing of the Model

The model was tested on the Bee Path project of the City of Ljubljana, which achieved a 95% success rate in the co-creation process. For a structured discussion and better understanding of this result, we discuss the fulfilment of the model attributes within each of the three sections: identification and mobilisation of stakeholders; the co-creation process; and the effects of co-creation.

The assessment confirms that the City of Ljubljana successfully addressed the initial phase concerning the identification and mobilisation of stakeholders (attribute 1.1), despite initially taking a different approach. Namely, the project evolved naturally by gradually incorporating a broad spectrum of participants over time, rather than at the outset as suggested in the literature. As the city lacked a clear idea in the beginning, it engaged in dialogue with beekeepers' associations recognised as the most competent actors on the topic. This early collaboration quickly revealed new dimensions and opportunities for innovative experimentation, encouraging the inclusion of additional entities such as cultural and educational institutions (e.g., Cankarjev dom, Ethnographic Museum, Kino Šiška, Faculty of Architecture) and private actors (e.g., hotels, malls). The expansion of the collaboration made many of the new participants keen on taking an active part by

modifying their spaces to enable urban beekeeping, which had a further ripple effect on the creation of innovative products such as protocol gifts featuring local honey, strategical planting of honey plants throughout the city, and the development of educational and tourism content linked to various urban beekeeping locations.

Initially, it was the municipality that proactively approached external stakeholders (attribute 1.2); however, as the initiative gained momentum and visibility, the dynamic shifted, with many external actors approaching the municipality, seeking involvement. This shift was supported by both formal and informal communication channels established by the municipality, including an online registration form. Moreover, the municipality clearly defined and communicated the benefits of the co-creation process, precisely those at the collective (societal) level (attribute 1.3). The potential individual benefits were intentionally disregarded, i.e., narrated explicitly by the municipality, leaving the interpretation entirely to (potential) partners. This approach was recognised as the only proper way of ensuring that participants had a genuine interest and desire to engage in the project, which is crucial for sustained motivation.

Moreover, the attributes referring to the second phase (i.e., the act of co-creation itself) were largely fulfilled, indicating a well-structured and well-facilitated initiative under the auspices of the City of Ljubljana. While allowing room for experimentation, the co-creation process maintained a certain structure, including designated city representatives (2.1) and a defined framework of established (meeting and decision-making) rules accepted by all participants (2.4). Nevertheless, the co-creation framework was not strictly detailed, enabling natural progress and future development—such as adopting a vision and action plan based on the collective input of all participants, which later established a clearer institutional infrastructure through various topical workgroups. Participants had clear roles (2.2) and tasks appropriate to their backgrounds and skills (2.10), as well as sufficient time to complete them (2.11). The external stakeholders, initially drawn from the beekeeping community, diversified over time, attracting a broader array of participants, even those unrelated to beekeeping as such (2.3). This expansion translated into a wider scope of the project, encompassing new areas like tourism and education, while maintaining the general goal of creating a bee-friendly, sustainable city (2.7). Moreover, co-creation activities took place through both traditional and digital channels (2.5), the latter playing a key role in sustaining the initiative during the Covid-19 pandemic. The role of the city coordinator was also pivotal for the quality of the co-creation process given their efforts in gathering and disseminating relevant data (2.9) and maintaining active, constructive collaboration among participants (2.8). According to the coordinator's assessments, in 90% of cases, conflicting interests and needs were successfully reconciled, leading to synergy and the joint development of specific innovative products (2.12).

According to the model, the project met all criteria in the second section concerning the act of co-creation itself, except for equal access (2.6). While the process was open and inclusive, its design lacked an institutionalised support mechanism to help participants overcome specific (both tacit and objective) challenges to achieve equal access and influence in the co-creation process. Instead, such mechanisms and activities were primarily designed and directed at end users of the co-created products—for example, by making tourism and educational programs accessible to the blind and those with physical disabilities. This raised concerns about not all stakeholders being equally equipped to voice their opinions in co-creation processes, prompting the need for the public organisation to ensure explicit instruments/protocols so that certain participants are not overshadowed by more dominant and vocal stakeholders. Specifically, the

assessment score recommended additional efforts to help participants better express their needs and perspectives during the co-creation process. However, the interviewee convincingly argued that the absence of such a mechanism did not undermine the co-creation process because all co-creators had certain competitive strengths (resources), as well as a clear idea of their individual expectations and thus strong interest in participating, which facilitated their articulate and active participation in developing specific products and co-creating value.

Eventually, the Bee Path project met the model criteria for the final phase relating to the effects of co-creation. Namely, the City of Ljubljana maintained an "open mind," allowing cooperation among participants to evolve in unexpected directions (3.1 and 3.2). The project's results were not at any point of the initiative predefined by the city; rather, they emerged organically from the collaboration of various actors. External co-creators not only actively participated in the design, but the City of Ljubljana even stepped back, allowing them to implement the agreed solutions, which undoubtedly enhanced their sense of ownership. A notable strength of the project was the institutionalised resource allocation (3.3) by the City of Ljubljana (in addition to the voluntary contributions from the Bee Path members), ensuring that what was agreed was not a dead letter. Thus, the city annually invested between €17,000 and €27,000, which covered 20% of the costs for the coordinator's salary, meeting venues, and other project activities (Strmšnik et al., 2022). It is important to emphasise, however, that the city did not provide financial incentives to external co-creators to develop specific content/solutions, which aligns with literature findings that monetary incentives are less effective than a genuine interest in co-creation (W. Voorberg et al., 2018).

Finally, the project's visibility—achieved through its activities such as the Day of Bees and education and tourism programs—raised awareness among participants and the general public about the results and benefits of the initiative (3.4). The City of Ljubljana disseminated the outcomes through established (official) channels, including an annual meeting, where participants recapped and reflected on their work, and a newsletter. The project received international recognition in 2017 as a good practice example in an URBACT tender, which paved the way for scaling up its impact across several EU cities.

6. Discussion and Conclusion

Building on the rich knowledge about co-creation drivers and barriers found in the existing literature and empirical cases, we extracted the conditions that determine what constitutes a quality co-creation process, thereby answering the first research question (RQ1). By operationalizing the 19 criteria, the article contributes to a better understanding of the key aspects a co-creation process should encompass to provide a suitable framework to foster synergy, creativity, and innovativeness in addressing "wicked" problems.

In addition, by employing the multiple criteria decision-making methodology (Bohanec, 2006), the article answers the second research question (RQ2). This helped us structure the findings from the literature review and case studies into an applicative model that supports public organisations in critically reflecting on their co-creation experience, thus enabling them to become better co-creators. The model captures the process integrally, extending beyond the act of co-creation itself to its preparatory phase—specifically, the suitable approach to engaging relevant and affected stakeholders—as well as to its post-co-creation phase focusing on the sustainability of its outcomes and co-created value.

Given the model's ambition to be applicable across various contexts—such as different types of public organisations, national, and policy contexts, and particularly climate policy in urban settings—we refrained from assigning fixed, universal weights to the model's attributes. Instead of a black-and-white judgment, the model requires a more active role by its users in reflecting on and interpreting the scores (including the textual interpretation, i.e., the recommendations) through the prism of the specific case. The validity of our decision was further confirmed by testing the model on the Bee Path project. The shortcoming identified by our model in this case, regarding the potential threat to equal access, was not uncritically accepted as an actual threat to the co-creation process itself—mainly due to the profile of the stakeholders involved (see the previous section). Nevertheless, the model's recommendation on this matter still provided an important perspective for the City of Ljubljana, either for future co-creation initiatives or even for this project if it evolves to include less confident or marginalised participants.

Regarding RQ3 and the model's suitability for assessing co-creation processes in the context of climate change at the city level, the score calculated by the model closely reflected and articulated what the project coordinator intuitively felt about co-creation. A potential aspect requiring further attention is the (non)existence of mechanisms to motivate participants, especially those who become less active over time. This was identified as a key challenge for the City of Ljubljana, as maintaining the initial enthusiasm with the same intensity throughout the entire course of the process can be difficult, particularly when co-creation initiatives span long periods of time.

In terms of specific features of the climate change policy area that might pose a challenge to the applicability of the model, the "rigidity" of the goals and of the approach to tackling climate change set by national and local governments was pointed out. According to the interviewee, often when external stakeholders are invited to co-create, the general direction is already defined, and governments are not keen on deviating from their initial design, hoping that the process will only confirm their position. However, this specific problem was not present in the case of the Bee Path project, which remained open and lacked any predefined solutions throughout its development. The main reason for this was attributed to its "soft" content and approach to climate change, avoiding any major infrastructural interventions.

Although this was pointed out as a policy-specific problem, the model already covers this aspect (see attribute 3.1) by recognizing such rigidity as a general barrier to co-creation (found in any context). Thus, our research does not find the co-creation drivers and barriers in the case of the climate policy area to be different from the general body of factors that affect co-creation quality. As such, it aligns with existing research on barriers to climate change co-creation (e.g., Kumer et al., 2022), which find specific challenges to be bound only to individual cases rather than to the policy area of climate change as such.

Therefore, the answer to RQ3 is clear: The model is suitable for assessing co-creation quality in the context of climate change policies at the city level of governance. Moreover, the methodology used as the basis for its development, namely the multi-criteria decision method, enhances the flexibility and capacity of the model for further developments, countering any potential criticism regarding its suitability or the risk of becoming outdated. Specific aspects that have not been fully covered by the model can be easily added to its structure. This also allows users to further adapt the model to better reflect their specific situation by adding weights that apply to their context.

Thus, our article complements the co-creation literature and scholarly endeavours aimed at developing models for critical reflections on different aspects of co-creation efforts in the public sector. While existing models have dealt with organisational maturity for co-creation (Jukić, Pluchinotta, et al., 2022), co-creation readiness of public services (Vrbek & Jukić, 2024), outcomes of co-creation processes (Marsilio et al., 2021), and planning of co-creation processes (Davis & Andrew, 2017), our model provides an additional framework focusing specifically on the quality of the co-creation process per se. Hence, future research could explore possibilities for further upgrading such models, not only by expanding their substance (e.g., incorporating additional attributes) but also by integrating emerging technologies like AI. While hybrid approaches combining MCDA and AI have been widely explored in the private sector—e.g., in supplier selection (Abdulla & Baryannis, 2024), finance (Černevičienė & Kabašinskas, 2022), cybersecurity (Svoboda & Lande, 2024), and intermodal freight transportation (Tupayachi et al., 2024)—their use in the public sector remains limited due to ethical and legal concerns, stemming from the lack of explainability and transparency in AI-driven decision-making (Abdulla & Baryannis, 2024; Černevičienė & Kabašinskas, 2022). These challenges can be overcome if MCDA techniques remain at the core of the decision-making process, while machine learning is used to streamline analysis, e.g., by reducing the number of criteria or alternative scenarios. However, current research often prioritises AI over MCDA, either by relegating MCDA to a secondary role—despite its stronger foundation in explainable decision-making—or by failing to produce organic hybrids that fully exploit the strengths of both methods (Abdulla & Baryannis, 2024). In our model, integrating emerging technologies could facilitate broader input from co-creation ecosystem actors and enable the analysis of large volumes of social media content to inform co-creation assessment. Such an upgrade could also refine tailored recommendations for improving future co-creation initiatives by referencing and continuously updating best practices related to specific aspects (attributes) of the process.

Beyond the lack of integration of emerging technologies, the model has a few additional limitations. As with all self-evaluation tools, there is a risk of biased or socially desirable responses. However, the model operates on the assumption that it will primarily be used by organisations genuinely committed to improving their co-creation capabilities. Organisations lacking such ambitions or objective incentives are unlikely to invest the effort needed to manipulate the tool for favourable results, making this concern relatively low-risk. Another limitation is that the tool is designed specifically for public organisations, focusing on public servants as effective co-creators. Since co-creation involves a broader range of internal and external actors, additional tools, potentially integrating AI (as discussed above), could be developed to support collaborative assessments, fostering sustainable co-creation ecosystems beyond individual initiatives. Finally, the study's scope is limited, as the model was tested within a single organisation in one co-creation initiative. To improve generalisability and applicability, we encourage practitioners and policymakers to test and adapt the DSM to their specific contexts. The model's flexibility allows for such customisation, supporting informed decision-making across diverse settings.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

The data used in this article, referring to the drivers and barriers extracted from the systematic literature review and the case studies, are available in Vrbek et al. (2022).

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

References

Abdulla, A., & Baryannis, G. (2024). A hybrid multi-criteria decision-making and machine learning approach for explainable supplier selection. *Supply Chain Analytics*, *7*, Article 100074. https://doi.org/10.1016/j.sca.2024.100074

Aix Marseille Team. (2020). *Vitrolles Municipality case. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (Grant agreement No 770591). Unpublished manuscript.

Alford, J., & Yates, S. (2016). Co-production of public services in Australia: The roles of government organisations and co-producers. *Australian Journal of Public Administration*, *75*(2), 159–175. https://doi.org/10.1111/1467-8500.12157

Andersen, N. A., Caswell, D., & Larsen, F. (2017). A new approach to helping the hard-to-place unemployed: The promise of developing new knowledge in an interactive and collaborative process. *European Journal of Social Security*, *19*(4), 335–352. https://doi.org/10.1177/1388262717745193

Ansell, C., & Torfing, J. (2021). Co-creation: The new kid on the block in public governance. *Policy & Politics*, *49*(2), 211–230. https://doi.org/10.1332/030557321X16115951196045

Blackstock, K. L., Kelly, G. J., & Horsey, B. L. (2007). Developing and applying a framework to evaluate participatory research for sustainability. *Ecological Economics*, *60*(4), 726–742. https://doi.org/10.1016/j.ecolecon.2006.05.014

Blume, T. (2016). Creative disruption for cultural change. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 91–100). Policy Press.

Bohanec, M. (2006). *Odločanje in modeli* (Vol. 2006). DMFA-založništvo.

Bovaird, T., Van Ryzin, G. G., Loeffler, E., & Parrado, S. (2015). Activating citizens to participate in collective co-production of public services. *Journal of Social Policy*, *44*(1), 1–23. https://doi.org/10.1017/S0047279414000567

Breit, E., & Salomon, R. (2015). Making the technological transition—Citizens' encounters with digital pension services. *Social Policy & Administration*, *49*(3), 299–315. https://doi.org/10.1111/spol.12093

Bryson, J. M., Cunningham, G. L., & Lokkesmoe, K. J. (2002). What to do when stakeholders matter: The case of problem formulation for the African American men project of Hennepin County, Minnesota. *Public Administration Review*, *62*(5), 568–584. https://doi.org/10.1111/1540-6210.00238

Burall, S., & Hughes, T. (2016). The hidden politics of policy design. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 71–80). Policy Press.

Caitana, B., & Moniz, G. C. (2024). Co-production boundaries of nature-based solutions for urban regeneration: The case of a healthy corridor. *Urban Planning*, *9*, Article 7306. https://doi.org/10.17645/up.7306

Carpenter, J., & Horvath, C. (2022). Co-creation and the city: Arts-based methods and participatory approaches in urban planning. *Urban Planning*, *7*(3), 311–314. https://doi.org/10.17645/up.v7i3.6106

Černevičienė, J., & Kabašinskas, A. (2022). Review of multi-criteria decision-making methods in finance using explainable artificial intelligence. *Frontiers in Artificial Intelligence*, *5*, Article 827584. https://doi.org/10.3389/frai.2022.827584

Cho, C., Park, S. Y., Son, J. K., & Lee, S. (2016). R&D support services for small and medium-sized enterprises: The different perspectives of clients and service providers, and the roles of intermediaries. *Science and Public Policy*, *43*(6), 859–871. https://doi.org/10.1093/scipol/scw006

Cilliers, J., Falla, A. M. V., Wall, G., & Barros, P. (2024). Transformative local governments: Addressing social urban challenges by bringing people and politics together. *Urban Planning*, *9*, Article 9344. https://doi.org/10.17645/up.9344

Clavin, A., Moore-Cherry, N., & Mills, G. (2021). Mapping Green Dublin: Co-creating a greener future with local communities. *Urban Planning*, *6*(4), 96–109. https://doi.org/10.17645/up.v6i4.4533

Cluley, V., & Radnor, Z. (2021). Rethinking co-creation: The fluid and relational process of value co-creation in public service organizations. *Public Money & Management*, *41*(7), 563–572. https://doi.org/10.1080/09540962.2020.1719672

Crosby, B. C., & Bryson, J. M. (2010). Integrative leadership and the creation and maintenance of cross-sector collaborations. *The Leadership Quarterly*, *21*(2), 211–230. https://doi.org/10.1016/j.leaqua.2010.01.003

Davis, A., & Andrew, J. (2017, November 28-30). *From rationalism to critical pragmatism: Revisiting Arnstein's ladder of public participation in co-creation and consultation* [Paper presentation]. 8th State of Australian Cities National Conference, Adelaide, Australia. https://apo.org.au/sites/default/files/resource-files/2018-06/apo-nid178271.pdf

Dečman, M. (2020). *Ministry of Public Administration case. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (Grant agreement No 770591). Unpublished manuscript.

DeLosRíos-White, M. I., Roebeling, P., Valente, S., & Vaittinen, I. (2020). Mapping the life cycle co-creation process of nature-based solutions for urban climate change adaptation. *Resources*, *9*(4), Article 39. https://doi.org/10.3390/resources9040039

Dormido, L., Garrido, I., L'Hotellerie-Fallois, P., & Santillán, J. (2023). *Climate change and sustainable growth: International initiatives and European policies* (Occasional Papers 2213). Banco de España. https://ideas.repec.org/p/bde/opaper/2213e.html

Doumpos, M., Figueira, J. R., Greco, S., & Zopounidis, C. (2019). *New perspectives in multiple criteria decision making*. Springer.

Duijn, M., Rijnveld, M., & Van Hulst, M. (2010). Meeting in the middle: Joining reflection and action in complex public sector projects. *Public Money & Management*, *30*(4), 227–233. https://doi.org/10.1080/09540962.2010.492183

Durose, C., & Richardson, L. (2016). Co-productive policy design. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 30–50). Policy Press.

Edelmann, N., & Virkar, S. (2023). The impact of sustainability on co-creation of digital public services. *Administrative Sciences*, *13*(2), Article 43. https://doi.org/10.3390/admsci13020043

Engen, M., Fransson, M., Quist, J., & Skålén, P. (2021). Continuing the development of the public service logic: A study of value co-destruction in public services. *Public Management Review*, *23*(6), 886–905. https://doi.org/10.1080/14719037.2020.1720354

European Commission. (2021). *EU missions: Climate neutral and smart cities*. Publications Office of the European Union. https://data.europa.eu/doi/10.2777/970811

Ferlie, E., & Ongaro, E. (2015). *Strategic management in public services organizations: Concepts, schools and contemporary issues*. Routledge.

Fledderus, J., Brandsen, T., & Honingh, M. (2014). Restoring trust through the co-production of public services: A theoretical elaboration. *Public Management Review*, *16*(3), 424–443. https://doi.org/10.1080/14719037.2013.848920

Fox, N., Campbell-Arvai, V., Lindquist, M., Van Berkel, D., & Serrano-Vergel, R. (2022). Gamifying decision support systems to promote inclusive and engaged urban resilience planning. *Urban Planning*, *7*(2), 239–252. https://doi.org/10.17645/up.v7i2.4987

Gebauer, H., Johnson, M., & Enquist, B. (2014). Service innovations for enhancing public transit services. In R. Rønning, B. Enquist, & L. Fuglsang (Eds.), *Framing innovation in public service sectors* (pp. 41–62). Routledge.

Giannone, D. (2015). Suspending democracy? The governance of the EU's political and economic crisis as a process of neoliberal restructuring. In K. N. Demetriou (Ed.), *The European Union in crisis* (pp. 101–119). Springer. https://doi.org/10.1007/978-3-319-08774-0_6

Griffiths, M. (2015). Empowering citizens: A constructivist assessment of the impact of contextual and design factors on shared governance. In Information Resources Management Association (Ed.), *Public affairs and administration: Concepts, methodologies, tools, and applications* (pp. 1443–1461). IGI Global. https://doi.org/10.4018/978-1-4666-8358-7.ch071

Grotenbreg, S., & Van Gestel, N. (2020). *WP4 Task 2.1 – Strategic efforts of the Social Service Department Drechtsteden (SDD) to spur co-creation. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (Grant agreement No 770591). Unpublished manuscript.

Hardyman, W., Daunt, K. L., & Kitchener, M. (2015). Value co-creation through patient engagement in health care: A micro-level approach and research agenda. *Public Management Review*, *17*(1), 90–107. https://doi.org/10.1080/14719037.2014.881539

Harris, J., Barnes, A., Foden, M., Warner-Southwell, B., Kidd, E., Ward, E., Hewitt, C., & Weston, R. (2019). *Evaluating co-production: Co:Create—We are Co:Create: Connecting human stories to strategy (April 2016–March 2019)*. The University of Sheffield. https://doi.org/10.15131/SHEF.DATA.8948957.V1

Hofstad, H., Sørensen, E., Torfing, J., & Vedeld, T. (2022). Designing and leading collaborative urban climate governance: Comparative experiences of co-creation from Copenhagen and Oslo. *Environmental Policy and Governance*, *32*(3), 203–216. https://doi.org/10.1002/eet.1984

Hofstad, H., Sørensen, E., Torfing, J., & Vedeld, T. (2023). Leading co-creation for the green shift. *Public Money & Management*, *43*(4), 357–366. https://doi.org/10.1080/09540962.2021.1992120

Howell, M., & Wilkinson, M. (2016). Policy design as co-design. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 157–166). Policy Press.

Hunter, N. B., Roberts, D. C., Sutherland, C., & Slotow, R. (2022). Co-creation between cities and climate change science achieves research and action agenda. *Current Research in Environmental Sustainability*, *4*, Article 100189. https://doi.org/10.1016/j.crsust.2022.100189

Indra, V., Horáková, M., & Horák, P. (2024). Collaboration, participation, and innovation: Influencing factors of co-creation in a Czech municipality. *International Journal of Public Administration*. Advance online publication. https://doi.org/10.1080/01900692.2024.2428384

IPoP. (2021, April 9). *Maruška Markovčič: »Najprej je treba poskrbeti, da se skupnost poveže«*. Institute for spatial policies. https://ipop.si/2021/04/09/maruska-markovcic-najprej-je-treba-poskrbeti-da-se-skupnost-poveze

Isett, K. R., & Miranda, J. (2015). Watching sausage being made: Lessons learned from the co-production of governance in a behavioural health system. *Public Management Review*, *17*(1), 35–56. https://doi.org/10.1080/14719037.2014.881536

Jones, P., Lorne, C., & Speed, C. (2016). Using technology to help communities shout louder. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 141–148). Policy Press.

Jukić, T., Hržica, R., Vrbek, S., Benčina, J., Dečman, M., Pevcin, P., Jaman, P., Puzjak, M., Rilko, D., Subašić, A., & Gilja, B. (2022). *Decision support system for assessment of organisational readiness for co-creation.* Deliverable 7.1, Horizon 2020 Project No 770591. COGOV Project.

Jukić, T., Pevcin, P., Benčina, J., Dečman, M., & Vrbek, S. (2019). Collaborative innovation in public administration: Theoretical background and research trends of co-production and co-creation. *Administrative Sciences*, *9*(4), Article 90. https://doi.org/10.3390/admsci9040090

Jukić, T., Pluchinotta, I., Hržica, R., & Vrbek, S. (2022). Organizational maturity for co-creation: Towards a multi-attribute decision support model for public organizations. *Government Information Quarterly*, *39*(1), Article 101623. https://doi.org/10.1016/j.giq.2021.101623

Kane, L., & Boulle, M. (2018). 'This was different': Transferring climate mitigation knowledge practices south to south with the MAPS programme. *Climate Policy*, *18*(9), 1177–1188. https://doi.org/10.1080/14693062.2017.1421520

Kekez, A. (2018). Public service reforms and clientelism: Explaining variation of service delivery modes in Croatian social policy. *Policy and Society*, *37*(3), 386–404. https://doi.org/10.1080/14494035.2018.1436505

Kemp, R., & Rotmans, J. (2009). Transitioning policy: Co-production of a new strategic framework for energy innovation policy in the Netherlands. *Policy Sciences*, *42*(4), 303–322. https://doi.org/10.1007/s11077-009-9105-3

Kitchener, M., & Dearing, K. (2020). *Torfaen County Borough Council's A Good Day initiative. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (Grant agreement No 770591). Unpublished manuscript.

Kumer, P., Meulenberg, C., & Kralj, E. (2022). Challenges for planning climate change resilience through the co-creation living lab approach in the Mediterranean coastal town of Piran. *Journal for Geography*, *17*(2), 89–106. https://doi.org/10.18690/rg.17.2.2737

Lam, W. F., & Wang, X. (2014). The cognitive foundation of a co-production approach to performance measurement: How do officials and citizens understand government performance in China? *Public Administration and Development*, *34*(1), 32–47. https://doi.org/10.1002/pad.1669

Lindsay, C., Pearson, S., Batty, E., Cullen, A. M., & Eadson, W. (2018a). Co-production and social innovation in street-level employability services: Lessons from services with lone parents in Scotland. *International Social Security Review*, *71*(4), 33–50. https://doi.org/10.1111/issr.12188

Lindsay, C., Pearson, S., Batty, E., Cullen, A. M., & Eadson, W. (2018b). Street-level practice and the co-production of third sector-led employability services. *Policy & Politics*, *46*(4), 571–587. https://doi.org/10.1332/030557317X15120417452025

Livingstone, R. V. (2023). Overlooking the front line: Impacts of front-line worker inclusion on implementation and outcomes of collaborative innovation. *Public Administration*, *101*(3), 788–803. https://doi.org/10.1111/padm.12838

Lövbrand, E. (2011). Co-producing European climate science and policy: A cautionary note on the making of useful knowledge. *Science and Public Policy*, *38*(3), 225–236. https://doi.org/10.3152/030234211X12924093660516

Lund, D. H. (2018). Co-creation in urban governance: From inclusion to innovation. *Scandinavian Journal of Public Administration*, *22*(2), 3–17.

Magnussen, S., & Rønning, R. (2021). Creating value in public services: The struggle between private and public interests? *The Innovation Journal: The Public Sector Innovation Journal*, *26*(1), Article 1.

Marsilio, M., Fusco, F., Gheduzzi, E., & Guglielmetti, C. (2021). Co-production performance evaluation in healthcare. A systematic review of methods, tools and metrics. *International Journal of Environmental Research and Public Health*, *18*(7), Article 3336. https://doi.org/10.3390/ijerph18073336

McCabe, P. (2016). Challenges in policy redesign. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 63–70). Policy Press.

Mikusova Merickova, B., Nemec, J., & Svidroňová, M. (2015). Co-creation in local public services delivery innovation: Slovak experience. *Lex Localis – Journal of Local Self-Government*, *13*(3), 521–535. https://doi.org/10.4335/13.3.521-535(2015)

Morton, S., Pencheon, D., & Bickler, G. (2019). The sustainable development goals provide an important framework for addressing dangerous climate change and achieving wider public health benefits. *Public Health*, *174*, 65–68. https://doi.org/10.1016/j.puhe.2019.05.018

Nemec, J., Svidroňová, M. M., & Kovács, É. (2019). Welfare co-production: Hungarian and Slovak reality. *NISPAcee Journal of Public Administration and Policy*, *12*(2), 195–215. https://doi.org/10.2478/nispa-2019-0019

Newcastle Team. (2020). *Analyze strategic efforts at multiple levels to spur co-creation: Newcastle City Council and Co-creation. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (Grant agreement No 770591). Unpublished manuscript.

Novani, S. (2016). Value co-creation on cloud computing: A case study of Bandung City, Indonesia. In K. Mangkusubroto, U. S. Putro, S. Novani, & K. Kijima (Eds.), *Systems science for complex policy making: A study of Indonesia* (pp. 43–63). Springer. https://doi.org/10.1007/978-4-431-55273-4_4

Oldfield, C. (2016). In favour of co-production. In K. Majgaard, J. C. Ry Nielsen, B. Quinn, & J. W. Raine (Eds.), *Developing public managers for a changing world* (pp. 83–102). Emerald Group Publishing. https://doi.org/10.1108/S2045-794420160000005005

Osborne, S. P. (Ed.). (2010). *The new public governance? Emerging perspectives on the theory and practice of public governance* (1st ed.). Routledge.

Osborne, S. P., Radnor, Z., & Strokosch, K. (2016). Co-production and the co-creation of value in public services: A suitable case for treatment? *Public Management Review*, *18*(5), 639–653. https://doi.org/10.1080/14719037.2015.1111927

Ostling, A. (2017). Social innovation in practice: Opportunities for citizens and governments. In A. A. Paulin, L. G. Anthopoulos, & C. G. Reddick (Eds.), *Beyond bureaucracy: Towards sustainable governance informatisation* (pp. 117–131). Springer. https://doi.org/10.1007/978-3-319-54142-6_8

Ostrom, E. (1996). Crossing the great divide: Coproduction, synergy, and development. *World Development*, *24*(6), 1073–1087. https://doi.org/10.1016/0305-750X(96)00023-X

Pestoff, V. (2014). Collective action and the sustainability of co-production. *Public Management Review*, *16*(3), 383–401. https://doi.org/10.1080/14719037.2013.841460

Pill, M., & Bailey, N. (2012). Community empowerment or a strategy of containment? Evaluating neighbourhood governance in the City of Westminster. *Local Government Studies*, *38*(6), 731–751. https://doi.org/10.1080/03003930.2012.679934

Rasiah, R., Kari, F., Sadoi, Y., & Mintz-Habib, N. (2018). Climate change and sustainable development issues: Arguments and policy initiatives. *Journal of the Asia Pacific Economy*, *23*(2), 187–194. https://doi.org/10.1080/13547860.2018.1442140

Regal, B., Ferlie, E., Aagaard, P., & Vrbek, S. (2024). Governance modes, mayoral leadership and transitions

to public sector co-creation across Europe. *Public Policy and Administration*. Advance online publication. https://doi.org/10.1177/09520767241231598

Rijeka Team. (2020). *City of Rijeka case. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (Grant agreement No 770591). Unpublished manuscript.

Rose, M. (2016). Using mediation to resolve conflict. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 167–175). Policy Press.

Roskilde Team. (2020). *Gentofte Municipality case. Internal WP4 T2.1 report prepared within the framework of COGOV project Horizon 2020* (grant agreement No 770591). Unpublished manuscript.

Rutherfoord, R., & Spurling, L. (2016). Designing policy for localism. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 81–90). Policy Press.

Saha, P. (2012). *Enterprise architecture for connected e-government: Practices and innovations*. IGI Global. https://doi.org/10.4018/978-1-4666-1824-4

Selloni, D. (2017). *CoDesign for public-interest services*. Springer. https://doi.org/10.1007/978-3-319-53243-1_11

Sicilia, M., Guarini, E., Sancino, A., Andreani, M., & Ruffini, R. (2016). Public services management and co-production in multi-level governance settings. *International Review of Administrative Sciences*, *82*(1), 8–27. https://doi.org/10.1177/0020852314566008

Sillak, S., Borch, K., & Sperling, K. (2021). Assessing co-creation in strategic planning for urban energy transitions. *Energy Research & Social Science*, *74*, Article 101952. https://doi.org/10.1016/j.erss.2021.101952

Sørensen, E., Bryson, J., & Crosby, B. (2021). How public leaders can promote public value through co-creation. *Policy & Politics*, *49*(2), 267–286. https://doi.org/10.1332/030557321X16119271739728

Sørensen, E., & Torfing, J. (2016). Collaborative innovation in the public sector. In J. Torfing & P. Triantafillou (Eds.), *Enhancing public innovation by transforming public governance* (1st ed., pp. 117–138). Cambridge University Press. https://doi.org/10.1017/CBO9781316105337.006

Sørensen, E., & Torfing, J. (2022). Co-creating ambitious climate change mitigation goals: The Copenhagen experience. *Regulation & Governance*, *16*(2), 572–587. https://doi.org/10.1111/rego.12374

Steele, J. (2016). Doing politics to build power and change policy. In C. Durose & L. Richardson (Eds.), *Designing public policy for co-production: Theory, practice and change* (pp. 115–124). Policy Press.

Steen, T., Brandsen, T., & Verschuere, B. (2019). Public administration into the wild: Grappling with co-production and social innovation. In A. Massey (Ed.), *A research agenda for public administration* (pp. 63–78). Edward Elgar Publishing. https://doi.org/10.4337/9781788117258.00010

Strmšnik, K., Markovčič, M., Erhart, V., Lírio, A., Varga, A., Napierała, B. K., Papoulidou, E., Hatjina, F., Olszewska, J., Alves, M., Majewska, N., Laki, N., Zoffoli, R., Teston, S., & Ferreira, T. (2022). *Evolving into a Bee Path City: The guidelines and the transfer journey of the BeePathNet network cities*. City of Ljubljana. https://urbact.eu/sites/default/files/2022-11/Evolving%20into%20a%20Bee%20Path%20City%20-%20short%20guidelines%20EN.pdf

Svoboda, I., & Lande, D. (2024). *Enhancing multi-criteria decision analysis with AI: Integrating analytic hierarchy process and GPT-4 for automated decision support* (Version 1). arXiv. https://doi.org/10.48550/arXiv.2402.07404

Torfing, J. (2019). Collaborative innovation in the public sector: The argument. *Public Management Review*, *21*(1), 1–11. https://doi.org/10.1080/14719037.2018.1430248

Torfing, J., & Sørensen, E. (2022). *Experiences and practices of co-creation and co-production: The role of strategic management practices for co-creating public value outcomes* (Deliverable 4.1, Horizon 2020

Project No. 770591). COGOV. https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5f1cbd9bb&appId=PPGMS

Torfing, J., Sørensen, E., & Breimo, J. P. (2023). When Norway met co-creation: The import, diffusion, and onboarding of a magic concept in public administration. *International Public Management Journal*, *26*(5), 667–686. https://doi.org/10.1080/10967494.2022.2128127

Torfing, J., Sørensen, E., & Dečman, M. (2023). Reaping the fruits of co-creation through design experiments. *Public Policy and Administration*. Advance online publication. https://doi.org/10.1177/09520767231197802

Torfing, J., Sørensen, E., & Røiseland, A. (2019). Transforming the public sector into an arena for co-creation: Barriers, drivers, benefits, and ways forward. *Administration & Society*, *51*(5), 795–825. https://doi.org/10.1177/0095399716680057

Torfing, J., & Triantafillou, P. (2013). What's in a name? Grasping new public governance as a political-administrative system. *International Review of Public Administration*, *18*(2), 9–25. https://doi.org/10.1080/12294659.2013.10805250

Touati, N., & Maillet, L. (2018). Co-creation within hybrid networks: What can be learnt from the difficulties encountered? The example of the fight against blood- and sexually-transmitted infections. *International Review of Administrative Sciences*, *84*(3), 469–485. https://doi.org/10.1177/0020852317741679

Tu, X. (2016). Conditions for the co-production of new immigrant services in Hong Kong. *International Journal of Public Administration*, *39*(13), 1067–1076. https://doi.org/10.1080/01900692.2016.1177838

Tupayachi, J., Xu, H., Omitaomu, O. A., Camur, M. C., Sharmin, A., & Li, X. (2024). Towards next-generation urban decision support systems through AI-powered construction of scientific ontology using large language models—A case in optimizing intermodal freight transportation. *Smart Cities*, *7*(5), 2392–2421. https://doi.org/10.3390/smartcities7050094

URBACT. (2017). *Bee path: Building together the story of bees in urban areas*. https://urbact.eu/good-practices/bee-path

URBACT. (2024). *Bee Path Cities*. URBACT Knowledge Hub. https://urbact.eu/knowledge-hub/food/bees

Van Dis, R., Matt, M., Lhoste, E., & Loconto, A. M. (2023). Social learning from co-creation: Cities on an environmental mission. *The International Journal of Sociology of Agriculture and Food*, *29*(1), 73–79. https://doi.org/10.48416/IJSAF.V29I1.604

Van Gestel, N., Kuiper, M., & Pegan, A. (2023). Strategies and transitions to public sector co-creation across Europe. *Public Policy and Administration*. Advance online publication. https://doi.org/10.1177/09520767231184523

Virtanen, P., & Jalonen, H. (2024). Public value creation mechanisms in the context of public service logic: An integrated conceptual framework. *Public Management Review*, *26*(8), 2331–2354. https://doi.org/10.1080/14719037.2023.2268111

Voorberg, W., Jilke, S., Tummers, L., & Bekkers, V. (2018). Financial rewards do not stimulate coproduction: Evidence from two experiments. *Public Administration Review*, *78*(6), 864–873. https://doi.org/10.1111/puar.12896

Voorberg, W. H., Bekkers, V. J. J. M., & Tummers, L. G. (2015). A systematic review of co-creation and co-production: Embarking on the social innovation journey. *Public Management Review*, *17*(9), 1333–1357. https://doi.org/10.1080/14719037.2014.930505

Vrbek, S., & Jukić, T. (2024). Co-creation service readiness model: A decision support for the selection of public services suitable for improvement through co-creation. *Transforming Government: People, Process and Policy*, *18*(1), 13–32. https://doi.org/10.1108/TG-03-2023-0031

Vrbek, S., Jukić, T., Hržica, R., Dečman, M., Jaman, P., Puzjak, M., Rilko, D., Subašić, A., & Gilja, B. (2022). *Deliverable 7.3 Tool supporting the renewal of public services. EU project funded under grant agreement No 770591*. https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5eb9ab57f&appId=PPGMS

Vrbek, S., & Kuiper, M. (2022). Command, control and co-creation: Drivers and barriers faced by professionals co-creating in the Slovenian public sector. *Central European Public Administration Review*, *20*(1), 33–56. https://doi.org/10.17573/cepar.2022.1.02

Vrbek, S., & Pluchinotta, I. (2021). Is culture a special 'hub' policy area for co-creation? *Journal of Comparative Politics*, *14*(2), 34–52.

Wiewiora, A., Keast, R., & Brown, K. (2016). Opportunities and challenges in engaging citizens in the co-production of infrastructure-based public services in Australia. *Public Management Review*, *18*(4), 483–507. https://doi.org/10.1080/14719037.2014.999820

Wiid, R., & Mora-Avila, P. (2018). Arts marketing framework: The arts organisation as a hub for participation. *Journal of Public Affairs*, *18*(2), Article e1657. https://doi.org/10.1002/pa.1657

Williams, B. N., Kang, S.-C., & Johnson, J. (2016). (Co)-contamination as the dark side of co-production: Public value failures in co-production processes. *Public Management Review*, *18*(5), 692–717. https://doi.org/10.1080/14719037.2015.1111660

Williams, B. N., LePere-Schloop, M., Silk, P. D., & Hebdon, A. (2016). The co-production of campus safety and security: A case study at the University of Georgia. *International Review of Administrative Sciences*, *f82*(1), 110–130. https://doi.org/10.1177/0020852315573157

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