

Co-Creation in European Urban Climate Neutrality Projects: When it is ‘worth it’?

SWOT analysis of co-creation in climate neutrality projects in Aarhus, Bristol, and Gothenburg

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Thesis for the fulfilment of the
Master of Science in Environmental Management and Policy
Lund, Sweden, May 2026



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Published in 2026 by IIIIEE, Lund University, P.O. Box 196, S-221 00 LUND, Sweden,
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ISSN 1401-9191

Acknowledgements

First and foremost, I want to thank Dr. Yuliya Voytenko Palgan for being the best supervisor and her unwavering belief in me and this thesis. Your support and suggestions helped make this thesis what it is, and your editing suggestions helped make it sound great on paper. Thank you for talking me down and helping to build up this thesis. Your knowledge and dedication to the topic helped me develop this research and see it from new perspectives. Thank you so much, I sincerely appreciate all your guidance and wisdom.

Next, I want to express my sincere appreciation for everyone who agreed to participate as interviewees. Without you this thesis would not have been possible, and your insights added a level of depth and nuance to the research findings that reflected your expertise. Thank you for gifting me your time and knowledge.

Thank you to all the teachers and staff at the IIIIEE for imparting their knowledge, wisdom, and advice on me over the past two years. I appreciate the opportunities that I have been given by being a part of this program and hope that many more students can benefit from it as well.

I have endless gratitude for my fellow members of B31. The past two years have been stressful and educational, but also so fun and joyous. Thank you for the late-night study sessions and the endless love and support. I have learned so much throughout my time at insti and you all have been such a big part of it. There's no one else that I wish I had experienced all of this with, you are friends for life.

All the love and gratitude in my heart and the world to my friends, family, and loved ones who have offered unwavering love and support during my life and education. I would not be where I am or who I am today without you. Your presence has meant everything to me, giving me strength and resilience. Thank you.

Lastly, I wish to dedicate this thesis to my cat, Duchess. Thank you for 20 years of being the best friend and companion I could have asked for and for always offering such comfort and joy. Rest easy now, I will always love you.

Abstract

Co-creation is gaining popularity as a form of public participation, especially in urban environments, as a way to engage the public and private sectors more fully for increased solutions to complex challenges like climate change. However, co-creation can be expensive and take time and resources to implement. By conducting a literature review and interviewing co-creation participants from three European projects, this research explores the question of when and how co-creation's advantages outweigh its disadvantages. Through the literature review, an analytical framework featuring the strengths, weaknesses, opportunities, and threats of co-creation was developed. Using this framework, interviews with eight participants from three co-creation cases in Aarhus, Denmark (Co-SHAPE), Bristol, UK (Mission Net Zero), and Gothenburg, Sweden (MOSAIC) were analyzed to determine the effectiveness of co-creation in three different settings across Europe. An effective project had more advantages (strengths plus opportunities) than disadvantages (weaknesses plus threats).

Based on these metrics, the Co-SHAPE and Mission Net Zero projects were effective, and the MOSAIC project was not. Each case portrayed different advantages and disadvantages of co-creation, but a few common patterns and lessons emerged, chief among them: having a pre-existing network of connections facilitates collaboration, dedicating time to create a common language is necessary, creating a balance between focus on outcomes and the process increases learnings, and main barriers included entrenched political traditions, bad communication, and the overall structure of laws influences project goals, design, and uptake of solutions.

These findings provide lessons for city government officials looking to implement co-creation for the urban climate transition to enhance the success of such projects and their solutions. The analytical framework presented in this research also provides a means to evaluate the effectiveness of additional co-creation projects and create generalizable solutions to a wider range of cities and advance the urban climate transition.

Keywords: Co-creation; urban governance; urban climate transition; public participation

Executive Summary

Introduction. Climate change is already causing widespread changes across Earth's various systems leading to adverse impacts that affect both nature and people, and urban environments are no exception (IPCC, 2023). More than half the world's population lives in cities, which are responsible for almost 70% of the world's carbon footprint (Mendizabel et al., 2018). However, municipalities frequently face a capacity gap, lacking the direct financial resources, total control over energy systems, or technical expertise required to achieve total climate neutrality alone (Doci et al., 2025; Voets et al., 2021). This necessitates a shift from traditional governance modes like New Public Management, which is characterized by siloed, market-driven efficiency, to new modes like New Public Governance (NPG). NPG expanded roles so private actors can contribute directly to public problem-solving and governance through strategies like collaborative governance and co-creation. This shift seeks to leverage co-creation to harness distributed knowledge across the city ecosystem of government, industry, academia, and civil society. Yet a fundamental tension persists. While co-creation is essential for solving wicked climate problems, it is notoriously resource-intensive, administratively demanding, and slow.

The overall aim of this research is to identify when the advantages co-creation affords, like increased innovation, increased democratic legitimacy, and enhanced trust outweigh the disadvantages, like time, cost, and resource use, of performing co-creation for climate transition projects in European cities. Furthermore, this research aims to explore the different definitions of co-creation that currently exist in scientific literature and how the definitions have evolved over time. This research will contribute to the body of collaborative governance research as well as the findings being able to inform and guide European municipalities' efforts to accelerate the climate transition, to become more participatory, and to increase the effective use of co-creation. Specific questions researched included:

Research Question 1: How does current literature conceptualize co-creation based on its strengths, weaknesses, opportunities, and threats?

Research Question 2: In the urban climate transition sphere, when and how do the advantages of co-creation outweigh the disadvantages, and when and how do the advantages not outweigh the disadvantages?

- **Supporting Question:** What lessons can be learned from studying projects where co-creation was utilized for climate transition projects?

Methodology. Using an exploratory qualitative approach (Creswell and Creswell, 2018), this research addresses the three research questions. A narrative literature review with a systematic orientation traced co-creation's history, definitions, benefits, and drawbacks and helped to develop an analytical framework on co-creation's strengths, weaknesses, opportunities, and threats (Table 0-1). A multiple-case study was conducted after selecting three cases in Aarhus, Denmark (Co-SHAPE), Bristol, UK (Mission Net Zero), and Gothenburg, Sweden (MOSAIC) by searching for European co-creation projects and applying a ranking system to generate empirical evidence. Seven semi-structured interviews were conducted across the three cases to capture first-hand knowledge on collaboration practicalities, partner interactions and contributions, strengths and challenges, and how city context shaped these dynamics. Interviews and supplemental grey literature were mapped to the analytical framework to assess project effectiveness and to offer recommendations on when co-creation is advisable. Combining the literature review and case study approach enabled triangulation of findings, situating interview insights within the literature and allowing cross-case comparison to identify contextual factors that influence co-creation outcomes and inform recommendations.

The research utilized a rigorous two-step analytical process to evaluate the effectiveness of co-creation. First, an initial framework was developed by identifying the strengths, weaknesses, opportunities, and threats of co-creation from the academic literature and iteratively refining it with aspects identified in interviews (Table 0-1). Second, each cases' interview and grey literature data was coded for the presence (1) or absence (0) of each SWOT aspect in the analytical framework. Additionally, all interview and grey literature data was adjusted across the cases for the SWOT aspects identified from the interviews. Because more strengths than weaknesses and more threats than opportunities were identified, all categories were normalized to the overall number of SWOT aspects for comparability. Strengths and opportunities were combined into advantages and weaknesses and threats were combined into disadvantages. The advantages and disadvantages were then compared to assess the effectiveness of the co-creation projects.

Table 0-1: Simplified Analytical Framework (blue boxes represent aspects identified from interviews)

	Strengths	Weaknesses	Opportunities	Threats
Resources and Performance	Aggregates cross-sector knowledge	Resource-demanding	Replaces services lost to budget cuts	Uncertain overall effects
	Reduces municipal service costs	Increases municipal service costs	Digital access lowers participation barriers	
	Improves outcomes through shared resources	Gaps in co-creation expertise		
Social Justice	Strengthens democratic legitimacy	Unequal representation	Builds transformative capacity	Weak participation incentives
	Gives citizens a public voice	High participation barrier	Fosters shared ownership	Limited actor transparency
	Enhances mutual trust	Perceived citizen knowledge gap	Fosters stronger, united communities	Risk of contributions not integrated
	Builds support for climate action		Facilitates knowledge exchange	
Governance	Better public service provision	Cross-sector divides hinder collaboration	Dismantles institutional silos	Entrenched political tradition blocks adoption
		Participants are risk averse		Overall structure of laws, regulations, and administrations influencing project design and uptake
		Lack of buy-in from senior management in participating organizations		

Main Findings. The results started with a discussion of whether the cases were strong projects based on the analytical framework. Co-SHAPE and Mission Net Zero were found to be effective projects because their advantages outweighed their disadvantages, while MOSAIC was found to be an ineffective project because its disadvantages outweighed its advantages. Each case was then presented according to the themes identified in the analytical framework. Resources and performance focused on evaluating the aggregation of cross-sector knowledge, administrative overhead, and the efficiency of public service provision. The social justice theme focused on democratic legitimacy, mutual learning, and the empowerment of marginalized or skeptical communities. Governance focused on analyzing the dismantling of institutional silos and the impact of entrenched political traditions and legal structures. An analysis across the three cases was then conducted based on the results to compare the themes from each case and their overall effectiveness.

Based on the analytical framework, it was seen that while the cases shared many aspects, none of them were exactly the same. Co-SHAPE was the most effective project, having the most

advantages compared to disadvantages identified, while MOSAIC was the most ineffective project having more disadvantages than advantages identified. The three cases did share some common positive traits, including aggregating cross-sector knowledge, strengthening democratic legitimacy, giving citizens a public voice, enhancing mutual trust, fostering stronger, united communities, and building transformative capacity. However, they also shared common negative traits like being resource-demanding, cross sector divides hindering collaboration, lack of buy-in from senior management, entrenched political tradition blocking adaptation, and the structure of laws influencing project design and uptake. These findings demonstrate that even with the increasing ability of municipalities to capitalize on the advantages of co-creation, there are still improvements that can be made to both co-creation methodology and the wider institutional frameworks to facilitate co-creation. These aspects demonstrated in the analysis also generally coincided with and reinforced theoretical findings from the literature.

Conclusions. These example cases show that there are different ways to achieve effective co-creation, though the framework provides a way to evaluate that effectiveness to determine what contexts co-creation is worth it in. Different patterns emerged while analyzing the projects. The amount of direct participation in these cases and the overall increasing participation in the cities reflects findings in the literature that public participation is increasing and that even if all aspects of co-creation in a project aren't successful, the learnings from the work are contributing to perfecting future collaboration. Aspects that were noted to be vital successful factor across the cases were having an organization or person with experience facilitating collaboration and having a network in the city to approach for collaboration before the start of the project. Many discussed the importance of seeing the value of the process of co-creation and not just the outcome, suggesting a balance between the goals of gaining knowledge from the process, and using that knowledge for improvements is necessary. Noted was that the cases were not focused on implementation, rather focusing on co-creating plans for future implementation, suggesting that citizens are still seen more as consultants for planning rather than influential actors throughout the solution process, or that municipalities are not quite ready to give up that level of control. Distinct barriers to effective co-creation were largely connected to communication and having different languages among stakeholders for explaining similar concepts. Entrenched political traditions and the overall structure of laws in the city also created barriers to successful co-creation. Taking the time at the beginning of projects to talk through these differences and come to a common understanding was highlighted as a key factor to avoid miscommunication and conflict.

In conclusion, based on these projects and the analytical framework, co-creation is worth it when it is used as a strategic investment for transformative change in the city, used in a focused project with a few main goals where every actor is on an equal playing field and can directly interact without power dynamics to produce solutions together. Incorporating a diverse range of civil society and government stakeholders through a pre-existing network of trusted connections produces an ideal arena for co-creation to occur. A helpful pre-condition is also having the funding and time to dedicate to investing in building an effective co-creation framework that can be used for future projects.

This research offers several avenues for future research, including utilizing the proposed analytical framework for future studies on a more diverse range of co-creation projects across Europe to increase the generalizability of findings. Additionally, this research offers lessons for practice focused on ideal conditions or designs to capitalize on co-creation's advantages and offset its disadvantages to make co-creation worth it in more cities.

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Abbreviations

AI1 – Aarhus Interviewee 1

AI2 – Aarhus Interviewee 2

BCC – Bristol City Council

BI1 – Bristol Interviewee 1

BI2 – Bristol Interviewee 2

BI3 – Bristol Interviewee 3

BI4 – Bristol Interviewee 4

CG – Collaborative Governance

Co-SHAPE – Co-Shaping Areas in Peri-Urban Environments

EU – European Union

GI1 – Gothenburg Interviewee 1

GI2 – Gothenburg Interviewee 2

MNZ – Mission Net Zero

MOSAIC – Mission-Oriented SwafS to Advance Innovation through Co-creation

NPG – New Public Governance

NPM – New Public Management

SwafS – Science with and for Society

UK – United Kingdom

1 Introduction

The introduction starts with a discussion of the background (Section 1.1) of why cities should be a main actor in the climate transition as well as why collaboration is essential to cities meeting their climate goals. It also introduces co-creation as a concept and its evolution from community participation to collaborative governance and finally to co-creation to set the scene for this thesis' research. Section 1.2 discusses the tension between idea generation and resource intensiveness that is characteristic of co-creation and outlines the gap existing in current literature on explicitly comparing the advantages and disadvantages of co-creation to highlight where its implementation is most effective. This gap is what influenced the aim and research questions described in Section 1.3. The remainder of this section (Sections 1.4, 1.5, 1.6, and 1.7) discuss the scope, ethical considerations, intended audience, and structure of the thesis.

1.1 Background

Through the emissions of greenhouse gases from human activities, there has been widespread changes in the Earth's atmosphere, oceans, cryosphere, and biosphere, affecting weather and climate patterns in every region across the globe (IPCC, 2023). These changes have already led to widespread adverse impacts affecting both nature and people everywhere (IPCC, 2023). More than half of the world's population lives in cities and faces the adverse impacts climate change has on health, well-being, the economy, and essential services (Mendizabel et al., 2018; IPCC, 2023). Urban environments and their networks are significantly interconnected spaces and are responsible for almost 70% of the world's carbon footprint (Doci et al., 2025). With climate change being such a threat to human well-being and planetary health and with it progressing at a rapid rate, there is an urgent need for more effective and equitable mitigation and adaptation actions across all levels of government, including city level governance (IPCC, 2023). There is, thus, a need to transition urban environments to be more sustainable and to lower carbon emissions by offering various zero-carbon alternatives for services, products, and production (Doci et al., 2025).

Many cities are responding to this need with focus on lowering local greenhouse gas emissions, lowering energy consumption, establishing cleaner transport options, and increasing effective waste management and green building practices (Vermeulen, Winkeler, and Kalra, 2025; Sillak, Borch, and Sperling, 2021). However, many of the urban systems that need to be modified for effective climate change mitigation and adaptation are affected by reliance on costly infrastructure and entrenched use that require radical change for mitigation and adaptation to be integrated into the urban landscape (Vermeulen, Winkeler, and Kalra, 2025). Additionally, cities are integrated and complex organisms where municipalities on their own do not have the means or capacity to address and finance the innovation and solutions necessary for this transition (Doci et al., 2025; Voets et al., 2021). City governments have limited control over sources of CO₂ emissions and are not in control of major businesses, urban estates, transport and energy systems (in some cases) or related development agendas that are crucial for success in urban transformations (Hofstad et al., 2022). Even if they had that control, changes that are optimal from an economic or technical point of view may not be acceptable or beneficial to all social groups involved (Sillak, Borch, and Sperling, 2021). With the problem of climate change being the result of collective action from diverse actors, the solution also needs to come from a diverse group of actors (Zet al., 2021). Collaboration with and financial investment from local urban stakeholders, such as public and private sectors, citizens, and civil society groups, is necessary to reach urban transition goals (Doci et al., 2025; Voets et al., 2021). However, the institutions and governance practices in place in a city are determining factors into what kind of collaboration is possible (Ansell and Torfing, 2021) and many cities need to or are in the process of exploring new governance practices to enable this shared responsibility (Doci et al., 2025).

There have been different iterations of what the collaboration between public and private actors looks like in cities. One such type of collaboration is citizen participation in government decision making, which, especially for environmental decisions, is not a new phenomenon (Irvin and Stansbury, 2004; Ansell and Torfing, 2021). It has long been used to gain public acceptance and support, especially in controversial situations or where public opposition to change or government action exists, as well as to inform better and more efficient policies (Irvin and Stansbury, 2004). From citizen participation, research evolved toward governance networks that bring together public and private stakeholders to develop improved governance solutions (Ansell and Torfing, 2021). This development eventually led to the concept of collaborative governance (Ansell and Torfing, 2021).

Building on collaborative governance, which includes cross-boundary governance and collaboration (Emerson, Nabatchi, and Balogh, 2012) the concept of co-creation expands on the collaboration possible between the public and private sectors (Ansell and Torfing, 2021). Although relatively new and not uniformly defined, co-creation reflects a shift toward deeper forms of collaboration (Hedensted Lund, 2018). In the public sector, co-creation is often framed as a way to address complex societal challenges, with effectiveness and efficiency prioritized over increasing representation and empowerment (Sillak, Borch, and Sperling, 2021). In contrast, within urban development, co-creation is viewed as a way to draw on private-sector knowledge and experience to better understand citizens' needs and improve policies, rather than having citizens directly invent new services or products (Hedensted Lund, 2018). Co-creation is also a way to enhance democracy and democratic legitimacy as well as empower citizens by giving them a stage to voice their needs and wants where they can actively influence the outcomes (Acar, Steen, and Verschuere, 2025; Leino and Puumala, 2021; Torfing, Sørensen, and Roiseland, 2019). More broadly, co-creation can be understood as collaboration between diverse actors (such as public agencies, local, regional, and national governments, citizens, volunteers, civil society organizations, and other local stakeholders) to enhance innovation and develop new public solutions. In this sense, co-creation functions as a proactive governance strategy aimed at reducing conflict and improving cooperation across sectoral silos (Ansell and Torfing, 2021).

However, co-creation also demands significant time, effort, administrative capacity, and financial resources (Leino and Puumala, 2021; Irvin and Stansbury, 2004; Vedeld, 2022), resources that many cities lack. As a result, co-creation may not always be practical or necessary. A trade-off emerges between generating innovative ideas through broad participation and the need to accelerate the climate transition. This raises a key question: when is co-creation a useful and necessary tool for advancing climate action and when does it instead hinder or slow that process?

1.2 Problem Definition

There is abundant literature on community participation, engagement, and co-creation, with a lot of it focusing on how collaborative partnerships between citizen and private sector actors and municipal actors can result in enhanced public values, social cohesion, and efficiency (Acar, Steen and Verschuere, 2025; Torfing, Sørensen, and Roiseland, 2019; Siebers and Torfing, 2018; Doci et al., 2025).

There is, however, a tension between the benefits of co-creation and the challenges that are associated with its increased use, especially between the ability for co-creation to generate new and more diverse ideas to solve the wicked problems of climate change (Siebers and Torfing, 2018; Acar, Steen, and Verschuere, 2025) and the resource intensiveness and slowness that is characteristic of co-creation (Ansell and Gash, 2008; Leino and Puumala, 2021; Torfing, Sørensen, and Roiseland, 2019). This is often more implicit in literature, with articles outlining

the barriers and benefits of co-creation, rather than explicitly comparing the two to highlight the contexts when co-creation is most useful in accelerating the climate transition.

A significant body of research exists on identifying the challenges and benefits of co-creation along with the evolution of co-creation from more traditional modes of governance, such as top-down decisions from governments with little input from citizens or only including citizen input in the implementation phase (Ansell and Gash, 2008; Leino and Puumala, 2021; Torfing, Sørensen, and Røiseland, 2019; Siebers and Torfing, 2018; Acar, Steen, and Verschuere, 2025; Reifensahl, Augenstein, and Möller, 2025). The literature tends to focus more on discussing the process of collaboration and co-creation, such as who is involved, how they are involved, and why they are involved, rather than the outcomes of these processes, which this research aims to contribute to by bringing in a more normative lens on the advantages and disadvantages of co-creation. The knowledge gap that this thesis will focus on exploring is about connecting the effectiveness of co-creation to city or project contexts to study how and when co-creation should be included in city projects by comparing the advantages and disadvantages demonstrated in past projects to offer suggestions of when co-creation is most impactful.

1.3 Aim and Research Questions

The overall aim of this research is to identify when the advantages co-creation affords, like increased innovation, increased democratic legitimacy, and enhanced trust outweigh the disadvantages, like time, cost, and resource use, of performing co-creation for climate transition projects in European cities. Understanding when collaboration between city stakeholders and the municipality results in learnings or solutions that accelerate the climate transition and when those collaborations just take time without creating better solutions is a part of reaching this goal. Furthermore, this research aims to explore the different definitions of co-creation that currently exist in scientific literature and how the definitions have evolved over time. This research will contribute to the body of collaborative governance research as well as the findings being able to inform and guide European municipalities' efforts to accelerate the climate transition, to become more participatory, and to increase the effective use of co-creation.

Specific questions include:

Research Question 1: How does current literature conceptualize co-creation based on its strengths, weaknesses, opportunities, and threats?

Research Question 2: In the urban climate transition sphere, when and how do the advantages of co-creation outweigh the disadvantages, and when and how do the advantages not outweigh the disadvantages?

- **Supporting Question:** What lessons can be learned from studying projects where co-creation was utilized for climate transition projects?

1.4 Scope

This research focuses on understanding when co-creation results in accelerating urban climate transition solutions and when it takes more time and resources than the solutions are worth using three case projects from European municipalities and learnings from existing literature on co-creation.

Academic literature, with a preference given for literature from Europe, was analyzed to answer Research Question (RQ) 1 and to support RQ 2. Exploring the theory and evolution from public participation to collaborative governance to co-creation, and co-creation's current role

led to understanding the benefits and barriers of co-creation, its effectiveness, and the different types and strategies of co-creation.

To answer RQ 2, interviews were conducted with stakeholders from the three European urban climate transition projects. Due to time and resource constraints, the research looked at three projects that were almost or already completed in three different European cities. The choice to look at projects from different cities was made to allow study of the city contexts that affected the effectiveness of the co-creation projects rather than focusing on the typology of the co-creation project. Choosing projects that were already completed, or almost completed, allowed the participants and the researcher to view the entirety of the project and make judgements on its outcomes. The chosen projects all took place between 2021 and 2026, being completed between 2023 and 2026. The choice to look at recent projects was made to increase the likelihood that personnel associated with the project would still be in the same organization as they were when the project took place and therefore would be more easily contactable. Additionally, recent projects were chosen to ensure more accurate recall of experiences from the project. Using the interviews to determine things that went well or not well during the project and that led to overall success or failure made up the lessons learned that contributed to understanding the contexts where co-creation is more or less relevant.

It should be noted that due to time constraints this research did not focus on analyzing the networks between municipal governance and regional or national governance but focused on the local conditions that affected the projects. However, it is acknowledged that these interactions do have influence on local conditions and were touched upon in the research but not studied in depth.

1.5 Ethical Considerations

This research was not funded by any external organization and no person, others than the author, was in a position to influence the analysis and subsequent conclusions. Yuilya Voytenko Palgan as supervisor guided the research, but the overall results, analysis, and conclusions were determined fully by the author. Additionally, the research design has been reviewed against the criteria for research requiring an ethics board review at Lund University and has been found to not require a statement from the ethics committee.

All participation in this research was voluntary and not incentivized or compensated in any way. Prior to conducting any interviews, participants were given detailed information about the research, its aim, and their rights related to the interview and research process as well as their right to withdraw consent at any time outlined in a consent form (Appendix A). Participants' consent was verbally re-confirmed at the start of each interview, including their consent to be audio-recorded and their right to review any quotes used directly in the results. All participants are identified according to their general role (academic partner, municipal partner, private partner, etc.) and the case, with no other affiliations or names ascribed to their responses.

The data obtained during this research was used solely for the purpose of completing an MSc in Environmental Management and Policy. Any other use of this data will require the researcher to obtain explicit consent from each participant prior to use in secondary research. Lastly, interview recordings are stored securely in a password protected folder on the researcher's hard drive until the thesis is approved and published, after which all data will be deleted.

1.6 Audience

This research builds knowledge for various urban actors involved in the urban climate transition, like city government officials, urban planners, policymakers, and non-governmental

organizations. The results from focusing on how co-creation can be used to advance the urban climate net zero transition may improve the effectiveness of future co-creation projects by offering suggestions for when to implement co-creation in urban climate transition projects. Having more evidence for which contexts co-creation has been successful in can help city government officials make decisions about when it is most useful to them to implement a co-creation strategy. However, it must be noted that this research does not offer suggestions on what type of co-creation cities should pursue, as there is no one-size-fits-all solution. Cities have very different pre-existing conditions and contexts that will affect what strategy or solution is best for them and that is up to each city to evaluate and determine. This research can highlight the contexts that affected the uptake of the co-creation used in each case, and speculate on the reasons behind the outcomes, but cannot offer concrete assurances that the strategies will work in every single similar context.

By diving into urban co-creation and setting directions for future research, this research is also aimed at researchers in co-creation, collaborative governance, and the urban climate transition. The theoretical and practical views that this thesis offers creates grounding for additional research while providing a framework that can be used to evaluate the effectiveness of other co-creation projects.

1.7 Disposition

This thesis begins with Section 1, which introduces the background and presents the problem definition, research aim and research questions, the scope of the research, ethical considerations associated with conducting the research, and the intended audience. It then continues with Section 2 describing the current state of research and understanding of co-creation, including a history of community participation and its evolution through collaborative governance to the term co-creation used throughout this thesis. Section 2 culminates in a discussion of the advantages and disadvantages of co-creation as seen in the literature. Section 3 explores the research design employed by this thesis as well as the data collection methods and the method of analysis. It also introduces an analytical framework based on co-creation's strengths, weaknesses, opportunities and threats, which were identified in the literature review, to be used to analyze the chosen case projects.

Section 4 presents the findings of this research, focused on presenting the results of each studied case individually. This section contains sub-sections for each case, starting with a description of the case, followed by the results from the interviews for each case based on the themes presented in the analytical framework. A presentation of the SWOT aspects that are missing from each case ends the sub-section.

Section 5 then takes the results presented in Section 4 and analyzes them across the three cases to highlight the main findings of the research. This includes how each case's effectiveness compares to the other cases, as well as comparing the observed traits in the cases to what was highlighted in the literature. It ends with a discussion of themes that emerged through the analysis of findings.

Section 6 discusses the main findings from the research and looks at themes of co-creation from the analysis that were common across the cases and how those themes fit into the current literature. This section also includes a reflection on the analytical framework, methodology, and other limitations of this research.

Section 7 concludes this research by summarizing the findings, highlighting areas for future research, and discussing the lessons and implications for practice.

2 Literature Review

This section provides an overview of the research topic, exploring concepts of public participation, collaborative governance, urban climate governance, and co-creation. It starts with a description of public participation, its strengths and weaknesses (Section 2.1), and the history of participation that led to the emergence of collaborative governance from which rose the concept of co-creation as a subset of collaborative governance (Sections 2.1.1-2.1.3). What follows is a discussion of the different definitions of co-creation that can be found in the literature, distinguishing the term co-creation from co-production and collaborative governance, as well as a brief discussion of typologies of co-creation and summarized by the advantages and disadvantages of co-creation (Section 2.2). This section ends in the presentation of co-creation's advantages and disadvantages (Section 2.2.2) to inform an analytical framework outlining the strengths, weaknesses, opportunities, and threats associated with co-creation based on the literature (Table 3-4).

2.1 Public Participation to Co-Creation

There are many terms used for the phenomenon that is soliciting input and collaboration from the public for government decision making. This is sometimes called public participation (Coenen, Huitema, and Woltjer, 2009; Reifensahl, Augenstein, and Möller, 2025), community engagement (Anthony, 2024), citizen engagement (Siebers and Torfing, 2018), or citizen participation (Irvin and Stansbury, 2004; Michels and De Graaf, 2010) with the overall idea being to get citizens more actively involved in democracy to improve the governance process and make it more effective (Irvin and Stansbury, 2004). This thesis will use the term public participation, defined as the process of directly engaging public stakeholders in governmental decision making, for uniformity. Increased public participation has been pushed since the 1950s (Irvin and Stansbury, 2004), and proponents of public participation offer many arguments for why it enhances the governance process.

At its core, public participation is creating a pathway for collaborating or informing citizens and other stakeholders (Anthony, 2024) by facilitating the breakdown of hierarchies of governance and building on shared local knowledge about local vulnerabilities and possible adaptation measures (Reifensahl, Augenstein, and Möller, 2025). This pathway serves many functions, one of them being education. Through the participatory process, citizens are seen as being more involved, informed, and competent, becoming citizen-experts who are able to see more solutions to community problems (Michels and De Graaf, 2010; Irvin and Stansbury, 2004). In addition, a more informed public and more collaboration with administrators means that decisions that may be unpopular at first can be explained or changed to be more grounded in what the citizenry needs and wants, leading to increased support for more controversial policies (Irvin and Stansbury, 2004; Coenen, Huitema, and Woltjer, 2009). When citizens are more involved or learn about what goes in to making decisions in government and the rationale behind those decisions, they can be more sympathetic to the decisions that are made which results in increased trust, or at least reduced opposition (Irvin and Stansbury, 2004). While citizens can learn a lot from participating more directly in governance, administrators can also learn a lot from public participation. They are introduced to their community's positions and can learn which policies are likely to be unpopular before introducing them to avoid policy failures (Irvin and Stansbury, 2004). Public participation also allows governments to utilize more information sources, perspectives, and possible solutions to improve the quality of decisions (Michels and De Graaf, 2010). In this, both citizens and administrators can feel more connected to their communities and more responsible for public decisions and how people are impacted by them (Michels and De Graaf, 2010).

Another reason for local governments doing public participation is to increase the legitimacy of decisions and inclusiveness in democracy (Sørensen, Bryson, and Crosby, 2021; Michels and De Graaf, 2010). If done well, the perspectives of more vulnerable populations or those who have historically not had a voice can be uplifted and given the opportunity to shape their communities to their needs (Leino and Puumala, 2021). When community activists have regular contact with key government decision makers, they have a more direct chance to sway them as well as having the knowledge to be able to teach other citizens how to interact with decision makers (Irvin and Stansbury, 2004). Through this, participation can be used as a way to reduce power inequalities in society by giving otherwise powerless citizens the knowledge and legitimacy to play on the same level as government decision makers (Hedensted Lund, 2018; Irvin and Stansbury, 2004).

Public participation is a strategy for dealing with wicked and complex problems that the public sector cannot solve on its own (Siebers and Torfing, 2018). Enabling citizens to participate in environmental decisions allows for their specific local expertise and knowledge to be included in climate solutions (Reifenstahl, Augenstein, and Möller, 2025), as well as increasing support and acceptance for policies that directly affect the citizens (Coenen, Huitema, and Woltjer, 2009). Improving participation from just informing citizens to creating dialogue through methods like citizen advisory boards and town hall meetings also helps inform regulators of what would trigger intense public backlash (Irvin and Stansbury, 2004).

However, there are also arguments against public participation, or at least against increasing its use. Public participation is resource intense. The process is very time consuming, can be a significant administrative burden on government agencies, and requires a steep time commitment from staff (Irvin and Stansbury, 2004; Coenen, Huitema, and Woltjer, 2009). Some even argue that it can also be perceived as dull for participants, decreasing their incentives to participate (Irvin and Stansbury, 2004). Public participation can also be very monetarily expensive, with some methods being more costly than others (Irvin and Stansbury, 2004). Public participation can also have problems with representation where participants are drawn more often from advantaged groups or those with the time and opportunity to participate, and can exclude marginalized groups like ethnic minorities, young people, immigrants, and low-income households (Michels and De Graaf, 2010; Anthony, 2024). Another argument put forth by the literature centers around public participation resulting in lower quality results. Some argue that with public participation comes the risk of populist decision making where expert knowledge is ignored in favor of the popular choice, even if it leads to an outcome that will have long-term problems (Welp, Kasemir, and Jaeger, 2009).

There are also barriers to increasing public participation exemplified in the literature. One of these barriers is related to resistance to participation from governments who fear losing control of decision making (Irvin and Stansbury, 2004). On the other hand, unrealized expectations from citizens of the influence their participation has on government decisions can lead to backlash and distrust in citizens if they feel they are not heard during a participation process (Coenen, Huitema, and Woltjer, 2009). Another challenge with public participation is that the choice to participate can be driven by self-interest, with citizens only engaging when they feel they have something to gain or lose. This can make it difficult to create a representative sample and also open the process up to manipulation from large actors (Michels and De Graaf, 2010; Irvin and Stansbury, 2004).

2.1.1 Increasing Levels of Participation

However, there are many different levels of participation, some of them more involved than others. Arnstein's (1969) Ladder of Participation describes eight levels of participation based on how much control the participants have over the decision-making process. At the bottom are levels of non-participation where participants are educated or cured, but not participating. In

the middle are different degrees of tokenism, where participants may have a voice and be heard, but no power to ensure they are actually heeded. The highest levels of participation are where citizens gain more power either in partnership where they can negotiate, where they have been delegated power, or where they have full managerial power. However, there have been critiques against this Ladder of Participation for being too value-laden and combining typology and theory (Reed et al., 2018). Despite the critiques, this theory has been built upon by other participation models and developed into models like the split ladder of participation.

The split ladder of participation splits Arnstein's model at the bottom and the top and incorporates different contexts where participation could occur. These are based on problems being structured or unstructured, kinds of learning, kinds of dialogue, based in science or values, amount of trust and problem solving, and amount of participation necessary (Hulbert and Gupta, 2015). This model was developed as a tool to assess when participation is likely to work and under what conditions participation is necessary (Hulbert and Gupta, 2015). Others developed away from the idea of a ladder and proposed typologies like the wheel of participation to combine modes of engagement with top-down or bottom-up agency (Reed et al., 2018).

The wheel of participation features an inner and outer dial that can be spun to create different combinations of who is initiating and leading the process as well as modes of engagement, from one-way communication to co-production, to match the purpose and context where the engagement is needed (Reed et al., 2018). Even this idea has been built upon to generate models like the tree of participation (Bell and Reed, 2021) to demonstrate other aspects that should be considered in participation.

Historically, participation has mostly consisted of citizens being informed of decisions and policies, and even today, participation runs the risk of being tokenized if the input from citizens is not actually taken into decisions (Anthony, 2024; Leino and Puumala, 2021). However, these models show an evolving understanding of what public participation means and show that society is moving towards higher levels of participation by widening what is considered when deciding to implement participation. Creating structures and enabling citizens' participation in decision-making, especially for environmental decisions has many benefits, as described in Section 2.1, and this trend towards changing perspectives on participation is partially connected to changing modes of governance, which will be discussed in the next section.

2.1.2 From Traditional to New Forms of Governance

In the early years of the public sector from the mid 1900s to the 1980s, the state was expected to meet all the social and economic needs of the citizens and traditional forms of governance, like public administration, were the tools expected to meet all these demands (Osborne, 2006). Public administration was defined by setting rules and guidelines for everyone to follow, creating a central role for the bureaucracy in policy making, splitting politics and administration within the public organization, and being committed to incremental budgeting (Osborne, 2006). Such expectations and strict roles led to a lot of criticism and ultimate failure (Osborne, 2006).

After the 1980s came New Public Management (NPM), which saw governments being ran more like businesses and citizens became customers with needs, demands, and the right to choose where they got their services from, but no responsibility to design those services (Siebers and Torfing, 2018; Ansell and Torfing, 2021; Torfing et al., 2021). NPM was focused on running the public sector as efficiently as possible for results and utilized strategic management to get those results at a low cost (Torfing et al., 2021). Treating public value as a service was also a way of giving citizens a say in public service quality by encouraging competition and giving citizens a choice of where they got their services from, rather than a choice of adding their input into the political system (Sørensen, Bryson, and Crosby, 2021; Siebers and Torfing, 2021). Instead

of voting for representatives or giving direct input, citizens instead were voting with their patronage and money to change public value outcomes (Siebers and Torfing, 2021). However, NPM as a strategy and marketization of services in general also became highly criticized because it produced a fragmented and siloed governance system of market-focused agencies that had little capacity or desire to collaborate across institutional boundaries or engage the public (Sørensen, Bryson, and Crosby, 2021).

These criticisms have led to a new shift in governance strategy towards what Osborne (2006) has called New Public Governance (NPG). This is the idea that businesses, civil society actors, and public service users (citizens) can contribute directly to public problem-solving and governance with interactive governance modes like collaborative governance, network governance, co-production, and co-creation (Sørensen, Bryson, and Crosby, 2021; Ansell and Torfing, 2021; Osborne, 2006). All of these concepts share the idea that the involvement of a broad range of actors enhances the legitimacy and efficacy of decisions (Sørensen, Bryson, and Crosby, 2021), bringing back the concept of public participation being an enabling factor for public authorities to enhance public values. The next section will focus on collaborative governance as the dominant concept used to describe NPG.

2.1.3 Collaborative Governance

The shift in governance to NPG described by Osborne (2006) has partly led to the development of more collaborative modes of public governance such as collaborative governance (CG). CG developed throughout the 80s and 90s through local experiments in reaction to previous governance failures to become the successor to NPM (Ansell and Gash, 2008; Voets et al., 2021). CG shifts policies away from service delivery in government or market centric settings to settings in which a variety of actors, including public, private, and nonprofit, are jointly involved in policy making (Voets et al., 2021). As defined by Ansell and Torfing (2021), CG is “the processes and structures of public policy decision-making and management that enable people to engage across boundaries.” (pg.218). This trend towards collaboration, as well as coming from the criticisms and failures of NPM (Sørensen, Bryson, and Crosby, 2021), comes from a growth of knowledge and institutional capacity and the need to manage the more specialized and distributed knowledge that comes from that growth (Ansell and Gash, 2008).

The increased popularity of CG can also be explained by the need to find new, more collaborative solutions to increasingly complex challenges that are facing the world (Voets et al., 2021). Complex challenges require complex solutions, and fragmentation of the public sector and of knowledge means collaboration is one avenue to sparking more innovation through sharing of ideas (Voets et al., 2021; Ansell and Torfing, 2021). CG can also be seen as a reaction to increased fiscal stress from budget cuts and a push for leaner governments (Voets et al., 2021). While collaborative efforts can be seen as too expensive to continue during budget cuts, they tend to increase due to necessity as a response to resource scarcity (Voets et al., 2021).

A critical component of CG is governance, which refers to the rules and forms that make up the processes for collective decision making and how actors use them to exercise authority, grant power, take action, or ensure performance (Ansell and Gash, 2008; Voets et al., 2021). CG then builds on this idea and focuses on how public and private actors can work collectively, using processes, rules, and forms to create public value (Ansell and Gash, 2008). Though some forms of collaboration do not need state actors, CG is generally defined in such a way as to include public actors and agencies, who are most often the initiators of CG (Ansell and Gash, 2008; Voets et al., 2021).

CG often involves networks that bring together a broad range of actors and become the structures that support the processes that make CG possible (Ansell and Torfing, 2021; Voets

et al., 2021). These networks help to enable engagement and collective decision making across boundaries, making it an ideal strategy for complex new challenges that cannot be solved by the government alone. Like climate change, these challenges are at such a large scale and the solutions necessary are highly contested and considered beyond the capacity of any one entity to solve (Voets et al., 2021). The majority of research mentions that this network is made up of the public sector or public agencies and private actors, but don't specify beyond that. Sillak, Borch, and Sperling (2021) further elaborate on this by discussing the involvement of actors from the triple helix (government, industry, and academia) but also state that this can be expanded to a quadruple, quintuple, or more helix to fully encompass every part of civil society. It also appears that research focused on theory use terms like network, while research focused more on the practice of collaboration uses terms like triple helix. The exact actors that are included in a collaborative project or process are different depending on the exact case and which actors and sectors it affects, though it's not always clear what the inclusion criteria truly are (Sillak, Borch, and Sperling, 2021).

Despite CG being initiated mostly by public entities, the term collaboration implies two-way communication (Ansell and Gash, 2008). Collaboration is not consultative or informative, but a chance and arena for there to be communication and influence between public agencies and stakeholders, as well as between the stakeholders themselves (Ansell and Gash, 2008). In other words, stakeholders should be directly engaged in decision making and the process itself should be collective.

Within this shift to increased collaboration and working with CG has emerged the concept of co-creation. While CG can be understood as the overall structure and governance strategy for increasing collaboration, co-creation could be considered a more specific strategy. The next section will discuss in more detail what constitutes co-creation and what separates it from CG and other concepts.

2.2 Co-creation

Co-creation is another term that has various definitions and understandings, and there is no clear consensus on one definition (Aastevedt and Higdém, 2022; Brandsen and Honingh, 2018; Hedensted Lund, 2018). As a concept, co-creation has multiple roots contributing to its definitions. From the private sector, co-creation evolved from the notion that user input in product development from marketing research would lead to better, more successful products (Ansell and Torfing, 2021; Hedensted Lund, 2018; Aastevedt and Higdém, 2018), while in the public sector co-creation developed similarly to CG with the notion that it could solve complex societal problems in a more effective way by harnessing the resources of civil society (Hedensted Lund, 2018; Ansell and Torfing, 2021).

There are also terms like co-production, civic engagement, community participation, and collaborative innovation that are sometimes used interchangeably with co-creation (Brandsen and Honingh, 2018; Ansell and Torfing, 2021; Hedensted Lund, 2018), making it even harder for a single definition of the term to exist. It can also be said that there is a benefit to not having a clear and well-defined definition of co-creation as it allows for more interpretation by users to fit their exact needs and avoids imposing a specific process onto them (Brandsen and Honingh, 2018; Nyamakura et al., 2025). Practically, this increases its use value but academically makes it harder to be understood and studied. So here, a distinction has been made between these terms and while co-creation can be a part of CG and community participation is a part of co-creation, it goes beyond these concepts and is distinguished and defined as its own concept.

2.2.1 Defining Co-creation

Co-creation vs. Co-production

Co-production is frequently used interchangeably with co-creation, and many scholars have argued for clearer distinctions to highlight the particular benefits of co-creation (Ansell and Torfing, 2021; Brandsen and Honingh, 2018; Hedensted Lund, 2018). Although co-creation has public-sector roots, it is often associated with private-sector innovation, whereas co-production is commonly traced to public-sector studies of collaboration between government departments and citizens in service production (Ansell and Torfing, 2021). In this, co-production can be seen as an extension of public participation. Because of overlapping origins and practices, the terms share many similarities, but researchers have sought to distinguish them conceptually.

Both co-creation and co-production denote stages of the production process in which citizens have direct, active input rather than encompassing every possible form of citizen involvement (Brandsen and Honingh, 2018). Both concepts describe collaboration between public-sector service providers and citizens (Brandsen and Honingh, 2018; Aastevedt and Higdém, 2022) and emphasize citizen agency in shaping services. This active role differentiates them from definitions of community participation that involve only passive consultation or one-way feedback (Brandsen and Honingh, 2018; Torfing et al., 2021).

To clarify differences, it is useful to define each term. Some scholars treat co-creation as a subtype of co-production, acknowledging that co-production is the older term and that both involve including customers or service users in service production (Aastevedt and Higdém, 2022). Early definitions of co-production emphasized the mixing of productive efforts between public agencies and citizens, either directly or indirectly (Parks et al., 1981). Since that foundational work, researchers have broadened the concept to include a wider range of actors and activities, extending beyond narrow notions of service delivery (Ansell and Torfing, 2021). Nevertheless, many agree that co-production remains primarily focused on collaboration between public service providers and private service users during the implementation or delivery phase (Ansell and Torfing, 2021; Brandsen and Honingh, 2018; Hedensted Lund, 2018).

Co-creation is typically defined more expansively as a process in which a broad array of public and private actors collaborate to define shared problems and jointly design and implement solutions (Ansell and Torfing, 2021). Brandsen and Honingh (2018) argue that involvement from the planning or initiating stages characterizes co-creation, whereas citizen entry at later stages is better described as co-production. Hedensted Lund (2018) further observes that co-creation in the public sector often centers on generating knowledge about citizens to refine problem definitions and solution design, rather than solely enabling citizens to produce services.

The prevailing view positions co-creation as moving beyond mere participation or service-delivery co-production toward intentional engagement and collaboration at every stage of the process to address public problems (Hofstad et al., 2022; Nyamakura et al., 2025; Hofstad et al., 2022-b; Aastevedt and Higdém, 2018). Hedensted Lund (2018) highlights that co-creation fosters innovation and value creation through collaborative processes involving diverse actors. Torfing, Sørensen, and Røiseland (2019) describe co-creation as a multi-actor process that seeks to solve shared challenges through exchanges of knowledge, resources, and ideas, enabling continuous improvement or transformative innovations that reconceptualize problems and open new solution pathways. Baptista et al. (2020) similarly define co-creation as interactive collaboration between the public sector and service users, exchanging resources, knowledge, competences, and ideas. Criado et al. (2021) offer a broader framing in which organizations and individuals who constitute a community engage in participatory action to resolve specific challenges.

For the purposes of this thesis, co-creation is understood as an intentional, collaborative process in which two or more actors from a broad range of public and private organizations collectively exchange knowledge to define a problem and to initiate, design, and implement new solutions or improve existing processes to address that problem.

Co-creation vs. Collaborative Governance

CG has been described in the previous sections, and it can be said that definitions of co-creation tend to overlap with this concept. If CG refers to the processes and structures that enable people to engage across boundaries for collective decision making (Ansell and Torfing, 2021), then co-creation could be understood as one of the processes that CG is enabling. However, CG is a much broader concept that includes more processes and agendas, while co-creation emphasizes one particular agenda (Ansell and Torfing, 2021).

Co-creation emphasizes the role of collaboration leading to innovation and stresses the engagement of a wider group of stakeholders with more interest in bottom-up innovation instead of being initiated by public agencies (Ansell and Torfing, 2021). Additionally, while CG is a decentered process, it does want to create more centralized networks where innovation occurs, while co-creation emphasizes the value of mobilizing and utilizing the distributed nature of innovation resources (Voets et al., 2021; Ansell and Torfing, 2021). Co-creation aims to build on the distributed experience, knowledge, resources, and perspectives of actors by bringing them together in a way that facilitates resource exchange to discover innovative solutions (Ansell and Torfing, 2021). Finally, co-creation is more of a proactive strategy than CG, which grew out of wanting to mediate conflict, organize effective cooperation across silos, and gain consent for public sector decisions (Ansell and Torfing, 2021). When the collaborative aspect of CG was seen as a way to correct limitations of past regimes like NPM, the collaboration often failed. As a proactive strategy, co-creation starts with collaboration to harness untapped knowledge and produce solutions with enhanced public value (Ansell and Torfing, 2021). So, while co-creation can be seen as a type of CG, it inhabits a niche where innovation is created through collaboration for untapped, distributed knowledge with a wide range of public and private actors.

2.2.2 Goals of Co-creation

Co-creation has varied definitions and goals. A primary goal is to empower citizens, particularly marginalized groups, by giving them a meaningful voice in decision-making, promoting social justice, and ensuring diverse stakeholder perspectives are represented (Reifenstahl, Augenstein, and Möller, 2025; Leino and Puumala, 2021). It also aims to strengthen social cohesion and build resilient communities by enhancing mutual trust and creating networks of social capital (Torfing, Sørensen, and Røiseland, 2019). Together these aims contribute to enhancing the democratic legitimacy of the public sector.

Co-creation further seeks to improve the quality and creativity of solutions. It facilitates collaborative innovation, bringing groups together with out-of-the-box ideas to address wicked problems such as climate change (Siebers and Torfing, 2018). By integrating lay knowledge from the public and private sectors, solutions become more holistic and context-specific (Reifenstahl, Augenstein, and Möller, 2025), which can increase effectiveness by better meeting user needs and reducing service failures (Acar, Steen, and Verschuere, 2025). Co-creation can also improve efficiency by delivering outcomes more optimally and saving time and money through mobilizing distributed resources and ideas (Torfing, Sørensen, and Røiseland, 2019).

Recent goals emphasize systemic change. Co-creation can reconceptualize the public sector from a legal authority or service provider into an arena of collaboration and enablement (Siebers and Torfing, 2018). It aims to shift ownership of collective problems and solutions from public

agencies to all involved actors (Ansell and Gash, 2008). Part of this systemic ambition is enabling transformative learning, where public and private participants alter mental frameworks, behaviors, and social practices to build capacity for effective climate action (Reifenstahl, Augenstein, and Möller, 2025). Finally, co-creation seeks to break administrative silos by compelling different departments to collaborate (Torfing, Sørensen, and Røiseland, 2019). These varied goals reflect co-creation's role in democratic governance, service innovation, and systemic transformation across sectors and local contexts.

Advantages and Disadvantages of Co-creation

Through defining co-creation and discussing the evolution of the term, a multitude of advantages and disadvantages of co-creation became apparent, organized here in Table 2-1 and based on the literature reviewed in the previous sections. This table is then used to help create the analytical framework (Table 3-4).

Table 2-1: Advantages and Disadvantages of Co-creation

	Advantages	Disadvantages
Resource mobilization and service performance	Condenses knowledge and resources from a network of actors	Time-consuming and resource demanding
	Uses societal resources to replace municipal resources that are cut due to budget constraints	Increased administrative costs
	Increases effectiveness and efficiency of public services increasing available resources, lowering costs of service provision, and matching citizens' needs to reduce service failure	Hard to estimate overall impacts
	Uses dialogue to meet unmet societal resources	
Democratic legitimacy and citizen voice	Increases democratic legitimacy and enhances democracy	Limited transparency and accountability
	Empowers citizens by giving them a stage and a voice to vocalize their needs and wants	Results could be ignored or the process becomes tokenized
	Builds joint sense of ownership over solutions to increase longevity	
Equity, access, and social outcomes	Enhances equity of services, service access, and service delivery	Unequal participation or representation from population
	Strengthens social cohesion and builds resilient communities	Selective participation bias
		Citizens may not view themselves as knowledgeable enough to participate or threshold to participate is too high
		Lack of incentive to participate
Innovation and transformation	Stimulates innovation	Changes public workers roles to managers of collaboration rather than providers of services, negatively impacting their working conditions
	Reconstructs actor roles which leads to transformative change	Lack of knowledge and skills necessary to facilitate co-creation
		Cultural, institutional, organizational, and communicational differences can severely affect co-creation
Governance, trust, and organizational change	Fosters trust in public sector and in stakeholder network	Entrenched political traditions mean reluctance to change
	Breaks down hierarchies and silos in administration and between stakeholders	

Source: Author's interpretation based on literature review

2.3 Putting it all together

The concept behind co-creation is not necessarily new, as it has been seen in similar concepts like public participation and CG. While co-creation can be defined as an aspect of CG or an extension of public participation, it can also be defined on its own. The evolution of community engagement to participation and finally to the current understanding of collaboration has shown the advantages and disadvantages of co-creation. Co-creation's focus on harnessing distributed knowledge and resources in collaboration for increased innovation is why it's so perfectly situated as a strategy to develop solutions for the complex challenge that is climate change. Mitigation and adaptation measures need innovative solutions that engage all stakeholders within a city to be successful. These measures on a city level are the foundational building block to fight climate change on a global level.

Understanding the benefits of co-creation is only one step to actually getting it implemented though. The institutions in place are the ones that shape the opportunities available to citizens for participation, and this can differ greatly depending on the current management strategies in use (Ansell and Torfing, 2021). There have been different shifts in governance strategies and with them the way the role of citizens is seen. From the traditional representative democracy where citizens' power lay in their vote, to the participatory democracy of the 1960s to 80s where citizens' roles expanded, to the current definition of participation (Siebers and Torfing, 2018). This change was supported by institutional design that allowed people to more directly participate, like public hearing processes, town hall meetings, citizen panels, and forums for public participation and debate (Siebers and Torfing, 2021). For co-creation to be able to be successfully used and implemented, it needs to be supported by institutions and seen as a valid and useful strategy.

Throughout this literature, the focus of study on co-creation has been strategies for co-creation, discovering typologies of co-creation from projects, or on what the process needs from an institutional point of view for co-creation to be successful. The literature also reflects a trend towards increased collaboration in public projects to achieve success in climate goals, particularly net zero or climate neutral ones. However, the literature highlights a need for more research into the effectiveness of co-creation for achieving those climate goals, particularly in connection with comparing that effectiveness to external factors that affect the collaboration. Within this there are also opportunities for research into translating findings to recommendations to cities for when to implement more co-creation strategies for better solutions against the climate crisis, and when to focus on getting solutions out quickly by minimizing collaboration. This gap, along with the reviewed literature and the identified advantages and disadvantages presented in Table 2-1, informed the analytical framework that is presented in Table 3-4 (and in a more detailed version in Appendix D), which will be presented in the methodology, and formed the basis for answering RQ 2.

3 Methodology

This study explores project contexts where co-creation's advantages outweigh its disadvantages to determine when it accelerates or hinders urban climate transition. Using an exploratory qualitative approach (Creswell and Creswell, 2018), it addresses three research questions. A narrative literature review with a systematic orientation traced co-creation's history, definitions, benefits, and drawbacks and helped to develop an analytical framework. A multiple-case study was used, selecting cases by searching for co-creation projects in Europe and applying a ranking system to generate empirical evidence. Interviews were mapped to the analytical framework to assess project effectiveness and to offer recommendations on when co-creation is advisable. Combining the review and case study approach enabled triangulation of findings, situating interview insights within the literature and allowing cross-case comparison to identify contextual factors that influence co-creation outcomes and inform recommendations. This section is structured as follows: research design (Section 3.1), case study selection (Section 3.2), data collection methods (Section 3.3), and analytical framework (Section 3.4).

3.1 Research Design

With the practical collaboration and aims of co-creation varying widely, this research adopts a comparative multiple-case study design and qualitative research methods to achieve its aim. Table 3-1 outlines the key stages and methods utilized. Case studies enable in-depth analysis of processes, activities, and events (Creswell and Creswell, 2018). Yin (1993) defines case studies as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context...and uses multiple sources of data" (pg. 59). Accordingly, case studies are appropriate when researchers seek to examine contextual conditions affecting a phenomenon and to draw on multiple data sources and perspectives (Yin, 1993). Because this research asks when and how the advantages of co-creation outweigh its disadvantages, a multiple-case study is well suited to examine the city-level contextual conditions that lead to more or less effective use of co-creation in achieving project goals.

Table 3-1: Research Design

Research Stages	Task	Methods	Research Questions
Stage 1 (part I) Literature Review	Understanding how co-creation has evolved and its current definitions, typologies, uses, and effectiveness	Narrative literature review with a more systematic approach	RQ1: How does current literature conceptualize co-creation based on its strengths, weaknesses, opportunities, and threats?
Stage 1 (part II) Development of the Analytical Framework	Identify and conceptualize the advantages and disadvantages of co-creation into its strengths, weaknesses, opportunities, and threats	Literature Review	
Stage 2 Interviews	Gain knowledge on strengths and barriers of co-creation in cases from those who participated in the case projects	Interviews with participants from selected case projects	RQ2 Supporting Question: What lessons can be learned from studying cases where co-creation was utilized for climate transition projects?
Stage 3 Analysis	Use analytical framework to create a proxy for analyzing the effectiveness of co-creation in different contexts.	(a) Interview transcriptions (b) Grey literature review on cases (c) Analytical Framework	RQ2: In the urban climate transition sphere, when and how do the advantages of co-creation outweigh the disadvantages?

Source: Author's Interpretation

3.2 Case Study Selection

Relevant case studies were identified by searching online for European co-creation projects that contributed to urban climate transition goals related to climate neutrality. A simple search on Google using terms such as ‘co-creation projects for urban climate transition in Europe’ proved most effective in finding relevant case projects. Identified projects were scored out of 100 against the selection criteria in Table 3-2. Those ranked 90 to 100 were shortlisted, and final selection depended on available contact information and interview request response rate.

Table 3-2: Case Study Selection Criteria

Case Study Selection Criteria	
General Criteria	<i>Geographical Location:</i> Within Europe
	<i>City Size:</i> Medium-sized cities, between 200,000 to 800,000 population
	<i>Time Frame:</i> Projects completed between 2023 and 2026
Specific Criteria	<i>Focus on Co-creation:</i> Co-creation was an intentional strategy in the project and/or it was aiming to increase co-creation in the city
	<i>Addressed Climate Neutrality Actions:</i> The problem the project was addressing should have contributed to solving issues with transitioning cities to climate neutrality
	<i>Municipal Involvement:</i> The projects included the municipality as one of the project partners

Source: Author's Interpretation

Europe was chosen because of an observed trend toward increasing multi-stakeholder collaboration for the climate transition and a substantial body of Europe-focused literature. There existed many projects that featured public-private collaboration, but fewer treated co-creation as an intentional, foundational approach rather than co-creation or collaboration introduced as an element later in the process. This criterion narrowed the pool of projects to choose from and produced the selected cases (Table 3-3). The chosen time frame increased the likelihood that project personnel remained with their organizations and allowed participants and the researcher to reflect on the full project. Although the cases addressed different aspects of the urban transition (Table 3-3), each aimed to advance climate neutrality in its city.

Table 3-3: Case Study Selection

Case	Climate Neutrality Concern Addressed	Location
Co-SHAPE	Addressing challenges related to land use and renewable energy production	Aarhus, Denmark
Mission Net Zero	Addressing barriers to progress toward net zero, particularly finding money for improvement and having the skilled professionals to do them	Bristol, UK
MOSAIC Gothenburg	Addressing how to make mobility more sustainable while retaining quality of life	Gothenburg, Sweden

Source: Author's interpretation based on selected cases' grey literature

3.3 Data Collection Methods and Data Collected

This section contains an overview of the data collection methods utilized in this research study, including a literature review, interviews with participants from the selected cases, and grey literature published about the cases.

3.3.1 Literature Review

To address the posed research questions, literature was identified and analyzed to trace how co-creation evolved from community engagement strategies and business practices into its current role as a governance strategy. This review established an initial understanding of co-creation types, uses, and effectiveness. Literature on the benefits, challenges, drivers, and barriers to co-creation was also analyzed in order to inform the creation of the analytical framework by which the case studies were evaluated.

The literature review was conducted as a narrative literature review, with systematic elements. A narrative approach was chosen as it allows for the researcher to draw on a diverse set of sources and related terms (Sillak, Borch, and Sperling, 2021), like co-creation, co-production, community engagement, and collaborative governance. It is also a method used to trace the development of a concept over time (Bourhis, 2017), which addressed RQ1. The flexibility of a narrative review enabled a more inclusive picture of available research (Bourhis, 2017). However, the lack of a formal search, synthesis, and analysis criteria introduces potential subjectivity in interpretation (Sillak, Borch, and Sperling, 2021).

Searches targeted literature on community engagement, community participation, collaborative governance, co-creation, co-creation typologies, and the benefits and challenges of co-creation. Scopus, Google Scholar, and the snowball method were used to locate peer-reviewed English-language articles on these topics.

Inclusion criteria for literature on co-creation included:

- Papers needed to include the term co-creation.
 - Other terms, like co-production, could be included as well, but co-creation needed to be mentioned.
- Papers had a focus on co-creation in the public sector or in urban governance, as opposed to the private sector or business theory.
- Preference was given to studies that focused on co-creation in the climate transition.

Inclusion criteria for literature on community engagement:

- Papers had a focus on examining community participation for environmental decision making and urban transformation.

Inclusion criteria for collaborative governance:

- Papers focusing on understanding the theory of collaborative governance.
- Papers focusing on collaborative governance in connection with urban transition, especially for the climate transition.

Excluded were papers that focused on co-production without addressing co-creation, studies narrowly focused on co-creation as knowledge production, research centered on other public-sector domains like health, works on smart cities that addressed only technological aspects, and studies of business value creation or commercial applications of co-creation, except where they informed the concept's evolution.

3.3.2 Interviews

The lived experience of co-creation participants is valuable for understanding collaboration practicalities, partner interactions and contributions, strengths and challenges, and how the city context shaped these dynamics. To capture this first-hand knowledge that is often missing in project documentation, semi-structured interviews were conducted. While these projects had many partners and stakeholders involved in the co-creation process, it was determined to strive for two to three interviews per case, including at least one municipal representative and at least one other stakeholder, to ensure sufficient perspectives and a good overview of the project. The municipality was generally the one to design and initiate the project, and the other stakeholder was one that had more direct contact with practical collaboration.

Semi-structured interviews used 12 pre-defined questions (see Appendix B). This approach was chosen for its flexibility in designing and refining the interview guide and conducting interviews (Horton, Macve, and Struyven, 2004). Semi-structured interviews allow the interviewees the freedom to express their thoughts and highlight areas of particular interest while allowing the interviewer to bring out greater depth to some responses and explore those areas of interest (Horton, Macve, and Struyven, 2004). Overall, the interview guide was there to provide structure and cover the topics needed, while also providing the freedom to add or remove questions based on the participants responses.

A total of 7 semi-structured interviews were held were conducted with participants from the Co-Shape, Mission Net Zero (MNZ), and MOSAIC – Gothenburg (MOSAIC) projects (See Appendix C for a full list of interviews). Each case included one interview with a municipal representative, except MOSAIC, which had two interviews with municipal representatives from different departments. Other interviewees varied by case. For Co-Shape, the academic partner involved in designing the architectural side of the project and direct collaboration with citizens was interviewed. For MNZ, two stakeholders were interviewed, one a charity organization that acted as an intermediary between the municipality and the community organizations, and the other a community network organization that had more direct contact with the community organizations in the collaboration. The other stakeholders involved in the MOSAIC project did not respond to interview requests, so grey literature was used to fill gaps.

Interviews averaged 45 minutes, were conducted via Zoom, and were audio recorded with prior written consent and verbal reconfirmation. To protect anonymity, the names of the participants and their organizations have not been used, instead they are referred to by the type of organization they represented. Interviews were transcribed using Microsoft Word's built in transcription feature and all recordings and transcriptions were saved locally in a password protected file to be deleted at the end of the research period.

3.3.3 Grey Literature Review

To support and complement the information obtained through the interviews, a review of grey literature from each of the cases was also completed. This literature included documents published by the project coordinators, documents published by project partners, news articles, articles published on websites by various project partners, and final findings documents. The majority of this literature was non-peer reviewed, publicly accessible, online articles or documentation. This review was done to inform the researcher about the cases prior to interviews, as well as after the interviews as part of the analysis to fill in any gaps created by low response to interview requests.

3.4 Analytical Framework

A SWOT analysis typically evaluates an organization's internal strengths and weaknesses and the external opportunities and threats in its environment (Sammot-Bonnici and Galea, 2014). In business, the internal analysis identifies resources, capabilities, core competencies, and competitive advantages, while the external analysis assesses market opportunities and threats by evaluating competitors' and the industry context (Sammot-Bonnici and Galea, 2014). The aim for an organization when conducting a SWOT analysis is to use these insights to formulate strategies that leverage strengths, mitigate threats, exploit opportunities, and offset weaknesses (Sammot-Bonnici and Galea, 2014). Because this research aimed to answer the normative question of when and under what conditions do the advantages of co-creation outweigh its disadvantages, rather than classifying project typologies and the analysis focused on factors that affect co-creation outcomes, a SWOT analysis was determined to be a useful tool to structure the analysis in this thesis.

Table 3-4: Analytical Framework – strengths, weaknesses, opportunities, and threats of co-creation based on the literature

	Strengths	Weaknesses	Opportunities	Threats
Resources and Performance	Aggregates cross-sector knowledge (Acar, Steen, and Verschuere, 2025; Torfing et al., 2021; Torfing, Sorensen, and Roiseland, 2019)	Resource-demanding (Leino and Puumala, 2021; Acar, Steen, and Verschuere, 2025; Torfing, Sorensen, and Roiseland, 2019)	Replaces services lost to budget cuts (Torfing et al., 2021; Acar, Steen, and Verschuere, 2025; Leino and Puumala, 2021)	Uncertain overall effects (Torfing et al., 2021)
	Reduces municipal service costs (Acar, Steen, and Verschuere, 2025)	Increases municipal service costs (Torfing et al., 2021)	Digital access lowers participation barriers (Leino and Puumala, 2021; Acar, Steen, and Verschuere, 2025)	
	Improves outcomes through shared resources (Acar, Steen, and Verschuere, 2025)	Gaps in co-creation expertise (Sillak, Borch, and Sperling, 2021)		
Social Justice	Strengthens democratic legitimacy (Leino and Puumala, 2021; Torfing, Sorensen, and Roiseland, 2019; Torfing et al., 2021; Acar, Steen, and Verschuere, 2025)	Unequal representation (Torfing et al., 2021; Torfing, Sorensen, and Roiseland, 2019; Leino and Puumala, 2021)	Builds transformative capacity (Torfing et al., 2021; Sillak, Borch, and Sperling, 2021)	Weak participation incentives (Sillak, Borch, and Sperling, 2021)
	Gives citizens a public voice (Acar, Steen, and Verschuere, 2025)	High participation barrier (Acar, Steen, and Verschuere, 2025)	Fosters shared ownership (Torfing et al., 2021)	Limited actor transparency (Torfing et al., 2021)
	Enhances mutual trust (Acar, Steen, and Verschuere, 2025; Torfing et al., 2021; Torfing, Sorensen, and Roiseland, 2019)	Perceived citizen knowledge gap (Leino and Puumala, 2021)	Fosters stronger, united communities (Leino and Puumala, 2021; Torfing, Sorensen, and Roiseland, 2019)	Risk of contributions not integrated (Leino and Puumala, 2021; Torfing, Sorensen, and Roiseland, 2019; Sillak, Borch, and Sperling, 2021)
	Builds support for climate action (Interviews)		Facilitates knowledge exchange (Michels and De Graaf, 2010; Irvin and Stansbury, 2004; Interviews)	
Governance	Better public service provision (Acar, Steen, and Verschuere, 2025; Torfing et al., 2021; Leino and Puumala, 2021)	Cross-sector divides hinder collaboration (Sillak, Borch, and Sperling, 2021; Torfing, Sorensen, and Roiseland, 2019)	Dismantles institutional silos (Leino and Puumala, 2021; Sillak, Borch, and Sperling, 2021)	Entrenched political tradition blocks adoption (Torfing et al., 2021; Leino and Puumala, 2021)
		Participants are risk averse (Torfing et al., 2021)		Overall structure of laws, regulations, and administrations influencing project design and uptake (Interviews)
		Lack of buy-in from senior management in participating organizations (Interviews)		

Source: Author's interpretation, based on literature review, identified advantages and disadvantages, and interviews

This was done in a two-step process, starting with developing the analytical framework (Table 3-4). The first step was to identify strengths, weaknesses, opportunities, and threats of co-creation from the literature and the advantages and disadvantages in Table 2-1, then iteratively refine them with interview data. All interview and grey-literature evidence was then adjusted across cases to include the additional interview-based aspects. These items were collated into the classic SWOT categories, strengths, weaknesses, opportunities, and threats, and synthesized into three themes: resources and performance, social justice, and governance (Table 3-4; detailed version in Appendix D). In Table 3-4, white boxes denote aspects identified in the literature and blue boxes denote aspects identified from interviews. During the SWOT analysis, internal strengths and weaknesses were defined as attributes observable during the project duration, while external opportunities and threats captured longer-term impacts on the city or external constraints on co-creation. The second step was to code each cases' interview and grey-literature data for the presence (1) or absence (0) of each SWOT aspect in the analytical framework (Appendix E).

To assess effectiveness, strengths were compared with weaknesses and opportunities were compared with threats to identify strong projects. More strengths signified a stronger project. Next, strengths and opportunities were combined to form advantages, while weaknesses and threats formed disadvantages. Because more weaknesses than strengths and more opportunities than threats were identified, all categories were normalized to the overall number of SWOT aspects for comparability. Cases were then compared by their advantages versus disadvantages to evaluate individual effectiveness, where more advantages signified a more effective project. Finally, advantages versus disadvantages were analyzed across the three cases and included insights about specific case contexts to identify which case was most effective and which city contexts supported successful co-creation.

4 Results

This section presents empirical results from the three case studies: Co-Shaping Areas in Peri-urban Environments, Mission Net Zero, and Mission Oriented SwafS to Advance Innovation through Co-creation, followed by an analysis of the use of co-creation across the cases. Each case is introduced briefly, followed by a SWOT table showing its strengths, weaknesses, opportunities, and threats, and a summary of overall effectiveness based on comparing strengths to weaknesses and opportunities to threats. Results are then organized by the analytical framework (Table 3-4), discussing present SWOT aspects within each theme (Resources and Performance, Social Justice, and Governance). Each case concludes with a section on aspects that were absent, offering possible reasons for their absence and the implications.

Figure 4-1 summarizes the overall strengths, weaknesses, opportunities, and threats identified in the analytical framework. The figures in the following sections are based on Figure 4-1 and show the aspects exhibited by each case.

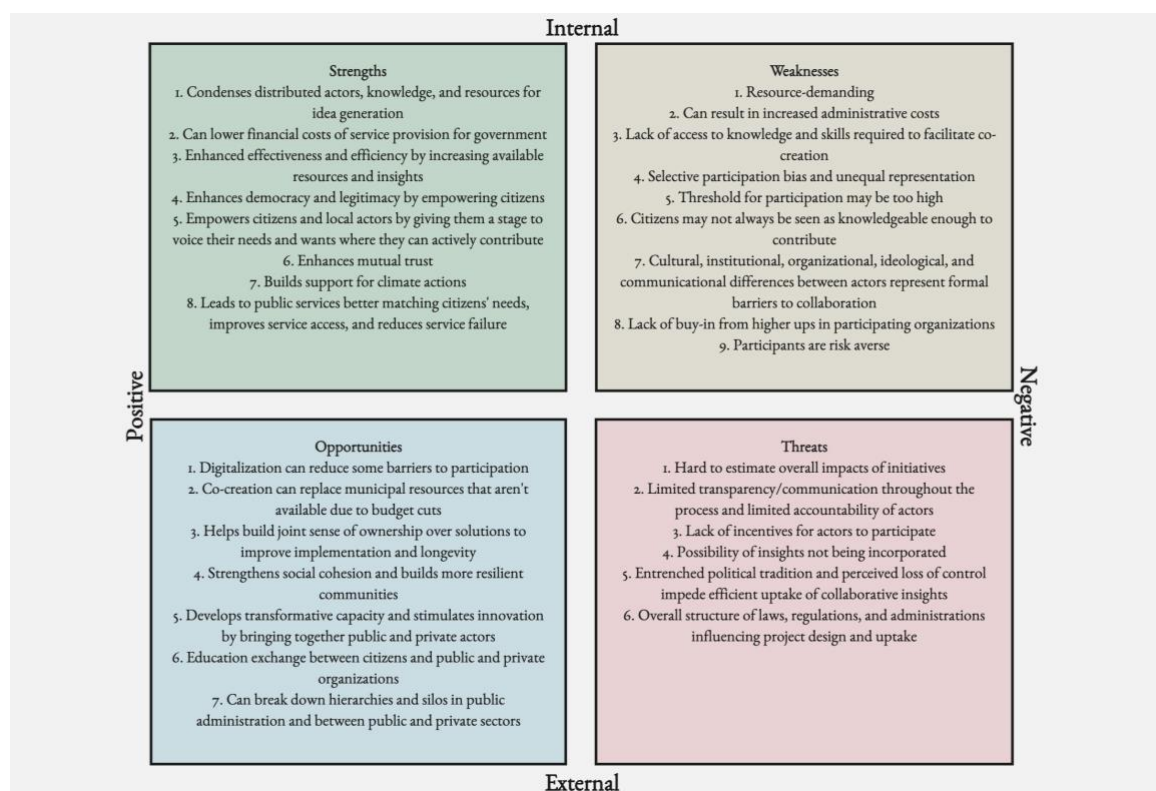


Figure 4-1. SWOT Analysis of Co-creation – Overall strengths, opportunities, weaknesses, and threats
Source: Author's interpretation based on literature review, advantages and disadvantages, and interviews

4.1 Co-Shaping Areas in Peri-urban Environments – Aarhus, Denmark

4.1.1 Introduction and SWOT Summary

The Co-Shaping Areas in Peri-urban Environments (Co-SHAPE) project took place in Aarhus, Denmark as a collaboration between the municipality and the Aarhus School of Architecture. Running from May 2024 to May 2026 (CDEU Office, 2024), the project focused on integrating energy production with nature conservation and recreation while contributing to the city's goal of climate neutrality by 2030 (Abrantes, 2025). Co-SHAPE aimed to address barriers to the net zero transition such as insufficient governance tools for comprehensive planning, residents' reluctance to live near energy projects, and a lack of internal cross-departmental cooperation in

energy planning (NZC, n.d.) by co-creating solutions with local citizens and multiple municipal departments (Aarhus Interviewee 2 (AI2)). As a pilot project, Co-SHAPE sought to plan the total green transition of Spørring, an area at the edge of the city (Abrantes, 2025 and ASA, n.d.). To understand how the city could develop a more sustainable transition and how they could design a citizen-inclusive process (Aarhus Interviewee 1 (AI1)), the project developed internal and external co-creation methodologies to involve every municipal department relevant to the net-zero transition while centering citizens as the main stakeholders (AI2). Co-SHAPE culminated in the production of a few scenarios for how Spørring could be sustainably transitioned. Creating multiple scenarios that had democratic legitimacy and aligned with political goals allows for flexibility in the transition and for bringing a renewable energy developer into the process at a later stage (AI1).

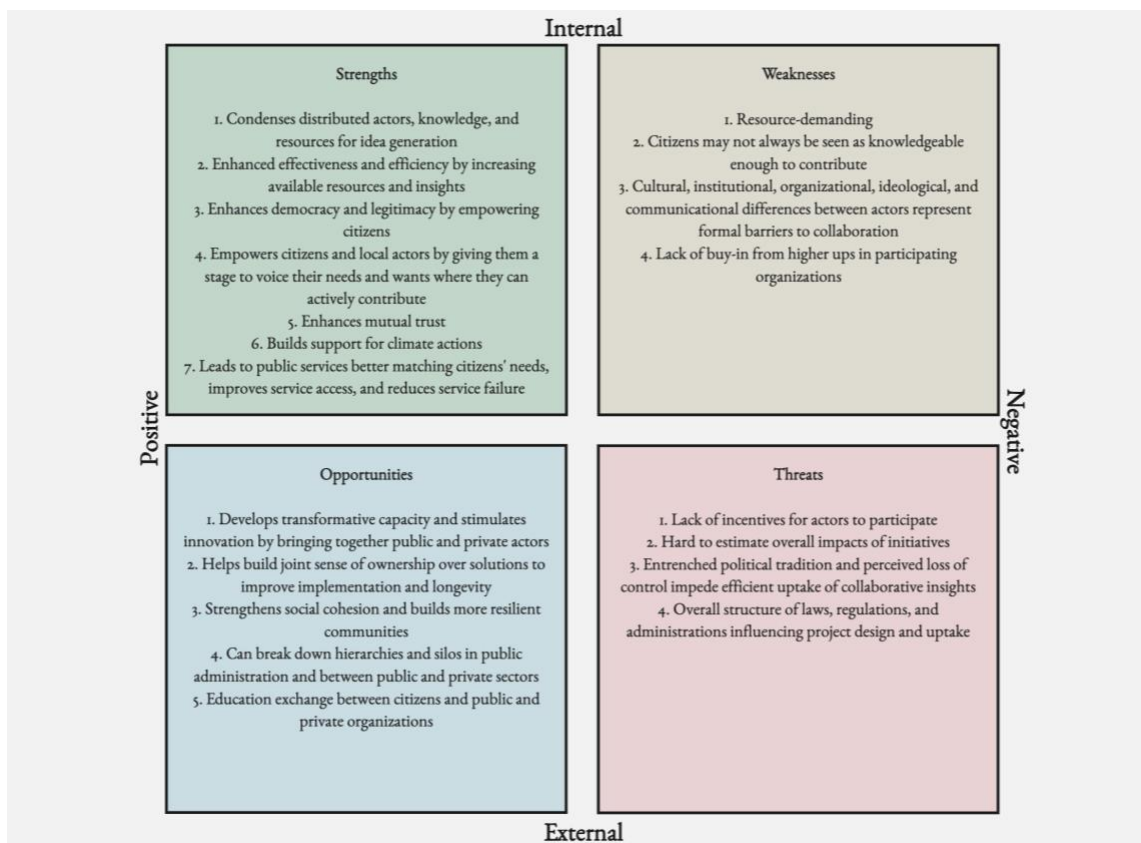


Figure 4-2. Analysis of Co-SHAPE Case – present strengths, opportunities, weaknesses, and threats

Source: Author's interpretation of Co-SHAPE case interviews applied to the analytical SWOT framework

Figure 4-2 summarizes the strengths, opportunities, weaknesses, and threats identified in the Co-SHAPE case. Overall, interviewees described more strengths and opportunities than weaknesses and threats. Both interviewees acknowledged collaboration barriers and offered a realistic assessment of the project, supporting the conclusion that Co-SHAPE effectively achieved its goal and developed a reusable co-creation methodology for future city projects.

Although there are more weaknesses than strengths in the analytical framework, normalizing the results shows there are still more strengths than weaknesses, making this a strong project. Similarly, there are more opportunities than threats in the framework, but even with normalization, the opportunities outweigh the threats. Thus, according to the analytical framework, the advantages of co-creation in Co-SHAPE outweighed its disadvantages. Sections 4.1.2-4.1.4 present the detailed SWOT analysis of the Co-SHAPE project, while Section 4.1.5 discusses aspects absent from the case.

4.1.2 Resources and Performance

Within the resources and performance theme of the analytical framework, Co-SHAPE condensed distributed actors, knowledge, and resources to improve idea generation. Partly because the municipal departments affected by landscape changes had different goals and expertise, and partly because the project aimed to design a sustainable transition that involved both citizens and departments, Co-SHAPE successfully concentrated diverse municipal expertise, citizen knowledge, and disciplinary methods into a single, structured process. This improved idea generation and aligned projects with political goals, producing a more effective, context-sensitive engagement methodology that better matches citizens needs and can be reused.

However, the project was very resource intense, which can make it difficult to convince others to spend those resources, especially since tangible outcomes had not yet been implemented. Despite this, interviewees emphasized the value of the process and as a foundation for future projects and argued that failing to invest in co-creation could be costlier in the long run due to barriers encountered in the future. One interviewee stressed that it's a "... strength of this product, even though it's been resource intensive, because there's been a lot of development of working out how we should do it [and] then we've actually created a sort of new institutional product that is possible to implement pretty seamlessly and with a pretty low amount of cost" (AI2).

This supports the argument that creating a collaborative network and a repeatable method requires high upfront cost but becomes less costly to apply subsequently. Overall, despite the high resource demand, Co-SHAPE's investment was judged worthwhile and successful in achieving its goals.

4.1.3 Social Justice

A large part of Co-SHAPE focused on how to integrate citizens into the decision-making process. The project made the local community the primary stakeholder "... because without their consent, without creating democratic legitimacy, then it would be very hard to pass the political stage" (AI2). Previous municipal methods had not sufficiently engaged citizens, so a new co-created framework was developed to manage Aarhus's climate transitions with a high degree of democratic legitimacy. This gave citizens a stage to voice their needs and empowered them to participate in scenario building. Since scenarios were developed jointly by citizens and all involved municipal departments, each party gained clearer awareness of their role in the project and how their actions affected others. This shared understanding built a sense of joint ownership of transformation solutions and develops the city's transformative capacity. Scenario building was also an opportunity for the municipality and the citizens to learn together and engage in "co-becoming" (AI2) where citizens could learn what the municipality knew and the municipality could learn what the citizens knew.

One reported threat was low incentive to participate due to initial community dissatisfaction with the municipality, as residents felt their needs had not been taken seriously. Substantial trust building and engagement were required to change this perception. By the project's end, with the focus given to incorporating the local community's needs into the scenarios, the narrative shifted and "... the representative for the process said we [the local community] feel engaged. We feel our needs and our considerations have been addressed" (AI2). This demonstrates that efforts to ensure engagement and democratic legitimacy are noticed by the public and help foster social cohesion and community resilience.

4.1.4 Governance

Despite the project's success, early governance challenges threatened its progress. Entrenched political traditions and differing working methods hindered communication and initial buy-in for a new working method. As one interviewee noted "There're so many processes going that have been established... for such a long time they have not asked, why should we do it differently?" (AI2) These different established ways of working meant that in the beginning of the project "...we all thought we were talking about the same, but we were not" (AI1). It became necessary to invest time in the beginning to engage in difficult conversations and co-create within the municipality to secure buy-in from each department and from those with influence over the transformation designs. A horizontal 'horizon team' helped bridge silos by ensuring representation from each municipal department.

On top of these challenges, the project also had to account for the legal and regulatory framework governing land use. Land use is an inherently political topic since there is not enough room for every stakeholder to get what they want, politicians decide what is prioritized, and this needs to be incorporated in the scenario building. Despite these constraints, Co-SHAPE produced scenarios that balanced political goals with community needs and desires.

4.1.5 SWOT Aspects Missing from the Case

The Co-SHAPE case exhibits many SWOT aspects identified in the literature, but several aspects are absent. Although the project was resource intense, financing was mentioned only insofar as Co-SHAPE received partial EU NetZeroCities programme funding. So, while it is unclear whether the project increased or reduced administrative costs or was intended to offset budget cuts, it can be speculated that without the EU funding, an unproven co-creation methodology may have been too costly for the municipality. However, this cannot be confirmed because none of the interview questions directly asked about financing of the project.

Other aspects, like selective participation bias and unequal representation, high participation threshold, participants risk aversion, and limited transparency were either not observed in the project or ran counter to the project's goals. No selection bias was noted, likely due to the variety and volume of engagement activities. The municipality had staff in the citizen engagement department with relevant experience, pre-existing community connections, and time to design a robust process, which helped ensure that insights were incorporated, avoiding a key threat to co-creation. The results of the project, the scenarios, were deliberately created to use the inputs of citizens and various municipal departments, and align them with political goals to create coherent, supported plans.

Digitalization to reduce barriers to participation was not evident, possibly because the focus on landscape change necessitated connecting with the community in the nature that would be affected. The goal to understand the community's connection to the land in order to design something that would be useful to every actor was possibly more easily met in person than through online channels. Also, the community's prior dissatisfaction with the municipality likely would have reduced the effectiveness of digital outreach. Despite limited digitalization, the participation threshold appeared low, as evidenced by successful engagement efforts.

4.2 Mission Net Zero – Bristol, United Kingdom

4.2.1 Introduction and SWOT Summary

Mission Net Zero (MNZ) ran place in Bristol, United Kingdom (UK) from March 2024 to November 2025 (Bristol.gov.uk, n.d.). The project aimed to accelerate Bristol and the West of England's net zero transition by working with local citizens to address non-technical barriers

(Bristol.gov.uk, n.d.). This included tackling financial and investment blockers, building public confidence to increase uptake of net zero technologies, and closing the skills gap through training (BCNP, 2026). Through partnerships and collaborations with city councils in the West of England, the Centre for Sustainable Energy, Bristol Energy Network, and Bristol Climate and Nature Partnership, among others, MNZ worked with 3 community anchor organizations to build support for climate action by developing climate action projects, strategic climate investment plans, and developing opportunities for green jobs and training (BCNP, 2026; Bristol.gov.uk, n.d., and CSE, n.d.).

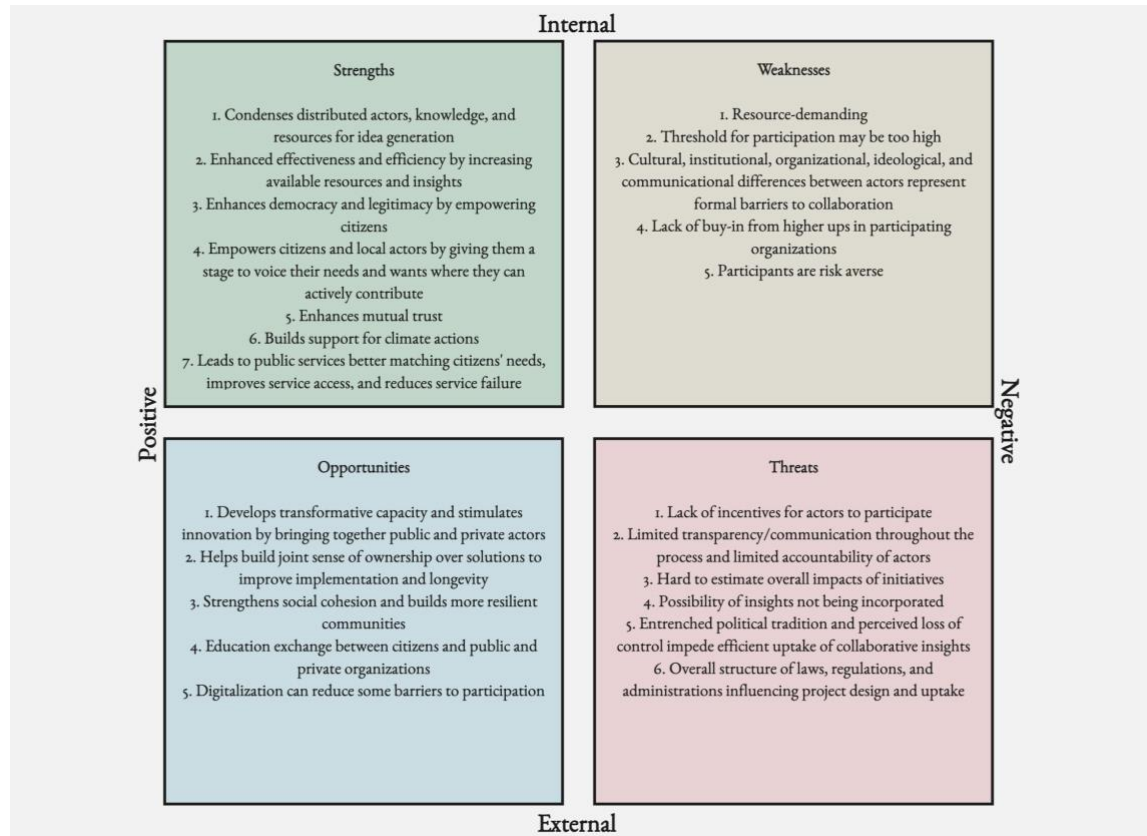


Figure 4-3. Analysis of MNZ Case – present strengths, opportunities, weaknesses, and threats

Source: Author's interpretation of MNZ case interviews applied to the analytical SWOT framework

Figure 4-3 shows the strengths, weaknesses, opportunities, and threats identified in the MNZ case. More strengths than weaknesses were identified, but threats outnumbered opportunities. The four interviewees felt that, despite challenges linked to the project's ambition and complexity, MNZ was a strong and ultimately successful project because it improved understanding of what communities want in their neighborhoods. While the project may not have met all of its goals, for example, not finding many instances of investable projects, it did provide information to guide future net zero transition technology initiatives and increase community uptake. However, several weaknesses and threats suggest areas for improvement.

A major strength was the project's dedication to a Just Transition and its inclusion of diverse community organizations in one strand while engaging different organizations elsewhere to broaden citizen reach. The use of an intermediary introduced some distance between the community and the municipality but also brought an experienced actor who could bridge perspectives and smooth communication. Partnering with a community network organization provided direct connections and strong relationships from the outset, easing engagement. However, trust-building and alignment among all partners could have been stronger at the project's start to improve communication throughout.

With 12 out of 15 advantages present, MNZ is a strong project, yet having 11 of 15 disadvantages indicates room for improvement and caution for replication. Even projects with notable weaknesses yield lessons that inform future implementation. Overall, because advantages outweighed disadvantages and the participants judged it successful, MNZ can be considered an effective project. Sections 4.2.2-4.2.4 present the detailed SWOT analysis, while Section 4.2.5 discusses the aspects missing from the MNZ project.

4.2.2 Resources and Performance

Within the resources and performance theme, MNZ sought to gather demand-side insights from a diverse range of stakeholders with interests in carbon- or fossil-fueled assets (BI1) and to create an enabling environment for communities by building connections and a network for collective action among community stakeholders (BI4). Involving different organizations, each with an understanding for a different aspects of the community's net-zero transition challenges, such as engagement, resident voice, and innovation, created a well-rounded discussion that considered residents' perspectives and effective communication strategies. Consequently, the project gained clearer insight into how to secure community social consent for climate actions in ways that would attract the supply chain and remain fundable.

However, the project's intensity and ambition, coupled with short timelines and uneven partner capacity, created challenges. MNZ was comprised of three main parts over 18 months and started quickly, making it difficult to define roles and align expectations, especially for community organizations who had little time to decide their roles in local energy. By design, to gain a wide range of perspectives on community energy, the community organization partners had different levels of knowledge and time available, and in combination with the charity organization acting as an intermediary experiencing staffing and capacity issues, this hindered collaboration. One interviewee noted that community organizations can support uptake of net-zero solutions but often lack resources and have limits to what they are willing to do (BI4). Despite these challenges, participants agreed that "having such a diverse range of skills and interest across the cohort was really powerful." (BI2)

These findings show that resource intensity in a co-creation project becomes problematic when partner capacities mismatch. Clearer role definitions and time invested in aligning goals and expectations would help manage diversity of skills and interests more effectively.

4.2.3 Social Justice

Past experience with projects to increase heat pump uptake in Bristol showed that without prior social consent, no amount of outreach would lead to widespread adoption. Therefore, MNZ began by asking communities what they wanted, using that as a starting point rather than the more patronizing prescribing of solutions on to residents (BI2). By incorporating community ideas into plans, MNZ empowered citizens, amplified their needs, and enhanced democratic legitimacy and support for climate solutions. A key partner was a community network organization with strong pre-existing civic society relationships and trust, which saved time and eased early engagement. Additionally, community organizations served as trusted intermediaries between their local community and the municipality, strengthening social cohesion.

Partners reported that the project "...helped to create an environment where we could probably go in and achieve things much quicker" (BI2). By advancing community priorities and organizational capacity, MNZ helped develop transformative capacity and positioned community organizations to access funding opportunities. To tailor solutions to diverse needs, the solution became to offer people a "menu with some starters and some side dishes along with the main course" of options for how residents could take ownership over home

improvements that benefit both homes and the environment (BI1). Initially, the municipality did not know which solutions residents wanted. Citizens knew that they "...[wanted] warmer homes, but they [did not] necessarily know how to go about that or what's appropriate or technically suitable..." (BI3). Over the project, the municipality learned community priorities for energy efficiency while citizens and community organizations learned about available energy efficiency options.

However, meaningful inclusion faced constraints. Community organizations often have limited resources and competing priorities, so participating in an ambitious, intensive process, and then promoting climate solutions within their communities, can exceed their capacity (BI4). Additionally, they tended to avoid energy projects perceived as "big, big changes that are outside the scope of what a lot of community organizations want to do" (BI2). Having the community organizations was an advantage in many ways during this project, but it also constrained what the project could achieve based on the organization's resources and their disinterest in stepping outside their comfort zones to enact change.

Another issue was limited input from community organizations during project planning. This was partly done because it would have been a much bigger ask to help plan a project that did not yet have funding (BI1). However, the plan might have been different if those community insights were included from the beginning. Communication difficulties arose when partners felt more direct municipality-community organization contact would have improved outcomes. Having the charity organization act as an intermediary sometimes created delays and miscommunication when communication from the municipality would go through the charity organization, which reinforced a power dynamic in which community organizations were not direct partners while the municipality, charity organization, and community network organization were. These challenges complicated the project but did not prevent it from achieving its intended outcomes.

4.2.4 Governance

Persistent governance barriers affected the project. The municipality was pressured by government funding to deliver tangible retrofit outputs, while community organizations prioritized people and collaborative processes. This entrenched tradition from the municipal side created a mismatch in performance metrics and on-the-ground focus (BI3). This was compounded by having an intermediary (as noted in Section 4.2.3), organizational differences, and divergent understandings of project goals, which produced early misunderstandings that required time to resolve (BI1). As in Co-SHAPE, plans presented to politicians had to be low-risk, which sometimes diluted outcomes. The trick was finding a path that met both community and municipal needs (BI2).

Bristol already had technologies such as heat pumps available to enhance net-zero goals, but uptake was low because these solutions lacked social consent. MNZ therefore sought to learn what residents wanted and to raise awareness of available solutions so interventions would match community needs while meeting municipal objectives (BI4). This approach proved successful.

These dynamics demonstrate that institutionalizing co-creation requires sustained commitment, and clearer communication channels so that co-created outputs are translated into policy and practice rather than remaining isolated plans.

4.2.5 SWOT Aspects Missing from the Case

An interesting aspect of this case was that all identified threats were present. This does not necessarily mean that the project was ineffective or unsuccessful, only that it faced more

challenges than the others. It is also possible that the interviewees for this case had a more critical perspective on the project, or the additional two interviews conducted for this case revealed a more complete image of the case that included all of the possible threats to co-creation. In any case, despite the abundance of threats MNZ faced, several key weaknesses were absent. The use of the charity organization as an intermediary might have introduced some issues, but it also provided expertise and knowledge of co-creation approaches that smoothed aspects of the collaboration, representing a valuable resource in the project. Additionally, the grey literature for the MNZ case stated that there was an open and inclusive expression of interest process that advertised the opportunities to be a part of this project. Combined with the Just Transition aim, this suggests there was no selective participation or unequal representation. Similarly to Co-SHAPE, there was little discussion of financial costs to the municipality or offsets to budget cuts, and MNZ also received outside funding for this project, from Innovate UK, suggesting this project may not have been feasible without that extra funding due to limited municipal resources.

4.3 Mission Oriented SwafS to Advance Innovation through Co-creation – Gothenburg, Sweden

4.3.1 Introduction and SWOT Summary

Mission-Oriented SwafS (Science with and for Society) to Advance Innovation through Co-creation (MOSAIC) was a collaboration among research organizations that ran from January 2021 to December 2023 and examined how quadruple-helix (policymakers, citizens, researchers, and businesses) co-creation could strengthen innovation and help cities address climate neutrality challenges (Stickydot, n.d.). Two city pilots in Gothenburg and Milan were used as testbeds for the engagement methodology (Stickydot, n.d.). This thesis will focus on the Gothenburg, Sweden pilot, which ran for 10 months and aimed to make mobility in one area of the city more sustainable while maintaining quality of life for residents (MOSAIC, n.d.). The project brought citizens, industry representatives, researchers, and city agencies and departments together in workshops and meetings to test the co-creation methodology and develop mobility plans and solutions (MOSAIC, n.d.).

Figure 4-4 shows the strengths, weaknesses, opportunities, and threats identified in the MOSAIC case. More weaknesses than strengths and more threats than opportunities were identified. The collaboration was informative and well planned from the researchers' side, but municipal planning time felt insufficient. Participants were generally positive about the collaborative experience, yet municipal interviewees said that they would either not repeat the project or modify it to embed it more clearly in municipal processes so results or the methodology could be reused. Neither interviewee said that the project was a full success. While one said that learnings from the project led to improved co-creation methods in the municipality, the other said that it was not successful and was not used again with lessons from the project only being relevant to certain departments and projects. Many barriers could have been avoided with more municipal planning time, greater engagement and anchoring from the municipality, and clearer communication from all parties.

Overall, MOSAIC displayed 7 of 15 advantages and 9 of 15 disadvantages. With more disadvantages than advantages, even when normalizing, and even though it has relatively few disadvantages, based on the available sources and applied framework, the MOSAIC case cannot be considered an effective project. Sections 4.3.2-4.3.4 present the detailed SWOT analysis, while Section 4.3.5 discusses the aspects missing from the MOSAIC project.

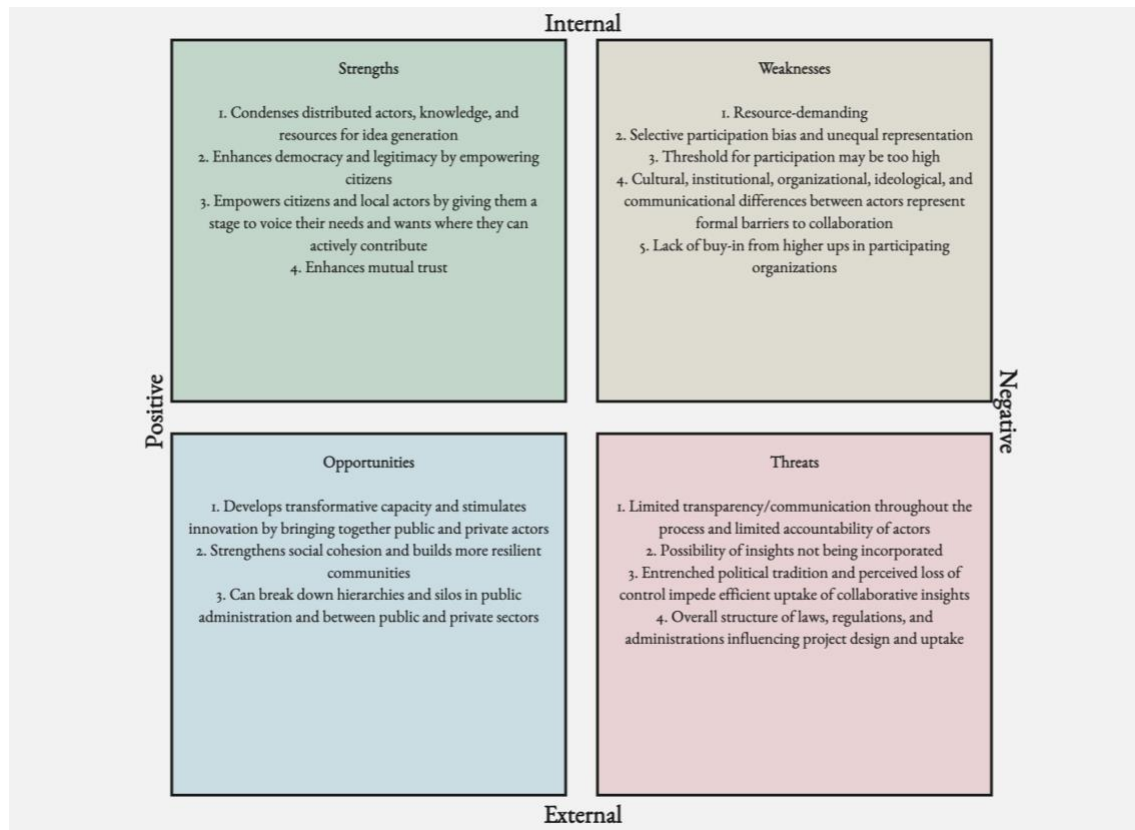


Figure 4.4. Analysis of MOSAIC Case – present strengths, opportunities, weaknesses, and threats

Source: Author's interpretation of MOSAIC case interviews applied to the analytical SWOT framework

4.3.2 Resources and Performance

Perhaps the project's greatest strength was engaging actors from every sector of the quadruple helix, the municipality, civil society/citizens, researchers, and industry. This concentration of diverse skills and sectoral knowledge strengthened idea generation and produced more context-specific solutions or as one interviewee noted, "different things come up when you bring four different groups of society together like this" (GI1). As discussed in more detail in Section 4.3.4, municipal actors also worked more closely together, bringing additional municipal knowledge into and beyond the project (GI2). However, the project was resource-intensive and ran on a short timeframe, requiring a large time commitment from participants and a heavy meeting schedule. Although funded by the overarching MOSAIC project through an EU office (GI1) and thus not a direct financial burden on the municipality, the time and human-resource demands made the methodology difficult to replicate in Gothenburg. Interviewees noted the project might not have happened without external partners and financing given limited municipal resources (GI2). Despite the benefits of engaging a diverse group of actors, the project's resource intensity meant replication in Gothenburg would be unrealistic without external funding and support.

4.3.3 Social Justice

Within the social justice theme, MOSAIC tested a methodology for an open and participatory approach to innovation by bringing quadruple-helix actors together to propose solutions for a specific question to the municipality (MOSAIC, n.d.). This succeeded in empowering participants and increasing democratic engagement, an effect reinforced by the city's democracy agenda to boost citizen involvement. However, that agenda was relatively new during the project, and this was one of the municipality's first uses of citizen co-creation, so the benefits

could not be fully realized (GI2). Still, collaboration among participants from diverse backgrounds produced solutions they were proud of and made the process enjoyable.

Interacting with citizens revealed that “they just want [the municipality] to communicate... and to feel that they have contributed somehow, even if it’s only to a method...” (GI2), and deep dialogue during co-creation helped build trust. Yet because the municipality did not adopt the co-created results, some participants were left disappointed and feeling distrustful (GI1).

Participation thresholds were high due to heavy meeting commitments and time constraints, preventing a fully open call for participation. Pre-existing networks and targeted invitations were used in conjunction, which may have produced unequal representation despite a still-diverse participant mix (GI1). Although implementation was never promised, the municipality’s lack of uptake left participants with the “... perception that the suggestions and ideas that they came up with... were not taken seriously” (GI1), a major threat to co-creation effectiveness. This mismatch partly stemmed from poor communication. Participants were told the exercise was a methodology test but were not sufficiently reminded, so expectations shifted during the project (GI1). More transparent, ongoing communication from the municipality could have better aligned expectations and improved outcomes.

4.3.4 Governance

During the MOSAIC project, barriers to collaboration within the municipality emerged, especially around resources and division of labor, with many staff denying responsibility for tasks (GI2). The project did, however, stimulate more interdepartmental discussion and collaboration, and this work has continued to grow after the project ended (GI2). While co-creation opened opportunities to break down silos and improve interdepartmental awareness, discussion, and collaborative capacity, persistent governance barriers remained.

One reported weakness was the inability to fully anchor the project within the municipality and secure leadership buy-in for the co-creation methodology due to the short timeline (GI1). Although many administrations joined MOSAIC discussions, leadership from responsible units did not participate because of time and resource constraints, making it difficult to incorporate the project’s results (GI1). This lack of management buy-in reduced result uptake and contributed to participant dissatisfaction. The municipality being “so afraid of promising things” (GI2) and fear of public backlash further limited implementation. Entrenched traditions and an aversion to loss of control left potential co-creation benefits unrealized. The organizational barriers that the presence of silos in the municipality presented did not help with this co-creation effort, with many departments arguing that the MOSAIC project was outside their job description (GI1). Compounded with the sluggishness of the administrative process, governance represented more of a disadvantage in the MOSAIC project than an advantage.

4.3.5 SWOT Aspects Missing from the Case

Similarly to the other cases, no finance-related effects, either cost reductions or increases for the municipality, were identified for MOSAIC. The project was fully funded by the overarching MOSAIC programme through EU funding, and interviewees noted that participation depended on that external support, stating that without the funding and management provided, a project like this would not have been undertaken due to limited municipal resources (GI1; GI2). However, MOSAIC did not directly produce any identifiable fiscal outcomes.

Several missing aspects reflect the project’s design. MOSAIC was intended to test a co-creation methodology rather than to generate implementable results, so outcomes typically associated with implementation, like enhanced effectiveness and efficiency, improved service provision, joint ownership of solutions, and broader support for climate action, were absent. Although

one could argue that involving citizens in discussions about sustainable transport might build support for climate action, neither interviews nor grey literature provided evidence that this was a primary goal or that effects extended beyond participants. Relatedly, an education exchange between public and private actors was lacking. The municipality learned from the project about sustainable transport, and researchers learned about the methodology's performance, but other participants did not appear to receive reciprocal learning from municipal actors.

Lack of access to co-creation skills was not coded as a weakness. The consultant firms and researchers running the process possessed the necessary expertise to manage practical co-creation activities and design the methodology.

A notable limitation of this case is that MOSAIC was the only one without non-municipal interviewees. The absence of external participant perspectives likely removed viewpoints that could have altered which aspects were identified as present or absent and may partly explain why fewer aspects were coded here than in other cases. Alternatively, the sparse coding could reflect the project's limited fit with the city context or its ineffectiveness. Interviewee recollections may also be biased. Participants' personal experiences, whether positive or negative, shaped their responses, and the three-year interval since project completion may have left only salient and often negative memories on which to draw.

In sum, findings for MOSAIC are constrained by its experimental design, external funding, and the available interview sample. The project's EU funding enabled its existence but produced no identifiable municipal financial impacts. Because MOSAIC tested methodology rather than implementation, many implementation-related strengths and opportunities did not materialize. The presence of skilled facilitators mitigated capacity gaps, but the lack of diverse interview perspectives and the project's limited anchoring in municipal structures mean the analytical framework can only reflect the evidence available from the interviews and grey literature.

5 Cross Case Analysis

The following section will be focused on an analysis across the three studied cases, Co-SHAPE, MNZ, and MOSAIC. Starting with an introduction and summary of the overall strengths, weaknesses, opportunities, threats, advantages, and disadvantages across the cases (Section 5.1), this section will present the analysis by theme (Resources and Performance, Social Justice, and Governance), connecting the findings from all three cases to the literature and discussing the theory versus the practice of the identified co-creation aspects (Sections 5.2-5.4). Section 5.5 will highlight the aspects that were missing from all cases, and Section 5.6 will highlight some themes about co-creation that emerged during the analysis of the cases. Finally, Section 5.7 summarizes the cross-case analysis.

5.1 Introduction and SWOT Summary

Figure 5-1 shows the total possible strengths, weaknesses, opportunities, threats, advantages, and disadvantages of co-creation from the analytical framework, and how each case scored in each category (see Appendix F for the normalized graph). Co-SHAPE and MNZ scored equally on strengths, while MOSAIC scored lower. Co-SHAPE recorded fewer weaknesses than MOSAIC and MNZ, which tied on weaknesses. MNZ and Co-SHAPE scored equally on opportunities, while MOSAIC scored fewer. Co-SHAPE and MOSAIC scored the same number of threats, while MNZ scored the most. Overall, MNZ and Co-SHAPE tied on advantages, with MOSAIC scoring fewer. MNZ scored the most disadvantages, followed by MOSAIC, and Co-SHAPE scored the least. Based on this, Co-SHAPE was the most effective project, with more advantages than disadvantages and fewer disadvantages than MNZ, and MOSAIC was the least effective project as it scored more disadvantages than advantages.

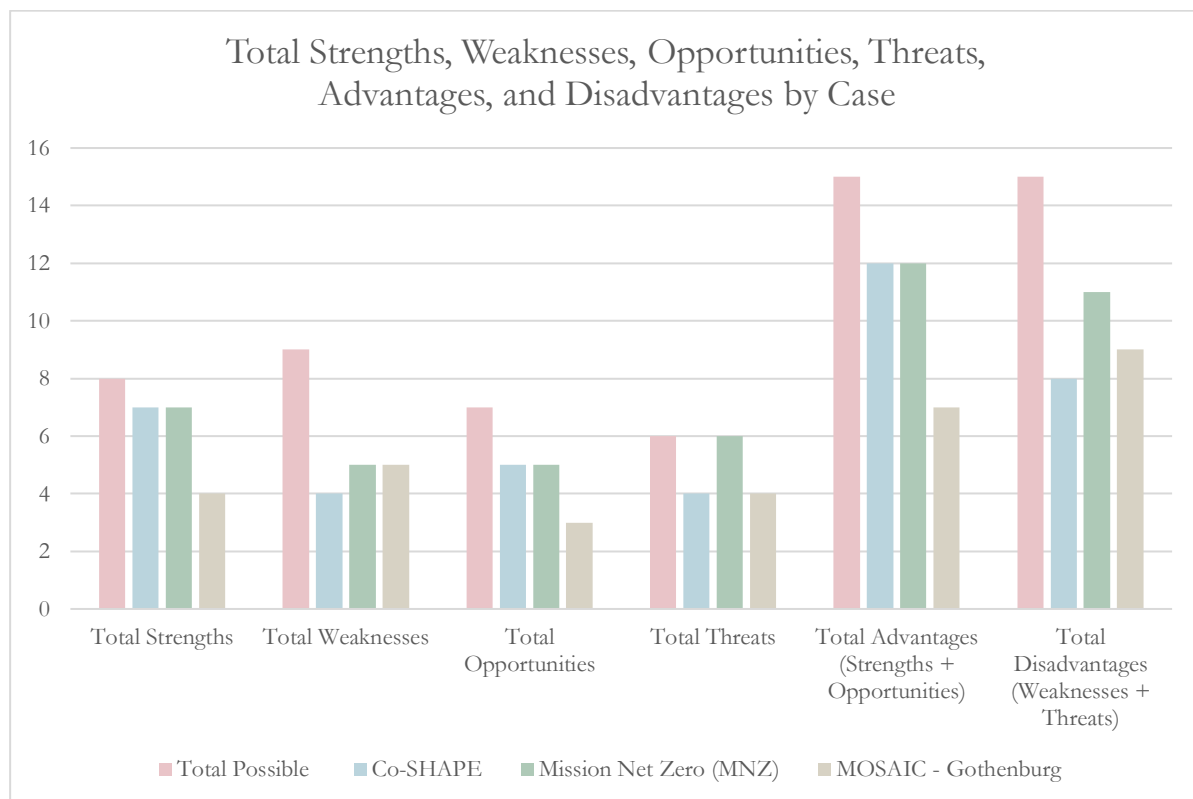


Figure 5-1. Total Strengths, Weaknesses, Opportunities, Threats, Advantages, and Disadvantages by Case

Source: Author's interpretation based on Analytical Framework and empirical data

However, it is important to note the fundamental difference between MOSAIC and the other two cases in how they were designed and initiated. MOSAIC was designed and largely run by

an external research and EU entity, whereas Co-SHAPE and MNZ were designed and run by their municipalities with partner support for practical facilitation. Additionally, MOSAIC's explicit goal was to test a methodology rather than to produce something municipally implementable outputs, shaped its identified strengths, weaknesses, opportunities, and threats, and explains why MOSAIC often differs from the other cases. This is not to imply that Co-SHAPE and MNZ always share the same aspects, but they align more frequently. As mentioned in Section 4.3.5, MOSAIC's methodological focus reduced implementation-related aspects, which may have skewed results and made it appear less effective than the other two cases.

5.2 Resources and Performance

The literature defines co-creation as a mix of actors sharing knowledge and resources to solve a complex problem collectively (Hedensted Lund, 2018; Torfing et al., 2021; Baptista et al., 2020). Because this is part of the definition, it was expected that every case would exhibit the strength of condensing distributed actors, knowledge, and resources for idea generation. If they did not, they would not qualify as co-creative processes under this definition. The MOSAIC project perhaps best exemplifies this strength, since it aimed to engage the quadruple helix to generate transport solutions grounded in social desire and technical feasibility. MNZ and Co-SHAPE achieved this as well, if less explicitly.

On the other side, a major concern with co-creation is its resource intensity, requiring time, knowledge, and staff to successfully accomplish. This appears in the literature and in the cases studied. The literature highlights insufficient human capital, time, and funding as key obstacles to the climate transition (Doci et al., 2025) and more bluntly describes co-creation as time consuming and resource demanding (Acar, Steen, and Verschuere, 2025; Ansell and Gash, 2008). Participants noted time demands across cases: AI2 observed that Co-SHAPE was time- and resource-intensive because it built the city's co-creation framework, similar to MOSAIC's high time demand to test methodology. MNZ and Co-SHAPE reported lengthy initial periods for partners to align on objectives, goals, and language. In MNZ, a partner's staffing and capacity issues created a barrier. MOSAIC interviewees cited time demands on participants and the municipality and noted funding challenges. Although other projects did not report direct financial problems, all relied on external funding, suggesting municipalities lacked the resources to undertake co-creation independently.

So, while resource demands varied slightly across projects, time was the most common and limiting factor, with money close behind. Idea generation from co-creation was consistently cited as a major benefit, demonstrating the value of combining perspectives. Despite the resource demand, as AI2 highlighted, failing to engage in co-creation could be costlier in the long run, since proposed changes would more likely encounter barriers and lose social consent if citizens' needs were not incorporated.

5.3 Social Justice

Enhancing democratic legitimacy is frequently discussed in the literature as a benefit of co-creation. Scholars note its ability to uplift historically suppressed citizen voices (Leino and Puumala, 2021), to place citizens and government decision makers on an equal footing (Hedensted Lund, 2018; Irvin and Stansbury, 2004) and increase legitimacy through greater citizen input into both process and output (Torfing, Sørensen, and Røiseland, 2019). All three cases exhibited this aspect, though they approached it differently. MOSAIC focused on creating an open, participatory innovation approach across city sectors, MNZ sought social consent for climate actions such as heat pumps, and Co-SHAPE developed a method for integrating citizens into decision-making. Regardless of method, these efforts empowered citizens and amplified their voice in the city. The literature describes co-creation's role in helping citizens feel heard

and able to influence services (Acar, Steen, and Verschuere, 2025), a dynamic evident in the cases. MNZ clarified what communities wanted in their neighborhoods, Co-SHAPE co-built scenarios for a transitioned city to include citizen needs, and MOSAIC found that citizens primarily wanted clear communication and a sense of contribution. Giving citizens that platform helped them feel empowered and involved.

When citizens feel listened to and see themselves contributing to government decisions, mutual trust develops among actors, a widely discussed aspect of co-creation in the literature. Many studies identify trust building as both a crucial first step and a common positive outcome of co-creation (Ansell and Gash, 2008; Doci et al., 2025; Torfing, Sørensen, and Røiseland, 2019; Leino and Puumala, 2021; Reifensahl, Augenstein, and Möller, 2025). This pattern is heavily reflected in practice with interviewees reporting increased trust among citizens and emphasized that investing time early to build trust and a shared language made projects possible or easier.

Co-creation also enables actors to align expectations, challenge and test proposed solutions, and pool resources, which fosters mutual transformative learning and builds capacity for systemic change (Torfing et al., 2021; Sillak, Borch, and Sperling, 2021). All three cases contributed to their cities' transformative capacity in different ways. Co-SHAPE disrupted traditional municipal practices to integrate diverse ideas into societally beneficial outputs. MNZ helped community organizations develop their priorities and understand their capacities, increasing their ability to implement climate actions and accelerate change. Although MOSAIC's co-created solutions were not immediately adopted, elements have influenced subsequent projects and decisions, demonstrating how co-creation can seed transformative capacity and later innovation.

Notably, while MNZ and Co-SHAPE built community support for climate action, MOSAIC did not, despite its focus on sustainable transport. The other cases explicitly educated participants about climate actions and environmental benefits to increase support, but MOSAIC did not. Possibly because MOSAIC's solutions were not expected to be implemented in their original forms and outreach did not extend beyond participants, building broader support for sustainable transport was not treated as a goal or outcome. This strength, building support through co-creation, emerged from interview data rather than the literature, though the literature does note that co-creation can increase support for unpopular or controversial policies (Irvin and Stansbury, 2004), which climate action sometimes is.

The literature describes co-creation as a means for governments to inform citizens about processes and decisions and for citizens to inform governments about their needs and offer better urban solutions (Michels and De Graaf, 2010; Irvin and Stansbury, 2004). Co-SHAPE and MNZ both demonstrated reciprocal learning where citizens learned more about the climate transition and sometimes about municipal workings, and the municipality learned what changes citizens and local stakeholders wanted. MOSAIC, however, did not show this pattern. Interview and grey-literature evidence suggests MOSAIC was primarily designed for researchers to test the co-creation methodology, so citizens learned little about the municipality or the climate transition.

The literature also warns that co-creation can suffer selective participation bias and unequal representation, since advantaged groups often have more time and opportunity to participate (Michels and De Graaf, 2010; Anthony, 2024). This trait was identified only in MOSAIC, mainly because there was insufficient time at the project's start for the open, inclusive, and participatory recruitment process that usually occurs in the city. That this issue appeared in only one case indicates practitioners are generally aware of the risk and try to design processes to avoid it.

Rather than unequal representation, the cases reflect literature showing that inclusive co-creation can empower citizens, enhance mutual trust, strengthen social cohesion, and build more resilient communities (Leino and Puumala, 2021; Torfing, Sørensen, and Røiseland, 2019). MOSAIC's grey literature notes that co-creation helped participants build relationships and trust that may enable future collaboration, showing that co-creation can help build a tighter knit community. MNZ explicitly worked with smaller community organizations to prevent further disadvantage, directly contributing to resilience and social cohesion. In Co-SHAPE, AI1 described 'co-becoming,' a collaborative learning process for using land in the net-zero transition. This shared framing can foster cohesion between communities and the municipality.

However, limited transparency and weak communication remain recurring threats to social cohesion. The literature cautions that opacity breeds distrust and conflict and that unequal information access undermines collaboration (Ansell and Gash, 2008; Coenen, 2009; Torfing et al., 2021). In practice, MNZ illustrates how project scale and complexity can create communication gaps, especially when some participants lack equal partner status and intermediaries add muddled exchange layers. MOSAIC shows downstream effects of ineffective communication. Mixed messages about project purpose and unclear expectations left participants dissatisfied when results were not made tangible or followed up. Even when one side believes communication was adequate, differing expectations signal that messages did not land uniformly.

Another recurring threat is that citizens' inputs from co-creation are not incorporated into final project plans or implementation (Coenen, 2009). Co-created knowledge can be uncomfortable to work with and challenge traditional structures which worst case results in co-creation processes becoming a tokenistic practice (Leino and Puumala, 2021). For collaboration to be true co-creation, it should not be done merely for tokenism or legitimacy, but to delegate actual decision-making power to the participants and incorporate their ideas (Vermeulen, Winkeler, and Kalra, 2025).

Both MNZ and MOSAIC faced this threat. In MOSAIC, despite its methodological framing, participants nonetheless expected tangible follow-through, and the absence of idea incorporation left many feeling dismissed and reduced willingness to engage in future processes, as is reflected in the literature (Ansell and Gash, 2008). In MNZ, views diverged and some interviewees reported that the use of intermediary channels diluted community feedback, while others saw genuine municipal commitment and incorporation of ideas. This split highlights how organizational roles and visibility into decision pathways shape perceptions of whether inputs matter.

5.4 Governance

Part of the benefit of the education exchange that the literature discussed was focused on the idea that when city governments better understand what the citizenry needs and wants to see in the city, they react with public services and solutions that better match those needs and wants, which reduces policy failures and increases support for those policies (Irvin and Stansbury, 2004; Coenen, Huitema, and Woltjer, 2009). In the cases of MNZ and Co-SHAPE, this was evident as a reason why the municipalities engaged in co-creation to begin with. With Co-SHAPE's goal to understand how to get social consent for the landscape changes that come with the climate transition, understanding what the citizens wanted to see was an important goal to the project. MNZ had a similar approach where they wanted to understand what technologies or solutions people would be most interested in pursuing to create investable or fundable projects within the engaged communities.

Co-creation also offers the opportunity to break down hierarchies among local government, businesses, universities, citizens, and other stakeholders, transforming the public sector from a legal authority into an arena of collaboration and enablement (Leino and Puumala, 2021). While the data does not provide an explicit example of this, the municipalities' willingness to engage local stakeholders suggests some breakdown of hierarchies. The literature further highlights co-creation's potential to facilitate cross-department collaboration and break administrative silos (Torfing, Sørensen and Røiseland, 2019; Doci et al., 2025), which the data supports. Co-SHAPE emphasized increased internal municipal collaboration as both facilitated by co-creation and necessary for project success. MOSAIC reported barriers to internal municipal collaboration but noted that projects like MOSAIC and a recent democracy assignment are beginning to reduce silos and increase interdepartmental cooperation.

Despite these governance benefits, weaknesses and threats complicate realization of those advantages. A common weakness across cases was that institutional, organizational, or communicational differences became barriers to collaboration. The literature notes that actors entrenched in institutional roles can resist change and create blockage points (Torfing, Sørensen and Røiseland, 2019; Sillak, Borch and Sperling, 2021). In MNZ and Co-SHAPE, such differences produced communication barriers. Actors and departments held different perspectives and objectives, effectively operating in different languages where the same terms meant different things, which hindered alignment. MNZ faced the additional challenge of communication being routed through an intermediary, adding another interpretive layer. MOSAIC mainly struggled with internal municipal silos that made engaging all necessary departments difficult. All cases therefore highlighted the importance of investing time at the project outset to build a common understanding and trust to avoid miscommunication.

Despite not being evident in literature, lack of buy-in from upper management is also something that all three cases experienced and combined with organizational or institutional differences made collaboration more difficult. While this could be placed as an organizational challenge, because it is not a difference in organization, rather a lack of support within the organization, it became a different weakness. MOSAIC reported the absence of managers from departments with authority over transport being a mistake, since it contributed to co-created results not being adapted. Buy-in at every level is important, but senior leadership is essential to ensure that co-creation results and solutions are taken seriously and implemented. Co-SHAPE discussed this along with how having the difficult conversations with all stakeholders was important in achieving buy-in and contributed to the success of the project.

Closely related is the entrenchment of traditional public-sector working methods. When short-term efficiency and risk avoidance are prioritized, external collaboration can be perceived as a threat rather than a source of innovative insight (Torfing, Sørensen, and Røiseland, 2019; Leino and Puumala, 2021). Politicians may resist sharing power, and public managers may fear collaborating with actors they cannot control, creating a threat to co-creation (Torfing, Sørensen, and Røiseland, 2019). This threat was present in all three cases, though in different forms. The municipality's aversion to risk and avoidance of public backlash in the MOSAIC case meant that the city was missing out on the full benefits co-creation could have offered. In MNZ, there was a reliance on funding that was focused on physical outputs rather than the process, which limited and narrowed the co-creative process and pushed it towards one end result. Before the co-creation process in Co-SHAPE, Aarhus municipality had a more traditional way of working that had been established for so long, it took time and effort to break through and create a common understanding of a new way of. The success of Co-SHAPE despite this challenge was determined by the will of the participants to be a disruptive force and create change in the municipality.

However, a less easily changed factor emerged during the interviews is the overall structures of laws, regulations, and administrations that influence both co-creation design and result uptake. While related to insights not being incorporated or entrenched political traditions, this was added as a way to look at the wider context of the city or region or country that affect how co-creation is handled and how results can be used. All cases demonstrated that politics influence co-creation's design and uptake. In MOSAIC, though there was the new democratic assignment included increased citizen engagement, the process to implement changes was slow enough that the outcomes from the MOSAIC project could not be fully capitalized on. In both MNZ and Co-SHAPE, though the politicians were not direct participants in the co-creation, the recommendations for any changes to the city or the net zero strategy needed to be approved by them. Since politicians are generally more risk averse, the suggestions needed to be made less risky and framed to be more aligned with the politicians' goals, which can transform the suggestions to something the participants did not intend. Additionally, the changing political landscape in the UK around energy prices as well as political parties seeking to scale back or abandon climate action made investment in sustainable energy less attractive, complicating citizen uptake and investor interest. In Denmark, regulations around land use and development affected how renewable energy could be developed in the Co-SHAPE project.

Political traditions and structures seem to be among the most prevalent threats and the hardest to overcome. Political tradition on a local level can be solved with time and effort, as the Co-SHAPE project demonstrated, but the structure of laws, regulations, and administrations is much harder to change on a local level as they most often operate at higher levels. This necessitates finding other solutions like adapting the co-creation process or outcomes to align more closely with political goals. Even if the process or outcomes are adjusted, if the outcomes from co-creation are not taken seriously and incorporated into plans, it can leave citizens feeling unheard and dissatisfied with the municipality. Ensuring that there are plans or structures in place to use the outcomes before the co-creation is started can be helpful to avoid such a fate. Another threat that can have disastrous effects on co-creation is having limited transparency or communication. This can result in distrust in participants and the community and make it difficult to repeat co-creation for other projects as well as harming the current project, resulting in less beneficial solutions where not everyone gets an equal say.

5.5 SWOT Aspects Missing from all Cases

Across the three cases, few aspects were completely absent. Among them were the aspects focused on financial costs to administrations and lack of access to knowledge and skills to facilitate co-creation. While a lack of access to the knowledge and skills that are required to successfully facilitate co-creation can be a significant weakness of co-creation projects identified in the literature (Sillak, Borch, and Sperling, 2021), the studied cases all had knowledge and skills for co-creation. While MNZ and MOSAIC had external partners as the more knowledgeable party that led the practical collaboration aspect, Co-SHAPE had municipal actors that were highly knowledgeable and collaborated with other partners to create a successful co-creation process. Despite municipalities and internal partners possibly lacking co-creation knowledge, there are many external actors that have a lot of knowledge on the topic that can be utilized for success in co-creation projects.

The other absent aspects, co-creation's ability to affect financial costs in administrations is discussed in multiple articles. Some said that it could lower the costs of service provision for governments (Acar, Steen, and Verschuere, 2025), while others argued that it could increase administrative costs (Torfing et al., 2021). Still others argued that it could replace resources that budget cuts removed (Torfing et al., 2021; Acar, Steen, and Verschuere, 2025; Leino and Puumala, 2021). However, none of these were identified as present benefits from doing co-creation in the three studied cases. In fact, all of the cases received outside funding for the co-

creation projects so municipal budget was not a big factor in these cases. On the other hand, having outside funding would suggest that the co-creation would have increased administrative costs across the cases, but this would have been too much of a speculation to confidently code.

5.6 Success Factors and Learnings from Cases

5.6.1 Collaboration Strategies Employed

There are many strategies that can be used for co-creation's practical collaboration. The three studied cases used differing strategies, and this section will briefly present them.

The Co-SHAPE project used a deliberate, direct engagement process with citizens. It essentially began with a clean slate and made co-creation the project's core. This allowed the team to observe city life and focus on how people use space, interact, travel, and experience daily life, to develop ideas that merged citizens' views with political goals and private developer interests into scenarios for city transformation (AI2).

The practical collaboration began with planning within the project group before engaging the community. One municipal citizen-department staff member had run a similar process previously and brought connections and a starting approach. Engagement started with informal talks and workshops to explain the larger landscape transformations already underway, followed by six months of intensive co-creation. Activities included nature and city walks with landscape architects to map different understandings of the landscape, workshops with schools and the public, and invited workshops to co-create main ideas and designs based on input from the general workshops, resulting in a catalog of ideas. The project then formed a 25-person citizen group that held focused meetings on five or six projects to develop scenarios for landscape transformation (AI1).

MNZ worked with three community organizations in workshops, with those organizations engaging directly with their communities. An open, inclusive call for participants was used to select organizations with complementary but diverse skills and connections. The project also ran workshops with larger groups of community organizations and citizens for different parts of the process (BI1; BI2; BI4).

MOSAIC started with an open call for participants in the area of the city the project was focused on, however, it was mentioned that due to time constraints, potential participants were also directly contacted, and the participants ended up not being as diverse or representative as desired but still represented a diverse background of citizens and organizations in the area. The goal of MOSAIC was to engage stakeholders from the quadruple helix including academia, citizens and civil society, industry and SMEs, and city agencies and municipal departments. Collaboration started with a large opening workshop with all participants and then participants were split into three smaller groups where they met two to three times a month for five months to discuss specific shared solutions for the main challenge. The final ideas were tested during open events in the city (GI1; MOSAIC, n.d.).

5.6.2 Identified Learnings from Co-Creation

While education exchange has been identified from the literature as a benefit of co-creation, it also offers a broader learning opportunity for how to engage with citizens and how to do co-creation again in the future. The studied cases had various learnings as a result of their co-creation activities that will be presented in this section.

Co-SHAPE found that building multiple scenarios with local citizens created flexibility to combine citizens' needs and wants with political goals, municipal projects, and technical feasibility into plans acceptable to all stakeholders. Developing these plans before a large renewable-energy developer entered the conversation helps ensure those priorities remained central. Co-creating scenarios with all concerned parties also ensured everyone had access to the same information and became more aware of how their actions affected other parts of the project, enabling them to see the whole rather than just a part. A crucial lesson was that the process matters as much as the end product. Participants should recognize that knowledge is being created, often outside their own expertise, and understand the value of that knowledge.

Participants of the Co-SHAPE project learned that the focus of co-creation should be less on the product and more on the process of involving and listening to the influential actors. This learning was also echoed in the MOSAIC case. MOSAIC referred to how municipal employees should want to anchor co-creation in the organization and focus on the collaboration rather than on the output employees create. MNZ emphasized that the people chosen to work on a co-creation project should have the right temperament and knowledge to drive co-creation. Within the Co-SHAPE project, the process they discussed was about ensuring that a citizen engagement consultant, a landscape architect, and development consultants are all involved to act as a driving force for deep collaboration while municipal planning representatives are involved to act as the planning authority. Together this creates a team where ideas are creative and flexible, but also tangible and implementable. Planning authorities on their own can be too constrained, but without the planning authority, the solutions designed can lack the grounding necessary to make them successful and get them implemented. MOSAIC, for example, lacked that planning authority presence, and so the solutions that came from that co-creation were not implemented. Perhaps if that contingent had more of a presence in the collaboration, the drive to implement the changes might have been higher.

The Co-SHAPE project also imparted that even though this project was very resource intense, it was that way because it was establishing the framework for co-creation, and in the future, the resource cost will be low to do it again. Once the framework is there, co-creation is relatively inexpensive and requires a small team and fewer resources to complete, making the initial investment more valuable in the long run.

The learnings from the MNZ project have a bit of a different focus. Participants highlighted that the project was complex and while there were good elements of co-creation, trying to co-create everything was too much and made it difficult. A slightly simpler project that had fewer elements could have been more successful. Yet taking the risk on a large project yielded deeper learnings about the city, suggesting that willingness to accept risk is necessary to gain insights for future efforts. MOSAIC had a slightly opposite learning where they were left with the impression of not making promises that can't be kept and to clearly communicate the ones you are making. This is a much more conservative learning, though it was also pointed out from MOSAIC that if a project is asking a lot of time and commitment from participants, it should be for something that can be promised to be done. Especially if the project is about testing a methodology, it should be promised that the methodology will be used again to justify the time and energy spent on it.

Additionally, MNZ pointed out the importance of having more direct communication between participants instead of relying on an intermediary partner. Having an intermediary took away from the co-creation aspect and led to nuance being lost in translation. This demonstrated the importance of having knowledgeable facilitators of co-creation that can help create the opportunities where direct communication and alignment of ideals can occur. This direct communication and collaboration between all stakeholders would have been easier if all the

participants in the project were equal members, as opposed to some participants being partners and some being participants.

All cases noted that having a partner with intimate knowledge of the community was an important success factor in co-creation (discussed more in Section 5.6.3) and MNZ discussed learnings about community organizations. They highlighted how community organizations are in a unique position. They have a lot of influence over normalizing technology and increasing community understanding to boost uptake, but they need to be strong, respected, and well-resourced partners. However, these organizations have limits and can't do it all, so a balance needs to be found in what they offer. Part of capitalizing on the resource that they represent was manifested in putting an explicit value on their input and raising them to the same level as consultants by paying them to be a part of the project. Co-SHAPE highlighted the positive effect of a project leader in the citizen-engagement department who had prior relationships and time to develop a robust process with citizens. This pre-existing knowledge and dedicated staff time positively influenced co-creation.

Lastly, MOSAIC highlighted that in general, citizens don't actually expect or need that much from the municipality in these processes. They just want the municipality to communicate, including after the end of the project to learn about how the results of the project were used, and to feel like they contributed to something and the time they spent was worth something.

5.6.3 Identified Factors Affecting Collaboration

In addition to the learnings produced by the co-creation projects, several external factors affected collaboration. A primary factor across all cases was a different understanding of the language used by stakeholders in the project. Closely connected to organizational and communicational differences, this issue appeared in every case. They all mentioned how most partners started with a different idea of what the projects' goals were and how to achieve them. This was also something that was not recognized at first in the collaboration and caused some conflict or difficulties, especially in communication. When it was realized that this was a factor that was affecting the collaboration, MNZ and Co-SHAPE discussed the importance in taking the time to work together, have the tough conversations, and create a common or shared language to build trust, smooth communication, and make working together easier. However, in MOSAIC, it was not noticed that there was this communicational difference in the goals of the project until afterwards, which ended up affecting participants' satisfaction with the project.

Within the MNZ project, the city of Bristol already had a strong voluntary, community, and social enterprises sector and pre-existing relationships within them. This landscape, along with having community organization leaders that are systems thinkers who see the big picture of how climate and energy pressures are connected to the cost of living, coupled with genuine commitment from the city council, was an essential factor that made it possible to attempt such a widespread and complex project.

The one project that was not initiated by the municipality, but instead by a research initiative (MOSAIC), seemed to have the least success in the eyes of the municipality and the participants in the city. While it didn't have as many weaknesses as other projects, the lack of anchoring within the city could have contributed to its fewer strengths. If success factors are considered, municipal initiation and internal anchoring seem to support uptake and implementation of co-creation outputs. However, it must also be noted that this is the oldest project and therefore the ideas generated from the co-creation have actually had the time to be or not be uptaken. The other projects have yet to have the opportunity to be implemented, so it cannot be said for certain that they have been more successful in that regard. One of the interviewees for the MOSAIC project was optimistic that learnings from the pilot project are being used going

forward with citizen engagement in the city, though the methodology that was tested is not being used. The other interviewee was not as optimistic about the reuse of the project's methodology and mentioned that the city is looking at other co-creation methods they are able to utilize effectively. It was also speculated from one of the interviewees that because this methodology came from outside the municipality, there was resistance to implementing or fully committing to the process and it wasn't seen as the most important project. They mentioned that even though this was an issue the city wanted to work with, no one had the drive or capacity to want to work with it on top of all the other duties they had. This would suggest that a factor that is critical to success in collaboration is internal drive and having the call come from inside the house.

Co-SHAPE noted that political goals influence project choice and uptake, so creating a framework that accounts for those goals is important. Considering these goals and how politicians may want to view and implement them is something that both MNZ and Co-SHAPE mention as considerations for any solutions proposed from the co-creation team to politicians to increase success.

It also should be mentioned here that the overall structure of laws and administration that was discussed as a threat to co-creation in Section 5.4 also encompasses some of the external factors that can affect collaboration. The structure of laws and administrations is what enables or constrains collaboration, especially in the public sector. Without the support from these mechanisms, municipalities and public agents can have their hands tied and be unable to engage citizens in the discussion. With regulations like the democracy assignment in Gothenburg that was discussed in the MOSAIC case, collaboration with citizens becomes easier as there is a mechanism to support its increased use. However, it becomes a bit of a chicken and the egg situation where politicians, being risk averse, may not want to implement a methodology that is not proven to work or to promise things to the public that they are unsure they can accomplish, which is where cases like these come in. These cases are testing and developing co-creation methodology to show that it can work and create the right circumstances that enhance value for the administration, the citizens, and the city as a whole and that can be used again for other problems.

5.7 Summary of Analysis

While none of the interviewees considered the projects unsuccessful, most of them discussed the various challenges that the projects faced. Even a successful project can be improved, and co-creation is not just a learning process within the project, it is also an overall learning process, can be improved from one use of it to another, and adjusted for each specific project. The most significant challenges to these cases were also some that much of the literature noted. The resource-demanding nature of co-creation as well as the differences between actors can be insurmountable barriers to collaboration, and while these cases did include aspects of them, they were able to overcome them and produce useful results. Though it adds to the resource demand of co-creation, time was an essential ingredient to success, allowing for mutual trust to be built and to work through actor differences to engage all the necessary parties in the collaboration. The results show that MNZ and Co-SHAPE were very strong projects that were focused on increasing the effectiveness of stakeholder participation in government decision making and on creating better public services, specifically for climate action, based on ideas from a diverse range of actors. MOSAIC had more focus on the pure methodology of co-creation rather than on enhancing the effectiveness of public services.

Within the studied cases, the exhibited opportunities were closely tied to the design of the project, though there were a few aspects that could seem to be a side effect rather than deliberate. Developing transformative capacity and stimulating innovation was one that was not

surprising that all the cases portrayed as this is a large reason for engaging in co-creation. While it may not lead to direct, immediate changes, co-creation sows the seeds for change in the future by creating the capacity and knowledge for that change. Strengthening social cohesion and resilient communities is something that often seemed like a side effect of co-creation rather than a deliberate goal, but it was a common result that will be useful for future projects. Overall, Co-SHAPE and MNZ are not only strong projects, but they also create opportunities for future benefits and opportunities for change. Even though MOSAIC saw fewer opportunities, those that it did see will help to facilitate future co-creation opportunities and help create conditions for change.

However, the studied cases were not immune to threats. The threats that Co-SHAPE and MOSAIC faced were different, with Co-SHAPE having more trouble with getting participants and estimating the final outcomes and MOSAIC struggling with transparency and communication and the insights not being incorporated into more plans. Despite experiencing the same threat level, the solutions required were different. Co-SHAPE addressed many of its challenges and created a solution that made most happy, whereas MOSAIC did not have the time to address these threats and the lessons learned were instead used to create other engagement methods. Based on this analytical framework, MNZ was a very threatened project, experiencing every threat in some way. However, there were some contradiction in the interviews where one participant felt a threat that another participant said was not prevalent, showing that sometimes the role and personal experience of the participant effect the way the project or collaboration is perceived. Overall, the MNZ interviewees cited the project as a success and even if not every goal was met, the learnings from the project were valuable for future projects.

While none of the cases were unsuccessful, none of them were perfect either. All of them had aspects that they could improve on and factors outside of their control that influenced how the project was designed and the uptake of results. Co-creation is by definition a learning process, and evaluating past projects like this allows for reflection on what to improve and what to capitalize on.

6 Discussion

Discussing the project's results and analysis yielded some emerging patterns about co-creation (Section 6.1) noticed across the cases as well as connecting back to the literature review. Section 6.2 answers RQ2 by comparing the advantages and disadvantages across all cases and bringing in city contexts to discuss how they affected the effectiveness of the co-creation projects. Furthermore, the discussion reflects on the analytical framework used, the methods utilized in the research, and discusses the generalizability of the findings (6.3). It concludes with a discussion on the limitations of this research (6.4).

6.1 Emerging Patterns

During the review of results and the pursuing analysis, some patterns and themes emerged about co-creation. These were patterns that were noticed across the cases or echoed the literature review performed in Section 2. This section, 6.1, will lay these out and make speculations on their causes and impacts.

The literature review discussed the increasing levels of participation that are being seen across society (Arnstein, 1969; Reed et al., 2018; Hulbert and Gupta, 2015; Bell and Reed, 2021). Projects like Co-SHAPE and MOSAIC that are being conducted to either test participation methodologies or to develop them so they can be used as a framework for future projects showcases this increasing participation. While MNZ was not conducted to develop or test the co-creation methodology, the casual use of it for such a large project also demonstrates that participation is becoming the standard rather than the outlier. The more projects that are successful in their co-creation efforts help to prove that the concept is successful and useful and can be replicated in different contexts as well as for future projects in the same context.

In the studied cases, two out of the three were found to be effective uses of co-creation that resulted in successful outcomes or learnings from the collaboration. Of those two effective projects, their contexts and designs were very different, from the country and related laws and regulations to the designs of the projects themselves. In the Co-SHAPE project, part of the goal of the co-creation was to be a proof of concept for co-creation's future usage in the city. The interviewees for this case saw the project as having successfully designed a framework for co-creation that can be utilized to align municipal, political, and citizen perspectives and goals for the climate transition. MNZ interviewees also identified learnings from their project that can be taken and utilized in other cities and projects around the UK. This helps to illustrate how learnings from co-creation can be used in additional ways that maybe the original goals never took into consideration.

One thing that was mentioned often during interviews as a vital success factor was having a partner organization or person that already has close contact with the target demographic for collaboration and someone who knows how to engage the public. This pre-existing network and connections help to decrease the time required from municipal staff for outreach and connection building for co-creation (Irvin and Stansbury, 2004; Coenen, Huitema, and Woltjer, 2009). It also helps to create a better connection with groups that are historically disadvantaged who may be more wary of the government or who have not had the opportunity to engage in collaborations before (Leino and Puumala, 2021), like in the MNZ project where community organizations were considered a more trusted partner by the community members which facilitated their incorporation into the project. Additionally, it provided the knowledge and skills to facilitate co-creation, the lack of which the literature describes as a challenge to co-creation.

It was noted during the research that municipalities seemed to be more interested in the outcomes and the product that came from the collaboration, while other partners such as

academics, private sector actors, and citizens seemed to be more interested in the process and the conversation that the collaboration requires than the outcome. Municipalities can be more constrained in their funding and what they are able to do with that funding. The municipal interviewee from MNZ mentioned that the funding they receive for the heat pump project is to pay for the physical heat pumps, meaning that in order for the government to consider a project successful, they need to see the increased uptake of equipment. Whereas community organization, citizens, and possibly even private sector organizations are not nearly as constrained by this type of funding and can be more focused on developing the collaboration process, which was highlighted as a beneficial learning for the charity organization that they could take with them to other cities and projects. While this was felt most strongly in MNZ, MOSAIC and Co-SHAPE also discussed how there should be more focus on the process rather than the product because that's the space and time where trust and shared language are built that leads to successful collaboration. Though neither of the cases specifically mentioned that the municipalities focus was more on the outcome, the point both made about shifting focus to the process leads to the belief that there is not currently enough focus on this.

It can be said that with MOSAIC's goal of testing methodology and not looking at implementation or results, all of the focus was on the process. However, since the process was not used for results, it makes it hard to judge the success of the outcomes. This would suggest that there needs to be a balance between focus on the process and focus on the outcomes, since even with the best theoretical process, if the resulting solutions don't become tangible outcomes, it would not be a successful project. Co-creation should not be meant to just talk and have no action, and though success is not only defined as rate of implementation, it is hard to see the long-term value of co-creation if it is not creating feasible, implementable solutions. When designing a framework for conducting co-creation projects, there should be more focus on the process and the learnings that come out of it rather than focusing on how the process reaches the ultimate project goal, but in projects that are designed for creating implementable solutions, there does need to be focus on using that process to create the best solutions.

On that note, there is an interesting observation that both MNZ and Co-SHAPE created plans for future implementation rather than actually implementing the solutions, and MOSAIC focused on testing a co-creation methodology rather than actually creating implementable solutions. It's interesting that co-creation is more often seen as a way to involve citizens and partner organizations to plan for the changes the urban climate transition requires and to co-create knowledge rather than involving them in the actual implementation of the solutions.

The why behind this is unclear. Perhaps it's connected to the idea introduced in literature that regular citizens aren't seen as knowledgeable enough, by themselves and others, to be able to offer valuable insight during implementation (Leino and Puumala, 2021). While the involvement of the citizens or partners was direct in the selected cases and they had influence over the design of the final outcome, and (at least in the case of Co-SHAPE) the final plans that will eventually be implemented, it is still unclear whether they will have any direct role during implementation of those plans. This could also be due to municipalities employing expert urban planners and departments that have experience in the implementation aspect, so they do not need any additional help. Connected to this is the possibility that municipalities don't want to give up that level of control, which is a recognized barrier to co-creation in the literature (Irvin and Stansbury, 2004).

However, these particular cases also partially experience this lack of implementation because of outside circumstances in the two cities – neither MNZ nor Co-SHAPE had the funding available for immediate implementation. Co-SHAPE was additionally lacking one of the main developers they needed to implement their scenarios so they wouldn't have been able to implement

anything anyway. One interviewee did mention that it was easier to get people and citizens to become involved in generating solutions when they know there's money and a path to implementation, but a lot of entities aren't willing to fund implementation until there is a plan. A balance must be struck between proving feasibility to investors and proving to potential participants that their inputs will actually result in change. Nevertheless, if the choice is between involving citizens to co-create a plan for change or involving them in implementation of a plan that the municipality made, it's a better solution to involve them in the planning to both get social consent and to ensure that citizens have a voice in something that will change their community.

Another echo of the literature that was noted in practice was the benefits of co-creation increasing effectiveness in public service provision by better meeting user needs (Reifenstahl, Augenstein, and Möller, 2025; Acar, Steen, and Verschurere, 2025). This was beautifully demonstrated in the MNZ project with one interviewee discussing the “menu” of options idea that resulted from seeing what community members actually want when retrofitting their houses. Citizens can have “the main course, which is what the government is funding, [or] a bunch of starters and side dishes that you can have to go with it that would make it more enjoyable” (BI1). Without the co-creation in this project, it's harder to look past the focus on what the government is actually funding, even though residents don't seem to be interested in it, to the small, more basic actions that people do want. With the backing of social desire that co-creation provided, there is more incentive for future programs to include other measures to create a better, more holistic fit for what people want. Co-SHAPE had a similar way of creating a better, more holistic fit by including all involved parties in landscape change into scenario building to create scenarios that were most beneficial to society. The solutions suggested as a result of co-creation in Co-SHAPE provide public services that meet the needs of the citizens, the private sector, and the politicians. With social consent from every sector, it is less likely that the new solutions will fail.

Communication appears to be an important attribute to get right when doing co-creation. Bad communication or miscommunication between project partners and between partners and the citizens involved in the project makes it extremely difficult to reach success within the project. Communicational differences is a barrier to co-creation that is discussed in the literature, along with institutional and organizational differences (Sillak, Borch, and Sperling, 2021). These differences can also result in conflict, though in these cases, it mostly resulted in poor communication that made directly working with project partners and participants about project goals difficult. This is very connected with an observed theme in these cases that different actors or participants have different objectives when working on the problem and therefore different understandings and language around the issue. They end up developing different ideas of what the collaboration should look like and why they're even engaging in co-creation to begin with.

One way to avoid this barrier that was noted by every case was to take time at the beginning of projects to talk through these things and create that common language to avoid later conflicts and miscommunications. However, that then runs projects into the realm of being very time intensive, which may be a prohibiting factor to some municipalities or projects. In the grand scheme of how long co-creation can take when allowed, these projects had relatively short timelines, which made it difficult to actually take the time needed at the beginning of the projects to align on goals, expectations and roles. An observation that was noted around why there wasn't always the time to spare for this important part of co-creation was connected to financing. Because all of these projects received outside funding to run the projects, they were more constrained in how much time they had to design and set up the project. MNZ even noted that they couldn't start bringing in the community organizations until the plan was made, the

funding was received, and the project started due to regulations about the money needing to be spent during the project.

The dependence on this type of project financing that designates how and when the money can be used and therefore the timelines of the project can be a hinderance when the outcome is communicational difficulties and a suboptimal timeline for co-creating and carrying out a plan, then implementing the solutions. Stopping the project after only one phase can create a feeling of disjointedness among participants when they either don't see their suggestions implemented or have to wait years to see the results or hear back from project partners. Reliance on project specific financing does not leave opportunities for communication with participants to continue after the project is over, which is something that was noted by a MOSAIC interviewee as an addition that would enhance participants' contentedness with the work they provided and increase citizens' trust in the local government to follow through on these types of projects.

All in all, co-creation is still an evolving concept that can be adapted to the conditions and projects which it is being utilized for. But it also faces a lot of barriers, some of which can be solved within the project, and some of which are more systemic and harder to solve for individual projects. However, the increased use of co-creation demonstrates that participation is becoming more of the norm for government decision making and the institutional structures that will enable its continued use will follow and make it increasingly easier to use. As to when co-creation is most effective, the next section, 6.2, will provide some answers.

6.2 Research Question 2: When do the Advantages Outweigh the Disadvantages?

In order to answer the research question of when and how do the advantages of co-creation outweigh the disadvantages, it is necessary to compare the strengths and opportunities (advantages) of each case against the weaknesses and threats (disadvantages) of each case. Co-SHAPE ended up with a total of 12 of 15 advantages and 8 of 15 disadvantages, MNZ ended with a total of 12 of 15 advantages and 11 of 15 disadvantages, and MOSAIC ended with a total of 7 of 15 advantages and 9 of 15 disadvantages (Figure 5-1).

When asked if they considered the project to be a success, all but one of the interviewees responded that yes, they considered the project, or at least an aspect of the project, to be successful. Whether they defined success as the project meeting its defined goals, or in lessons learned to improve future co-creation projects, success was felt by participants. This also demonstrates that success in a co-creation project can be a moving goal post and is determined by the process, how it goes, and how the participants individually felt. Whether success in this case equals an effective project is a slightly different story.

It's possible to separate success and effectiveness, with success being more personal and effectiveness being a measure of success taking into account goals being met and impacts felt. For this thesis, effectiveness is determined in proxy by the analytical framework, with more advantages than disadvantages being an effective project and more disadvantages than advantages being an ineffective project. When using this determinant, Co-SHAPE and MNZ are considered effective, and MOSAIC is considered ineffective.

However, as can be seen in previous sections, these numbers do not tell the whole story. Personal experience and role in the project can affect perspectives and lead to different conclusions. Additionally, the pre-existing conditions in a city can also play a role in which advantages or disadvantages are present and can be taken advantage of. A project that has enough time for planning, to anchor in the municipality and receive support from higher levels in participating organizations, is placed in an advantageous position early that sets it up for

success. When there is the luxury of allowing time at the start of the project to have conversations and get everyone on the same page terminology-wise, and where every relevant department in the municipality can come together or the municipality is already de-siloed has another advantage setting it up for success. A project will also be more successful and easier to implement if one of the involved partners has a network of connections across the city to help enable collaboration with more sectors and stakeholders in the city. On that note, having a trusted person or organization that the citizens you're hoping to reach know or an organization that has more intimate knowledge of the community and how to interact with citizens the best way is also something that was noted across the cases.

Of course, these can also be effects or goals of co-creation and be seen after a first successful co-creation project. As noted in Co-SHAPE, the first application of co-creation is the most strenuous and resource-intensive and after all these success factors are set up, further co-creation is much easier and more incentivized. Having all of these factors present in a city before co-creation is closer to the ideal, best-case scenario that will make co-creation exceptionally easy, rather than the hard and fast requirements for co-creation.

There are also some aspects that can make co-creation harder. The more complex the project, the more time and resources it will take to achieve its goals. More specialized knowledge and dividing of tasks may be required as well, which poses its own concerns as co-creation is meant to bring together distributed and different actors to work together to reach a joint solution. If time or resources are a concern, then a simpler project with clearly defined goals that is co-designed by the project partners is more likely to be successful.

Having an intermediary can be useful to reach more participants that may be reluctant to work with the municipality if the municipality is not a trusted stakeholder. However, they can create space between the different actors in the collaboration. When some participants in a co-creation project are not also considered partners, it puts them on a different level, which can also create space or lead to less direct communication between all partners. Direct communication between all partners is one of the essential parts of the co-creation process and creates an arena for idea generation to occur. Though it is also noted that the time spent in direct communication can sometimes be overwhelming and be a deterrent to participation which can create representation issues. Fewer meetings that may be longer and spread over time are noted to be the most beneficial and easiest for the majority of participants to manage.

All of the studied cases were doing co-creation in a smaller area of the city, which is useful when testing a co-creation method or looking at a specific problem that affects one part of the city. Unless the city is small, attempting to do city-wide co-creation for one project may be too ambitious. However, when a successful co-creation methodology is found, it can be used to create a framework for how to approach other projects with a city stakeholder first perspective.

Based on these cases and this analysis, the situation when the advantages of co-creation outweigh the disadvantages would be in a focused project with a few main goals where every actor is on an equal playing field and can directly interact to produce solutions together. Reaching out to and incorporating a diverse range of civil society along with municipal resources in a city where there is a pre-existing network of trusted connections between actors creates an ideal arena where co-creation can fully engage the stakeholders for successful solutions. Having a project or problem where enough time is allowed for all of this to occur and for trust and a shared language to be built within the group is an essential ingredient to creating lasting solutions that add value to the city as a whole.

Unfortunately, there is no one size fits all solution to co-creation. Every city is different, and this is a snapshot of how three cities handled co-creation for the climate transition and their experiences. Cities of similar size or characteristics may find that these strategies work well for them, but they may find that the same strategy does not work at all for their stakeholders. Despite the resource-intensity of co-creation, which is seen both in literature and in these cases, the overall and long-term benefits that come from having a city designed by its citizens for its citizens is not to be overlooked or underappreciated. As noted by one of the interviewees, the long-term cost of not doing co-creation and having an unhappy population and failed services could be higher than the upfront costs of embarking on a co-creation journey from the start.

6.3 Reflections on Analytical Framework and Methods

In the studied literature for this project, there was an abundance of identified advantages and disadvantages of co-creation, as well as the barriers and drivers that co-creation faces. There were also frameworks or typologies for identifying the type of co-creation strategy employed, rather than on ways to analyze the effectiveness of the co-creation and the projects as a whole, especially for climate neutrality specific co-creation projects. This required the research to produce its own framework for analyzing the effectiveness of co-creation.

The literature contained many differences in what the benefits and drawbacks of co-creation are and was usually very connected to the specific focus of the researcher. Creating this analytical framework necessitated combining all of the relevant literature and synthesizing them first into advantages and disadvantages and then into the SWOT categories that were used to do the in-depth analysis of co-creation in the cases. The SWOT analysis was chosen as a good basis for the analytical framework because it provided more detailed insights into the distinct effects that the advantages or disadvantages would have on co-creation. Were they connected more to current or future problems? Were the benefits going to be felt immediately or in the future? Is it a disadvantage that can be mitigated within the scope of the project, or is a much larger issue that can't be easily fixed? Is the advantage capitalized on within the project scope, or is it an advantage that will be felt by more than just the participants? These nuances created an opportunity to utilize the SWOT strategy when creating the analytical framework.

The analytical framework went through many iterations that contained more or less detail until it settled into the final version used in this thesis. The addition of aspects that were identified during interviews and then iteratively coded for in the other interviews added an element of practice into the theory of the framework, and in the opinion of the research, made it more relevant to the specifics of studying cases focused on driving climate neutrality in urban environments. However, because the aspects were not necessarily backed up by the theory provided in the literature review, this could be a case of case specific relevance and confirmation bias during the interviews. Additionally, the overall framework being created through a non-systematic literature review could mean that there are aspects from the body of published works on co-creation that was missed, or aspects that were given too much importance and were not actually main advantages or disadvantages of co-creation. However, with the available time and resources, the focused searching of literature, and the iterative creation of the framework, it was determined to be an accurate representation of the strengths, weaknesses, opportunities, and threats of co-creation.

When it comes to the interviews done for this research, fewer interviews than ideal did occur. Interviewing more people would have led to a wider spread of perspectives and possibly added additional insights, but interviews were limited by who was attached to the project and therefore findable as well as who answered email requests for interviews. Some additional interviews would have added missing perspectives, particularly to the MOSAIC case, where only municipal participants were interviewed. However, those additional possible interviewees either did not

answer, or initially answered and then declined an interview. This was an unavoidable possibility and was mitigated by contacting as many people as possible and using the snowball effect with interviewees to locate additional interviewees. However, it did not prevent it from happening completely. In any case, the interviews that were secured were considered to reach saturation and provide enough insights to conduct the analysis and come to conclusions.

On the other hand, the selection criteria for choosing case projects for this research was fairly rigorous. The inclusion of specific selection criteria combined with a ranking system for the searched projects demonstrated the ability to be systematic in choosing the most suitable projects for the research questions. Additionally, the rigorousness of the analysis demonstrated by coding every interview and grey literature for each of the aspects identified in the SWOT analysis (Appendix E) and comparing all of these aspects to find themes and shared learnings was considered to be a strength of this project.

However, it must be noted that because of the limited number of cases studied and the limited number of interviews conducted per case, these findings cannot be considered representative of European climate neutrality co-creation projects. Therefore, these findings are not necessarily generalizable to all of Europe, but instead cities that have similar attributes to the studied cities may find these results are most relevant. On the other hand, the use of the analytical framework that was created through the literature review and the methods used to analyze the cases can be expanded and replicated with more cities and more cases per city to generate generalizable findings and recommendations for co-creation for climate neutrality.

6.4 Research Limitations

As mentioned in Section 6.3, the main limitation of this research is that the results are not generalizable as the cases are one, not representative of all co-creation cases within Europe, and two, interviews were not entirely representative of each case in themselves. However, the presented analytical framework can be easily used for other co-creation cases and can contribute to producing additional and generalizable results about the effectiveness of co-creation.

Additionally, it must be mentioned that this research relied on the perspectives and memories of a few participants in partner organizations in the project. It did not incorporate the perspectives of local community members, private sector participants or every organization and municipal department that participated in the projects. This was a conscious decision as this project was limited in time and scope, and attaining interviews with every relevant participant or from every participant group would have been an unattainable goal, though this did serve to limit the analytical depth of each case. The interviewees were all directly involved in the project either in designing and running it at a high level or on a direct participant level, which meant they were often directly involved in decision making and therefore had good overviews of the whole project and its barriers and successes.

Grey literature for the sources provided some additional information that could help to triangulate findings to some extent. However, another limitation is about the availability of project documents and the depth to which they analyzed the cases. Much of the available literature was presenting only the good sides of the projects as they were mostly news or blog articles or publications recommending replication by other cities. The literature was sparse on reflections of the limitations or weaknesses of the projects, which could have skewed the results of this analysis to be more positive. It's possible that the projects wanted to convince others that the projects had been a good idea and it was money well spent, they wanted to show only the good sides to encourage others to follow a similar methodology, or that the purpose of the literature was such that reflections on limitations and weaknesses was not deemed relevant. In

any case, it should be noted for this research that this was a factor to consider when analyzing the literature from each case.

It should also be noted that the interviewees did not have the same reservations on reflecting on the weaknesses or limitations of the co-creation in their projects. In fact, some interviewees were much more negative than others, perhaps due to their roles and them being more directly involved in difficulties and conflicts within the projects, giving them a more pessimistic view on the projects, or possibly experience with newer co-creation projects that use a more successful methodology skewed the view of the previous one. However, even the most negative interviewees were also able to reflect on the strengths and benefits of the co-creation, contributing to well-rounded interviews that offered numerous insights into how the project worked and how the outcomes were received.

Lastly, as mentioned in the results and analysis sections multiple times, none of the interviewees mentioned anything about administrative costs and so those aspects remained absent during analysis. This could have been because the interview questions were not sufficiently aimed at asking directly about the costs of doing these projects, or it was not specifically mentioned as relevant to administrative costs because all the projects received external funding from sources such as NetZeroCities, EU Horizon, and Innovate UK, and so the projects were built around this available funding instead of municipal budgets. However, it is thought that if there was a significant barrier or reason for implementing co-creation then it would have come up when asked about barriers and strengths.

7 Conclusions

This final section emphasizes the main findings of this research with reference to the two main research questions and one supporting research question (Section 7.1). These findings are used to identify future research opportunities (Section 7.2) and to present lessons for practice to municipal governments and co-creation practitioners (Section 7.3).

7.1 Summary of Findings

This research project aimed to identify when the advantages of co-creation outweigh its disadvantages for performing co-creation for climate transition projects in European cities. It started with a narrative literature review with systematic elements on the evolution of public participation to co-creation. This literature review served to understand and conceptualize the advantages and disadvantages of co-creation by examining the strengths, weaknesses, opportunities, and threats of co-creation. These elements were then developed into the analytical framework presented in Table 3-4 and used to address RQ1: How does current literature conceptualize co-creation based on its strengths, weaknesses, opportunities, and threats? Additionally, the literature review revealed how governance has evolved from traditional modes relying on representation where citizens' power lay only in their vote to more inclusive modes of governance like collaborative governance and co-creation where citizens and private actors can directly affect public service provision. This trend of increasing participation is continuing today with public participation and co-creation becoming more popular modes of governance, especially for complex problems like climate change.

In the second phase of this research, three co-creation projects, Co-SHAPE in Aarhus, Denmark, Mission Net Zero in Bristol, UK, and MOSAIC in Gothenburg, Sweden, were studied. These projects were selected to be studied in more depth through interviews with participants from each case. The interviews served to build knowledge on strengths and barriers of co-creation present in each case from those who directly participated in the co-creation activities. Grey literature from each case was also reviewed to fill gaps left by interviews and confirm the presented data. The interviews also helped to answer the Supporting Research Question: What lessons can be learned from studying cases where co-creation was utilized for climate transition projects? From the strengths of each project and the reasons why those parts were so successful, to the barriers and weaknesses of each project, interviews helped to provide insights into whether and how the projects were effective in reaching their goals and in their collaboration.

Finally, the interviews were analyzed against the analytical framework to code for whether or not the identified aspects were present to create a proxy evaluation for effectiveness in the projects. During the analysis of the interviews, additional aspects were recognized and then iteratively coded for in every interview. The analysis revealed themes and patterns around when co-creation was effective to answer RQ2: In the urban climate transition sphere, when and how do the advantages of co-creation outweigh the disadvantages, and when and how do the advantages not outweigh the disadvantages?

In short, the advantages that co-creation affords generally outweigh the disadvantages, but the context of the project and the wider city as well as the design and anchoring within organizations involved in the collaboration have a significant effect on the success and effectiveness of collaboration. As there is no one size fits all solution to climate change and solutions must be adapted to the area in which they are being implemented, the same goes for co-creation. Learnings and recommendations in co-creation can be modified and adapted to fit the needs of the city the collaboration is taking place in, as well as for the projects and questions being studied. However, co-creation appears to be most effective when it is conducted for a less

complex project with knowledgeable staff with the time to dedicate to creating a holistic and inclusive collaboration strategy that involves stakeholders with a pre-existing network of actors in the city.

7.2 Opportunities for Future Research

As the use of co-creation and public participation continues to increase, it is useful to identify areas where this research can be expanded. By evaluating practical and theoretical implications of co-creation across diverse urban contexts, its effective implementation can be enhanced.

Therefore, it would be beneficial to further explore how co-creation projects focused on other aspects of the climate transition are handled or explore the effectiveness of co-creation for other complex issues outside of climate change. This would give a wider understanding of all of the variables that can affect co-creation. It can also help determine if co-creation for climate change is more or less effective than co-creation in general. Additionally, studying co-creation projects in cities of different sizes, so comparing small, medium, and large cities, could provide valuable insight into how city complexity changes co-creation's effectiveness. Differently sized cities have access to different resources and different networks of actors, which could change the results of when and how co-creation is most advantageous to accelerate the climate transition.

Looking at the long-term impacts and changes that occur as a result of co-creation would be an interesting avenue for further research. This research focused on the short-term effectiveness of co-creation projects, but the implementation and implications of the generated solutions could be quite different. While this may be hard to directly study, as there can be many reasons and drivers for change in a city, it would lead to new insights into how funding opportunities and uptake of solutions are affected by co-creation projects such as these. This would also further support the findings on when co-creation is most effective.

Including the implications of multi-level governance into a study on co-creation would also bring in the perspectives and effects that regional, national, and international policies have on both the ability of cities to conduct co-creation projects and on how changing sentiments on climate policy effect the focus and direction of co-creation projects. These new perspectives could offer insights into the kind of co-creation projects that get the most attention and funding, showing where the focus of co-creation is trending.

One thing that was mentioned by an interviewee was how citizens like to know how the results from their co-creation sessions were used by the municipality. They also mentioned that the municipality should continue to be in contact with participants and update them on how their suggestions are being used even after the end of the project. One can presume that this continued communication would boost morale and trust in the municipality from citizens and make them and other citizens more likely to want to engage in future co-creation. However, this conclusion needs more research to confirm. Understanding the ramifications of more or less communication with co-creation participants post project would create another perspective on how citizens specifically view co-creation, making this a compelling future research opportunity.

Finally, the analytical framework used in this research could be utilized to study more cases of co-creation for climate transition projects across Europe and include more interviews and data to make the results more representative, significant, and generalizable.

7.3 Lessons for Practice

In this section, lessons about co-creation for continued practice, particularly by city governments, are presented. Many of these recommendations hinge on a municipality having the resources, particularly time, already available to them to have greater success in co-creation.

However, it is possible to use co-creation to create these conditions as well. Early co-creation projects designed to build up networks, trust, and engagement in the city may be harder and take more resources, but concurrent co-creation efforts will prove to be less costly and easier. Early co-creation can start with simpler, more tangible projects to build trust and technique, and once a framework is in place, can be expanded to larger and more complex projects.

Recommendations for future practice:

1. Simpler projects focused on one main question make it easier to coordinate across the group and have direct communication with every project partner. If a project is seeking to answer multiple questions in one project, co-creation may not be the best route, unless there is an abundance of time.
2. Ensure every stakeholder involved in the co-creation project is an equal partner guarantee that there are no power dynamics that effect collaboration, and everyone can directly communicate. Co-creation can still be possible without this, but it may be less effective.
3. Take time after a project starts to set expectations and create a common language around the project, including common understanding of its main aims, goals, and strategies for achieving them as well as to clearly define roles among partners.
4. Time commitments can be a hindering factor to some groups of actors, so to help ensure a just and inclusive process where every voice in the city can be heard, consider having fewer, but longer meetings.
5. Going to the citizens and engaging them with multiple methods increases engagement and can help build trust in the municipality, especially if citizens have historically felt unheard.
6. Ensure a person or organization with experience in facilitating cross-sector collaboration is part of the team designing and running the co-creation process to ease communication and collaboration efforts.
7. Having a partner organization that has pre-existing connections or a network with the target collaborators and can be a trusted actor creates an ideal arena for effective co-creation and solution creation.
8. Engage a wide range of city actors from across sectors, including municipal, academia, private organizations and businesses, and citizens to achieve the highest level of social consent and most effective solutions.
9. Shift the focus from being solely on the end product to recognizing the benefits of the process and knowledge production of co-creation as well.
10. Working with breaking down internal municipal silos makes communication and goal alignment smoother to enhance the effectiveness of co-creation.

Again, co-creation has no one size fits all solution, and the strategies utilized in every city and every project may be vastly different depending on pre-existing resources and conditions. Co-creation is also a learning process, where even an unsuccessful project can result in learnings to better co-creation in the future. With public participation increasing across Europe, co-creation may be an increasing strategy for approaching such a divisive issue as climate change is. Urban environments have a large role to play in accelerating the climate transition and the social consent that co-creation offers can provide the ideal circumstances for tackling this complex issue.

Bibliography

Aastvedt, A., & Hgdem, U. (2022). Co-creation, Collaborative Innovation and Open Innovation in the Public Sector: A Perspective on Distinctions and the Convergence of Definitions. *Nordic Journal of Innovation in the Public Sector*, 1(1), 53–68. <https://doi.org/10.18261/njips.1.1.4>

Abrantes, E. (2025, July 7). *Aarhus bets on co-creation and compromise for its green future*. Net Zero Cities. Retrieved May 17, 2026, from <https://netzerocities.eu/2025/07/07/aarhus-bets-on-co-creation-and-compromise-for-its-green-future/>

Acar, L., Steen, T., & Verschuere, B. (2025). Public values? A systematic literature review into the outcomes of public service co-creation. *Public Management Review*, 27(5), 1357–1389. <https://doi.org/10.1080/14719037.2023.2288248>

Ansell, C., & Gash, A. (2008). Collaborative Governance in Theory and Practice. *Journal of Public Administration Research and Theory*, 18(4), 543–571. <https://doi.org/10.1093/jopart/mum032>

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>

Anthony, B. (2024). The Role of Community Engagement in Urban Innovation Towards the Co-Creation of Smart Sustainable Cities. *Journal of the Knowledge Economy*, 15(1), 1592–1624. <https://doi.org/10.1007/s13132-023-01176-1>

Arnstein, S. R. (1969). A Ladder Of Citizen Participation. *Journal of the American Institute of Planners*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>

Arkitektskolen Aarhus (ASA). (n.d.). *Co-SHAPE – Co-Shaping Areas in Peri-Urban Environments*. Arkitektskolen Aarhus. Retrieved May 17, 2026, from <https://aarch.dk/en/co-shape-co-shaping-areas-in-peri-urban-environments/>

Baptista, N., Alves, H., & Matos, N. (2020). Public Sector Organizations and Cocreation With Citizens: A Literature Review on Benefits, Drivers, and Barriers. *Journal of Nonprofit & Public Sector Marketing*, 32(3), 217–241. <https://doi.org/10.1080/10495142.2019.1589623>

Bell, K., & Reed, M. (2021). The tree of participation: A new model for inclusive decision-making. *Community Development Journal*, bsab018. <https://doi.org/10.1093/cdj/bsab018>

Bourhis, J. (2017). Narrative Literature Review. In *The SAGE Encyclopedia of Communication Research Methods*. SAGE Publications, Inc. <https://doi.org/10.4135/9781483381411.n370>

Brandsen, T., & Honingh, M. (2018). Definitions of Co-Production and Co-Creation. In T. Brandsen, B. Verschuere, & T. Steen (Eds.), *Co-Production and Co-Creation: Engaging Citizens in Public Services* (1st ed.). Routledge. <https://doi.org/10.4324/9781315204956>

Bristol Climate & Nature Partnership (BCNP). (n.d.). *Mission Net Zero Inclusion in Action Toolkit*. Bristol Climate & Nature Partnership. <https://bristolclimatenature.org/wp-content/uploads/2026/03/Inclusion-in-action-toolkit-FINAL.pdf>

Bristol.gov.uk (n.d.). *Mission Net Zero*. Bristol.gov.uk. Retrieved May 17, 2026, from <https://www.bristol.gov.uk/council/policies-plans-and-strategies/our-action-on-climate-and-ecology/mission-net-zero>

- Central Denmark EU Office (CDEU). (2024, January 26). 4,4 mio. Kr. i EU-Støtte: Aarhus er udnævnt som pilotby under EU's climate-neutral and smart cities mission [DKK 4.4 million in EU support: Aarhus has been appointed as a pilot city under the EU's Climate-neutral and Smart Cities Mission]. Good Story. Retrieved May 17, 2026, from <https://centraldenmark.eu/44-mio-kr-i-eu-stoette-aarhus-er-udnaevnt-som-pilotby-under-eus-climate-neutral-and-smart-cities-mission/>
- Centre for Sustainable Energy (CSE). (n.d.). *Mission Net Zero*. Mission Net Zero. Retrieved May 17, 2026, from <https://www.cse.org.uk/my-community/community-projects/mission-net-zero/>
- Coenen, F. (2009). Chapter 1: Introduction. In F. H. J. M. Coenen (Ed.), *Public participation and better environmental decisions: The promises and limits of participatory processes for the quality of environmentally related decision-making*. Springer.
- Coenen, F., Huitema, D., & Woltjer, J. (2009). Participatory Decision-Making for Sustainable Consumption. In F. H. J. M. Coenen (Ed.), *Public participation and better environmental decisions: The promises and limits of participatory processes for the quality of environmentally related decision-making*. Springer.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fifth edition). SAGE.
- Criado, J. I., Dias, T. F., Sano, H., Rojas-Martín, F., Silvan, A., & Filho, A. I. (2021). Public Innovation and Living Labs in Action: A Comparative Analysis in post-New Public Management Contexts. *International Journal of Public Administration*, 44(6), 451–464. <https://doi.org/10.1080/01900692.2020.1729181>
- Doci, G., Dorst, H., Hillen, S., & Tjokrodikromo, T. (2025). Urban transition governance in practice: Exploring how European cities govern local transitions to achieve climate neutrality. *Frontiers in Sustainable Cities*, 7, 1559356. <https://doi.org/10.3389/frsc.2025.1559356>
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). An Integrative Framework for Collaborative Governance. *Journal of Public Administration Research and Theory*, 22(1), 1–29. <https://doi.org/10.1093/jopart/mur011>
- Hedensted Lund, D. (2018). Co-Creation in Urban Governance: From Inclusion to Innovation. *Scandinavian Journal of Public Administration*, 22(2), 3–17. <https://doi.org/10.58235/sjpa.v22i2.11422>
- 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., Vedeld, T., Agger, A., Hanssen, G. S., Tønnesen, A., & Valencia, S. (2022)-b. Cities as public agents: A typology of co-creational leadership for urban climate transformation. *Earth System Governance*, 13, 100146. <https://doi.org/10.1016/j.esg.2022.100146>
- Horton, J., Macve, R., & Struyven, G. (2004). Qualitative Research: Experiences in Using Semi-Structured Interviews. In *The Real Life Guide to Accounting Research* (pp. 339–357). Elsevier. <https://doi.org/10.1016/B978-008043972-3/50022-0>
- Hurlbert, M., & Gupta, J. (2015). The split ladder of participation: A diagnostic, strategic, and evaluation tool to assess when participation is necessary. *Environmental Science & Policy*, 50, 100–113. <https://doi.org/10.1016/j.envsci.2015.01.011>
- IPCC: Calvin, K., Dasgupta, D., Krinner, G., Mukherji, A., Thorne, P. W., Trisos, C., Romero, J., Aldunce, P., Barrett, K., Blanco, G., Cheung, W. W. L., Connors, S., Denton, F., Diongue-Niang, A., Dodman, D., Garschagen, M., Geden, O., Hayward, B., Jones, C., ... Ha, M. (with Lee, H.). (2023). *IPCC, 2023: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]*. IPCC, Geneva, Switzerland. (P. Arias, M. Bustamante, I. Elgizouli,

G. Flato, M. Howden, C. Méndez-Vallejo, J. J. Pereira, R. Pichs-Madruga, S. K. Rose, Y. Saheb, R. Sánchez Rodríguez, D. Ürge-Vorsatz, C. Xiao, N. Yassaa, J. Romero, J. Kim, E. F. Haites, Y. Jung, R. Stavins, ... C. Péan, Eds.; First). Intergovernmental Panel on Climate Change (IPCC). <https://doi.org/10.59327/IPCC/AR6-9789291691647>

Irvin, R. A., & Stansbury, J. (2004). Citizen Participation in Decision Making: Is It Worth the Effort? *Public Administration Review*, 64(1), 55–65. <https://doi.org/10.1111/j.1540-6210.2004.00346.x>

Leino, H., & Puumala, E. (2021). What can co-creation do for the citizens? Applying co-creation for the promotion of participation in cities. *Environment and Planning C: Politics and Space*, 39(4), 781–799. <https://doi.org/10.1177/2399654420957337>

Mendizabal, M., Heidrich, O., Feliu, E., García-Blanco, G., & Mendizabal, A. (2018). Stimulating urban transition and transformation to achieve sustainable and resilient cities. *Renewable and Sustainable Energy Reviews*, 94, 410–418. <https://doi.org/10.1016/j.rser.2018.06.003>

Michels, A., & De Graaf, L. (2010). Examining Citizen Participation: Local Participatory Policy Making and Democracy. *Local Government Studies*, 36(4), 477–491. <https://doi.org/10.1080/03003930.2010.494101>

MOSAIC. (n.d.). *Co-creation in action in the EU Mission “Climate-neutral and Smart Cities” – the Gothenburg pilot*. MOSAIC. https://mosaic-mission.eu/sites/default/files/2023-12/GothenburgPilotCase_Final_v5.pdf

Net Zero Cities (NZC). (n.d.). *Aarhus’s Pilot City Activity: Co-Shaping Areas in Peri-Urban Environments*. Aarhus. Retrieved May 17, 2026, from <https://netzerocities.eu/aarhus-pilot-city-activity-co-shaping-areas-in-peri-urban-environments/#:~:text=The%20CO%2DSHAPE%20pilot%20project,use%20and%20renewable%20energy%20production.>

Nyamakura, B., Masih, I., Werner, M., Hermans, L., & Jewitt, G. (2025). Typologies of climate service co-creation approaches in practice. *Climate Services*, 40, 100607. <https://doi.org/10.1016/j.cliser.2025.100607>

Osborne, S. P. (2006). The New Public Governance?¹. *Public Management Review*, 8(3), 377–387. <https://doi.org/10.1080/14719030600853022>

Parks, R. B., Baker, P. C., Kiser, L., Oakerson, R., Ostrom, E., Ostrom, V., Percy, S. L., Vandivort, M. B., Whitaker, G. P., & Wilson, R. (1981). CONSUMERS AS COPRODUCERS OF PUBLIC SERVICES: SOME ECONOMIC AND INSTITUTIONAL CONSIDERATIONS. *Policy Studies Journal*, 9(7), 1001–1011. <https://doi.org/10.1111/j.1541-0072.1981.tb01208.x>

Reed, M. S., Vella, S., Challies, E., De Vente, J., Frewer, L., Hohenwallner-Ries, D., Huber, T., Neumann, R. K., Oughton, E. A., Sidoli Del Ceno, J., & Van Delden, H. (2018). A theory of participation: What makes stakeholder and public engagement in environmental management work? *Restoration Ecology*, 26(S1). <https://doi.org/10.1111/rec.12541>

Reifenstahl, T., Augenstein, K., & Möller, S. (2025). Enhancing public participation through social learning and local identity: The case of climate adaptation in small and medium sized municipalities. *Journal of Environmental Planning and Management*, 1–20. <https://doi.org/10.1080/09640568.2025.2545982>

Sammot-Bonnici, T., & Galea, D. (2015). Swot Analysis. In C. L. Cooper (Ed.), *Wiley Encyclopedia of Management* (1st ed., pp. 1–8). Wiley. <https://doi.org/10.1002/9781118785317.weom120103>

Siebers, V., & Torfing, J. (2018). Co-creation as a new form of citizen engagement Comparing Danish and Dutch experiences at the local government level. *International Public Management Review*, 18(1/2), 187–208.

- Sillak, S., Borch, K., & Sperling, K. (2021). Assessing co-creation in strategic planning for urban energy transitions. *Energy Research & Social Science*, 74, 101952. <https://doi.org/10.1016/j.erss.2021.101952>
- Stickydot. (n.d.). *MOSAIC: Co-creating innovation processes to tackle Mission city challenges across Europe*. MOSAIC. Retrieved May 17, 2026, from <https://stickydot.eu/activities/mosaic/>
- 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>
- Torring, J., Ferlie, E., Jukić, T., & Ongaro, E. (2021). A theoretical framework for studying the co-creation of innovative solutions and public value. *Policy & Politics*, 49(2), 189–209. <https://doi.org/10.1332/030557321X16108172803520>
- Torring, 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>
- Vedeld, T. (2022). The Co-creation Paradox: Small Towns and the Promise and Limits of Collaborative Governance for Low-Carbon, Sustainable Futures. *Scandinavian Journal of Public Administration*, 26(3), 45–70. <https://doi.org/10.58235/sjpa.v26i3.7006>
- Vermeulen, B., Winkeler, L., & Kalra, M. (2025). Urban Transition Toward Environmental Sustainability: Instrumentation and Institutionalization of Co-Creation. *Urban Planning*, 10, 9647. <https://doi.org/10.17645/up.9647>
- Voets, J., Brandsen, T., Koliba, C., & Verschuere, B. (2021). Collaborative Governance. In E. Hannah (Ed.), *Oxford Research Encyclopedia of Politics*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190228637.013.1419>
- Welp, M., Kasemir, B., & Jaeger, C. C. (2009). Citizens' Voices in Environmental Policy: The Contribution of Integrated Assessment Focus Groups to Accountable Decision-Making. In F. H. J. M. Coenen (Ed.), *Public participation and better environmental decisions: The promises and limits of participatory processes for the quality of environmentally related decision-making*. Springer.
- Yin, R. K. (1993). *Applications of case study research* (1st ed., Vol. 34). SAGE Publications, Inc.

Appendix A – Consent Form

Degree Project at the International Institute for Industrial Environmental Economics
(IIIEE), Lund University

Co-Creation in European Urban Climate Projects: When it is 'worth it'? (working title)

Introduction and Purpose of Project

This project investigates the trade-offs inherent in using co-creation for urban climate transitions. This study specifically explores the tension between the innovative potential of co-creation and its high resource demands (in time, money, knowledge, and staff resources), aiming to identify the contexts in which the advantages of collaboration outweigh its disadvantages. By conducting a SWOT analysis of the literature, an analytical framework of the strengths, weaknesses, opportunities, and threats of co-creation was conceptualized. This framework will be applied to the four selected urban climate transition projects through interviews and document reviews to determine which advantages the projects capitalized on, and which disadvantages created barriers to effective utilization of collaboration. This will act as a proxy to determine overall effectiveness of co-creation in these contexts. Ultimately, using this information, this study seeks to offer suggestions for municipalities to determine when to utilize co-creation for better solutions, and when to prioritize speed and resources by minimizing collaboration.

Procedures

With your consent, I would like to record the interview to be able to accurately capture the information you provide. Recordings will be audio only and saved within Lund University servers or directly on my computer. The recording will be used for transcription purposes only.

The information gathered will be used for the fulfilment of the Degree Project as part of the Environmental Management and Policy Master's Program at the International Institute for Industrial Environmental Economics (IIIEE), Lund University.

Participant Rights

As a participant, you have the right to:

- (a) Withdraw from the project at any time and to withdraw any unprocessed/unpublished data previously supplied without providing any reason
- (b) Request that certain materials be kept confidential
- (c) Be guaranteed that any information given will be for research purposes only
- (d) Be guaranteed that any personal information you provide will be safeguarded and only disclosed where you have consented to the disclosure or as required by law
- (e) Be guaranteed that the security of the research data will be protected during and after completion of the study
- (f) To review any summary or synthesis of interview data at any time up until the data is actually published

For Questions and Contacts

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Consent Form

This form is to ensure that you have been given information about the *Co-Creation in European Urban Climate Projects: When is it 'worth it'?* thesis and to give you an opportunity to confirm that you are willing to take part in this research. For all activities below, please indicate which applies to you (*checked box indicates consent*):

☐	I have been familiarised with the Degree Project: <i>Co-Creation in European Urban Climate Projects: When is it 'worth it'?</i> I have had the possibility to ask questions, and I have received satisfactory answers to my questions before being interviewed
☐	As a research participant, I am aware of my right to withdraw participation at any time
☐	I give my consent that the interview can be audio -recorded, transcribed using a third party speech-to-text transcription application, translated (if necessary) and analysed
☐	I give my consent to be identified by my organization
☐	I understand that the results of the research will be presented so that no information can be traced to me personally
☐	I give my consent that a record of my interview can be safely stored for future reference
☐	I have been informed how data will be handled at the end of the research
☐	I have been informed of the secondary use of data

Note: Your participation is voluntary. As an interviewee, you do not have to answer all the questions that are asked; you reserve the right to refuse or cease participation in the interview process without stating your reason and may request to keep certain materials confidential. In addition, you have the right to review any summary or synthesis of the interview at any time up until the data is actually published.

Please, sign below to confirm your consent – digital signatures are possible:

	Participant	Researcher
Name and Last Name		Hanna Gardella, IIIEE
Signature		
Date		

Appendix B – Interview Questions

1. What was your role in the project?
2. In your own words, what was the aim of the project?
3. How was the project initiated and designed?
4. What were the specific goals the project had? Were those goals met?
 - a. Why do you think the goals were able (or unable) to be met?
 - b. Were there any specific contexts or factors inherent to the city (where the project took place) that made it easier or harder for those goals to be met, in your opinion?
5. Why was co-creation (or collaboration with local stakeholders) chosen as a strategy for this project?
6. How was this collaboration included in the project plan and set up?
 - a. What has the collaboration practically looked like? Has it followed the plan?
7. How was decision making in the project handled?
8. What barriers to collaboration did you experience within this project?
9. In your opinion, what were the biggest strengths of this project?
10. What would you have liked to change about the collaboration in the project? What would you keep the same?
11. What has stayed with you the most from the project?
12. Anything else you want to highlight or mention that I have not already asked about?
13. Do you have any questions for me?

Appendix C – List of Interviewees

Table 0-1. List of Interviewees

Participant Code	Project, City	Position	Medium	Time Length	Date of Interview
AI1	Co-SHAPE, Aarhus	Academic Partner	Online	40 min	31.03.2026
AI2	Co-SHAPE, Aarhus	Municipal Partner	Online	40 min	17.04.2026
BI1	Mission Net Zero, Bristol	Municipal Partner	Online	42 min	09.04.2026
BI2	Mission Net Zero, Bristol	Charity Organization Partner	Online	58 min	15.04.2026
BI3	Mission Net Zero, Bristol	Charity Organization Partner	Online	58 min	15.04.2026
BI4	Mission Net Zero, Bristol	Community Network Organization Partner	Online	38 min	20.04.2026
GI1	MOSAIC, Gothenburg	Municipal Partner	Online	1 hour 15 min	13.04.2026
GI2	MOSAIC, Gothenburg	Municipal Partner	Online	33 min	14.04.2026

Appendix D – Full Analytical Framework

	Strengths	Weaknesses	Opportunities	Threats
Resources and Performance	<i>Aggregates cross-sector knowledge</i> Condenses distributed actors, knowledge, and resources for idea generation (Acar, Steen, and Verschuere, 2025; Torfing et al., 2021; Torfing, Sorensen, and Roiseland, 2019)	<i>Resource-demanding</i> Takes time, money, staff, and capacity to complete (Leino and Puumala, 2021; Acar, Steen, and Verschuere, 2025; Torfing, Sorensen, and Roiseland, 2019)	<i>Replaces services lost to budget cuts</i> Co-creation can replace municipal resources that aren't available due to budget cuts (Torfing et al., 2021; Acar, Steen, and Verschuere, 2025; Leino and Puumala, 2021)	<i>Uncertain overall effects</i> Hard to estimate overall impacts of initiatives (Torfing et al., 2021)
	<i>Reduces municipal service costs</i> Can lower costs of service provision for government (Acar, Steen, and Verschuere, 2025)	<i>Increases municipal service costs</i> Can result in increased administrative costs (Torfing et al., 2021)	<i>Digital access lowers participation barriers</i> Digitalization can reduce some barriers to participation (Leino and Puumala, 2021; Acar, Steen, and Verschuere, 2025)	
	<i>Improves outcomes through shared resources</i> Enhanced effectiveness and efficiency by increasing available resources and insights (Acar, Steen, and Verschuere, 2025)	<i>Gaps in co-creation expertise</i> Lack of knowledge and skills required to facilitate co-creation (Sillak, Borch, and Sperling, 2021)		
Social Justice	<i>Strengthens democratic legitimacy</i> Enhances democracy and legitimacy by empowering citizens (Leino and Puumala, 2021; Torfing, Sorensen, and Roiseland, 2019; Torfing et al., 2021; Acar, Steen, and Verschuere, 2025)	<i>Unequal representation</i> Unequal representation of city population caused by selective participation bias (Torfing et al., 2021; Torfing, Sorensen, and Roiseland, 2019; Leino and Puumala, 2021)	<i>Builds transformative capacity</i> Develops transformative capacity and stimulates innovation by bringing together public and private actors (Torfing et al., 2021; Sillak, Borch, and Sperling, 2021)	<i>Weak participation incentives</i> Lack of incentives for actors to participate or difficulty in getting them involved (Sillak, Borch, and Sperling, 2021)
	<i>Gives citizens a public voice</i> Empowers citizens and local actors by giving them a stage to voice their needs and wants where they can actively contribute (Acar, Steen, and Verschuere, 2025)	<i>High participation barrier</i> Threshold for citizens to contribute may be too high (Acar, Steen, and Verschuere, 2025)	<i>Fosters shared ownership</i> Helps build joint sense of ownership over solutions to improve implementation and longevity (Torfing et al., 2021)	<i>Limited actor transparency</i> Limited transparency throughout the process and limited accountability of actors (Torfing et al., 2021)
	<i>Enhances mutual trust</i> Increases trust of other actors through participation (Acar, Steen, and Verschuere, 2025; Torfing et al., 2021; Torfing, Sorensen, and Roiseland, 2019)	<i>Perceived citizen knowledge gap</i> Citizens may not always be seen as knowledgeable enough to contribute (Leino and Puumala, 2021)	<i>Fosters stronger, united communities</i> Strengthens social cohesion and builds more resilient communities (Leino and Puumala, 2021; Torfing, Sorensen, and Roiseland, 2019)	<i>Risk of contributions not integrated</i> Possibility of insights not being incorporated and the process becoming tokenized (Leino and Puumala, 2021; Torfing, Sorensen, and Roiseland, 2019; Sillak, Borch, and Sperling, 2021)
	Builds support for climate action (Interviews)		<i>Facilitates knowledge exchange</i> Education exchange between citizens and public and private organizations (Michels and De Graaf, 2010; Irvin and Stansbury, 2004; Interviews)	
Governance	<i>Better public service provision</i> Leads to public services better matching citizens' needs, improves service	<i>Cross-sector divides hinder collaboration</i> Cultural, institutional, organizational, ideological, and communicational	<i>Dismantles institutional silos</i> Can break down hierarchies and silos in public administration and	<i>Entrenched political tradition blocks adoption</i> Entrenched political tradition and perceived loss of control impede

	access, and reduces service failures (Acar, Steen, and Verschuere, 2025, Torfing et al., 2021; Leino and Puumala, 2021)	differences between actors create barriers to collaboration (Sillak, Borch, and Sperling, 2021, Torfing, Sorensen, and Roiseland, 2019)	between public and private sectors (Leino and Puumala, 2021, Sillak, Borch, and Sperling, 2021)	efficient uptake of collaborative insights (Torfing et al., 2021; Leino and Puumala, 2021)
		Participants are risk averse Participants are risk averse leading to difficulties in achieving collaboration and innovation (Torfing et al., 2021)		Overall structure of laws, regulations, and administrations influencing project design and uptake (Interviews)
		Lack of buy-in from senior management in participating organizations (Interviews)		

Source: Based on the literature review, the identified advantages and disadvantages, and interviews

Appendix E – Full Analysis – Coding

	Strengths - Resources and Performance			Strengths - Social Justice			Strengths - Governance		Total Strengths
	Condenses distributed actors, knowledge, and resources for idea generation	Can lower financial costs of service provision for government	Enhanced effectiveness and efficiency by increasing available resources and insights	Enhances democracy and legitimacy by empowering citizens	Empowers citizens and local actors by giving them a stage to voice their needs and wants where they can actively contribute	Builds support for climate action	Enhances mutual trust	Leads to public services better matching citizens' needs, improves service access, and reduces service failures	
Aarhus Interview 1 (Academic partner)	1	0	1	1	1	1	1	0	5
Aarhus Interview 2 (Municipal partner)	1	0	1	1	1	1	1	1	7
Aarhus Grey Literature	1	0	1	1	1	1	1	1	7
Co-SHAPE Aarhus Total	1	0	1	1	1	1	1	1	7

	Weaknesses - Resources and Performance			Weaknesses - Social Justice			Weaknesses - Governance and Trust			Total Weaknesses
	Resource-demanding/Lack of resources	Can result in increased administrative financial costs	Lack of access to knowledge and skills required to facilitate co-creation	Selective participation bias and unequal representation	Threshold for participation may be too high	Citizens may not always be seen as knowledgeable enough to contribute	Cultural, institutional, organizational, ideological, and communication differences between actors represent formal barriers to collaboration	Lack of buy-in from higher ups in participating organizations	Participants are risk averse	
Aarhus Interview 1 (Academic partner)	1	0	0	0	0	1	1	0	0	3
Aarhus Interview 2 (Municipal partner)	1	0	0	0	0	0	1	1	0	3
Aarhus Grey Literature	1	0	0	0	0	0	1	0	0	2
Co-SHAPE Aarhus Total	1	0	0	0	0	1	1	1	0	4

	Opportunities - Resources and Performance			Opportunities - Social Justice			Opportunities - Governance and Trust		Total Opportunities
	Digitalization can reduce some barriers to participation	Co-creation can replace municipal resources that aren't available due to budget cuts	Helps build joint sense of ownership over solutions to improve implementation and longevity	Strengthens social cohesion and builds more resilient communities	Develops transformative capacity and stimulates innovation by bringing together public and private actors	Education exchange between citizens and public and private organizations	Can break down hierarchies and silos in public administration and between public and private sectors		
Aarhus Interview 1 (Academic partner)	0	0	1	1	1	1	1		5
Aarhus Interview 2 (Municipal partner)	0	0	1	1	1	1	1		5
Aarhus Grey Literature	0	0	1	1	1	1	1		5
Co-SHAPE Aarhus Total	0	0	1	1	1	1	1		5

	Threats - Resources and Performance	Threats - Social Justice			Threats - Governance and Trust		Total Threats
	Hard to estimate overall impacts of initiatives	Limited transparency/communication throughout the process and limited accountability of actors	Lack of incentives for actors to participate / Takes a lot of effort to get them to join	Possibility of insights not being incorporated	Entrenched political tradition and perceived loss of control impede efficient uptake of collaborative insights	Overall structure of laws, regulations, and administrations influencing project design and uptake (from interviews)	
Aarhus Interview 1 (Academic partner)	1	0	1	0	1	1	4
Aarhus Interview 2 (Municipal partner)	0	0	1	0	1	1	3
Aarhus Grey Literature	1	0	1	0	1	1	4
Co-SHAPE Aarhus Total	1	0	1	0	1	1	4

	Strengths - Resources and Performance			Strengths - Social Justice			Strengths - Governance		Total Strengths
	Condenses distributed actors, knowledge, and resources for idea generation	Can lower financial costs of service provision for government	Enhanced effectiveness and efficiency by increasing available resources and insights	Enhances democracy and legitimacy by empowering citizens	Empowers citizens and local actors by giving them a stage to voice their needs and wants where they can actively contribute	Builds support for climate action	Enhances mutual trust	Leads to public services better matching citizens' needs, improves service access, and reduces service failures	
Bristol Interview 1 (Municipal partner)	1	0	0	1	1	1	0	1	5
Bristol Interview 2 (BI2 + BI3) (Charity Organization Partner)	1	0	1	0	1	1	1	1	6
Bristol Interview 3 (Community Network Organization)	1	0	0	1	1	1	1	1	6
Bristol Grey Literature	1	0	0	1	1	1	1	1	6
Mission Net Zero Bristol Total	1	0	1	1	1	1	1	1	7

	Weaknesses - Resources and Performance			Weaknesses - Social Justice			Weaknesses - Governance and Trust			Total Weaknesses
	Resource-demanding/Lack of resources	Can result in increased administrative financial costs	Lack of access to knowledge and skills required to facilitate co-creation	Selective participation bias and unequal representation	Threshold for participation may be too high	Citizens may not always be seen as knowledgeable enough to contribute	Cultural, institutional, organizational, ideological, and communicational differences between actors represent formal barriers to collaboration	Lack of buy-in from higher ups in participating organizations	Participants are risk averse	
Bristol Interview 1 (Municipal partner)	1	0	0	0	1	0	1	0	1	4
Bristol Interview 2 (BI2 + BI3) (Charity Organization Partner)	1	0	0	0	1	0	1	1	1	5
Bristol Interview 3 (Community Network Organization)	1	0	0	0	1	0	1	0	1	4
Bristol Grey Literature	0	0	0	0	0	0	0	0	0	0
Mission Net Zero Bristol Total	1	0	0	0	1	0	1	1	1	5

	Opportunities - Resources and Performance		Opportunities - Social Justice				Opportunities - Governance and Trust	Total Opportunities
	Digitalization can reduce some barriers to participation	Co-creation can replace municipal resources that aren't available due to budget cuts	Helps build joint sense of ownership over solutions to improve implementation and longevity	Strengthens social cohesion and builds more resilient communities	Develops transformative capacity and stimulates innovation by bringing together public and private actors	Education exchange between citizens and public and private organizations	Can break down hierarchies and silos in public administration and between public and private sectors	
Bristol Interview 1 (Municipal partner)	0	0	1	1	1	1	0	4
Bristol Interview 2 (BI2 + BI3) (Charity Organization Partner)	0	0	0	1	1	1	0	3
Bristol Interview 3 (Community Network Organization)	0	0	1	1	1	1	0	4
Bristol Grey Literature	1	0	1	1	1	0	0	4
Mission Net Zero Bristol Total	1	0	1	1	1	1	0	5

	Threats - Resources and Performance	Threats - Social Justice			Threats - Governance and Trust		Total Threats
	Hard to estimate overall impacts of initiatives	Limited transparency/communication throughout the process and limited accountability of actors	Lack of incentives for actors to participate / Takes a lot of effort to get them to join	Possibility of insights not being incorporated	Entrenched political tradition and perceived loss of control impede efficient uptake of collaborative insights	Overall structure of laws, regulations, and administrations influencing project design and uptake (from interviews)	
Bristol Interview 1 (Municipal partner)	0	1	1	0	1	0	3
Bristol Interview 2 (BI2 + BI3) (Charity Organization Partner)	1	1	1	1	0	1	5
Bristol Interview 3 (Community Network Organization)	1	0	1	0	0	1	3
Bristol Grey Literature	0	0	0	0	0	0	0
Mission Net Zero Bristol Total	1	1	1	1	1	1	6

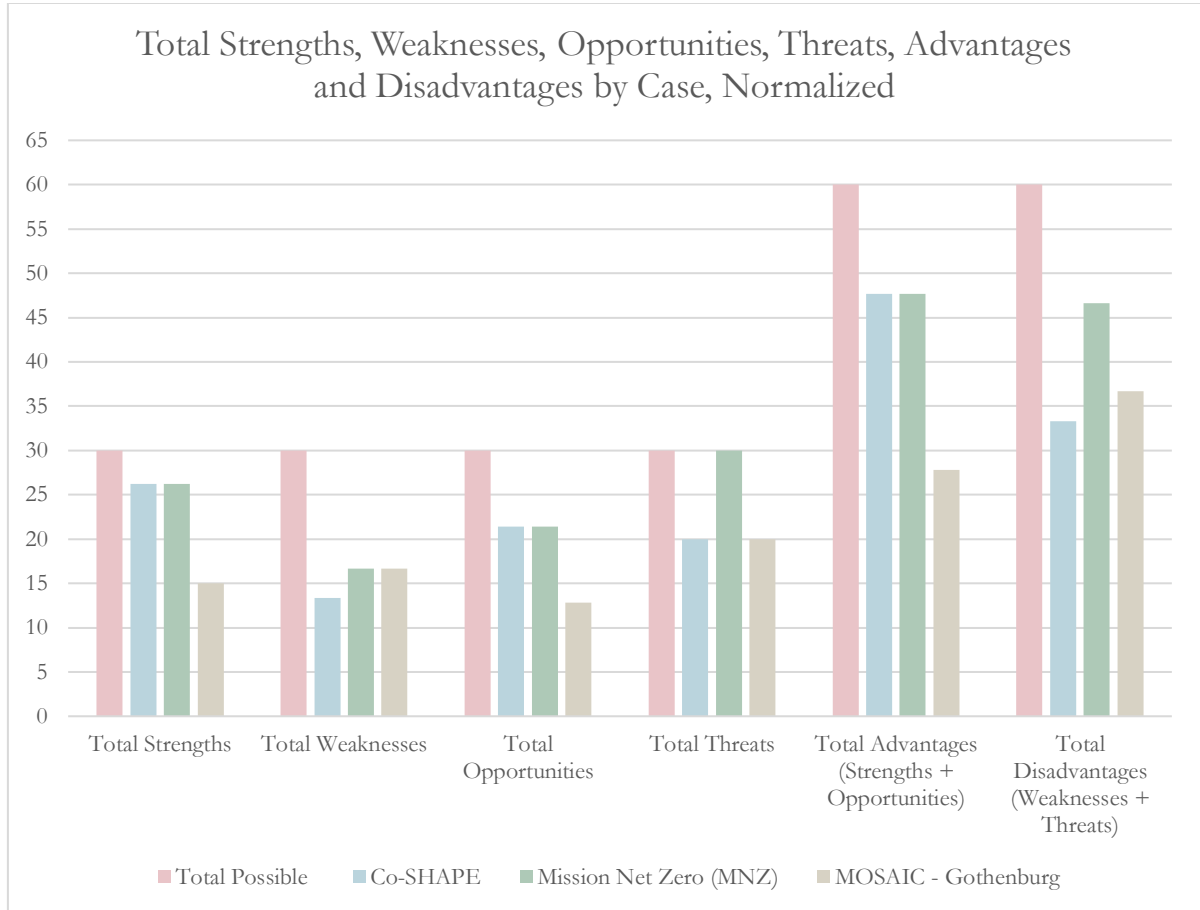
	Strengths - Resources and Performance			Strengths - Social Justice			Strengths - Governance	Total Strengths
	Condenses distributed actors, knowledge, and resources for idea generation	Can lower financial costs of service provision for government	Enhanced effectiveness and efficiency by increasing available resources and insights	Enhances democracy and legitimacy by empowering citizens	Empowers citizens and local actors by giving them a stage to voice their needs and wants where they can actively contribute	Builds support for climate action	Enhances mutual trust	
Gothenburg Interview 1 (Municipal)	1	0	0	0	1	0	0	2
Gothenburg Interview 2 (Municipal)	1	0	0	1	1	0	1	4
Gothenburg Grey Literature	1	0	0	0	1	0	1	3
MOSAIC Gothenburg Total	1	0	0	1	1	0	1	4

	Weaknesses - Resources and Performance			Weaknesses - Social Justice			Weaknesses - Governance and Trust			Total Weaknesses
	Resource-demanding/Lack of resources	Can result in increased administrative financial costs	Lack of access to knowledge and skills required to facilitate co-creation	Selective participation bias and unequal representation	Threshold for participation may be too high	Citizens may not always be seen as knowledgeable enough to contribute	Cultural, institutional, organizational, ideological, and communicational differences between actors represent formal barriers to collaboration	Lack of buy-in from higher ups in participating organizations	Participants are risk averse	
Gothenburg Interview 1 (Municipal)	1	0	0	1	1	0	0	1	0	4
Gothenburg Interview 2 (Municipal)	1	0	0	0	0	0	1	1	0	3
Gothenburg Grey Literature	1	0	0	1	0	0	0	0	0	2
MOSAIC Gothenburg Total	1	0	0	1	1	0	1	1	0	5

	Opportunities - Resources and Performance		Opportunities - Social Justice			Opportunities - Governance and Trust		Total Opportunities
	Digitalization can reduce some barriers to participation	Co-creation can replace municipal resources that aren't available due to budget cuts	Helps build joint sense of ownership over solutions to improve implementation and longevity	Strengthens social cohesion and builds more resilient communities	Develops transformative capacity and stimulates innovation by bringing together public and private actors	Education exchange between citizens and public and private organizations	Can break down hierarchies and silos in public administration and between public and private sectors	
Gothenburg Interview 1 (Municipal)	0	0	0	0	0	1	0	1
Gothenburg Interview 2 (Municipal)	0	0	0	0	0	1	0	2
Gothenburg Grey Literature	0	0	0	0	1	1	0	2
MOSAIC Gothenburg Total	0	0	0	0	1	1	0	3

	Threats - Resources and Performance	Threats - Social Justice			Threats - Governance and Trust		Total Threats
	Hard to estimate overall impacts of initiatives	Limited transparency/communication throughout the process and limited accountability of actors	Lack of incentives for actors to participate / Takes a lot of effort to get them to join	Possibility of insights not being incorporated	Entrenched political tradition and perceived loss of control impede efficient uptake of collaborative insights	Overall structure of laws, regulations, and administrations influencing project design and uptake (from interviews)	
Gothenburg Interview 1 (Municipal)	0	1	0	1	1	1	4
Gothenburg Interview 2 (Municipal)	0	1	0	1	0	1	3
Gothenburg Grey Literature	0	0	0	0	0	0	0
MOSAIC Gothenburg Total	0	1	0	1	1	1	4

Appendix F – Normalized Graph – Total Strengths, Weaknesses, Opportunities, Threats, Advantages and Disadvantages by Case



Source: Own interpretation